

SPECIAL PUBLICATION SJ2011-SP2

**WATER CONSERVATION POTENTIAL FOR THE
DISTRICT WATER SUPPLY PLAN 2010**

APPENDICES



APPENDIX A

AGGREGATED DOR CODES AND NAICS CROSSWALK TABLE

APPENDIX A. Aggregated List of DOR Codes

Category	DOR Classification	DOR Code	DOR Sub Classification Definition
Vacant or Undefined			
	Residential	0000	Vacant Residential
	Residential	0900	Undefined - Reserved for use by DOR only
	Commercial	1000	Vacant Commercial
	Industrial	4000	Vacant industrial
	Institutional	7000	Vacant Institutional
Single Family			
	Residential	0100	Single Family
	Residential	0200	Mobile Homes
Multi-family			
	Residential	0300	Multi-family (10+ Units)
	Residential	0400	Condo
	Residential	0500	Cooperatives
	Residential	0800	Multi-family (<10 units)
Live-in care			
	Residential	0600	Retirement Homes (not eligible for exemption. Other given institutional classification)
	Institutional	7400	Homes for the aged
	Institutional	7500	Orphanages, other non profit or charitable services
	Institutional	7800	Sanitariums, convalescent and rest homes
Hotels			
	Commercial	3900	Hotels, motels
Hospitals			
	Institutional	7300	Privately owned hospitals
	Government	8500	Hospitals
Office Buildings			
	Commercial	1700	Office buildings, non-professional (one story)
	Commercial	1800	Office buildings, non-professional (multi story)
	Commercial	1900	Professional service buildings
	Commercial	2300	Financial Institution (banks, saving and loan co., mortgage co., credit services)
	Commercial	2400	Insurance company offices
	Government	8600	Counties (other than public schools, college, hospitals) including non-municipal governments
	Government	8700	State, other than military, forests, parks, recreational areas, hospitals, colleges
	Government	8800	Federal, other than military, forests, parks, recreational areas, hospitals, colleges
	Government	8900	Municipal, other than parks, recreational areas, colleges, hospitals
Schools			
	Institutional	7200	Private schools and colleges
	Government	8300	public county schools
	Government	8400	Colleges
Category	Classification	DOR Code	Sub Classification Definition
Restaurants			
	Commercial	2100	Restaurants, cafeterias
	Commercial	2200	Drive-in restaurants
	Commercial	3300	Nightclubs, cocktail lounges, bars
Retail			
	Commercial	1100	Stores, one story
	Commercial	1300	Department store
	Commercial	1500	Regional shopping centers
	Commercial	1600	Community shopping centers
Supermarket			
	Commercial	1400	Supermarket
Indoor Recreation			
	Commercial	3200	Enclosed theaters, enclosed auditoriums
	Commercial	3400	Bowling alleys, skating rinks, pool halls, enclosed arenas
	Institutional	7100	Churches
	Institutional	7700	Clubs, lodges, union halls
	Institutional	7900	Cultural organizations, facilities
Outdoor Recreation			
	Commercial	3500	Tourist attractions, permanent exhibits, other entertainment facilities, fairgrounds (privately owned)
	Commercial	3600	Camps
	Commercial	3700	Race tracks; horse, auto or dog
	Government	8200	Forest, parks, recreational areas
	Miscellaneous	9700	Outdoor recreational or parkland, or high-water recharge subject to classified se assessment
Golf Courses			
	Commercial	3800	Golf courses, driving ranges
Auto and Repair			
	Commercial	2000	Airports (private or commercial), bus terminals, marine terminals, piers, marinas
	Commercial	2500	Repair service shops (excluding automotive), radio & TV. repair, refrigeration, laundries, laundromats, etc...
	Commercial	2600	Service stations
	Commercial	2700	Auto sales, auto repair and storage, auto service shops, body and fender shops, farm & machinery sales, etc..
Manufacturing			
	Commercial	2900	Wholesale outlets, produce houses, manufacturing outlets
	Industrial	4100	Light manufacturing, small equipment plants, small machine shops
	Industrial	4200	Heavy industrial, heavy equipment manufacturing, large machine shops, auto or aircraft plants
	Industrial	4300	Lumber yards, sawmills, planing mills
	Industrial	4400	Packing plants, fruits and vegetables, meat packing plants
	Industrial	4500	Canneries, fruit and vegetables, bottlers and brewers distilleries, wineries
	Industrial	4600	Other food processing, candy, bakeries, potato chip factories
	Industrial	4700	Mineral processing, phosphate processing, cement plants, refineries, clay plants, rock & gravel plants
Warehouses/Storage			
	Industrial	4800	Warehousing, distribution terminals, trucking terminals, van and storage warehousing
	Industrial	4900	Open storage, new and used building supplies, junk yards, auto wrecking, fuel storage, material storage

APPENDIX A. Aggregated List of DOR Codes

Category	Classification	DOR Code	Sub Classification Definition
Cropland			
	Agricultural	5100	Cropland soil capability Class I
	Agricultural	5200	Cropland soil capability Class II
	Agricultural	5300	Cropland soil capability Class III
Timberland			
	Agricultural	5400	Timberland - site index 90 and above
	Agricultural	5500	Timberland - site index 80 to 89
	Agricultural	5600	Timberland - site index 70 to 79
	Agricultural	5700	Timberland - site index 60 to 69
	Agricultural	5900	Timberland not classified by site index to Pines
Grazing land			
	Agricultural	6000	Grazing land soil capability Class I
	Agricultural	6100	Grazing land soil capability Class II
	Agricultural	6200	Grazing land soil capability Class III
	Agricultural	6300	Grazing land soil capability Class IV
	Agricultural	6400	Grazing land soil capability Class V
	Agricultural	6500	Grazing land soil capability Class VI
Orchard/Citrus Groves			
	Agricultural	6600	Orchard Groves, Citrus, etc
Cattle			
	Agricultural	6800	Dairies, feed lots
Miscellaneous Agricultural			
	Commercial	3000	Florist, greenhouses
	Agricultural	5000	Improved agricultural
	Agricultural	6700	Poultry, bees, tropical fish, rabbits, etc.
	Agricultural	6900	Ornamentals, miscellaneous agricultural
Easements			
	Miscellaneous	9100	Utility, gas & electric, telephone, local rr, water & sewer, pipelines, canals, radio/telephone/gram communicati
	Miscellaneous	9300	Subsurface rights
	Miscellaneous	9400	Right-of-way, streets, roads, irrigation channel, ditch, etc
	Miscellaneous	9500	Rivers and lakes, submerged lands
	Miscellaneous	9600	Sewage disposal, solid waste, borrow pits, drainage reservoirs, waste lands, marsh, sand dunes, swamps
Non-Agricultural			
	Non-Agricultural	9900	Acreage not zoned agricultural
Centrally Assessed			
	Centrally Assessed	9800	Centrally assessed
Miscellaneous			
	Residential	0700	Miscellaneous Residential (migrant camps, boarding homes, etc.)
	Commercial	1200	Mixed use - store & office OR store & residential
	Commercial	2800	Parking lot (commercial or patron), mobile home parks
	Institutional	7600	Mortuaries, cemeteries, crematoriums
	Miscellaneous	9000	Leasehold interests (government owned property leased by a non-governmental lessee)

NAICS Crosswalk Table

DOR_CATEGORY	DOR_CODE	DOR_DESCRIPTION	NAICS_Economic	NAICS_Economic Desc	NAICS_Subsector	NAICS_Subsector_Desc	NAICS_Industry	NAICS_Industry Desc
RESIDENTIAL	0000	VACANT RESIDENTIAL	UNKNOWN					
RESIDENTIAL	0002	VACANT CO-OP W/NO MOBILE HOME	UNKNOWN					
RESIDENTIAL	0004	VACANT CONDOMINIUM	UNKNOWN					
RESIDENTIAL	0005	VACANT CO-OP W/MOBILE HOME ON PERSONAL PROPERTY	UNKNOWN					
RESIDENTIAL	0100	SINGLE FAMILY	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0104	SINGLE FAMILY HOMES/CONDOMINIUM	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0108	1/2 OF A DUPLEX	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0200	MOBILE HOMES	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0204	MOBILE HOMES/ CONDOMINIUM	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0300	MULTI FAMILY - 10 UNITS OR MORE	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0400	CONDOMINIUM IMPROVED	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0500	COOPERATIVES	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0600	RETIREMENT HOMES NOT ELIGIBLE UNDER 196.192	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0700	MISCELLANEOUS RESIDENTIAL - MIGRANT CAMPS, ETC.	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0800	DUPLEX	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0801	TWO OR MORE HOUSES	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0803	MULTI-FAMILY MORE THAN 2, LESS THAN 10 UNITS	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0805	HOUSE PLUS A DUPLEX	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
RESIDENTIAL	0900	UNDEFINED - RESERVED FOR D.O.R.	UNKNOWN					
COMMERCIAL	1000	VACANT COMMERCIAL	UNKNOWN					
COMMERCIAL	1100	STORES, ONE-STORY	44-45	Retail Trade				
COMMERCIAL	1200	MIXED USE- STORE & OFFICE, STORE & RESIDENTIAL COMBINATIONS, ETC.	53 - 56	Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services				
COMMERCIAL	1300	DEPARTMENT STORE	44-45	Retail Trade	452	General Merchandise Stores	4521	Department stores
COMMERCIAL	1400	SUPERMARKETS	44-45	Retail Trade	445	Food and Beverage Stores	4451	Grocery Stores
COMMERCIAL	1500	REGIONAL SHOPPING CENTERS	44-45	Retail Trade				
COMMERCIAL	1600	COMMUNITY SHOPPING CENTERS	44-45	Retail Trade				
COMMERCIAL	1604	COMMUNITY SHOPPING CENTERS CONDOMINIUM	44-45	Retail Trade				
COMMERCIAL	1700	OFFICE BUILDINGS, NON-PROFESSIONAL, ONE-STORY	56 - 56	Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services				
COMMERCIAL	1704	OFFICE CONDOMINIUM	55 - 56	Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services				
COMMERCIAL	1800	OFFICE BUILDINGS, NON-PROFESSIONAL, MULTI-STORY	56 - 56	Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services				
COMMERCIAL	1900	PROFESSIONAL SERVICE BUILDINGS AND MEDICAL OFFICES	54 - 56	Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services				
COMMERCIAL	1904	OFFICE, CONDOMINIUM, MEDICAL	55 - 56	Professional, Scientific, and Technical Services; Management of Companies and Enterprises; Administrative and Support and Waste Management and Remediation Services				
COMMERCIAL	2000	AIRPORTS, BUS AND MARINE TERMINALS, PIERS, MARINAS	48-49	Transportation and Warehousing				
COMMERCIAL	2100	RESTAURANTS, CAFETERIAS	72	Accommodation and Food Services	722	Food Services and Drinking Places		
COMMERCIAL	2200	DRIVE-IN RESTAURANTS	72	Accommodation and Food Services	722	Food Services and Drinking Places		
COMMERCIAL	2300	FINANCIAL INSTITUTIONS	52	Finance and Insurance	521	Monetary Authorities-Central Bank		
COMMERCIAL	2400	INSURANCE COMPANIES	52	Finance and Insurance	524	Insurance Carriers and Related Activities		
COMMERCIAL	2500	REPAIR SERVICE SHOPS	81	Other Services (except Public Administration)	811	Repair and Maintenance		
COMMERCIAL	2600	SERVICE STATIONS	81	Other Services (except Public Administration)	811	Repair and Maintenance		
COMMERCIAL	2700	AUTO SALES, REPAIR, DEALER, AND RELATED	44-45	Retail Trade	441	Motor Vehicle and Parts Dealers		
COMMERCIAL	2800	PARKING LOTS - COMMERCIAL AND PATRON	81	Other Services (except Public Administration)	812	Personal and Laundry Services	8129	Other Personal Services
COMMERCIAL	2802	MOBILE HOME PARKS	81	Other Services (except Public Administration)	814	Private Households	8141	Private Households
COMMERCIAL	2900	WHOLESALE & MANUFACTURING OUTLETS, PRODUCE & COMMERCIAL FISH HOUSES	42	Wholesale Trade				
COMMERCIAL	3000	FLORIST, GREENHOUSES	44-45	Retail Trade	453	Miscellaneous Store Retailers	4531	Florists
COMMERCIAL	3100	DRIVE - IN THEATERS, ENCLOSED AUDITORIUMS	51	Information	512	Motion Picture and Sound Recording Industries		
COMMERCIAL	3300	NIGHTCLUBS, COCKTAIL LOUNGES, BARS	72	Accommodation and Food Services	722	Food Services and Drinking Places	7224	Drinking Places (Alcoholic Beverages)
COMMERCIAL	3400	BOWLING ALLEYS, SKATING RINK, POOL HALL, ENCLOSED ARENA	71	Arts, Entertainment, and Recreation	713	Amusement, Gambling, and Recreation Industries		
COMMERCIAL	3500	TOURIST ATTRACTION, PERMANENT EXHIBITS, OTHER PRIVATELY OWNED ENTERTAINMENT FACILITIES	71	Arts, Entertainment, and Recreation	713	Amusement, Gambling, and Recreation Industries		
COMMERCIAL	3600	CAMPS	72	Accommodation and Food Services	721	Accommodation		
COMMERCIAL	3700	RACE TRACKS, HORSE, AUTO, DOG	71	Arts, Entertainment, and Recreation	711	Performing Arts, Spectator Sports, and Related Industries		
COMMERCIAL	3800	GOLF COURSES, DRIVING RANGES	71	Arts, Entertainment, and Recreation	713	Amusement, Gambling, and Recreation Industries		
COMMERCIAL	3900	HOTELS, MOTELS	72	Accommodation and Food Services	721	Accommodation		
INDUSTRIAL	4000	VACANT INDUSTRIAL	UNKNOWN					
INDUSTRIAL	4100	LIGHT INDUSTRIAL, SM EQUIP MFG, SM MACH SHOP, PRINTING PLANTS	31-33	Manufacturing				
INDUSTRIAL	4104	LIGHT INDUSTRIAL, CONDOMINIUM, SM EQUIP MFG, SM MACH SHOP, PRINTING PLANTS CONDO	31-33	Manufacturing				
INDUSTRIAL	4200	HEAVY INDUSTRIAL, HVY EQUIP MFG, LG MACH SHOPS, FOUNDRIES	31-33	Manufacturing				

NAICS Crosswalk Table

DOR_CATEGORY	DOR_CODE	DOR_DESCRIPTION	NAICS_Economic	NAICS_Economic Desc	NAICS_Subsector	NAICS_Subsector_Desc	NAICS_Industry	NAICS_Industry Desc
INDUSTRIAL	4300	LUMBER YARDS, SAWMILLS, PLANING MILLS	31-33	Manufacturing	321	Wood Product Manufacturing		
INDUSTRIAL	4400	PACKING, FRUIT & VEGETABLES, MEAT PACKING PLANTS	31-33	Manufacturing	311	Food Manufacturing		
INDUSTRIAL	4500	CANNERIES, FRUIT & VEGETABLES, BOTTLES & BREWERS	31-33	Manufacturing	311	Food Manufacturing		
INDUSTRIAL	4600	OTHER FOOD PROCESSING, CANDY FACTORIES, BAKERY	31-33	Manufacturing	311	Food Manufacturing		
INDUSTRIAL	4700	MINERAL PROCESSING, PHOSPHATE PROCESS, CEMENT PLANTS	31-33	Manufacturing	327	Nonmetallic Mineral Product Manufacturing		
INDUSTRIAL	4800	WAREHOUSING, DISTRIBUTION TERMINALS, VANS & STORAGE WAREHOUSING	48-49	Transportation and Warehousing	493	Warehousing and Storage		
INDUSTRIAL	4801	MINI STORAGE WAREHOUSE	48-49	Transportation and Warehousing	493	Warehousing and Storage		
INDUSTRIAL	4804	WAREHOUSING CONDOMINIUM, DIST TERMINALS, VANS & STORAGE WAREHOUSING CONDOMINIUM	48-49	Transportation and Warehousing	493	Warehousing and Storage		
INDUSTRIAL	4900	OPEN STORAGE, NEW & USED BLDG, SUPPLIES, JUNK YARDS, AUTO WRECKING	48-49	Transportation and Warehousing	493	Warehousing and Storage		
AGRICULTURAL	5000	IMPROVED AGRICULTURAL, STABLES	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	5001	IMPROVED AGRICULTURAL, STABLES - WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	5100	CROPLAND SOIL CAPABILITY CLASS 1	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production		
AGRICULTURAL	5101	CROPLAND SOIL CAPABILITY CLASS 1 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production		
AGRICULTURAL	5200	CROPLAND SOIL CAPABILITY CLASS 2	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production		
AGRICULTURAL	5201	CROPLAND SOIL CAPABILITY CLASS 2 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production		
AGRICULTURAL	5300	CROPLAND SOIL CAPABILITY CLASS 3	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production		
AGRICULTURAL	5301	CROPLAND SOIL CAPABILITY CLASS 3 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production		
AGRICULTURAL	5400	TIMBERLAND - SITE INDEX 90 AND ABOVE	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5401	TIMBERLAND - SITE INDEX 90 AND ABOVE WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5500	TIMBERLAND - SITE INDEX 80 TO 89	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5501	TIMBERLAND - SITE INDEX 80 TO 89 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5600	TIMBERLAND - SITE INDEX 70 TO 79	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5601	TIMBERLAND - SITE INDEX 70 TO 79 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5700	TIMBERLAND - SITE INDEX 60 TO 69	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5701	TIMBERLAND - SITE INDEX 60 TO 69 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5800	TIMBERLAND - SITE INDEX 50 TO 59	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5801	TIMBERLAND - SITE INDEX 50 TO 59 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5900	TIMBERLAND AND NOT CLASSIFIED BY SITE INDEX TO PINES	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	5901	TIMBERLAND AND NOT CLASSIFIED BY SITE INDEX TO PINES WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	113	Forestry and Logging		
AGRICULTURAL	6000	GRAZING LAND SOIL CAPABILITY CLASS 1	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6001	GRAZING LAND SOIL CAPABILITY CLASS 1 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6100	GRAZING LAND SOIL CAPABILITY CLASS 2	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6101	GRAZING LAND SOIL CAPABILITY CLASS 2 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6200	GRAZING LAND SOIL CAPABILITY CLASS 3	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6201	GRAZING LAND SOIL CAPABILITY CLASS 3 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6300	GRAZING LAND SOIL CAPABILITY CLASS 4	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6301	GRAZING LAND SOIL CAPABILITY CLASS 4 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6400	GRAZING LAND SOIL CAPABILITY CLASS 5	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6401	GRAZING LAND SOIL CAPABILITY CLASS 5 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6500	GRAZING LAND SOIL CAPABILITY CLASS 6	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6501	GRAZING LAND SOIL CAPABILITY CLASS 6 WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6600	ORCHARDS GROVE, CITRUS, ETC	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production	1113	Fruit and Tree Nut Farming
AGRICULTURAL	6601	ORCHARDS GROVE, CITRUS, ETC WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	111	Crop Production	1113	Fruit and Tree Nut Farming
AGRICULTURAL	6700	POULTRY, BEES, TROPICAL FISH, RABBITS, ETC.	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6701	POULTRY, BEES, TROPICAL FISH, RABBITS, ETC. WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production		
AGRICULTURAL	6800	DAIRIES, FEED LOTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production	1121	Cattle Ranching and Farming
AGRICULTURAL	6801	DAIRIES, FEED LOTS WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	112	Animal Production	1121	Cattle Ranching and Farming
AGRICULTURAL	6900	ORNAMENTAL, MISCELLANEOUS AGRICULTURAL	11	Agriculture, Forestry, Fishing and Hunting	115	Support Activities for Agriculture and Forestry		
AGRICULTURAL	6901	ORNAMENTAL, MISCELLANEOUS AGRICULTURAL WITH IMPROVEMENTS	11	Agriculture, Forestry, Fishing and Hunting	115	Support Activities for Agriculture and Forestry		
INSTITUTIONAL	7000	VACANT INSTITUTIONAL	UNKNOWN					
INSTITUTIONAL	7100	CHURCHES	81	Other Services (except Public Administration)	813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	8131	Religious Organizations
INSTITUTIONAL	7200	PRIVATE SCHOOLS AND COLLEGES	61	Educational Services	611	Educational Services		
INSTITUTIONAL	7300	PRIVATELY OWNED HOSPITALS	62	Health Care and Social Assistance	622	Hospitals		
INSTITUTIONAL	7400	HOME FOR THE AGED	62	Health Care and Social Assistance	623	Nursing and Residential Care Facilities		
INSTITUTIONAL	7500	ORPHANAGES, OTHER NON-PROFIT/ CHARITABLE SERVICES	62	Health Care and Social Assistance	623	Nursing and Residential Care Facilities		
INSTITUTIONAL	7600	MORTUARIES, CEMETERIES, CREMATORIUMS	54-84	Other Services (except Public Administration)	812	Personal and Laundry Services	8122	Death Care Services
INSTITUTIONAL	7700	CLUBS, LODGES, UNION HALLS	71	Arts, Entertainment, and Recreation	713	Amusement, Gambling, and Recreation Industries		
INSTITUTIONAL	7800	SANITARIUMS, CONVALESCENT AND REST HOMES	62	Health Care and Social Assistance	623	Nursing and Residential Care Facilities		
INSTITUTIONAL	7900	CULTURAL ORGANIZATIONS, FACILITIES	71	Arts, Entertainment, and Recreation	712	Museums, Historical Sites, and Similar Institutions		
GOVERNMENT	8000	UNDEFINED - RESERVED FOR FUTURE USE	UNKNOWN					
GOVERNMENT	8100	MILITARY	92	Public Administration	928	National Security and International Affairs		
GOVERNMENT	8200	FOREST, PARKS, RECREATION AREAS	71	Arts, Entertainment, and Recreation	712	Museums, Historical Sites, and Similar Institutions		
GOVERNMENT	8300	PUBLIC COUNTY SCHOOLS	61	Educational Services	611	Educational Services		
GOVERNMENT	8400	COLLEGES	61	Educational Services	611	Educational Services		
GOVERNMENT	8500	HOSPITALS	62	Health Care and Social Assistance	622	Hospitals		
GOVERNMENT	8600	COUNTY OTHER THAN PREVIOUSLY COVERED	92	Public Administration	921	Executive, Legislative, and Other General Government Support		
GOVERNMENT	8700	STATE OTHER THAN PREVIOUSLY COVERED	92	Public Administration	921	Executive, Legislative, and Other General Government Support		
GOVERNMENT	8800	FEDERAL OTHER THAN PREVIOUSLY COVERED	92	Public Administration	921	Executive, Legislative, and Other General Government Support		
GOVERNMENT	8900	MUNICIPAL OTHER THAN PREVIOUSLY COVERED	92	Public Administration	921	Executive, Legislative, and Other General Government Support		
GOVERNMENT	9000	LEASEHOLD INTERESTS - GOVERNMENT OWNED/LEASED TO NON-GOVERNMENTAL LESSEE	53	Real Estate and Rental and Leasing	531	Real Estate		

NAICS Crosswalk Table

DOR_CATEGORY	DOR_CODE	DOR_DESCRIPTION	NAICS_Economic	NAICS_Economic Desc	NAICS_Subsector	NAICS_Subsector_Desc	NAICS_Industry	NAICS_Industry Desc
MISCELLANEOUS	9100	UTILITY - GAS, ELECTRIC, TELEPHONE, ETC.	22	Utilities	221	Utilities		
MISCELLANEOUS	9200	MINING, PETROLEUM OR GAS LANDS	21	Mining, Quarrying, and Oil and Gas Extraction	211	Oil and Gas Extraction		
MISCELLANEOUS	9300	SUBSURFACE RIGHTS	21	Mining, Quarrying, and Oil and Gas Extraction				
MISCELLANEOUS	9400	RIGHT-OF-WAYS, STREETS, ROADS, DITCH, ETC.	UNKNOWN					
MISCELLANEOUS	9500	RIVERS, LAKES, SUBMERGED LANDS	UNKNOWN					
MISCELLANEOUS	9600	SEWAGE DISPOSAL, SOLID WASTE, BORROW PITS, ETC.	56	Administrative and Support and Waste Management and Remediation Services	562	Waste Management and Remediation Services		
MISCELLANEOUS	9700	OUTDOOR RECREATIONAL OR PARK LAND SUBJECT TO CLASSIFIED ASSESSMENT	71	Arts, Entertainment, and Recreation	712	Museums, Historical Sites, and Similar Institutions		
MISCELLANEOUS	9800	CENTRALLY ASSESSED - RAILROADS	48-49	Transportation and Warehousing	482	Rail Transportation		
MISCELLANEOUS	9900	VACANT ACREAGE NOT ZONED AGRICULTURAL	UNKNOWN					
MISCELLANEOUS	9901	VACANT ACREAGE NOT ZONED AGRICULTURAL -IMPROVED	UNKNOWN					
MISCELLANEOUS	9902	VACANT ACREAGE NOT ZONED AGRICULTURAL - WITH MOBILE HOME - CODE NOT USED AS OF 10/8	UNKNOWN					

APPENDIX B

RESIDENTIAL GROWTH WORKFLOW

Residential Growth Workflow

Data Join

Join the Property Appraisal Data with the Population Data, Water Service Areas, and Reclaimed Service Areas.

- Tag parcels that will have or do have reclaimed water.

Existing Conditions

Isolate residential parcels by existing DOR Code:

- Single Family

001	Single Family
002	Mobile Homes

- Multi-Family

003	Multi-family (10+ Units)
004	Condo
005	Cooperatives
008	Multi-family (<10 units)

Assign Residential Categories (RES_CAT) and Buildout (BO_CON) Conditions.

- Single Family – Assign RES_CAT based on Just Values using the formulas below. Each County will be unique.

Residential Category	Just Value Percentiles
RS1	<25%
RS2	>25% and <50%
RS3	>50% and <75%
RS4	>75% and <90%
RS5	> 90th

- Multifamily – Assign RES_CAT to RS6.
- Assign BO_CON based on Year Built.

Year Built	Buildout Condition
Pre-1984	1
1984-1994	2
After 1994	3

Calculate the average dwelling units per acre (DU_ACi) for the parcels for the residential categories. This will be used to assign future parcels with a residential category.

Calculate the average population density (people per dwelling unit, POP_DUi) for the residential categories. This will be used to calculate the amount of property that will be developed in the future.

Proportion property based on dwelling units at buildout (DU_BO) and the estimated dwelling units in 2030 (DU_2030):

- Set upper limit of parcel area (REL_LIM) = $DU_BO \div DU_AC_BO$
- Establish Area of parcel that can be used in calculation of water use.
 - If $REL_AC > REL_LIM$, $Area_{10} = REL_LIM$,
Else, $Area_{10} = REL_AC$

*This process assumes that existing properties use all the available area in the 2010 water use estimate.

Future Conditions

Run the selection criteria below and assign Buildout Condition = 4:

- Population 2010 – Population 2030 > 0; and
- Population 2030 > 0

Assign the Residential Category based on the average (DU_ACi) for each county for each residential category.

Calculate the amount the property that will be developed over the planning horizon:

- Proportion property based on dwelling units at buildout (DU_BO) and the estimated dwelling units in 2030 (DU_2030):

$$\circ \text{ \% Property} = \frac{DU_{BO}}{DU_{2030}}$$

$$DU_{2030} = \frac{POP_{2030}}{POP_DUi}$$

If %_Prop > 1, Set to 1

- Set upper limit of parcel area (REL_LIM) = DU_BO ÷ DU_AC_BO
- Establish Area of parcel that will be used in future
 - If REL_AC * %_Prop > REL_LIM, AVAIL_REL = REL_LIM,
Else, AVAIL_REL = REL_AC * %_Prop

- $Area_{10} = 0$
- $Area_{15} = AVAIL_REL * RSGrow_{15}$
- $Area_{20} = AVAIL_REL * RSGrow_{20}$
- $Area_{25} = AVAIL_REL * RSGrow_{25}$
- $Area_{30} = AVAIL_REL * RSGrow_{30}$

*Make sure area units are in square feet.

- Calculate RSGrow_i for each County based on the following formulas:

$$RSGrow_{10} = 0$$

$$RSGrow_{15} = \frac{POP_{15} - POP_{10}}{POP_{30} - POP_{10}}$$

$$RSGrow_{20} = \frac{POP_{20} - POP_{15}}{POP_{30} - POP_{10}}$$

$$RSGrow_{25} = \frac{POP_{25} - POP_{20}}{POP_{30} - POP_{10}}$$

$$RSGrow_{30} = \frac{POP_{30} - POP_{25}}{POP_{30} - POP_{10}}$$

The average combined Pilot Study percent growths in each 5-year window are as follows:

- $RSGrow_{15} = 0.22$
- $RSGrow_{20} = 0.27$
- $RSGrow_{25} = 0.27$
- $RSGrow_{30} = 0.24$

Water Use

- Apply indoor water-use benchmarks by residential category and build-out condition on a per-parcel-area basis from the Pilot Study.
- Apply the outdoor water-use benchmarks by residential category and build-out condition on a per-parcel-area basis from the Pilot Study. It would be preferable if the outdoor assignment could be based on the county's private well density that most closely matches one of the Pilot Study utilities.
- Set outdoor water use to 0 for parcels with reclaimed water.

APPENDIX C

COMMERCIAL GROWTH WORKFLOW

Commercial Growth Workflow

Data Join

Join the Property Appraisal Data with the Population Data, Water Service Areas, and Reclaimed Service Areas.

Existing Conditions

Use the aggregated DOR categories to select commercial parcels that have a Year Built > 0. These are the parcels that are assumed to have water use in 2010.

Future Conditions

Determine a growth rate for commercial parcels.

- Select commercial parcels with Year Built > 1980.
- Sum the square footage of the selected parcel by aggregated DOR category.
- Divide the square footage by 29 years to get parcel growth by year for each aggregated DOR category ($GrowRate_i$).
- Multiply the growth rates by 20 years to get a theoretical growth area in 2030 of each DOR category ($TheorGrowthArea_{i,2030}$) and sum up the total area ($TheorGrowthArea_{Total,2030}$).
- Calculate the Percent Relative Growth for each aggregated DOR category:

$$\% \text{ Relative Growth}_i = \frac{\text{TheorGrowth Area}_{i,2030}}{\text{TheorGrowth Area}_{Total,2030}}$$

Determine available area for commercial growth.

- Select parcels that have vacant commercial/industrial/institutional DOR classifications and $POP30 < 1$. These are the parcels eligible to have commercial growth that have not been converted to residential use.
- Sum the total available area of parcels eligible for commercial growth (TOT_AREA).
 - If $TOT_AREA > TheorGrowthArea_{Total,2030}$, then $TOT_AREA30 = TheorGrowthArea_{Total,2030}$
 - Else, $TOT_AREA30 = TOT_AREA$.
- Determine the amount of commercial land that is developed in 2015, 2020, 2025 and 2030:

$$COM_AREA15 = TOT_AREA30 * RSGrow_{15}$$

$$COM_AREA20 = TOT_AREA30 * RSGrow_{20}$$

$$COM_AREA25 = TOT_AREA30 * RSGrow_{25}$$

$$COM_AREA30 = TOT_AREA30 * RSGrow_{30}$$

- o where $RSGrow_i$ for each County is based on the following formulas (calculated in Residential Growth Workflow too):

$$RSGrow_{15} = \frac{POP_{15} - POP_{10}}{POP_{30} - POP_{10}}$$

$$RSGrow_{20} = \frac{POP_{20} - POP_{15}}{POP_{30} - POP_{10}}$$

$$RSGrow_{25} = \frac{POP_{25} - POP_{20}}{POP_{30} - POP_{10}}$$

$$RSGrow_{30} = \frac{POP_{30} - POP_{25}}{POP_{30} - POP_{10}}$$

- Calculate the growth in each aggregated DOR category for the 5-year increments.

$$AREA_{i_2015} = COM_AREA15 * \% \text{ Relative Growth}_i$$

$$AREA_{i_2020} = COM_AREA20 * \% \text{ Relative Growth}_i$$

$$AREA_{i_2025} = COM_AREA25 * \% \text{ Relative Growth}_i$$

$$AREA_{i_2030} = COM_AREA30 * \% \text{ Relative Growth}_i$$

Water Use

For existing water users, apply the District-wide water-use benchmarks to the building square footage based on the aggregated DOR categories. The benchmark applied will depend on the appraisal data for each County, since not all counties gather both heated area and actual building area.

For future water users, apply the District-wide water-use benchmarks to the parcel square footage based on the aggregated DOR categories.

APPENDIX D

GROWTH RATES

Appendix D. Residential Growth Rates

New Population within Utility Service Area Boundary

Utility	2015	2020	2025	2030	Total Growth
GAINESVILLE REGIONAL UTILITIES	8,900	10,000	10,200	8,700	37,800
LEESBURG CITY OF	2,600	2,900	2,900	2,900	11,300
PALM BAY UTILITIES	8,200	12,100	14,100	12,300	46,700
PALM COAST CITY OF	15,900	17,300	14,500	11,500	59,200
ST JOHNS COUNTY UTILITIES	15,000	18,100	18,600	18,200	69,800

Percent of Total Growth

Utility	2015	2020	2025	2030	Total
GAINESVILLE REGIONAL UTILITIES	24%	26%	27%	23%	100%
LEESBURG CITY OF	23%	26%	26%	26%	100%
PALM BAY UTILITIES	18%	26%	30%	26%	100%
PALM COAST CITY OF	27%	29%	25%	19%	100%
ST JOHNS COUNTY UTILITIES	21%	26%	27%	26%	100%

Appendix D. Commercial Growth Rates

GRU

Category	Growth Rate (ac/yr)	Relative Growth	Theoretical 2030 Area (ac)	2015 Available Parcel Area (ac)	2020 Available Parcel Area (ac)	2025 Available Parcel Area (ac)	2030 Available Parcel Area (ac)
Auto Machine/Repair	8	3.9%	183	12	13	13	11
Golf Courses	109	12.8%	600	38	42	43	37
Hospitals	10	1.1%	53	3	4	4	3
Hotels	5	1.4%	68	4	5	5	4
Indoor Recreation	25	11.5%	541	34	37	39	33
Live-in care	17	5.1%	237	15	16	17	15
Manufacturing	10	3.9%	181	12	13	13	11
Miscellaneous	13	5.3%	247	16	17	18	15
Office Buildings	52	24.6%	1,154	74	80	83	71
Outdoor Recreation	39	2.0%	92	6	6	7	6
Restaurants	4	1.7%	80	5	6	6	5
Retail	27	12.5%	586	37	41	42	36
Schools	13	4.3%	200	13	14	14	12
Supermarket	3	0.2%	10	1	1	1	1
Warehouses/Storage	20	9.6%	451	29	31	33	28
Totals	356	100%	4,681	298	324	337	286

Appendix D. Commercial Growth Rates

Leesburg

Category	Growth Rate (ac/yr)	Relative Growth	Theoretical 2030 Area (ac)	2015 Available Parcel Area (ac)	2020 Available Parcel Area (ac)	2025 Available Parcel Area (ac)	2030 Available Parcel Area (ac)
Auto Machine/Repair	5	5.4%	94	12	14	13	13
Golf Courses	68	6.2%	107	14	16	15	15
Hospitals	6	0.6%	10	1	1	1	1
Hotels	1	0.3%	5	1	1	1	1
Indoor Recreation	15	12.1%	208	27	30	30	30
Live-in care	3	0.7%	13	2	2	2	2
Manufacturing	7	5.7%	98	13	14	14	14
Miscellaneous	11	2.0%	34	4	5	5	5
Office Buildings	33	42.2%	729	95	106	104	104
Restaurants	3	2.8%	49	6	7	7	7
Retail	11	13.7%	237	31	34	34	34
Schools	4	0.8%	14	2	2	2	2
Warehouses/Storage	7	7.5%	129	17	19	18	18
Totals	175	100%	1,726	224	251	245	247

Appendix D. Commercial Growth Rates

Palm Bay

Category	Growth Rate (ac/yr)	Relative Growth	Theoretical 2030 Area (ac)	2015 Available Parcel Area (ac)	2020 Available Parcel Area (ac)	2025 Available Parcel Area (ac)	2030 Available Parcel Area (ac)
Auto Machine/Repair	3	1.8%	51	9	13	16	14
Golf Courses	109	6.2%	178	31	46	54	47
Hospitals	10	0.5%	13	2	3	4	3
Hotels	5	0.3%	8	1	2	3	2
Indoor Recreation	25	8.9%	256	45	66	77	67
Live-in care	17	1.4%	41	7	11	12	11
Manufacturing	10	17.8%	511	90	132	154	134
Miscellaneous	13	4.3%	122	22	32	37	32
Office Buildings	52	35.3%	1,013	178	262	306	266
Outdoor Recreation	39	0.6%	17	3	5	5	5
Restaurants	4	1.4%	39	7	10	12	10
Retail	27	8.1%	234	41	61	71	61
Schools	13	8.9%	255	45	66	77	67
Warehouses/Storage	20	4.6%	132	23	34	40	35
Totals	347	100%	2,870	505	744	867	755

Appendix D. Commercial Growth Rates

Palm Coast

Category	Growth Rate (ac/yr)	Relative Growth	Theoretical 2030 Area (ac)	2015 Available Parcel Area (ac)	2020 Available Parcel Area (ac)	2025 Available Parcel Area (ac)	2030 Available Parcel Area (ac)
Auto Machine/Repair	7	2.8%	103	17	19	16	12
Golf Courses	109	19.9%	726	121	131	110	87
Hospitals	10	3.0%	110	18	20	17	13
Hotels	5	0.6%	23	4	4	4	3
Indoor Recreation	25	4.5%	166	28	30	25	20
Live-in care	17	0.9%	33	6	6	5	4
Manufacturing	10	1.1%	40	7	7	6	5
Miscellaneous	13	0.7%	27	5	5	4	3
Office Buildings	52	45.1%	1,646	274	297	250	197
Outdoor Recreation	39	1.4%	51	9	9	8	6
Restaurants	4	0.9%	32	5	6	5	4
Retail	27	7.1%	258	43	47	39	31
Schools	13	10.4%	381	63	69	58	46
Supermarket	3	0.4%	16	3	3	2	2
Warehouses/Storage	20	0.9%	35	6	6	5	4
Totals	354	100%	3,647	608	658	553	437

Appendix D. Commercial Growth Rates

SJCU

Category	Growth Rate (ac/yr)	Relative Growth	Theoretical 2030 Area (ac)	2015 Available Parcel Area (ac)	2020 Available Parcel Area (ac)	2025 Available Parcel Area (ac)	2030 Available Parcel Area (ac)
Auto Machine/Repair	6	1.9%	87	8	10	10	10
Golf Courses	109	32.6%	1,519	136	165	169	166
Hotels	5	2.1%	98	9	11	11	11
Indoor Recreation	25	10.3%	481	43	52	54	53
Live-in care	17	1.8%	84	8	9	9	9
Manufacturing	10	3.7%	170	15	18	19	19
Miscellaneous	13	5.0%	233	21	25	26	25
Office Buildings	52	16.2%	753	67	82	84	82
Outdoor Recreation	39	5.4%	254	23	27	28	28
Restaurants	4	2.2%	100	9	11	11	11
Retail	27	5.2%	245	22	27	27	27
Schools	13	8.8%	412	37	45	46	45
Supermarket	3	0.3%	12	1	1	1	1
Warehouses/Storage	20	4.6%	212	19	23	24	23
Totals	344	100%	4,661	417	505	519	508

APPENDIX E

TEHCNICAL MEMORANDUM 1: EVALUATION OF CONSERVATION TOOLS

**SJRWMD Project No. 25554:
Water Conservation Potential
for the District's WSP 2010**

Technical Memorandum 1: Evaluation of Conservation Tools



**Prepared for:
Jones Edmunds & Associates**

July 2010

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1.0 BACKGROUND AND PURPOSE

St. Johns River Water Management District (SJRWMD or the District) is currently updating their District Water Supply Plan (DWSP). The District has contracted with Jones Edmunds (Contract #25554) to estimate Water Conservation Potential for the District's 2010 Water Supply Plan. Part of the project is to identify the most appropriate conservation tool for the District's use or to develop a tool if the available tools are found to be unfitting for the District. Jones Edmunds contracted with Simmons Environmental Consulting (SEC) to provide assistance on this project by evaluating previously developed conservation tools and providing recommendations for their use in whole or in part to estimate conservation potential for the 2010 DWSP. This Technical Memorandum (Tech Memo 1) includes the evaluation of the conservation tools. Based on the results of the tool evaluation, workflow alternatives were developed that considered using the available tools and developing an alternative tool to calculate conservation potential for the DWSP. Based on the merits of each workflow alternative, a single workflow structure is recommended and suggested steps to implement the workflow are identified.

2.0 OBJECTIVES

The objectives of the tool evaluation are:

- Identify and compare cost and economic performance calculations used in the following conservation tools:
 - Alliance for Water Efficiency Water Conservation Tracking Tool (AWE tool)
 - Conserve Florida Water Master Guide (MG)
 - Conserve Florida Water EZ Guide 1.6 (EZG1.6)
 - Conserve Florida Water EZ Guide 2.0 Beta (EZG2.0)
- Compare how the tools calculate unit costs and benefits
- Compare the tools' use of economic performance metrics, namely:
 - BMP cost-effectiveness
 - Net savings
 - Net benefits
 - Savings to investment ratio
 - Cost/benefit
- Identify economic input requirements for the tools and resulting outputs
 - Cost of implementing best management practices (BMPs)
 - Timing and magnitude of deferred and/or avoided capital and operation and maintenance costs
 - Timing and magnitude of conservation costs and water savings
 - Lost revenue

- Identify if the unit production cost of alternative water supplies (AWS) can be directly compared to the unit benefit of conservation.
- Identify mutually exclusive work flow alternatives for estimating conservation potential for the DWSP and recommend the most appropriate alternative.

3.0 WATER SAVINGS PARAMETERS AND PARAMETRIC EQUATIONS

This section provides an evaluation of conservation parameters and associated parametric equations used by the tools. Section 4 includes water savings calculations. For most parameters, each tool uses different water savings and economic terminology. In order to more clearly identify the similarities and differences in the equations used by each tool, common terminology is used for this evaluation.

3.1 Annual Rate of Savings Decay

The AWE tool allows for savings rate decay. This is used for BMP savings that are subject to decaying over time. An example of savings decay provided by the AWE tool is household or irrigation surveys (or audits). Savings may occur soon after customer participation; however, studies have found that water savings decline as a result of residents reverting to previous water using habits or let water conserving equipment fall into disrepair. The AWE tool accounts for savings decay through its “effective conservation” calculations. The CFWC tools do not account for savings decay.

3.2 Fixture Service Life

The fixture service life is an important factor to be considered in calculating conservation benefits. For example, if the BMP includes installing a piece of water saving equipment that could be replaced with a less efficient piece of equipment once it wears out, savings should be assumed to persist only for the service life of the efficient piece of equipment. The user can assume an infinite service life when end users cannot replace the efficient fixture for an inefficient fixture. For example, for an ultra low flow toilet (ULFT) retrofit BMP, an inefficient toilet is replaced with an ULFT. It is reasonable for this BMP to assume all future toilets at this site will also be at least a ULFT. Hence, the BMP would be considered to have an infinite service life.

3.2.1 Fixture Service Life in the CFWC Tools

The CFWC Master Guide does not provide for a fixture service life, instead it assumes that all BMPs will continue to save water throughout the water savings horizon. The EZG1.6 introduces the term “savings rate service life,” but it is not used by the tool.

The EZG2.0 uses fixture service life and the age of housing stock to estimate the number of fixtures available for retrofit at the analysis start-year. It also uses the fixture service life to estimate daily savings and the daily BMP cost (see Subsection 4.5.3 and Subsection 5.6.4, respectively).

3.2.3 Fixture Service Life in the AWE Tool

For each BMP, the AWE tool prompts the user to define the useful life of savings from the activity, expressed in number of years. The AWE tool accounts for savings life through its “effective conservation” accounting (see Subsection 3.5).

3.3 Water Savings Rates

The tools use different terminology for the water savings rate, but the terms are basically the same metric and in general, all the tools use this parametric the same way; they multiply it by the number of implementations to calculate water savings.

3.3.1 Water Savings Rates in the Master Guide and the EZG1.6

The Master Guide defines the term “water savings rate (WSR)” as the amount of water saved by one account, unit, or measure per day, and it is expressed in gpd per account, unit, or measure; EZG1.6 continued with this metric and its definition. The Master Guide uses standard (default) WSRs that are based on Florida and national case and end-use studies. Users of the Master Guide can overwrite these savings rates if desired. The EZG1.6 does not offer default values, rather the user must enter a WSR for each BMP.

3.3.2 Water Savings Rates in the EZG2.0

The EZG2.0 does not use the term WSR, rather it uses the term “water savings,” which is expressed as gpd/fixture. Of the tools evaluated, the EZG2.0 provides the most tailored (to utility customer demographics) water savings rates. The EZG2.0 water savings rate calculation approach includes:

- Establishing three efficiency categories (pre-1983, 1983 through 1994, and post-1994)
- Calculating existing water use for each efficiency category, which results in more accurate water savings rates (gpd/fixture) for retrofits (see fixture use equations below)
- Existing and retrofitted use includes fixture leakage
- Existing and retrofitted use considers people per household (PPH) and the number of fixtures per household
- Water savings (gpd/fixture) is the difference between existing and retrofitted savings

Existing use for each efficiency category and fixture type is calculated accordingly:

$$\text{Existing Fixture Use} = \text{Per capita fixture use} \times \frac{\text{PPH}}{\text{Fixture per household}}$$

Where:

Existing fixture use = Fixture use (including leakage) for each efficiency category, expressed in gpd/fixture

Per capita fixture use = Fixture use per capita (including leakage) for each efficiency category, expressed in gpcd/fixture

PPH = People per household for each efficiency category

$$\text{Retrofitted Fixture Use} = \text{Intensity} \times \text{Frequency} \times \text{Leakage} \times \frac{\text{PPH}}{\text{Fixture per household}}$$

Where:

Retrofitted fixture use = Fixture use (including leakage) for each efficiency category, expressed in gpd/fixture

Intensity = Intensity for each fixture and attribute (good/better/best technology). Intensity for toilets, clothes washers, showers/faucets is gallon per flush, gallon per load, and gallon per minute, respectively.

Frequency = Unit of frequency for each fixture and attribute (good/better/best technology). Unit of frequencies for toilets, clothes washers, showers, and faucets is flush per person per day, loads per person per day,* shower per person per day,* and minutes per person per day, respectively.

Leakage = A factor 1.15 is used to estimate leakage of retrofitted fixtures

PPH = People per household for each efficiency category

* The following should be noted:

- The tool states that the unit for frequency for clothes washers is “gallons per load;” however, it should be stated as “loads per person per day.”
- Shower intensity is multiplied by 8 minutes per shower.

Using the existing and retrofitted fixture water use, the EZG2.0 calculates the WSR accordingly:

$$\text{WSR} = \text{Existing Fixture Use} - \text{Retrofitted Fixture Use}$$

3.3.3 Water Savings Rates in the AWE Tool

The AWE Tool uses the term “unit water savings” and defines it as the amount of water saved over the course of one year by one unit of activity; it is expressed as gpy per activity. For the purposes of this

evaluation, the unit water savings will be called the water savings rate. The tool also uses the term “code unit water savings,” which is the WSR resulting from one code-driven (rather than program-driven) activity. The WSR and code WSR would be the same for replacing a non-conserving toilet with a ULFT, or replacing a non-conserving showerhead with a conserving showerhead because the replacement models from code-driven replacement are the same level of efficiency as the replacement fixtures for the program-driven replacements. However, if the savings due to code-driven replacement is different than program-driven replacement, savings can be more accurately estimated if different WSRs are used. For example, a high-efficiency toilet (HET) saves approximately 23% more water than a ULFT. For an HET program, the user can assume that all natural replacements will be a ULFT, while only programmed replacements will be an HET. In this case, the code WSR would use a ULFT WSR, whereas the program WSR would be 23% higher than the code WSR.

The AWE tool calculates unique (to the utility using the tool) WSRs for residential ULF toilets using people per household (PPH) information entered by the user. The tool provides default WSRs for residential showerheads and clothes washers, and commercial toilets. The user can override the tool-calculated or default WSRs. The WSR for conversion of a non-ULFT to a ULFT for the single family (SF) and multi-family (MF) sectors is from the BMP Costs and Savings Study: A Guide to the Data and Methods for Cost-effectiveness Analysis of Urban Water Conservation Best Management Practices, published by the California Urban Water Conservation Council. The WSRs (for SF and MF) to convert non-ULFTs to ULFTs are calculated as follows:

$$WSR_{SF} = 6.693PPH_{SF} - 0.529^2_{SF} + 7.826$$

$$WSR_{MF} = 19.138PPH_{MF} - 0.942^2_{MF} + 2.181$$

3.4 Number of Implementations

Although the terminology varies among the tools evaluated, each tool uses the yearly number of implementations (NI_t) and/or total number of implementation (TNI) to calculate BMP cost and savings. For each BMP, NI_t refers to the number of implementations for year t ; whereas, TNI refers to the total number of implementations across the planning horizon. The following subsections include a discussion of how this parametric is used by each tool.

3.4.1 Treatment of Number of Implementations in the Master Guide

In the Master Guide, the user *must* enter the yearly NI_t , which the tool uses to calculate yearly costs and savings.

3.4.2 Treatment of Number of Implementations in the EZG1.6

In the EZG1.6, the user can choose to enter a yearly NI_t for each year of the planning horizon, or the user can choose to enter TNI only. If the user chooses to enter yearly NI_t values, the tool calculates yearly gross savings and yearly costs for each BMP on the BMP Detail worksheet using yearly values of TNI_t . But the tool uses the TNI to calculate the BMP’s total cost and water savings and cost effectiveness.

3.4.3 Treatment of Number of Implementations in the EZG2.0

On the SF Indoor, MF Indoor, and BMP Summary worksheets in EZG2.0, the tool populates the total number of fixtures (TNI) for each BMP with the total available fixture stock. The User's Manual indicates that the tool uses a linear programming optimization algorithm (MS Excel® Solver) to determine the fixtures to retrofit, but does not specify if the TNI are optimized. During the course of this evaluation, all attempts to run the optimizer resulted in Visual Basic errors. Therefore, it is unknown if the solution is supposed to be an optimized number of implementations or simply an indication of which BMPs are cost effective. On the BMP Summary worksheet, the user can override the tool-populated TNI with a different value.

The EZG2.0 does not have annual planning capabilities at this time; as such, it does not give the user the option to enter yearly NI_t values; instead, the user enters the TNI for the entire planning horizon, which the tool uses to calculate costs and active savings.

3.4.4 Treatment of Number of Implementations in the AWE Tool

Similar to the Master Guide, the AWE Tool *requires* the user to enter yearly NI_t values, which it calls "annual conservation activities." The tool then transposes the NI_t values into annual "effective conservation activities" prior to use in yearly costs and savings calculations (see next subsection).

3.5 Effective Conservation

Of the tools evaluated, the AWE Tool is the only tool that uses "effective conservation" as a means of accounting for savings decay, useful life, and the cumulative effect of conservation savings. The unit of measure for effective conservation is the number of implementations. Essentially, effective conservation is calculated by the tool by transposing yearly NI_t values accordingly:

- NI_t values are cumulative; therefore, the NI_t value at the end of the planning horizon is the TNI
- The cumulative NI_t for each year is adjusted downward at the rate of savings decay
- The cumulative NI_t for each year is adjusted downward as the service lives of previous implementations expire

3.6 Fixture Stock and Natural Replacement Rate

The annual natural replacement rate (nrr) is the rate (% per year) at which utility customers replace non-conserving fixtures with conserving fixtures, and do so without program intervention. The nrr is used to calculate the service area's fixture stock that is available for retrofitting at the analysis start-year (S_v) and the available fixture stock at any year t (S_t), throughout the planning horizon. It is important to understand the difference between the fixture stock and the number of implementations. The fixture stock is the total available implementations (fixtures available to retrofit). Whereas, the number of implementations is the portion of the available fixture stock that the analyst plans to retrofit (implement) in a given year (NI_t), or throughout the planning horizon (TNI). The following subsections describe the fixture stock and natural replacement methodologies used by each tool.

3.6.1 Fixture Stock and Natural Replacement Accounting in the Master Guide

The Master Guide does not provide automatic fixture stock accounting and therefore, does not use an nrr. Rather, the tool prompts the user to enter the “number of available accounts, measures, or units.” This is the same as the stock at the analysis start-year. An experienced analyst would typically use a natural replacement rate or fixture service life to calculate the requested data before entering it into the tool. If this occurs, there is no issue with manually entering the fixture stock at year 0. However, the Master Guide does not account for natural replacement in the BMP implementation schedule. The yearly number of available measures in the schedule is reduced by the number program-planned implementations only. Therefore, it is possible that the analyst would plan to retrofit more fixtures than are available.

3.6.2 Fixture Stock and Natural Replacement Accounting in the EZG1.6

The EZG1.6 prompts the user for the annual passive replacement rate (nrr), but the tool cannot use it to calculate S_y because the tool does not provide for relevant housing data input such as the number of bathrooms (and half bathrooms) per SF home and MF unit, and the number of pre-1994 SF homes and MF units. Instead, similar to the Master Guide, it prompts the user for the number of accounts, units or fixtures available for retrofit (S_y). It should be noted that the User’s Guide provides information on how the user can calculate the accounts or units available for retrofit using property appraiser’s data, but the guidance does not instruct the user to apply the nrr or fixture service life to account for natural replacement. However, an experience analyst would know to account for natural replacement prior to data entry.

Although the tool does not use the nrr to calculate S_y , it does however, use the nrr for fixture stock and passive water savings accounting throughout the planning horizon. If the user chooses to enter a BMP implementation schedule on the optional BMP Detail worksheet, the tool calculates the available stock (S_t) and the number of passive replacements (NI_{p_t}) for each scheduled year accordingly:

$$S_t = S_{t-1} - NI_{p_{t-1}} - NI_{t-1}$$

Where:

S_t = Fixture stock (or available or remaining accounts, or units) at year t

NI_{p_t} = Number of passive implementations in year t as a result of natural replacement

NI_t = Number of planned implementations in year t

$$NI_{P_t} = S_t \times nrr$$

Where:

NI_{P_t} = Number of passive implementations in year t as a result of natural replacement

S_t = Fixture stock (or available or remaining accounts, or units) at year t

nrr = Natural replacement rate, expressed as a fraction

3.6.3 Fixture Stock and Natural Replacement Accounting in the EZG2.0

The EZG2.0 does not provide for a natural replacement rate. Rather, it uses the fixture's service life to estimate natural replacement. The tool includes default service lives for fixtures, which the user can override. The tool uses parcel-level property appraiser's data and fixture service lives to account for natural replacement in the customer parcel data worksheet. The worksheet provides a running tally of fixture replacement dates for each fixture and parcel. Each parcel has an indicated year built and number of bathrooms. The tool refers to this spreadsheet to calculate the number of each type of fixture, at each efficiency category (pre-1983, 1983-1994, and post-1994). The efficiency category refers to the fixture, not the parcel year built. For example, if a residential toilet service life is set by the user to be 20 years, a parcel with two bathrooms and a year built date of 1966 will have replaced the original toilets with 3.5-gpf toilets at 1986, and then with 1.6-gpf toilets in 2006. The tool includes these two fixtures as part of the sum of toilets in the 1995 efficiency category (1.6-gpf), not the pre-1983 efficiency category.

Currently, the tool does not provide yearly implementation accounting; however, based on discussions with CFWC staff, the next release of the EZG2.0 (to be released in 2011) will include a projections worksheet capable of performing that function. The projections worksheet will likely use the fixture service life to estimate S_y for each year of implementation.

3.6.4 Fixture Stock and Natural Replacement Accounting in the AWE Tool

There are two locations in the AWE tool where natural replacement rates are stored: (1) in a hidden worksheet that calculates fixture stock and code-driven savings, and (2) in the "Define Activities" worksheet. The nrr in the hidden worksheet is used to calculate the SF and MF fixture stock for toilets and showerheads at the analysis start-year as shown in the following two equations. SF and MF fixture stock for toilets is calculated accordingly:

$$S_y = H_{pre-1994}(FB + HB)(1 - nrr)^{(Y-1994)}$$

Where:

S_y = Fixture stock at analysis start-year, Y

$H_{pre-1994}$ = Number of pre-1994 SF or MF housing units built before 1994*

FB = Full bathrooms per SF or MF housing unit

HB = Half bathrooms per SF or MF housing unit

nrr = Default natural replacement rate for toilets defined in the hidden "Pre94_Resid_Toilets_Showers" worksheet

The SF and MF fixture stock for showerheads at the analysis start-year is calculated accordingly:

$$S_Y = H_{pre-1994}(FB)(1 - nrr)^{(Y-1994)}$$

Where:

S_Y = Fixture stock at analysis start-year, Y

$H_{pre-1994}$ = Number of pre-1994 SF or MF housing units built before 1994*

nrr = Default natural replacement rate for showerheads defined in the hidden "Pre94_Resid_Toilets_Showers" worksheet

**Note: The equations shown above are a true reflection of how the tool calculates fixture stocks of toilets and showerheads, however; the calculations provided in Appendix A of the User's Manual uses 1990 and 1991 instead of pre-1994 and 1995, respectively.*

The nrr in the "define activities" worksheet is used to calculate passive savings as discussed in Subsection 4.2.

The yearly number of code-driven replacements in the AWE tool is calculated similarly to the number of passive replacements in the EZG1.6 tool with the exception that the AWE tool bases the calculation on the analysis year stock (S_Y), rather than the previous year's stock. The AWE tool calculates the number of code-driven replacements for showerheads and residential and commercial toilets accordingly:

$$\text{Cumulative } NI_{P_t} = S_Y(1 - (1 - nrr)^{t-Y})$$

Where:

Cumulative NI_{P_t} = Cumulative number of passive code-driven implementations in year t

S_Y = Fixture stock at analysis start-year, Y

nrr = Natural replacement rate, expressed as a fraction

4.0 WATER SAVINGS CALCULATIONS

Water savings can be expressed as yearly, cumulative, or total; gross, passive or active; peak or off-peak; and as combination of these parameters. Generally, water savings are calculated differently among the tools evaluated. The Master Guide, EZG1.6 and the AWE Tool calculate yearly and total program savings; however, the EZG1.6 does not use the yearly savings to calculate total program savings. EZG2.0 does not have a planning module; therefore, there is no yearly accounting of program costs or savings. The Master Guide and EZG2.0 do not provide passive savings accounting. The AWE Tool provides comprehensive passive savings accounting, and the EZG1.6 provides passive savings accounting to a limited extent. The AWE tool uses the term “gross savings,” which is the total of active and passive savings; the EZG1.6 calculates gross savings as well. Of the tools evaluated, only the AWE tool provides peak season and off-peak season water savings. The Master Guide and EZG1.6 calculate both yearly savings and cumulative yearly savings. For these two tools, yearly savings are understood as new savings that occur each year. That is to say that yearly savings are savings that occur in year t due to implementation in year t only, rather than the cumulative number of implementations for that year. The various water savings calculation methodologies used by the tools are evaluated in this subsection.

4.1 Peak and Off-peak Period Savings

The AWE tool accounts peak (dry) period savings and off-peak (rainy) period savings in addition to average savings. This is accomplished by the user defining the peak start and end months for the utility. Also, for each conservation activity included in the plan, the user defines the percentage of annual water savings from the activity realized during the peak season. The tool calculates peak and off-peak savings for gross, passive and active savings by multiplying the percentage of annual water savings for peak (and off-peak) by each the gross, passive and active savings.

4.2 Passive Water Savings

Water conservation savings are considered to be either active or passive savings. Active savings are savings that occur as a direct result of a water supplier implementing conservation BMPs; whereas, passive savings are savings that would have occurred in the absence of the program. Code-driven savings occur when plumbing codes interact with the natural replacement of inefficient fixtures. Another element of passive savings, “participant freeriders,” is defined in the AWE tool as the percentage of participants that are freeriders. Participant freeriders are customers that actively participate in a utility conservation program; however, these participants would have undertaken the same activity even if the program did not exist.

The Master Guide and EZG2.0 do not provide for passive savings accounting. The EZG1.6 does not calculate passive savings separately from active savings, but it does acknowledge the passive code-driven savings in the BMP Detail worksheet as part of the reported gross savings (see Subsection 4.3.1).

As previously mentioned, the AWE tool acknowledges two types of passive savings (1) code-driven savings resulting from natural replacement; and (2) participant freeriders. When entering demand

projections, the user specifies whether or not the projections account for plumbing codes. If the user selects “no,” the tool calculates yearly plumbing code savings accordingly:

$$(Cumulative\ plumbing\ code\ savings)_t = WSR \times Cumulative\ NI_{P_t}$$

Where:

(Cumulative plumbing code savings)_t = Water savings attributed to plumbing codes and natural replacement at year t

WSR = Code water savings rate (see Subsection 3.3.3)

Cumulative NI_{P_t} = Cumulative number of code-driven implementations (natural replacements) in year t

The yearly plumbing code savings are then subtracted from the yearly baseline water use to provide the user with the baseline use adjusted for plumbing codes. If the user indicates that the utility’s demand projections include plumbing code efficiencies, the tool enters zeros for the yearly plumbing code savings, and the baseline demand and “baseline - code savings” demand are the same.

The other element of passive savings identified in the AWE Tool is the effect of participant freeriders. For each conservation activity, the user defines (or accepts default values) for the percent of program participants that are freeriders. The tool counts water savings from freeriders as passive rather than active (or program-driven).

The tool calculates yearly cumulative passive savings using the nrr and code WSR from the “Define Activities” worksheet, but it is unclear as to what the exact equation is. The equation in the cell for each year of passive savings references a “passive savings array,” which includes the terms NI_t, savings decay, service life, nrr, WSR and code WSR.

The tool calculates cumulative yearly peak and off-peak passive water savings by multiplying the cumulative yearly passive savings for any given year by the peak and off-peak season percentages, respectively. Total passive water savings and annual average passive water savings are cumulative values; their calculations are presented in Subsections 4.5.4 and 4.6, respectively.

4.3 Gross Water Savings

Gross water savings is the sum of passive (plumbing code or natural replacement, and program freeriders) and active (program-driven) water savings. The CFWC tools do not explicitly identify program freeriders, rather it is understood that if any freeriders exist, the resulting savings are active savings because the freerider customers participated in the program. As previously discussed, the Master Guide and the EZG2.0 do not provide for passive water savings accounting; as such, gross water savings is not applicable. The EZG1.6 calculates gross water savings as discussed in the following section.

4.3.1 Gross Water Savings in the EZG1.6

The term “gross water savings” is not defined in the EZG1.6; however, the yearly and cumulative yearly savings calculated on the BMP Detail worksheets are in fact gross savings because it includes both active and passive code-driven savings (due to natural replacement). For each BMP, the user enters the nrr (called the passive annual replacement rate in the EZG1.6) on the main BMP worksheet. If the user chooses to enter a yearly implementation schedule on the optional BMP Detail worksheet, the tool will calculate gross water savings (WS_{G_t}) for each year accordingly:

$$WS_{G_t} = \frac{(NI_t + NI_{P_t}) \times WSR \times 365 \text{ days/yr}}{1,000,000 \text{ gal/MG}}$$

Where:

WS_{G_t} = Gross water savings at year t, expressed in MG. Note, this is not a cumulative value, it is “new” savings: savings that occur due to implementations for year t only.

NI_t = Number of planned implementations in year t. Note, this is not a cumulative value, it is “new” implementations: the number of implementations for year t only.

NI_{P_t} = Number of passive implementations in year t as a result of natural replacement. Note, this is not a cumulative value, it is “new” implementations: the number of implementations for year t only.

WSR = Water savings rate, expressed as gpd per number of implementations

The BMP Detail worksheet also calculates the cumulative gross water savings accordingly:

$$\text{Cumulative } WS_{G_t} = WS_{G_t} + \text{Cumulative } WS_{G_{t-1}}$$

Although the EZG1.6 calculates cumulative yearly gross savings as shown above, cumulative gross savings could alternatively be calculated (with the same result) as follows:

$$\text{Cumulative } WS_{G_t} = (\text{Cumulative } NI_t + \text{Cumulative } NI_{P_t}) \times WSR \times \frac{365 \text{ days/year}}{1,000,000 \text{ gal/MG}}$$

Where:

Cumulative WS_{G_t} = Cumulative gross water savings at year t, expressed in MG.

Cumulative NI_t = Cumulative number of planned implementations in year t.

NI_{P_t} = Cumulative number of passive implementations in year t as a result of natural replacement.

WSR = Water savings rate, expressed as gpd per implementation

The tool does not use different terminology to distinguish between the (gross) savings calculated from the implementation plan and the (active) savings reported on the main BMP page.

4.3.2 Gross Water Savings in the AWE Tool

Of the tools evaluated, the AWE tool is the only tool that explicitly defines the term “gross water savings” and uses it throughout the tool. The EC_t term used to calculate gross water savings captures the cumulative effect of conservation in addition to savings decay and fixture service life (see Subsections 3.5, 3.1, and 3.2, respectively). Therefore, the yearly gross water savings calculated by this tool is actually the cumulative gross water savings (adjusted for savings decay and fixture service life). Meaning the yearly savings include savings from previous years’ activities as well as savings resulting from activities implemented in the subject year, t (“new” yearly savings). Unlike the Master Guide and EZG1.6, the AWE tool does not explicitly calculate “new” yearly savings for any of its savings parameters. This is an acceptable approach because cumulative savings is the savings parameter used to adjust demand forecasts in the Master Guide and in the AWE tool. Yearly cumulative gross water savings for each activity (BMP) are calculated by the AWE tool as follows:

$$\text{Cumulative } WS_{G_t} = \frac{EC_t \times WSR}{1,000,000 \text{ gal/MG}}$$

Where:

Cumulative WS_{G_t} = Cumulative gross water savings at year t, expressed in MG

EC_t = Effective conservation in year t, expressed as the number of activities, this is the NI_t transposed to account for savings decay and fixture service life, and the cumulative effect of water savings (see Subsection 3.5)

WSR = Water savings rate (AWE uses the term “unit water savings”), expressed in gpy per activity

Cumulative peak (and off-peak) yearly gross water savings are calculated by the tool by multiplying the peak (and off-peak) season percentages by the cumulative WS_{G_t} for each year t. Total gross water savings and annual average gross water savings are cumulative values; their calculations are presented in Subsections 4.5.4 and 4.6, respectively.

4.4 Active Water Savings

As discussed in Subsection 4.2, active savings are savings that occur as a direct result of program intervention. This subsection includes an evaluation of the methodologies used by the CFWC tools and the AWE tool to calculate active water savings.

4.4.1 Active Water Savings in the Master Guide

Active water savings is the only type of water savings calculated by the Master Guide. The Guide calculates active water savings exactly like the EZG1.6 calculates gross water savings (see Subsection 4.3.1); the exception is that the NI_{P_t} term is not used in the active savings calculated by the Master Guide. Active yearly water savings is calculated by the Master Guide as follows:

$$WS_{A_t} = \frac{NI_t \times WSR \times 365 \text{ days/yr}}{1,000,000 \text{ gal/MG}}$$

Where:

WS_{A_t} = Active water savings at year t, expressed in MG. Note, this is not a cumulative value, it is “new” savings: savings that occur due to implementations for year t only.

NI_t = Number of planned implementations in year t. Note, this is not a cumulative value, it is “new” implementations: the number of implementations for year t only.

WSR = Water savings rate, expressed in gpd per implementation

The Master Guide also calculates the cumulative active water savings accordingly:

$$\text{Cumulative } WS_{A_t} = WS_{A_t} + \text{Cumulative } WS_{A_{t-1}}$$

Although the Master Guide calculates cumulative yearly active savings as shown above, cumulative active savings could alternatively be calculated (with the same result) as follows:

$$\text{Cumulative } WS_{A_t} = \text{Cumulative } NI_t \times WSR \times \frac{365 \text{ days/year}}{1,000,000 \text{ gal/MG}}$$

Where:

Cumulative WS_{A_t} = Cumulative active water savings at year t, expressed in MG.

Cumulative NI_t = Cumulative number of planned implementations in year t.

WSR = Water savings rate, expressed as gpd per implementation

4.4.2 Active Water Savings in the EZG1.6 and EZG2.0

Although the optional BMP Detail worksheet of the EZG1.6 calculates yearly and cumulative yearly gross water savings, it does not calculate yearly and cumulative yearly active water savings. The main BMP page calculates total active water savings for each BMP, but it does use the implementation schedule, if the user chosen to populate it. Instead, it calculates the total water savings for each BMP using the TNI

as discussed in Subsection 4.5.2. The EZG2.0 does not offer an implementation schedule, and therefore does not provide for any type of yearly calculations; it calculates total active water savings using the TNI as discussed in Subsection 4.5.3.

4.4.3 Active Water Savings in the AWE Tool

The AWE tool uses the term “active savings” and “program savings” interchangeably. It calculates cumulative active water savings as the difference between cumulative gross and cumulative passive savings. As previously identified, gross and passive water savings in the AWE tool are calculated using effective conservation. Yearly EC_t values capture the cumulative effect of conservation savings in addition to savings decay and fixture service life. Therefore, the yearly active water savings calculated by this tool is actually the cumulative active water savings. Meaning the yearly savings include savings from previous years’ activities as well as savings resulting from activities implemented in the subject year, t. Yearly cumulative active water savings for each activity (BMP) are calculated by the AWE tool as follows:

$$\text{Cumulative } WS_{A_t} = \text{Cumulative } WS_{G_t} - \text{Cumulative } WS_{P_t}$$

Where:

WS_{A_t} = Cumulative active water savings at year t, expressed in MG

WS_{G_t} = Cumulative gross water savings at year t, expressed in MG

WS_{P_t} = Cumulative passive water savings at year t, expressed in MG

Cumulative peak (and off-peak) yearly active water savings are calculated by the tool by multiplying the peak (and off-peak) season percentages by the cumulative WS_{A_t} for each year t. Total active water savings and annual average active water savings are cumulative values; their calculations are presented in Subsections 4.5.4 and 4.6, respectively.

4.5 Total Water Savings

Total water savings is an important metric in evaluating conservation opportunities because most economic analyses use total savings to compute cost-effectiveness. Total water savings are calculated differently amongst the tools evaluated. All tools calculate the total active water savings. The AWE tool also calculates total gross and passive water savings. The Master Guide and the AWE Tool account for yearly implementation and provide a more accurate estimation of total water savings compared to the EZG1.6 and EZG2.0, which do not consider timing of conservation implementation. Total water savings calculations performed by each of the tools are provided in the following subsections.

4.5.1 Total Water Savings in the Master Guide

The Master Guide refers to the “total BMP water savings” or “total program water savings” as the water savings over planning horizon. Since the Master Guide provides active savings accounting only, the total savings refers to total active savings, which is calculated as follows:

$$TWS = \sum_{t=Y}^{t=n} \text{Cumulative } WS_{A_t}$$

Where:

TWS = BMP or program total water savings that accumulate over the planning horizon, expressed in MG

Cumulative WS_{A_t} = Cumulative active water savings at year t, expressed in MG

Y = Analysis start-year

n = Last year of planning horizon

This equation is exactly the same as AWE’s total active water savings calculation (see Subsection 4.5.4). It is important to note that the TWS indicated in this equation is for use in calculating the economic performance of the BMP. Cumulative yearly water savings are the savings that are to be used in adjusting demand projections to reflect conservation implementation.

4.5.2 Total Water Savings in the EZG1.6

As discussed in Subsection 4.3.1, the EZG1.6 provides for gross water savings accounting on the BMP Detail worksheet. On this worksheet, the total gross water savings is the cumulative gross yearly water savings at the last year of the planning horizon.

Also discussed in Subsection 4.3.1, although the EZG1.6 provides for a yearly implementation schedule, the tool does not calculate yearly active water savings (only gross) and does not consider the implementation schedule in its total water savings calculation; rather, it computes total water savings for each BMP accordingly:

$$TWS = \frac{TNI \times WSH \times WSR \times 365 \text{ days/yr}}{1,000 \text{ gal/Kgal}}$$

Where:

TWS = BMP total active water savings, expressed in Kgal

TNI = Total number of planned implementations over the planning horizon

WSH = Planning horizon, expressed in years

WSR = Water savings rate, expressed in gpd per implementation

4.5.3 Total (Daily) Water Savings in the EZG2.0

Like the Master Guide, the EZG2.0 provides for active water savings only in its planning calculations. Unlike the other tools evaluated, the EZG2.0 provides total savings as a daily savings. Total daily water savings is calculated by EZG2.0 as follows:

$$TWS = TNI \times WSR$$

Where:

TWS = Total daily water savings, expressed in gpd

TNI = Total number of planned fixture retrofits over the planning horizon

WSR = Water savings rate, expressed as gpd per implementation

4.5.4 Total Water Savings in the AWE Tool

The AWE tool calculates water savings similar to the Master Guide in that it acknowledges a yearly implementation schedule that includes the cumulative effect of conservation. The AWE tool uses the term “lifetime” water savings rather than total water savings. The equation below shows TWS calculated over the planning horizon; however, it is important to note that the water savings calculations in the AWE tool capture the life of the BMP through use of the effective conservation term. Therefore, total water savings are actually being calculated over the lifespan of the equipment, rather than the planning horizon. Although the tool calculates total water savings (or lifetime water savings), it does not explicitly use this metric anywhere else in the tool. Unlike the Master Guide, the AWE tool calculates total water savings for gross, passive and active water savings as follows:

$$TWS = \sum_{t=Y}^{t=n} \text{Cumulative } WS_t$$

Where:

TWS = BMP or program total gross, passive, or active water savings that accumulate over the planning horizon, expressed in MG

Cumulative WS = Cumulative gross, passive, or active water savings at year t, expressed in MG

Y = Analysis start-year

n = Last year of planning horizon

4.6 Annual Average Water Savings

Of the tools evaluated, only the AWE tool calculates annual average water savings. Similar to AWE's use of total (or lifetime) water savings, the tool does not use annual average water savings anywhere else in the tool. The tool calculates the annual average gross, passive, and active water savings by dividing their total water savings (see Subsection 4.5.4) by the number of years in the planning horizon (n).

5.0 CONSERVATION COST CALCULATIONS

The time value of money is an important consideration in calculating costs of long-term projects; and in calculating the time value of money, the analyst must choose the appropriate discount rate and time horizon over which to evaluate costs of alternative projects. The Master Guide and the AWE tool both account for the time value of money; whereas, the EZG1.6 and EZG2.0 do not. The treatment of the time value of money in conservation cost calculations for each tool is provided in the following subsections. Cost calculations, including unit cost calculations, used by the tools are provided in this section; Section 6 includes unit benefit calculations. In Section 7, the tools' use of unit costs and benefits to evaluate economic performance is discussed. In Section 8, the District's guidance for calculating costs for alternative supply projects for use in the DWSP 2010 update is provided.

5.1 Time-Value-of-Money

The time value of money is the value of money at a defined real interest (or discount) rate applied over a specified amount of time. The time value of money provides valuation of a future stream of income or costs by discounting the annual amounts and then adding them together to provide a lump-sum present value of the entire income (or cost) stream. In following subsections, background information is provided for nominal and real discount rates, nominal and constant dollars, annual costs and budget, present value costs and amortized costs; along with a description of how each tool accounts (or does not account) for the time value of money.

5.2 Nominal and Real Discount Rates

A key component of the time value of money is the real interest (or discount) rate. The term "interest rate" is used when the economic analysis is to determine a future stream of money. The term "discount rate" is used when determining the present value of future amounts of money. The terminology changes to reflect the direction of the analysis (moving money forward in time, or discounting it back). The nominal interest (or discount) rate refers to the rate of interest before adjustment for inflation. In terms of its use in capital project planning, the nominal interest rate is the rate the utility currently pays or expects to pay to finance long-term capital projects. The real interest rate includes the effect of inflation. The equation for converting nominal interest (or discount) rate to a real interest (or discount) rate is provided in Subsection 5.2.3., and the equation for converting nominal dollars to constant dollars is provided in Subsection 5.3. The Master Guide and the AWE Tool account for the time value of money using a real discount rate. The EZG1.6 and EZG2.0 do not account for the time value of money.

Subsections 5.2.1 through 5.2.3 describe the use (or non-use) of real discount rates in the DWSP and the tools evaluated.

5.2.1 Real Discount Rate Used by the Maser Guide

The Master Guide uses the current (at the time of model development) default real discount rate of 5.375, which was the FY05 federal water resources planning rate. The user can update this rate at any time.

5.2.2 Real Discount Rate Calculated in the EZG1.6 and EZG2.0

As previously mentioned, the EZG1.6 is capable of calculating yearly costs, but does not account for the time value of money. The EZG2.0 does not provide for annual program accounting, and therefore does not use the time value of money in its equations. Neither of the EZGs accounts for the time value of money; as such, discount rates do not apply to these two tools.

5.2.3 Real Discount Rate Calculated by the AWE Tool

The AWE Tool prompts the user for the utility's "nominal interest rate" and "inflation rate." The tool calculates the real discount rate using the standard economic equation for converting a nominal interest rate to a real interest (or discount) rate:

$$d = \frac{r - i}{1 + i}$$

Where:

d = Real discount rate

i = Inflation rate

r = The current (nominal) interest rate the utility pays to borrow money for long-term capital improvement projects.

5.3 Nominal and Constant Dollars

The term "nominal dollars" refers to a value expressed in money of the day (year, etc.); the term "constant dollars" refers to a metric for valuing the price of something over time, without that metric changing due to inflation. The term, constant dollars, specifically refers to dollars whose present value is linked to a given year. Converting nominal dollars to constant dollars is helpful in water resources planning, because the cost of various project components can be normalized (or denominated) to a common year. For example, the conservation analyst may have 2002 costs for a toilet rebate program, and a 2006 quote for irrigation evaluations. For each conservation activity, the analyst needs to convert the nominal dollars to constant dollars in order to provide an adequate accounting for the time value of money and provide a fair comparison against other alternatives. If the base year for the analysis is 2010,

the analyst would need to convert the 2002 cost data for the toilet rebate BMP and the 2006 cost data for the irrigation evaluation BMP to 2010 constant dollars.

5.3.1 Constant Dollars Used by the CFWC Tools

The CFWC tools do not provide for the conversion of nominal to constant dollars; rather the user is expected to have converted nominal dollars to constant dollars (denominated in the analysis start-year) prior to entering the cost data.

5.3.2 Constant Dollars Calculated by the AWE Tool

For each BMP, the AWE tool prompts the user to enter the year for which costs are denominated. If the user imports an activity (or BMP) from the tool's activity library, the activity's costs and year for which the costs are denominated are pre-defined. In either case, the tool converts the costs to analysis start-year constant dollars using the basic economic equation for the conversion of nominal to constant dollars as follows:

$$D_C = D_N (1 + i)^{C-N}$$

Where:

D_C = Constant dollars denominated in the analysis start-year, C

D_N = Nominal dollars denominated in year, N

i = Inflation rate

5.4 Annual Costs

The EZG2.0 does not provide annual cost and water savings accounting. The Master Guide, EZG1.6 and the AWE tool calculate annual costs for each BMP accordingly:

$$C_t = NI_t \times D_C$$

Where:

C_t = Cost in year t to implement a number of implementations (of a single BMP), expressed in analysis start-year constant dollars

NI_t = Number of implementations in year t

D_C = The cost of one implementation, expressed in analysis start-year (constant) dollars

It should be noted that the Master Guide and the EZG1.6 tools and their respective User's Manuals do not explicitly prompt the user to enter constant dollars denominated in the analysis start-year; however, an experienced analyst would know to do so.

The AWE tool also allows for utility initial fixed costs (independent of the number of implementations) and follow-up fixed and variable (dependent on the number of implementations) costs in its annual cost calculations. Further, the AWE tool calculates annual costs from the utility's, customers', and total societal perspectives separately.

5.5 Utility Annual Budget

Of the tools evaluated, only the AWE tool provides for an annual utility budget. For each BMP (and for the program total), the AWE tool calculates the utility annual budget as follows:

$$B_t = C_t \times (1 + i)^{t-Y}$$

Where:

B_t = Utility budget needed in year t to implement a number of implementations (of a single BMP) or the total program

C_t = Cost in year t to implement a number of implementations (of a single BMP) or the total program, expressed in analysis start-year constant dollars

i = Inflation rate

Y = Analysis start-year

The budget equation provided above assumes that the utility will not finance their conservation program. If the utility were to finance their program, the annualized (or amortized) cost would represent the annual budget needed by the utility to pay for financing (see Subsection 5.7).

Although the AWE tool provides for customers' and total societal perspectives of conservation costs and benefits, it does not provide for a customer or societal annual budget calculation.

5.6 Total Conservation Costs

The total conservation cost represents the total cost for a utility to implement a BMP or program. The Master Guide and the AWE tool account for the time value of money in their calculation of total costs; whereas, the EZG tools do not. The total costs calculated by the Master Guide and AWE tool are present value (PV) costs. The present value cost is the value on a given date (typically defined as a year) of a future cost (or income) or series of future costs (or incomes), discounted to reflect the time value of money. In conservation planning, the present value cost is what the utility would need to spend or set aside today in order to fully fund a BMP or an entire program. The following subsections provide equations for the calculation of total conservation costs used by each tool. Also provided is a brief discussion of utility revenue reductions that typically occur from conservation implementation.

5.6.1 Utility Revenue Reductions

Deferred capital can be one of the benefits of conservation; however, one of the costs can be reduced revenue. Reduced water sales means reduced revenue if the utility does not offset reduced water sales with rate increases or by other methods. Therefore, an important part of this evaluation is to identify if lost revenue is included in the conservation cost and economic performance calculations used by any of the tools; and if so, how revenue reductions are incorporated into the conservation costs. The result of that evaluation is that all the tools evaluated assume that revenue lost to conservation is recovered through rate increases or other means outside the scope of the tools cost calculations. That is to say, the tools do not include the cost of loss revenue in the conservation cost calculations. The AWE tool models the conservation program's impact on utility revenue and rates. This is an attractive feature offered by the AWE tool that is not offered by the other tools; however, the revenue impact is not included in the total conservation costs. Rather, it is a stand-alone model within the tool that allows the analyst to identify the impact the conservation program will have on utility revenue requirements and rates.

5.6.2 Total Conservation Cost in the Master Guide and AWE Tool

The Master Guide and the AWE tool calculate the total conservation cost of a BMP or program as a present value cost accordingly:

$$PV_C = \sum_{t=Y}^{t=n} \frac{D_{C_t}}{(1+d)^{t-Y}}$$

Where:

PV_C = Present value cost of implementing a BMP or program, expressed in analysis start-year constant dollars

d = Real discount rate

D_{C_t} = the cost of the BMP or program in year t , expressed in analysis start-year (constant) dollars

Y = The analysis start-year

n = The last year of planning horizon

Of the tools evaluated, only the Master Guide and the AWE tool calculate the PV costs, and both tools calculate present value costs using this equation. The only difference is the annual cost (D_{C_t}) in the AWE tool can include fixed startup costs and yearly follow-up costs as discussed in Subsection 5.4. The AWE tool also calculates customer and total societal PV costs.

5.6.3 Total Conservation Cost in the EZG1.6 and EZG2.0

Although the EZG1.6 includes a yearly implementation schedule of water savings on the BMP Detail worksheet, the tool does not use the annual costs in the worksheet to calculate the total present value cost. The EZG2.0 does not provide for annual accounting of cost or savings. Both tools calculate the total cost for each BMP accordingly:

$$\text{Total BMP Cost} = \text{TNI} \times D_C$$

Where:

TNI = Total number implementations (for a particular BMP) for the entire planning horizon

D_C = Cost per implementation (specifically, cost per fixture (C_f) for the EZG2.0)

5.6.4 Total (Daily) Conservation Cost in the EZG2.0

The EZG2.0's calculation of total BMP cost is provided in Subsection 5.6.3, additionally, the EZG2.0 calculates a daily conservation cost. Of the tools evaluated, the EZG2.0 is the only tool that calculates BMP daily costs.

At this time, the only BMPs available in the current version of EZG2.0 are residential indoor plumbing fixture retrofits. As such, the term fixture cost and fixture service life used in the equation below applies to all available BMPs in the tool. The EZG2.0 calculates the total daily cost for each BMP accordingly:

$$\text{Total Daily Cost (\$/day)} = \frac{\text{TNI} \times C_f}{\text{fixture service life} \times 365 \text{ d/yr}}$$

Where:

TNI = Total number of fixtures retrofitted

C_f = Cost per fixture

5.7 Amortized (or Annualized) Cost

The amortized (or annualized cost) is what the utility would need to expend annually if it were to finance the conservation program over some fixed number of years. Of the tools evaluated, only the AWE tool calculates an amortized cost, which it does so accordingly:

$$C_A = \frac{PV \times d}{1 - (1 + d)^{-p}}$$

Where:

C_A = Annualized (or amortized) cost of a BMP or program

PV = PV cost of a BMP or program in analysis start-year dollars

d = Real discount rate

p = The number of periods over which the BMP will be amortized, expressed in years.

5.8 Cost-effectiveness and Unit Cost of Conservation

In utility conservation planning, the BMP's cost effectiveness or unit cost of conservation is expressed as the cost per unit volume of water saved (for example, \$/Kgal or \$/MG). In utility water supply planning, the unit cost of supply (referred to by SJRWMD as the unit production cost) is the cost per unit volume of water produced. For both cases, the unit cost includes both fixed and variable costs. In utility water conservation planning, water saved is avoided water produced (an avoided cost) and is therefore considered a conservation benefit from the utility's perspective. Unit benefits of conservation are discussed in Subsection 5.9.

Conservation costs and benefits are identified from one of three perspectives: utility, customer, or total societal. Of these three perspectives, all tools provide for the utility perspective. The AWE tool is the only tool of the tools evaluated that also provide for the customer and total societal perspectives. The total societal perspective includes costs and benefits of the utility and the customer, and also includes environmental benefits. Total societal costs and benefits often result in transfer payments, which is a cost or benefit from the total societal perspective that has a net value of 0. An example of a transfer payment is a rebate offered by a utility. The rebate amount is a cost from the utility's perspective and a benefit from the customer's perspective. In this example, the rebate is a transfer payment because the net value of the rebate from the total societal perspective equals zero.

Although the AWE tool offers the attractive feature of providing multiple perspectives, the focus of this evaluation is on utility costs and benefits; therefore, customer and total societal costs and benefits were not further evaluated. In the following subsections, calculations are provided for conservation unit costs from the utility perspective for each tool. Unit cost calculations are compared among the tools in Subsection 5.8.5. Unit costs and benefits are used by the tools to calculate the economic performance of conservation (see Section 7).

5.8.1 Unit Cost in the Master Guide

The Master Guide's calculation of total water savings (TWS) is presented in Subsection 4.5.1, and the calculation of total conservation cost (PV_C) is presented in Subsection 5.6.2. Using these terms, the Master Guide refers to the unit cost of conservation as "cost effectiveness," and calculates it accordingly:

$$U_C (\$/MG) = \frac{PV_C}{TWS}$$

5.8.2 Unit Cost in the EZG1.6

The EZG1.6's calculation of total water savings (TWS) is presented in Subsection 4.5.2, and calculation of the total BMP cost is presented in Subsection 5.6.3. Using these terms, the EZG1.6 refers to the unit cost of conservation as the "cost effectiveness," and calculates it accordingly:

$$U_c(\$/Kgal) = \frac{\text{Total BMP Cost}}{\text{TWS}}$$

5.8.3 Unit Cost in the EZG2.0

The EZG2.0's calculation of total daily water savings (TWS) is presented in Subsection 4.5.3, and calculation of the total daily cost is presented in Subsection 5.6.4. Using these terms, the EZG2.0 refers to the unit cost of conservation as the "total program cost (\$/Kgal)," and calculates it accordingly:

$$U_c(\$/Kgal) = \frac{\text{Total daily cost} \times 1,000 \text{ gal/Kgal}}{\text{Total daily water savings}}$$

5.8.4 Unit Cost in the AWE Tool

The total conservation cost calculated by the AWE tool (PV_C) is provided in Subsection 5.6.2. The tool's calculation of total gross, passive, and active water savings (TWS) is presented in Subsection 4.5.4; however, the tool does not use the TWS as the unit volume term in its calculation of unit cost. Rather it uses the denominator shown in the following equation:

$$U_c(\$/MG) = \frac{PV_C}{\sum_{t=Y}^{t=n} \frac{\text{Cumulative WS}_{A_t}}{(1+d)^{t-Y}}}$$

5.8.5 Comparison of Unit Cost Calculations

In the calculation of the unit cost of conservation, the Master Guide and the AWE tool both use program present value costs in the numerator and the cumulative active water savings in the denominator. It is unclear however, why the AWE tool performs a present value calculation on the total water savings.

The EZG1.6 and EZG2.0 calculate the unit cost of conservation similar to each other. The exception is that the EZG2.0 uses the fixture service life instead of the water savings horizon, which is more appropriate for calculating the unit cost of a single BMP as compared to using the planning horizon like the Master Guide and EZG1.6, because fixtures have varying services lives. However, it is important to note that when selecting fixture life, if the fixture cannot be replaced with a less efficient fixture, the fixture life should be considered infinite.

Unit costs calculated by the two EZGs do not acknowledge an implementation schedule; rather, the methodology assumes that all BMPs are implemented at the start of the plan. It should be noted however, that the number of implementations does not affect the unit cost calculated by these tools because, due to the calculations from which the unit benefit calculations are derived, the number of

implementations cancel out each other. Therefore, the unit cost calculated by these two tools is best understood as the unit cost of a single fixture with the investment cost occurring at year zero and the BMP providing savings through its service life. The EZG2.0 uses the unit cost to rank BMPs, which is not preferred for reasons discussed in Subsection 7.5.

6.0 UNIT BENEFIT OF CONSERVATION

As discussed in Subsection 5.8, conservation costs and benefits are identified from one of three perspectives: utility, customer, or total societal; the focus of this evaluation is on utility costs and benefits. In utility water supply planning, the unit cost of supply is the cost per unit volume of water produced and it includes both fixed and variable costs. However, in utility water conservation planning, water saved is avoided water produced (an avoided cost) and is therefore considered a conservation benefit. Other utility conservation benefits include avoided wastewater costs, deferred capacity expansion, and avoided capacity expansion. Typically, unit production costs developed for water supply planning purposes are expressed as an equivalent annuity; whereas, conservation unit costs are typically expressed as a present value unit cost. For this reason, and many others, a direct comparison of the unit cost of conservation to the unit production costs is not preferred as discussed in Subsection 9. Section 8 of this Tech Memo presents calculations used by SJRWMD to develop unit production costs for use in the DWSP.

In the following subsections, surrogate metrics used by the CFWC tools as the unit benefit are identified. For the AWE tool, a description of how user-entered yearly avoided costs are used to calculate the unit benefit of conservation. Also, functions of the AWE tool's "Simple Avoided Cost Calculator" are provided. Section 6 provides calculations that use unit costs and benefits to calculate the economic performance of conservation.

6.1 Unit Benefit in the Master Guide

In the Master Guide's original release (prior to being hosted by CFWC), the tool calculated yearly avoided unit costs of supply. For the analysis start year, and for each future year, the tool prompted the user to enter the utility's projected average annual volume in MGD, and the PV unit cost to produce (or buy) water, expressed in \$/Kgal. For each year, the user could enter multiple sources and PV unit costs. Using these user-entered yearly parameters, the tool calculated the utility's avoided PV unit cost (\$/Kgal) for each year. Where multiple sources were entered by the user, the tool calculated the yearly PV unit cost as the weighted (by volume) average unit cost for each year. CFWC staff members have made several changes to the Master Guide since the organization began hosting the tool. The currently available tool only allows the user to enter a single unit cost of water. The tool prompts the user to enter the "unit cost of the next increment of supply," which is used as a surrogate unit benefit of conservation.

6.2 Unit Benefit in the EZ1.6

The EZG1.6 prompts the user to enter the unit cost of avoided water (unit benefit), which it calls the “cost of avoided water.” The tool and the User’s Manual do not provide guidance to the user to enter PV unit cost; however, it appears from the unit savings calculations used by the EZG1.6, that the intended metric is the PV unit cost.

6.3 Unit Benefit in the EZ2.0

The EZG2.0 prompts the user to enter the unit benefit, which it calls the “savings of water production.” The tool and the User’s Guide instruct the user to enter a cost that represents the reduction in water production O&M expenses as well as the avoided cost of alternative supply but does not specify that the cost be a PV or an equivalent annual cost.

6.4 Unit Benefit in the AWE Tool

In the AWE tool, the user can opt to manually enter avoided costs or provide the tool with avoided cost parameters and allow the tool to calculate conservation benefits using the tool’s “Simple Avoided Cost Calculator.” The following subsections present the tool’s unit benefit calculations for each method.

6.4.1 Avoided Costs Calculated by the “Simple Avoided Cost Calculator”

If the user selects to use the tool’s avoided cost calculator on the “Enter Utility Avoided Costs” worksheet, the worksheet configures to provide for the data entries listed below.

- For each water supply O&M cost, the user is prompted to enter the \$/MG and the nominal rate of increase for the following O&M costs:
 - Water purchase cost
 - Energy for transmission, treatment, and distribution
 - Chemicals
 - Other variable O&M

- If the user indicated that the utility provides wastewater treatment, the user is prompted to enter the \$/MG and the nominal rate of increase for the following wastewater O&M costs:
 - Energy for transmission, treatment, and discharge
 - Chemicals
 - Other variable O&M

- The tool requests the following data for capacity benefit calculations
 - Year new capacity is needed under the current demand projection
 - Amount of new capacity that will be added (MGD)
 - Avoidable system expansion cost (\$/MGD)

- Using the user inputs listed above, the tool calculates the total annual water O&M expense (\$/MG) and the average nominal rate of increase for water O&M expenses. The tool also does this for wastewater O&M costs and rates of increase. The tool then calculates yearly supply and wastewater avoidable costs (\$) and uses these yearly costs to calculate the PV benefit of avoidable water and avoidable wastewater accordingly:

$$(Avoidable\ Supply\ Cost)_t = Cumulative\ WS_{A_t} \times (Avoidable\ Supply\ O\&M\ Cost)_t$$

$$PV\ of\ Avoidable\ Supply = \sum_{t=Y}^{t=n} \frac{(Avoidable\ Supply\ Cost)_t}{(1+d)^{t-Y}}$$

$$(Avoidable\ Wastewater\ Cost)_t = Cumulative\ WS_{A_t} \times \frac{WSR}{WSR_{ww}} \times (Avoidable\ Wastewater\ O\&M\ Cost)_t$$

$$PV\ of\ Avoidable\ Wastewater = \sum_{t=Y}^{t=n} \frac{(Avoidable\ Wastewater\ Cost)_t}{(1+d)^{t-Y}}$$

The tool also calculates the PV of the capacity benefit which is the total of deferred and avoided expansion costs. This calculation uses the user-entered volume of planned capacity expansion and the year the expansion is planned to occur.

The tool then calculates the total PV benefit of conservation as follows:

$$PV_B = PV\ of\ avoided\ water + PV\ of\ avoided\ wastewater + PV\ of\ capacity\ benefit$$

Where:

PV_B = Present value benefit of implementing a BMP or program expressed in analysis start-year constant dollars

$D_{c,t}$ = the cost of the BMP or program in year t, expressed in analysis start-year (constant) dollars

Y = The analysis start-year

n = The last year of the planning horizon

6.4.2 Manually-entered Avoided Costs

If the user selects to manually enter avoided costs on the “Enter Utility Avoided Costs” worksheet, the worksheet configures to provide a table for yearly data entry. For each year of the planning horizon (t), the user is prompted to enter peak (P) and off-peak (OP) avoided costs in \$/MG. If the utility also provides wastewater collection and treatment, the avoided costs should include wastewater avoided costs. The tool uses the user-entered peak and off-peak avoided costs (\$/MG) and the cumulative yearly peak and off-peak active water savings (MG) to calculate yearly avoided costs (\$) accordingly:

$$(Avoided\ Cost)_t = (Cumulative\ WS_{A_t})_P \times ((Avoided\ Cost)_t)_P + (Cumulative\ WS_{A_t})_{OP} \times ((Avoided\ Cost)_t)_{OP}$$

The tool then converts the yearly avoided costs to a PV avoided cost, which it calls the “avoided supply and wastewater” cost. When the user chooses to manually enter avoided costs, the tool does not calculate the capacity benefit; rather, it assumes that the analyst has accounted for the capacity benefit in the yearly avoided costs that were manually entered. The tool also assumes that the analyst’s yearly avoided peak and off-peak costs included both avoided water and wastewater costs. For the manually-entered data option, PV avoided supply and wastewater cost is the PV_B as shown in the equation below.

$$PV_B = \sum_{t=Y}^{t=n} \frac{(Avoided\ Cost)_t}{(1 + d)^{t-Y}}$$

6.4.3 Unit Benefit

Regardless of which data-entry method is chosen by the user, the unit benefit of conservation is calculated as follows:

$$U_B (\$/MG) = \frac{PV_B}{\sum_{t=Y}^{t=n} \frac{Cumulative\ WS_{A_t}}{(1 + d)^{t-Y}}}$$

7.0 ECONOMIC PERFORMANCE ANALYSES

An economic performance analysis is primarily concerned with comparing alternative projects on the basis of an economic measure of effectiveness. Economic analyses for the public sector are typically a cost-effectiveness analysis or a cost benefit analysis. A cost-effectiveness analysis (CEA) is a form of economic analysis that compares the relative costs and outcomes (effects) of two or more courses of action. A cost-effectiveness analysis is distinct from cost-benefit analysis, which assigns a monetary value to the effect. For water conservation, CEA compares the cost to save a unit volume of water to the cost to produce a unit volume of water. A CBA assigns a monetary value to the water saved.

A net benefit analysis (NBA) compares the present value benefits of an individual project to the project’s present value of costs over a specified planning horizon. An NBA is most appropriate for comparing alternatives with large capital costs, like water supply projects. An NBA is typically used to identify if future positive cash flows can justify an initial investment. It can be used to compare alternative projects where each project includes components with varying service lives. In this case, for each project alternative, the life cycle cost (LCC) is computed for each project component, then, the individual LLCs of each component are amortized over a set planning horizon. The net benefit (NB) does not require that an alternative base case be identified; it is calculated as follows:

$$NB = PV_B - PV_C$$

A project alternative’s net savings (NS) and savings-to-investment ration (SIR) are measures of its economic performance relative to a base case. These metrics compare a project’s present value

savings to its present value investment. These performance metrics are typically applied when benefits occur primarily in the form of operational cost reductions. Because the NS and SIR are both relative measures of performance; they can only be computed with respect to a designated base case. Therefore, the analysis start year, plan horizon, and discount rate must be the same for the base case as the alternative being evaluated. Computing a project's NS can determine if the cost of the project is justified by the savings in O&M costs and it is a good metric for evaluating projects on an accept/reject basis. However, the NS computed for independent projects is not useful for ranking the projects based on limited funding. The SIR is more effective for ranking independent project alternatives. The SIR is a variation of the benefit-to-cost ratio for use when benefits occur primarily as reductions in operation-related costs. The terms used in the NS and the SIR equation are the same; they include:

- PV of the project's O&M savings compared to the mutually exclusive base case
- PV of the additional (incremental) investment needed to implement the project compared to the mutually exclusive base case

NS and SIR are calculated as follows:

$$NS = \sum_{t=Y}^{t=n} \frac{(O\&M \text{ Cost Savings})_t}{(1+d)^{t-Y}} - \sum_{t=Y}^{t=n} \frac{(Incremental \text{ Investment})_t}{(1+d)^{t-Y}}$$

$$SIR = \frac{\sum_{t=Y}^{t=n} \frac{(O\&M \text{ Cost Savings})_t}{(1+d)^{t-Y}}}{\sum_{t=Y}^{t=n} \frac{(Incremental \text{ Investment})_t}{(1+d)^{t-Y}}}$$

The NS and SIR can be computed in a CEA, where the effect is a unit of water saved. NS and SIR can also be computed in a CBA, where water saved is assigned a monetary value.

7.1 Economic Performance Analysis in the Master Guide

The Master Guide compares the unit cost of conservation (see Subsection 5.8.1) to the unit cost of the next increment of supply (see Subsection 6.1). Where the unit cost of conservation is greater than the user-entered unit cost (called the avoided cost) of the next increment of supply, the unit cost value of the BMP or program is shown in red font to alert the user that the BMP is not cost effective as compared to the next increment of water. It is very important to note that for this to be a fair analysis, the analyst must enter the PV unit benefit of the next increment of supply.

7.2 Economic Performance Analysis in EZG1.6

The EZG1.6 compares the conservation unit cost (see Subsection 5.8.2) to the unit benefit (cost of avoided water) (see Subsection 6.2). The tool calculates the net savings as follows:

$$NS (\$/Kgal) = U_B - U_C$$

For BMPs with a positive NS, the BMP cell is green to indicate that it is cost effective as compared to the cost of next increment of supply. Also, the tool charts U_C against U_B to indicate to the user which BMPs are cost-effective.

7.3 Economic Performance Analysis in the EZG2.0

The EZG2.0 compares the conservation unit cost (see Subsection 5.8.3) to the unit benefit (cost of avoided water) (see Subsection 6.3). The tool calculates the net savings. The tool also refers to the NS (\$/day) as the “marginal net savings,” and the “savings of water production costs – total programs costs.” The tool ranks BMPs according to the NS, which it calculates follows:

$$NS (\$/Kgal) = U_B - U_C$$

The tool also calculates the net benefit (NB) for each BMP accordingly:

$$NB (\$/day) = NS \times \frac{\text{Total Daily Water Savings}}{1,000 \text{ gal/Kgal}}$$

7.4 Economic Performance Analysis in the AWE Tool

The AWE tool calculates the NS (which it calls the net present value, NPV) and SIR (which it calls the cost-benefit, C/B) of the conservation program accordingly:

$$NS (\$) = U_B - U_C$$

$$SIR = \frac{U_B}{U_C}$$

A positive NS (or NPV, using the tool’s terminology), and an SIR (or B/C, using the tool’s terminology) ratio greater than one indicate the present value of future utility costs would be lower with the BMP or program than without it. BMPs that result in a negative NS or SIR less than one are shown in red font to alert the user that the BMP is not cost effective.

7.5 Comparison of Economic Performance Analyses

Of the tools evaluated, the AWE tool provides the most accurate economic performance analysis. It is the only tool capable of providing a fair comparison of the unit cost of conservation to the unit cost of supply. It is capable of providing a more accurate estimate of conservation costs and benefits because it uses a yearly implementation schedule to calculate yearly and present value conservation costs and avoided costs. Also, it uses the reductions in the yearly demand forecast to identify the point of capacity deferment/avoidance and calculates the resulting present value capacity benefit.

The EZG2.0 is capable of identifying the most cost effective BMPs for a specific utility based on the utility's service area characteristics. The tool generates a table specific to the utility service area that shows the NB for each type of fixture replacement, at set unit benefit costs. The table is generated using the number of fixtures at different efficiencies (age) in the service area. Using this table, the user can select the retrofit fixture technology level (such as ULFT or HET) that is most applicable to its service area. The tool then ranks BMPs according to the unit cost of conservation (\$/Kgal), which as mentioned in Subsection 5.8.5, does not use the number of available (or user-entered planned) implementations. Since the most attractive feature of the EZG2.0 is that model results are highly tailored to the utility, to not use the number of available fixtures for retrofit is a missed opportunity for identifying the most cost-effective BMPs. However, as discussed in Subsection 3.4.3, during the course of this evaluation, attempts to run the linear programming optimization algorithm (MS Excel® Solver) resulted in Visual Basic errors. Perhaps, the Solver function ranks BMPs according to NB.

Although the EZG2.0 is very powerful for selecting among BMPs, it is not capable of calculating an accurate conservation benefit because it does not have yearly projections capabilities and does not distinguish between O&M avoided costs and the capacity benefit. Therefore, its economic performance analysis is limited to selecting among a limited suite of BMPs, at user-entered avoided unit costs.

8.0 AWS COST ESTIMATING FOR THE 2010 DWSP

A primary component of the DWSP is a summary of water supply alternatives which includes the average unit production cost (UPC) for each alternative. The DWSP also includes water conservation options. Conservation, in essence, is an alternative water supply. Therefore, it is desirable to compare the economic performance of conservation to other alternative supplies. The District published cost estimating and economic criteria (Special Publication SJ2010-SP4, September 21, 2009) to guide the development of cost estimates of water supply alternatives for the 2010 DWSP. Although the scope of this evaluation does not include an evaluation of alternative water supply cost estimating, the methodology used by SJRWMD is presented in the context of this evaluation to highlight that the unit production cost developed for water supply alternatives is not the U_b of conservation presented in Section 6.

8.1 Real Discount Rate

The District's guidance identifies the FY09 federal water resources planning rate of 4.625 % per annum as the real discount rate to be used in all economic calculations for the 2010 DWSP update.

8.2 Constant Dollars

The District's published cost estimating and economic criteria (Special Publication SJ2010-SP4, September 21, 2009) requires all costs for use in the DWSP 2010 Update to be denominated in mid-year 2010 dollars.

8.3 Unit Production Cost

The economic metric that is central to comparing alternative water supplies is the unit production cost (UPC). The UPC is defined in the SJRWMD guidance as the total annual cost of water production divided by the total annual production volume as follows:

$$UPC = \frac{\text{Annual cost} \times ADF}{1,000 \text{ Kgal/MG} \times 365 \text{ d/yr}}$$

Where:

UPC = Annual unit production cost, expressed in \$/Kgal

Annual Cost = Annual O&M costs plus the EAC of capital costs, expressed in \$/yr

ADF = Average daily flow of product water, expressed in MGD

As shown above, the UPC calculation requires capital costs to be annualized so that they can be added to the annual O&M costs. In computing O&M electrical costs, the SJRWMD guidance requires a unit energy cost of \$0.08 per Kilowatt-hour (kWh). The annualized (or amortized) capital cost is called the equivalent annual cost (EAC). The EAC equation used by SJRWMD shown below is the basic economic equation for converting a present cost to a uniform annual cost over a number of periods, using a discount rate. For the EAC, the number of periods over which the present cost is amortized is the economic service life of the equipment. The District's guidelines (SJ2010-SP4) include a list of service lives for various capital elements. The lives range from five years for reverse osmosis membranes to 40 years for water conveyance structures.

$$EAC = \frac{\text{Asset Price} \times \text{Discount Rate}}{1 - (1 + \text{Discount Rate})^{-n}}$$

Where:

Asset price = Price of supply component in analysis-year dollars

Discount rate = FY09 Federal Water Resources planning rate of 4.625 % per annum

n = The economic service life for the component type

9.0 COMPARING THE UNIT COST OF CONSERVATION TO THE UPC

Subsection 6.4 provided background on the computation of unit benefits in the AWE tool. As noted the AWE methodology, avoided O&M costs are calculated on a yearly basis with respect to the cumulative water saved at each year. A yearly schedule of cumulative water savings is even more critical in the computation of the capacity benefit. The UPC of water supply alternatives developed for use in the SJRWMD is appropriate for comparing water supply projects to each other; however, it is not

appropriate to compare these UPCs to the unit cost of conservation developed for the DWSP for the following reasons:

- A significant component of the UPC is amortized capital, and conservation is typically not financed.
- Comparing the O&M component of the UPC to the unit cost of conservation is slightly more reasonable because, like conservation, it is not capitalized, but this approach ignores the capacity benefit.
- Although O&M costs are reported as a cost/unit volume, in actuality, the reduction in a unit volume of water does not reduce the O&M costs on a 1:1 ratio. For example, staffing a water treatment plant occurs in large steps of water production, not on a linear basis.

There are other issues involved with comparing the unit cost of conservation with UPCs in the DWSP; however, an exhaustive analysis of the issues and recommendations for developing comparable UPCs are beyond the scope of this evaluation. Utilities should develop unit benefit calculations that acknowledge water production O&M costs of their current supply (and wastewater treatment) and the increased O&M expenses of the new alternative supply when it occurs. Also, the utility should calculate the capacity benefit that is appropriate for their utility based on timing of the alternative supply and whether the effect of conservation will be used to increase reliability or defer/avoid capital.

10.0 RECOMMENDATIONS

The purpose of this evaluation is to identify which tool is most appropriate for use by the District in calculating district-wide water conservation potential. The purpose of this Tech Memo is to provide results of the evaluation and to establish a workflow that couples the District's water use benchmark model results with a tool capable of modeling district-wide conservation potential. The water use benchmark model (being developed by Jones Edmunds as part of this project) is a geographic information system (GIS) model that uses parcel-level data. It is capable of estimating current water use per water-use sector and fixture type. The model also includes outdoor water use benchmarks. The scope of this evaluation did not include identifying the ability of the selected tool to aid the District in providing guidance to utilities in the development of their water conservation plans, nor did it include assisting District regulatory staff in evaluating water conservation plans submitted by utilities as part of their Consumptive Use Permit (CUP). However, the evaluation of potential work flow alternatives considered this function as an added value worthy of inclusion.

All four conservation tools evaluated in this Tech Memo are capable of generating a utility-specific water conservation plan. However, CFWC staff has communicated to SEC that future CFWC efforts will primarily focus the further development of the EZG2.0, and as such, *new* users of the Master Guide and the EZG1.6 will not be supported. Therefore, including the use of these two older CFWC tools (in whole) in the workflow is not recommended. Of the tools evaluated in this Tech Memo, the tools remaining for

further consideration are the EZG2.0 and the AWE tool. Developing a conservation plan for *each* utility in the District using either of these tools would be a large undertaking. One of the biggest challenges for such an endeavor would be the collection of data required to run the models; this is especially true for the AWE data requirements. Therefore, developing a conservation plan for *each* utility in the District using either the EZG2.0 or the AWE tool was not considered as a viable option. Alternative work flow structures that were considered for further evaluation include the following three alternatives:

(1) Use the EZG2.0 to Calculate Conservation Potential for the DWSP

This workflow alternative includes CFWC staff using the EZG2.0 to estimate district-wide water conservation potential. CFWC has demonstrated the tool is capable of this task through CFWC staffs' service to South Florida Water Management District (SFWMD). For SFWMD, CFWC estimated conservation potential for SFWMD's Upper East Coast Planning Region. Much like the benchmark tool developed by Jones Edmunds for this project, the EZG2.0 uses parcel level data to estimate current (baseline) water use for each water-use sector including SF, MF, NR and indoor/outdoor uses. However, at this time, the tool is capable of estimating SF and MF indoor conservation potential only.

The author has not reviewed the results of the CFWC/SFWMD analysis, but through discussions with CFWC staff, it is understood that district-wide conservation potential was estimated by assigning one workbook per county in the planning region. The parcel-level data in each county workbook is the aggregate of all parcels within all utility service area boundaries of that county. Therefore, utility-specific conservation potential was not identified. Rather, the highest level of geographic detail of conservation potential remained at the County level. The EZG2.0 User's Manual indicates that the tool includes the capability to optimize solutions for a specified budget and for a reduction in per capita water use. Since the highest level of detail was performed at the county level, the optimized solutions were at the county level. Budget and per capita water use are highly utility-specific parameters, so optimization at the county level is not preferred.

If this approach were used to estimate conservation potential for SJRWMD, conservation potential and optimized solutions could not be provided at the utility level. Further, with county-level data existing in separate workbooks, an additional workbook that aggregates county-level potential to the district level would be required in order to aggregate conservation potential to the district-level potential. This would be possible by either creating a new workbook that uses macros to access the county-level data for summary, or by entering all service area boundaries within the District into the existing EZG2.0 tool, much like the process of aggregating utility data for use in the county workbooks. This alternative does not leverage parcel-level water use benchmarks developed by SJRWMD. Further, this alternative does not provide the added value of aiding the District in providing guidance to utilities in the development of their water conservation plans, nor does it assist District regulatory staff in evaluating water conservation plans as part of the CUP evaluation process.

(2) Use the EZG2.0 to Model Conservation Potential for Pilot Utilities and Transfer Results

This alternative includes using the benchmark model to develop utility categories based on likenesses in water use and other service-area profile characteristics (as compared to the pilot utilities). For this alternative, water conservation plans for the pilot utilities would be developed by populating the EZG2.0 with their data and the results would be duplicated to represent all utilities in that category. This approach to estimating conservation potential is consistent with the DWSP's water use projections and water supply alternatives, because they too are evaluated at the utility, county, and district level. This alternative leverages the benchmark model to a limited extent. Also, to a limited extent, the results of this alternative can be used by the District to provide guidance to utilities in the development of their water conservation plans (from the perspective of a utility that is "like" the subject utility) and to a limited extent, can assist District regulatory staff in the CUP evaluation process. However, data inputs required by both tools are too utility-specific for the model results to be an appropriate representation of utilities within each utility group.

(3) Enhance the Benchmark Model to Calculate Conservation Potential

This alternative includes using parcel data for each utility service area within the District to calculate conservation potential. The model structure is capable of estimating conservation potential at the utility level, and aggregating utility-level results to the county and district level. This approach to estimating conservation potential is consistent with the DWSP's water use projections and water supply alternatives, because they too are evaluated at the utility, county, and district level.

This alternative, which leverages the existing benchmark model, and EZG2.0 methodologies, estimates utility-specific conservation potential through automated functions. The results of the model can be used by the District to provide guidance to utilities in the development of their water conservation plans and can assist District regulatory staff in the CUP evaluation process. This is especially true because the conservation cost-effectiveness and potential water savings are developed using the EZG2.0 methodology, which is readily available for utilities to download from CFWC and use for free.

An additional benefit of this alternative is that conservation potential from domestic self-supply (DSS) parcels can be estimated using the same calculation methodologies used for public supply. This could be accomplished at the county level using parcel data for parcels that lie outside of utility service area boundaries. DSS conservation potential could be aggregated at the district level. For the DSS water use sector, conservation potential would be estimated using the same calculations used for parcels that are within a utility service area boundary.

Based on the merits of the three alternatives presented, the third alternative is recommended. The recommended approach for implementing the selected alternative is discussed in the remainder of this section.

In order for conservation potential to reflect the use of the most cost effective (to the utility) BMPs, the model would be enhanced to identify cost-effective BMPs and build water conservation potential on those BMPs. This would be achieved by performing calculations used in the EZG2.0 to calculate daily costs, daily water savings, and the unit cost of conservation for each BMP. The service life used in the equations should use 20 years for BMPs with an infinite service life (due to non-conserving fixtures not being available in the market place) and the total number of available implementations $(TNI)_A$ would be used, consistent with EZG2.0. Using a standard unit benefit selected by SJRWMD, the model would calculate NS (\$/Kgal) and NB (\$/day) consistent with the calculations used in EZG2.0. The tool will use a pass/fail test by removing BMPs with a negative net savings. Passing BMPs will be ranked for each utility based on NB (as computed by the EZG2.0), which is a metric that considers the number of fixtures in the service area that are available to be retrofitted.

It is important to understand a BMP unit cost calculated using the recommended EZG2.0 methodology is the BMP cost effectiveness, not the BMP *program* cost effectiveness (unit cost of conservation.); BMP program cost effectiveness requires an implementation schedule to calculate. However, the BMP cost effectiveness can be used as a surrogate unit cost for this relative (to other BMPs under consideration) analysis with acceptable results.

After cost-effective BMPs have been identified for each utility using the relative analysis described above, yearly cumulative gross water savings (WS_{G_t}) can be calculated for each BMP using a constant NI_t value that equals the total number of available implementations divided by the DWSP horizon of 20 years. These yearly cumulative water savings values represent the water available in the District through passive and active conservation at each year t. They could be calculated similar to the Master Guide and AWE tool methodologies as follows:

$$\text{Cumulative } WS_{G_t} = (\text{Cumulative } NI_t) \times WSR \times \frac{365 \text{ days/year}}{1,000,000 \text{ gal/MG}}$$

Where:

Cumulative WS_{G_t} = Cumulative passive and active water savings at year t, expressed in MG.

$$NI_t = \frac{(TNI)_A}{20 \text{ yrs}}$$

WSR = Water savings rate, expressed as gpd per implementation

The constant NI_t values would provide a place holder of yearly planned (and passive) implementations that could be refined with a variable implementation schedule considered by a utility. Future updates to the DWSP can include conservation implementation schedules from approved Consumptive Use Permits, and from plans otherwise communicated by utilities. For other utilities, the constant NI_t values can remain in place. Using this methodology, pivot tables can be used to sum conservation potential at the utility, county, and District levels disaggregated by BMP and water use sector.

It is recommended the cost effectiveness values of BMPs remain at the BMP cost-effectiveness level as described previously in this approach. The BMP cost effectiveness values should be accompanied by an explanation as to their meaning and that they are not directly comparable to the UPC of the alternative water supplies. However, the BMPs selected for each utility are based on the unique characteristics of the utilities' service areas. The utilities should be encouraged to use the BMPs presented in the DWSP and perform a detailed conservation plan that distinguishes between active and passive savings and base their program unit costs on active savings only.

The method described above for calculating gross water savings is for example purposes. A more involved approach that calculates active and passive savings separately could be provided. For that approach, the BMP selection process would be the same, but the active and passive water savings would be calculated separately by using a constant passive NI_t value based on a natural replacement rate similar to the EZG1.6 and AWE tool. Alternatively, parcel data and the fixture service life (actual, not 20 years) could be used to calculate variable passive NI_t values, similar to the EZG2.0. If this approach were used, total program costs and savings could be used to estimate a program unit cost of conservation.

APPENDIX F

BMP LIBRARY

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Conservation Coordinator and Customer Education – GLOBAL

Description

Managing the coordination and implementation of conservation practices for a medium to large utility may require a full-time conservation specialist. This specialist would educate customers and oversee water audits. Studies have shown that conservation through education can result in significant water savings by changing water consumption behavior. Water audits of residential and commercial customers can lead to significant water savings as well.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	-	5.0	90
1984 to 1993	-	2.5	90
1994 to Present	-	1.0	90
Future	-	1.0	90

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
NA	NA

Notes

Cost based on a \$65,000 conservation specialist conducting workshops and water audits and making service calls. Analysis assumes that savings will be less for newer homes with more efficient fixtures and water-using devices. Water savings is applied to total water use.

References

American Water Works Association (AWWA). (2005). *Water Conservation Programs: A Planning Manual*. (AWWA-M52).

Mayer, P., & DeOreo, W. B. (eds.). (1999). *Residential End Uses of Water*. AWWA Research Foundation and AWWA.

Aggressive Meter Monitoring Program – GLOBAL

Description

Sustaining water savings from conservation will require routine tracking and follow-up. This BMP accounts for the need to implement a program dedicated to maintaining water savings. The success of this BMP will depend on the tools and information systems that a utility has implemented. For example, utilities with AMR/AMI systems are capable of providing information that can identify leaks and non-conserving behavior. The savings rates assume that implementing the program will lead to savings above and beyond the maintenance of other conservation practices.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	-	2.0	90
1984 to 1993	-	2.0	90
1994 to Present	-	2.0	90
Future	-	2.0	90

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
NA	NA

Notes

The annual cost of the program is based on a utility size at \$5 per year for each residential dwelling unit in the service area. The service includes meter data monitoring, software, hardware, work order process management, customer auditing, and miscellaneous costs for educational materials to support the conservation program. Cost does not include plumbing costs on customer's side of meter. Water savings is applied to total water use.

References

AWWA. (2005). *Water Conservation Programs: A Planning Manual*. (AWWA-M52).

Mayer, P., & DeOreo, W. B. (eds.). (1999). *Residential End Uses of Water*. AWWA Research Foundation and AWWA.

McDilda, D. (2009, November – December) Measuring and Managing – Making Sense of Metering Technology. *Water Efficiency – The Journal for Water Resource Management*.

Low-Flow-Volume Showerhead Replacement – INDOOR

Description

Replacing showerheads with low-volume showerheads (2.5 gpm) can result in water savings.

Residential Water Savings by Build-out Condition

Build-out Condition	Passive Replacement* (%)	Water Savings (%)	Efficiency (%)
Pre-1984	80	3.9	90
1984 to 1993	65	3.9	90
1994 to Present	100	0.0	-
Future	-	-	-

* Passive replacement for 1994- Present accounts for changes in plumbing standards adopting 2.5 gpm.

Commercial Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	80	Varies	100
1984 to 1993	65	Varies	100
1994 to Present	100	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$35	15



LOW-FLOW VOLUME SHOWERHEAD
(SOURCE: ENVIRONMENTAL PROTECTION AGENCY)

Notes

Cost includes installation. This BMP typically results in less total water savings, but it is easy to implement and tends to be more cost effective. Water savings for residential use is applied to indoor water use.

References

Alliance for Water. (1991). *Water Conservation Tracking Tool v.1.1 – User Guide*. A&N Technical Services.

East Bay Municipal Utility District (EBMUD). (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

US Department of Housing and Urban Development. (2000). *Residential Rehabilitation Inspection Guide*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

High-Efficiency Showerhead Replacement – INDOOR

Description

Replacing showerheads with high-efficiency showerheads (1.5 gpm) can result in water savings.

Residential Water Savings by Build-out Condition

Build-out Condition	Passive Replacement* (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	0	7.2	90
1984 to 1993	0	7.5	90
1994 to Present	0	6.7	-
Future	-	-	-

* Passive assumes that all showerhead replacements have been with 2.5 gpm showerheads. Water savings is proportioned based on passive replacement of 2.5 gpm fixtures in each build-out condition.

Commercial Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	0	Varies	100
1984 to 1993	0	Varies	100
1994 to Present	0	Varies	100
Future	-	-	-

* Commercial water savings depends on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$40	15

Notes

Cost includes installation. This BMP typically results in less total water savings, but it is easy to implement and tends to be more cost effective. Water savings for residential use is applied to indoor water use.

References

Alliance for Water. (1991). *Water Conservation Tracking Tool v.1.1 – User Guide*. A&N Technical Services.

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

US Department of Housing and Urban Development. (2000). *Residential Rehabilitation Inspection Guide*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.



HIGH-EFFICIENCY SHOWERHEAD
(SOURCE: WWW.CLEANAIRGARDENING.COM)

Low-Flow Faucet Aerator Replacement – INDOOR



FAUCET AERATOR
(SOURCE: SJRWMD)

Description

Replacing faucet aerators reduces kitchen faucet flow to 2.2 gpm and bathroom faucet flow to 1.0 gpm.

Residential Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	0	5.9	90
1984 to 1993	0	5.9	90
1994 to Present	0	5.7	90
Future	-	-	-

* Passive assumes that all faucet replacements have been with 1.5 gpm aerators. Water savings is proportioned based on passive replacement of 1.5 gpm fixtures in each build-out condition.

Commercial Water Savings Build-out Condition – Bathroom Faucets

Build-out Condition	Passive Replacement (%)	Water Savings*	Efficiency (%)
Pre-1984	0	Varies	100
1984 to 1994	0	Varies	100
1994 to Present	0	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$15	10

Notes

Cost includes installation. This BMP typically results in less total water savings, but it is easy to implement and tends to be more cost effective. Faucet savings is based on the assumption that half of the water use is used by kitchen faucets and half of the water use is used by bathroom faucets. Savings from faucet aerators may be less noticeable than that of other BMPs because faucets are often used for purposes that require a set volume of water (filling a pot). Water savings is applied to total indoor water use.



BATHROOM FAUCET (SOURCE: SJRWMD)

References

- AWWA. (2005). *Water Conservation Programs: A Planning Manual* (AWWA-M52).
- EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.
- Mayer, P., & DeOreo, W. B. (eds.). (1999). *Residential End Uses of Water*. AWWA Research Foundation and AWWA.
- Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

Ultra-Low Flush Toilet Replacement Program – INDOOR

Description

The toilet replacement cost consists of replacing high-flow conventional toilets with ultra-low flush toilets (1.6 gpf).

Residential Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	64	19.4	100
1984 to 1993	4	16.0	100
1994 to Present	100	0.0	100
Future	-	-	-

* Passive replacement for 1994- Present accounts for changes in plumbing standards adopting 1.6 gpf toilets.

Commercial Water Savings Build-out Condition – Toilets

Build-out Condition	Passive Replacement (%)	Water Savings*	Efficiency (%)
Pre-1984	64	Varies	100
1984 to 1993	4	Varies	100
1994 to Present	100	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$300	40

Notes

Cost based on District or utility bearing entire cost of toilet replacement. Water savings is applied to total indoor water use. Cost includes installation.

References

Alliance for Water. (2005). *Water Conservation Tracking Tool v.1.1 – User Guide*. Koeller & Company.

AWWA. (2010). *Water Conservation for Small- and Medium-Sized Utilities*.

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

Mayer, P., & DeOreo, W. B. (eds.). (1999). *Residential End Uses of Water*. AWWA Research Foundation and AWWA.

US Department of Housing and Urban Development. (2000). *Residential Rehabilitation Inspection Guide*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

High-Efficiency Toilet Replacement Program – INDOOR

Description

The toilet replacement cost consists of replacing high-flow conventional toilets with highest-efficiency toilets (gallons per flush (1.2 gpf)).

Residential Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	0	11.9	100
1984 to 1993	0	18.2	100
1994 to Present	0	6.7	100
Future	-	-	-

* Passive assumes that all toilet replacements have been replaced with 1.6 gpf toilets. Water savings is proportioned based on passive replacement of 1.6 gpf toilets in each build-out condition.

Commercial Water Savings Build-out Condition – Toilets

Build-out Condition	Passive Replacement (%)	Water Savings*	Efficiency (%)
Pre-1984	0	Varies	100
1984 to 1993	0	Varies	100
1994 to Present	0	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$400	40

Notes

Cost based on District or utility bearing entire cost of toilet replacement. It assumes implementing a dual-flush toilet that has an option of 0.8 gpf for urine. Water savings is applied to total indoor water use. Cost includes installation.

References

Alliance for Water. (2005). *Water Conservation Tracking Tool v.1.1 – User Guide*. Koeller & Company.

AWWA. (2010). *Water Conservation for Small- and Medium-Sized Utilities*.

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

Mayer, P., and DeOreo, W. B. (eds.). (1999). *Residential End Uses of Water*. AWWA Research Foundation and AWWA.

US Department of Housing and Urban Development. (2000). *Residential Rehabilitation Inspection Guide*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.



“THIS MODEL OF TOILET USES FAR LESS WATER PER FLUSH THAN MANY SIMILAR FIXTURES ON THE MARKET TODAY.” (SOURCE: SJRWMD)

High-Efficiency Clothes Washer Replacement – INDOOR

Description

Replace inefficient clothes washers with high-efficiency washers (27 gallons per load).

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency* (%)
Pre-1984	80	7.4	85
1984 to 1993	80	8.3	85
1994 to Present	76	7.4	85
Future	-	-	-

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$850	13

Notes

Cost based on District or utility bearing entire cost of washer replacement. There are typically concerns with these types of BMPs, such as a customer taking the device upon moving from the residence. Water savings is applied to total indoor water use. Cost includes installation.



HIGH-EFFICIENCY CLOTHES WASHER
(SOURCE: SJRWMD)

References

US Department of Housing and Urban Development. (2000). *Residential Rehabilitation Inspection Guide*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

High-Efficiency Dishwashers – INDOOR



HIGH EFFICIENT DISHWASHER (SOURCE: SJRWMD)

Description

This BMP consists of replacing conventional dishwashers with water-efficient dishwashers (4.5 gal per load).

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement* (%)	Water Savings (%)	Efficiency (%)
Pre-1984	0	0.5	100
1984 to 1993	0	0.5	100
1994 to Present	0	0.5	100
Future	-	-	-

*The analysis assumes that all dishwashers are already at 7.0 gpm efficiency in all build-out conditions.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$550	10

Notes

Cost based on District or utility bearing entire cost of washer replacement. Water savings is applied to total indoor water use. Cost includes installation and delivery.

References

US Department of Housing and Urban Development. (2000). *Residential Rehabilitation Inspection Guide*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

Urinal Replacement Program – INDOOR

Description

The urinal replacement cost consists of replacing high-flow conventional urinals with high-efficiency urinals (gallons per flush (0.5 gpf)).

Commercial Water Savings Build-out Condition – Urinals

Build-out Condition	Passive Replacement (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	0	Varies	100
1984 to 1993	0	Varies	100
1994 to Present	0	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$450	40

Notes

Cost based on District or utility bearing entire cost of urinal replacement. The urinal cost is \$375 per urinal for bulk purchases and \$75 per installation. A urinal lifetime was assumed to have the same lifetime as toilets. Water savings is applied to total water use.



AMERICAN STANDARD MAYBROOK
0.5 – 1.0 GPF URINAL
(SOURCE: HOMEDEPOT.COM)

References

Alliance for Water. (2005). *Water Conservation Tracking Tool v.1.1 – User Guide*. Koeller & Company.

AWWA. (2010). *Water Conservation for Small- and Medium-Sized Utilities*.

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

Mayer, P., and DeOreo, W. B. (eds.). (1999). *Residential End Uses of Water*. AWWA Research Foundation and AWWA.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

Waterless Urinal Replacement Program – INDOOR

Description

A waterless urinal is typically for single-person use and requires neither flushing nor water supply plumbing.

Commercial Water Savings Build-out Condition – Urinals

Build-out Condition	Passive Replacement (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	0	Varies	100
1984 to 1993	0	Varies	100
1994 to Present	0	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$625	40



Notes

Cost based on District or utility bearing entire cost of urinal replacement. Potential savings depends upon the number of users at the facility. If urinals are available, males more often use urinals than toilets. The largest potential water savings from waterless urinal replacement are at facilities with a large number of males. Water savings is applied to total water use. Odor problems are typically the result of insufficient cleaning schedules. Cost includes installation.

WATERLESS URINALS IN THE COMMONS CENTER AT VANDERBILT UNIVERSITY, TN
 (Source: www.vanderbilt.edu)

References

Alliance for Water. (2005). *Water Conservation Tracking Tool v.1.1 – User Guide*. Koeller & Company.

California Urban Water Conservation Council. (2005, June). *Water Conservation Plan Development Guidance Document – Appendix B: Description of Conservation Measures and Programs*.

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

Commercial Kitchen Pre-Rinse Spray Valve Replacement – INDOOR

Description

Non-residential kitchens often contain pre-rinse sprayers that rinse food from dishware. The pre-rinse spray valves control water flow in these sprayers. The BMP consists of replacing non-conserving sprayers with sprayers containing water-conserving valves with a flow rate of 1.6 gpm. The conserving valves have equal or better rinsing effectiveness because of improved spray patterns.



NIAGARA 1.6 GPM PRE-RINSE SPRAY VALVE
(SOURCE: WWW.CONSERVATIONMART.COM)

Commercial Water Savings Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	20	Varies	95
1984 to 1993	20	Varies	95
1994 to Present	20	Varies	95
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$150	5

Notes

Cost includes replacement valve and installation fees. The Code of Federal Regulations states that "commercial pre-rinse spray valves manufactured on or after January 1, 2006 shall have a flow rate of not more than 1.6 gallons per minute."

References

Alliance for Water. (2005). *Water Conservation Tracking Tool v.1.1 – User Guide*. Koeller & Company.

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

Southwest Florida Water Management District (SWFWMD). (2009, July). *Water Conservation Hotel and Motel Program (CHAMP)*, 7.

Water Reuse/Recycling Laundry Machines – INDOOR

Description

This BMP includes replacing conventional industrial-grade laundry machines with water reuse/recycling machines.

Commercial Water Savings Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings* (%)	Efficiency (%)
Pre-1984	0	Varies	100
1984 to 1993	0	Varies	100
1994 to Present	0	Varies	100
Future	-	-	-

* Commercial water savings is dependent on the type of facility and the facility's water-use characteristics.

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$100,000	NA

Notes

This BMP is applied to hotels, hospitals, and live-in care laundry water use. Water is recycled for use in all cycles of the washing process. For example, the AquaRecycle System screens for large particles; filters small particulates, oils and greases, and soaps and organics; adds ozone to remove additional organics; and passes the water through a UV system for disinfection. Cost includes unit and installation fees for a system capable of recycling 15 gpm. The device life is unknown. Water savings is applied to total water use.

References

EBMUD. (2008). *Watersmart Guidebook: A Water-Use Efficiency Plan-Review Guide for New Businesses*.

Ordinances Adopting Higher Indoor Efficiency Standards – INDOOR

Description

Adopt ordinance requiring most efficient plumbing fixtures rated by EPA, primarily toilets.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	NA	NA	NA
1984 to 1993	NA	NA	NA
1994 to Present	NA	NA	NA
Future	-	5.3	100

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$0	NA

Notes

Assume cost of ordinance adoption is minimal. Savings is constant based on today's technology and indoor water use patterns. Water savings is applied to total water use.

References

N/A

Submetering Billing of Apartment Units – INDOOR

Description

National studies show 16% reductions in end use from implementing submetering. The analysis assumes that the maximum saving would be 5% by submetering. The passive replacement factor approximates the number of accounts in each category that are already submetered.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	50	5	100
1984 to 1993	50	5	100
1994 to Present	75	5	100
Future	100	-	-

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$1,500	20

Notes

The BMP can be challenging to implement because of the amount of plumbing changes that may be necessary on the customer's side of a master meter needed to sub-meter high-density homes. Water savings is applied to total water use.

References

AWWA. (2005). *Water Conservation Programs: A Planning Manual*, (AWWA-M52).

Mayer, P., Towler, E., DeOreo, W. B., Caldwell, E., Miller, T., Osann, E. R., Brown, E., Bickel, P. J., & Fisher, S. B. (2004). *National Multiple Family Submetering and Allocation Billing Program Study*. Aquacraft, Inc. and EBMUD.

Alliance for Water. (2001). *Water Conservation Tracking Tool v.1.1 – User Guide*. IRWD.

Efficient Irrigation Systems (non turf) – OUTDOOR

Description

Install efficient irrigation systems for non-turf areas including, but not limited to, drip irrigation, bubblers, micro-sprinklers (rotate), and micro-sprayers (stationary).

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	2	7.5	100
1984 to 1993	2	7.5	100
1994 to Present	20	7.5	100
Future	NA	NA	NA

Cost and Device Life

Average Cost (\$/home)	Device Life (yrs)
\$1,400	10



MICRO SPRAY
(SOURCE: SJRWMD)



IN-LINE DRIP TUBING
(SOURCE: SJRWMD)



DRIP EMITTERS
(SOURCE: SJRWMD)

Notes

Analysis assumes that only outdoor users connected to the potable supply with irrigation systems would experience water savings. Savings are based on 50% savings of non-turf areas, which are assumed to be 15% of irrigable area. Water savings in future years would be negated by ordinances requiring efficient irrigation systems. The analysis assumes that the utility would hire a landscape contractor to install the irrigation systems. Water savings is an annual average savings applied to total outdoor water use.

References

- Brown, S. P. *Drip Irrigation – Beautify Your Landscape and Conserve Water – Drip by Drip!*
Retrieved May 18, 2010, from the SWFWMD Web site: <http://www.swfwmd.state.fl.us/waterres/drought/articles/drip.htm>
- Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

Install Soil Moisture Sensor Shut-off Devices – OUTDOOR

Description

Install soil moisture sensor to shut off irrigation system based on soil moisture content. The BMP targets irrigation systems that are over-watering landscaping.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	-	25	100
1984 to 1993	-	25	100
1994 to Present	-	25	100
Future	NA	NA	NA

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$300	10

Notes

Cost includes sensor and replacement controller on irrigators with irrigation systems. Water savings is an annual average savings applied to total outdoor water use.

References

Jones, G., Scott, K., & Barcelo, M. (2006, December). *Southwest Florida Water Management District Regional Water Supply Plan*. Conservation and Development Department, SWFWMD.

Reiss Engineering. (2009, July). *Polk County Comprehensive Water Supply Plan – Conservation Analysis*. REI Project No. 8501. Revision No. 3.

University of Florida – IFAS Extension. (2008). *Florida Field Guide to Low Impact Development – Soil Moisture Sensors*. Program for Resource Efficient Communities.

Install Single-Family Advanced ET Irrigation Controllers – OUTDOOR

Description

Install signal-based irrigation controllers that automatically adjust irrigation controllers according to the needs of the landscape. The technology includes irrigation systems that automatically adjust their irrigation schedules according to real-time measurements of ET by sending a signal by satellite pager technology or telephone line. The BMP targets irrigation systems that are over-watering landscaping.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	-	25	100
1984 to 1993	-	25	100
1994 to Present	-	25	100
Future	NA	NA	NA

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$400	10

Notes

Cost includes sensor and replacement controller on irrigators with irrigation systems. Savings based on reduced outdoor water consumption per household per day (IRWD, 2001). Savings in future years are assumed to come from ordinances promoting irrigation efficiency. Water savings is an annual average savings applied to outdoor water use from in-ground irrigation systems.

References

Alliance for Water. (2001). *Water Conservation Tracking Tool v.1.1 – User Guide*. IRWD.

Dukes, M. (2008, October). *Summary of Smart Controller Testing In Florida & Lessons Learned*. PowerPoint Presentation. Water Smart Innovations Las Vegas, NV: University of Florida – IFAS.

Landscape Replacement Program – OUTDOOR

Description

Replace high-consumption turf and shrubs with Florida-friendly species. Examples of replacement materials include xeriscape and hardscape. When landscaping is designed to match local soils and natural hydrology, it can significantly reduce, or eliminate, potable water consumption for outdoor irrigation. In addition to offsetting potable water demands, Florida-friendly landscaping reduces the amount of water running off into the stormwater management systems by reducing excessive landscape irrigation.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	5	33	100
1984 to 1993	5	33	100
1994 to Present	5	33	100
Future	NA	NA	NA

Cost and Device Life

Average Cost (\$/home)	Device Life (yrs)
\$5,000	20

Notes

Savings rates can be highly variable with landscape replacement. The savings could be much higher if combined with prohibiting potable outdoor watering for any modified landscaping. Water savings is an annual average savings applied to total water use.



*LOW-IMPACT LANDSCAPING IN SARASOTA COUNTY
(SOURCE: FLORIDA-FRIENDLY LANDSCAPING)*

References

Alliance for Water. (2001). *Water Conservation Tracking Tool v.1.1 – User Guide*. IRWD.

Reiss Engineering. (2009, July). *Polk County Comprehensive Water Supply Plan – Conservation Analysis*. REI Project No. 8501. Revision No. 3.

SWFWMD. *Seven Steps to a Successful Xeriscape*.

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

Modifications to Land Development Regulations (LDR) Limiting Water Use – OUTDOOR

Description

Adopt ordinances that promote efficient irrigation and limit irrigable area and landscaping.

Water Savings by Build-out Condition

Build-out Condition	Passive Replacement (%)	Water Savings (%)	Efficiency (%)
Pre-1984	NA	NA	NA
1984 to 1993	NA	NA	NA
1994 to Present	NA	NA	NA
Future	-	60%	100

Cost and Device Life

Cost (\$/unit)	Device Life (yrs)
\$0.00	20

Notes

Analysis assumes savings will come from all new homes in the District. A savings goal of 60% is assumed based on reducing turf irrigable area, planting Florida-friendly landscaping, and requiring efficient watering devices such soil moisture sensors and aggressive enforcement of irrigation ordinances. There could be other irrigable area alternatives to consider. Water savings is applied to total water use.

References

Vickers, A. (2001). *Handbook of Water Use and Conservation: Homes, Landscapes, Businesses, Industries, Farms*. Amherst, MA: WaterPlow Press.

APPENDIX G

FIXTURE CALCULATION METHODS

G1. Estimating Water Using Devices

Fixture estimates for each water using category:

- Toilets
- Urinals
- Bathroom sinks
- Kitchen sinks
- Showers

Single Family

The number of bathrooms per square foot of single family building area was derived using data provided by the district for single family parcels within GRU's and Vero Beach's service area boundaries. For each single family parcel, the data contained the year the dwelling was built, the total building area of the dwelling, and the number of bathrooms within the dwelling. The information for the two aforementioned utilities was combined to generate the bathroom benchmark numbers provided in Table A.1. These bathroom benchmark numbers were applied to all single family parcels in the 6 pilot study utilities. It is important to note, bathroom data was not provided for the remaining four utilities within this pilot study: City of Palm Bay, Palm Coast, St. Johns County Utilities, and Leesburg. It was assumed each parcel contained 1 kitchen sink and each bathroom contained 1 toilet, 1 sink, and zero urinals. The number of showers for each parcel was assumed to be the number of bathrooms rounded to the previous whole integer. Note: see below for the methodology used to calculate mobile home water using devices as it deviates from the description above.

Table A.1 Number of Bathrooms per Square Foot of Building Area in Single Family Dwellings

Bathroom/ Square Foot
0.0009

- Toilets
1 per bathroom
- Urinals
0
- Bathroom sinks
1 per bathroom
** note: this underestimates the number of bathroom sinks due to double sinks*
- Showers
Round to previous whole integer
- Kitchen sink
1 kitchen sink per parcel

G1. Estimating Water Using Devices

Single Family - continued -

Mobile Homes

Mobile home parcels are similar to multi family parcels in that each parcel can contain several units. Thus, the calculations used for estimating water using devices for mobile home parcels are consistent with the Multi Family water using devices calculations. It was assumed each unit contained 2 bathrooms and 1 kitchen sink. It is important to note, mobile home parcels were classified as Single Family to account for irrigation water use.

Toilets	2 per unit
Urinals	0
Bathroom sinks	2 per unit <i>* note: this underestimates the number of bathroom sinks due to double sinks</i>
Showers	2 per unit
Kitchen sink	1 kitchen sink per parcel

Multi Family

Initially, the number of bathrooms per square foot of multi-family building area was derived using data provided by the District for multi-family parcels within GRU's and Vero Beach's service area boundaries; similar to the procedure for single family. However, there were discrepancies between the number of units on a parcel and the number of listed bathrooms. This error led to an underestimation of the number of bathrooms. Therefore, it was assumed every multi-family unit contained 2 bathrooms and 1 kitchen sink.

Toilets	2 per unit
Urinals	0
Bathroom sinks	2 per unit <i>* note: this underestimates the number of bathroom sinks due to double sinks</i>
Showers	2 per unit
Kitchen sink	1 kitchen sink per parcel

G1. Estimating Water Using Devices

Live-in Care

The 2007 Florida Building Code: Building provides the maximum floor area allowances per occupant in Table 1004.1.1 of Chapter 10. It was assumed the number of people residing at any live-in care facility was equal to the total building area divided by the allowable floor area per occupant as listed in the 2007 Florida Building Code: Building for institutional sleeping areas (Eq. A.1). The 2007 Florida Building Code: Plumbing lists the minimum number of required plumbing fixtures in Table 403.1 of Chapter 4. It was assumed live-in care facilities require the same fixture counts as residential care facilities listed in the 2007 Florida Building Code: Plumbing. It was assumed each facility contained 1 kitchen sink.

Number of people:

$$\frac{\text{BuildingArea}(SF)}{\left(\frac{120SF}{Person}\right)} = \# \text{ People} \quad \text{(Eq. A.1)}$$

Toilet	2 per 10 people
Urinal	1 per 10 people
Bathroom sinks	1 sink per toilet
Showers	1 per 8 people
Kitchen sink	1 kitchen sink

G1. Estimating Water Using Devices

Hotels

The method described in Phase I of the study over estimates hotel fixture counts, therefore, the method was refined to obtain better estimates. The number of rooms per hotel was calculated using the average hotel room area (400 sq-ft) and the assumption that an additional 15% of area is needed for common areas.¹ The results of this method were compared to a shapefile the District provided which indicated the number of rental units per facility. The match between the District dataset and calculated rooms are within reason. It was assumed that each room contained 1 toilet, 1 bathroom sink, 1 shower, and zero urinals. Due to the variability of units within hotels (e.g. standard rooms, suites), a reasonable assumption for the number of kitchen sinks could not be determined.

$$\frac{BuildingArea(SF)}{\left(\frac{400SF}{Room} * 1.15CommonArea\right)} = \#Rooms \quad (Eq. A.2)$$

Toilet

1 per room

Urinals

0

Bathroom Sinks

1 per room

** note: this underestimates the number of bathroom sinks due to double sinks*

Showers

1 per room

Kitchen sink

Not calculated - unable to determine a reasonable assumption

1. Dimensions Guide - Hotel Room Size (June 2008) <http://www.dimensionsguide.com/hotel-room-size/>

G1. Estimating Water Using Devices

Hospitals

The District provided Jones Edmunds a shapefile of that has information about hospitals within Florida including the number of beds within each facility. The hospital shapefile was intersected with the property appraiser data to obtain the average beds per building square foot. It was assumed there was one bed per room. A reasonable assumption could not be determined for kitchen sinks.

Number of beds:

$$\frac{BuildingArea(SF)}{\left(\frac{0.0012406beds}{BuildingArea(SF)} \right)} = \# Beds \quad (Eq. A.3)$$

Number of rooms:

	1 bed = 1 room
Toilet	1 per room
Urinals	0.5 per room
Bathroom sinks	1 per room
Showers	1 per 15 people
Kitchen sink	Not calculated - unable to determine a reasonable assumption

G1. Estimating Water Using Devices

Office Buildings

The 2007 Florida Buildings Codes: Building proves the maximum floor area allowances per occupant in Table 1004.1.1 of Chapter 10. It was assumed the number of people at any office building was equal to the total building area divided by the allowable floor area per occupant as listed in the 2007 Florida Building Code: Building under business areas (Eq. A.5). The 2007 Florida Building Code: Plumbing lists the minimum number of required plumbing fixtures in Table 403.1 of Chapter 4 for businesses. A reasonable assumption could not be determined for kitchen sinks.

Number of people:

$$\frac{BuildingArea(SF)}{\left(\frac{100SF}{Person}\right)} = \# People \quad (Eq. A.4)$$

Toilet

2 per 25 people (up to the first 50 people)
add 2 per 50 people for remainder

Urinals

1 per 25 people (up to the first 50 people)
add 1 per 50 people for remainder

Bathroom sinks

1 sink per toilet

Showers

n/a

Kitchen sink

Not calculated - unable to determine a reasonable assumption

G1. Estimating Water Using Devices

Schools

The 2007 Florida Building Code: Building provides the maximum floor area allowances per occupant in Table 1004.1.1 of Chapter 10. It was assumed the number of people at any school was equal to the total building area divided by the allowable floor area per occupant as listed in the 2007 Florida Building Code: Building under shops and vocational room areas (Eq. A.6). The 2007 Florida Building Code: Plumbing lists the minimum number of required plumbing fixtures in Table 403.1 of Chapter 4 for educational facilities. It was assumed each school building contained one kitchen sink.

Number of people:

$$\frac{BuildingArea(SF)}{\left(\frac{50SF}{Person}\right)} = \# People \quad (Eq. A.5)$$

Toilets	2 per 50 people
Urinals	1 per 50 people
Bathroom sinks	1 sink per toilet
Showers	n/a
Kitchen sink	1 kitchen sinks

Restaurants

The estimated water using devices listed below for restaurants were assumed based on general knowledge.

Toilets	4 per parcel
Urinal	1 per parcel
Bathroom sinks	2 per parcel
Showers	1 per parcel
Kitchen Sink	1 per parcel

G1. Estimating Water Using Devices

Retail

The 2007 Florida Building Code: Building provides the maximum floor area allowances per occupant in Table 1004.1.1 of Chapter 10. It was assumed the number of people at any retail was equal to the total building area divided by the allowable floor area per occupant as listed in the 2007 Florida Building Code: Building under mercantile - basement and grade floor areas (Eq. A.7). The 2007 Florida Building Code: Plumbing lists the minimum number of required plumbing fixtures in Table 403.1 of Chapter 4 for mercantile facilities. It was assumed each retail building contained one kitchen sink.

Number of people:

$$\frac{\text{BuildingArea}(SF)}{\left(\frac{30SF}{\text{Person}}\right)} = \# \text{ People} \quad (\text{Eq. A.6})$$

Toilets	2 per 500 people
Urinals	1 per 500 people
Bathroom sinks	1 sink per toilet
Showers	n/a
Kitchen sink	1 kitchen sinks

G1. Estimating Water Using Devices

Indoor Recreation

The estimated water using devices listed below for indoor recreation were assumed based on general knowledge.

Toilets	4 per parcel
Urinal	1 per parcel
Bathroom sinks	2 per parcel
Showers	1 per parcel
Kitchen sink	1 per parcel

Outdoor Recreation

The estimated water using devices listed below for outdoor recreation were assumed based on general knowledge.

Toilets	4 per parcel
Urinal	1 per parcel
Bathroom sinks	2 per parcel

G1. Estimating Water Using Devices

Auto and Repair

The estimated water using devices listed below for auto and repair facilities were assumed based on general knowledge.

Toilets	4 per parcel
Urinal	1 per parcel
Bathroom sinks	3 per parcel
Showers	1 per parcel
Kitchen sink	1 per parcel

Warehouses

The 2007 Florida Building Code: Building provides the maximum floor area allowances per occupant in Table 1004.1.1 of Chapter 10. It was assumed the number of people at any warehouse facility was equal to the total building area divided by the allowable floor area per occupant as listed in the 2007 Florida Building Code: Building for storage, stock, and shipping areas (Eq. A.9). The 2007 Florida Building Code: Plumbing lists the minimum number of required plumbing fixtures in Table 403.1 of Chapter 4. It was assumed warehouses require the same fixture counts as storage facilities listed in the 2007 Florida Building Code: Plumbing.

Number of people:

$$\frac{BuildingArea(SF)}{\left(\frac{300SF}{Person}\right)} = \# People \quad \text{(Eq. A.7)}$$

Toilets	2 per 100 people
Urinals	1 per 100 people
Bathroom sinks	1 sink per toilet
Showers	0
Kitchen sink	1 kitchen sinks

G1. Estimating Water Using Devices

Manufacturing

It is assumed manufacturing facilities have similar counts of water using devices as warehouses.
Please see the Warehouses section for the methodologies and assumptions applied to Manufacturing.

Miscellaneous

The miscellaneous category is highly variable in the types of facilities and their corresponding end water uses.
Fixture counts were not estimated for parcels within this category.

Negligible Amount of Fixtures

Vacant or Undefined
Easements
Non-agricultural
Centrally assessed

Categories Outside of Scope of Pilot Study (Agricultural)

Cropland
Timberland
Grazing land
Orchard/Citrus Groves
Cattle
Miscellaneous Agricultural

APPENDIX H

GRU ANALYSIS PACKAGE

Appendix H

Gainesville Regional Utilities

- A. Account Level Screening
- B. Benchmarks Per Residential Category and Build-out Condition for Accounts with No Seasonal Behavior
- C. Benchmarks per Residential Category and Build-out Condition for All Accounts
- D. Benchmarks per Non-Residential Category and Build-out Condition for All Accounts
- E. Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use
- F. Percentage of Accounts Likely using an In-Ground Irrigation System connected to the Public Water Supply
- G. Analysis of Accounts with Irrigation Meters
- H. Bill Frequency Analysis
- I. Cost Effective Water Conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 year Planning Horizon
- J. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon
- K. Residential and Commercial BMP Conservation Practices with a 1 year Implementation Period sorted by Program Water Savings
- L. Efficient Water Use Benchmarks
- M. GIS Maps Illustrating the Geographic Distribution of the Top Water Use Categories within the Service Area Boundary

N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year
Planning Horizon Period for a 1 year Program Implementation Period

A. Account Level Data Screening to Generate Benchmarks for Single Family Accounts

Background:

Account level water consumption data is complex, variable and unique to each utility. Joining the account water consumption data with District population and property appraiser geospatial data results in inconsistencies and anomalies that need to be recognized, evaluated and cleaned in order to generate meaningful water consumption benchmarks and statistics. The following summarizes the analysis performed to calculate water consumption benchmarks and statistics.

Analysis	Reason for Step in Analysis	Utility Specific Notes
Initial screens		
Screen Accounts with no total consumption	Removes accounts with no consumption over period of analysis less than 15,000 gallons total water use.	NA
Screen Accounts with population less than one	Removes accounts with population less than one person to avoid overestimating per capita use	NA
Screen by Department of Revenue Code	Isolate account that are single family in account billing records and property appraisal database	NA
Isolate period of analysis for each utility	Look at aggregate billing data anomalies to find abnormal consumption trends: abnormally low, low/high switching, abnormally high.	Palm Coast- Jan'08 was dropped, SJUD does not include Nov,Dec-'09, Palm Bay does not in Oct, Nov, Dec-09. Leesburg November data was consider for removal due to numerous skipped reads.
Evaluate accounts with no seasonal or transient behavior		
Screen for Year Built	Capture accounts with water consumption for three build out conditions	
Capture accounts that have min month above min threshold	Develop a clean data set to compare against industry benchmarks for occupied homes and develop an understanding for indoor/outdoor use characteristics. Use this dataset to run tests and to check quality of analyses on large accounts dataset that include accounts with transient behavior.	Minimum threshold developed for each utility as the average population per account multiplied by the min indoor usage of 60 gallons per person per day.
Evaluate all accounts		
Separate transient accounts from accounts with anomalously low consumption	If account has less than 15,000 gallons of consumption for period of analysis it is exclude from analysis. There are accounts with population, but look to be vacated over the period of the analysis.	This analysis keeps accounts that average at least 1000 gallons per month. There are many account in Palm Bay and Palm Coast that have low and continuous consumption between 1000 and 3000 gallons per month.
Assign indoor use to transient accounts that have minimum month of zero.	For accounts with a min month of zero, the min month hydrograph separation will assign all water consumption as outdoor. For accounts with min month equaling zero and consumption in other months, indoor consumption in months with consumption is set to the average consumption for the period.	This has the tendency to over predict indoor consumption in transient accounts. But checks against clean datasets are within reason.
Screen for minimum irrigable area	Used in calculating outdoor benchmarks and to avoid small denominators from benchmark calculations (Subtracting house area from parcel area can lead to small or negative numbers).	

B. GRU - Benchmarks Per Residential Category and Build Out Condition for Accounts with No Seasonal Behavior

Res Class	Build Out Condition	Population	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)
RS1	Pre 1984	2,584	39.69	54.14	93.83
	1984 - 1993	290	44.45	61.53	105.98
	1994 to Present	72	37.05	47.71	84.76
RS2	Pre 1984	2,813	50.67	57.15	107.82
	1984 - 1993	1,001	54.91	67.32	122.23
	1994 to Present	266	55.33	63.99	119.33
RS3	Pre 1984	2,794	52.15	54.46	106.61
	1984 - 1993	1,103	64.23	68.23	132.46
	1994 to Present	863	72.93	67.81	140.74
RS4	Pre 1984	1,268	73.88	64.41	138.30
	1984 - 1993	1,115	98.46	70.87	169.33
	1994 to Present	1,112	101.39	74.99	176.38
RS5	Pre 1984	623	94.50	67.62	162.12
	1984 - 1993	862	135.21	81.59	216.80
	1994 to Present	1,336	127.46	85.25	212.71

C. GRU - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Number of Records	Avg Yr Built	Average Monthly Average (gal/month)	Average Monthly Max (gal/month)	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)	StdDev of Per Capita Total (gpcd)
RS1	Pre 1984	6,138	1973	5,077	13,063	20.61	36.42	57.03	40.79
	1984 - 1993	701	1986	4,661	10,991	26.29	40.00	66.29	47.88
	1994 to Present	114	1999	5,719	13,816	25.26	50.76	76.02	51.12
RS2	Pre 1984	5,340	1975	5,724	14,726	28.14	37.54	65.67	47.34
	1984 - 1993	1,533	1988	6,032	14,898	40.00	44.87	84.87	54.06
	1994 to Present	544	2000	5,831	13,943	32.50	44.42	76.91	49.83
RS3	Pre 1984	4,188	1976	6,457	16,931	35.48	40.03	75.51	51.89
	1984 - 1993	1,872	1989	6,713	17,246	46.13	46.27	92.41	58.38
	1994 to Present	1,368	1999	7,468	18,799	56.40	46.44	102.85	62.82
RS4	Pre 1984	1,653	1975	7,754	20,629	46.00	46.23	92.23	68.89
	1984 - 1993	1,264	1989	9,325	24,953	73.25	54.11	127.36	79.00
	1994 to Present	1,536	1999	9,035	22,447	73.25	56.35	129.60	79.04
RS5	Pre 1984	636	1974	9,662	27,238	63.68	51.51	115.19	93.90
	1984 - 1993	743	1990	12,862	34,545	113.32	69.93	183.25	122.88
	1994 to Present	1,483	2001	10,979	28,675	97.71	64.54	162.25	124.66
HD	Pre 1984	1,566	1976	14,504	27,785	- *	- *	40.80	76.84
	1984 - 1993	348	1986	19,732	38,733	- *	- *	51.56	63.05
	1994 to Present	91	2000	46,068	76,440	- *	- *	23.77	85.18

* Multi family water use was assumed to be used primarily indoors.

GRU - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)	StdDev of Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	11,932	1,518	1,217.10	0.076	0.094	0.006	0.011	0.019	0.015
	1984 - 1993	10,857	1,453	1,117.53	0.069	0.085	0.009	0.019	0.024	0.019
	1994 to Present	20,466	1,381	1,227.61	0.090	0.100	0.009	0.016	0.021	0.015
RS2	Pre 1984	15,316	1,979	1,529.55	0.060	0.077	0.006	0.010	0.015	0.011
	1984 - 1993	11,047	1,935	1,442.32	0.056	0.074	0.010	0.020	0.023	0.016
	1994 to Present	8,537	1,771	1,358.88	0.065	0.084	0.012	0.030	0.030	0.020
RS3	Pre 1984	19,405	2,364	1,813.20	0.051	0.066	0.007	0.012	0.015	0.011
	1984 - 1993	14,070	2,277	1,698.65	0.050	0.067	0.010	0.018	0.020	0.013
	1994 to Present	9,650	2,221	1,643.96	0.051	0.069	0.015	0.034	0.029	0.017
RS4	Pre 1984	27,033	2,929	2,257.18	0.046	0.059	0.007	0.012	0.014	0.011
	1984 - 1993	21,970	2,961	2,203.09	0.045	0.061	0.010	0.019	0.019	0.013
	1994 to Present	12,253	2,649	1,952.61	0.050	0.068	0.017	0.034	0.030	0.019
RS5	Pre 1984	49,381	4,034	3,123.86	0.038	0.048	0.007	0.012	0.013	0.012
	1984 - 1993	42,654	4,202	3,079.92	0.041	0.055	0.010	0.017	0.016	0.012
	1994 to Present	29,398	4,228	3,139.46	0.038	0.051	0.012	0.026	0.021	0.019
HD	Pre 1984	30,808	9,492	8,556.40	0.050	0.056	- *	- *	0.022	0.025
	1984 - 1993	113,799	34,933	30,370.99	0.019	0.021	- *	- *	0.026	0.024
	1994 to Present	533,593	169,073	145,046.44	0.009	0.010	- *	- *	0.013	0.049

* Multi family water use was assumed to be used primarily indoors.

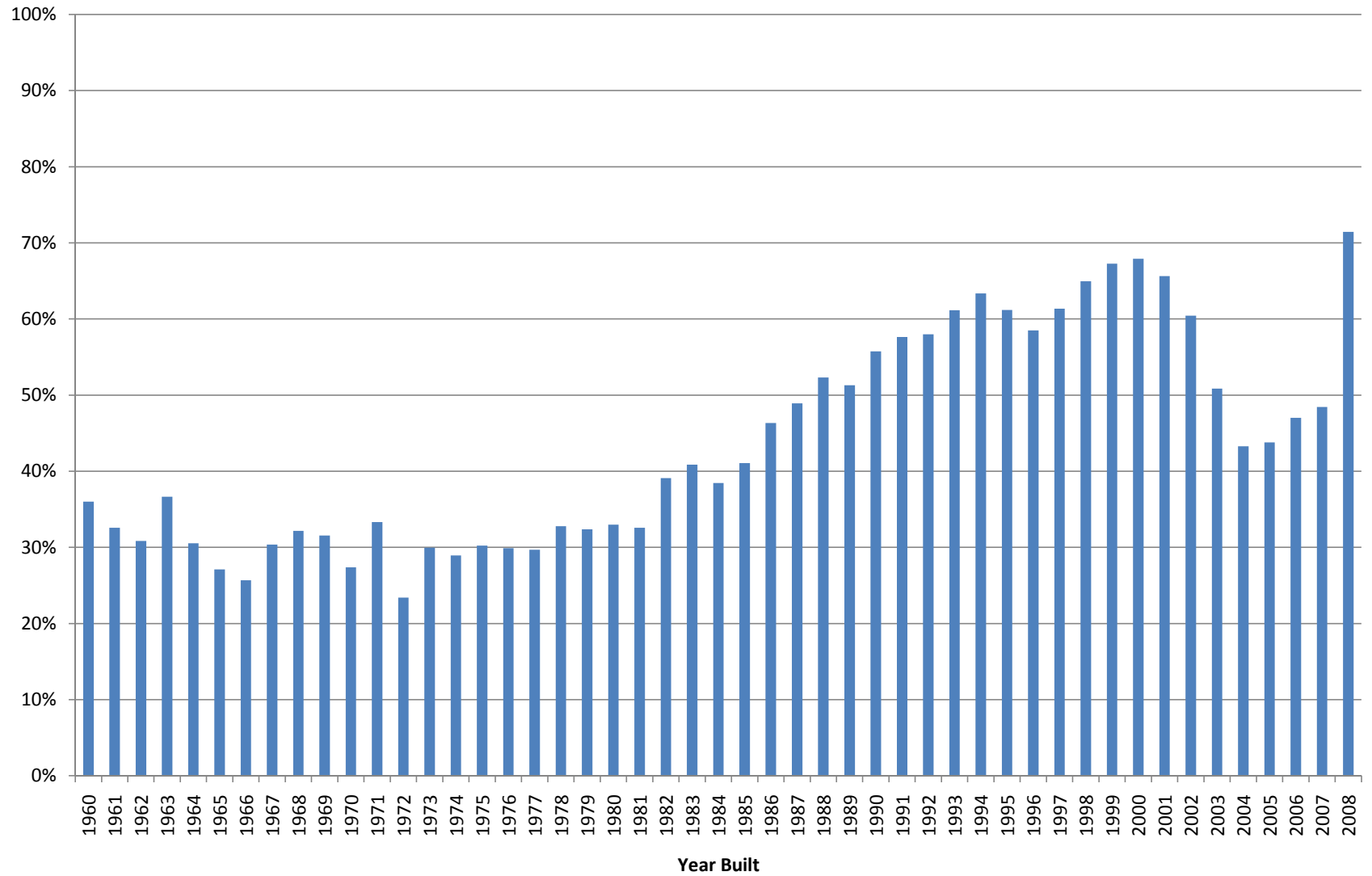
D. GRU - Benchmarks Per Non-Residential Category and Build Out Condition for All Accounts

	Build Out Condition	Number of Records	Avg Yr Built	Avg Use Per Account (gpd)	Average Max Use (gpd)	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)	Stdev WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	108	1972	397	1,020	517,484	10,563	9,161	0.09	0.12	0.02	0.06
	1984 - 1993	44	1987	471	1,328	63,549	8,616	6,879	0.09	0.10	0.01	0.02
	1994 to Present	38	1999	894	2,533	90,304	10,453	8,918	0.22	0.28	0.02	0.04
HOTELS	Pre 1984	17	1970	5,130	9,678	101,706	38,679	30,277	0.16	0.21	0.06	0.05
	1984 - 1993	9	1987	6,635	12,288	140,153	54,911	41,721	0.13	0.17	0.05	0.02
	1994 to Present	9	2000	6,154	9,192	111,345	64,024	59,989	0.11	0.11	0.06	0.02
INDOOR RECREATION	Pre 1984	113	1966	394	1,258	102,831	10,004	8,922	0.06	0.06	0.01	0.02
	1984 - 1993	50	1988	658	1,877	166,396	16,855	15,165	0.06	0.06	0.01	0.03
	1994 to Present	31	2000	934	2,622	585,734	25,429	23,362	0.06	0.06	0.01	0.02
MANUFACTURING	Pre 1984	39	1971	1,814	4,478	227,453	21,379	20,183	0.08	0.10	0.01	0.01
	1984 - 1993	17	1987	756	1,789	106,717	33,180	29,669	0.06	0.07	0.01	0.01
	1994 to Present	8	1999	1,345	5,040	180,396	32,544	32,138	0.05	0.05	0.01	0.02
OFFICE BUILDINGS	Pre 1984	325	1973	1,045	2,628	385,541	17,385	16,521	0.09	0.10	0.02	0.05
	1984 - 1993	249	1988	1,526	5,721	561,394	14,878	13,218	0.11	0.14	0.03	0.07
	1994 to Present	149	1999	997	2,133	70,628	15,458	14,335	0.09	0.11	0.03	0.05
RESTAURANTS	Pre 1984	64	1968	1,120	2,568	21,361	4,758	3,834	0.30	0.38	0.08	0.09
	1984 - 1993	44	1988	1,484	2,709	34,608	3,910	3,522	0.46	0.54	0.06	0.05
	1994 to Present	39	1999	1,658	2,969	43,591	5,177	4,334	0.37	0.44	0.06	0.10
RETAIL	Pre 1984	179	1971	383	923	42,317	10,952	8,964	0.06	0.08	0.02	0.09
	1984 - 1993	80	1988	697	1,488	186,707	47,796	41,952	0.06	0.06	0.03	0.16
	1994 to Present	56	2000	1,040	3,198	157,646	37,555	32,460	0.05	0.06	0.01	0.02
SCHOOLS	Pre 1984	37	1970	510	1,630	210,283	22,482	21,698	0.09	0.10	0.01	0.02
	1984 - 1993	47	1988	2,022	5,173	824,583	15,484	13,307	0.16	0.19	0.01	0.02
	1994 to Present	11	1999	602	1,173	161,273	22,567	21,899	0.04	0.05	0.01	0.01
VACANT OR UNDEFINED	Pre 1984	9	1978	469	1,374	235,325	5,116	3,321	0.20	0.62	0.00	0.01
	1984 - 1993	143	1987	729	2,130	182,860	3,074	2,306	0.67	2.03	0.03	0.10
	1994 to Present	13	2002	1,007	2,994	216,760	4,596	3,553	0.28	0.52	0.02	0.03
WAREHOUSES/STORAGE	Pre 1984	156	1974	262	925	56,389	12,076	11,320	0.03	0.04	0.01	0.01
	1984 - 1993	56	1988	806	2,143	175,623	21,442	20,698	0.09	0.09	0.03	0.11
	1994 to Present	50	1999	571	1,469	131,053	20,945	19,887	0.11	0.12	0.01	0.02

E. GRU - Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use

Res Class	Build Out Condition	% of Homes with Irrigation Systems	% of Outdoor Water used by Irrigation Systems
RS1	Pre 1984	21%	84%
	1984 - 1993	24%	75%
	1994 to Present	32%	80%
RS2	Pre 1984	28%	89%
	1984 - 1993	39%	84%
	1994 to Present	34%	85%
RS3	Pre 1984	37%	91%
	1984 - 1993	47%	89%
	1994 to Present	57%	94%
RS4	Pre 1984	49%	94%
	1984 - 1993	68%	96%
	1994 to Present	67%	96%
RS5	Pre 1984	59%	97%
	1984 - 1993	82%	98%
	1994 to Present	68%	96%

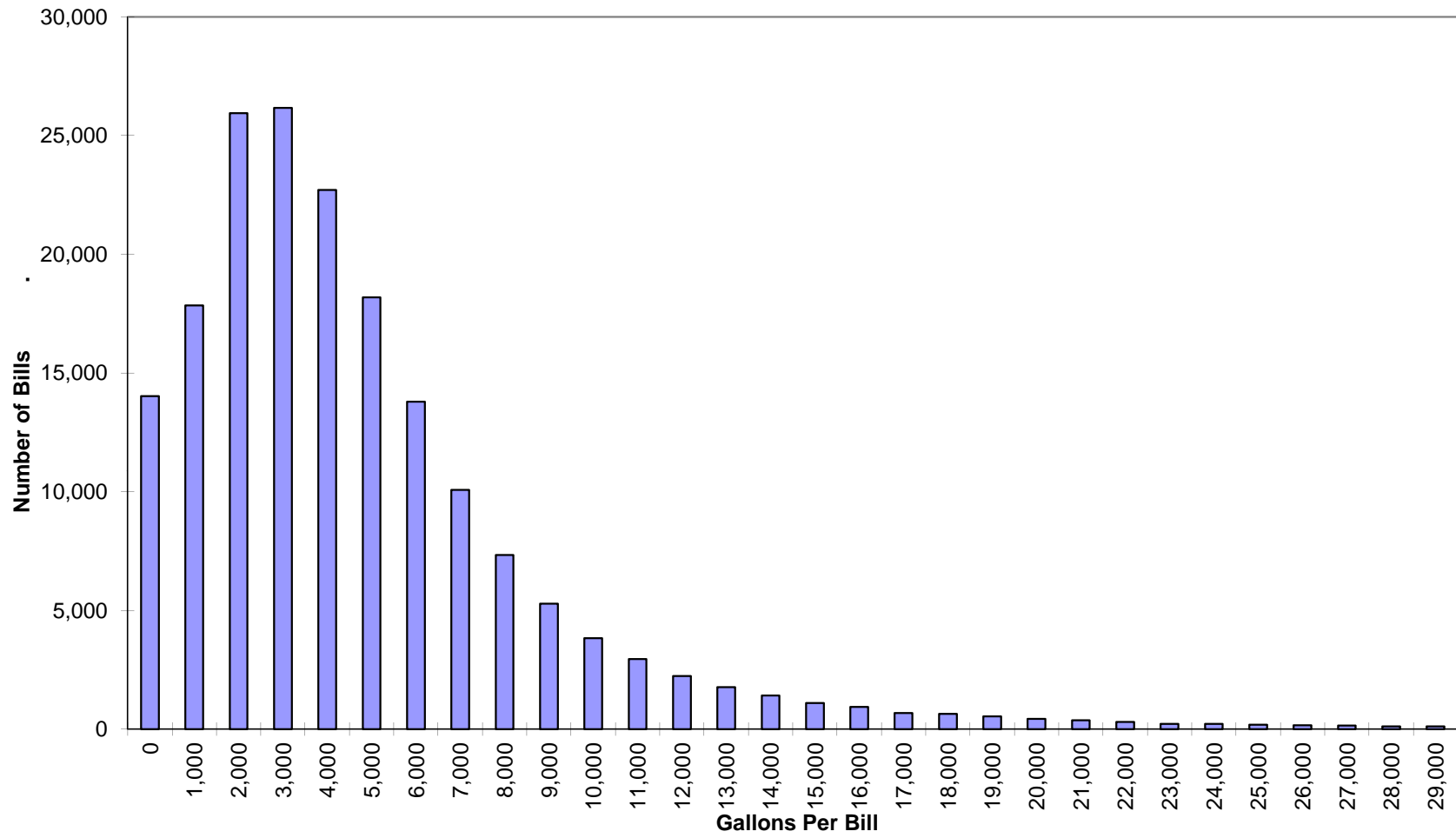
F. Percentage of Accounts in GRU Likely using an In-Ground Irrigation System connected to the Public Water Supply



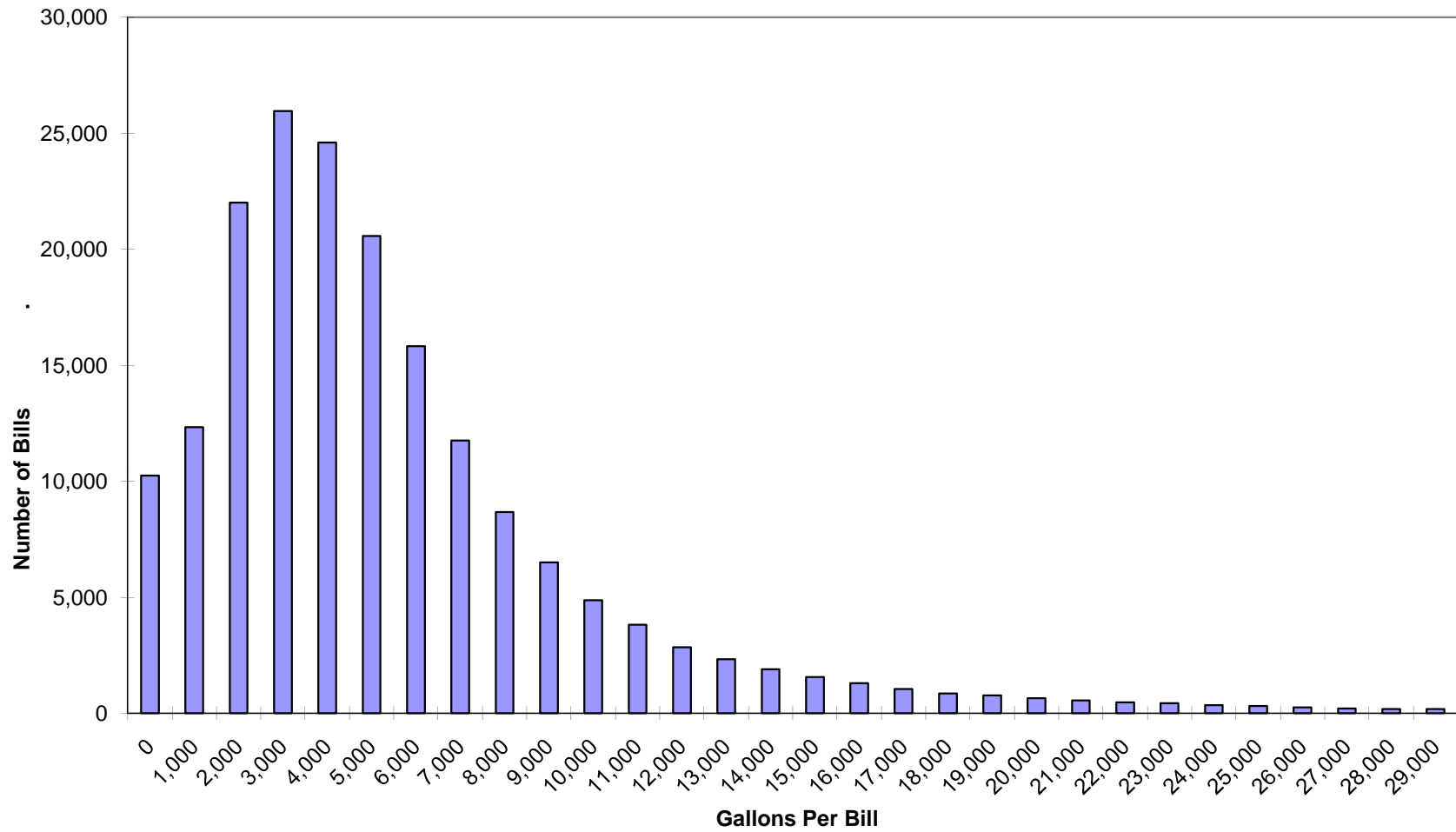
G. GRU Accounts with Irrigation Meters

Res Class	Build Out Condition	Population 2010	Indoor Per Capita with Irrigation Meters (gpcd)	Indoor Per Capita w/o Irrigation Meters (gpcd)	Population 2010	Outdoor Per Capita with Irrigation Meters (gpcd)	Outdoor Per Capita w/o Irrigation Meters (gpcd)
RS1	Pre 1984	93	38.04	36.42	93	68.46	20.61
	1984 - 1993	5	34.25	40.00	7	111.57	26.29
RS2	Pre 1984	169	44.81	37.54	169	87.55	28.14
	1984 - 1993	30	52.47	44.87	30	89.40	40.00
	1994 to Present	17	49.15	44.42	17	37.86	32.50
RS3	Pre 1984	233	51.81	40.03	233	97.35	35.48
	1984 - 1993	100	54.81	46.27	100	106.21	46.13
	1994 to Present	219	51.53	46.44	215	93.09	56.40
RS4	Pre 1984	198	61.77	46.23	198	85.45	46.00
	1984 - 1993	271	70.49	54.11	269	99.90	73.25
	1994 to Present	390	63.45	56.35	385	105.84	73.25
RS5	Pre 1984	666	25.44	51.51	231	69.94	63.68
	1984 - 1993	856	56.48	69.93	311	169.20	113.32
	1994 to Present	1,812	53.99	64.54	910	179.29	97.71

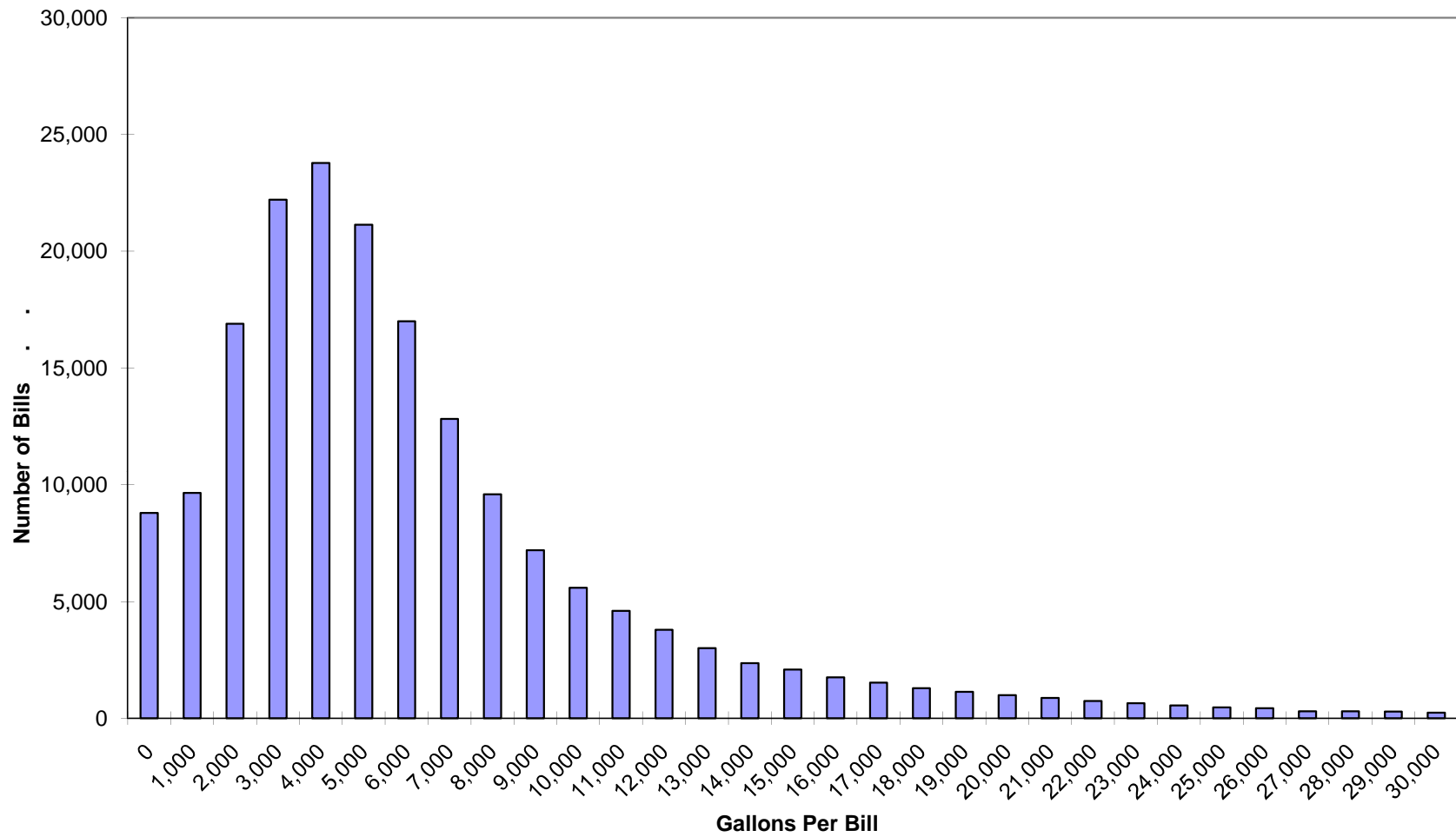
H. GRU Bill Frequency Analysis - RS1 (January 2008 to December 2009)



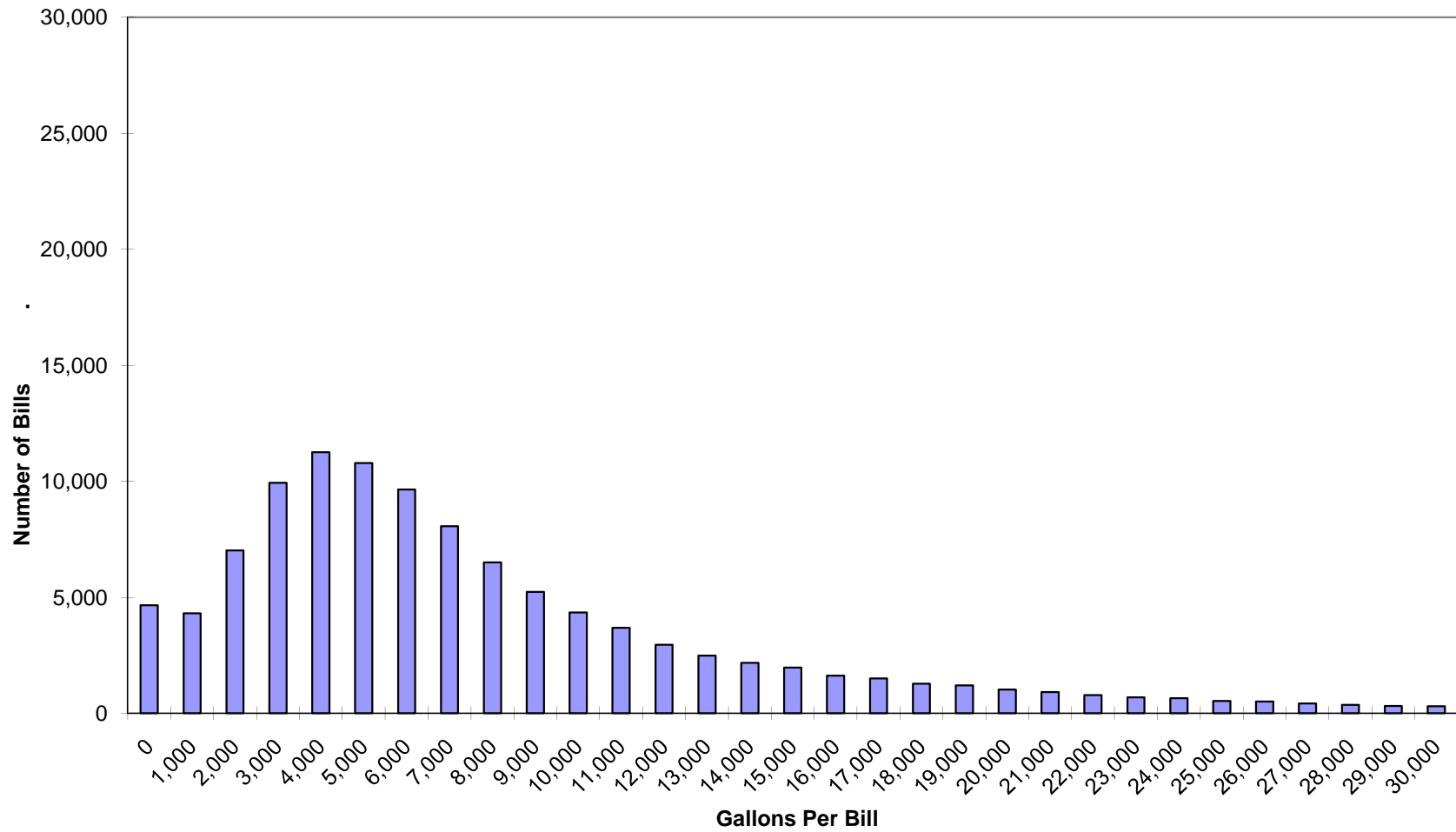
GRU Bill Frequency Analysis - RS2 (January 2008 to December 2009)



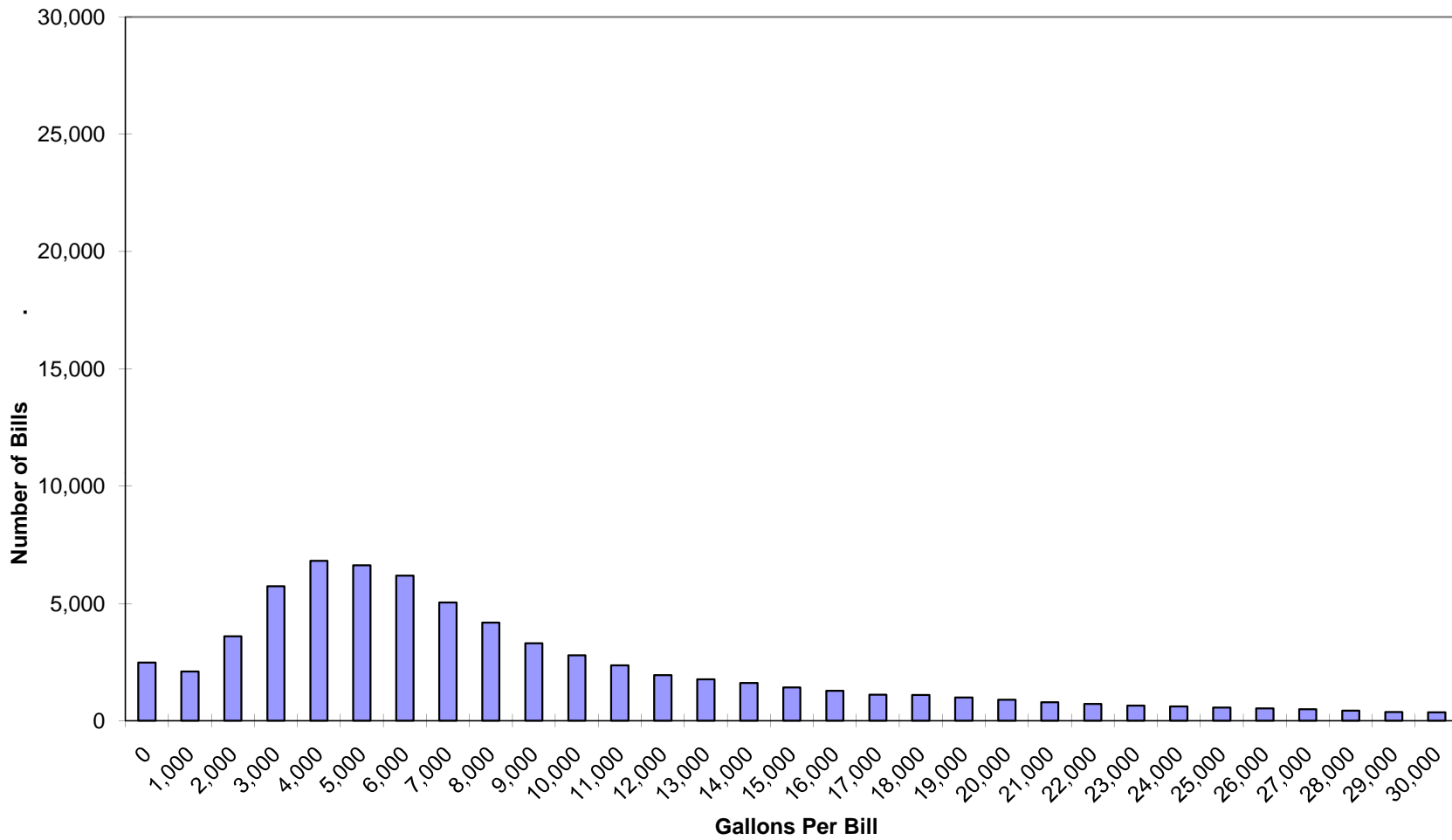
GRU Bill Frequency Analysis - RS3 (January 2008 to December 2009)



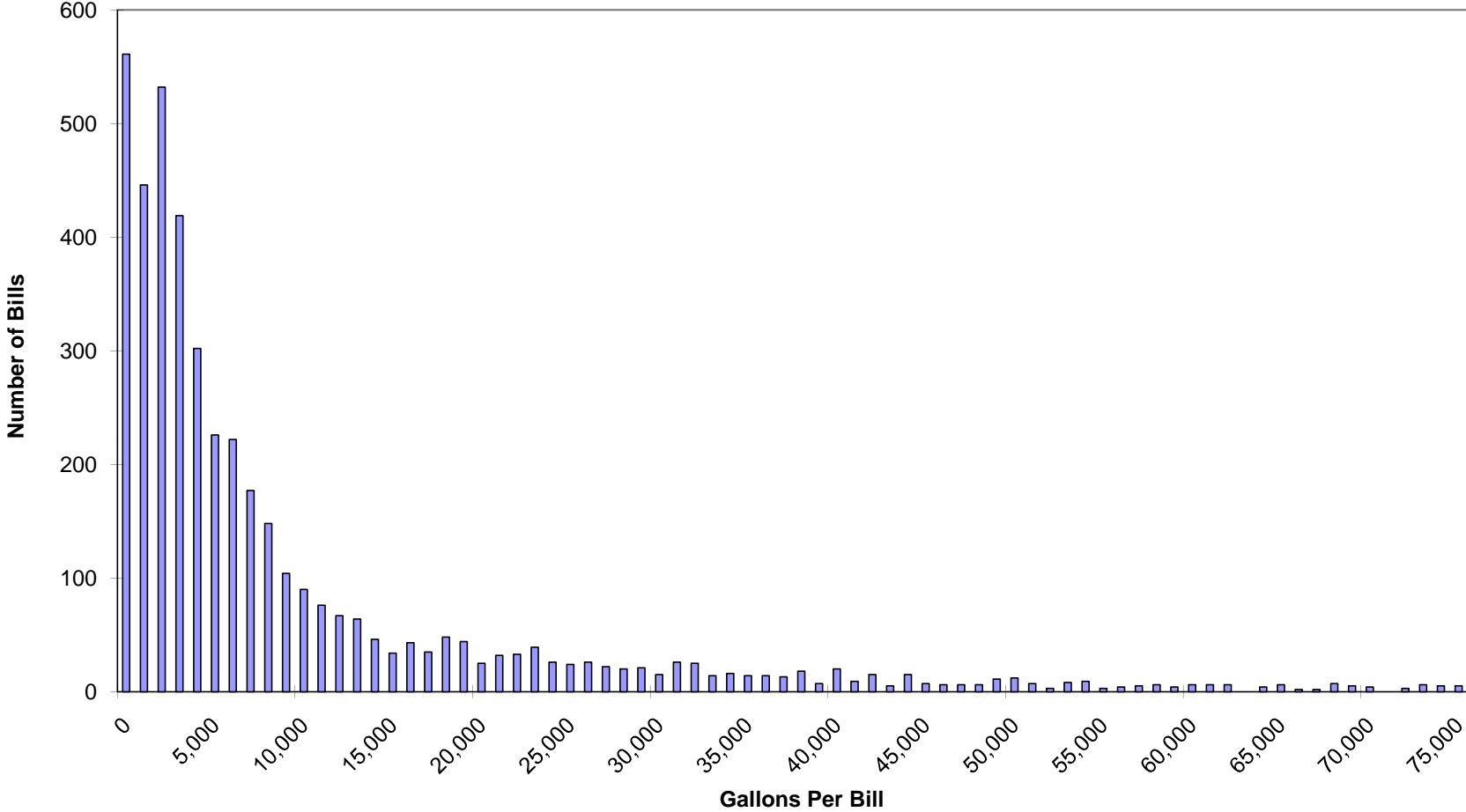
GRU Bill Frequency Analysis - RS4 (January 2008 to December 2009)



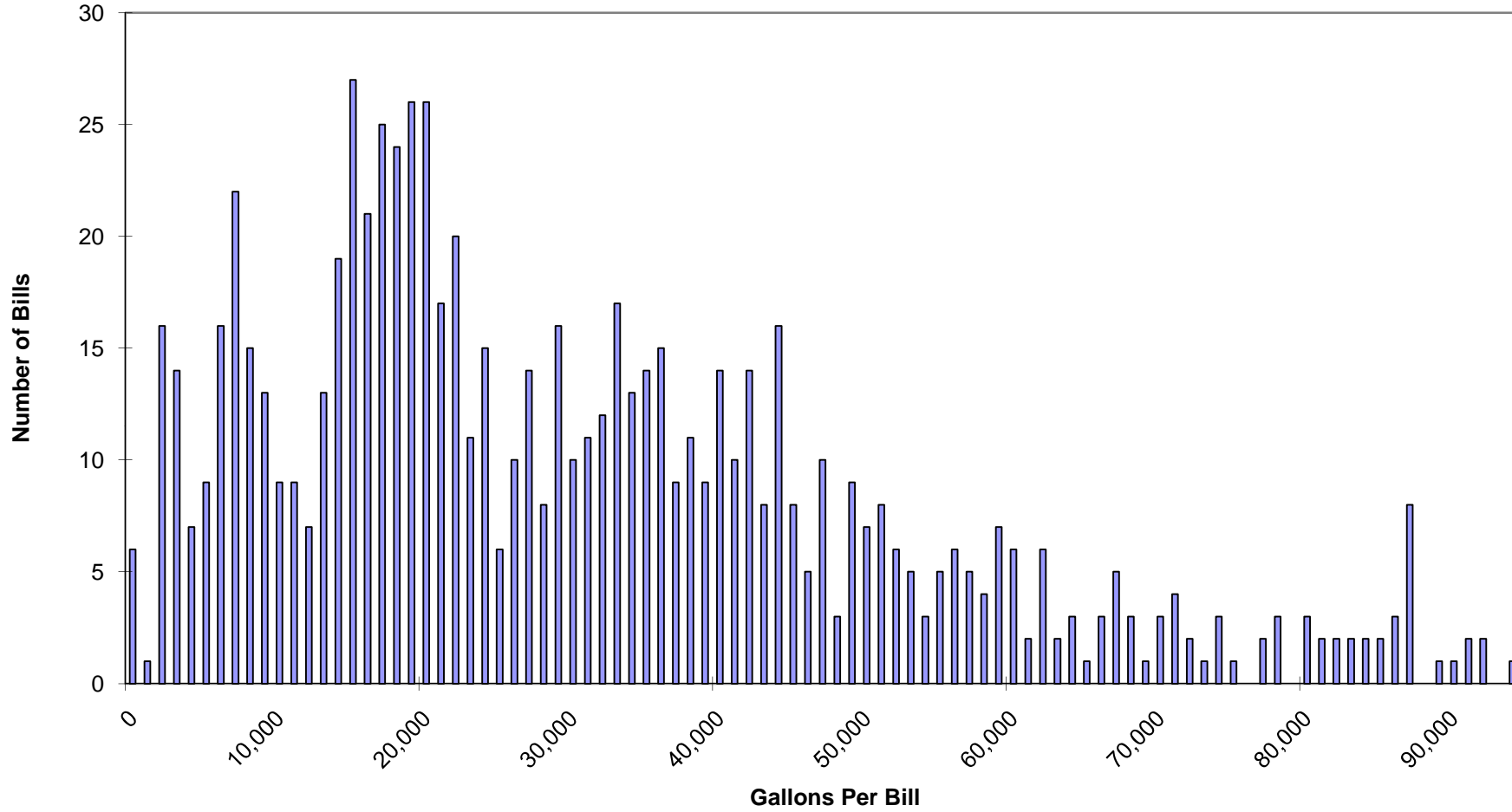
GRU Bill Frequency Analysis - RS5 (January 2008 to December 2009)



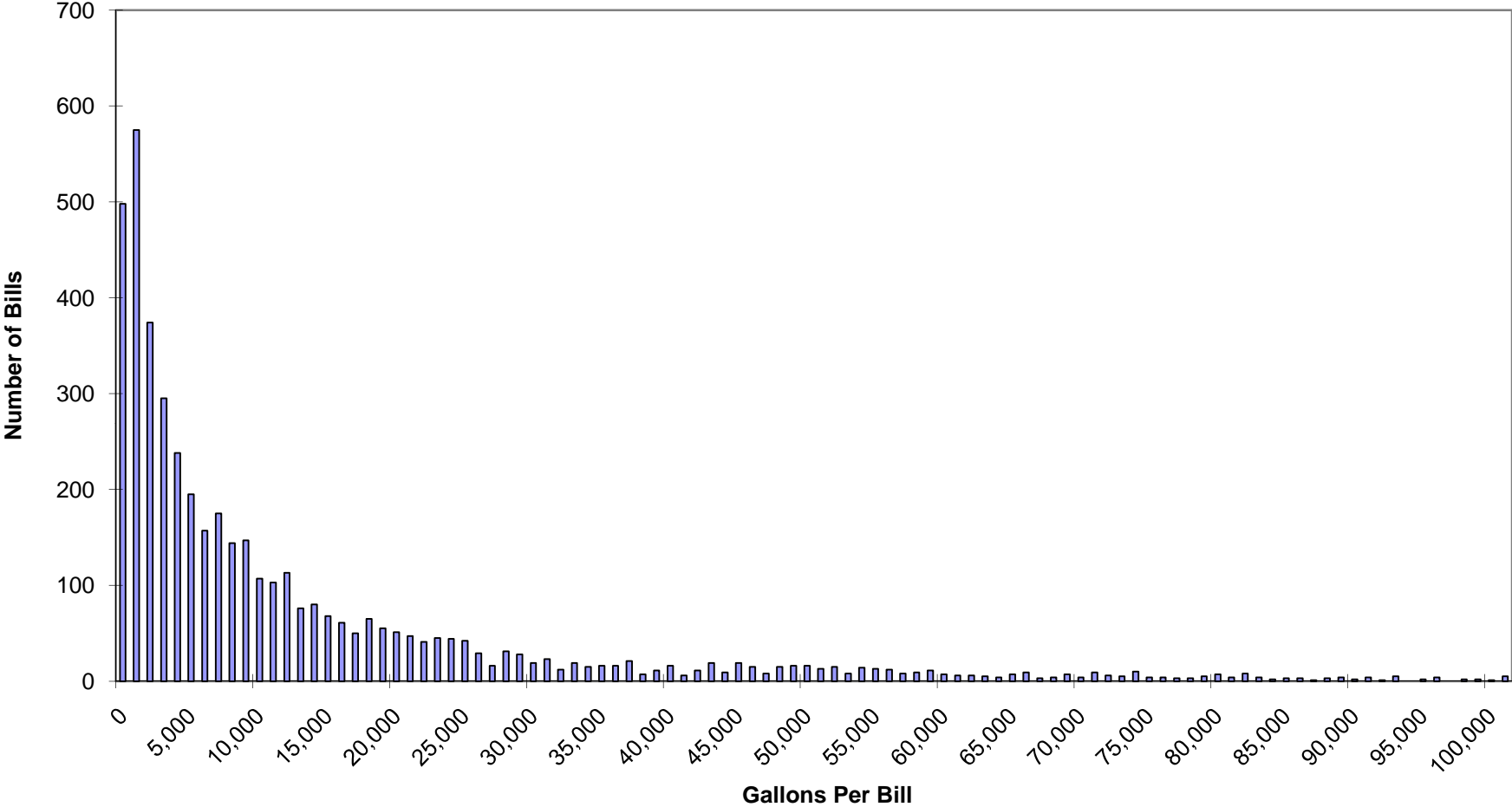
**GRU Bill Frequency Analysis - AUTO & REPAIR
(January 2008 to December 2009)**



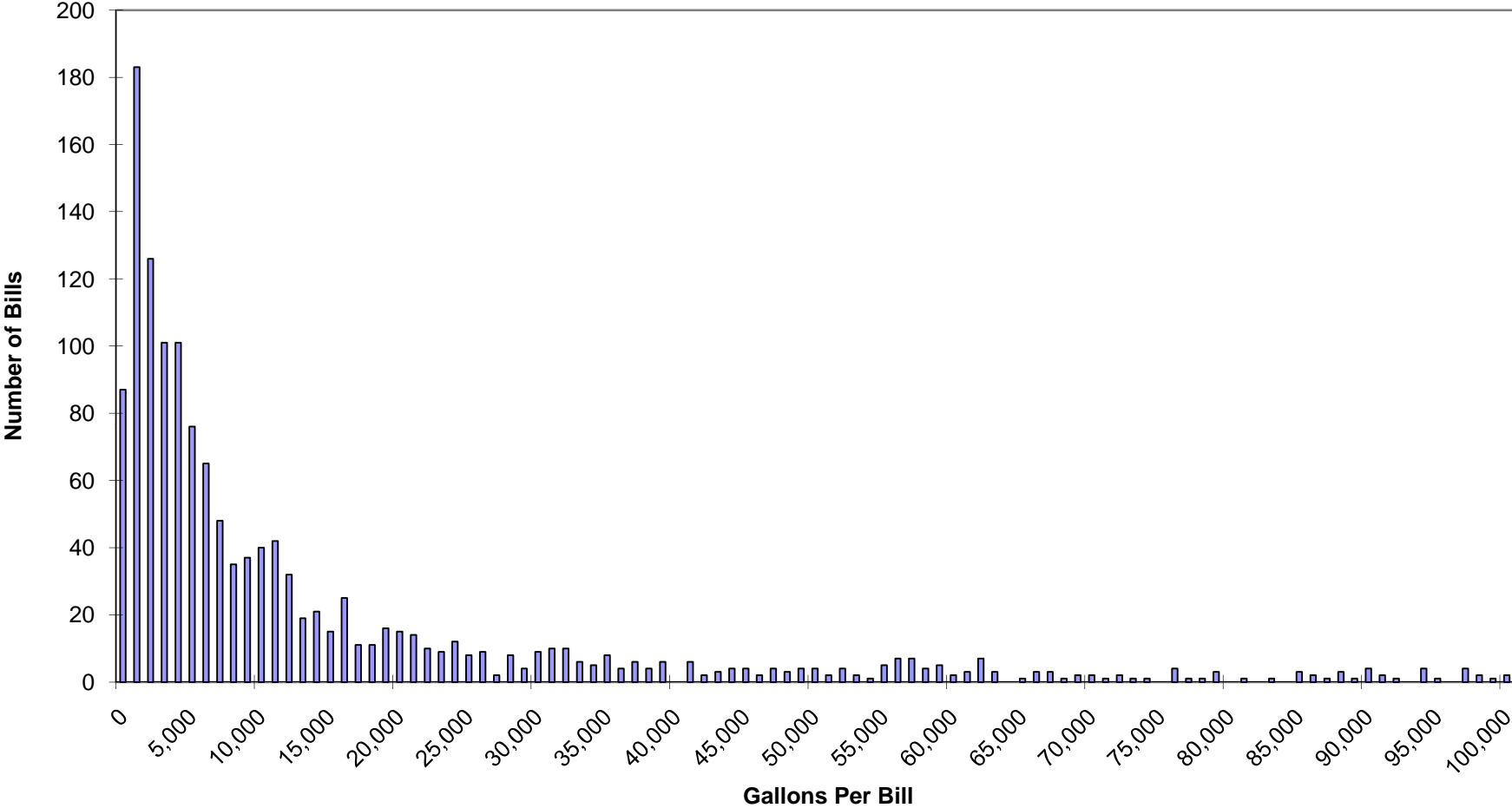
GRU Bill Frequency Analysis - HOTELS
(January 2008 to December 2009)



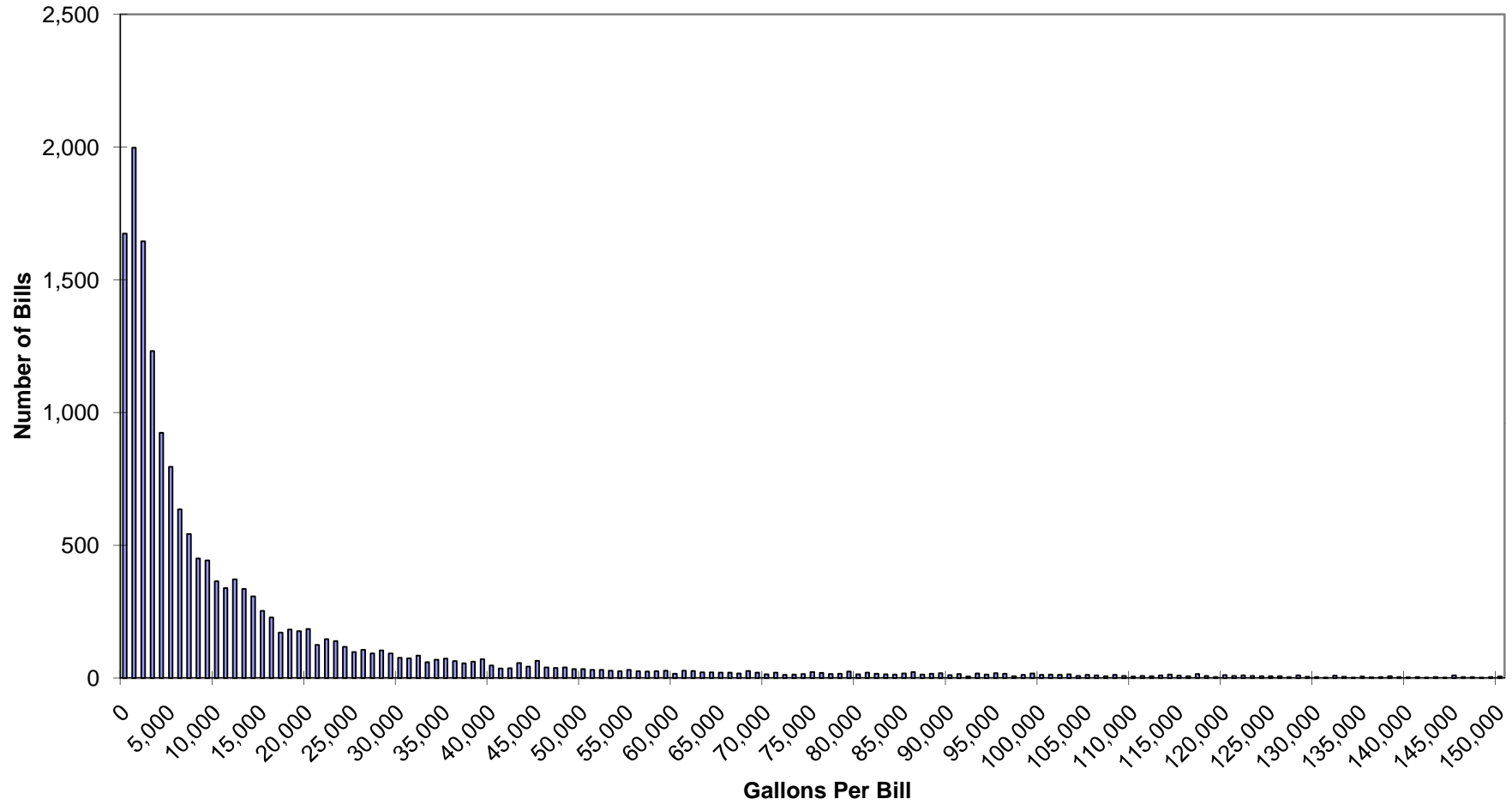
**GRU Bill Frequency Analysis - INDOOR RECREATION
(January 2008 to December 2009)**



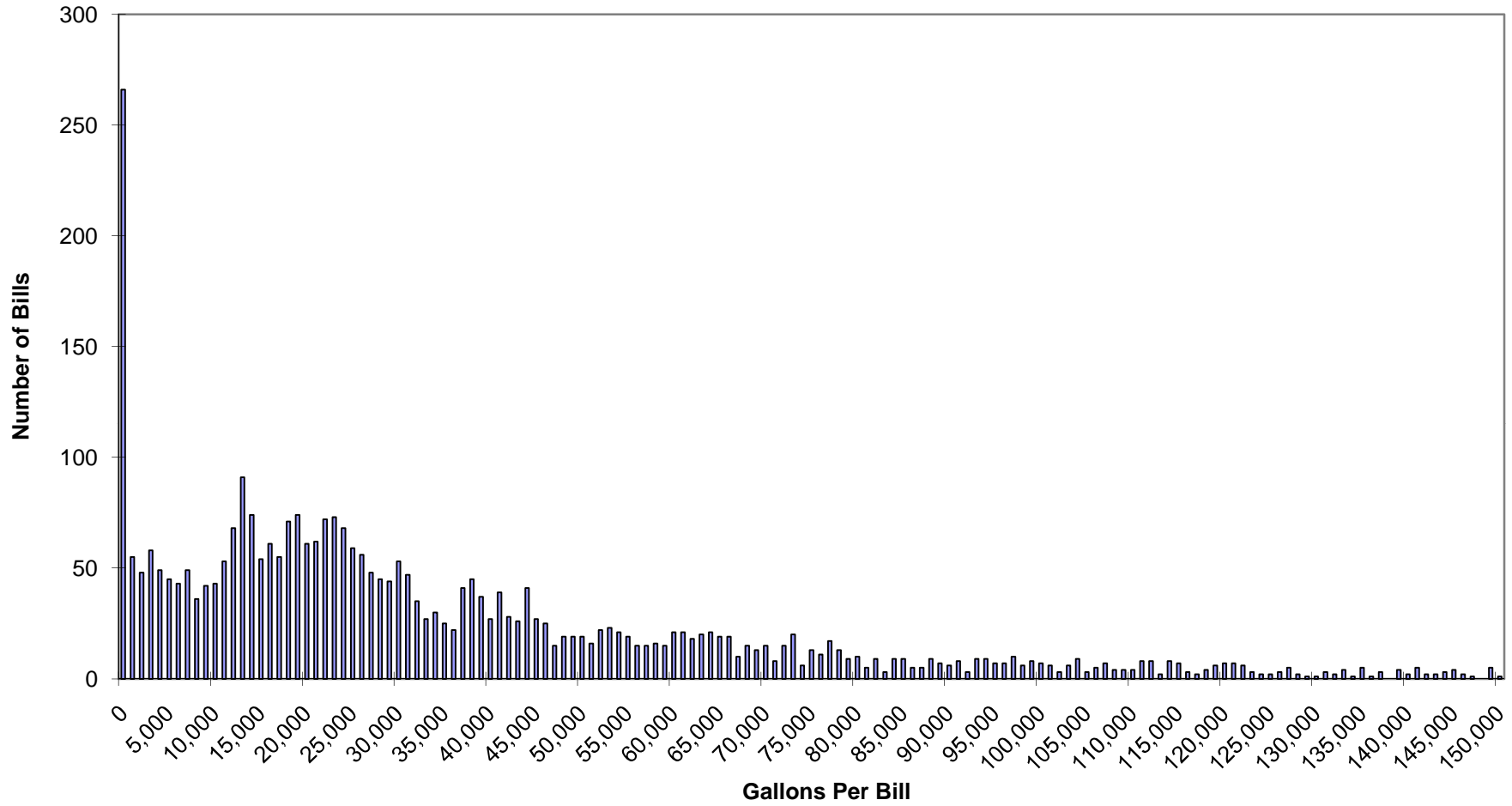
GRU Bill Frequency Analysis - MANUFACTURING
(January 2008 to December 2009)



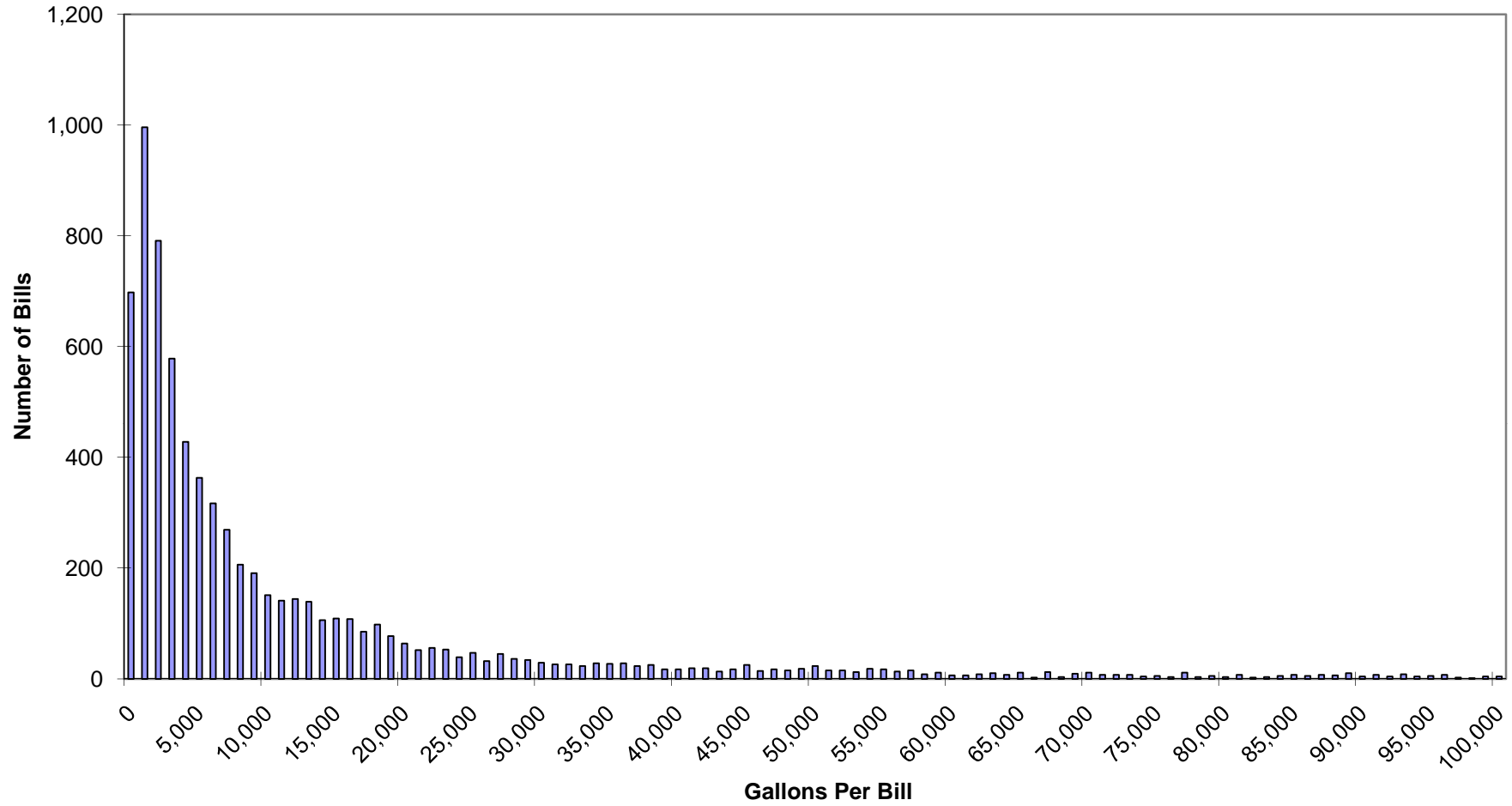
GRU Bill Frequency Analysis - OFFICE BUILDINGS (January 2008 to December 2009)



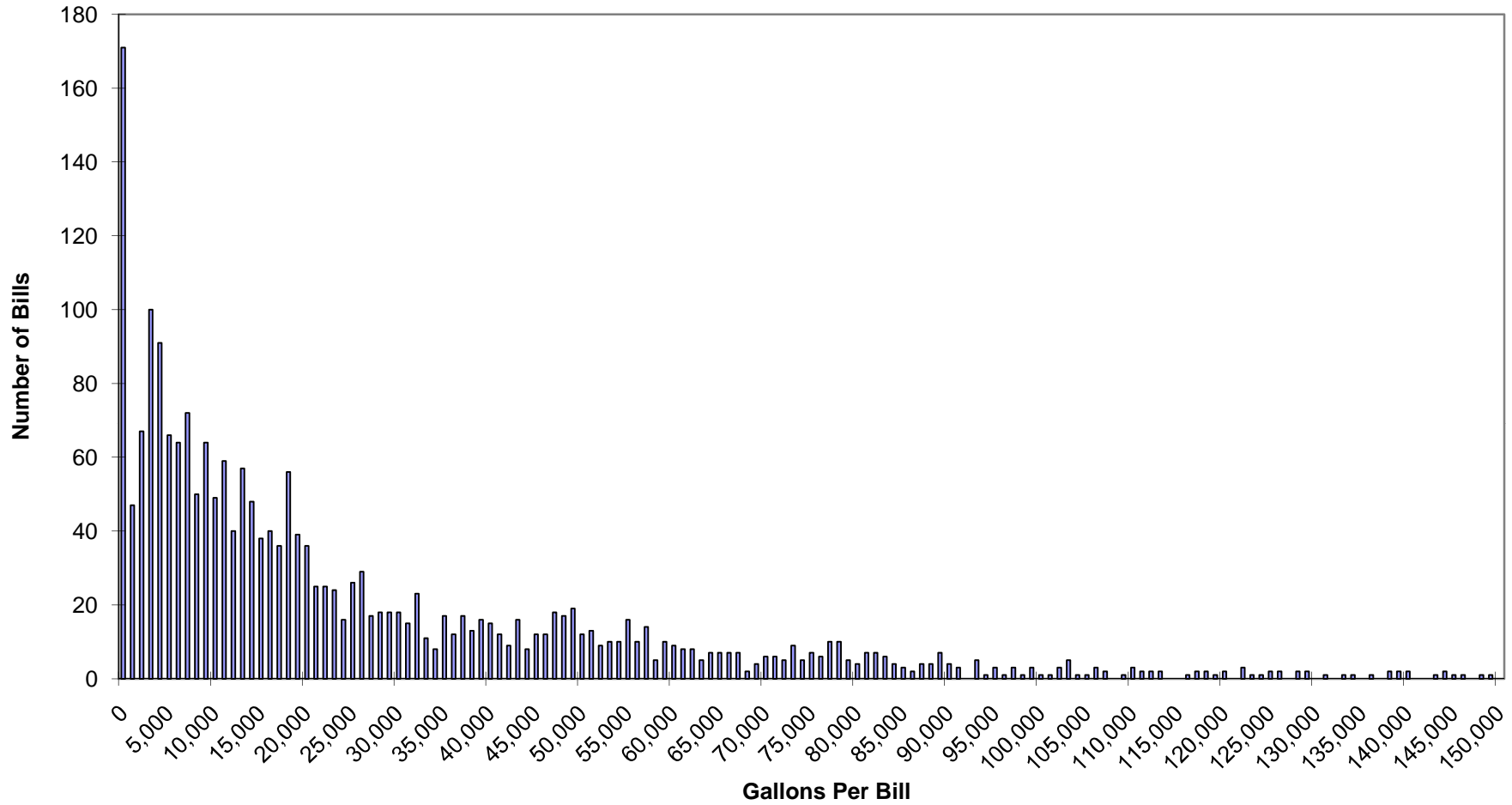
GRU Bill Frequency Analysis - RESTAURANTS
(January 2008 to December 2009)



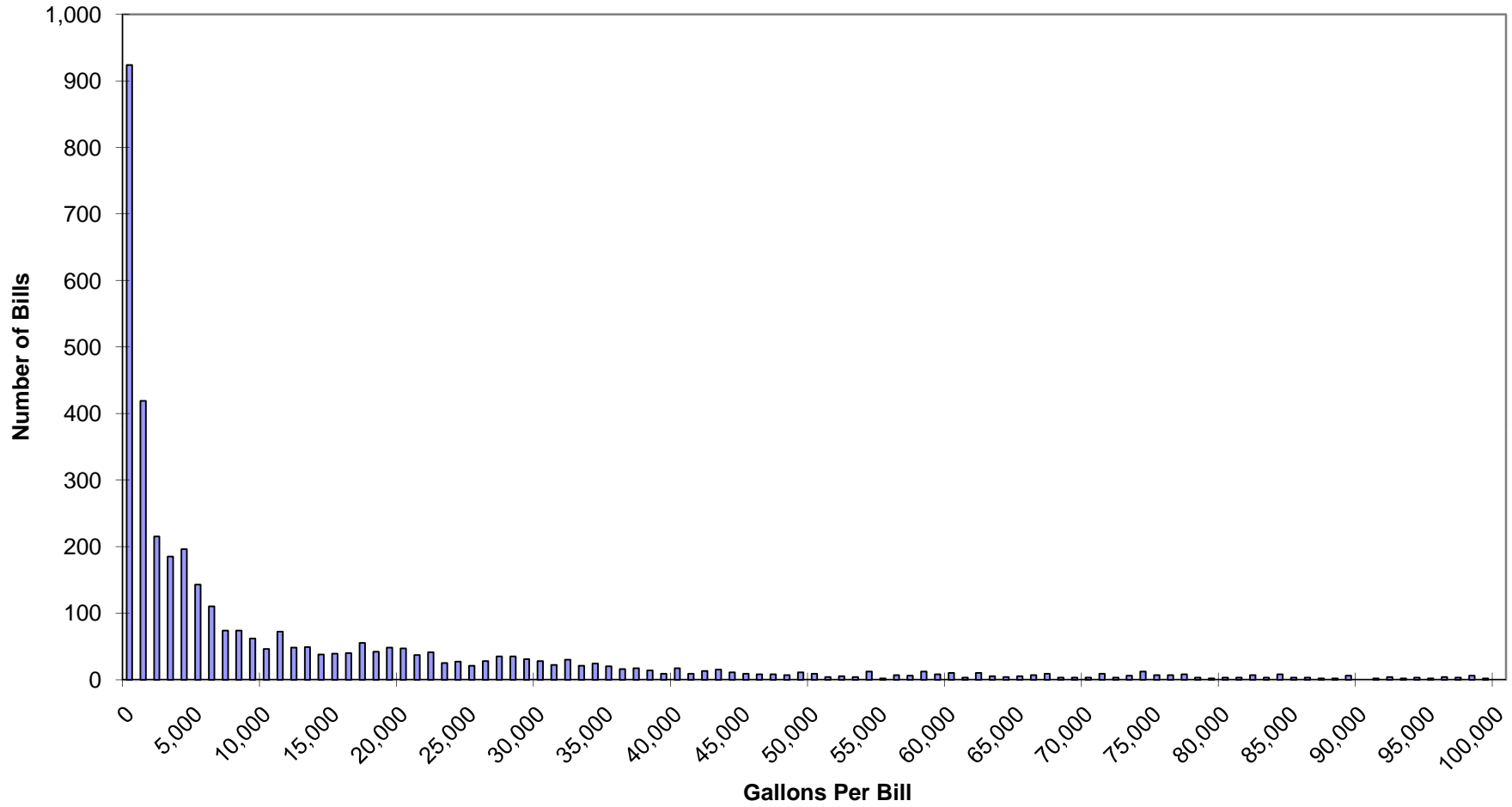
GRU Bill Frequency Analysis - RETAIL (January 2008 to December 2009)



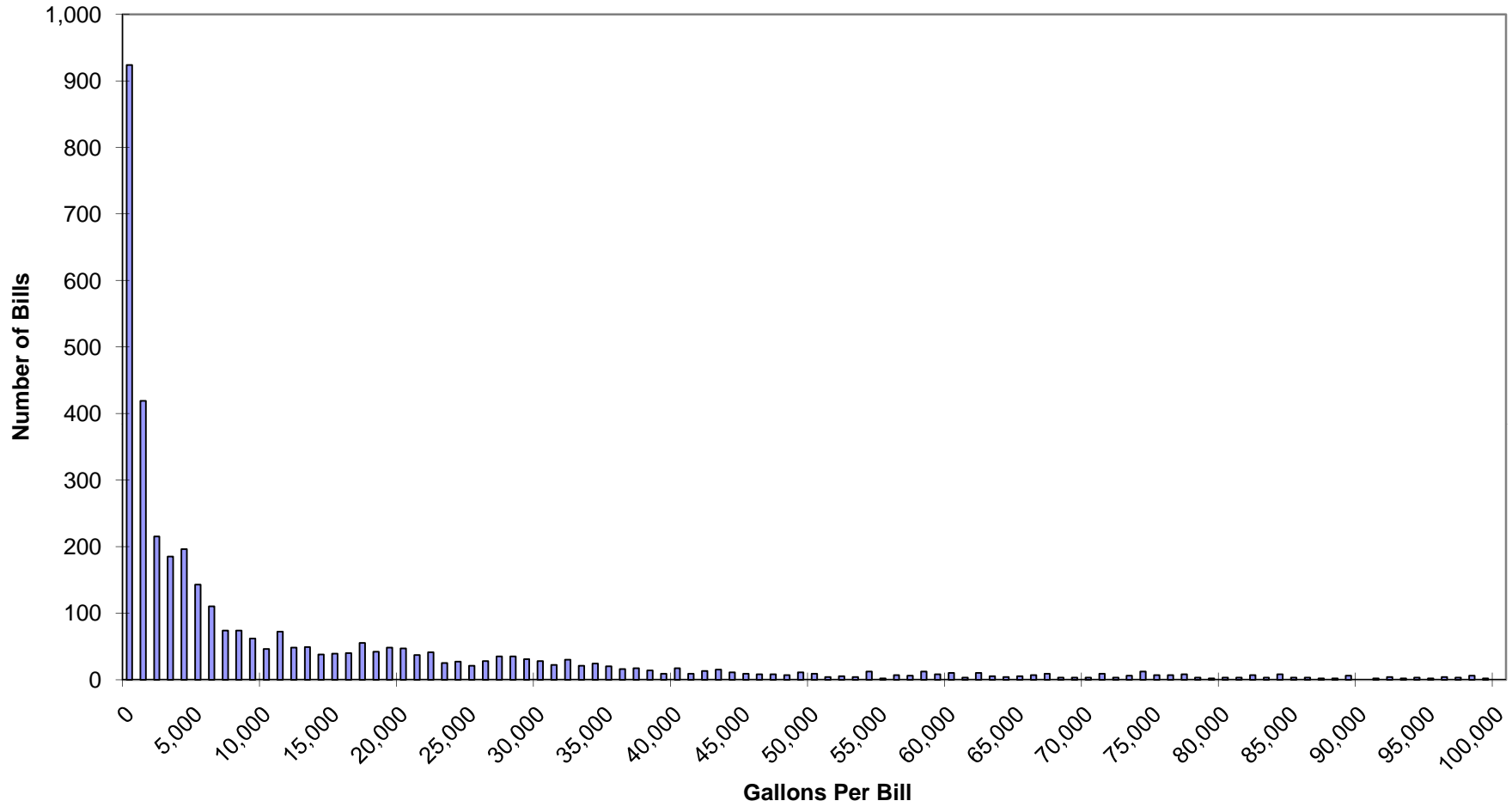
GRU Bill Frequency Analysis - SCHOOLS (January 2008 to December 2009)



**GRU Bill Frequency Analysis - VACANT OR UNDEFINED
(January 2008 to December 2009)**



GRU Bill Frequency Analysis - WAREHOUSES/STORAGE
(January 2008 to December 2009)



I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Gainesville Regional Utilities

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	1 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	15,698,000
Commercial	3,654,000
Total	19,352,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	141,000	\$810,000	\$1.26
Aggressive Meter Monitoring Program - GLOBAL	283,000	4,974,000	\$3.86
Subtotals	424,000	\$5,784,000	\$3.00

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	90,000	178,000	\$1,960,000	\$2.42
Ultra Low Flush Toilet Replacement Program - INDOOR	337,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	84,000	197,000	\$1,903,000	\$2.12
High Efficiency Clothes Washer Replacement - INDOOR	91,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	33,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	91,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	876,000	\$3,190,000	\$0.80
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	807,000	\$0	\$0.00
Subtotals	635,000	2,149,000	\$7,053,000	\$0.72

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	3,000	2,500	\$42,000	\$3.69
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	47,000	44,000	\$618,000	\$3.09
Low Flow Faucet Aerator Replacement - INDOOR	25,000	58,000	\$131,000	\$0.50
Urinal Replacement Program - INDOOR	31,000	10,400	\$104,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	27,000	\$23,000	\$0.19
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	35,000	\$0	\$0.00
Subtotals	106,000	176,900	\$918,000	\$1.14

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	741,000	2,750,000	\$16,506,000	\$1.32

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Gainesville Regional Utilities

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	5 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	15,698,000
Commercial	3,654,000
Total	19,352,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	141,000	\$810,000	\$1.26
Aggressive Meter Monitoring Program - GLOBAL	283,000	4,974,000	\$3.86
Subtotals	424,000	\$5,784,000	\$3.00

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	115,000	154,000	\$1,689,000	\$2.41
Ultra Low Flush Toilet Replacement Program - INDOOR	337,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	141,000	141,000	\$1,359,000	\$2.12
High Efficiency Clothes Washer Replacement - INDOOR	91,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	33,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	91,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	876,000	\$3,190,000	\$0.80
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	807,000	\$0	\$0.00
Subtotals	717,000	2,069,000	\$6,238,000	\$0.66

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	3,000	2,200	\$36,000	\$3.60
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	52,000	39,000	\$550,000	\$3.10
Low Flow Faucet Aerator Replacement - INDOOR	41,000	41,000	\$93,000	\$0.50
Urinal Replacement Program - INDOOR	33,000	8,700	\$87,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	27,000	\$23,000	\$0.19
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	35,000	\$0	\$0.00
Subtotals	129,000	152,900	\$789,000	\$1.13

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	846,000	2,646,000	\$15,373,000	\$1.28

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Gainesville Regional Utilities

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	10 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	15,698,000
Commercial	3,654,000
Total	19,352,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	141,000	\$810,000	\$1.26
Aggressive Meter Monitoring Program - GLOBAL	283,000	4,974,000	\$3.86
Subtotals	424,000	\$5,784,000	\$3.00

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	145,000	123,000	\$1,352,000	\$2.42
Ultra Low Flush Toilet Replacement Program - INDOOR	337,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	211,000	70,000	\$680,000	\$2.14
High Efficiency Clothes Washer Replacement - INDOOR	91,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	33,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	91,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	876,000	\$3,190,000	\$0.80
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	807,000	\$0	\$0.00
Subtotals	817,000	1,967,000	\$5,222,000	\$0.58

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	4,000	1,800	\$29,000	\$3.54
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	55,000	33,000	\$465,000	\$3.10
Low Flow Faucet Aerator Replacement - INDOOR	62,000	21,000	\$47,000	\$0.49
Urinal Replacement Program - INDOOR	35,000	6,500	\$65,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	27,000	\$23,000	\$0.19
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	35,000	\$0	\$0.00
Subtotals	156,000	124,300	\$629,000	\$1.11

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	973,000	2,515,000	\$13,962,000	\$1.22

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Gainesville Regional Utilities

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	20 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	15,698,000
Commercial	3,654,000
Total	19,352,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	141,000	\$810,000	\$1.26
Aggressive Meter Monitoring Program - GLOBAL	283,000	4,974,000	\$3.86
Subtotals	424,000	\$5,784,000	\$3.00

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	145,000	62,000	\$676,000	\$2.40
Ultra Low Flush Toilet Replacement Program - INDOOR	337,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	281,000	0	\$0	\$0.00
High Efficiency Clothes Washer Replacement - INDOOR	91,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	33,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	91,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	876,000	\$3,190,000	\$0.80
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	807,000	\$0	\$0.00
Subtotals	887,000	1,836,000	\$3,866,000	\$0.46

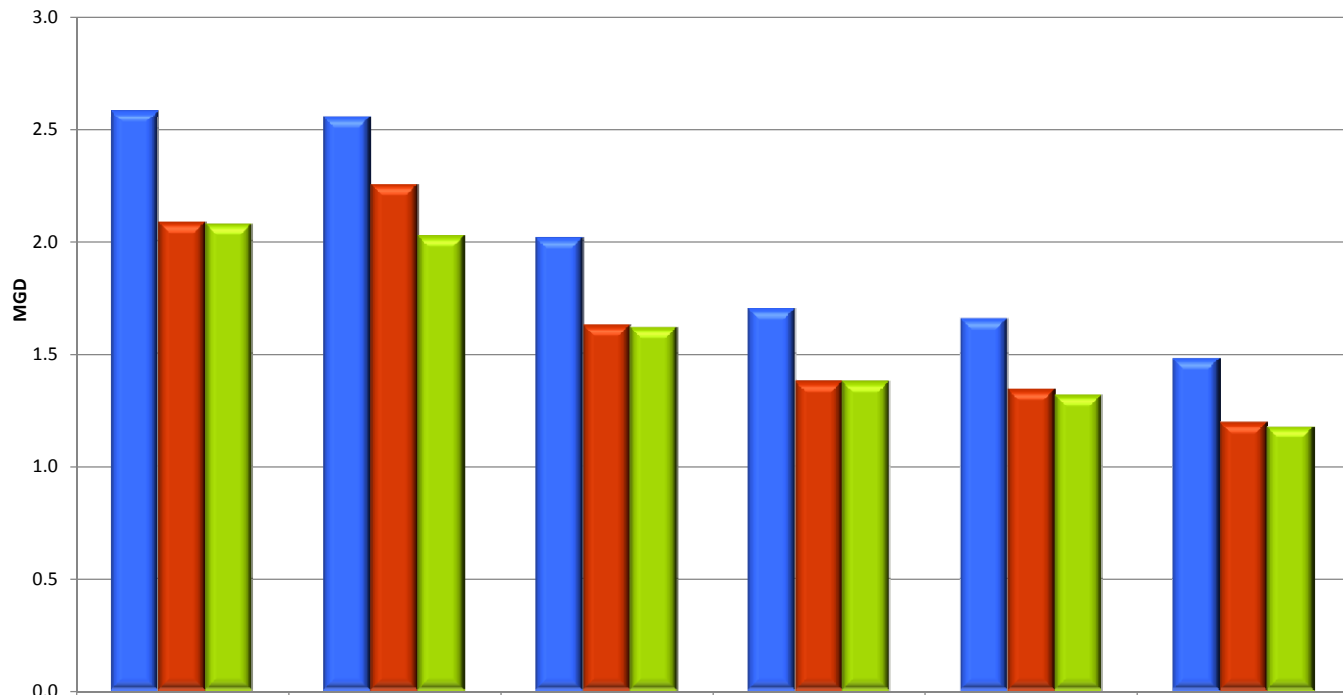
Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	4,000	900	\$15,000	\$3.66
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	55,000	21,000	\$296,000	\$3.10
Low Flow Faucet Aerator Replacement - INDOOR	83,000	0	\$0	\$0.00
Urinal Replacement Program - INDOOR	36,000	2,200	\$22,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	27,000	\$23,000	\$0.19
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	35,000	\$0	\$0.00
Subtotals	178,000	86,100	\$356,000	\$0.91

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	1,065,000	2,346,000	\$12,007,000	\$1.13

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

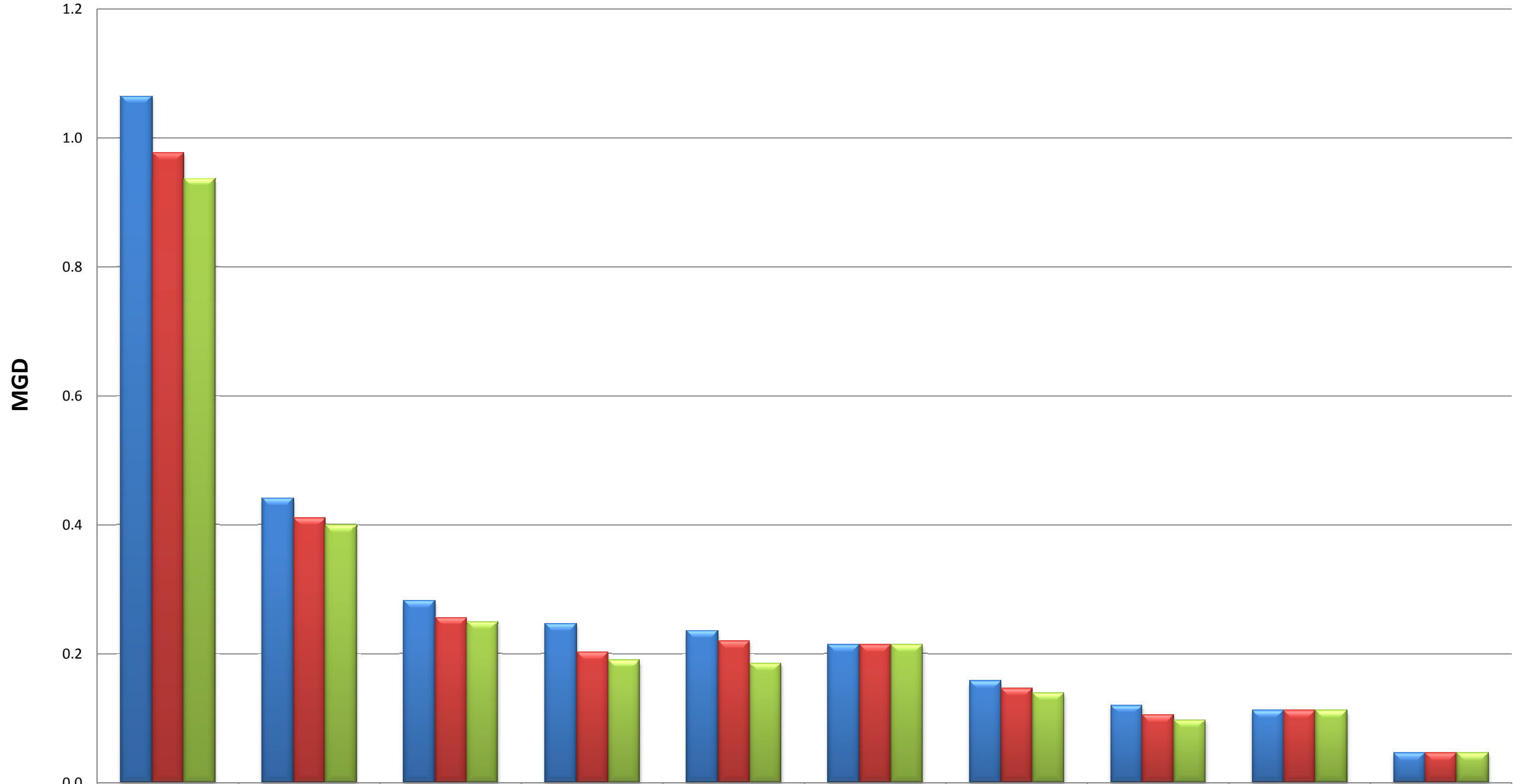
J. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Use over a 20 year Planning Horizon

GRU- Residential



■ Current Use	2.58	2.55	2.01	1.70	1.65	1.48
■ Use with Cost-Effective Conservation	2.08	2.25	1.62	1.37	1.34	1.19
■ Use with Maximum Conservation	2.07	2.02	1.61	1.37	1.31	1.17
PV Cost with Cost-Effective Conservation	\$1,652,437	\$3,096,000	\$1,873,725	\$1,520,625	\$1,572,262	\$1,372,387
PV Cost With Maximum Conservation	\$20,466,937	\$47,820,000	\$38,519,725	\$21,446,625	\$13,142,262	\$9,516,537

GRU- Commercial



	OFFICE BUILDINGS	RETAIL	WAREHOUSES/STORAGE	RESTAURANTS	HOTELS	AUTO & REPAIR	INDOOR RECREATION	SCHOOLS	MANUFACTURING	VACANT OR UNDEFINED
Current Use	1.06	0.44	0.28	0.25	0.24	0.21	0.16	0.12	0.11	0.05
Use with Cost-Eff BMPs	0.98	0.41	0.26	0.20	0.22	0.21	0.15	0.11	0.11	0.05
Max Conservation Use	0.94	0.40	0.25	0.19	0.19	0.21	0.14	0.10	0.11	0.05
Cost-Effective PV Cost	\$195,600	\$84,000	\$57,600	\$57,600	\$18,000	\$-	\$2,400	\$10,800	\$-	\$-
Maximum PV Cost	\$2,580,000	\$612,000	\$156,000	\$264,000	\$5,412,000	\$-	\$360,000	\$624,000	\$-	\$-

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	3	4	100	-	461,743	\$0	\$0.00
2	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	4	4	100	-	188,418	\$0	\$0.00
3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	3	75	-	132,733	\$499,500	\$0.83
4	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	3	75	-	132,733	\$374,625	\$0.62
5	Landscape Replacement Program - OUTDOOR	5	3	50	-	116,059	\$5,852,500	\$11.09
6	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	5	4	100	-	103,460	\$0	\$0.00
7	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	1	75	-	95,802	\$495,600	\$1.14
8	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	1	75	-	95,802	\$371,700	\$0.85
9	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	2	75	-	93,820	\$318,600	\$0.75
10	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	2	75	-	93,820	\$238,950	\$0.56
11	Landscape Replacement Program - OUTDOOR	3	1	50	-	87,980	\$10,697,500	\$26.73
12	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	1	75	-	84,208	\$476,700	\$1.24
13	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	1	75	-	84,208	\$357,525	\$0.93
14	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	1	75	-	83,268	\$243,900	\$0.64
15	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	1	75	-	83,268	\$182,925	\$0.48
16	Landscape Replacement Program - OUTDOOR	5	2	50	-	79,858	\$3,092,500	\$8.51
17	Landscape Replacement Program - OUTDOOR	2	1	50	-	78,817	\$13,392,500	\$37.36
18	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	1	75	-	76,398	\$433,500	\$1.25
19	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	1	75	-	76,398	\$325,125	\$0.94
20	Landscape Replacement Program - OUTDOOR	1	1	50	-	76,049	\$15,990,000	\$46.22
21	Landscape Replacement Program - OUTDOOR	5	1	50	-	71,520	\$3,292,500	\$10.12
22	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	3	75	-	63,250	\$380,100	\$1.32
23	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	3	75	-	63,250	\$285,075	\$0.99
24	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	1	75	-	62,054	\$282,900	\$1.00
25	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	1	75	-	62,054	\$212,175	\$0.75
26	Landscape Replacement Program - OUTDOOR	4	3	50	-	55,305	\$4,495,000	\$17.87
27	Landscape Replacement Program - OUTDOOR	4	1	50	-	55,197	\$4,587,500	\$18.27
28	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	2	75	-	50,876	\$269,400	\$1.16
29	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	2	75	-	50,876	\$202,050	\$0.87
30	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	3	4	100	-	44,503	\$0	\$0.00
31	Landscape Replacement Program - OUTDOOR	4	2	50	-	44,174	\$3,142,500	\$15.64
32	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	2	4	100	-	42,245	\$0	\$0.00
33	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	2	75	-	41,746	\$266,400	\$1.40
34	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	2	75	-	41,746	\$199,800	\$1.05
35	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	3	75	-	41,201	\$280,800	\$1.50
36	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	3	75	-	41,201	\$210,600	\$1.12
37	Landscape Replacement Program - OUTDOOR	3	2	50	-	39,035	\$4,515,000	\$25.43
38	Landscape Replacement Program - OUTDOOR	3	3	50	-	36,550	\$3,872,500	\$23.29
39	High Efficiency Toilet Replacement Program - INDOOR	6	2	75	37,980	33,233	\$2,085,160	\$13.79
40	Efficient Irrigation Systems (non turf) - OUTDOOR	5	3	75	-	31,856	\$1,398,600	\$9.65
41	High Efficiency Toilet Replacement Program - INDOOR	1	1	75	36,190	31,666	\$1,885,240	\$13.09
42	High Efficiency Toilet Replacement Program - INDOOR	6	3	75	34,137	29,870	\$5,090,960	\$37.47
43	High Efficiency Toilet Replacement Program - INDOOR	6	1	75	32,715	28,626	\$3,803,520	\$29.21
44	Efficient Irrigation Systems (non turf) - OUTDOOR	3	1	75	-	28,166	\$1,699,950	\$13.27
45	Efficient Irrigation Systems (non turf) - OUTDOOR	5	2	75	-	27,583	\$1,093,050	\$8.71
46	High Efficiency Toilet Replacement Program - INDOOR	2	1	75	31,169	27,273	\$1,578,920	\$12.73

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
47	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	2	75	-	26,082	\$172,800	\$1.46
48	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	2	75	-	26,082	\$129,600	\$1.09
49	Landscape Replacement Program - OUTDOOR	2	2	50	-	25,880	\$3,500,000	\$29.73
50	Efficient Irrigation Systems (non turf) - OUTDOOR	2	1	75	-	24,757	\$1,634,850	\$14.52
51	Efficient Irrigation Systems (non turf) - OUTDOOR	5	1	75	-	24,481	\$836,850	\$7.52
52	Efficient Irrigation Systems (non turf) - OUTDOOR	1	1	75	-	22,461	\$1,486,800	\$14.55
53	High Efficiency Toilet Replacement Program - INDOOR	3	1	75	25,054	21,922	\$1,261,120	\$12.65
54	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	6	4	100	-	19,035	\$0	\$0.00
55	Efficient Irrigation Systems (non turf) - OUTDOOR	4	1	75	-	18,244	\$970,200	\$11.69
56	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	4	4	100	-	15,256	\$0	\$0.00
57	Efficient Irrigation Systems (non turf) - OUTDOOR	4	3	75	-	15,180	\$1,063,650	\$15.40
58	Efficient Irrigation Systems (non turf) - OUTDOOR	4	2	75	-	14,958	\$924,000	\$13.58
59	High Efficiency Toilet Replacement Program - INDOOR	5	2	75	15,792	13,818	\$729,120	\$11.60
60	High Efficiency Toilet Replacement Program - INDOOR	3	2	75	15,228	13,324	\$532,280	\$8.78
61	Submetering Billing of Apartment Units - INDOOR	6	1	75	-	12,887	\$7,641,000	\$130.35
62	High Efficiency Showerhead Replacement - INDOOR	1	1	75	24,633	12,317	\$134,660	\$2.40
63	Efficient Irrigation Systems (non turf) - OUTDOOR	3	2	75	-	12,273	\$913,500	\$16.36
64	Submetering Billing of Apartment Units - INDOOR	6	3	75	-	11,941	\$5,114,250	\$94.15
65	High Efficiency Showerhead Replacement - INDOOR	6	1	75	22,268	11,134	\$271,680	\$5.36
66	High Efficiency Toilet Replacement Program - INDOOR	4	2	75	12,548	10,980	\$555,660	\$11.13
67	Landscape Replacement Program - OUTDOOR	1	2	50	-	10,834	\$1,655,000	\$33.58
68	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	1	4	100	-	10,714	\$0	\$0.00
69	High Efficiency Showerhead Replacement - INDOOR	2	1	75	21,216	10,608	\$84,590	\$1.75
70	High Efficiency Toilet Replacement Program - INDOOR	4	1	75	11,942	10,449	\$811,440	\$17.07
71	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	3	75	-	9,957	\$64,500	\$1.42
72	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	3	75	-	9,957	\$48,375	\$1.07
73	Efficient Irrigation Systems (non turf) - OUTDOOR	3	3	75	-	9,888	\$785,400	\$17.46
74	High Efficiency Toilet Replacement Program - INDOOR	2	2	75	11,256	9,849	\$412,720	\$9.21
75	Landscape Replacement Program - OUTDOOR	2	3	50	-	9,832	\$1,490,000	\$33.32
76	Submetering Billing of Apartment Units - INDOOR	6	2	75	-	9,782	\$4,189,500	\$94.16
77	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	2	75	-	9,721	\$49,500	\$1.12
78	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	2	75	-	9,721	\$37,125	\$0.84
79	High Efficiency Toilet Replacement Program - INDOOR	5	3	75	10,231	8,952	\$1,379,840	\$33.88
80	High Efficiency Showerhead Replacement - INDOOR	6	2	75	17,608	8,804	\$148,940	\$3.72
81	High Efficiency Toilet Replacement Program - INDOOR	5	1	75	9,789	8,565	\$776,160	\$19.92
82	High Efficiency Showerhead Replacement - INDOOR	3	1	75	17,053	8,527	\$67,560	\$1.74
83	Efficient Irrigation Systems (non turf) - OUTDOOR	2	2	75	-	7,668	\$593,250	\$17.01
84	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	2	4	100	-	5,896	\$0	\$0.00
85	High Efficiency Toilet Replacement Program - INDOOR	4	3	75	6,502	5,689	\$795,060	\$30.72
86	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	5	4	100	-	5,669	\$0	\$0.00
87	Landscape Replacement Program - OUTDOOR	1	3	50	-	5,123	\$452,500	\$19.42
88	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	3	75	-	4,930	\$18,600	\$0.83
89	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	3	75	-	4,930	\$13,950	\$0.62
90	High Efficiency Toilet Replacement Program - INDOOR	1	2	75	4,925	4,310	\$195,160	\$9.96
91	High Efficiency Toilet Replacement Program - INDOOR	3	3	75	4,848	4,242	\$685,020	\$35.50
92	High Efficiency Showerhead Replacement - INDOOR	4	1	75	8,129	4,064	\$48,300	\$2.61

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
93	High Efficiency Showerhead Replacement - INDOOR	5	2	75	7,321	3,661	\$45,570	\$2.74
94	High Efficiency Showerhead Replacement - INDOOR	3	2	75	7,059	3,530	\$28,520	\$1.78
95	High Efficiency Showerhead Replacement - INDOOR	5	1	75	6,663	3,332	\$48,510	\$3.20
96	High Efficiency Showerhead Replacement - INDOOR	4	2	75	5,817	2,909	\$33,080	\$2.50
97	Efficient Irrigation Systems (non turf) - OUTDOOR	1	2	75	-	2,858	\$169,050	\$13.00
98	High Efficiency Showerhead Replacement - INDOOR	2	2	75	5,218	2,609	\$22,110	\$1.86
99	Efficient Irrigation Systems (non turf) - OUTDOOR	2	3	75	-	2,390	\$180,600	\$16.61
100	High Efficiency Toilet Replacement Program - INDOOR	2	3	75	1,881	1,646	\$175,560	\$23.44
101	Efficient Irrigation Systems (non turf) - OUTDOOR	1	3	75	-	1,183	\$51,450	\$9.56
102	High Efficiency Showerhead Replacement - INDOOR	1	2	75	2,283	1,142	\$13,940	\$2.68
103	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	1	4	100	-	937	\$0	\$0.00
104	High Efficiency Toilet Replacement Program - INDOOR	1	3	75	614	537	\$53,200	\$21.77
105	Efficient Irrigation Systems (non turf) - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
106	Efficient Irrigation Systems (non turf) - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
107	Efficient Irrigation Systems (non turf) - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
108	High Efficiency Clothes Washer Replacement - INDOOR	6	3	75	19,229	-	\$0	\$100,000.00
109	High Efficiency Clothes Washer Replacement - INDOOR	6	2	75	7,361	-	\$0	\$100,000.00
110	High Efficiency Clothes Washer Replacement - INDOOR	6	1	75	8,646	-	\$0	\$100,000.00
111	High Efficiency Clothes Washer Replacement - INDOOR	5	3	75	5,763	-	\$0	\$100,000.00
112	High Efficiency Clothes Washer Replacement - INDOOR	5	2	75	3,061	-	\$0	\$100,000.00
113	High Efficiency Clothes Washer Replacement - INDOOR	5	1	75	2,587	-	\$0	\$100,000.00
114	High Efficiency Clothes Washer Replacement - INDOOR	4	3	75	3,663	-	\$0	\$100,000.00
115	High Efficiency Clothes Washer Replacement - INDOOR	4	2	75	2,432	-	\$0	\$100,000.00
116	High Efficiency Clothes Washer Replacement - INDOOR	4	1	75	3,156	-	\$0	\$100,000.00
117	High Efficiency Clothes Washer Replacement - INDOOR	3	3	75	2,731	-	\$0	\$100,000.00
118	High Efficiency Clothes Washer Replacement - INDOOR	3	2	75	2,951	-	\$0	\$100,000.00
119	High Efficiency Clothes Washer Replacement - INDOOR	3	1	75	6,621	-	\$0	\$100,000.00
120	High Efficiency Clothes Washer Replacement - INDOOR	2	3	75	1,060	-	\$0	\$100,000.00
121	High Efficiency Clothes Washer Replacement - INDOOR	2	2	75	2,182	-	\$0	\$100,000.00
122	High Efficiency Clothes Washer Replacement - INDOOR	2	1	75	8,238	-	\$0	\$100,000.00
123	High Efficiency Clothes Washer Replacement - INDOOR	1	3	75	346	-	\$0	\$100,000.00
124	High Efficiency Clothes Washer Replacement - INDOOR	1	2	75	955	-	\$0	\$100,000.00
125	High Efficiency Clothes Washer Replacement - INDOOR	1	1	75	9,564	-	\$0	\$100,000.00
126	High Efficiency Dishwashers - INDOOR	6	3	75	6,369	-	\$0	\$100,000.00
127	High Efficiency Dishwashers - INDOOR	6	2	75	2,609	-	\$0	\$100,000.00
128	High Efficiency Dishwashers - INDOOR	6	1	75	3,436	-	\$0	\$100,000.00
129	High Efficiency Dishwashers - INDOOR	5	3	75	1,909	-	\$0	\$100,000.00
130	High Efficiency Dishwashers - INDOOR	5	2	75	1,085	-	\$0	\$100,000.00
131	High Efficiency Dishwashers - INDOOR	5	1	75	1,028	-	\$0	\$100,000.00
132	High Efficiency Dishwashers - INDOOR	4	3	75	1,213	-	\$0	\$100,000.00
133	High Efficiency Dishwashers - INDOOR	4	2	75	862	-	\$0	\$100,000.00
134	High Efficiency Dishwashers - INDOOR	4	1	75	1,254	-	\$0	\$100,000.00
135	High Efficiency Dishwashers - INDOOR	3	3	75	904	-	\$0	\$100,000.00
136	High Efficiency Dishwashers - INDOOR	3	2	75	1,046	-	\$0	\$100,000.00
137	High Efficiency Dishwashers - INDOOR	3	1	75	2,632	-	\$0	\$100,000.00
138	High Efficiency Dishwashers - INDOOR	2	3	75	351	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
139	High Efficiency Dishwashers - INDOOR	2	2	75	773	-	\$0	\$100,000.00
140	High Efficiency Dishwashers - INDOOR	2	1	75	3,274	-	\$0	\$100,000.00
141	High Efficiency Dishwashers - INDOOR	1	3	75	115	-	\$0	\$100,000.00
142	High Efficiency Dishwashers - INDOOR	1	2	75	338	-	\$0	\$100,000.00
143	High Efficiency Dishwashers - INDOOR	1	1	75	3,801	-	\$0	\$100,000.00
144	High Efficiency Showerhead Replacement - INDOOR	6	3	75	-	-	\$363,640	\$100,000.00
145	High Efficiency Showerhead Replacement - INDOOR	5	3	75	-	-	\$86,240	\$100,000.00
146	High Efficiency Showerhead Replacement - INDOOR	4	3	75	-	-	\$47,330	\$100,000.00
147	High Efficiency Showerhead Replacement - INDOOR	3	3	75	-	-	\$40,780	\$100,000.00
148	High Efficiency Showerhead Replacement - INDOOR	2	3	75	-	-	\$9,410	\$100,000.00
149	High Efficiency Showerhead Replacement - INDOOR	1	3	75	-	-	\$3,800	\$100,000.00
150	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
151	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
152	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
153	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
154	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
155	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
156	Landscape Replacement Program - OUTDOOR	6	3	50	-	-	\$43,182,500	\$100,000.00
157	Landscape Replacement Program - OUTDOOR	6	2	50	-	-	\$17,687,500	\$100,000.00
158	Landscape Replacement Program - OUTDOOR	6	1	50	-	-	\$32,262,500	\$100,000.00
159	Low Flow Faucet Aerator Replacement - INDOOR	6	3	75	-	-	\$0	\$100,000.00
160	Low Flow Faucet Aerator Replacement - INDOOR	6	2	75	27,703	-	\$0	\$100,000.00
161	Low Flow Faucet Aerator Replacement - INDOOR	6	1	75	36,495	-	\$0	\$100,000.00
162	Low Flow Faucet Aerator Replacement - INDOOR	5	3	75	19,585	-	\$0	\$100,000.00
163	Low Flow Faucet Aerator Replacement - INDOOR	5	2	75	11,519	-	\$0	\$100,000.00
164	Low Flow Faucet Aerator Replacement - INDOOR	5	1	75	10,920	-	\$0	\$100,000.00
165	Low Flow Faucet Aerator Replacement - INDOOR	4	3	75	12,446	-	\$0	\$100,000.00
166	Low Flow Faucet Aerator Replacement - INDOOR	4	2	75	9,153	-	\$0	\$100,000.00
167	Low Flow Faucet Aerator Replacement - INDOOR	4	1	75	13,322	-	\$0	\$100,000.00
168	Low Flow Faucet Aerator Replacement - INDOOR	3	3	75	9,279	-	\$0	\$100,000.00
169	Low Flow Faucet Aerator Replacement - INDOOR	3	2	75	11,107	-	\$0	\$100,000.00
170	Low Flow Faucet Aerator Replacement - INDOOR	3	1	75	27,949	-	\$0	\$100,000.00
171	Low Flow Faucet Aerator Replacement - INDOOR	2	3	75	3,602	-	\$0	\$100,000.00
172	Low Flow Faucet Aerator Replacement - INDOOR	2	2	75	8,210	-	\$0	\$100,000.00
173	Low Flow Faucet Aerator Replacement - INDOOR	2	1	75	34,770	-	\$0	\$100,000.00
174	Low Flow Faucet Aerator Replacement - INDOOR	1	3	75	1,175	-	\$0	\$100,000.00
175	Low Flow Faucet Aerator Replacement - INDOOR	1	2	75	3,592	-	\$0	\$100,000.00
176	Low Flow Faucet Aerator Replacement - INDOOR	1	1	75	40,372	-	\$0	\$100,000.00
177	Low Flow Volume Showerhead Replacement - INDOOR	6	2	75	6,409	-	\$0	\$100,000.00
178	Low Flow Volume Showerhead Replacement - INDOOR	6	1	75	4,825	-	\$0	\$100,000.00
179	Low Flow Volume Showerhead Replacement - INDOOR	5	2	75	2,665	-	\$0	\$100,000.00
180	Low Flow Volume Showerhead Replacement - INDOOR	5	1	75	1,444	-	\$0	\$100,000.00
181	Low Flow Volume Showerhead Replacement - INDOOR	4	2	75	2,117	-	\$0	\$100,000.00
182	Low Flow Volume Showerhead Replacement - INDOOR	4	1	75	1,761	-	\$0	\$100,000.00
183	Low Flow Volume Showerhead Replacement - INDOOR	3	2	75	2,570	-	\$0	\$100,000.00
184	Low Flow Volume Showerhead Replacement - INDOOR	3	1	75	3,695	-	\$0	\$100,000.00

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J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
185	Low Flow Volume Showerhead Replacement - INDOOR	2	2	75	1,899	-	\$0	\$100,000.00
186	Low Flow Volume Showerhead Replacement - INDOOR	2	1	75	4,597	-	\$0	\$100,000.00
187	Low Flow Volume Showerhead Replacement - INDOOR	1	2	75	831	-	\$0	\$100,000.00
188	Low Flow Volume Showerhead Replacement - INDOOR	1	1	75	5,337	-	\$0	\$100,000.00
189	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	6	4	100	-	-	\$0	\$100,000.00
190	Ultra Low Flush Toilet Replacement Program - INDOOR	6	2	75	64,107	-	\$0	\$100,000.00
191	Ultra Low Flush Toilet Replacement Program - INDOOR	6	1	75	38,401	-	\$0	\$100,000.00
192	Ultra Low Flush Toilet Replacement Program - INDOOR	5	2	75	26,656	-	\$0	\$100,000.00
193	Ultra Low Flush Toilet Replacement Program - INDOOR	5	1	75	11,490	-	\$0	\$100,000.00
194	Ultra Low Flush Toilet Replacement Program - INDOOR	4	2	75	21,180	-	\$0	\$100,000.00
195	Ultra Low Flush Toilet Replacement Program - INDOOR	4	1	75	14,018	-	\$0	\$100,000.00
196	Ultra Low Flush Toilet Replacement Program - INDOOR	3	2	75	25,703	-	\$0	\$100,000.00
197	Ultra Low Flush Toilet Replacement Program - INDOOR	3	1	75	29,408	-	\$0	\$100,000.00
198	Ultra Low Flush Toilet Replacement Program - INDOOR	2	2	75	18,999	-	\$0	\$100,000.00
199	Ultra Low Flush Toilet Replacement Program - INDOOR	2	1	75	36,586	-	\$0	\$100,000.00
200	Ultra Low Flush Toilet Replacement Program - INDOOR	1	2	75	8,313	-	\$0	\$100,000.00
201	Ultra Low Flush Toilet Replacement Program - INDOOR	1	1	75	42,479	-	\$0	\$100,000.00

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	OFFICE BUILDINGS	4	100	-	18,592	\$0	\$0.00
2	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	-	14,880	\$549,844	\$8.12
3	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	1	75	-	9,663	\$1,650,000	\$37.54
4	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	-	9,647	\$272,344	\$6.21
5	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	10,617	9,290	\$328,440	\$7.77
6	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	10,526	9,210	\$162,680	\$3.88
7	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	1	75	-	8,978	\$6,030	\$0.15
8	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	2	75	-	7,491	\$3,960	\$0.12
9	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	3	75	-	7,093	\$3,510	\$0.11
10	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	-	6,546	\$223,125	\$7.49
11	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	2	75	-	6,109	\$750,000	\$26.99
12	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	3	75	-	5,474	\$675,000	\$27.11
13	Waterless Urinal Replacement Program - INDOOR	RETAIL	2	75	-	4,766	\$118,125	\$5.45
14	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	2	75	5,200	4,550	\$70,420	\$3.40
15	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RETAIL	4	100	-	4,449	\$0	\$0.00
16	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	-	3,391	\$16,406	\$1.06
17	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	INDOOR RECREATION	4	100	-	3,340	\$0	\$0.00
18	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	-	2,884	\$17,813	\$1.36
19	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RESTAURANTS	4	100	-	2,833	\$0	\$0.00
20	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	1	75	-	2,802	\$159,375	\$12.50
21	Waterless Urinal Replacement Program - INDOOR	RETAIL	1	75	-	2,785	\$61,875	\$4.88
22	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	3,147	2,754	\$10,500	\$0.84
23	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	-	2,659	\$31,406	\$2.60
24	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	HOTELS	4	100	-	2,574	\$0	\$0.00
25	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	WAREHOUSES/STORAGE	4	100	-	2,293	\$0	\$0.00
26	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	2,618	2,291	\$133,280	\$12.79
27	Waterless Urinal Replacement Program - INDOOR	RETAIL	3	75	-	2,284	\$67,500	\$6.50
28	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	-	2,219	\$20,625	\$2.04
29	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	2,421	2,118	\$24,640	\$2.56
30	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	8,428	2,107	\$79,178	\$8.26
31	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	-	2,101	\$18,281	\$1.91
32	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	1	75	2,330	2,039	\$203,420	\$21.93
33	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	-	1,978	\$59,531	\$6.62
34	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	2	75	2,253	1,971	\$153,205	\$17.08
35	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	-	1,967	\$30,469	\$3.41
36	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	1	75	-	1,963	\$3,870	\$0.43
37	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	1	75	2,000	1,750	\$95,200	\$11.96
38	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	1	75	1,987	1,739	\$36,820	\$4.66
39	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	1,897	1,660	\$37,520	\$4.97
40	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	6,240	1,560	\$39,218	\$5.53
41	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	-	1,350	\$15,469	\$2.52
42	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	2	75	-	1,306	\$40,781	\$6.87
43	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	-	1,258	\$27,188	\$4.75

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
44	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	2	75	1,425	1,247	\$24,360	\$4.30
45	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	1,411	1,235	\$71,120	\$12.66
46	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	1,403	1,228	\$18,060	\$3.23
47	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	1,373	1,202	\$32,480	\$5.94
48	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	1,356	1,187	\$9,800	\$1.82
49	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	SCHOOLS	4	100	-	1,031	\$0	\$0.00
50	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	2	75	-	915	\$4,410	\$1.06
51	High Efficiency Showerhead Replacement - INDOOR	HOTELS	1	75	1,758	879	\$14,530	\$3.63
52	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	3	75	914	799	\$40,320	\$11.09
53	Urinal Replacement Program - INDOOR	RETAIL	2	75	3,083	771	\$17,010	\$4.85
54	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	840	735	\$21,840	\$6.53
55	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	2,618	655	\$32,130	\$10.79
56	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	3	75	740	648	\$175,369	\$59.54
57	High Efficiency Showerhead Replacement - INDOOR	HOTELS	2	75	1,165	583	\$10,943	\$4.13
58	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	540	472	\$18,480	\$8.60
59	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	1,866	466	\$2,565	\$1.21
60	High Efficiency Showerhead Replacement - INDOOR	HOTELS	3	75	931	466	\$12,526	\$5.91
61	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	3	75	-	422	\$46,875	\$24.43
62	Urinal Replacement Program - INDOOR	SCHOOLS	1	75	1,587	397	\$22,950	\$12.71
63	Urinal Replacement Program - INDOOR	RETAIL	1	75	1,577	394	\$8,910	\$4.97
64	Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	1,506	377	\$4,523	\$2.64
65	Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	1,435	359	\$2,970	\$1.82
66	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	1,356	339	\$2,363	\$1.53
67	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	3	75	-	295	\$990	\$0.74
68	Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	1,120	280	\$8,573	\$6.73
69	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	1,114	278	\$4,388	\$3.46
70	Urinal Replacement Program - INDOOR	RETAIL	3	75	914	228	\$9,720	\$9.36
71	Urinal Replacement Program - INDOOR	SCHOOLS	2	75	845	211	\$5,873	\$6.11
72	Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	840	210	\$2,633	\$2.75
73	Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	814	204	\$3,915	\$4.23
74	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	3	75	169	148	\$27,860	\$41.48
75	Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	540	135	\$2,228	\$3.63
76	Urinal Replacement Program - INDOOR	SCHOOLS	3	75	169	42	\$6,750	\$35.17
77	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$4,410	\$100,000.00
78	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$5,130	\$100,000.00
79	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$14,760	\$100,000.00
80	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	3	75	-	-	\$5,400	\$100,000.00
81	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	2	75	-	-	\$7,020	\$100,000.00
82	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	1	75	-	-	\$16,740	\$100,000.00
83	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$13,680	\$100,000.00
84	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	2	75	-	-	\$25,200	\$100,000.00
85	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	1	75	-	-	\$31,590	\$100,000.00
86	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	3	75	-	-	\$2,970	\$100,000.00

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
87	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	2	75	-	-	\$5,220	\$100,000.00
88	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	1	75	-	-	\$11,430	\$100,000.00
89	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	3	75	-	-	\$810	\$100,000.00
90	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	2	75	-	-	\$900	\$100,000.00
91	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	1	75	-	-	\$1,980	\$100,000.00
92	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
93	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$0	\$100,000.00
94	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$0	\$100,000.00
95	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
96	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	2	75	-	-	\$0	\$100,000.00
97	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	1	75	-	-	\$0	\$100,000.00
98	High Efficiency Showerhead Replacement - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
99	High Efficiency Showerhead Replacement - INDOOR	RETAIL	2	75	-	-	\$0	\$100,000.00
100	High Efficiency Showerhead Replacement - INDOOR	RETAIL	1	75	-	-	\$0	\$100,000.00
101	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	3	75	-	-	\$390	\$100,000.00
102	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	2	75	-	-	\$440	\$100,000.00
103	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	1	75	-	-	\$670	\$100,000.00
104	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$0	\$100,000.00
105	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	-	-	\$0	\$100,000.00
106	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	-	-	\$0	\$100,000.00
107	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	-	-	\$330	\$100,000.00
108	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	-	-	\$580	\$100,000.00
109	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	-	-	\$1,270	\$100,000.00
110	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	3,828	-	\$0	\$100,000.00
111	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	3,407	-	\$0	\$100,000.00
112	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	2,323	-	\$0	\$100,000.00
113	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	3	75	476	-	\$0	\$100,000.00
114	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	2	75	1,543	-	\$0	\$100,000.00
115	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	1	75	3,311	-	\$0	\$100,000.00
116	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	3	75	2,578	-	\$0	\$100,000.00
117	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	2	75	5,630	-	\$0	\$100,000.00
118	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	1	75	3,290	-	\$0	\$100,000.00
119	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	3	75	2,372	-	\$0	\$100,000.00
120	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	2	75	2,621	-	\$0	\$100,000.00
121	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	1	75	3,141	-	\$0	\$100,000.00
122	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	3	75	7,390	-	\$0	\$100,000.00
123	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	2	75	11,396	-	\$0	\$100,000.00
124	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	1	75	17,579	-	\$0	\$100,000.00
125	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	3	75	1,524	-	\$0	\$100,000.00
126	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	2	75	1,487	-	\$0	\$100,000.00
127	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	1	75	2,336	-	\$0	\$100,000.00
128	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	3	75	1,567	-	\$0	\$100,000.00
129	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	2	75	1,829	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
130	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	1	75	2,894	-	\$0	\$100,000.00
131	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
132	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$0	\$100,000.00
133	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$0	\$100,000.00
134	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
135	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	2	75	-	-	\$0	\$100,000.00
136	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	1	75	-	-	\$0	\$100,000.00
137	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
138	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	2	75	-	-	\$0	\$100,000.00
139	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	1	75	-	-	\$0	\$100,000.00
140	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	3	75	-	-	\$0	\$100,000.00
141	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	2	75	-	-	\$0	\$100,000.00
142	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	1	75	-	-	\$0	\$100,000.00
143	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$0	\$100,000.00
144	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	-	-	\$0	\$100,000.00
145	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	-	-	\$0	\$100,000.00
146	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	-	-	\$0	\$100,000.00
147	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	-	-	\$0	\$100,000.00
148	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	-	-	\$0	\$100,000.00
149	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
150	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	2	75	420	-	\$0	\$100,000.00
151	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	1	75	379	-	\$0	\$100,000.00
152	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
153	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	5,316	-	\$0	\$100,000.00
154	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	1,644	-	\$0	\$100,000.00
155	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
156	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	2	75	2,407	-	\$0	\$100,000.00
157	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	1	75	2,343	-	\$0	\$100,000.00
158	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
159	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	2	75	8,784	-	\$0	\$100,000.00
160	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	1	75	2,328	-	\$0	\$100,000.00
161	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	-	-	\$0	\$100,000.00
162	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	4,089	-	\$0	\$100,000.00
163	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	2,223	-	\$0	\$100,000.00
164	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$0	\$100,000.00
165	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	17,780	-	\$0	\$100,000.00
166	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	12,440	-	\$0	\$100,000.00
167	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	-	-	\$0	\$100,000.00
168	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	2,320	-	\$0	\$100,000.00
169	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	1,653	-	\$0	\$100,000.00
170	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
171	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	2	75	3,806	-	\$0	\$100,000.00
172	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	1	75	2,731	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
173	Urinal Replacement Program - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
174	Urinal Replacement Program - INDOOR	HOTELS	2	75	-	-	\$0	\$100,000.00
175	Urinal Replacement Program - INDOOR	HOTELS	1	75	-	-	\$0	\$100,000.00
176	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$3,675,000	\$100,000.00
177	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$4,275,000	\$100,000.00
178	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$12,300,000	\$100,000.00
179	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	3	75	-	-	\$825,000	\$100,000.00
180	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	2	75	-	-	\$3,675,000	\$100,000.00
181	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	1	75	-	-	\$3,225,000	\$100,000.00
182	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	3	75	-	-	\$4,500,000	\$100,000.00
183	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	2	75	-	-	\$5,850,000	\$100,000.00
184	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	1	75	-	-	\$13,950,000	\$100,000.00
185	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	3	75	-	-	\$2,925,000	\$100,000.00
186	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	2	75	-	-	\$3,300,000	\$100,000.00
187	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	1	75	-	-	\$5,025,000	\$100,000.00
188	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	3	75	-	-	\$11,400,000	\$100,000.00
189	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	2	75	-	-	\$21,000,000	\$100,000.00
190	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	1	75	-	-	\$26,325,000	\$100,000.00
191	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	3	75	-	-	\$2,475,000	\$100,000.00
192	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	2	75	-	-	\$4,350,000	\$100,000.00
193	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	1	75	-	-	\$9,525,000	\$100,000.00
194	Waterless Urinal Replacement Program - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
195	Waterless Urinal Replacement Program - INDOOR	HOTELS	2	75	-	-	\$0	\$100,000.00
196	Waterless Urinal Replacement Program - INDOOR	HOTELS	1	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

RANK	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
216	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	3	75	-	-	\$2,925,000	\$100,000.00
217	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	1	75	-	-	\$0	\$100,000.00
218	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	2	75	-	-	\$0	\$100,000.00
219	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
220	High Efficiency Showerhead Replacement - INDOOR	RETAIL	1	75	-	-	\$0	\$100,000.00
221	High Efficiency Showerhead Replacement - INDOOR	RETAIL	2	75	-	-	\$0	\$100,000.00
222	High Efficiency Showerhead Replacement - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
223	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
224	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	1	75	-	-	\$16,740	\$100,000.00
225	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	2	75	-	-	\$7,020	\$100,000.00
226	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	3	75	-	-	\$5,400	\$100,000.00
227	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	1	75	-	-	\$13,950,000	\$100,000.00
228	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	2	75	-	-	\$5,850,000	\$100,000.00
229	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	3	75	-	-	\$4,500,000	\$100,000.00
230	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	1	75	-	-	\$0	\$100,000.00
231	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	2	75	-	-	\$0	\$100,000.00
232	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
233	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	1	75	-	-	\$0	\$100,000.00
234	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	2	75	-	-	\$0	\$100,000.00
235	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
236	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
237	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	1	75	-	-	\$3,225,000	\$100,000.00
238	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	2	75	-	-	\$3,675,000	\$100,000.00
239	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	3	75	-	-	\$825,000	\$100,000.00
240	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$0	\$100,000.00
241	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$0	\$100,000.00
242	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
243	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$0	\$100,000.00
244	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$0	\$100,000.00
245	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
246	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
247	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$14,760	\$100,000.00
248	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$5,130	\$100,000.00
249	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$4,410	\$100,000.00
250	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$12,300,000	\$100,000.00
251	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$4,275,000	\$100,000.00
252	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$3,675,000	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

L. GRU - Efficient Use Benchmarks Per Residential Category and Build Out Condition

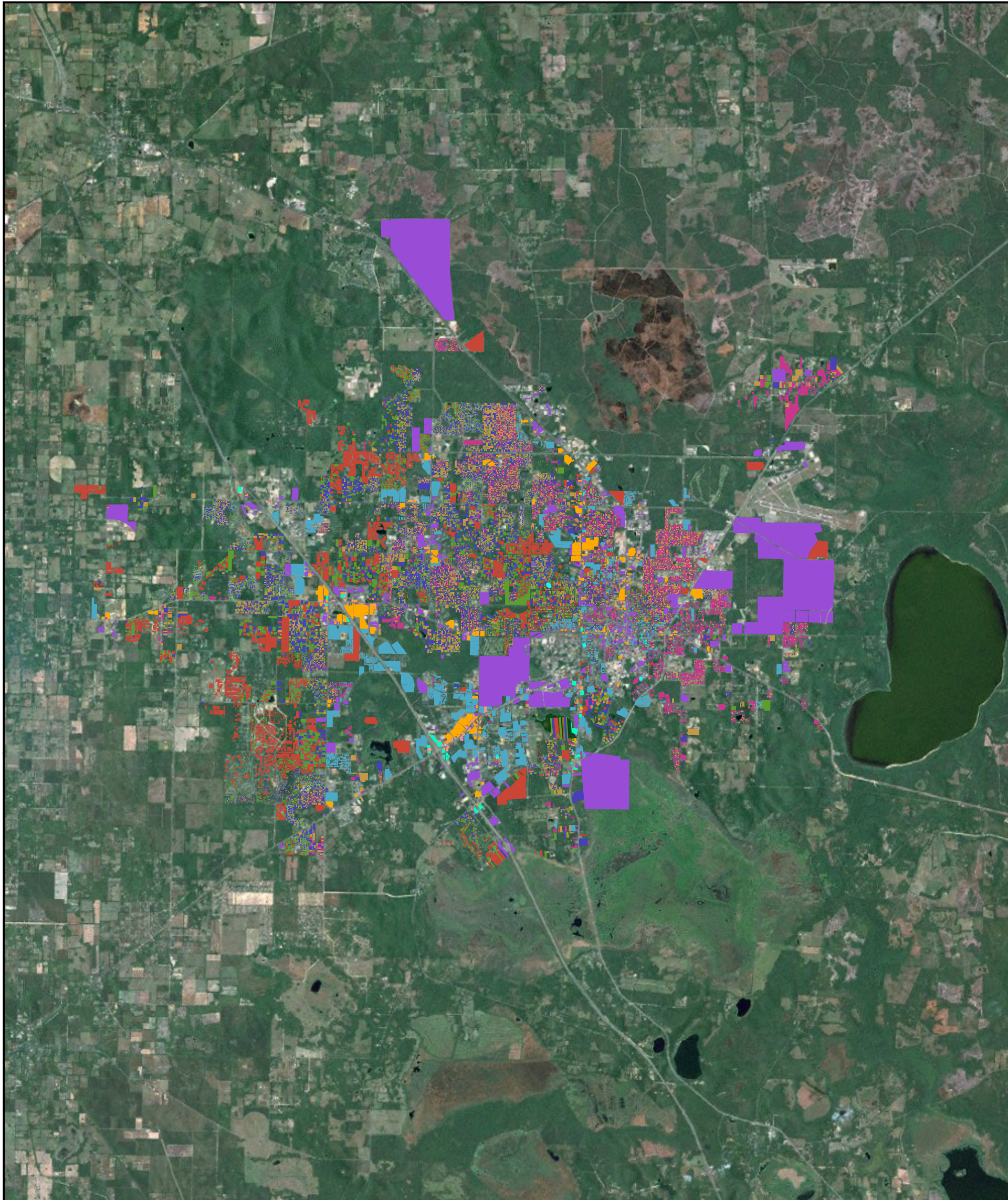
Res Class	Build Out Condition	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	0.062	0.076	0.005	0.009	0.015
	1984 - 1993	0.053	0.066	0.007	0.015	0.018
	1994 to Present	0.076	0.084	0.007	0.013	0.018
	Future	0.066	0.073	0.006	0.011	0.016
RS2	Pre 1984	0.048	0.061	0.005	0.008	0.012
	1984 - 1993	0.043	0.056	0.008	0.015	0.017
	1994 to Present	0.055	0.072	0.010	0.026	0.025
	Future	0.050	0.065	0.009	0.023	0.023
RS3	Pre 1984	0.040	0.052	0.005	0.009	0.012
	1984 - 1993	0.038	0.051	0.007	0.014	0.015
	1994 to Present	0.043	0.057	0.013	0.028	0.024
	Future	0.038	0.051	0.011	0.025	0.022
RS4	Pre 1984	0.036	0.046	0.005	0.010	0.011
	1984 - 1993	0.034	0.046	0.008	0.014	0.014
	1994 to Present	0.041	0.056	0.014	0.028	0.025
	Future	0.036	0.049	0.012	0.025	0.022
RS5	Pre 1984	0.030	0.038	0.005	0.010	0.010
	1984 - 1993	0.031	0.042	0.007	0.013	0.012
	1994 to Present	0.031	0.042	0.010	0.021	0.017
	Future	0.026	0.036	0.009	0.018	0.015
HD	Pre 1984	0.041	0.046	na	na	0.018
	1984 - 1993	0.014	0.016	na	na	0.019
	1994 to Present	0.009	0.010	na	na	0.012
	Future	0.008	0.010	na	na	0.012

GRU - Efficient Use Benchmarks Per Non-Residential Category and Build Out Condition*

	Build Out Condition	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
HOTELS	Pre 1984	0.149	0.193	0.055
	1984 - 1993	0.124	0.156	0.043
	1994 to Present	0.100	0.108	0.059
	Future	0.101	0.108	0.059
INDOOR RECREATION	Pre 1984	0.051	0.058	0.010
	1984 - 1993	0.051	0.055	0.014
	1994 to Present	0.053	0.054	0.009
	Future	0.053	0.055	0.010
MANUFACTURING	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
OFFICE BUILDINGS	Pre 1984	0.081	0.092	0.018
	1984 - 1993	0.101	0.120	0.024
	1994 to Present	0.089	0.105	0.025
	Future	0.090	0.106	0.025
RESTAURANTS	Pre 1984	0.248	0.314	0.069
	1984 - 1993	0.360	0.424	0.044
	1994 to Present	0.311	0.371	0.049
	Future	0.350	0.417	0.055
RETAIL	Pre 1984	0.060	0.075	0.022
	1984 - 1993	0.052	0.059	0.025
	1994 to Present	0.045	0.056	0.012
	Future	0.045	0.056	0.012
SCHOOLS	Pre 1984	0.077	0.085	0.012
	1984 - 1993	0.138	0.161	0.010
	1994 to Present	0.041	0.045	0.008
	Future	0.043	0.047	0.008
VACANT OR UNDEFINED	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
WAREHOUSES/STORAGE	Pre 1984	0.032	0.034	0.007
	1984 - 1993	0.077	0.083	0.024
	1994 to Present	0.104	0.110	0.008
	Future	0.106	0.113	0.008

* Efficient use benchmarks are not calculated for categories whose end uses are too variable to assign conservation practices to or when there are insufficient data to develop water use benchmarks.

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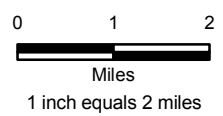
Legend

RS1
RS2
RS3
RS4
RS5
RS6
Hotels
Office Buildings
Restaurants
Retail

Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	1.48	1.17
RES-2	1.66	1.31
RES-3	2.01	1.61
RES-4	1.70	1.37
RES-5	2.58	2.07
RES-6	2.55	2.02
Office Buildings	1.06	0.94
Retail	0.44	0.40
Warehouses/Storage	0.28	0.25
Restaurants	0.25	0.19



M.
**Geographic Distribution of Top Water Use Categories,
 Typical Use, & Conservation Savings Gain
 Gainesville Regional Utilities**



N. Conservation Practices Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS1	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	10,714	\$0	\$0.00
RS1	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	937	\$0	\$0.00
RS1	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	4,930	\$13,950	\$0.62
RS1	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	4,930	\$18,600	\$0.83
RS1	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	9,721	\$37,125	\$0.84
RS1	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	76,398	\$325,125	\$0.94
RS1	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	9,721	\$49,500	\$1.12
RS1	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	76,398	\$433,500	\$1.25
RS1	1	High Efficiency Showerhead Replacement - INDOOR	75	24,633	12,317	\$134,660	\$2.40
RS1	2	High Efficiency Showerhead Replacement - INDOOR	75	2,283	1,142	\$13,940	\$2.68
RS1	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,183	\$51,450	\$9.56
RS1	2	High Efficiency Toilet Replacement Program - INDOOR	75	4,925	4,310	\$195,160	\$9.96
RS1	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,858	\$169,050	\$13.00
RS1	1	High Efficiency Toilet Replacement Program - INDOOR	75	36,190	31,666	\$1,885,240	\$13.09
RS1	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	22,461	\$1,486,800	\$14.55
RS1	3	Landscape Replacement Program - OUTDOOR	50	-	5,123	\$452,500	\$19.42
RS1	3	High Efficiency Toilet Replacement Program - INDOOR	75	614	537	\$53,200	\$21.77
RS1	2	Landscape Replacement Program - OUTDOOR	50	-	10,834	\$1,655,000	\$33.58
RS1	1	Landscape Replacement Program - OUTDOOR	50	-	76,049	\$15,990,000	\$46.22
RS1	3	High Efficiency Clothes Washer Replacement - INDOOR	75	346	-	\$0	\$100,000.00
RS1	2	High Efficiency Clothes Washer Replacement - INDOOR	75	955	-	\$0	\$100,000.00
RS1	1	High Efficiency Clothes Washer Replacement - INDOOR	75	9,564	-	\$0	\$100,000.00
RS1	3	High Efficiency Dishwashers - INDOOR	75	115	-	\$0	\$100,000.00
RS1	2	High Efficiency Dishwashers - INDOOR	75	338	-	\$0	\$100,000.00
RS1	1	High Efficiency Dishwashers - INDOOR	75	3,801	-	\$0	\$100,000.00
RS1	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$3,800	\$100,000.00
RS1	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,175	-	\$0	\$100,000.00
RS1	2	Low Flow Faucet Aerator Replacement - INDOOR	75	3,592	-	\$0	\$100,000.00
RS1	1	Low Flow Faucet Aerator Replacement - INDOOR	75	40,372	-	\$0	\$100,000.00
RS1	2	Low Flow Volume Showerhead Replacement - INDOOR	75	831	-	\$0	\$100,000.00
RS1	1	Low Flow Volume Showerhead Replacement - INDOOR	75	5,337	-	\$0	\$100,000.00
RS1	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	8,313	-	\$0	\$100,000.00
RS1	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	42,479	-	\$0	\$100,000.00
RS2	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	42,245	\$0	\$0.00
RS2	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	5,896	\$0	\$0.00
RS2	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	84,208	\$357,525	\$0.93
RS2	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	9,957	\$48,375	\$1.07
RS2	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	26,082	\$129,600	\$1.09
RS2	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	84,208	\$476,700	\$1.24
RS2	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	9,957	\$64,500	\$1.42
RS2	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	26,082	\$172,800	\$1.46
RS2	1	High Efficiency Showerhead Replacement - INDOOR	75	21,216	10,608	\$84,590	\$1.75

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

N. Conservation Practices Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS2	2	High Efficiency Showerhead Replacement - INDOOR	75	5,218	2,609	\$22,110	\$1.86
RS2	2	High Efficiency Toilet Replacement Program - INDOOR	75	11,256	9,849	\$412,720	\$9.21
RS2	1	High Efficiency Toilet Replacement Program - INDOOR	75	31,169	27,273	\$1,578,920	\$12.73
RS2	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	24,757	\$1,634,850	\$14.52
RS2	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,390	\$180,600	\$16.61
RS2	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	7,668	\$593,250	\$17.01
RS2	3	High Efficiency Toilet Replacement Program - INDOOR	75	1,881	1,646	\$175,560	\$23.44
RS2	2	Landscape Replacement Program - OUTDOOR	50	-	25,880	\$3,500,000	\$29.73
RS2	3	Landscape Replacement Program - OUTDOOR	50	-	9,832	\$1,490,000	\$33.32
RS2	1	Landscape Replacement Program - OUTDOOR	50	-	78,817	\$13,392,500	\$37.36
RS2	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,060	-	\$0	\$100,000.00
RS2	2	High Efficiency Clothes Washer Replacement - INDOOR	75	2,182	-	\$0	\$100,000.00
RS2	1	High Efficiency Clothes Washer Replacement - INDOOR	75	8,238	-	\$0	\$100,000.00
RS2	3	High Efficiency Dishwashers - INDOOR	75	351	-	\$0	\$100,000.00
RS2	2	High Efficiency Dishwashers - INDOOR	75	773	-	\$0	\$100,000.00
RS2	1	High Efficiency Dishwashers - INDOOR	75	3,274	-	\$0	\$100,000.00
RS2	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$9,410	\$100,000.00
RS2	3	Low Flow Faucet Aerator Replacement - INDOOR	75	3,602	-	\$0	\$100,000.00
RS2	2	Low Flow Faucet Aerator Replacement - INDOOR	75	8,210	-	\$0	\$100,000.00
RS2	1	Low Flow Faucet Aerator Replacement - INDOOR	75	34,770	-	\$0	\$100,000.00
RS2	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,899	-	\$0	\$100,000.00
RS2	1	Low Flow Volume Showerhead Replacement - INDOOR	75	4,597	-	\$0	\$100,000.00
RS2	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	18,999	-	\$0	\$100,000.00
RS2	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	36,586	-	\$0	\$100,000.00
RS3	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	461,743	\$0	\$0.00
RS3	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	44,503	\$0	\$0.00
RS3	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	95,802	\$371,700	\$0.85
RS3	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	41,746	\$199,800	\$1.05
RS3	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	41,201	\$210,600	\$1.12
RS3	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	95,802	\$495,600	\$1.14
RS3	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	41,746	\$266,400	\$1.40
RS3	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	41,201	\$280,800	\$1.50
RS3	1	High Efficiency Showerhead Replacement - INDOOR	75	17,053	8,527	\$67,560	\$1.74
RS3	2	High Efficiency Showerhead Replacement - INDOOR	75	7,059	3,530	\$28,520	\$1.78
RS3	2	High Efficiency Toilet Replacement Program - INDOOR	75	15,228	13,324	\$532,280	\$8.78
RS3	1	High Efficiency Toilet Replacement Program - INDOOR	75	25,054	21,922	\$1,261,120	\$12.65
RS3	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	28,166	\$1,699,950	\$13.27
RS3	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	12,273	\$913,500	\$16.36
RS3	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	9,888	\$785,400	\$17.46
RS3	3	Landscape Replacement Program - OUTDOOR	50	-	36,550	\$3,872,500	\$23.29
RS3	2	Landscape Replacement Program - OUTDOOR	50	-	39,035	\$4,515,000	\$25.43
RS3	1	Landscape Replacement Program - OUTDOOR	50	-	87,980	\$10,697,500	\$26.73

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N. Conservation Practices Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS3	3	High Efficiency Toilet Replacement Program - INDOOR	75	4,848	4,242	\$685,020	\$35.50
RS3	3	High Efficiency Clothes Washer Replacement - INDOOR	75	2,731	-	\$0	\$100,000.00
RS3	2	High Efficiency Clothes Washer Replacement - INDOOR	75	2,951	-	\$0	\$100,000.00
RS3	1	High Efficiency Clothes Washer Replacement - INDOOR	75	6,621	-	\$0	\$100,000.00
RS3	3	High Efficiency Dishwashers - INDOOR	75	904	-	\$0	\$100,000.00
RS3	2	High Efficiency Dishwashers - INDOOR	75	1,046	-	\$0	\$100,000.00
RS3	1	High Efficiency Dishwashers - INDOOR	75	2,632	-	\$0	\$100,000.00
RS3	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$40,780	\$100,000.00
RS3	3	Low Flow Faucet Aerator Replacement - INDOOR	75	9,279	-	\$0	\$100,000.00
RS3	2	Low Flow Faucet Aerator Replacement - INDOOR	75	11,107	-	\$0	\$100,000.00
RS3	1	Low Flow Faucet Aerator Replacement - INDOOR	75	27,949	-	\$0	\$100,000.00
RS3	2	Low Flow Volume Showerhead Replacement - INDOOR	75	2,570	-	\$0	\$100,000.00
RS3	1	Low Flow Volume Showerhead Replacement - INDOOR	75	3,695	-	\$0	\$100,000.00
RS3	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	25,703	-	\$0	\$100,000.00
RS3	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	29,408	-	\$0	\$100,000.00
RS4	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	188,418	\$0	\$0.00
RS4	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	15,256	\$0	\$0.00
RS4	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	62,054	\$212,175	\$0.75
RS4	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	50,876	\$202,050	\$0.87
RS4	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	63,250	\$285,075	\$0.99
RS4	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	62,054	\$282,900	\$1.00
RS4	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	50,876	\$269,400	\$1.16
RS4	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	63,250	\$380,100	\$1.32
RS4	2	High Efficiency Showerhead Replacement - INDOOR	75	5,817	2,909	\$33,080	\$2.50
RS4	1	High Efficiency Showerhead Replacement - INDOOR	75	8,129	4,064	\$48,300	\$2.61
RS4	2	High Efficiency Toilet Replacement Program - INDOOR	75	12,548	10,980	\$555,660	\$11.13
RS4	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	18,244	\$970,200	\$11.69
RS4	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	14,958	\$924,000	\$13.58
RS4	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	15,180	\$1,063,650	\$15.40
RS4	2	Landscape Replacement Program - OUTDOOR	50	-	44,174	\$3,142,500	\$15.64
RS4	1	High Efficiency Toilet Replacement Program - INDOOR	75	11,942	10,449	\$811,440	\$17.07
RS4	3	Landscape Replacement Program - OUTDOOR	50	-	55,305	\$4,495,000	\$17.87
RS4	1	Landscape Replacement Program - OUTDOOR	50	-	55,197	\$4,587,500	\$18.27
RS4	3	High Efficiency Toilet Replacement Program - INDOOR	75	6,502	5,689	\$795,060	\$30.72
RS4	3	High Efficiency Clothes Washer Replacement - INDOOR	75	3,663	-	\$0	\$100,000.00
RS4	2	High Efficiency Clothes Washer Replacement - INDOOR	75	2,432	-	\$0	\$100,000.00
RS4	1	High Efficiency Clothes Washer Replacement - INDOOR	75	3,156	-	\$0	\$100,000.00
RS4	3	High Efficiency Dishwashers - INDOOR	75	1,213	-	\$0	\$100,000.00
RS4	2	High Efficiency Dishwashers - INDOOR	75	862	-	\$0	\$100,000.00
RS4	1	High Efficiency Dishwashers - INDOOR	75	1,254	-	\$0	\$100,000.00
RS4	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$47,330	\$100,000.00
RS4	3	Low Flow Faucet Aerator Replacement - INDOOR	75	12,446	-	\$0	\$100,000.00

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Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS4	2	Low Flow Faucet Aerator Replacement - INDOOR	75	9,153	-	\$0	\$100,000.00
RS4	1	Low Flow Faucet Aerator Replacement - INDOOR	75	13,322	-	\$0	\$100,000.00
RS4	2	Low Flow Volume Showerhead Replacement - INDOOR	75	2,117	-	\$0	\$100,000.00
RS4	1	Low Flow Volume Showerhead Replacement - INDOOR	75	1,761	-	\$0	\$100,000.00
RS4	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	21,180	-	\$0	\$100,000.00
RS4	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	14,018	-	\$0	\$100,000.00
RS5	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	103,460	\$0	\$0.00
RS5	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	5,669	\$0	\$0.00
RS5	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	83,268	\$182,925	\$0.48
RS5	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	93,820	\$238,950	\$0.56
RS5	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	132,733	\$374,625	\$0.62
RS5	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	83,268	\$243,900	\$0.64
RS5	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	93,820	\$318,600	\$0.75
RS5	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	132,733	\$499,500	\$0.83
RS5	2	High Efficiency Showerhead Replacement - INDOOR	75	7,321	3,661	\$45,570	\$2.74
RS5	1	High Efficiency Showerhead Replacement - INDOOR	75	6,663	3,332	\$48,510	\$3.20
RS5	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	24,481	\$836,850	\$7.52
RS5	2	Landscape Replacement Program - OUTDOOR	50	-	79,858	\$3,092,500	\$8.51
RS5	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	27,583	\$1,093,050	\$8.71
RS5	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	31,856	\$1,398,600	\$9.65
RS5	1	Landscape Replacement Program - OUTDOOR	50	-	71,520	\$3,292,500	\$10.12
RS5	3	Landscape Replacement Program - OUTDOOR	50	-	116,059	\$5,852,500	\$11.09
RS5	2	High Efficiency Toilet Replacement Program - INDOOR	75	15,792	13,818	\$729,120	\$11.60
RS5	1	High Efficiency Toilet Replacement Program - INDOOR	75	9,789	8,565	\$776,160	\$19.92
RS5	3	High Efficiency Toilet Replacement Program - INDOOR	75	10,231	8,952	\$1,379,840	\$33.88
RS5	3	High Efficiency Clothes Washer Replacement - INDOOR	75	5,763	-	\$0	\$100,000.00
RS5	2	High Efficiency Clothes Washer Replacement - INDOOR	75	3,061	-	\$0	\$100,000.00
RS5	1	High Efficiency Clothes Washer Replacement - INDOOR	75	2,587	-	\$0	\$100,000.00
RS5	3	High Efficiency Dishwashers - INDOOR	75	1,909	-	\$0	\$100,000.00
RS5	2	High Efficiency Dishwashers - INDOOR	75	1,085	-	\$0	\$100,000.00
RS5	1	High Efficiency Dishwashers - INDOOR	75	1,028	-	\$0	\$100,000.00
RS5	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$86,240	\$100,000.00
RS5	3	Low Flow Faucet Aerator Replacement - INDOOR	75	19,585	-	\$0	\$100,000.00
RS5	2	Low Flow Faucet Aerator Replacement - INDOOR	75	11,519	-	\$0	\$100,000.00
RS5	1	Low Flow Faucet Aerator Replacement - INDOOR	75	10,920	-	\$0	\$100,000.00
RS5	2	Low Flow Volume Showerhead Replacement - INDOOR	75	2,665	-	\$0	\$100,000.00
RS5	1	Low Flow Volume Showerhead Replacement - INDOOR	75	1,444	-	\$0	\$100,000.00
RS5	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	26,656	-	\$0	\$100,000.00
RS5	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	11,490	-	\$0	\$100,000.00
RS6	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	19,035	\$0	\$0.00
RS6	2	High Efficiency Showerhead Replacement - INDOOR	75	17,608	8,804	\$148,940	\$3.72
RS6	1	High Efficiency Showerhead Replacement - INDOOR	75	22,268	11,134	\$271,680	\$5.36

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Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS6	2	High Efficiency Toilet Replacement Program - INDOOR	75	37,980	33,233	\$2,085,160	\$13.79
RS6	1	High Efficiency Toilet Replacement Program - INDOOR	75	32,715	28,626	\$3,803,520	\$29.21
RS6	3	High Efficiency Toilet Replacement Program - INDOOR	75	34,137	29,870	\$5,090,960	\$37.47
RS6	3	Submetering Billing of Apartment Units - INDOOR	75	-	11,941	\$5,114,250	\$94.15
RS6	2	Submetering Billing of Apartment Units - INDOOR	75	-	9,782	\$4,189,500	\$94.16
RS6	1	Submetering Billing of Apartment Units - INDOOR	75	-	12,887	\$7,641,000	\$130.35
RS6	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	High Efficiency Clothes Washer Replacement - INDOOR	75	19,229	-	\$0	\$100,000.00
RS6	2	High Efficiency Clothes Washer Replacement - INDOOR	75	7,361	-	\$0	\$100,000.00
RS6	1	High Efficiency Clothes Washer Replacement - INDOOR	75	8,646	-	\$0	\$100,000.00
RS6	3	High Efficiency Dishwashers - INDOOR	75	6,369	-	\$0	\$100,000.00
RS6	2	High Efficiency Dishwashers - INDOOR	75	2,609	-	\$0	\$100,000.00
RS6	1	High Efficiency Dishwashers - INDOOR	75	3,436	-	\$0	\$100,000.00
RS6	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$363,640	\$100,000.00
RS6	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Landscape Replacement Program - OUTDOOR	50	-	-	\$43,182,500	\$100,000.00
RS6	2	Landscape Replacement Program - OUTDOOR	50	-	-	\$17,687,500	\$100,000.00
RS6	1	Landscape Replacement Program - OUTDOOR	50	-	-	\$32,262,500	\$100,000.00
RS6	3	Low Flow Faucet Aerator Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Low Flow Faucet Aerator Replacement - INDOOR	75	27,703	-	\$0	\$100,000.00
RS6	1	Low Flow Faucet Aerator Replacement - INDOOR	75	36,495	-	\$0	\$100,000.00
RS6	2	Low Flow Volume Showerhead Replacement - INDOOR	75	6,409	-	\$0	\$100,000.00
RS6	1	Low Flow Volume Showerhead Replacement - INDOOR	75	4,825	-	\$0	\$100,000.00
RS6	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	-	\$0	\$100,000.00
RS6	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	64,107	-	\$0	\$100,000.00
RS6	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	38,401	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
HOTELS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	2,574	\$0	\$0.00
HOTELS	1	High Efficiency Showerhead Replacement - INDOOR	75	1,758	879	\$14,530	\$3.63
HOTELS	2	High Efficiency Showerhead Replacement - INDOOR	75	1,165	583	\$10,943	\$4.13
HOTELS	3	High Efficiency Showerhead Replacement - INDOOR	75	931	466	\$12,526	\$5.91
HOTELS	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,253	1,971	\$153,205	\$17.08
HOTELS	1	High Efficiency Toilet Replacement Program - INDOOR	75	2,330	2,039	\$203,420	\$21.93
HOTELS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	6,109	\$750,000	\$26.99
HOTELS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	5,474	\$675,000	\$27.11
HOTELS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	9,663	\$1,650,000	\$37.54
HOTELS	3	High Efficiency Toilet Replacement Program - INDOOR	75	740	648	\$175,369	\$59.54
HOTELS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$810	\$100,000.00
HOTELS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$900	\$100,000.00
HOTELS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$1,980	\$100,000.00
HOTELS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,567	-	\$0	\$100,000.00
HOTELS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,829	-	\$0	\$100,000.00
HOTELS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	2,894	-	\$0	\$100,000.00
HOTELS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	420	-	\$0	\$100,000.00
HOTELS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	379	-	\$0	\$100,000.00
HOTELS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	3,806	-	\$0	\$100,000.00
HOTELS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,731	-	\$0	\$100,000.00
HOTELS	3	Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	1	Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	3	Waterless Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Waterless Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	1	Waterless Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	3,340	\$0	\$0.00
INDOOR RECREATION	3	Waterless Urinal Replacement Program - INDOOR	75	-	1,350	\$15,469	\$2.52
INDOOR RECREATION	3	Urinal Replacement Program - INDOOR	75	540	135	\$2,228	\$3.63
INDOOR RECREATION	2	Urinal Replacement Program - INDOOR	75	814	204	\$3,915	\$4.23
INDOOR RECREATION	2	Waterless Urinal Replacement Program - INDOOR	75	-	1,258	\$27,188	\$4.75
INDOOR RECREATION	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,373	1,202	\$32,480	\$5.94
INDOOR RECREATION	1	Waterless Urinal Replacement Program - INDOOR	75	-	1,978	\$59,531	\$6.62
INDOOR RECREATION	1	Urinal Replacement Program - INDOOR	75	1,120	280	\$8,573	\$6.73
INDOOR RECREATION	3	High Efficiency Toilet Replacement Program - INDOOR	75	540	472	\$18,480	\$8.60
INDOOR RECREATION	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,411	1,235	\$71,120	\$12.66
INDOOR RECREATION	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$2,970	\$100,000.00
INDOOR RECREATION	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$5,220	\$100,000.00

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Commercial Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
INDOOR RECREATION	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$11,430	\$100,000.00
INDOOR RECREATION	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$330	\$100,000.00
INDOOR RECREATION	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$580	\$100,000.00
INDOOR RECREATION	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$1,270	\$100,000.00
INDOOR RECREATION	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,524	-	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,487	-	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Faucet Aerator Replacement - INDOOR	75	2,336	-	\$0	\$100,000.00
INDOOR RECREATION	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,320	-	\$0	\$100,000.00
INDOOR RECREATION	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,653	-	\$0	\$100,000.00
INDOOR RECREATION	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$2,475,000	\$100,000.00
INDOOR RECREATION	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$4,350,000	\$100,000.00
INDOOR RECREATION	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$9,525,000	\$100,000.00
OFFICE BUILDINGS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	18,592	\$0	\$0.00
OFFICE BUILDINGS	2	High Efficiency Toilet Replacement Program - INDOOR	75	10,526	9,210	\$162,680	\$3.88
OFFICE BUILDINGS	2	Urinal Replacement Program - INDOOR	75	6,240	1,560	\$39,218	\$5.53
OFFICE BUILDINGS	2	Waterless Urinal Replacement Program - INDOOR	75	-	9,647	\$272,344	\$6.21
OFFICE BUILDINGS	3	Waterless Urinal Replacement Program - INDOOR	75	-	6,546	\$223,125	\$7.49
OFFICE BUILDINGS	1	High Efficiency Toilet Replacement Program - INDOOR	75	10,617	9,290	\$328,440	\$7.77
OFFICE BUILDINGS	1	Waterless Urinal Replacement Program - INDOOR	75	-	14,880	\$549,844	\$8.12
OFFICE BUILDINGS	1	Urinal Replacement Program - INDOOR	75	8,428	2,107	\$79,178	\$8.26
OFFICE BUILDINGS	3	Urinal Replacement Program - INDOOR	75	2,618	655	\$32,130	\$10.79
OFFICE BUILDINGS	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,618	2,291	\$133,280	\$12.79
OFFICE BUILDINGS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$13,680	\$100,000.00
OFFICE BUILDINGS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$25,200	\$100,000.00
OFFICE BUILDINGS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$31,590	\$100,000.00
OFFICE BUILDINGS	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	7,390	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	11,396	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	17,579	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	17,780	-	\$0	\$100,000.00

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Commercial Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
OFFICE BUILDINGS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	12,440	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$11,400,000	\$100,000.00
OFFICE BUILDINGS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$21,000,000	\$100,000.00
OFFICE BUILDINGS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$26,325,000	\$100,000.00
RESTAURANTS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	2,833	\$0	\$0.00
RESTAURANTS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	7,093	\$3,510	\$0.11
RESTAURANTS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	7,491	\$3,960	\$0.12
RESTAURANTS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	8,978	\$6,030	\$0.15
RESTAURANTS	2	Urinal Replacement Program - INDOOR	75	1,435	359	\$2,970	\$1.82
RESTAURANTS	3	Waterless Urinal Replacement Program - INDOOR	75	-	2,101	\$18,281	\$1.91
RESTAURANTS	2	Waterless Urinal Replacement Program - INDOOR	75	-	2,219	\$20,625	\$2.04
RESTAURANTS	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,421	2,118	\$24,640	\$2.56
RESTAURANTS	1	Waterless Urinal Replacement Program - INDOOR	75	-	2,659	\$31,406	\$2.60
RESTAURANTS	1	Urinal Replacement Program - INDOOR	75	1,506	377	\$4,523	\$2.64
RESTAURANTS	3	Urinal Replacement Program - INDOOR	75	840	210	\$2,633	\$2.75
RESTAURANTS	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,897	1,660	\$37,520	\$4.97
RESTAURANTS	3	High Efficiency Toilet Replacement Program - INDOOR	75	840	735	\$21,840	\$6.53
RESTAURANTS	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$390	\$100,000.00
RESTAURANTS	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$440	\$100,000.00
RESTAURANTS	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$670	\$100,000.00
RESTAURANTS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	2,372	-	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	2,621	-	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	3,141	-	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	4,089	-	\$0	\$100,000.00
RESTAURANTS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,223	-	\$0	\$100,000.00
RESTAURANTS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$2,925,000	\$100,000.00
RESTAURANTS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,300,000	\$100,000.00
RESTAURANTS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$5,025,000	\$100,000.00
RETAIL	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	4,449	\$0	\$0.00
RETAIL	2	High Efficiency Toilet Replacement Program - INDOOR	75	5,200	4,550	\$70,420	\$3.40
RETAIL	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,987	1,739	\$36,820	\$4.66
RETAIL	2	Urinal Replacement Program - INDOOR	75	3,083	771	\$17,010	\$4.85
RETAIL	1	Waterless Urinal Replacement Program - INDOOR	75	-	2,785	\$61,875	\$4.88
RETAIL	1	Urinal Replacement Program - INDOOR	75	1,577	394	\$8,910	\$4.97
RETAIL	2	Waterless Urinal Replacement Program - INDOOR	75	-	4,766	\$118,125	\$5.45
RETAIL	3	Waterless Urinal Replacement Program - INDOOR	75	-	2,284	\$67,500	\$6.50

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Commercial Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RETAIL	3	Urinal Replacement Program - INDOOR	75	914	228	\$9,720	\$9.36
RETAIL	3	High Efficiency Toilet Replacement Program - INDOOR	75	914	799	\$40,320	\$11.09
RETAIL	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$5,400	\$100,000.00
RETAIL	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$7,020	\$100,000.00
RETAIL	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$16,740	\$100,000.00
RETAIL	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	3	Low Flow Faucet Aerator Replacement - INDOOR	75	2,578	-	\$0	\$100,000.00
RETAIL	2	Low Flow Faucet Aerator Replacement - INDOOR	75	5,630	-	\$0	\$100,000.00
RETAIL	1	Low Flow Faucet Aerator Replacement - INDOOR	75	3,290	-	\$0	\$100,000.00
RETAIL	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	8,784	-	\$0	\$100,000.00
RETAIL	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,328	-	\$0	\$100,000.00
RETAIL	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$4,500,000	\$100,000.00
RETAIL	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$5,850,000	\$100,000.00
RETAIL	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$13,950,000	\$100,000.00
SCHOOLS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	1,031	\$0	\$0.00
SCHOOLS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	1,963	\$3,870	\$0.43
SCHOOLS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	295	\$990	\$0.74
SCHOOLS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	915	\$4,410	\$1.06
SCHOOLS	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,425	1,247	\$24,360	\$4.30
SCHOOLS	2	Urinal Replacement Program - INDOOR	75	845	211	\$5,873	\$6.11
SCHOOLS	2	Waterless Urinal Replacement Program - INDOOR	75	-	1,306	\$40,781	\$6.87
SCHOOLS	1	High Efficiency Toilet Replacement Program - INDOOR	75	2,000	1,750	\$95,200	\$11.96
SCHOOLS	1	Waterless Urinal Replacement Program - INDOOR	75	-	2,802	\$159,375	\$12.50
SCHOOLS	1	Urinal Replacement Program - INDOOR	75	1,587	397	\$22,950	\$12.71
SCHOOLS	3	Waterless Urinal Replacement Program - INDOOR	75	-	422	\$46,875	\$24.43
SCHOOLS	3	Urinal Replacement Program - INDOOR	75	169	42	\$6,750	\$35.17
SCHOOLS	3	High Efficiency Toilet Replacement Program - INDOOR	75	169	148	\$27,860	\$41.48
SCHOOLS	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	476	-	\$0	\$100,000.00
SCHOOLS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,543	-	\$0	\$100,000.00
SCHOOLS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	3,311	-	\$0	\$100,000.00
SCHOOLS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000

Commercial Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
SCHOOLS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,407	-	\$0	\$100,000.00
SCHOOLS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,343	-	\$0	\$100,000.00
SCHOOLS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$825,000	\$100,000.00
SCHOOLS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,675,000	\$100,000.00
SCHOOLS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,225,000	\$100,000.00
WAREHOUSES/STORAGE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	2,293	\$0	\$0.00
WAREHOUSES/STORAGE	2	High Efficiency Toilet Replacement Program - INDOOR	75	3,147	2,754	\$10,500	\$0.84
WAREHOUSES/STORAGE	3	Waterless Urinal Replacement Program - INDOOR	75	-	3,391	\$16,406	\$1.06
WAREHOUSES/STORAGE	2	Urinal Replacement Program - INDOOR	75	1,866	466	\$2,565	\$1.21
WAREHOUSES/STORAGE	2	Waterless Urinal Replacement Program - INDOOR	75	-	2,884	\$17,813	\$1.36
WAREHOUSES/STORAGE	3	Urinal Replacement Program - INDOOR	75	1,356	339	\$2,363	\$1.53
WAREHOUSES/STORAGE	3	High Efficiency Toilet Replacement Program - INDOOR	75	1,356	1,187	\$9,800	\$1.82
WAREHOUSES/STORAGE	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,403	1,228	\$18,060	\$3.23
WAREHOUSES/STORAGE	1	Waterless Urinal Replacement Program - INDOOR	75	-	1,967	\$30,469	\$3.41
WAREHOUSES/STORAGE	1	Urinal Replacement Program - INDOOR	75	1,114	278	\$4,388	\$3.46
WAREHOUSES/STORAGE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$4,410	\$100,000.00
WAREHOUSES/STORAGE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$5,130	\$100,000.00
WAREHOUSES/STORAGE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$14,760	\$100,000.00
WAREHOUSES/STORAGE	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	3,828	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	3,407	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	2,323	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5,316	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,644	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,675,000	\$100,000.00
WAREHOUSES/STORAGE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$4,275,000	\$100,000.00
WAREHOUSES/STORAGE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$12,300,000	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000

APPENDIX I

LEESBURG ANALYSIS PACKAGE

Appendix I

Leesburg

- A. Account Level Screening
- B. Benchmarks Per Residential Category and Build-out Condition for Accounts with No Seasonal Behavior
- C. Benchmarks per Residential Category and Build-out Condition for All Accounts
- D. Benchmarks per Non-Residential Category and Build-out Condition for All Accounts
- E. Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use
- F. Percentage of Accounts Likely using an In-Ground Irrigation System connected to the Public Water Supply
- G. Bill Frequency Analysis
- H. Cost Effective Water Conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 year Planning Horizon
- I. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon
- J. Residential and Commercial BMP Conservation Practices with a 1 year Implementation Period sorted by Program Water Savings
- K. Efficient Water Use Benchmarks
- L. GIS Maps Illustrating the Geographic Distribution of the Top Water Use Categories within the Service Area Boundary
- M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon Period for a 1 year Program Implementation Period

A. Account Level Data Screening to Generate Benchmarks for Single Family Accounts

Background:

Account level water consumption data is complex, variable and unique to each utility. Joining the account water consumption data with District population and property appraiser geospatial data results in inconsistencies and anomalies that need to be recognized, evaluated and cleaned in order to generate meaningful water consumption benchmarks and statistics. The following summarizes the analysis performed to calculate water consumption benchmarks and statistics.

Analysis	Reason for Step in Analysis	Utility Specific Notes
Initial screens		
Screen Accounts with no total consumption	Removes accounts with no consumption over period of analysis less than 15,000 gallons total water use.	NA
Screen Accounts with population less than one	Removes accounts with population less than one person to avoid overestimating per capita use	NA
Screen by Department of Revenue Code	Isolate account that are single family in account billing records and property appraisal database	NA
Isolate period of analysis for each utility	Look at aggregate billing data anomalies to find abnormal consumption trends: abnormally low, low/high switching, abnormally high.	Palm Coast- Jan'08 was dropped, SJUD does not include Nov,Dec-'09, Palm Bay does not in Oct, Nov, Dec-09. Leesburg November data was consider for removal due to numerous skipped reads.
Evaluate accounts with no seasonal or transient behavior		
Screen for Year Built	Capture accounts with water consumption for three build out conditions	
Capture accounts that have min month above min threshold	Develop a clean data set to compare against industry benchmarks for occupied homes and develop an understanding for indoor/outdoor use characteristics. Use this dataset to run tests and to check quality of analyses on large accounts dataset that include accounts with transient behavior.	Minimum threshold developed for each utility as the average population per account multiplied by the min indoor usage of 60 gallons per person per day.
Evaluate all accounts		
Separate transient accounts from accounts with anomalously low consumption	If account has less than 15,000 gallons of consumption for period of analysis it is exclude from analysis. There are accounts with population, but look to be vacated over the period of the analysis.	This analysis keeps accounts that average at least 1000 gallons per month. There are many account in Palm Bay and Palm Coast that have low and continuous consumption between 1000 and 3000 gallons per month.
Assign indoor use to transient accounts that have minimum month of zero.	For accounts with a min month of zero, the min month hydrograph separation will assign all water consumption as outdoor. For accounts with min month equaling zero and consumption in other months, indoor consumption in months with consumption is set to the average consumption for the period.	This has the tendency to over predict indoor consumption in transient accounts. But checks against clean datasets are within reason.
Screen for minimum irrigable area	Used in calculating outdoor benchmarks and to avoid small denominators from benchmark calculations (Subtracting house area from parcel area can lead to small or negative numbers).	

B. Leesburg - Benchmarks Per Residential Category and Build Out Condition for Accounts with No Seasonal Behavior

Res Class	Build Out Condition	Population	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)
RS1	Pre 1984	531	80.37	70.36	150.73
	1984 - 1993	41	57.06	75.39	132.45
	1994 to Present	105	73.55	65.89	139.44
RS2	Pre 1984	373	120.81	92.80	213.61
	1984 - 1993	172	155.93	99.23	255.16
	1994 to Present	281	141.07	100.48	241.55
RS3	Pre 1984	82	211.50	128.03	339.53
	1984 - 1993	139	158.06	109.52	267.58
	1994 to Present	788	170.30	115.03	285.33
RS4	Pre 1984	53	282.74	134.60	417.34
	1984 - 1993	73	204.73	91.97	296.70
	1994 to Present	362	197.04	124.84	321.87
RS5	Pre 1984	83	245.53	122.97	368.50
	1984 - 1993	47	196.42	116.21	312.63
	1994 to Present	289	226.72	139.66	366.38

C. Leesburg - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Number of Records	Avg Yr Built	Average Monthly Average (gal/month)	Average Monthly Max (gal/month)	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)	StdDev of Per Capita Total (gpcd)
RS1	Pre 1984	1,343	1955	4,886	7,287	19.00	47.89	66.88	61.73
	1984 - 1993	78	1987	4,561	6,231	15.08	45.81	60.89	51.64
	1994 to Present	93	1999	5,592	7,427	26.54	46.03	72.58	77.48
RS2	Pre 1984	600	1957	6,629	10,478	35.88	57.77	93.65	84.33
	1984 - 1993	408	1991	8,729	11,855	56.75	86.93	143.68	98.01
	1994 to Present	751	1998	8,075	12,337	54.36	78.58	132.94	82.06
RS3	Pre 1984	112	1963	8,368	13,383	49.47	76.40	125.87	113.36
	1984 - 1993	197	1991	10,768	17,377	83.38	89.94	173.32	95.41
	1994 to Present	1,346	1999	10,477	16,375	82.01	88.91	170.92	93.55
RS4	Pre 1984	42	1962	11,826	20,151	91.91	84.62	176.54	195.73
	1984 - 1993	63	1990	10,532	17,940	63.86	97.99	161.85	103.81
	1994 to Present	678	2001	12,119	18,839	101.91	97.18	199.09	116.65
RS5	Pre 1984	82	1960	9,550	14,249	72.30	71.45	143.75	162.87
	1984 - 1993	34	1989	12,274	23,299	83.71	93.55	177.27	128.23
	1994 to Present	296	2002	12,240	18,690	109.26	101.00	210.26	139.05
HD	Pre 1984	134	1957	6,877	58,687	- *	- *	37.41	152.65
	1984 - 1993	36	1987	2,431	5,606	- *	- *	9.57	9.82
	1994 to Present	39	1999	2,081	5,844	- *	- *	13.58	7.50

* Multi family water use was assumed to be used primarily indoors.

Leesburg - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)	StdDev of Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	10,767	-	1,073	-	0.185	0.005	0.008	0.018	0.018
	1984 - 1993	6,512	-	1,042	-	0.192	0.006	0.011	0.026	0.022
	1994 to Present	9,272	-	1,073	-	0.163	0.007	0.012	0.022	0.020
RS2	Pre 1984	13,306	-	1,451	-	0.137	0.007	0.012	0.019	0.017
	1984 - 1993	7,423	-	1,400	-	0.145	0.015	0.026	0.039	0.025
	1994 to Present	6,915	-	1,384	-	0.131	0.016	0.030	0.041	0.025
RS3	Pre 1984	18,717	-	2,000	-	0.108	0.007	0.012	0.020	0.019
	1984 - 1993	10,908	-	1,734	-	0.114	0.017	0.029	0.036	0.019
	1994 to Present	8,736	-	1,773	-	0.107	0.020	0.037	0.042	0.024
RS4	Pre 1984	24,254	-	2,335	-	0.095	0.009	0.015	0.020	0.018
	1984 - 1993	15,381	-	2,070	-	0.112	0.011	0.019	0.027	0.018
	1994 to Present	10,474	-	2,062	-	0.098	0.021	0.039	0.040	0.024
RS5	Pre 1984	41,731	-	2,665	-	0.087	0.007	0.011	0.013	0.017
	1984 - 1993	30,003	-	3,160	-	0.077	0.009	0.015	0.019	0.017
	1994 to Present	14,797	-	2,511	-	0.083	0.019	0.037	0.036	0.024
HD	Pre 1984	13,500	-	2,400	-	0.094	- *	- *	0.025	0.110
	1984 - 1993	17,563	-	3,557	-	0.022	- *	- *	0.007	0.008
	1994 to Present	8,594	-	2,148	-	0.032	- *	- *	0.008	0.003

* Multi family water use was assumed to be used primarily indoors.

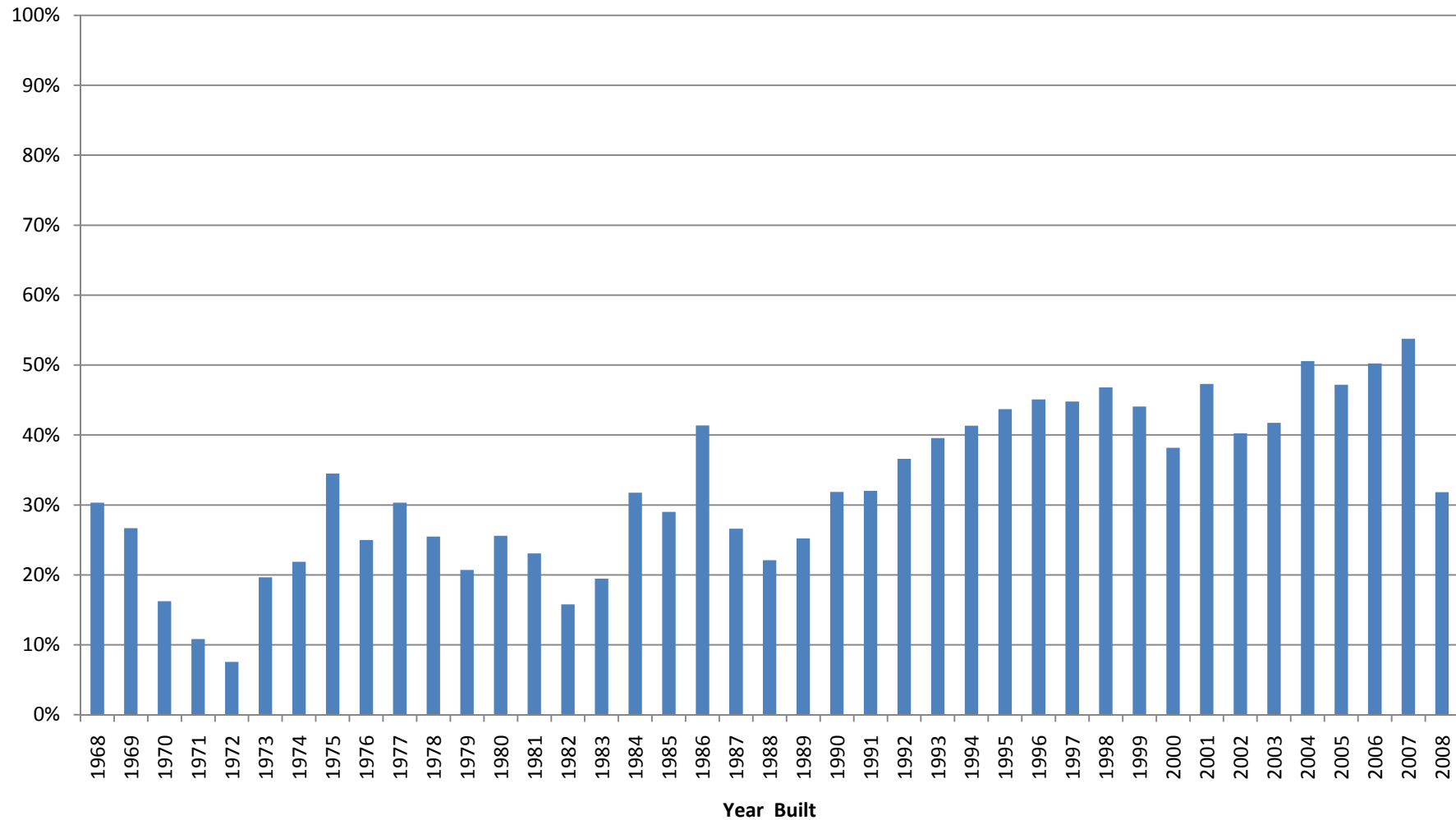
D. Leesburg - Benchmarks Per Non-Residential Category and Build Out Condition for All Accounts

	Build Out Condition	Number of Records	Avg Yr Built	Avg Use Per Account (gpd)	Average Max Use (gpd)	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)	Stdev WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	72	1961	175	764	40,847	-	6,462	-	0.07	0.01	0.02
	1984 - 1993	22	1987	248	881	65,711	-	5,256	-	0.06	0.01	0.01
	1994 to Present	17	2003	810	1,694	100,841	-	8,498	-	0.19	0.02	0.03
HOSPITALS	Pre 1984	4	1951	730	1,747	80,721	-	42,292	-	0.04	0.01	0.01
	1984 - 1993	7	1987	4,577	6,550	251,704	-	7,219	-	3.94	0.07	0.17
	1994 to Present	na	na	na	na	na	-	na	-	na	na	na
INDOOR RECREATION	Pre 1984	44	1956	318	1,191	60,434	-	7,640	-	0.05	0.01	0.02
	1984 - 1993	39	1988	683	1,869	117,370	-	8,078	-	0.03	0.01	0.02
	1994 to Present	10	2002	171	436	242,299	-	9,451	-	0.02	0.00	0.00
LIVE-IN CARE	Pre 1984	8	1952	3,988	8,769	73,220	-	16,316	-	0.32	0.07	0.05
	1984 - 1993	2	1991	4,836	41,681	172,045	-	35,165	-	0.44	0.05	0.05
	1994 to Present	4	1999	1,004	1,935	91,892	-	13,629	-	0.08	0.01	0.00
MANUFACTURING	Pre 1984	32	1966	743	1,753	179,777	-	24,915	-	0.05	0.01	0.03
	1984 - 1993	15	1989	739	1,652	83,824	-	15,545	-	0.13	0.01	0.01
	1994 to Present	18	2000	1,271	2,846	174,821	-	10,607	-	0.17	0.01	0.01
MISCELLANEOUS	Pre 1984	32	1952	1,376	2,436	287,370	-	7,476	-	0.38	0.03	0.04
	1984 - 1993	7	1987	2,002	4,744	2,238,749	-	5,737	-	0.79	0.28	0.73
	1994 to Present	na	na	na	na	na	-	na	-	na	na	na
OFFICE BUILDINGS	Pre 1984	165	1959	422	1,211	25,936	-	5,587	-	0.13	0.02	0.03
	1984 - 1993	103	1988	982	3,731	152,613	-	5,543	-	0.24	0.06	0.30
	1994 to Present	82	2002	285	872	218,483	-	7,021	-	0.05	0.01	0.02
RESTAURANTS	Pre 1984	26	1963	849	1,768	25,060	-	2,675	-	0.33	0.04	0.03
	1984 - 1993	11	1988	2,138	3,983	119,405	-	17,370	-	0.45	0.04	0.02
	1994 to Present	13	2001	2,375	5,003	58,994	-	4,840	-	0.48	0.06	0.09
RETAIL	Pre 1984	119	1954	603	2,828	54,709	-	12,657	-	0.06	0.02	0.04
	1984 - 1993	26	1987	670	1,676	156,537	-	33,508	-	0.10	0.01	0.02
	1994 to Present	47	2002	321	958	114,590	-	18,980	-	0.08	0.01	0.02
WAREHOUSES/STORAGE	Pre 1984	42	1960	680	1,578	70,647	-	16,020	-	0.07	0.01	0.02
	1984 - 1993	8	1985	223	743	78,744	-	23,211	-	0.01	0.00	0.00
	1994 to Present	40	2002	170	607	75,418	-	14,894	-	0.01	0.00	0.00

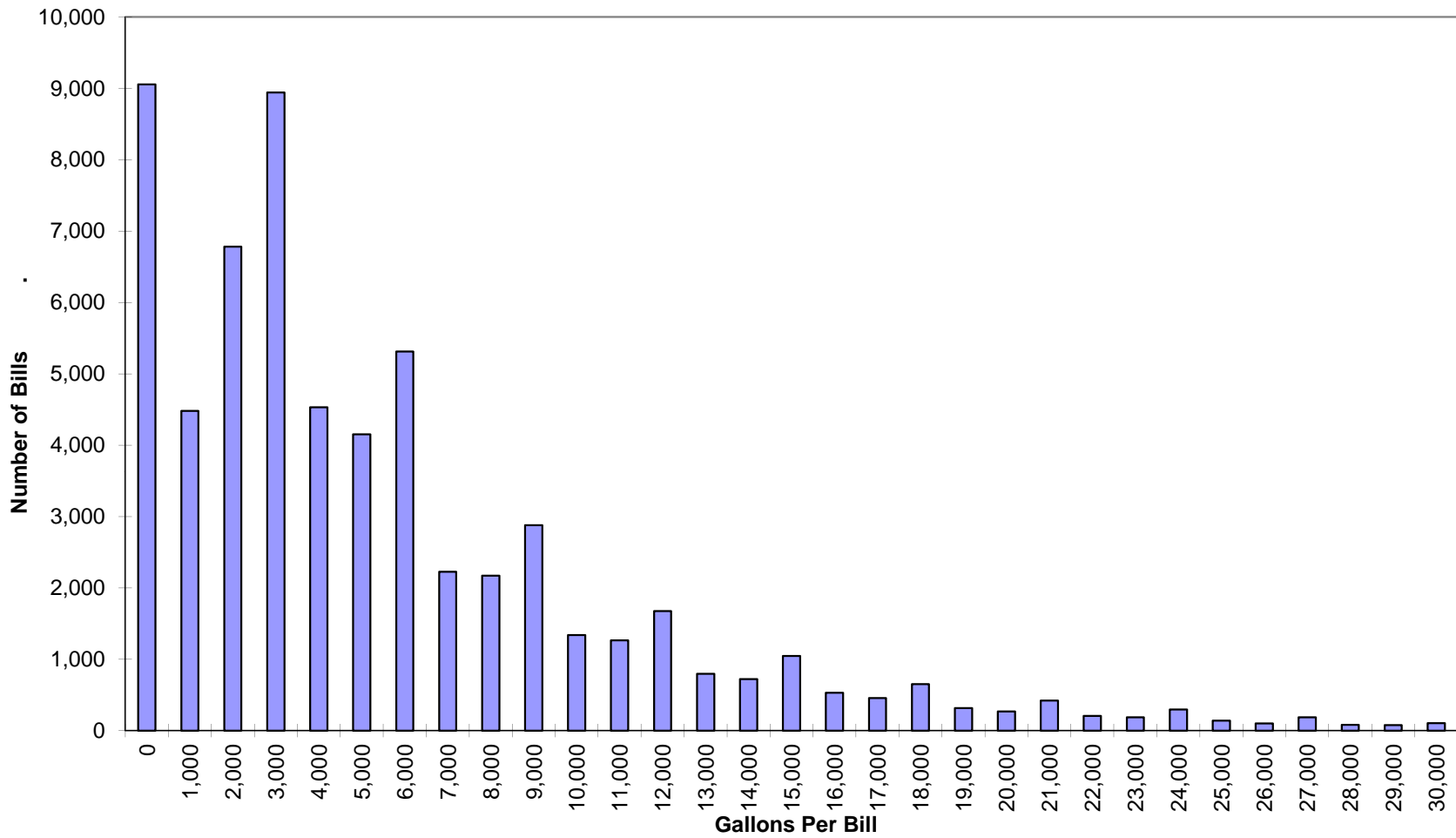
E. Leesburg - Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use

Res Class	Build Out Condition	% of Homes with Irrigation Systems	% of Outdoor Water used by Irrigation Systems
RS1	Pre 1984	9%	54%
	1984 - 1993	4%	37%
	1994 to Present	9%	40%
RS2	Pre 1984	17%	67%
	1984 - 1993	30%	67%
	1994 to Present	30%	66%
RS3	Pre 1984	21%	71%
	1984 - 1993	52%	81%
	1994 to Present	46%	78%
RS4	Pre 1984	28%	84%
	1984 - 1993	48%	83%
	1994 to Present	54%	85%
RS5	Pre 1984	27%	80%
	1984 - 1993	53%	85%
	1994 to Present	48%	82%

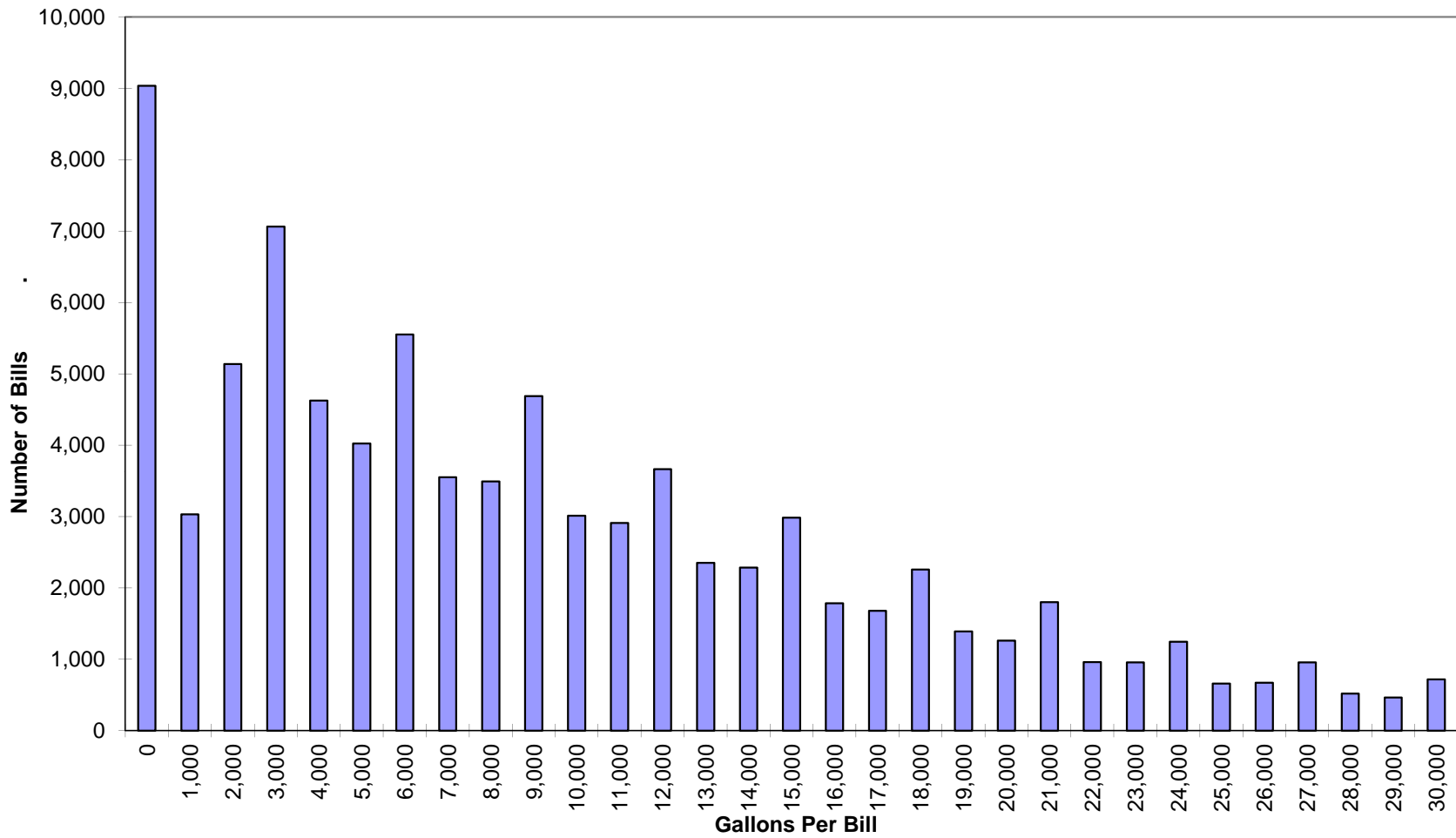
F. Percentage of Accounts in Leesburg Likely Using an In-Ground Irrigation System connected to the Public Water Supply



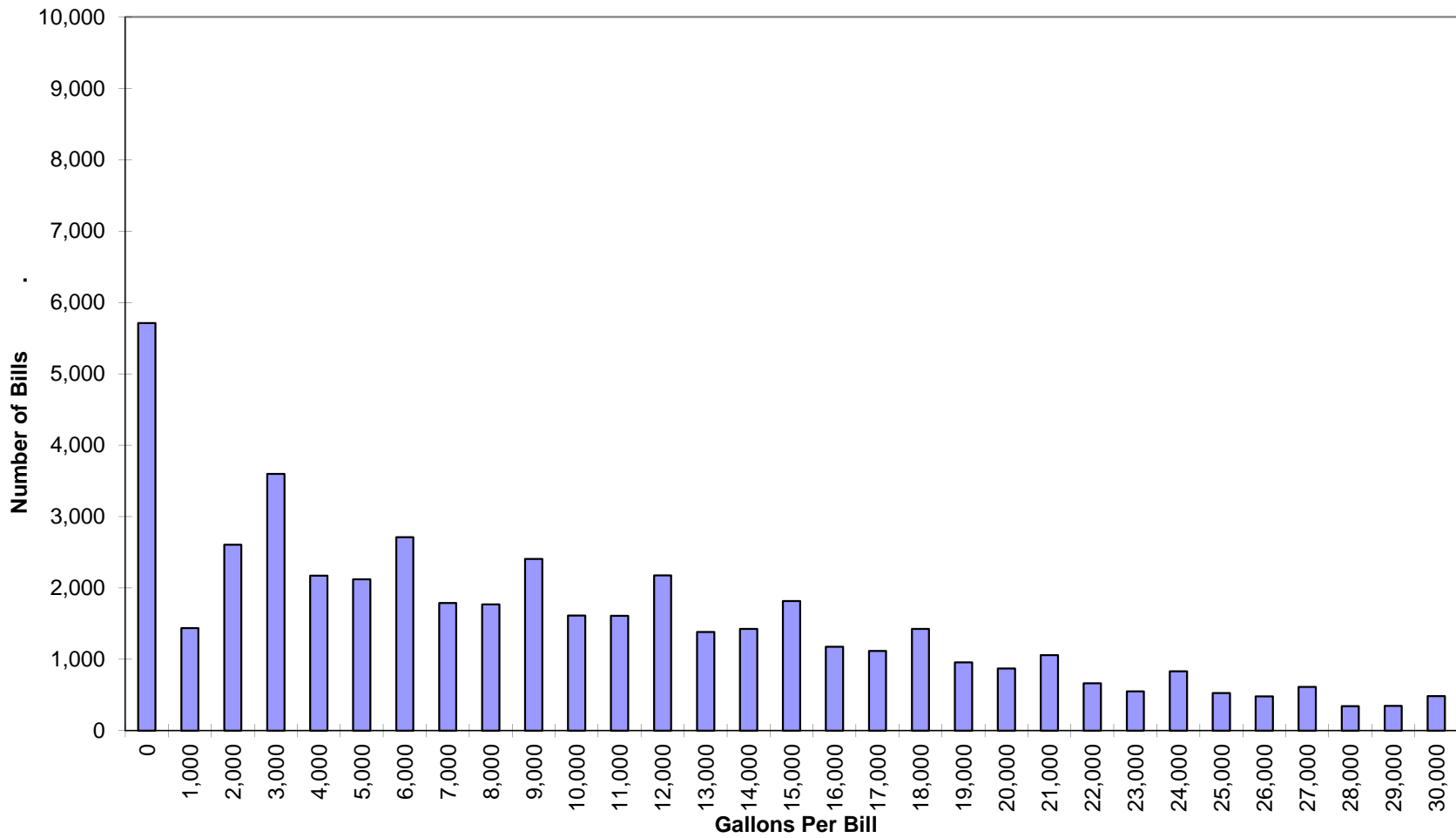
G. Leesburg Bill Frequency Analysis - RS1 (January 2008 to December 2009)



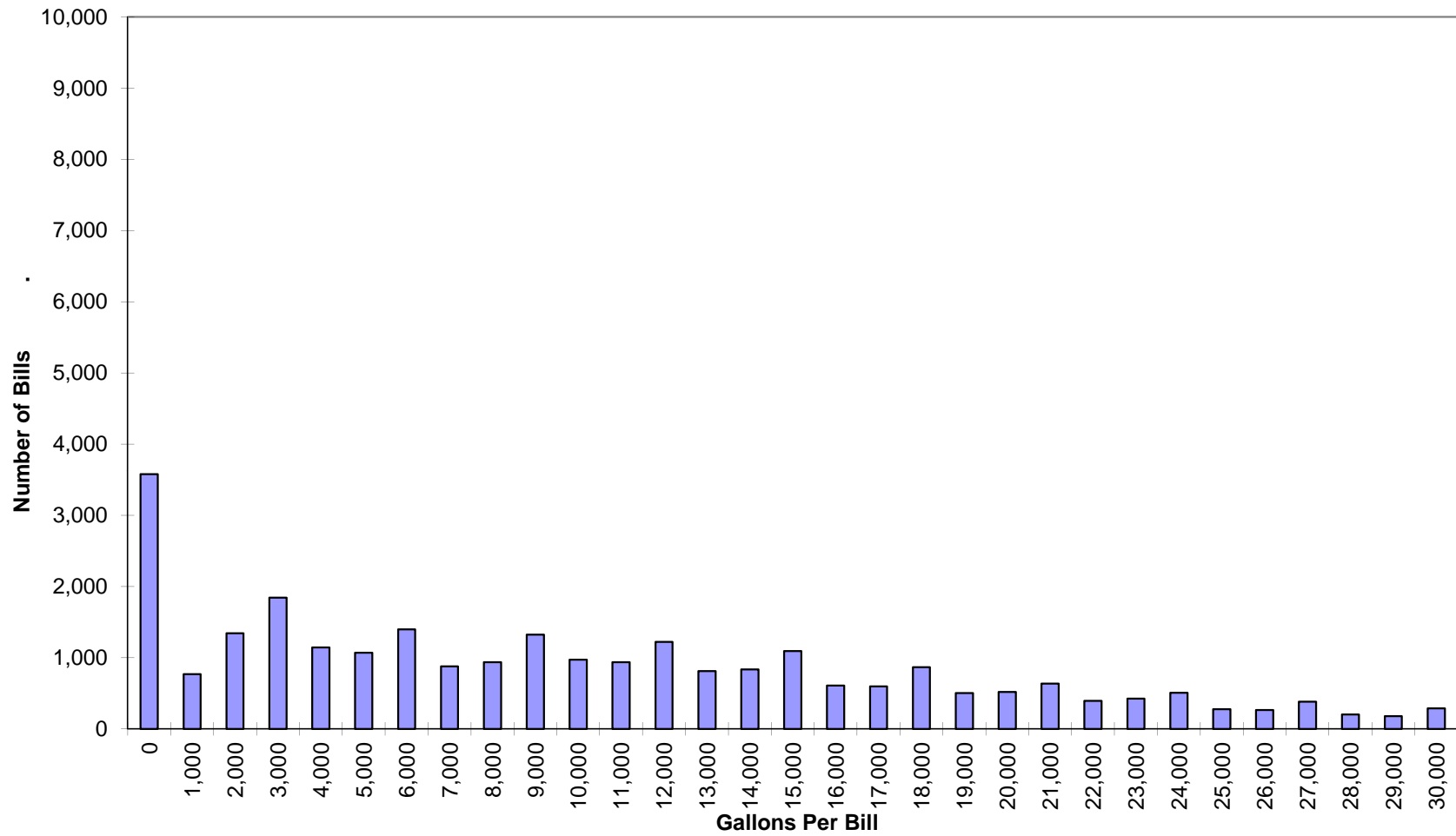
Leesburg Bill Frequency Analysis - RS2 (January 2008 to December 2009)



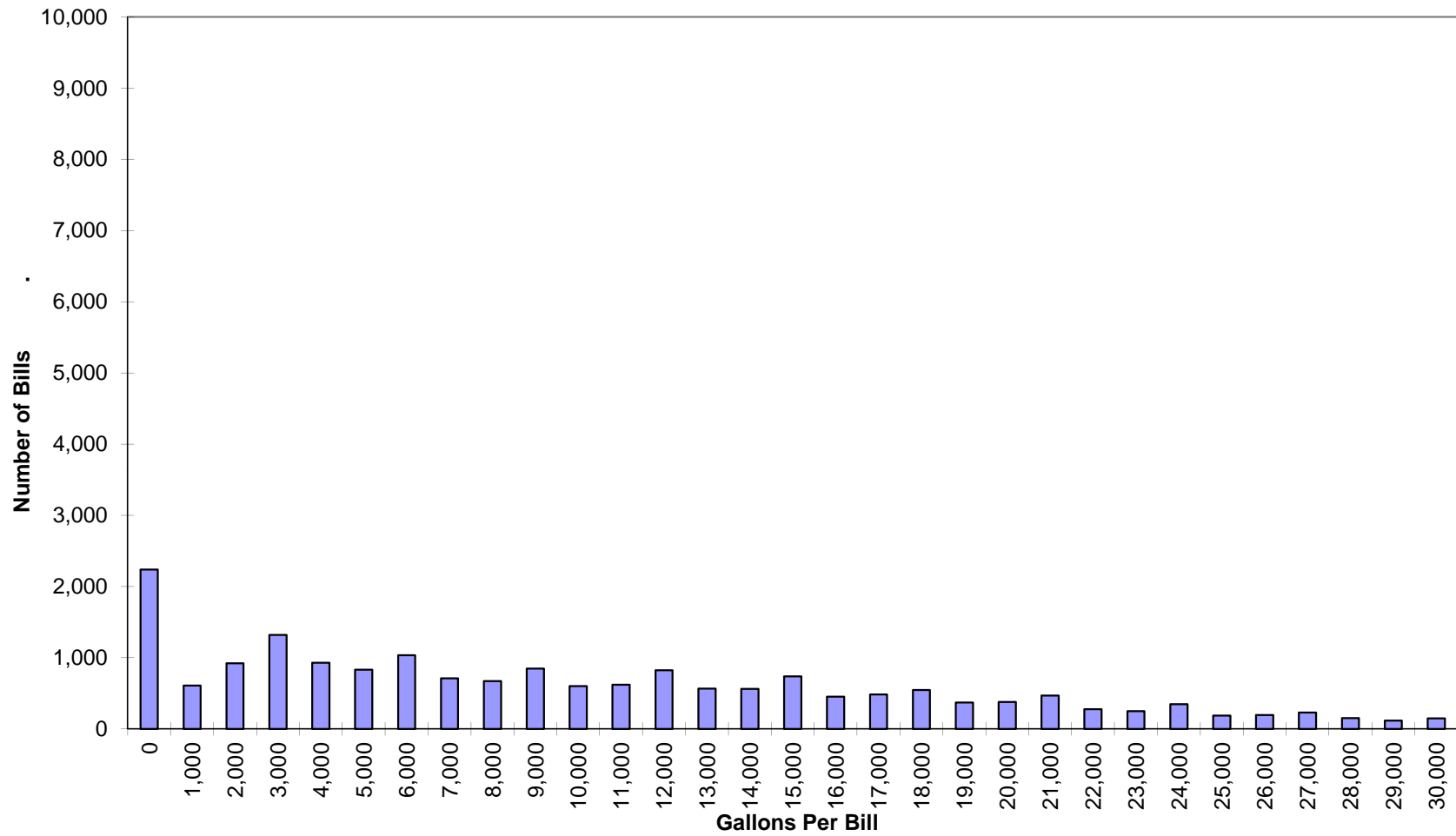
Leesburg Bill Frequency Analysis - RS3 (January 2008 to December 2009)



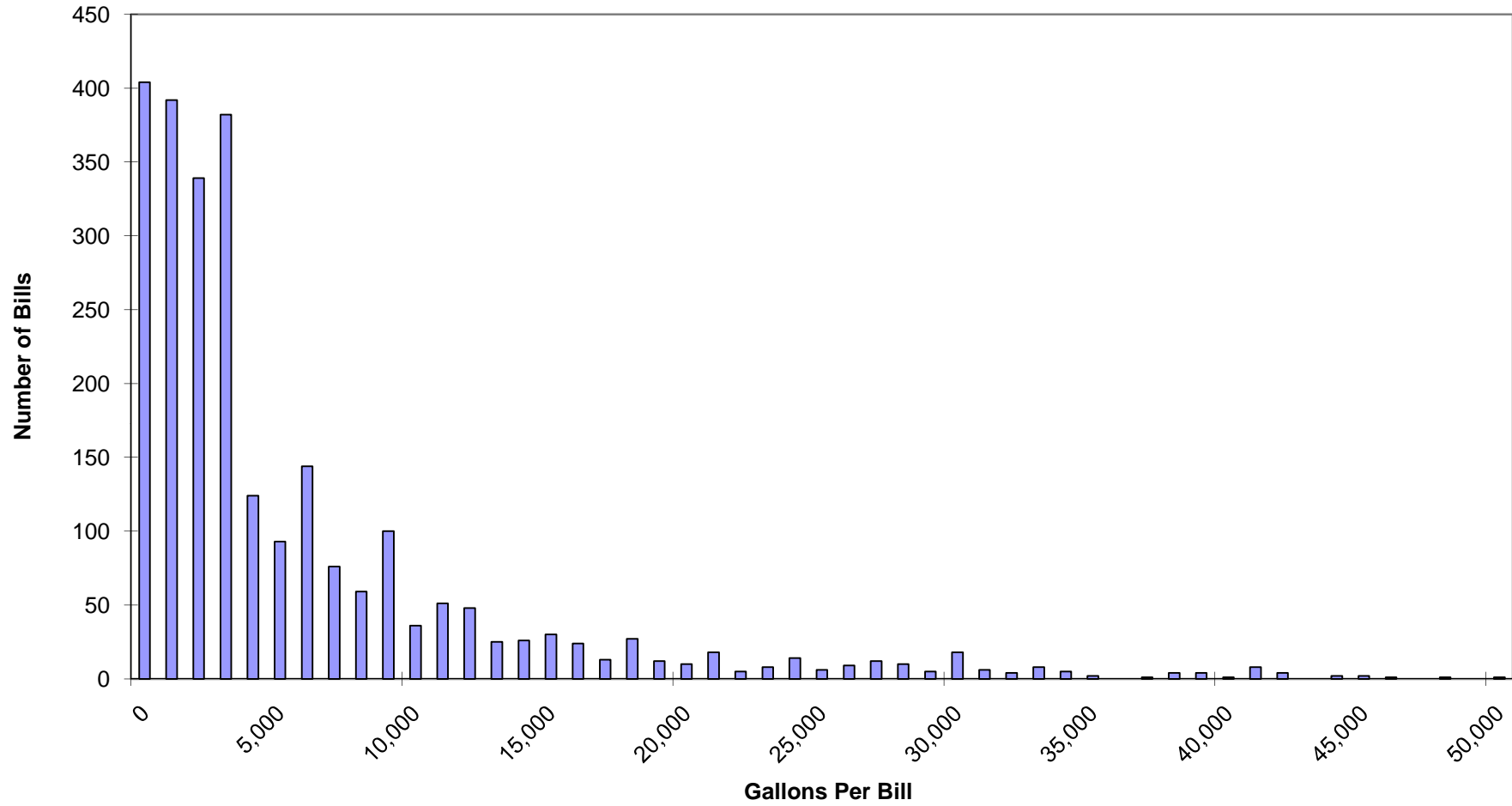
Leesburg Bill Frequency Analysis - RS4 (January 2008 to December 2009)



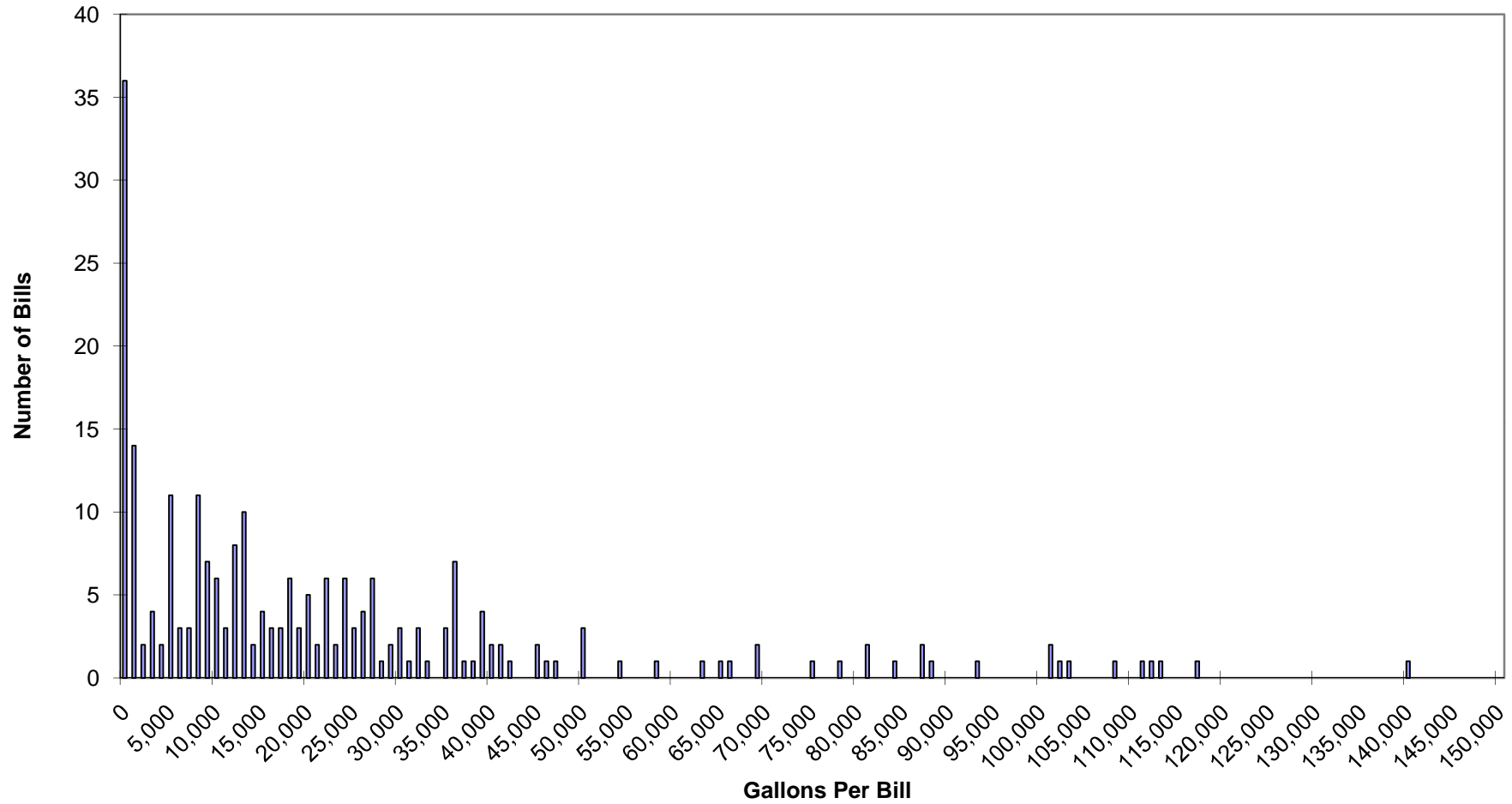
Leesburg Bill Frequency Analysis - RS5 (January 2008 to December 2009)



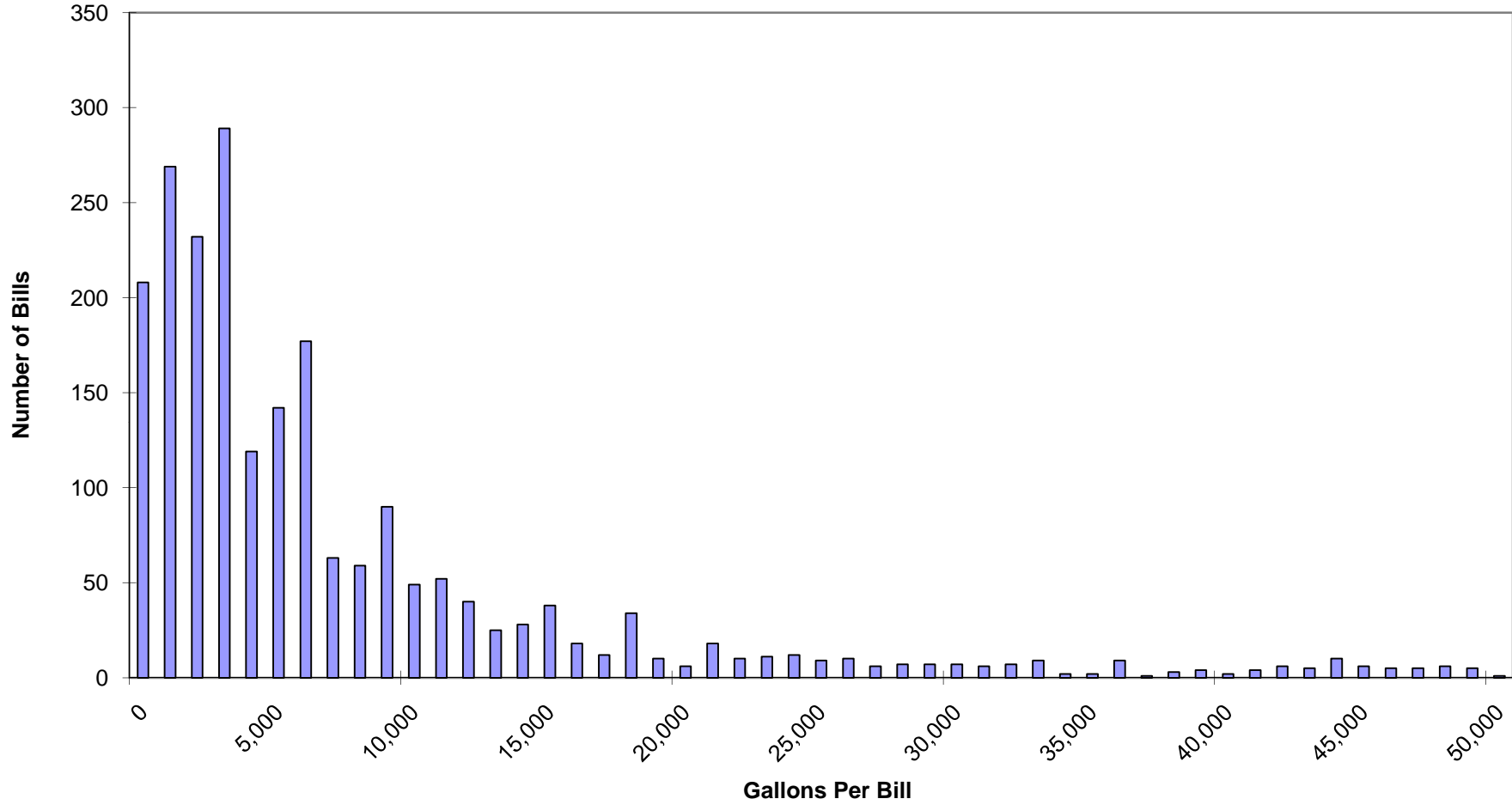
Leesburg Bill Frequency Analysis - AUTO & REPAIR (January 2008 to December 2009)



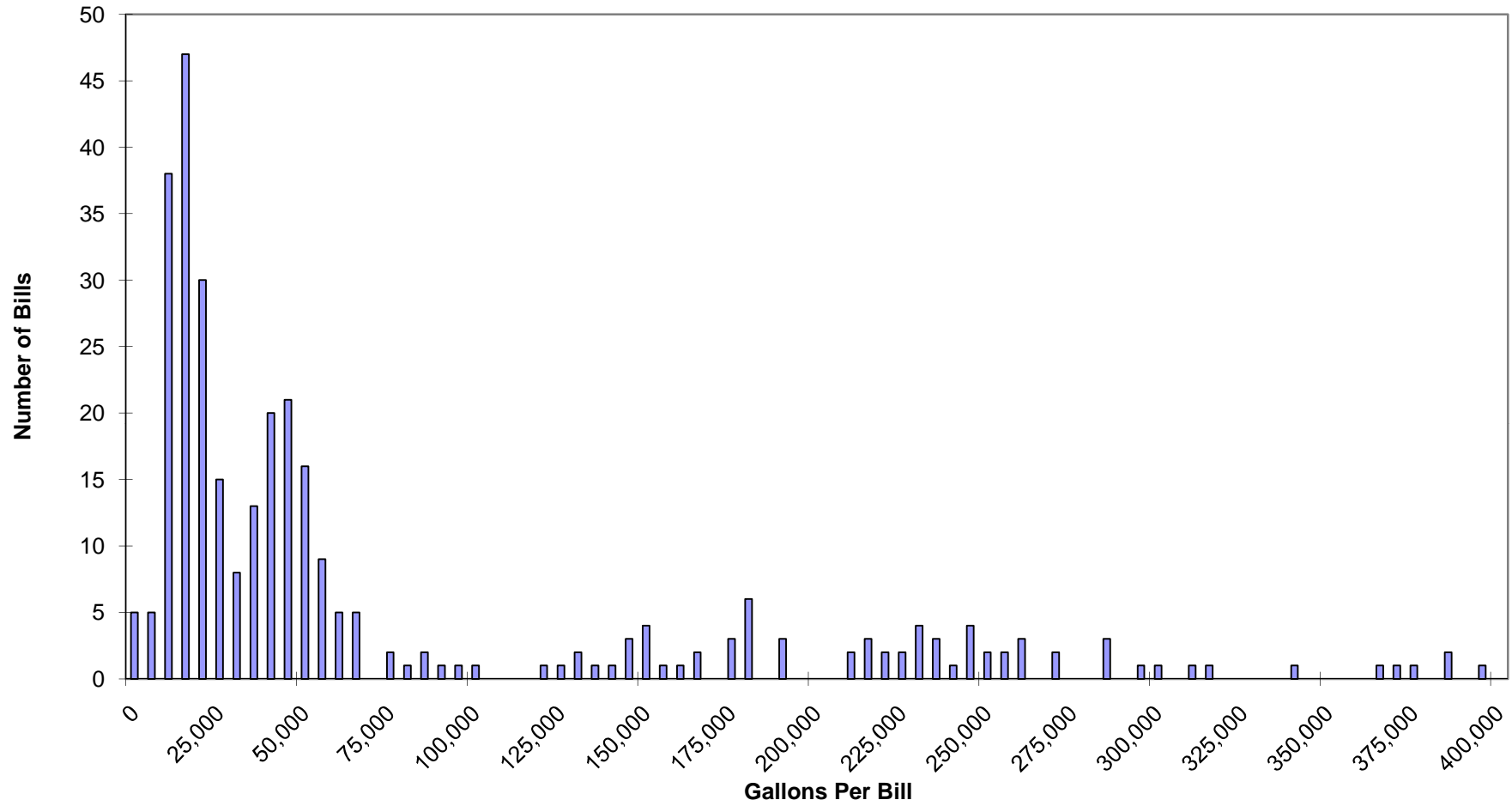
Leesburg Bill Frequency Analysis - HOSPITALS
(January 2008 to December 2009)



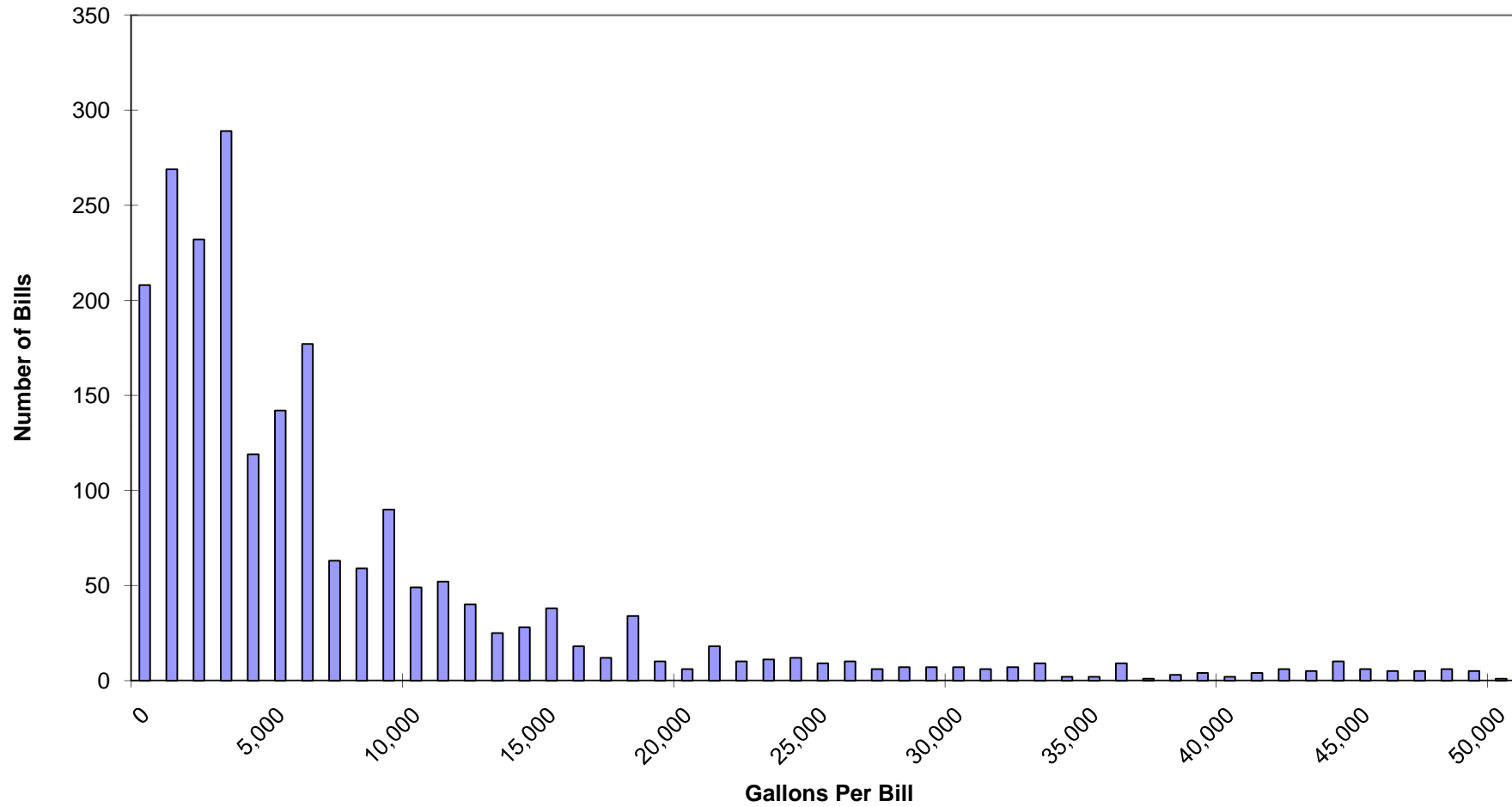
**Leesburg Bill Frequency Analysis - INDOOR RECREATION
(January 2008 to December 2009)**



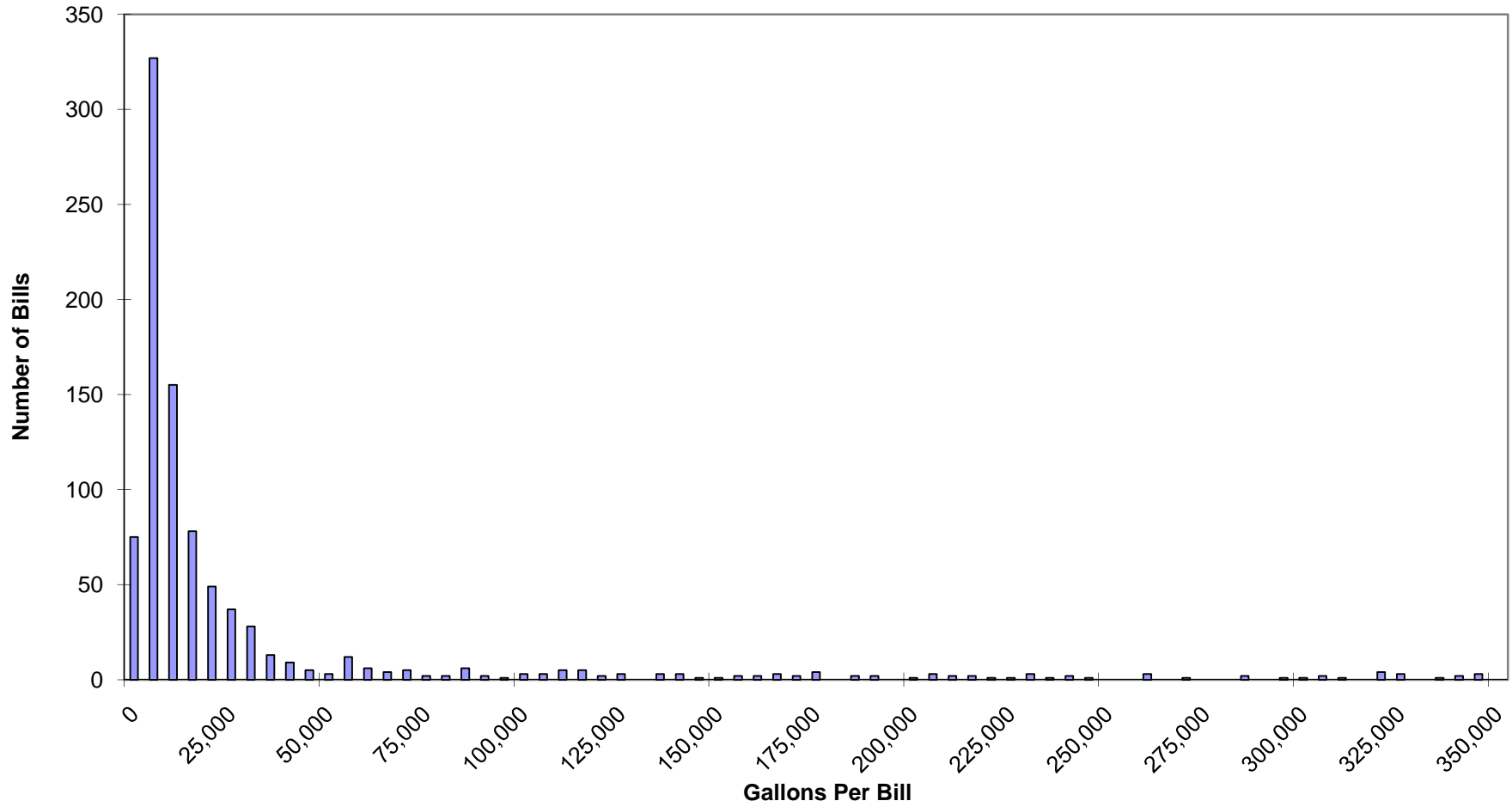
Leesburg Bill Frequency Analysis - LIVE-IN CARE (January 2008 to December 2009)



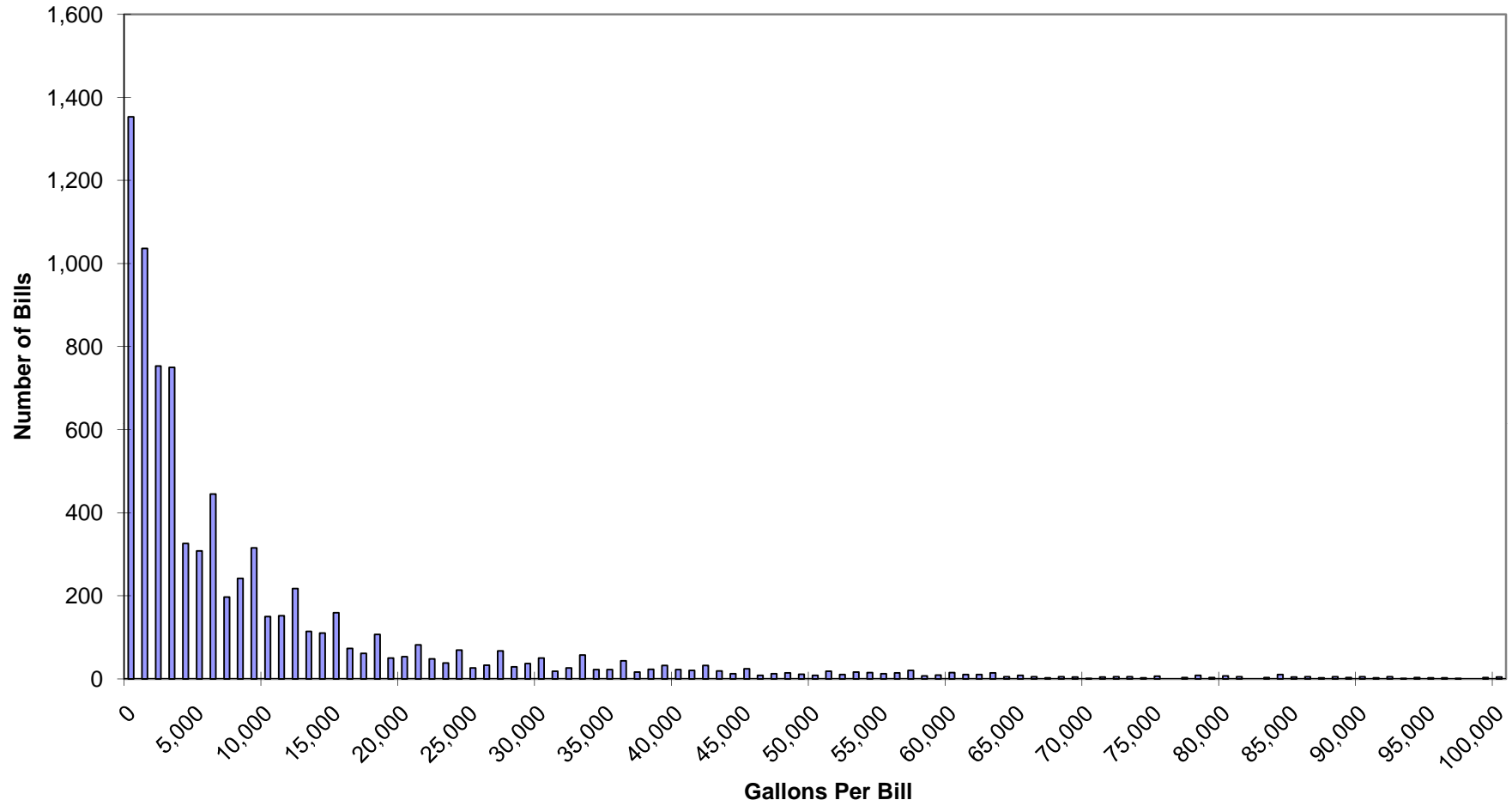
Leesburg Bill Frequency Analysis - MANUFACTURING
(January 2008 to December 2009)



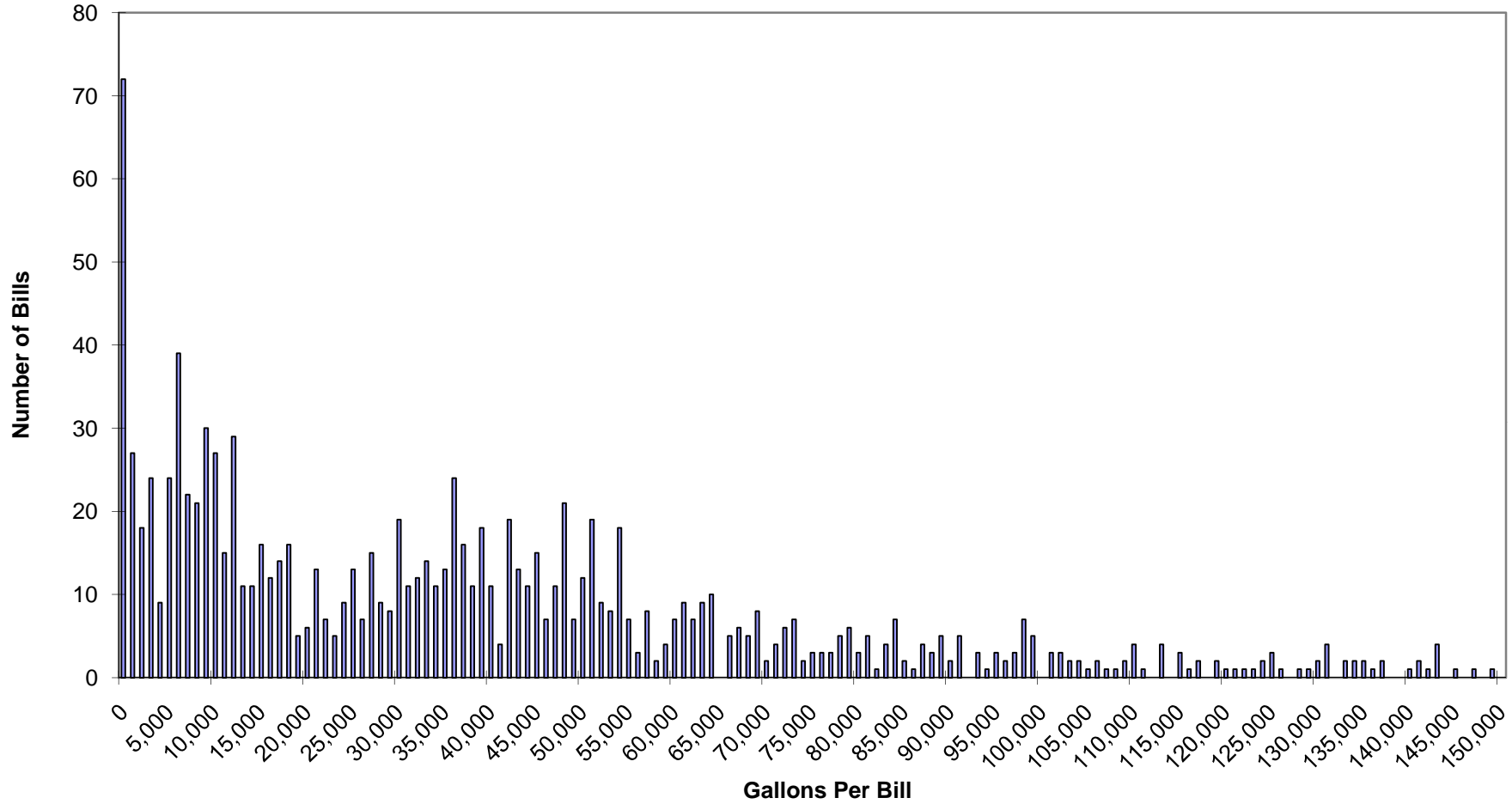
**Leesburg Bill Frequency Analysis - MISCELLANEOUS
(January 2008 to December 2009)**



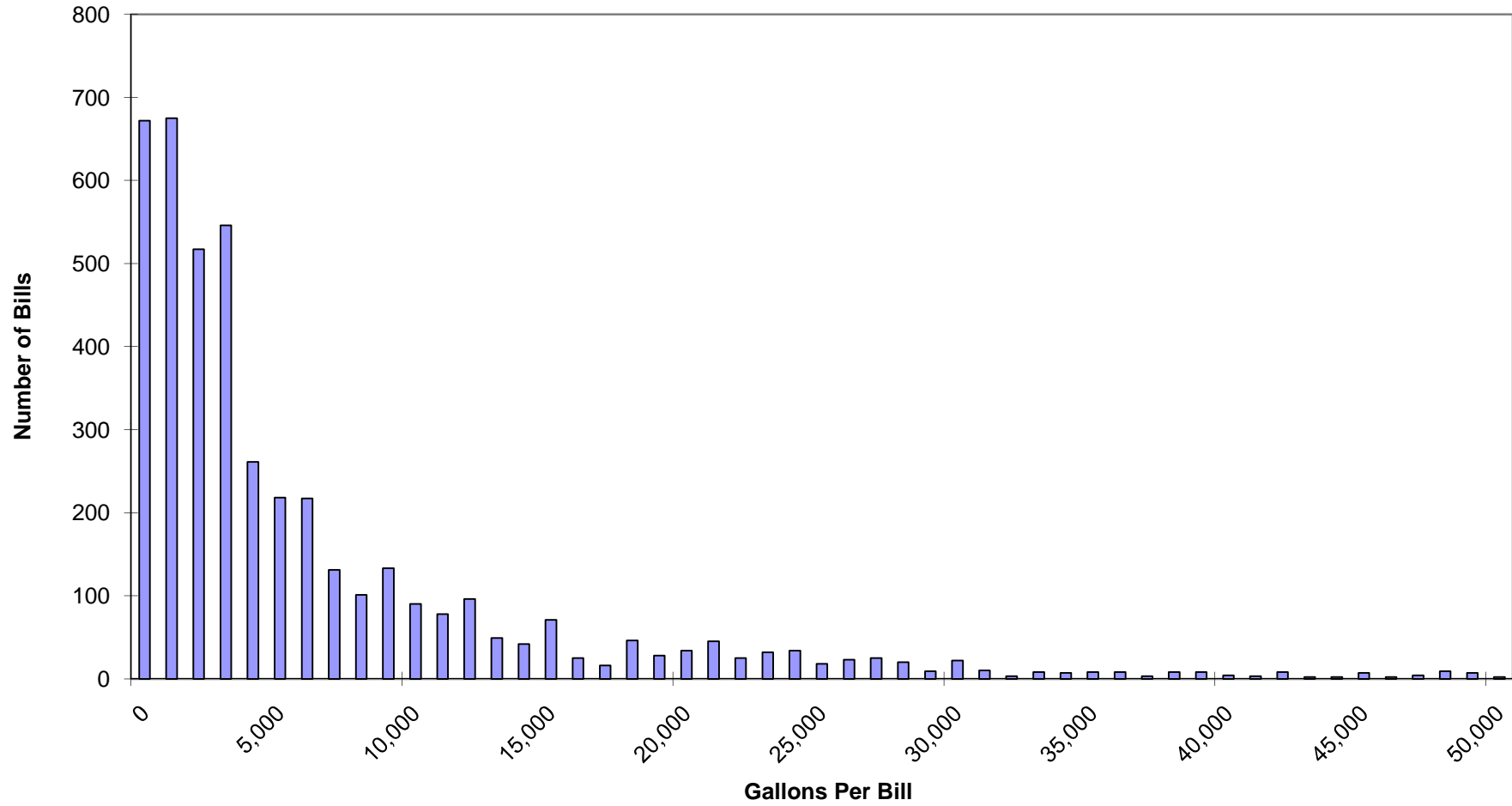
**Leesburg Bill Frequency Analysis - OFFICE BUILDINGS
(January 2008 to December 2009)**



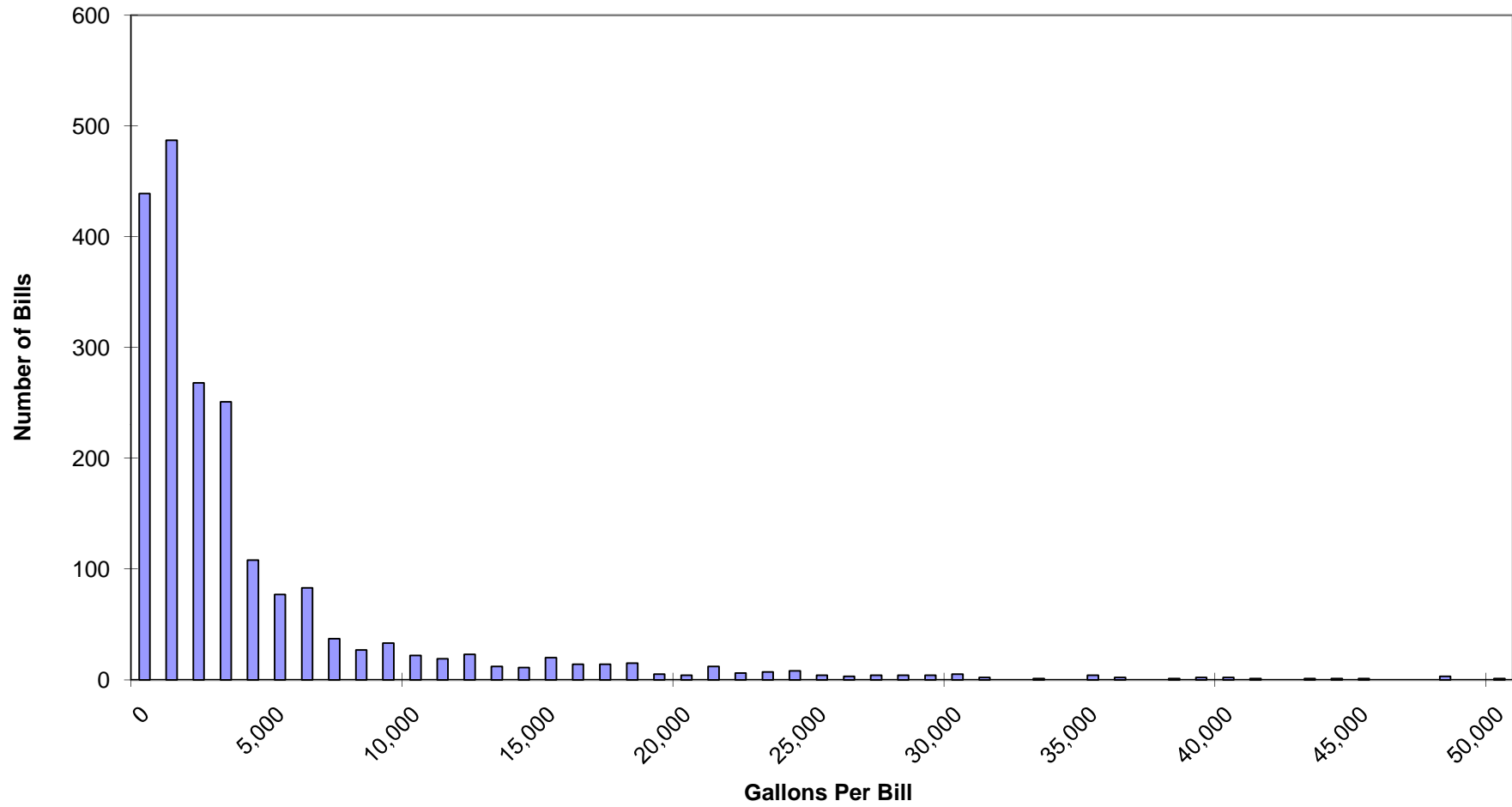
Leesburg Bill Frequency Analysis - RESTAURANTS
(January 2008 to December 2009)



Leesburg Bill Frequency Analysis - RETAIL
(January 2008 to December 2009)



Leesburg Bill Frequency Analysis - WAREHOUSES/STORAGE (January 2008 to December 2009)



H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Leesburg

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	1 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	6,765,000
Commercial	1,755,000
Total	8,520,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	61,000	\$810,000	\$2.92
Aggressive Meter Monitoring Program - GLOBAL	122,000	1,140,000	\$2.05
Subtotals	183,000	\$1,950,000	\$2.34

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	19,000	51,000	\$704,000	\$3.03
Ultra Low Flush Toilet Replacement Program - INDOOR	90,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	26,000	61,000	\$605,000	\$2.18
High Efficiency Clothes Washer Replacement - INDOOR	24,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	8,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	26,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	469,000	\$1,020,000	\$0.48
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	452	\$7,350	\$3.58
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	469,000	\$0	\$0.00
Subtotals	167,000	1,076,452	\$2,336,350	\$0.48

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	3,300	\$9,000	\$0.60
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	14,000	17,000	\$99,000	\$1.28
Low Flow Faucet Aerator Replacement - INDOOR	8,000	17,000	\$24,000	\$0.31
Urinal Replacement Program - INDOOR	9,000	7,200	\$56,000	\$1.71
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	16,000	\$6,000	\$0.08
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	19,000	\$0	\$0.00
Subtotals	32,000	79,500	\$194,000	\$0.54

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	199,000	1,339,000	\$5,376,000	\$0.88

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Leesburg

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	5 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	6,765,000
Commercial	1,755,000
Total	8,520,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	61,000	\$810,000	\$2.92
Aggressive Meter Monitoring Program - GLOBAL	122,000	1,140,000	\$2.05
Subtotals	183,000	\$1,950,000	\$2.34

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	26,000	44,000	\$606,000	\$3.03
Ultra Low Flush Toilet Replacement Program - INDOOR	90,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	43,000	43,000	\$432,000	\$2.21
High Efficiency Clothes Washer Replacement - INDOOR	24,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	7,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	26,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	469,000	\$1,020,000	\$0.48
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	452	\$7,350	\$3.58
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	469,000	\$0	\$0.00
Subtotals	190,000	1,051,452	\$2,065,350	\$0.43

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	2,000	2,800	\$8,000	\$0.63
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	16,000	15,000	\$88,000	\$1.29
Low Flow Faucet Aerator Replacement - INDOOR	13,000	12,000	\$17,000	\$0.31
Urinal Replacement Program - INDOOR	10,000	6,000	\$46,000	\$1.69
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	16,000	\$6,000	\$0.08
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	19,000	\$0	\$0.00
Subtotals	41,000	70,800	\$165,000	\$0.51

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	231,000	1,305,000	\$5,016,000	\$0.85

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Leesburg

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	10 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	6,765,000
Commercial	1,755,000
Total	8,520,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	61,000	\$810,000	\$2.92
Aggressive Meter Monitoring Program - GLOBAL	122,000	1,140,000	\$2.05
Subtotals	183,000	\$1,950,000	\$2.34

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	35,000	35,000	\$485,000	\$3.05
Ultra Low Flush Toilet Replacement Program - INDOOR	90,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	65,000	22,000	\$216,000	\$2.16
High Efficiency Clothes Washer Replacement - INDOOR	24,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	7,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	26,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	469,000	\$1,020,000	\$0.48
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	452	\$7,350	\$3.58
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	469,000	\$0	\$0.00
Subtotals	221,000	1,021,452	\$1,728,350	\$0.37

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	2,000	2,200	\$7,000	\$0.70
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	17,000	13,000	\$75,000	\$1.27
Low Flow Faucet Aerator Replacement - INDOOR	19,000	6,000	\$9,000	\$0.33
Urinal Replacement Program - INDOOR	12,000	4,500	\$35,000	\$1.71
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	16,000	\$6,000	\$0.08
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	19,000	\$0	\$0.00
Subtotals	50,000	60,700	\$132,000	\$0.48

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	271,000	1,265,000	\$4,572,000	\$0.79

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Leesburg

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	20 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	6,765,000
Commercial	1,755,000
Total	8,520,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	61,000	\$810,000	\$2.92
Aggressive Meter Monitoring Program - GLOBAL	122,000	1,140,000	\$2.05
Subtotals	183,000	\$1,950,000	\$2.34

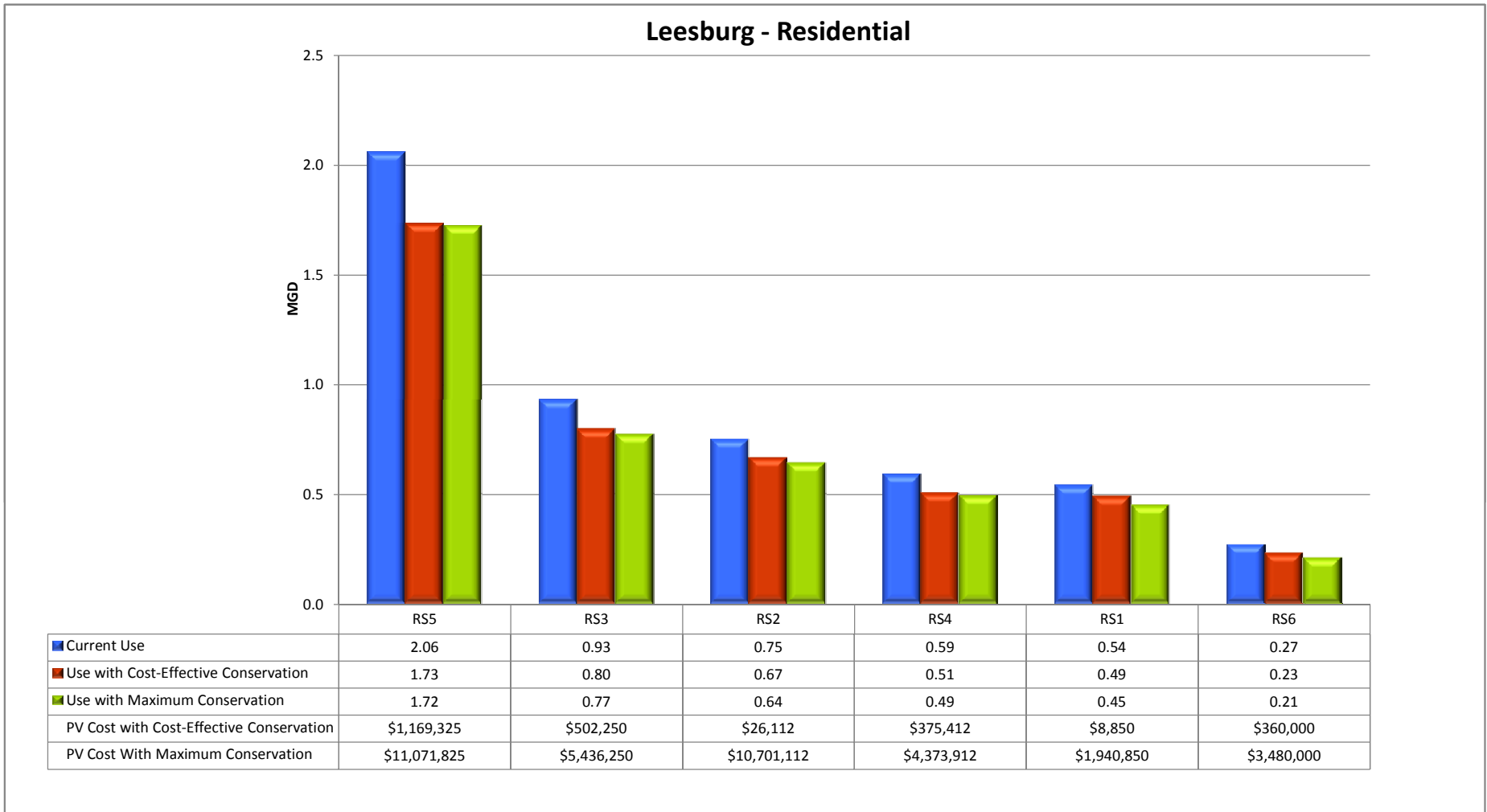
Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	35,000	17,000	\$243,000	\$3.14
Ultra Low Flush Toilet Replacement Program - INDOOR	90,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	87,000	0	\$0	\$0.00
High Efficiency Clothes Washer Replacement - INDOOR	24,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	9,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	26,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	469,000	\$1,020,000	\$0.48
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	452	\$7,350	\$3.58
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	469,000	\$0	\$0.00
Subtotals	245,000	981,452	\$1,270,350	\$0.28

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	2,000	1,100	\$3,000	\$0.60
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	17,000	8,000	\$47,000	\$1.29
Low Flow Faucet Aerator Replacement - INDOOR	25,000	0	\$0	\$0.00
Urinal Replacement Program - INDOOR	12,000	1,500	\$12,000	\$1.76
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	16,000	\$6,000	\$0.08
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	19,000	\$0	\$0.00
Subtotals	56,000	45,600	\$68,000	\$0.33

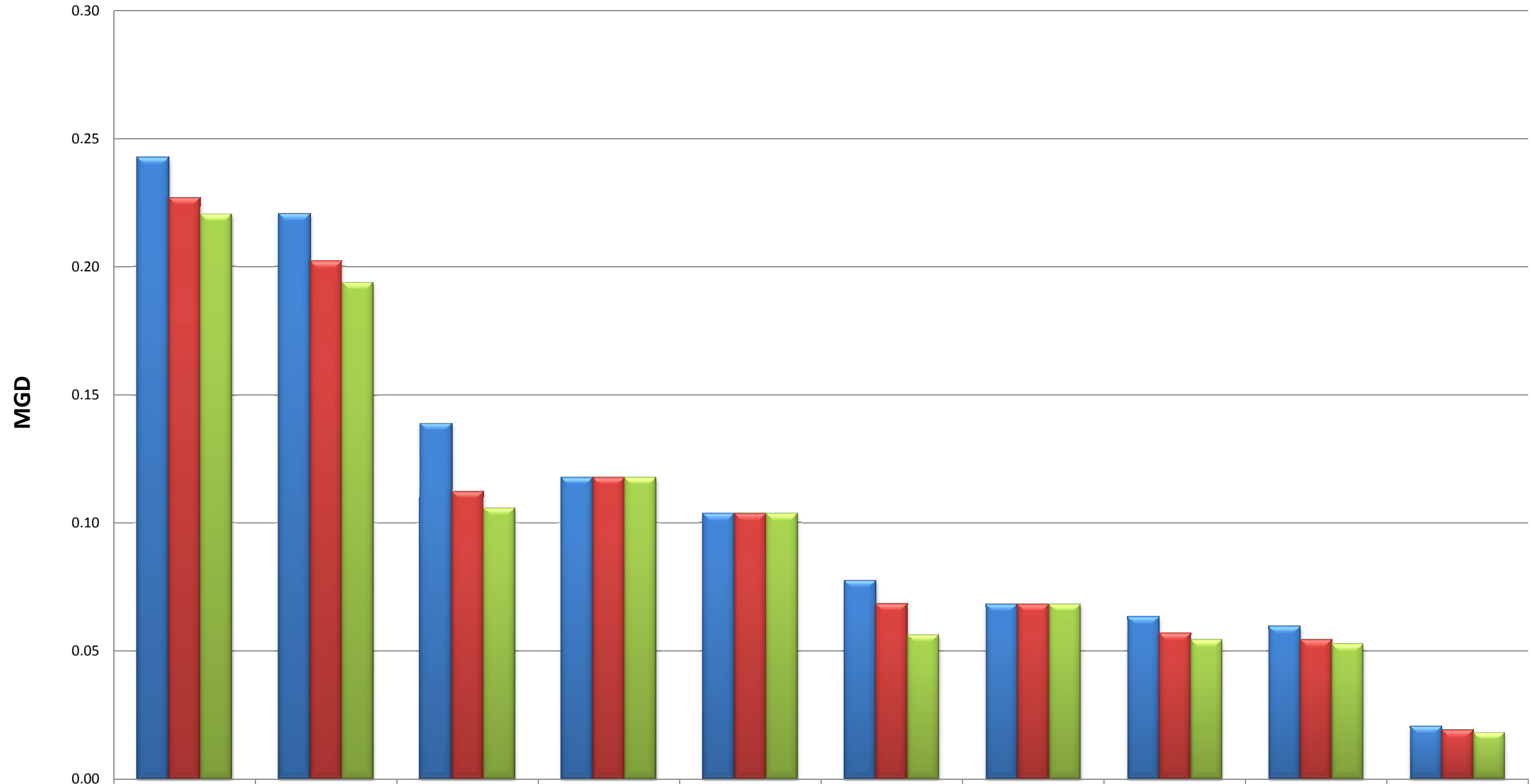
Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	301,000	1,210,000	\$3,946,000	\$0.72

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon



Leesburg- Commercial



	RETAIL	OFFICE BUILDINGS	RESTAURANTS	MISCELLANEOUS	MANUFACTURING	LIVE-IN CARE	AUTO & REPAIR	HOSPITALS	WAREHOUSES/STORAGE	INDOOR RECREATION
Current Use	0.24	0.22	0.14	0.12	0.10	0.08	0.07	0.06	0.06	0.02
Use with Cost-Eff BMPs	0.23	0.20	0.11	0.12	0.10	0.07	0.07	0.06	0.05	0.02
Max Conservation Use	0.22	0.19	0.11	0.12	0.10	0.06	0.07	0.05	0.05	0.02
Cost-Effective PV Cost	\$24,000	\$24,000	\$14,400	\$-	\$-	\$4,800	\$-	\$4,800	\$9,600	\$-
Maximum PV Cost	\$252,000	\$420,000	\$84,000	\$-	\$-	\$1,872,000	\$-	\$1,320,000	\$60,000	\$156,000

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	2	4	100	-	397,276	\$0	\$0.00
2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	2	75	-	125,339	\$342,000	\$0.60
3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	2	75	-	125,339	\$256,500	\$0.45
4	Landscape Replacement Program - OUTDOOR	5	2	50	-	123,139	\$5,112,500	\$9.13
5	Landscape Replacement Program - OUTDOOR	3	3	50	-	76,930	\$4,607,500	\$13.17
6	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	3	75	-	72,109	\$267,300	\$0.81
7	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	3	75	-	72,109	\$200,475	\$0.61
8	Landscape Replacement Program - OUTDOOR	5	1	50	-	49,942	\$2,737,500	\$12.05
9	Landscape Replacement Program - OUTDOOR	5	3	50	-	48,883	\$2,195,000	\$9.87
10	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	3	75	-	48,086	\$134,100	\$0.61
11	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	3	75	-	48,086	\$100,575	\$0.46
12	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	1	75	-	47,655	\$92,400	\$0.43
13	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	1	75	-	47,655	\$69,300	\$0.32
14	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	3	75	-	43,728	\$187,500	\$0.94
15	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	3	75	-	43,728	\$140,625	\$0.71
16	Landscape Replacement Program - OUTDOOR	4	3	50	-	43,121	\$2,740,000	\$13.97
17	Landscape Replacement Program - OUTDOOR	1	1	50	-	42,186	\$4,380,000	\$22.83
18	Landscape Replacement Program - OUTDOOR	2	1	50	-	41,223	\$3,000,000	\$16.00
19	Efficient Irrigation Systems (non turf) - OUTDOOR	5	2	75	-	36,850	\$1,172,850	\$7.00
20	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	5	4	100	-	36,036	\$0	\$0.00
21	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	1	75	-	33,089	\$65,100	\$0.43
22	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	1	75	-	33,089	\$48,825	\$0.32
23	Landscape Replacement Program - OUTDOOR	2	3	50	-	30,765	\$2,270,000	\$16.22
24	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	4	4	100	-	30,202	\$0	\$0.00
25	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	1	75	-	27,355	\$51,000	\$0.41
26	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	1	75	-	27,355	\$38,250	\$0.31
27	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	3	75	-	24,464	\$85,200	\$0.77
28	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	3	75	-	24,464	\$63,900	\$0.57
29	High Efficiency Toilet Replacement Program - INDOOR	5	2	75	21,808	19,082	\$1,292,060	\$14.89
30	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	2	4	100	-	19,019	\$0	\$0.00
31	Efficient Irrigation Systems (non turf) - OUTDOOR	3	3	75	-	17,306	\$747,600	\$9.50
32	Efficient Irrigation Systems (non turf) - OUTDOOR	5	1	75	-	14,011	\$317,100	\$4.98
33	Landscape Replacement Program - OUTDOOR	3	1	50	-	12,306	\$780,000	\$13.93
34	Landscape Replacement Program - OUTDOOR	2	2	50	-	12,085	\$822,500	\$14.96
35	Landscape Replacement Program - OUTDOOR	3	2	50	-	11,702	\$662,500	\$12.45
36	Efficient Irrigation Systems (non turf) - OUTDOOR	5	3	75	-	11,541	\$374,850	\$7.14
37	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	2	75	-	11,312	\$43,500	\$0.85
38	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	2	75	-	11,312	\$32,625	\$0.63
39	Efficient Irrigation Systems (non turf) - OUTDOOR	4	3	75	-	10,495	\$525,000	\$11.00
40	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	1	75	-	10,439	\$21,000	\$0.44
41	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	1	75	-	10,439	\$15,750	\$0.33
42	Efficient Irrigation Systems (non turf) - OUTDOOR	2	1	75	-	9,728	\$222,600	\$5.03
43	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	2	75	-	9,617	\$30,600	\$0.70
44	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	2	75	-	9,617	\$22,950	\$0.52
45	Efficient Irrigation Systems (non turf) - OUTDOOR	1	1	75	-	8,042	\$174,300	\$4.76

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
46	High Efficiency Toilet Replacement Program - INDOOR	1	1	75	8,626	7,548	\$516,320	\$15.04
47	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	1	75	-	7,134	\$13,500	\$0.42
48	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	1	75	-	7,134	\$10,125	\$0.31
49	Landscape Replacement Program - OUTDOOR	4	1	50	-	7,101	\$380,000	\$11.76
50	High Efficiency Toilet Replacement Program - INDOOR	5	1	75	7,636	6,682	\$656,740	\$21.61
51	Efficient Irrigation Systems (non turf) - OUTDOOR	2	3	75	-	5,871	\$238,350	\$8.92
52	Landscape Replacement Program - OUTDOOR	4	2	50	-	5,440	\$352,500	\$14.25
53	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	3	4	100	-	5,399	\$0	\$0.00
54	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	2	75	-	5,398	\$21,000	\$0.86
55	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	2	75	-	5,398	\$15,750	\$0.64
56	High Efficiency Showerhead Replacement - INDOOR	5	2	75	10,110	5,055	\$81,530	\$3.55
57	High Efficiency Toilet Replacement Program - INDOOR	6	1	75	5,354	4,685	\$323,680	\$15.19
58	High Efficiency Toilet Replacement Program - INDOOR	3	3	75	5,261	4,604	\$814,800	\$38.91
59	High Efficiency Toilet Replacement Program - INDOOR	4	3	75	4,694	4,108	\$491,400	\$26.30
60	High Efficiency Toilet Replacement Program - INDOOR	6	2	75	4,561	3,991	\$183,960	\$10.13
61	High Efficiency Toilet Replacement Program - INDOOR	2	1	75	4,387	3,839	\$364,980	\$20.90
62	Landscape Replacement Program - OUTDOOR	1	2	50	-	3,431	\$387,500	\$24.83
63	Efficient Irrigation Systems (non turf) - OUTDOOR	3	2	75	-	3,326	\$149,100	\$9.86
64	Efficient Irrigation Systems (non turf) - OUTDOOR	3	1	75	-	3,069	\$72,450	\$5.19
65	Landscape Replacement Program - OUTDOOR	1	3	50	-	3,053	\$342,500	\$24.66
66	High Efficiency Toilet Replacement Program - INDOOR	5	3	75	3,446	3,015	\$557,200	\$40.63
67	High Efficiency Showerhead Replacement - INDOOR	1	1	75	5,871	2,936	\$36,880	\$2.76
68	Efficient Irrigation Systems (non turf) - OUTDOOR	2	2	75	-	2,827	\$105,000	\$8.16
69	High Efficiency Showerhead Replacement - INDOOR	5	1	75	5,198	2,599	\$41,150	\$3.48
70	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	4	4	100	-	2,398	\$0	\$0.00
71	Submetering Billing of Apartment Units - INDOOR	6	1	75	-	2,109	\$650,250	\$67.78
72	Efficient Irrigation Systems (non turf) - OUTDOOR	4	1	75	-	2,097	\$46,200	\$4.84
73	High Efficiency Toilet Replacement Program - INDOOR	6	3	75	2,316	2,026	\$218,120	\$23.67
74	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	6	4	100	-	1,981	\$0	\$0.00
75	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	5	4	100	-	1,847	\$0	\$0.00
76	High Efficiency Showerhead Replacement - INDOOR	6	1	75	3,644	1,822	\$23,120	\$2.79
77	High Efficiency Toilet Replacement Program - INDOOR	3	2	75	2,055	1,798	\$85,820	\$10.49
78	High Efficiency Toilet Replacement Program - INDOOR	2	3	75	2,019	1,767	\$297,220	\$36.98
79	High Efficiency Toilet Replacement Program - INDOOR	2	2	75	1,985	1,737	\$99,120	\$12.54
80	Efficient Irrigation Systems (non turf) - OUTDOOR	4	2	75	-	1,587	\$72,450	\$10.04
81	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	2	75	-	1,537	\$2,100	\$0.30
82	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	2	75	-	1,537	\$1,575	\$0.23
83	High Efficiency Showerhead Replacement - INDOOR	2	1	75	2,986	1,493	\$19,760	\$2.91
84	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	3	75	-	1,471	\$3,900	\$0.58
85	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	3	75	-	1,471	\$2,925	\$0.44
86	High Efficiency Toilet Replacement Program - INDOOR	4	2	75	1,635	1,431	\$62,160	\$9.55
87	High Efficiency Toilet Replacement Program - INDOOR	3	1	75	1,580	1,382	\$105,700	\$16.81
88	Submetering Billing of Apartment Units - INDOOR	6	2	75	-	1,175	\$370,125	\$69.27
89	High Efficiency Showerhead Replacement - INDOOR	6	2	75	2,114	1,057	\$13,140	\$2.73
90	High Efficiency Toilet Replacement Program - INDOOR	1	2	75	1,166	1,020	\$45,640	\$9.83

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
91	High Efficiency Toilet Replacement Program - INDOOR	4	1	75	1,156	1,012	\$67,900	\$14.76
92	Submetering Billing of Apartment Units - INDOOR	6	3	75	-	810	\$219,375	\$59.54
93	High Efficiency Showerhead Replacement - INDOOR	3	1	75	1,075	538	\$5,910	\$2.42
94	High Efficiency Showerhead Replacement - INDOOR	3	2	75	953	476	\$4,740	\$2.19
95	High Efficiency Showerhead Replacement - INDOOR	2	2	75	920	460	\$5,350	\$2.56
96	Efficient Irrigation Systems (non turf) - OUTDOOR	1	2	75	-	452	\$7,350	\$3.58
97	High Efficiency Showerhead Replacement - INDOOR	4	1	75	787	393	\$4,050	\$2.26
98	High Efficiency Showerhead Replacement - INDOOR	4	2	75	758	379	\$3,700	\$2.15
99	Efficient Irrigation Systems (non turf) - OUTDOOR	1	3	75	-	353	\$11,550	\$7.19
100	High Efficiency Toilet Replacement Program - INDOOR	1	3	75	379	332	\$40,320	\$26.71
101	High Efficiency Showerhead Replacement - INDOOR	1	2	75	541	270	\$3,260	\$2.65
102	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	3	4	100	-	269	\$0	\$0.00
103	Landscape Replacement Program - OUTDOOR	6	1	50	-	-	\$2,745,000	\$100,000.00
104	Landscape Replacement Program - OUTDOOR	6	3	50	-	-	\$1,850,000	\$100,000.00
105	Landscape Replacement Program - OUTDOOR	6	2	50	-	-	\$1,560,000	\$100,000.00
106	High Efficiency Showerhead Replacement - INDOOR	3	3	75	-	-	\$48,500	\$100,000.00
107	High Efficiency Showerhead Replacement - INDOOR	5	3	75	-	-	\$35,180	\$100,000.00
108	High Efficiency Showerhead Replacement - INDOOR	4	3	75	-	-	\$29,330	\$100,000.00
109	High Efficiency Showerhead Replacement - INDOOR	2	3	75	-	-	\$16,450	\$100,000.00
110	High Efficiency Showerhead Replacement - INDOOR	6	3	75	-	-	\$15,580	\$100,000.00
111	High Efficiency Showerhead Replacement - INDOOR	1	3	75	-	-	\$2,880	\$100,000.00
112	Efficient Irrigation Systems (non turf) - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
113	Efficient Irrigation Systems (non turf) - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
114	Efficient Irrigation Systems (non turf) - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
115	High Efficiency Clothes Washer Replacement - INDOOR	6	3	75	1,304	-	\$0	\$100,000.00
116	High Efficiency Clothes Washer Replacement - INDOOR	6	2	75	884	-	\$0	\$100,000.00
117	High Efficiency Clothes Washer Replacement - INDOOR	6	1	75	1,415	-	\$0	\$100,000.00
118	High Efficiency Clothes Washer Replacement - INDOOR	5	3	75	1,941	-	\$0	\$100,000.00
119	High Efficiency Clothes Washer Replacement - INDOOR	5	2	75	4,227	-	\$0	\$100,000.00
120	High Efficiency Clothes Washer Replacement - INDOOR	5	1	75	2,018	-	\$0	\$100,000.00
121	High Efficiency Clothes Washer Replacement - INDOOR	4	3	75	2,644	-	\$0	\$100,000.00
122	High Efficiency Clothes Washer Replacement - INDOOR	4	2	75	317	-	\$0	\$100,000.00
123	High Efficiency Clothes Washer Replacement - INDOOR	4	1	75	306	-	\$0	\$100,000.00
124	High Efficiency Clothes Washer Replacement - INDOOR	3	3	75	2,964	-	\$0	\$100,000.00
125	High Efficiency Clothes Washer Replacement - INDOOR	3	2	75	398	-	\$0	\$100,000.00
126	High Efficiency Clothes Washer Replacement - INDOOR	3	1	75	418	-	\$0	\$100,000.00
127	High Efficiency Clothes Washer Replacement - INDOOR	2	3	75	1,137	-	\$0	\$100,000.00
128	High Efficiency Clothes Washer Replacement - INDOOR	2	2	75	385	-	\$0	\$100,000.00
129	High Efficiency Clothes Washer Replacement - INDOOR	2	1	75	1,159	-	\$0	\$100,000.00
130	High Efficiency Clothes Washer Replacement - INDOOR	1	3	75	214	-	\$0	\$100,000.00
131	High Efficiency Clothes Washer Replacement - INDOOR	1	2	75	226	-	\$0	\$100,000.00
132	High Efficiency Clothes Washer Replacement - INDOOR	1	1	75	2,280	-	\$0	\$100,000.00
133	High Efficiency Dishwashers - INDOOR	6	3	75	432	-	\$0	\$100,000.00
134	High Efficiency Dishwashers - INDOOR	6	2	75	313	-	\$0	\$100,000.00
135	High Efficiency Dishwashers - INDOOR	6	1	75	562	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
136	High Efficiency Dishwashers - INDOOR	5	3	75	643	-	\$0	\$100,000.00
137	High Efficiency Dishwashers - INDOOR	5	2	75	1,498	-	\$0	\$100,000.00
138	High Efficiency Dishwashers - INDOOR	5	1	75	802	-	\$0	\$100,000.00
139	High Efficiency Dishwashers - INDOOR	4	3	75	876	-	\$0	\$100,000.00
140	High Efficiency Dishwashers - INDOOR	4	2	75	112	-	\$0	\$100,000.00
141	High Efficiency Dishwashers - INDOOR	4	1	75	121	-	\$0	\$100,000.00
142	High Efficiency Dishwashers - INDOOR	3	3	75	982	-	\$0	\$100,000.00
143	High Efficiency Dishwashers - INDOOR	3	2	75	141	-	\$0	\$100,000.00
144	High Efficiency Dishwashers - INDOOR	3	1	75	166	-	\$0	\$100,000.00
145	High Efficiency Dishwashers - INDOOR	2	3	75	377	-	\$0	\$100,000.00
146	High Efficiency Dishwashers - INDOOR	2	2	75	136	-	\$0	\$100,000.00
147	High Efficiency Dishwashers - INDOOR	2	1	75	461	-	\$0	\$100,000.00
148	High Efficiency Dishwashers - INDOOR	1	3	75	71	-	\$0	\$100,000.00
149	High Efficiency Dishwashers - INDOOR	1	2	75	80	-	\$0	\$100,000.00
150	High Efficiency Dishwashers - INDOOR	1	1	75	906	-	\$0	\$100,000.00
151	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
152	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
153	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
154	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
155	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
156	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
157	Low Flow Faucet Aerator Replacement - INDOOR	6	3	75	-	-	\$0	\$100,000.00
158	Low Flow Faucet Aerator Replacement - INDOOR	6	2	75	3,327	-	\$0	\$100,000.00
159	Low Flow Faucet Aerator Replacement - INDOOR	6	1	75	5,973	-	\$0	\$100,000.00
160	Low Flow Faucet Aerator Replacement - INDOOR	5	3	75	6,595	-	\$0	\$100,000.00
161	Low Flow Faucet Aerator Replacement - INDOOR	5	2	75	15,907	-	\$0	\$100,000.00
162	Low Flow Faucet Aerator Replacement - INDOOR	5	1	75	8,519	-	\$0	\$100,000.00
163	Low Flow Faucet Aerator Replacement - INDOOR	4	3	75	8,986	-	\$0	\$100,000.00
164	Low Flow Faucet Aerator Replacement - INDOOR	4	2	75	1,193	-	\$0	\$100,000.00
165	Low Flow Faucet Aerator Replacement - INDOOR	4	1	75	1,290	-	\$0	\$100,000.00
166	Low Flow Faucet Aerator Replacement - INDOOR	3	3	75	10,071	-	\$0	\$100,000.00
167	Low Flow Faucet Aerator Replacement - INDOOR	3	2	75	1,499	-	\$0	\$100,000.00
168	Low Flow Faucet Aerator Replacement - INDOOR	3	1	75	1,762	-	\$0	\$100,000.00
169	Low Flow Faucet Aerator Replacement - INDOOR	2	3	75	3,865	-	\$0	\$100,000.00
170	Low Flow Faucet Aerator Replacement - INDOOR	2	2	75	1,448	-	\$0	\$100,000.00
171	Low Flow Faucet Aerator Replacement - INDOOR	2	1	75	4,894	-	\$0	\$100,000.00
172	Low Flow Faucet Aerator Replacement - INDOOR	1	3	75	726	-	\$0	\$100,000.00
173	Low Flow Faucet Aerator Replacement - INDOOR	1	2	75	851	-	\$0	\$100,000.00
174	Low Flow Faucet Aerator Replacement - INDOOR	1	1	75	9,623	-	\$0	\$100,000.00
175	Low Flow Volume Showerhead Replacement - INDOOR	6	2	75	770	-	\$0	\$100,000.00
176	Low Flow Volume Showerhead Replacement - INDOOR	6	1	75	790	-	\$0	\$100,000.00
177	Low Flow Volume Showerhead Replacement - INDOOR	5	2	75	3,680	-	\$0	\$100,000.00
178	Low Flow Volume Showerhead Replacement - INDOOR	5	1	75	1,126	-	\$0	\$100,000.00
179	Low Flow Volume Showerhead Replacement - INDOOR	4	2	75	276	-	\$0	\$100,000.00
180	Low Flow Volume Showerhead Replacement - INDOOR	4	1	75	170	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
181	Low Flow Volume Showerhead Replacement - INDOOR	3	2	75	347	-	\$0	\$100,000.00
182	Low Flow Volume Showerhead Replacement - INDOOR	3	1	75	233	-	\$0	\$100,000.00
183	Low Flow Volume Showerhead Replacement - INDOOR	2	2	75	335	-	\$0	\$100,000.00
184	Low Flow Volume Showerhead Replacement - INDOOR	2	1	75	647	-	\$0	\$100,000.00
185	Low Flow Volume Showerhead Replacement - INDOOR	1	2	75	197	-	\$0	\$100,000.00
186	Low Flow Volume Showerhead Replacement - INDOOR	1	1	75	1,272	-	\$0	\$100,000.00
187	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	6	4	100	-	-	\$0	\$100,000.00
188	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	1	4	100	-	-	\$0	\$100,000.00
189	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	1	4	100	-	-	\$0	\$100,000.00
190	Ultra Low Flush Toilet Replacement Program - INDOOR	6	2	75	7,698	-	\$0	\$100,000.00
191	Ultra Low Flush Toilet Replacement Program - INDOOR	6	1	75	6,284	-	\$0	\$100,000.00
192	Ultra Low Flush Toilet Replacement Program - INDOOR	5	2	75	36,811	-	\$0	\$100,000.00
193	Ultra Low Flush Toilet Replacement Program - INDOOR	5	1	75	8,963	-	\$0	\$100,000.00
194	Ultra Low Flush Toilet Replacement Program - INDOOR	4	2	75	2,760	-	\$0	\$100,000.00
195	Ultra Low Flush Toilet Replacement Program - INDOOR	4	1	75	1,357	-	\$0	\$100,000.00
196	Ultra Low Flush Toilet Replacement Program - INDOOR	3	2	75	3,469	-	\$0	\$100,000.00
197	Ultra Low Flush Toilet Replacement Program - INDOOR	3	1	75	1,854	-	\$0	\$100,000.00
198	Ultra Low Flush Toilet Replacement Program - INDOOR	2	2	75	3,351	-	\$0	\$100,000.00
199	Ultra Low Flush Toilet Replacement Program - INDOOR	2	1	75	5,150	-	\$0	\$100,000.00
200	Ultra Low Flush Toilet Replacement Program - INDOOR	1	2	75	1,968	-	\$0	\$100,000.00
201	Ultra Low Flush Toilet Replacement Program - INDOOR	1	1	75	10,125	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	OFFICE BUILDINGS	4	100	0	10,035	\$0	\$0.00
2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	2	75	0	8,172	\$990	\$0.03
3	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RESTAURANTS	4	100	0	4,054	\$0	\$0.00
4	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	1	75	0	3,766	\$675,000	\$39.41
5	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	0	3,598	\$90,469	\$5.53
6	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	3	75	0	2,884	\$1,170	\$0.09
7	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	2	75	0	2,790	\$150,000	\$11.82
8	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RETAIL	4	100	0	2,440	\$0	\$0.00
9	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	0	2,420	\$5,156	\$0.47
10	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	2,641	2,311	\$6,160	\$0.59
11	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	2,567	2,247	\$53,900	\$5.27
12	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	1	75	0	2,229	\$2,340	\$0.23
13	Waterless Urinal Replacement Program - INDOOR	RETAIL	1	75	0	2,049	\$48,281	\$5.18
14	Water Reuse/Recycling Laundry Machines – INDOOR	HOSPITALS	2	75	0	2,046	\$525,000	\$56.42
15	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	0	1,970	\$27,188	\$3.03
16	Waterless Urinal Replacement Program - INDOOR	RETAIL	2	75	0	1,957	\$27,188	\$3.05
17	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	2,150	1,881	\$16,240	\$1.90
18	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	2	75	2,136	1,869	\$16,240	\$1.91
19	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	0	1,446	\$10,781	\$1.64
20	Waterless Urinal Replacement Program - INDOOR	RETAIL	3	75	0	1,412	\$26,250	\$4.09
21	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	1	75	0	1,363	\$810	\$0.13
22	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	1	75	1,462	1,279	\$28,840	\$4.96
23	Waterless Urinal Replacement Program - INDOOR	HOSPITALS	2	75	0	1,148	\$4,219	\$0.81
24	High Efficiency Toilet Replacement Program - INDOOR	HOSPITALS	2	75	1,253	1,096	\$2,520	\$0.51
25	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	2	75	0	1,010	\$180	\$0.04
26	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	0	955	\$51,563	\$11.87
27	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	HOSPITALS	4	100	0	944	\$0	\$0.00
28	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	1,031	902	\$6,300	\$1.53
29	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	0	872	\$52,969	\$13.35
30	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	0	854	\$6,094	\$1.57
31	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	INDOOR RECREATION	4	100	0	719	\$0	\$0.00
32	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	0	707	\$27,656	\$8.60
33	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	772	675	\$16,520	\$5.38
34	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	0	660	\$12,188	\$4.06
35	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	681	596	\$30,800	\$11.36
36	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	WAREHOUSES/STORAGE	4	100	0	539	\$0	\$0.00
37	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	0	510	\$22,969	\$9.91
38	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	2,038	510	\$13,028	\$5.62
39	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	3	75	565	494	\$15,540	\$6.91
40	High Efficiency Showerhead Replacement - INDOOR	HOSPITALS	2	75	864	432	\$45	\$0.02
41	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	3	75	0	417	\$300,000	\$158.20
42	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	471	412	\$14,560	\$7.77
43	Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	1,566	391	\$743	\$0.42
44	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	685	343	\$1,380	\$0.89
45	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	1,275	319	\$3,915	\$2.70
46	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	364	318	\$27,440	\$18.96

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
47	Urinal Replacement Program - INDOOR	RETAIL	2	75	1,266	317	\$3,915	\$2.72
48	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	349	305	\$31,640	\$22.78
49	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	342	299	\$7,280	\$5.35
50	Urinal Replacement Program - INDOOR	RETAIL	1	75	1,160	290	\$6,953	\$5.27
51	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	532	266	\$740	\$0.61
52	Water Reuse/Recycling Laundry Machines – INDOOR	HOSPITALS	1	75	0	231	\$300,000	\$285.48
53	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	0	205	\$9,375	\$10.07
54	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	819	205	\$1,553	\$1.67
55	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	LIVE-IN CARE	4	100	0	187	\$0	\$0.00
56	Urinal Replacement Program - INDOOR	HOSPITALS	2	75	743	186	\$608	\$0.72
57	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	3	75	0	151	\$360	\$0.52
58	Urinal Replacement Program - INDOOR	RETAIL	3	75	565	141	\$3,780	\$5.89
59	Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	541	135	\$7,425	\$12.08
60	Waterless Urinal Replacement Program - INDOOR	HOSPITALS	1	75	0	130	\$49,219	\$83.44
61	Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	458	114	\$3,983	\$7.65
62	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	0	106	\$21,563	\$44.86
63	Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	374	93	\$1,755	\$4.13
64	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	0	88	\$3,750	\$9.35
65	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	349	87	\$7,628	\$19.22
66	Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	342	85	\$878	\$2.26
67	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	96	84	\$2,100	\$5.48
68	High Efficiency Toilet Replacement Program - INDOOR	HOSPITALS	1	75	93	81	\$29,400	\$79.83
69	Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	289	72	\$3,308	\$10.08
70	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	82	72	\$5,600	\$17.18
71	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	0	59	\$4,219	\$15.85
72	High Efficiency Showerhead Replacement - INDOOR	HOSPITALS	1	75	93	47	\$525	\$2.48
73	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	42	37	\$12,740	\$75.72
74	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	71	35	\$570	\$3.53
75	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	0	30	\$17,813	\$130.09
76	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	33	29	\$21,280	\$162.77
77	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	23	20	\$5,040	\$54.09
78	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	82	20	\$1,350	\$14.49
79	Urinal Replacement Program - INDOOR	HOSPITALS	1	75	73	18	\$7,088	\$84.85
80	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	57	14	\$540	\$8.32
81	Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	42	11	\$3,105	\$64.59
82	Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	23	6	\$608	\$22.82
83	Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	19	5	\$2,565	\$115.83
84	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$3,600	\$100,000.00
85	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$810	\$100,000.00
86	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$3,780	\$100,000.00
87	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	3	75	0	0	\$4,140	\$100,000.00
88	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	2	75	0	0	\$2,250	\$100,000.00
89	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	1	75	0	0	\$11,070	\$100,000.00
90	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$7,470	\$100,000.00
91	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$9,990	\$100,000.00
92	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$15,930	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
93	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	3	75	0	0	\$810	\$100,000.00
94	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	2	75	0	0	\$3,420	\$100,000.00
95	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	1	75	0	0	\$4,410	\$100,000.00
96	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
97	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOSPITALS	2	75	0	0	\$630	\$100,000.00
98	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOSPITALS	1	75	0	0	\$360	\$100,000.00
99	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
100	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
101	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
102	High Efficiency Showerhead Replacement - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
103	High Efficiency Showerhead Replacement - INDOOR	RETAIL	2	75	0	0	\$0	\$100,000.00
104	High Efficiency Showerhead Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
105	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	3	75	0	0	\$130	\$100,000.00
106	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	2	75	0	0	\$110	\$100,000.00
107	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$260	\$100,000.00
108	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
109	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$0	\$100,000.00
110	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$0	\$100,000.00
111	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	0	0	\$90	\$100,000.00
112	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	0	0	\$380	\$100,000.00
113	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	0	0	\$490	\$100,000.00
114	High Efficiency Showerhead Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
115	High Efficiency Toilet Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
116	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	231	0	\$0	\$100,000.00
117	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	104	0	\$0	\$100,000.00
118	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	1,708	0	\$0	\$100,000.00
119	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	3	75	1,594	0	\$0	\$100,000.00
120	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	2	75	2,312	0	\$0	\$100,000.00
121	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	1	75	2,420	0	\$0	\$100,000.00
122	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	3	75	964	0	\$0	\$100,000.00
123	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	2	75	2,859	0	\$0	\$100,000.00
124	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	1	75	780	0	\$0	\$100,000.00
125	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	3	75	985	0	\$0	\$100,000.00
126	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	2	75	2,328	0	\$0	\$100,000.00
127	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	1	75	4,251	0	\$0	\$100,000.00
128	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	3	75	119	0	\$0	\$100,000.00
129	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	2	75	836	0	\$0	\$100,000.00
130	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	1	75	1,128	0	\$0	\$100,000.00
131	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	3	75	66	0	\$0	\$100,000.00
132	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	2	75	36	0	\$0	\$100,000.00
133	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	1	75	602	0	\$0	\$100,000.00
134	Low Flow Faucet Aerator Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
135	Low Flow Faucet Aerator Replacement - INDOOR	HOSPITALS	2	75	1,356	0	\$0	\$100,000.00
136	Low Flow Faucet Aerator Replacement - INDOOR	HOSPITALS	1	75	153	0	\$0	\$100,000.00
137	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
138	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
139	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
140	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
141	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	2	75	0	0	\$0	\$100,000.00
142	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
143	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	3	75	0	0	\$0	\$100,000.00
144	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	2	75	0	0	\$0	\$100,000.00
145	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
146	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
147	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$0	\$100,000.00
148	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$0	\$100,000.00
149	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	0	0	\$0	\$100,000.00
150	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	192	0	\$0	\$100,000.00
151	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	148	0	\$0	\$100,000.00
152	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	0	0	\$0	\$100,000.00
153	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	0	0	\$0	\$100,000.00
154	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	0	0	\$0	\$100,000.00
155	Low Flow Volume Showerhead Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
156	Low Flow Volume Showerhead Replacement - INDOOR	HOSPITALS	2	75	311	0	\$0	\$100,000.00
157	Low Flow Volume Showerhead Replacement - INDOOR	HOSPITALS	1	75	20	0	\$0	\$100,000.00
158	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
159	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	163	0	\$0	\$100,000.00
160	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	1,209	0	\$0	\$100,000.00
161	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
162	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	2	75	3,607	0	\$0	\$100,000.00
163	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	1	75	1,713	0	\$0	\$100,000.00
164	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	0	0	\$0	\$100,000.00
165	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	4,461	0	\$0	\$100,000.00
166	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	552	0	\$0	\$100,000.00
167	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
168	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	3,632	0	\$0	\$100,000.00
169	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	3,008	0	\$0	\$100,000.00
170	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	0	0	\$0	\$100,000.00
171	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	1,304	0	\$0	\$100,000.00
172	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	798	0	\$0	\$100,000.00
173	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	0	0	\$0	\$100,000.00
174	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	55	0	\$0	\$100,000.00
175	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	426	0	\$0	\$100,000.00
176	Ultra Low Flush Toilet Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
177	Ultra Low Flush Toilet Replacement Program - INDOOR	HOSPITALS	2	75	2,116	0	\$0	\$100,000.00
178	Ultra Low Flush Toilet Replacement Program - INDOOR	HOSPITALS	1	75	108	0	\$0	\$100,000.00
179	Urinal Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
180	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$3,000,000	\$100,000.00
181	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$675,000	\$100,000.00
182	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$3,150,000	\$100,000.00
183	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	3	75	0	0	\$3,450,000	\$100,000.00
184	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	2	75	0	0	\$1,875,000	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
185	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	1	75	0	0	\$9,225,000	\$100,000.00
186	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	3	75	0	0	\$975,000	\$100,000.00
187	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	2	75	0	0	\$825,000	\$100,000.00
188	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	1	75	0	0	\$1,950,000	\$100,000.00
189	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	3	75	0	0	\$6,225,000	\$100,000.00
190	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	2	75	0	0	\$8,325,000	\$100,000.00
191	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	1	75	0	0	\$13,275,000	\$100,000.00
192	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	3	75	0	0	\$675,000	\$100,000.00
193	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	2	75	0	0	\$2,850,000	\$100,000.00
194	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	1	75	0	0	\$3,675,000	\$100,000.00
195	Water Reuse/Recycling Laundry Machines – INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
196	Waterless Urinal Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

K. Leesburg - Efficient Use Benchmarks Per Residential Category and Build Out Condition

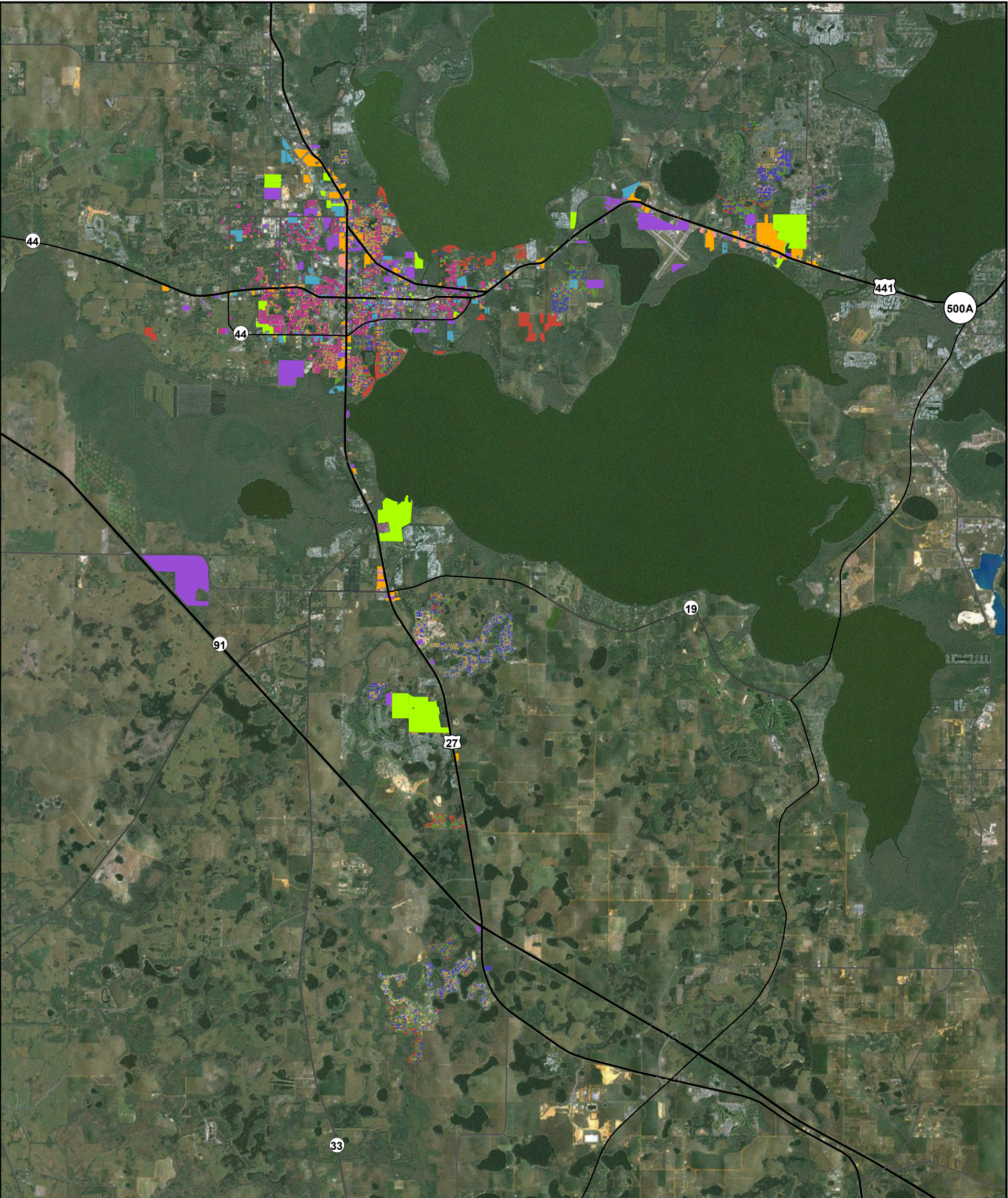
Res Class	Build Out Condition	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	na	0.154	0.004	0.007	0.015
	1984 - 1993	na	0.155	0.005	0.009	0.021
	1994 to Present	na	0.145	0.006	0.010	0.019
	Future	na	0.159	0.007	0.011	0.021
RS2	Pre 1984	na	0.112	0.006	0.009	0.015
	1984 - 1993	na	0.117	0.012	0.021	0.031
	1994 to Present	na	0.111	0.014	0.025	0.035
	Future	na	0.091	0.011	0.021	0.028
RS3	Pre 1984	na	0.088	0.006	0.010	0.016
	1984 - 1993	na	0.090	0.013	0.023	0.028
	1994 to Present	na	0.089	0.017	0.031	0.035
	Future	na	0.074	0.014	0.026	0.029
RS4	Pre 1984	na	0.076	0.007	0.012	0.016
	1984 - 1993	na	0.086	0.008	0.015	0.021
	1994 to Present	na	0.082	0.018	0.032	0.034
	Future	na	0.071	0.015	0.028	0.029
RS5	Pre 1984	na	0.070	0.005	0.009	0.011
	1984 - 1993	na	0.060	0.007	0.012	0.015
	1994 to Present	na	0.069	0.016	0.030	0.030
	Future	na	0.058	0.013	0.025	0.025
HD	Pre 1984	na	0.076	na	na	0.020
	1984 - 1993	na	0.017	na	na	0.005
	1994 to Present	na	0.030	na	na	0.008
	Future	na	0.030	na	na	0.007

Leesburg - Efficient Use Benchmarks Per Non-Residential Category and Build Out Condition*

	Build Out Condition	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
HOSPITALS	Pre 1984	na	0.035	0.012
	1984 - 1993	na	3.525	0.067
	1994 to Present	na	na	na
	Future	na	3.748	0.071
INDOOR RECREATION	Pre 1984	na	0.046	0.011
	1984 - 1993	na	0.023	0.011
	1994 to Present	na	0.022	0.003
	Future	na	0.022	0.003
LIVE-IN CARE	Pre 1984	na	0.281	0.060
	1984 - 1993	na	0.386	0.047
	1994 to Present	na	0.077	0.010
	Future	na	0.081	0.011
MANUFACTURING	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
MISCELLANEOUS	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
OFFICE BUILDINGS	Pre 1984	na	0.120	0.021
	1984 - 1993	na	0.210	0.056
	1994 to Present	na	0.050	0.010
	Future	na	0.051	0.010
RESTAURANTS	Pre 1984	na	0.279	0.033
	1984 - 1993	na	0.353	0.029
	1994 to Present	na	0.406	0.054
	Future	na	0.456	0.061
RETAIL	Pre 1984	na	0.056	0.018
	1984 - 1993	na	0.092	0.010
	1994 to Present	na	0.073	0.008
	Future	na	0.073	0.008
WAREHOUSES/STORAGE	Pre 1984	na	0.067	0.010
	1984 - 1993	na	0.013	0.003
	1994 to Present	na	0.011	0.003
	Future	na	0.011	0.003

* Efficient use benchmarks are not calculated for categories whose end uses are too variable to assign conservation practices to or when there are insufficient data to develop water use benchmarks.

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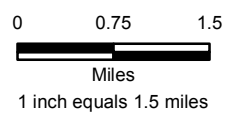
Legend

- RS1
- RS2
- RS3
- RS4
- RS5
- RS6
- Miscellaneous
- Office Buildings
- Restaurants
- Retail

Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	0.54	0.45
RES-2	0.75	0.64
RES-3	0.93	0.77
RES-4	0.59	0.49
RES-5	2.06	1.72
RES-6	0.27	0.21
Retail	0.24	0.22
Office Buildings	0.22	0.19
Restaurants	0.14	0.11
Miscellaneous	0.12	0.12



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**Geographic Distribution of Top Water Use Categories,
 Typical Use, & Conservation Savings Gain**
 City of Leesburg Utilities



M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS1	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	1,537	\$1,575	\$0.23
RS1	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	1,537	\$2,100	\$0.30
RS1	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	27,355	\$38,250	\$0.31
RS1	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	27,355	\$51,000	\$0.41
RS1	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	1,471	\$2,925	\$0.44
RS1	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	1,471	\$3,900	\$0.58
RS1	2	High Efficiency Showerhead Replacement - INDOOR	75	541	270	\$3,260	\$2.65
RS1	1	High Efficiency Showerhead Replacement - INDOOR	75	5,871	2,936	\$36,880	\$2.76
RS1	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	452	\$7,350	\$3.58
RS1	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	8,042	\$174,300	\$4.76
RS1	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	353	\$11,550	\$7.19
RS1	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,166	1,020	\$45,640	\$9.83
RS1	1	High Efficiency Toilet Replacement Program - INDOOR	75	8,626	7,548	\$516,320	\$15.04
RS1	1	Landscape Replacement Program - OUTDOOR	50	-	42,186	\$4,380,000	\$22.83
RS1	3	Landscape Replacement Program - OUTDOOR	50	-	3,053	\$342,500	\$24.66
RS1	2	Landscape Replacement Program - OUTDOOR	50	-	3,431	\$387,500	\$24.83
RS1	3	High Efficiency Toilet Replacement Program - INDOOR	75	379	332	\$40,320	\$26.71
RS1	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$2,880	\$100,000.00
RS1	3	High Efficiency Clothes Washer Replacement - INDOOR	75	214	-	\$0	\$100,000.00
RS1	2	High Efficiency Clothes Washer Replacement - INDOOR	75	226	-	\$0	\$100,000.00
RS1	1	High Efficiency Clothes Washer Replacement - INDOOR	75	2,280	-	\$0	\$100,000.00
RS1	3	High Efficiency Dishwashers - INDOOR	75	71	-	\$0	\$100,000.00
RS1	2	High Efficiency Dishwashers - INDOOR	75	80	-	\$0	\$100,000.00
RS1	1	High Efficiency Dishwashers - INDOOR	75	906	-	\$0	\$100,000.00
RS1	3	Low Flow Faucet Aerator Replacement - INDOOR	75	726	-	\$0	\$100,000.00
RS1	2	Low Flow Faucet Aerator Replacement - INDOOR	75	851	-	\$0	\$100,000.00
RS1	1	Low Flow Faucet Aerator Replacement - INDOOR	75	9,623	-	\$0	\$100,000.00
RS1	2	Low Flow Volume Showerhead Replacement - INDOOR	75	197	-	\$0	\$100,000.00
RS1	1	Low Flow Volume Showerhead Replacement - INDOOR	75	1,272	-	\$0	\$100,000.00
RS1	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	-	\$0	\$100,000.00
RS1	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	-	\$0	\$100,000.00
RS1	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,968	-	\$0	\$100,000.00
RS1	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	10,125	-	\$0	\$100,000.00
RS2	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	397,276	\$0	\$0.00
RS2	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	19,019	\$0	\$0.00
RS2	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	33,089	\$48,825	\$0.32
RS2	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	33,089	\$65,100	\$0.43
RS2	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	9,617	\$22,950	\$0.52
RS2	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	24,464	\$63,900	\$0.57
RS2	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	9,617	\$30,600	\$0.70
RS2	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	24,464	\$85,200	\$0.77
RS2	2	High Efficiency Showerhead Replacement - INDOOR	75	920	460	\$5,350	\$2.56
RS2	1	High Efficiency Showerhead Replacement - INDOOR	75	2,986	1,493	\$19,760	\$2.91

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS2	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	9,728	\$222,600	\$5.03
RS2	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,827	\$105,000	\$8.16
RS2	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	5,871	\$238,350	\$8.92
RS2	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,985	1,737	\$99,120	\$12.54
RS2	2	Landscape Replacement Program - OUTDOOR	50	-	12,085	\$822,500	\$14.96
RS2	1	Landscape Replacement Program - OUTDOOR	50	-	41,223	\$3,000,000	\$16.00
RS2	3	Landscape Replacement Program - OUTDOOR	50	-	30,765	\$2,270,000	\$16.22
RS2	1	High Efficiency Toilet Replacement Program - INDOOR	75	4,387	3,839	\$364,980	\$20.90
RS2	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,019	1,767	\$297,220	\$36.98
RS2	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$16,450	\$100,000.00
RS2	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,137	-	\$0	\$100,000.00
RS2	2	High Efficiency Clothes Washer Replacement - INDOOR	75	385	-	\$0	\$100,000.00
RS2	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,159	-	\$0	\$100,000.00
RS2	3	High Efficiency Dishwashers - INDOOR	75	377	-	\$0	\$100,000.00
RS2	2	High Efficiency Dishwashers - INDOOR	75	136	-	\$0	\$100,000.00
RS2	1	High Efficiency Dishwashers - INDOOR	75	461	-	\$0	\$100,000.00
RS2	3	Low Flow Faucet Aerator Replacement - INDOOR	75	3,865	-	\$0	\$100,000.00
RS2	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,448	-	\$0	\$100,000.00
RS2	1	Low Flow Faucet Aerator Replacement - INDOOR	75	4,894	-	\$0	\$100,000.00
RS2	2	Low Flow Volume Showerhead Replacement - INDOOR	75	335	-	\$0	\$100,000.00
RS2	1	Low Flow Volume Showerhead Replacement - INDOOR	75	647	-	\$0	\$100,000.00
RS2	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	3,351	-	\$0	\$100,000.00
RS2	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5,150	-	\$0	\$100,000.00
RS3	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	5,399	\$0	\$0.00
RS3	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	269	\$0	\$0.00
RS3	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	10,439	\$15,750	\$0.33
RS3	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	10,439	\$21,000	\$0.44
RS3	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	72,109	\$200,475	\$0.61
RS3	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	11,312	\$32,625	\$0.63
RS3	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	72,109	\$267,300	\$0.81
RS3	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	11,312	\$43,500	\$0.85
RS3	2	High Efficiency Showerhead Replacement - INDOOR	75	953	476	\$4,740	\$2.19
RS3	1	High Efficiency Showerhead Replacement - INDOOR	75	1,075	538	\$5,910	\$2.42
RS3	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	3,069	\$72,450	\$5.19
RS3	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	17,306	\$747,600	\$9.50
RS3	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	3,326	\$149,100	\$9.86
RS3	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,055	1,798	\$85,820	\$10.49
RS3	2	Landscape Replacement Program - OUTDOOR	50	-	11,702	\$662,500	\$12.45
RS3	3	Landscape Replacement Program - OUTDOOR	50	-	76,930	\$4,607,500	\$13.17
RS3	1	Landscape Replacement Program - OUTDOOR	50	-	12,306	\$780,000	\$13.93
RS3	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,580	1,382	\$105,700	\$16.81
RS3	3	High Efficiency Toilet Replacement Program - INDOOR	75	5,261	4,604	\$814,800	\$38.91

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS3	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$48,500	\$100,000.00
RS3	3	High Efficiency Clothes Washer Replacement - INDOOR	75	2,964	-	\$0	\$100,000.00
RS3	2	High Efficiency Clothes Washer Replacement - INDOOR	75	398	-	\$0	\$100,000.00
RS3	1	High Efficiency Clothes Washer Replacement - INDOOR	75	418	-	\$0	\$100,000.00
RS3	3	High Efficiency Dishwashers - INDOOR	75	982	-	\$0	\$100,000.00
RS3	2	High Efficiency Dishwashers - INDOOR	75	141	-	\$0	\$100,000.00
RS3	1	High Efficiency Dishwashers - INDOOR	75	166	-	\$0	\$100,000.00
RS3	3	Low Flow Faucet Aerator Replacement - INDOOR	75	10,071	-	\$0	\$100,000.00
RS3	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,499	-	\$0	\$100,000.00
RS3	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,762	-	\$0	\$100,000.00
RS3	2	Low Flow Volume Showerhead Replacement - INDOOR	75	347	-	\$0	\$100,000.00
RS3	1	Low Flow Volume Showerhead Replacement - INDOOR	75	233	-	\$0	\$100,000.00
RS3	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	3,469	-	\$0	\$100,000.00
RS3	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,854	-	\$0	\$100,000.00
RS4	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	30,202	\$0	\$0.00
RS4	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	2,398	\$0	\$0.00
RS4	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	7,134	\$10,125	\$0.31
RS4	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	7,134	\$13,500	\$0.42
RS4	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	5,398	\$15,750	\$0.64
RS4	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	43,728	\$140,625	\$0.71
RS4	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	5,398	\$21,000	\$0.86
RS4	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	43,728	\$187,500	\$0.94
RS4	2	High Efficiency Showerhead Replacement - INDOOR	75	758	379	\$3,700	\$2.15
RS4	1	High Efficiency Showerhead Replacement - INDOOR	75	787	393	\$4,050	\$2.26
RS4	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,097	\$46,200	\$4.84
RS4	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,635	1,431	\$62,160	\$9.55
RS4	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,587	\$72,450	\$10.04
RS4	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	10,495	\$525,000	\$11.00
RS4	1	Landscape Replacement Program - OUTDOOR	50	-	7,101	\$380,000	\$11.76
RS4	3	Landscape Replacement Program - OUTDOOR	50	-	43,121	\$2,740,000	\$13.97
RS4	2	Landscape Replacement Program - OUTDOOR	50	-	5,440	\$352,500	\$14.25
RS4	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,156	1,012	\$67,900	\$14.76
RS4	3	High Efficiency Toilet Replacement Program - INDOOR	75	4,694	4,108	\$491,400	\$26.30
RS4	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$29,330	\$100,000.00
RS4	3	High Efficiency Clothes Washer Replacement - INDOOR	75	2,644	-	\$0	\$100,000.00
RS4	2	High Efficiency Clothes Washer Replacement - INDOOR	75	317	-	\$0	\$100,000.00
RS4	1	High Efficiency Clothes Washer Replacement - INDOOR	75	306	-	\$0	\$100,000.00
RS4	3	High Efficiency Dishwashers - INDOOR	75	876	-	\$0	\$100,000.00
RS4	2	High Efficiency Dishwashers - INDOOR	75	112	-	\$0	\$100,000.00
RS4	1	High Efficiency Dishwashers - INDOOR	75	121	-	\$0	\$100,000.00
RS4	3	Low Flow Faucet Aerator Replacement - INDOOR	75	8,986	-	\$0	\$100,000.00
RS4	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,193	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS4	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,290	-	\$0	\$100,000.00
RS4	2	Low Flow Volume Showerhead Replacement - INDOOR	75	276	-	\$0	\$100,000.00
RS4	1	Low Flow Volume Showerhead Replacement - INDOOR	75	170	-	\$0	\$100,000.00
RS4	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,760	-	\$0	\$100,000.00
RS4	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,357	-	\$0	\$100,000.00
RS5	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	36,036	\$0	\$0.00
RS5	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	1,847	\$0	\$0.00
RS5	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	47,655	\$69,300	\$0.32
RS5	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	47,655	\$92,400	\$0.43
RS5	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	125,339	\$256,500	\$0.45
RS5	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	48,086	\$100,575	\$0.46
RS5	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	125,339	\$342,000	\$0.60
RS5	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	48,086	\$134,100	\$0.61
RS5	1	High Efficiency Showerhead Replacement - INDOOR	75	5,198	2,599	\$41,150	\$3.48
RS5	2	High Efficiency Showerhead Replacement - INDOOR	75	10,110	5,055	\$81,530	\$3.55
RS5	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	14,011	\$317,100	\$4.98
RS5	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	36,850	\$1,172,850	\$7.00
RS5	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	11,541	\$374,850	\$7.14
RS5	2	Landscape Replacement Program - OUTDOOR	50	-	123,139	\$5,112,500	\$9.13
RS5	3	Landscape Replacement Program - OUTDOOR	50	-	48,883	\$2,195,000	\$9.87
RS5	1	Landscape Replacement Program - OUTDOOR	50	-	49,942	\$2,737,500	\$12.05
RS5	2	High Efficiency Toilet Replacement Program - INDOOR	75	21,808	19,082	\$1,292,060	\$14.89
RS5	1	High Efficiency Toilet Replacement Program - INDOOR	75	7,636	6,682	\$656,740	\$21.61
RS5	3	High Efficiency Toilet Replacement Program - INDOOR	75	3,446	3,015	\$557,200	\$40.63
RS5	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$35,180	\$100,000.00
RS5	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,941	-	\$0	\$100,000.00
RS5	2	High Efficiency Clothes Washer Replacement - INDOOR	75	4,227	-	\$0	\$100,000.00
RS5	1	High Efficiency Clothes Washer Replacement - INDOOR	75	2,018	-	\$0	\$100,000.00
RS5	3	High Efficiency Dishwashers - INDOOR	75	643	-	\$0	\$100,000.00
RS5	2	High Efficiency Dishwashers - INDOOR	75	1,498	-	\$0	\$100,000.00
RS5	1	High Efficiency Dishwashers - INDOOR	75	802	-	\$0	\$100,000.00
RS5	3	Low Flow Faucet Aerator Replacement - INDOOR	75	6,595	-	\$0	\$100,000.00
RS5	2	Low Flow Faucet Aerator Replacement - INDOOR	75	15,907	-	\$0	\$100,000.00
RS5	1	Low Flow Faucet Aerator Replacement - INDOOR	75	8,519	-	\$0	\$100,000.00
RS5	2	Low Flow Volume Showerhead Replacement - INDOOR	75	3,680	-	\$0	\$100,000.00
RS5	1	Low Flow Volume Showerhead Replacement - INDOOR	75	1,126	-	\$0	\$100,000.00
RS5	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	36,811	-	\$0	\$100,000.00
RS5	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	8,963	-	\$0	\$100,000.00
RS6	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	1,981	\$0	\$0.00
RS6	2	High Efficiency Showerhead Replacement - INDOOR	75	2,114	1,057	\$13,140	\$2.73
RS6	1	High Efficiency Showerhead Replacement - INDOOR	75	3,644	1,822	\$23,120	\$2.79
RS6	2	High Efficiency Toilet Replacement Program - INDOOR	75	4,561	3,991	\$183,960	\$10.13

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS6	1	High Efficiency Toilet Replacement Program - INDOOR	75	5,354	4,685	\$323,680	\$15.19
RS6	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,316	2,026	\$218,120	\$23.67
RS6	3	Submetering Billing of Apartment Units - INDOOR	75	-	810	\$219,375	\$59.54
RS6	1	Submetering Billing of Apartment Units - INDOOR	75	-	2,109	\$650,250	\$67.78
RS6	2	Submetering Billing of Apartment Units - INDOOR	75	-	1,175	\$370,125	\$69.27
RS6	1	Landscape Replacement Program - OUTDOOR	50	-	-	\$2,745,000	\$100,000.00
RS6	3	Landscape Replacement Program - OUTDOOR	50	-	-	\$1,850,000	\$100,000.00
RS6	2	Landscape Replacement Program - OUTDOOR	50	-	-	\$1,560,000	\$100,000.00
RS6	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$15,580	\$100,000.00
RS6	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,304	-	\$0	\$100,000.00
RS6	2	High Efficiency Clothes Washer Replacement - INDOOR	75	884	-	\$0	\$100,000.00
RS6	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,415	-	\$0	\$100,000.00
RS6	3	High Efficiency Dishwashers - INDOOR	75	432	-	\$0	\$100,000.00
RS6	2	High Efficiency Dishwashers - INDOOR	75	313	-	\$0	\$100,000.00
RS6	1	High Efficiency Dishwashers - INDOOR	75	562	-	\$0	\$100,000.00
RS6	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Low Flow Faucet Aerator Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Low Flow Faucet Aerator Replacement - INDOOR	75	3,327	-	\$0	\$100,000.00
RS6	1	Low Flow Faucet Aerator Replacement - INDOOR	75	5,973	-	\$0	\$100,000.00
RS6	2	Low Flow Volume Showerhead Replacement - INDOOR	75	770	-	\$0	\$100,000.00
RS6	1	Low Flow Volume Showerhead Replacement - INDOOR	75	790	-	\$0	\$100,000.00
RS6	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	-	\$0	\$100,000.00
RS6	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	7,698	-	\$0	\$100,000.00
RS6	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	6,284	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
HOSPITALS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	944	\$0	\$0.00
HOSPITALS	2	High Efficiency Showerhead Replacement - INDOOR	75	864	432	\$45	\$0.02
HOSPITALS	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,253	1,096	\$2,520	\$0.51
HOSPITALS	2	Urinal Replacement Program - INDOOR	75	743	186	\$608	\$0.72
HOSPITALS	2	Waterless Urinal Replacement Program - INDOOR	75	0	1,148	\$4,219	\$0.81
HOSPITALS	1	High Efficiency Showerhead Replacement - INDOOR	75	93	47	\$525	\$2.48
HOSPITALS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	2,046	\$525,000	\$56.42
HOSPITALS	1	High Efficiency Toilet Replacement Program - INDOOR	75	93	81	\$29,400	\$79.83
HOSPITALS	1	Waterless Urinal Replacement Program - INDOOR	75	0	130	\$49,219	\$83.44
HOSPITALS	1	Urinal Replacement Program - INDOOR	75	73	18	\$7,088	\$84.85
HOSPITALS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	231	\$300,000	\$285.48
HOSPITALS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$630	\$100,000.00
HOSPITALS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$360	\$100,000.00
HOSPITALS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	3	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,356	0	\$0	\$100,000.00
HOSPITALS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	153	0	\$0	\$100,000.00
HOSPITALS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	311	0	\$0	\$100,000.00
HOSPITALS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	20	0	\$0	\$100,000.00
HOSPITALS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,116	0	\$0	\$100,000.00
HOSPITALS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	108	0	\$0	\$100,000.00
HOSPITALS	3	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
HOSPITALS	3	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	719	\$0	\$0.00
INDOOR RECREATION	1	Waterless Urinal Replacement Program - INDOOR	75	0	510	\$22,969	\$9.91
INDOOR RECREATION	1	Urinal Replacement Program - INDOOR	75	289	72	\$3,308	\$10.08
INDOOR RECREATION	3	Waterless Urinal Replacement Program - INDOOR	75	0	59	\$4,219	\$15.85
INDOOR RECREATION	1	High Efficiency Toilet Replacement Program - INDOOR	75	364	318	\$27,440	\$18.96
INDOOR RECREATION	3	Urinal Replacement Program - INDOOR	75	23	6	\$608	\$22.82
INDOOR RECREATION	3	High Efficiency Toilet Replacement Program - INDOOR	75	23	20	\$5,040	\$54.09
INDOOR RECREATION	2	Urinal Replacement Program - INDOOR	75	19	5	\$2,565	\$115.83
INDOOR RECREATION	2	Waterless Urinal Replacement Program - INDOOR	75	0	30	\$17,813	\$130.09
INDOOR RECREATION	2	High Efficiency Toilet Replacement Program - INDOOR	75	33	29	\$21,280	\$162.77
INDOOR RECREATION	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$810	\$100,000.00
INDOOR RECREATION	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$3,420	\$100,000.00
INDOOR RECREATION	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$4,410	\$100,000.00
INDOOR RECREATION	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$90	\$100,000.00
INDOOR RECREATION	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$380	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
INDOOR RECREATION	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$490	\$100,000.00
INDOOR RECREATION	3	Low Flow Faucet Aerator Replacement - INDOOR	75	66	0	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Faucet Aerator Replacement - INDOOR	75	36	0	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Faucet Aerator Replacement - INDOOR	75	602	0	\$0	\$100,000.00
INDOOR RECREATION	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	55	0	\$0	\$100,000.00
INDOOR RECREATION	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	426	0	\$0	\$100,000.00
INDOOR RECREATION	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$675,000	\$100,000.00
INDOOR RECREATION	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$2,850,000	\$100,000.00
INDOOR RECREATION	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,675,000	\$100,000.00
LIVE-IN CARE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	187	\$0	\$0.00
LIVE-IN CARE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	1,010	\$180	\$0.04
LIVE-IN CARE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	1,363	\$810	\$0.13
LIVE-IN CARE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	151	\$360	\$0.52
LIVE-IN CARE	2	High Efficiency Showerhead Replacement - INDOOR	75	532	266	\$740	\$0.61
LIVE-IN CARE	1	High Efficiency Showerhead Replacement - INDOOR	75	685	343	\$1,380	\$0.89
LIVE-IN CARE	3	High Efficiency Showerhead Replacement - INDOOR	75	71	35	\$570	\$3.53
LIVE-IN CARE	2	High Efficiency Toilet Replacement Program - INDOOR	75	772	675	\$16,520	\$5.38
LIVE-IN CARE	2	Urinal Replacement Program - INDOOR	75	458	114	\$3,983	\$7.65
LIVE-IN CARE	2	Waterless Urinal Replacement Program - INDOOR	75	0	707	\$27,656	\$8.60
LIVE-IN CARE	1	High Efficiency Toilet Replacement Program - INDOOR	75	681	596	\$30,800	\$11.36
LIVE-IN CARE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	2,790	\$150,000	\$11.82
LIVE-IN CARE	1	Waterless Urinal Replacement Program - INDOOR	75	0	955	\$51,563	\$11.87
LIVE-IN CARE	1	Urinal Replacement Program - INDOOR	75	541	135	\$7,425	\$12.08
LIVE-IN CARE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	3,766	\$675,000	\$39.41
LIVE-IN CARE	3	Waterless Urinal Replacement Program - INDOOR	75	0	106	\$21,563	\$44.86
LIVE-IN CARE	3	Urinal Replacement Program - INDOOR	75	42	11	\$3,105	\$64.59
LIVE-IN CARE	3	High Efficiency Toilet Replacement Program - INDOOR	75	42	37	\$12,740	\$75.72
LIVE-IN CARE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	417	\$300,000	\$158.20
LIVE-IN CARE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	119	0	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	836	0	\$0	\$100,000.00
LIVE-IN CARE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,128	0	\$0	\$100,000.00
LIVE-IN CARE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	192	0	\$0	\$100,000.00
LIVE-IN CARE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	148	0	\$0	\$100,000.00
LIVE-IN CARE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,304	0	\$0	\$100,000.00
LIVE-IN CARE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	798	0	\$0	\$100,000.00
OFFICE BUILDINGS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	10,035	\$0	\$0.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
OFFICE BUILDINGS	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,150	1,881	\$16,240	\$1.90
OFFICE BUILDINGS	2	Urinal Replacement Program - INDOOR	75	1,275	319	\$3,915	\$2.70
OFFICE BUILDINGS	2	Waterless Urinal Replacement Program - INDOOR	75	0	1,970	\$27,188	\$3.03
OFFICE BUILDINGS	1	High Efficiency Toilet Replacement Program - INDOOR	75	2,567	2,247	\$53,900	\$5.27
OFFICE BUILDINGS	1	Waterless Urinal Replacement Program - INDOOR	75	0	3,598	\$90,469	\$5.53
OFFICE BUILDINGS	1	Urinal Replacement Program - INDOOR	75	2,038	510	\$13,028	\$5.62
OFFICE BUILDINGS	3	Waterless Urinal Replacement Program - INDOOR	75	0	872	\$52,969	\$13.35
OFFICE BUILDINGS	3	Urinal Replacement Program - INDOOR	75	349	87	\$7,628	\$19.22
OFFICE BUILDINGS	3	High Efficiency Toilet Replacement Program - INDOOR	75	349	305	\$31,640	\$22.78
OFFICE BUILDINGS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$7,470	\$100,000.00
OFFICE BUILDINGS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$9,990	\$100,000.00
OFFICE BUILDINGS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$15,930	\$100,000.00
OFFICE BUILDINGS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	985	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	2,328	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	4,251	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	3,632	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	3,008	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$6,225,000	\$100,000.00
OFFICE BUILDINGS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$8,325,000	\$100,000.00
OFFICE BUILDINGS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$13,275,000	\$100,000.00
RESTAURANTS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	4,054	\$0	\$0.00
RESTAURANTS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	8,172	\$990	\$0.03
RESTAURANTS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	2,884	\$1,170	\$0.09
RESTAURANTS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	2,229	\$2,340	\$0.23
RESTAURANTS	2	Urinal Replacement Program - INDOOR	75	1,566	391	\$743	\$0.42
RESTAURANTS	2	Waterless Urinal Replacement Program - INDOOR	75	0	2,420	\$5,156	\$0.47
RESTAURANTS	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,641	2,311	\$6,160	\$0.59
RESTAURANTS	3	Waterless Urinal Replacement Program - INDOOR	75	0	854	\$6,094	\$1.57
RESTAURANTS	3	Urinal Replacement Program - INDOOR	75	342	85	\$878	\$2.26
RESTAURANTS	1	Waterless Urinal Replacement Program - INDOOR	75	0	660	\$12,188	\$4.06
RESTAURANTS	1	Urinal Replacement Program - INDOOR	75	374	93	\$1,755	\$4.13
RESTAURANTS	3	High Efficiency Toilet Replacement Program - INDOOR	75	342	299	\$7,280	\$5.35
RESTAURANTS	1	High Efficiency Toilet Replacement Program - INDOOR	75	471	412	\$14,560	\$7.77
RESTAURANTS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$130	\$100,000.00
RESTAURANTS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$110	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RESTAURANTS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$260	\$100,000.00
RESTAURANTS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	964	0	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	2,859	0	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	780	0	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	4,461	0	\$0	\$100,000.00
RESTAURANTS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	552	0	\$0	\$100,000.00
RESTAURANTS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$975,000	\$100,000.00
RESTAURANTS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$825,000	\$100,000.00
RESTAURANTS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$1,950,000	\$100,000.00
RETAIL	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	2,440	\$0	\$0.00
RETAIL	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,136	1,869	\$16,240	\$1.91
RETAIL	2	Urinal Replacement Program - INDOOR	75	1,266	317	\$3,915	\$2.72
RETAIL	2	Waterless Urinal Replacement Program - INDOOR	75	0	1,957	\$27,188	\$3.05
RETAIL	3	Waterless Urinal Replacement Program - INDOOR	75	0	1,412	\$26,250	\$4.09
RETAIL	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,462	1,279	\$28,840	\$4.96
RETAIL	1	Waterless Urinal Replacement Program - INDOOR	75	0	2,049	\$48,281	\$5.18
RETAIL	1	Urinal Replacement Program - INDOOR	75	1,160	290	\$6,953	\$5.27
RETAIL	3	Urinal Replacement Program - INDOOR	75	565	141	\$3,780	\$5.89
RETAIL	3	High Efficiency Toilet Replacement Program - INDOOR	75	565	494	\$15,540	\$6.91
RETAIL	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$4,140	\$100,000.00
RETAIL	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$2,250	\$100,000.00
RETAIL	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$11,070	\$100,000.00
RETAIL	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,594	0	\$0	\$100,000.00
RETAIL	2	Low Flow Faucet Aerator Replacement - INDOOR	75	2,312	0	\$0	\$100,000.00
RETAIL	1	Low Flow Faucet Aerator Replacement - INDOOR	75	2,420	0	\$0	\$100,000.00
RETAIL	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	3,607	0	\$0	\$100,000.00
RETAIL	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,713	0	\$0	\$100,000.00
RETAIL	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,450,000	\$100,000.00
RETAIL	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$1,875,000	\$100,000.00
RETAIL	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$9,225,000	\$100,000.00
WAREHOUSES/STORAGE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	539	\$0	\$0.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
WAREHOUSES/STORAGE	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,031	902	\$6,300	\$1.53
WAREHOUSES/STORAGE	1	Waterless Urinal Replacement Program - INDOOR	75	0	1,446	\$10,781	\$1.64
WAREHOUSES/STORAGE	1	Urinal Replacement Program - INDOOR	75	819	205	\$1,553	\$1.67
WAREHOUSES/STORAGE	2	High Efficiency Toilet Replacement Program - INDOOR	75	96	84	\$2,100	\$5.48
WAREHOUSES/STORAGE	2	Urinal Replacement Program - INDOOR	75	57	14	\$540	\$8.32
WAREHOUSES/STORAGE	2	Waterless Urinal Replacement Program - INDOOR	75	0	88	\$3,750	\$9.35
WAREHOUSES/STORAGE	3	Waterless Urinal Replacement Program - INDOOR	75	0	205	\$9,375	\$10.07
WAREHOUSES/STORAGE	3	Urinal Replacement Program - INDOOR	75	82	20	\$1,350	\$14.49
WAREHOUSES/STORAGE	3	High Efficiency Toilet Replacement Program - INDOOR	75	82	72	\$5,600	\$17.18
WAREHOUSES/STORAGE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$3,600	\$100,000.00
WAREHOUSES/STORAGE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$810	\$100,000.00
WAREHOUSES/STORAGE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$3,780	\$100,000.00
WAREHOUSES/STORAGE	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	231	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	104	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,708	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	163	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,209	0	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,000,000	\$100,000.00
WAREHOUSES/STORAGE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$675,000	\$100,000.00
WAREHOUSES/STORAGE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,150,000	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

APPENDIX J

PALM BAY ANALYSIS PACKAGE

Appendix J

Palm Bay

- A. Account Level Screening
- B. Benchmarks Per Residential Category and Build-out Condition for Accounts with No Seasonal Behavior
- C. Benchmarks per Residential Category and Build-out Condition for All Accounts
- D. Benchmarks per Non-Residential Category and Build-out Condition for All Accounts
- E. Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use
- F. Percentage of Accounts Likely using an In-Ground Irrigation System connected to the Public Water Supply
- G. Bill Frequency Analysis
- H. Cost Effective Water Conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 year Planning Horizon
- I. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon
- J. Residential and Commercial BMP Conservation Practices with a 1 year Implementation Period sorted by Program Water Savings
- K. Efficient Water Use Benchmarks
- L. GIS Maps Illustrating the Geographic Distribution of the Top Water Use Categories within the Service Area Boundary
- M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon Period for a 1 year Program Implementation Period

A. Account Level Data Screening to Generate Benchmarks for Single Family Accounts

Background:

Account level water consumption data is complex, variable and unique to each utility. Joining the account water consumption data with District population and property appraiser geospatial data results in inconsistencies and anomalies that need to be recognized, evaluated and cleaned in order to generate meaningful water consumption benchmarks and statistics. The following summarizes the analysis performed to calculate water consumption benchmarks and statistics.

Analysis	Reason for Step in Analysis	Utility Specific Notes
Initial screens		
Screen Accounts with no total consumption	Removes accounts with no consumption over period of analysis less than 15,000 gallons total water use.	NA
Screen Accounts with population less than one	Removes accounts with population less than one person to avoid overestimating per capita use	NA
Screen by Department of Revenue Code	Isolate account that are single family in account billing records and property appraisal database	NA
Isolate period of analysis for each utility	Look at aggregate billing data anomalies to find abnormal consumption trends: abnormally low, low/high switching, abnormally high.	Palm Coast- Jan'08 was dropped, SJUD does not include Nov,Dec-'09, Palm Bay does not in Oct, Nov, Dec-09. Leesburg November data was consider for removal due to numerous skipped reads.
Evaluate accounts with no seasonal or transient behavior		
Screen for Year Built	Capture accounts with water consumption for three build out conditions	
Capture accounts that have min month above min threshold	Develop a clean data set to compare against industry benchmarks for occupied homes and develop an understanding for indoor/outdoor use characteristics. Use this dataset to run tests and to check quality of analyses on large accounts dataset that include accounts with transient behavior.	Minimum threshold developed for each utility as the average population per account multiplied by the min indoor usage of 60 gallons per person per day.
Evaluate all accounts		
Separate transient accounts from accounts with anomalously low consumption	If account has less than 15,000 gallons of consumption for period of analysis it is exclude from analysis. There are accounts with population, but look to be vacated over the period of the analysis.	This analysis keeps accounts that average at least 1000 gallons per month. There are many account in Palm Bay and Palm Coast that have low and continuous consumption between 1000 and 3000 gallons per month.
Assign indoor use to transient accounts that have minimum month of zero.	For accounts with a min month of zero, the min month hydrograph separation will assign all water consumption as outdoor. For accounts with min month equaling zero and consumption in other months, indoor consumption in months with consumption is set to the average consumption for the period.	This has the tendency to over predict indoor consumption in transient accounts. But checks against clean datasets are within reason.
Screen for minimum irrigable area	Used in calculating outdoor benchmarks and to avoid small denominators from benchmark calculations (Subtracting house area from parcel area can lead to small or negative numbers).	

B. Palm Bay - Benchmarks Per Residential Category and Build Out Condition for Accounts with No Seasonal Behavior

Res Class	Build Out Condition	Population	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)
RS1	Pre 1984	316	31.31	69.52	100.83
	1984 - 1993	578	30.51	64.06	94.57
	1994 to Present	62	28.31	61.39	89.70
RS2	Pre 1984	255	34.09	67.60	101.69
	1984 - 1993	1,147	32.78	63.58	96.36
	1994 to Present	278	29.86	62.87	92.73
RS3	Pre 1984	183	38.77	68.81	107.57
	1984 - 1993	981	36.72	66.48	103.20
	1994 to Present	402	34.12	66.24	100.36
RS4	Pre 1984	58	47.75	68.28	116.03
	1984 - 1993	302	37.83	65.31	103.14
	1994 to Present	254	43.01	77.24	120.25
RS5	Pre 1984	38	42.22	68.28	110.51
	1984 - 1993	108	37.29	66.41	103.70
	1994 to Present	206	41.45	74.05	115.50

C. Palm Bay - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Number of Records	Avg Yr Built	Average Monthly Average (gal/month)	Average Monthly Max (gal/month)	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)	StdDev of Per Capita Total (gpcd)
RS1	Pre 1984	2,532	1974	3,818	7,936	12.85	34.73	47.58	27.73
	1984 - 1993	1,788	1987	4,401	8,914	17.37	32.82	50.19	27.98
	1994 to Present	188	1998	4,182	8,418	15.33	32.84	48.17	24.34
RS2	Pre 1984	1,828	1976	4,152	9,113	14.81	36.90	51.71	29.78
	1984 - 1993	3,128	1988	4,773	10,108	18.95	35.20	54.16	28.87
	1994 to Present	901	1999	4,460	8,836	18.00	33.82	51.82	27.13
RS3	Pre 1984	1,098	1978	4,515	10,719	16.99	39.51	56.50	35.27
	1984 - 1993	2,482	1988	5,092	11,914	20.77	36.42	57.19	33.89
	1994 to Present	1,288	2000	4,567	9,541	19.44	37.29	56.73	35.54
RS4	Pre 1984	302	1978	4,737	10,812	17.94	42.36	60.29	34.41
	1984 - 1993	762	1989	5,343	12,498	21.01	39.56	60.57	35.16
	1994 to Present	959	2002	4,639	9,912	24.13	42.36	66.49	46.33
RS5	Pre 1984	118	1971	5,420	14,302	24.87	47.64	72.52	51.03
	1984 - 1993	249	1988	5,501	12,996	22.20	40.41	62.61	35.77
	1994 to Present	611	2002	5,241	12,163	27.77	48.35	76.12	57.22
HD	Pre 1984	80	1961	3,654	7,940	- *	- *	31.15	26.31
	1984 - 1993	20	1986	2,585	6,866	- *	- *	14.20	15.50
	1994 to Present	4	2002	3,496	5,749	- *	- *	29.77	18.32

* Multi family water use was assumed to be used primarily indoors.

Palm Bay - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)	StdDev of Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	10,870	1,227	-	0.076		0.003	0.006	0.013	0.008
	1984 - 1993	10,682	1,269	-	0.075		0.005	0.008	0.014	0.009
	1994 to Present	10,316	1,263	-	0.075		0.005	0.008	0.014	0.008
RS2	Pre 1984	11,935	1,362	-	0.074		0.004	0.006	0.013	0.010
	1984 - 1993	11,630	1,543	-	0.067		0.005	0.008	0.014	0.009
	1994 to Present	10,479	1,557	-	0.062		0.005	0.009	0.015	0.008
RS3	Pre 1984	13,335	1,575	-	0.069		0.004	0.006	0.013	0.009
	1984 - 1993	12,625	1,637	-	0.067		0.005	0.009	0.014	0.009
	1994 to Present	10,997	1,717	-	0.058		0.005	0.009	0.015	0.008
RS4	Pre 1984	14,954	1,782	-	0.064		0.003	0.006	0.012	0.008
	1984 - 1993	13,864	1,888	-	0.062		0.005	0.008	0.014	0.009
	1994 to Present	11,936	1,943	-	0.050		0.005	0.009	0.014	0.008
RS5	Pre 1984	24,960	2,011	-	0.061		0.003	0.005	0.009	0.006
	1984 - 1993	18,594	2,203	-	0.054		0.004	0.007	0.011	0.007
	1994 to Present	19,866	2,425	-	0.045		0.005	0.009	0.012	0.009
HD	Pre 1984	16,615	1,889	-	0.064	-	- *	- *	0.011	0.014
	1984 - 1993	19,810	3,197	-	0.027	-	- *	- *	0.005	0.006
	1994 to Present	15,304	2,688	-	0.043	-	- *	- *	0.009	0.007

* Multi family water use was assumed to be used primarily indoors.

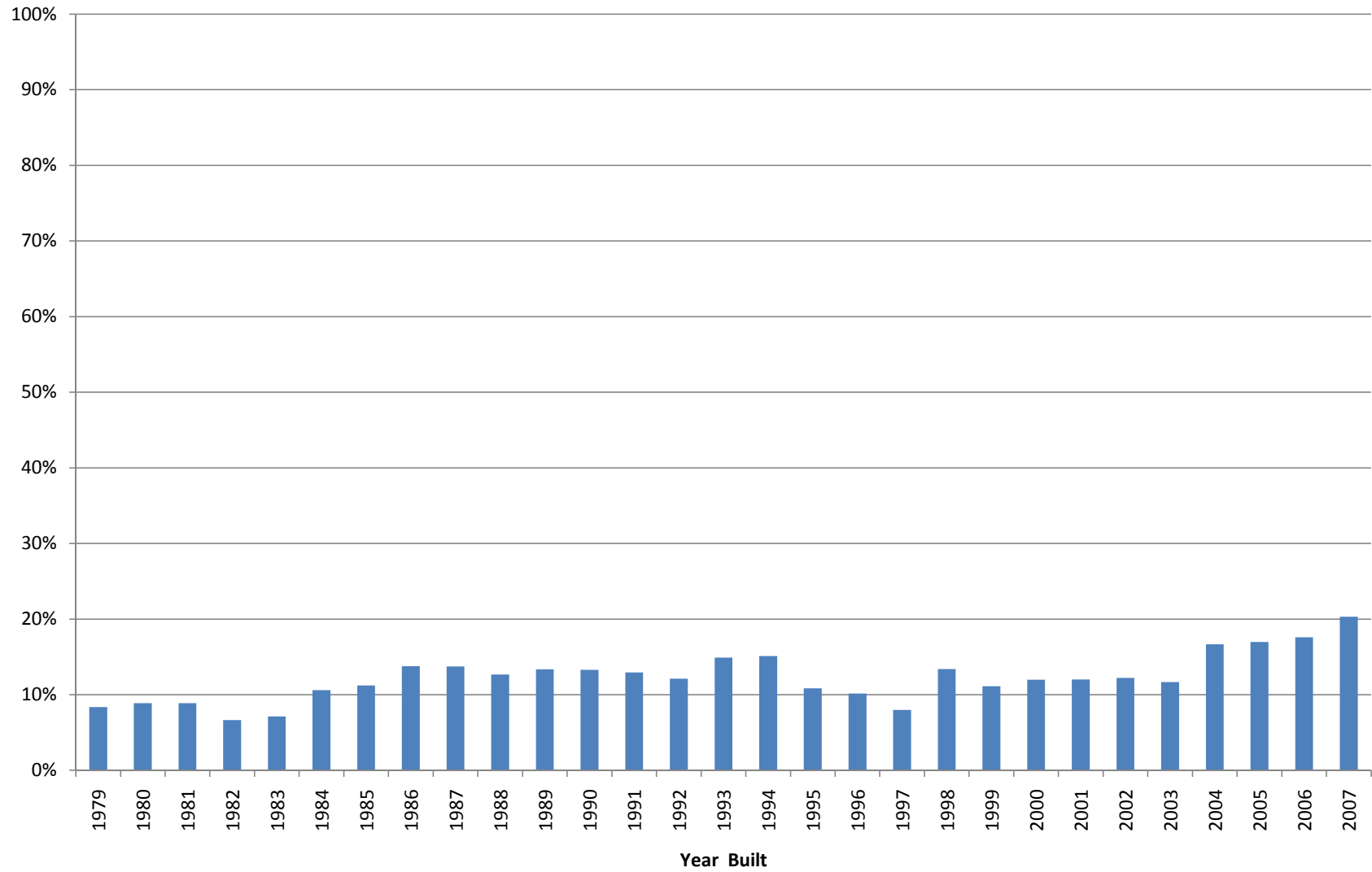
D. Palm Bay - Benchmarks Per Non-Residential Category and Build Out Condition for All Accounts

	Build Out Condition	Number of Records	Avg Yr Built	Avg Use Per Account (gpd)	Average Max Use (gpd)	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)	Stdev WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	13	1973	135	395	47,652	4,229	na	0.03	na	0.00	0.00
	1984 - 1993	18	1987	176	411	31,723	4,390	na	0.06	na	0.01	0.01
	1994 to Present	14	2000	830	1,959	93,435	12,716	na	0.27	na	0.03	0.07
HOTELS	Pre 1984	2	1965	2,203	3,368	136,686	32,045	na	0.16	na	0.01	0.01
	1984 - 1993	2	1986	5,985	11,077	179,561	59,405	na	0.09	na	0.03	0.03
	1994 to Present	1	2000	3,734	5,220	97,655	29,301	na	0.13	na	0.04	0.00
INDOOR RECREATION	Pre 1984	20	1967	343	843	145,025	12,726	na	0.04	na	0.01	0.01
	1984 - 1993	15	1988	345	1,173	168,688	10,429	na	0.03	na	0.00	0.00
	1994 to Present	11	2002	177	491	308,052	10,705	na	0.02	na	0.00	0.00
LIVE-IN CARE	Pre 1984	2	1972	6,501	9,338	211,437	39,442	na	0.19	na	0.04	0.05
	1984 - 1993	1	1986	7,548	8,651	209,660	61,311	na	0.12	na	0.04	0.00
	1994 to Present	4	2002	7,959	9,829	255,631	45,266	na	0.14	na	0.03	0.02
MANUFACTURING	Pre 1984	10	1971	2,096	3,599	618,347	190,799	na	0.03	na	0.01	0.01
	1984 - 1993	4	1987	4,608	7,316	301,549	64,227	na	0.46	na	0.02	0.02
	1994 to Present	5	2002	454	1,320	4,691,180	33,223	na	0.02	na	0.00	0.00
OFFICE BUILDINGS	Pre 1984	45	1975	259	663	126,995	11,437	na	0.04	na	0.01	0.01
	1984 - 1993	72	1987	571	1,415	152,433	9,269	na	0.07	na	0.01	0.01
	1994 to Present	38	2003	649	1,550	439,463	12,689	na	0.08	na	0.01	0.02
RESTAURANTS	Pre 1984	16	1972	837	1,519	30,638	3,008	na	0.30	na	0.03	0.03
	1984 - 1993	9	1988	1,374	3,471	30,922	3,396	na	0.40	na	0.04	0.04
	1994 to Present	15	2001	1,887	3,556	47,464	3,707	na	0.50	na	0.04	0.03
RETAIL	Pre 1984	31	1972	263	632	81,205	14,863	na	0.04	na	0.01	0.01
	1984 - 1993	54	1987	446	835	105,413	19,439	na	0.09	na	0.01	0.01
	1994 to Present	42	2002	485	952	90,112	19,350	na	0.05	na	0.01	0.01
SCHOOLS	Pre 1984	5	1976	2,441	3,888	758,206	92,151	na	0.05	na	0.00	0.00
	1984 - 1993	7	1989	6,567	13,119	1,823,899	159,103	na	0.04	na	0.00	0.00
	1994 to Present	6	2002	895	1,720	712,968	26,311	na	0.04	na	0.01	0.01
WAREHOUSES/STORAGE	Pre 1984	22	1979	370	1,128	106,904	29,713	na	0.03	na	0.00	0.00
	1984 - 1993	23	1986	223	606	61,680	14,689	na	0.02	na	0.00	0.00
	1994 to Present	25	2002	87	316	110,036	24,920	na	0.01	na	0.00	0.00

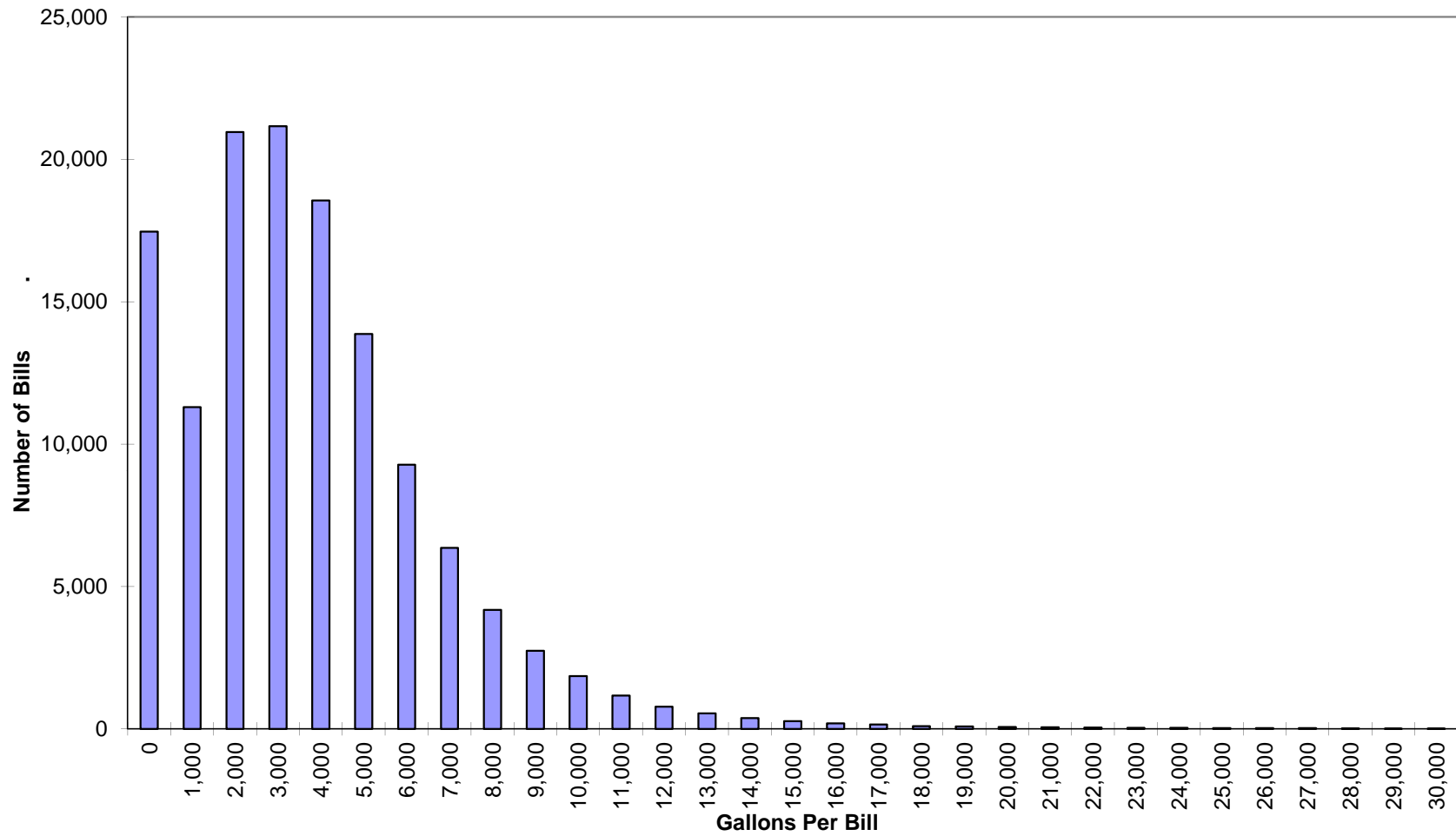
E. Palm Bay - Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use

Res Class	Build Out Condition	% of Homes with Irrigation Systems	% of Outdoor Water used by Irrigation Systems
RS1	Pre 1984	7%	23%
	1984 - 1993	11%	30%
	1994 to Present	10%	23%
RS2	Pre 1984	10%	27%
	1984 - 1993	14%	33%
	1994 to Present	11%	29%
RS3	Pre 1984	13%	35%
	1984 - 1993	17%	39%
	1994 to Present	14%	34%
RS4	Pre 1984	19%	40%
	1984 - 1993	20%	43%
	1994 to Present	15%	35%
RS5	Pre 1984	24%	49%
	1984 - 1993	21%	45%
	1994 to Present	19%	39%

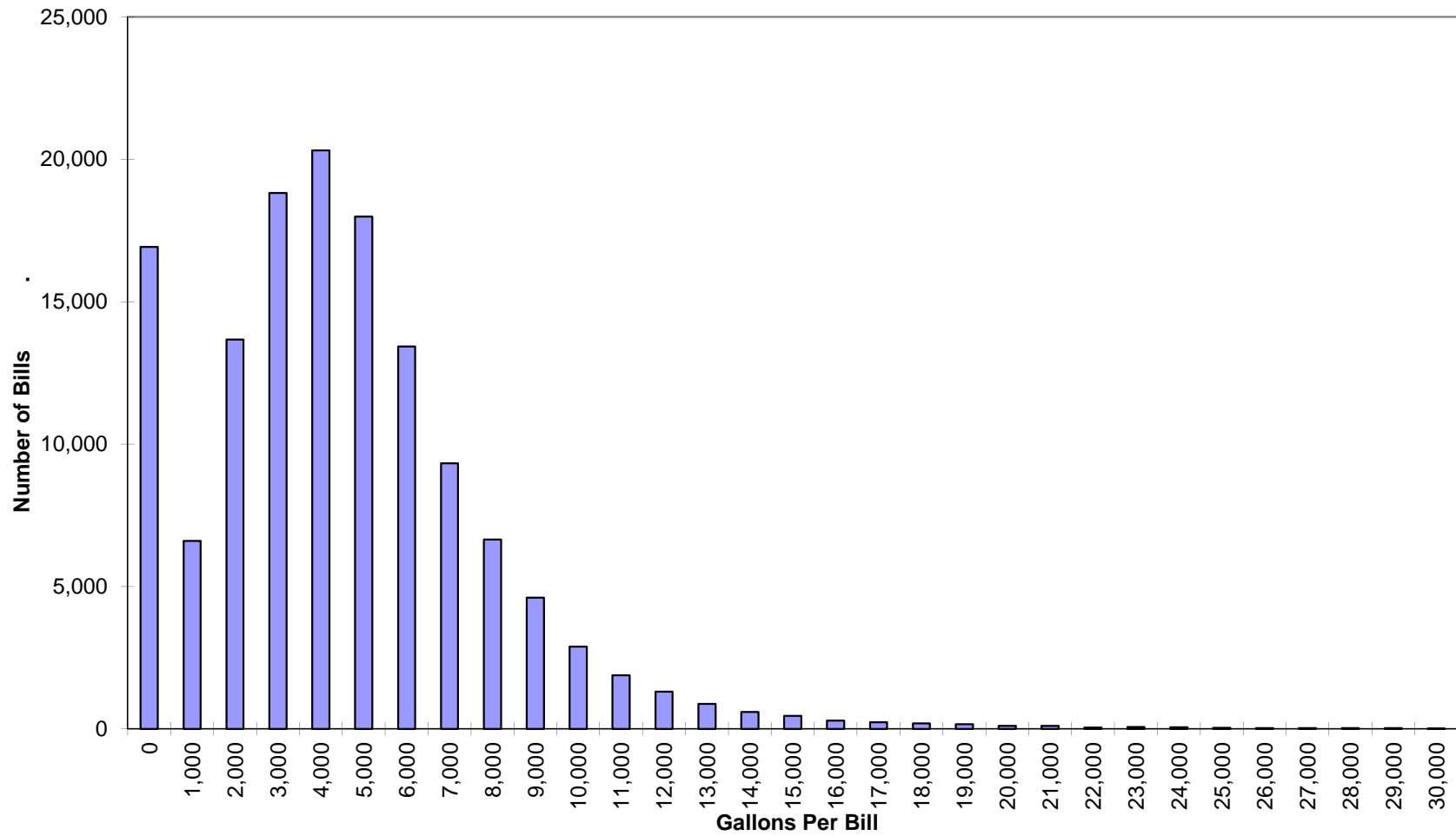
F. Percentage of Accounts in Palm Bay Likely Using an In-Ground Irrigation System connected to the Public Water Supply



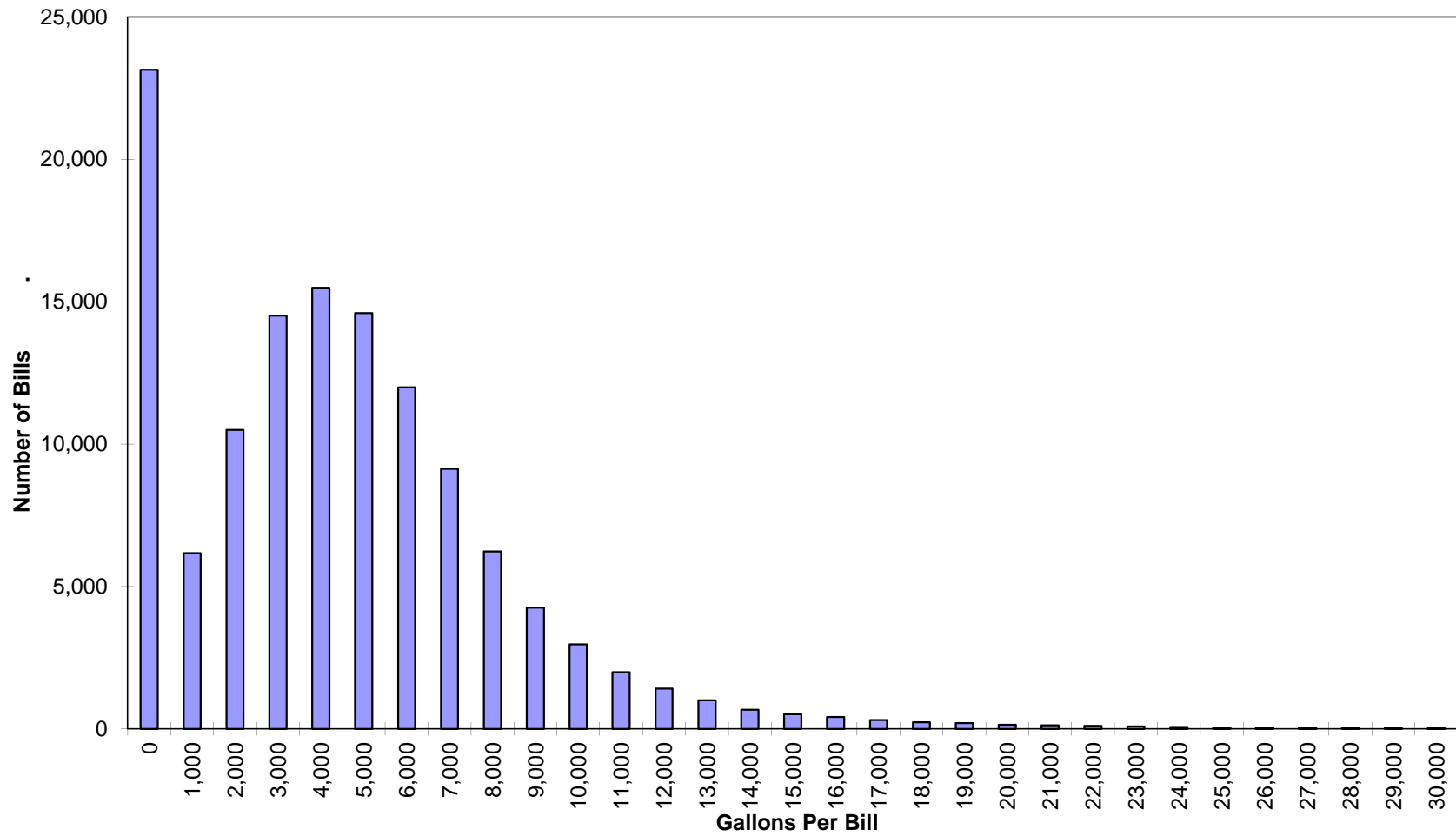
G. Palm Bay Bill Frequency Analysis - RS1 (January 2008 to September 2009)



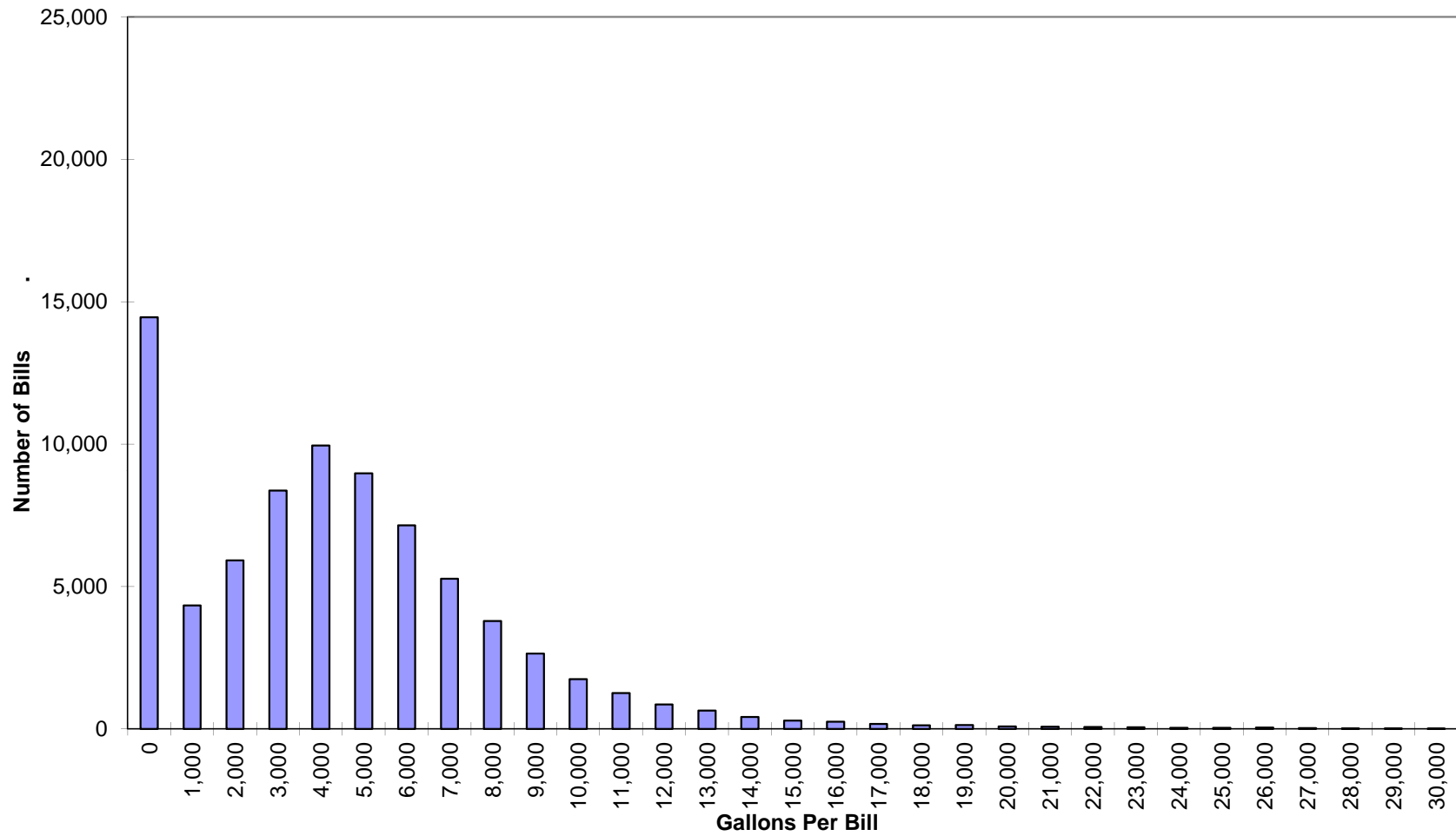
Palm Bay Bill Frequency Analysis - RS2 (January 2008 to September 2009)



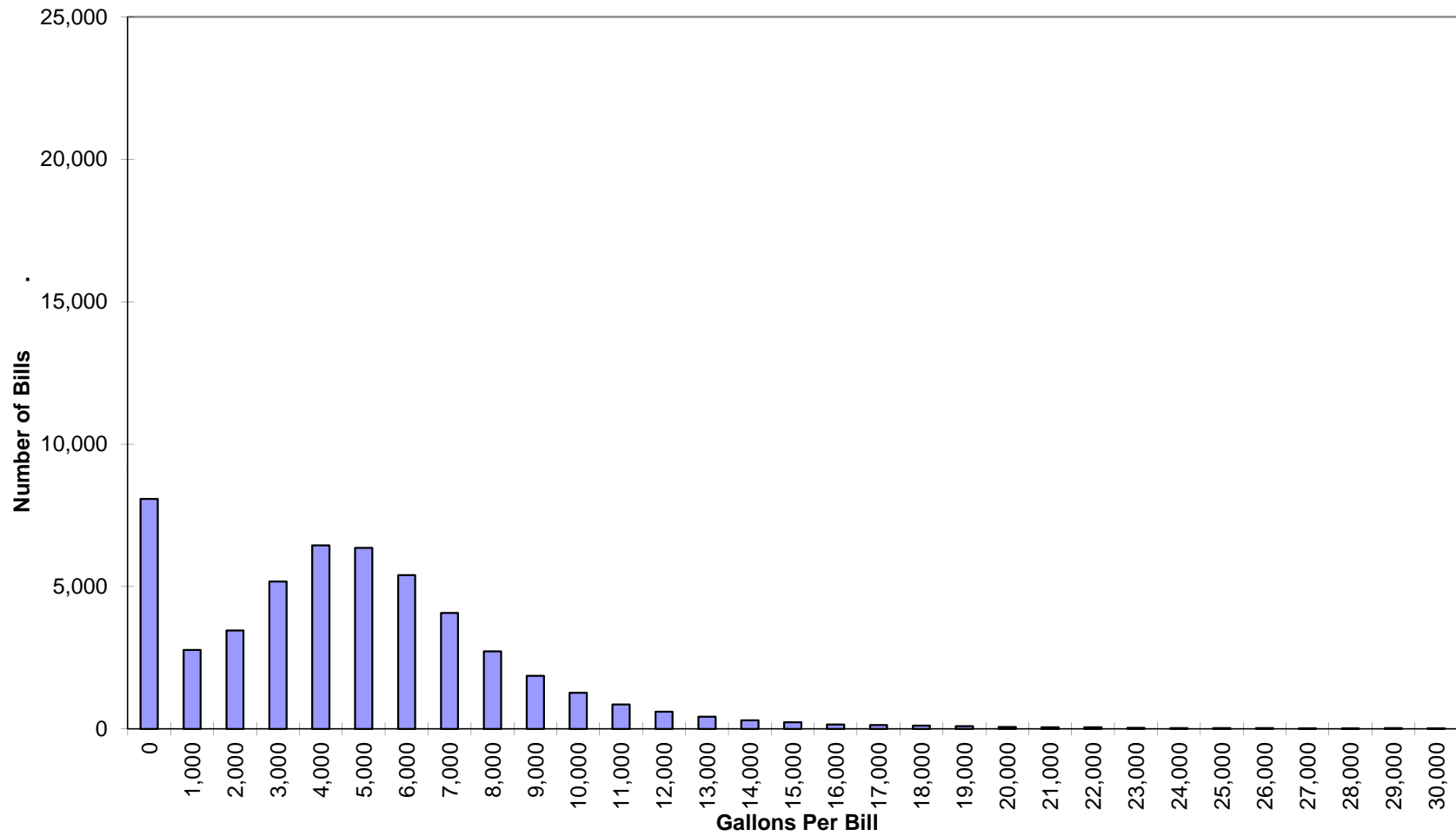
Palm Bay Bill Frequency Analysis - RS3 (January 2008 to September 2009)



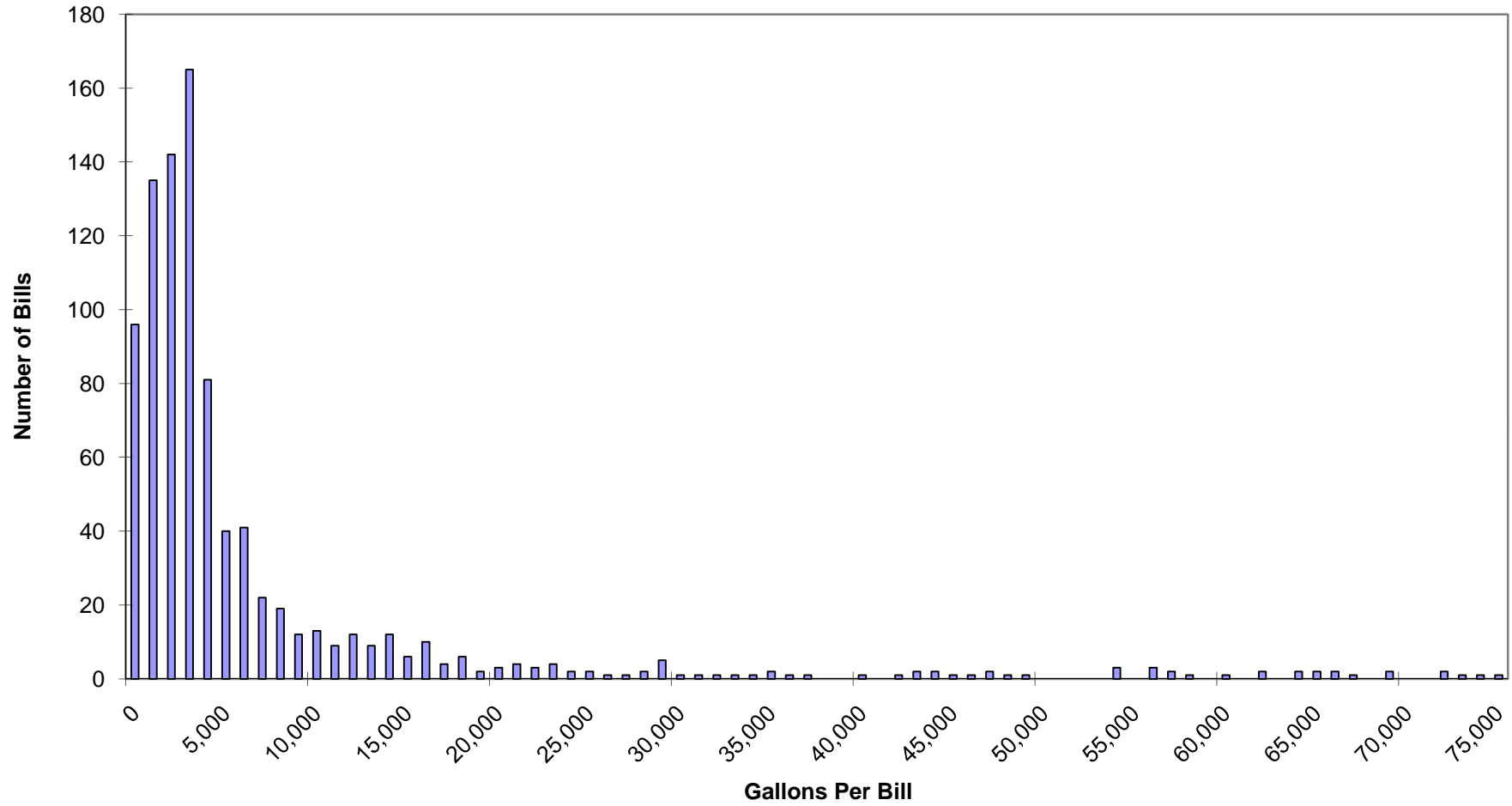
Palm Bay Bill Frequency Analysis - RS4 (January 2008 to September 2009)



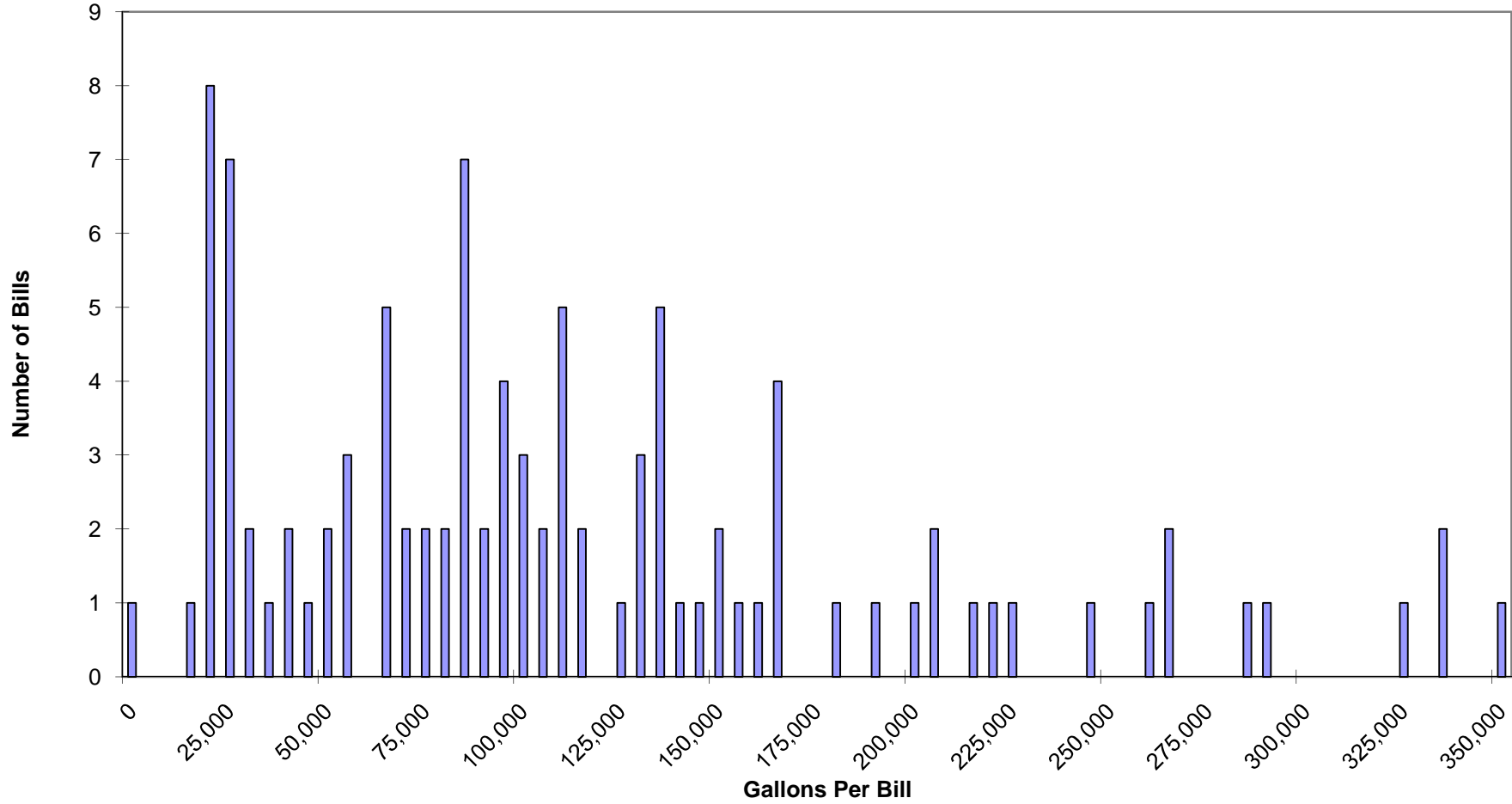
Palm Bay Bill Frequency Analysis - RS5 (January 2008 to September 2009)



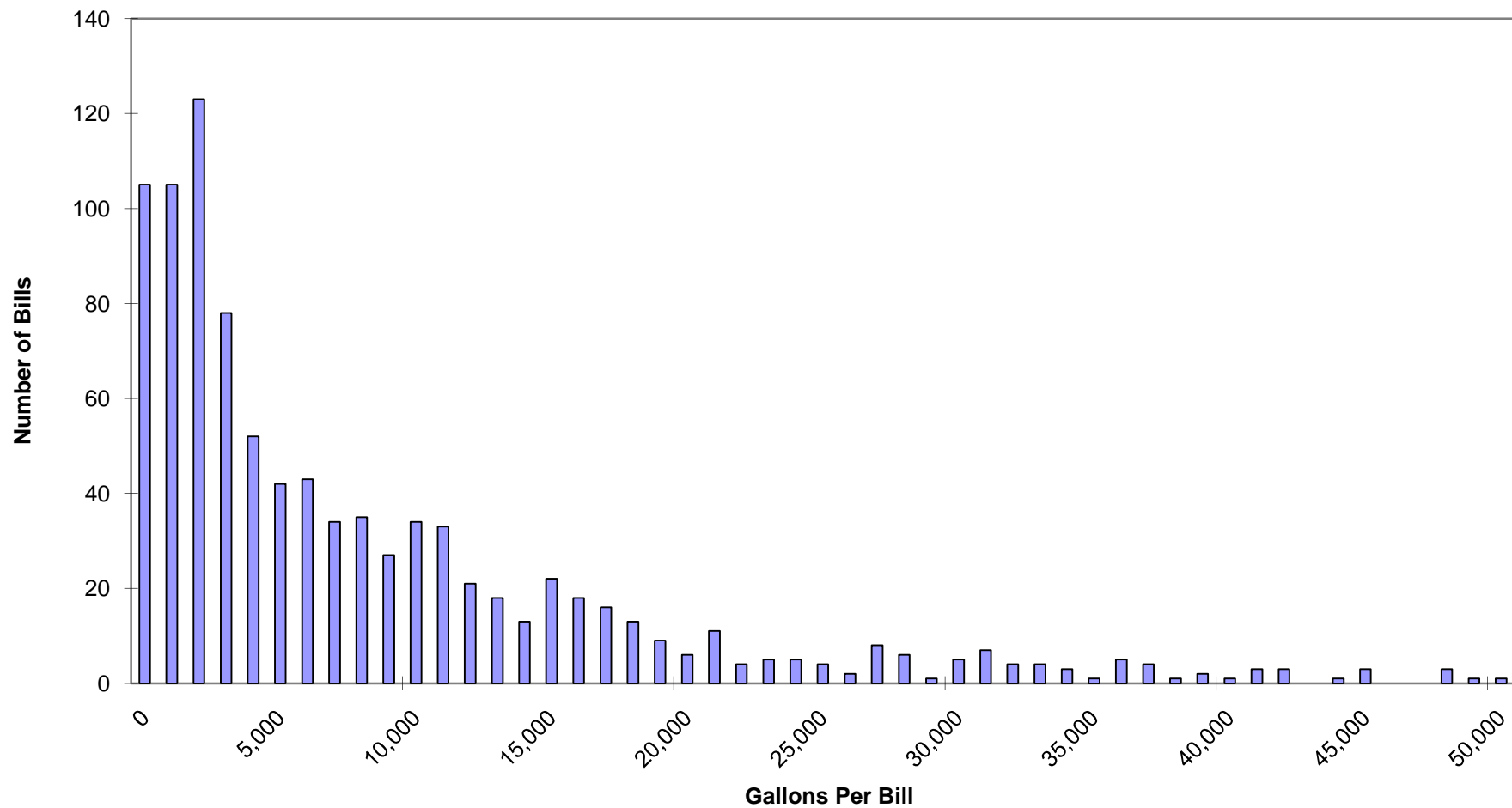
**Palm Bay Bill Frequency Analysis - AUTO & REPAIR
(January 2008 to September 2009)**



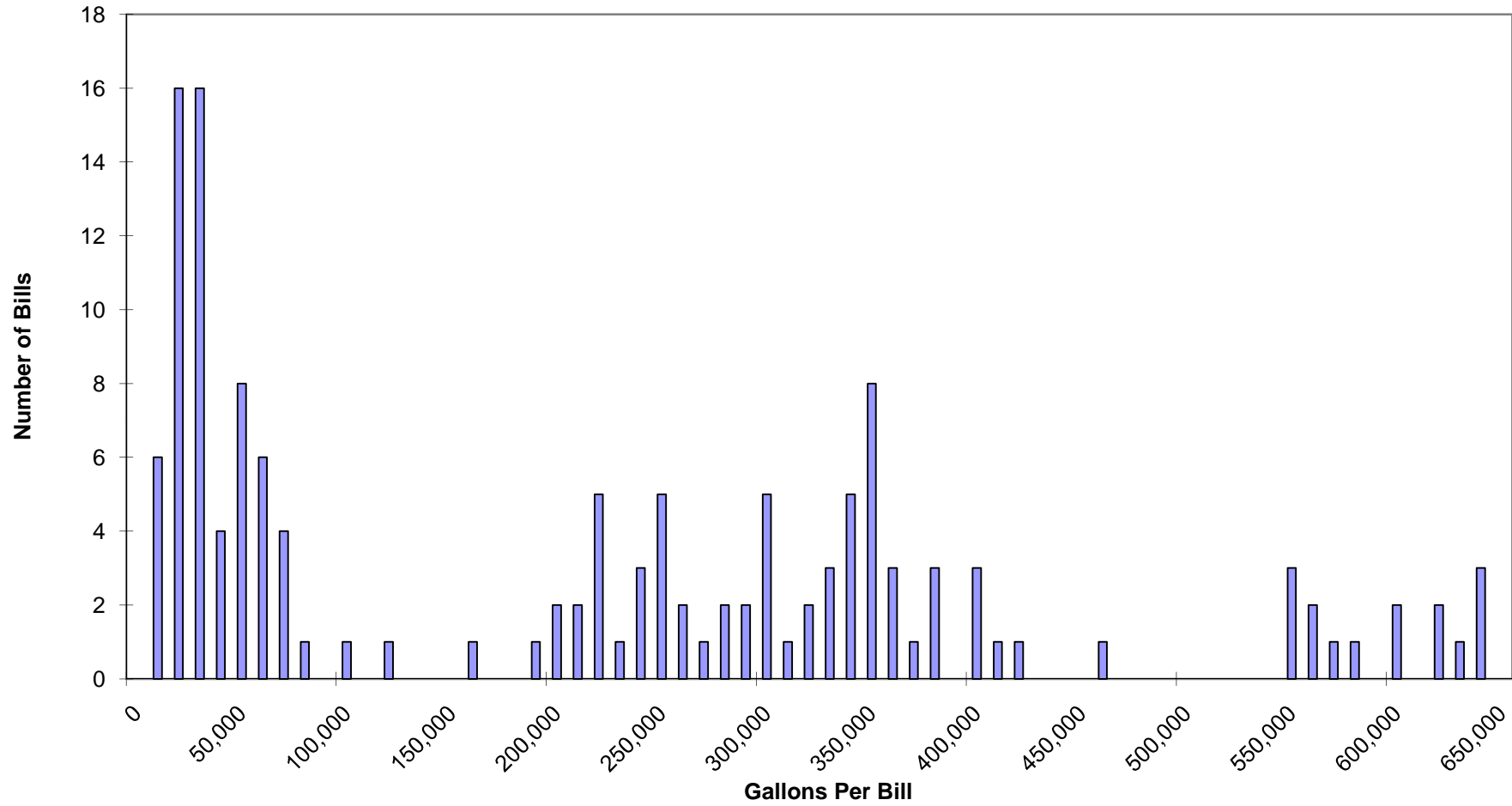
Palm Bay Bill Frequency Analysis - HOTELS
(January 2008 to September 2009)



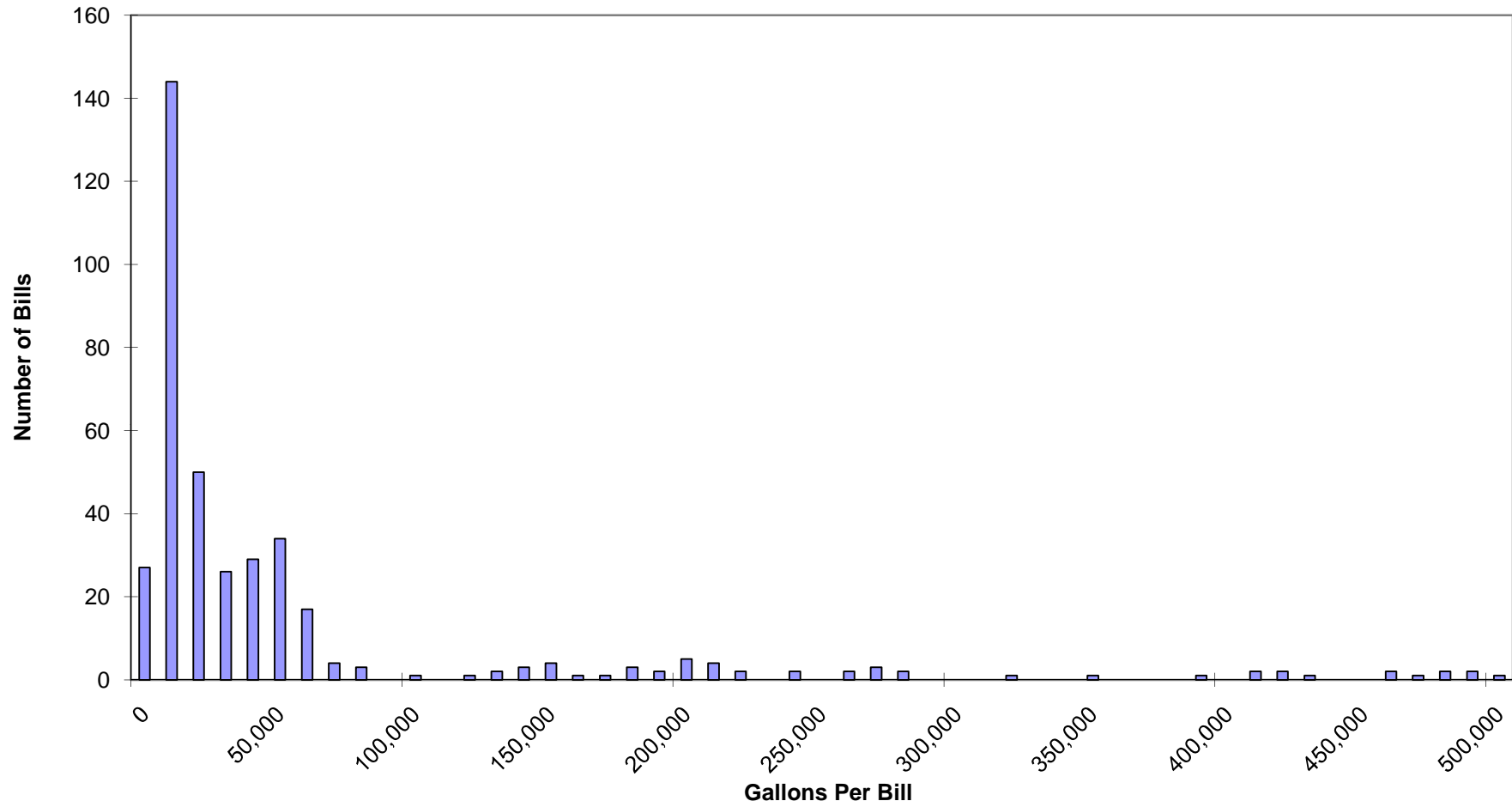
**Palm Bay Bill Frequency Analysis - INDOOR RECREATION
(January 2008 to September 2009)**



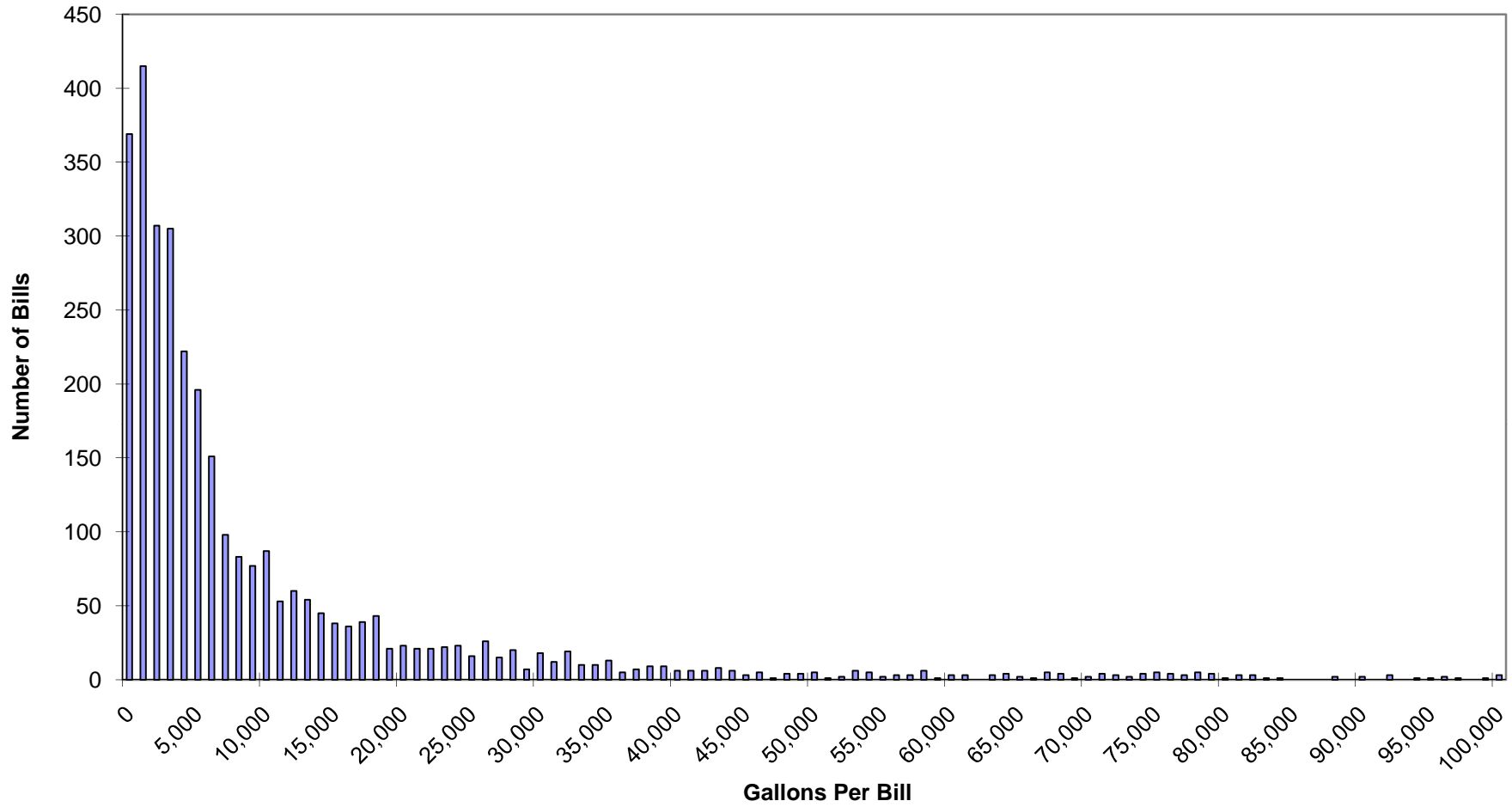
**Palm Bay Bill Frequency Analysis - LIVE-IN CARE
(January 2008 to September 2009)**



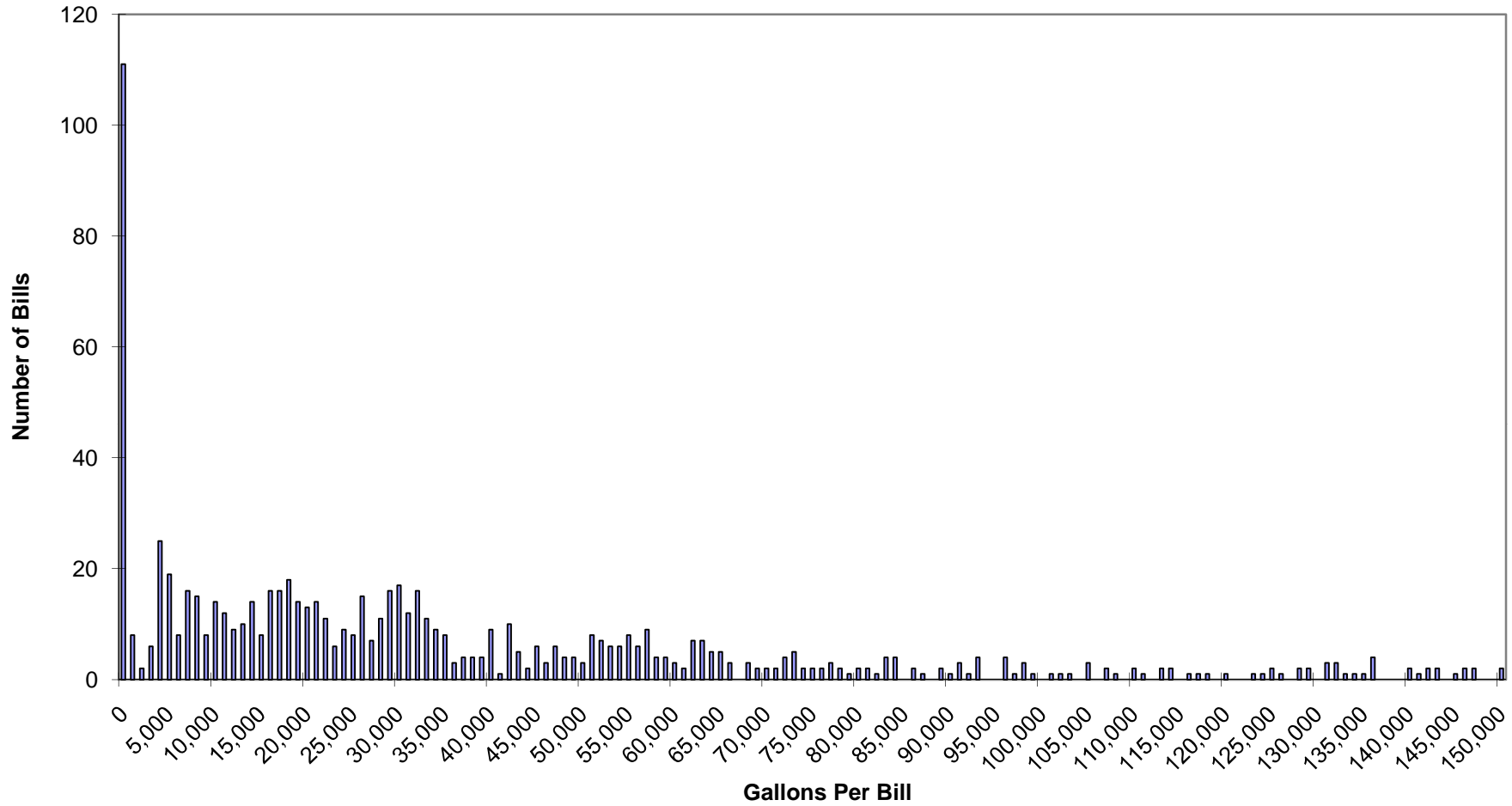
Palm Bay Bill Frequency Analysis - MANUFACTURING
(January 2008 to September 2009)



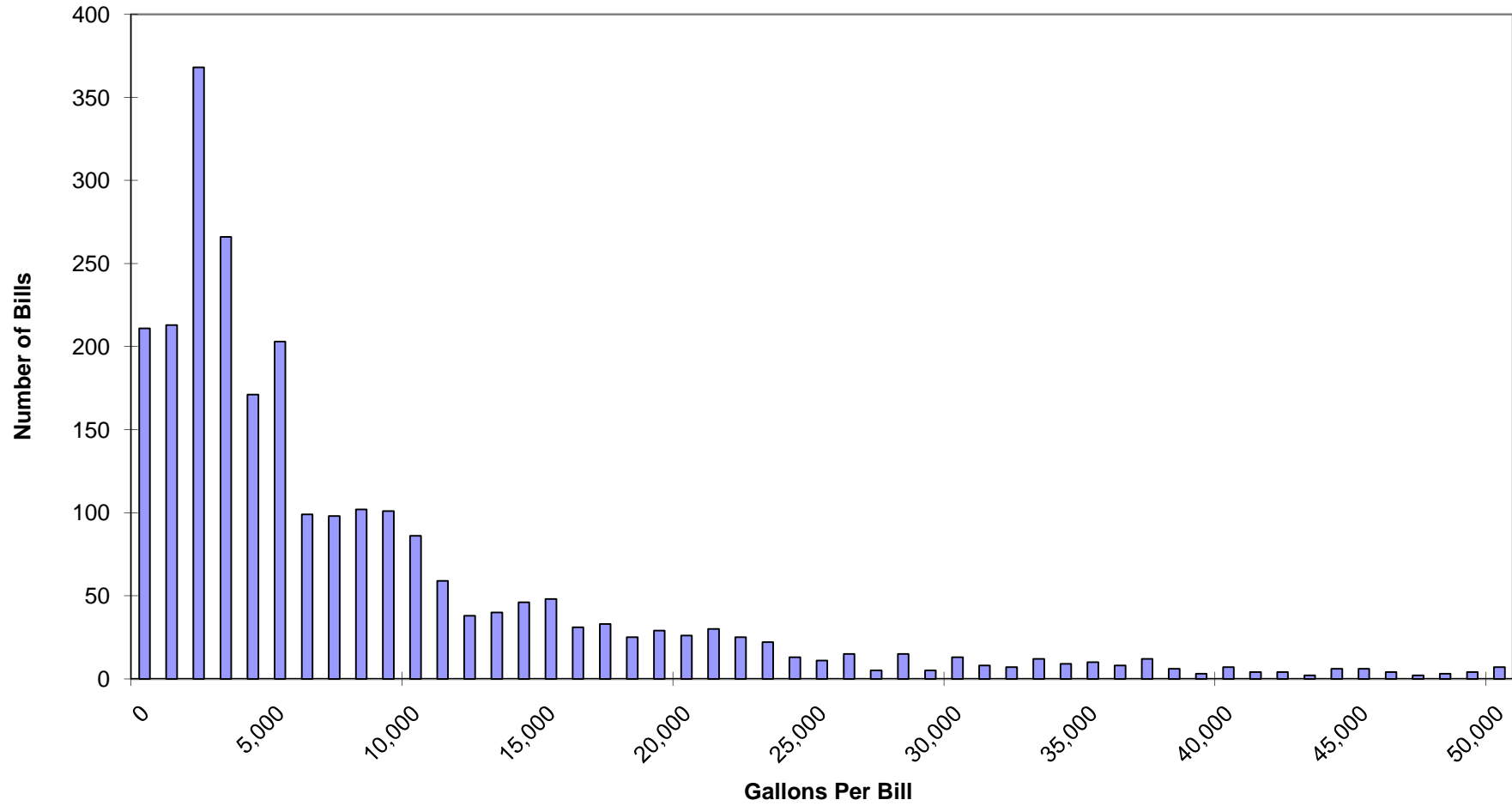
Palm Bay Bill Frequency Analysis - OFFICE BUILDINGS
(January 2008 to September 2009)



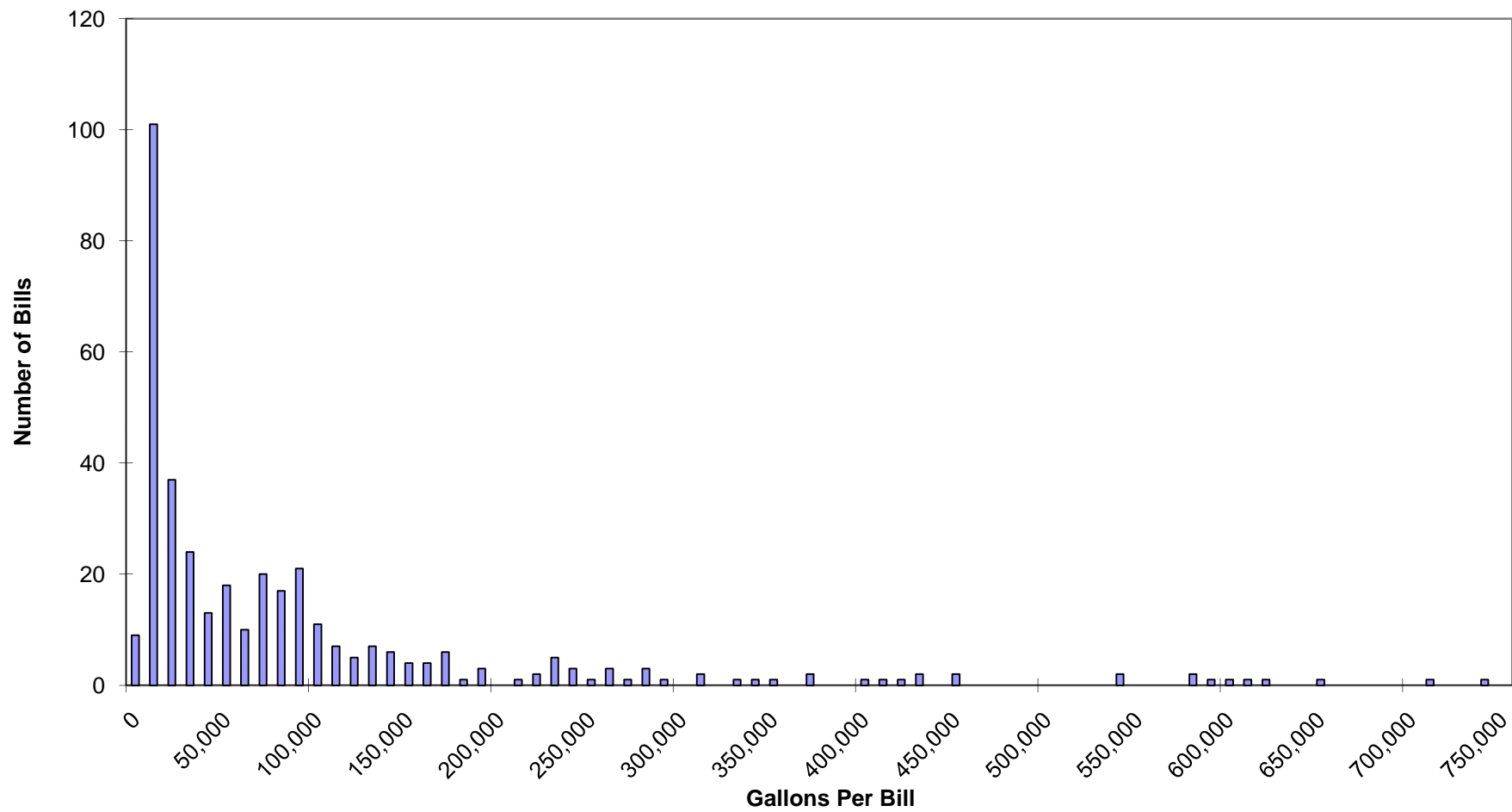
Palm Bay Bill Frequency Analysis - RESTAURANTS
(January 2008 to September 2009)



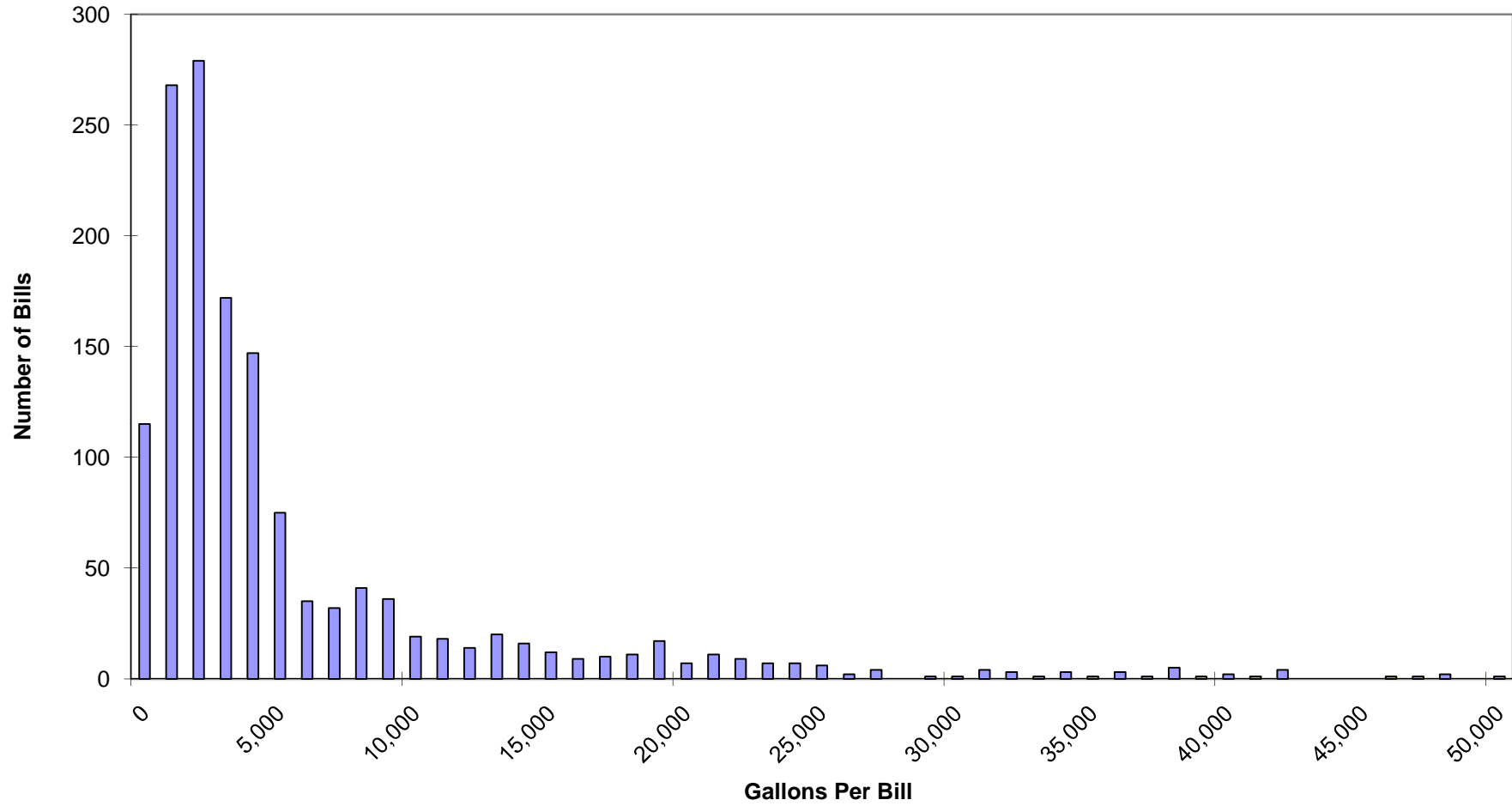
Palm Bay Bill Frequency Analysis - RETAIL
(January 2008 to September 2009)



Palm Bay Bill Frequency Analysis - SCHOOLS (January 2008 to September 2009)



Palm Bay Bill Frequency Analysis - WAREHOUSES/STORAGE
(January 2008 to September 2009)



H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Bay

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	1 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,588,000
Commercial	1,466,000
Total	11,054,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	86,000	\$810,000	\$2.07
Aggressive Meter Monitoring Program - GLOBAL	173,000	4,204,000	\$5.34
Subtotals	259,000	\$5,014,000	\$4.26

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	62,000	93,000	\$1,036,000	\$2.45
Ultra Low Flush Toilet Replacement Program - INDOOR	273,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	57,000	134,000	\$1,495,000	\$2.45
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	19,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	191,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	92,000	\$838,000	\$2.00
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	241,000	\$0	\$0.00
Subtotals	463,000	751,000	\$3,369,000	\$0.99

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	1,400	\$14,000	\$2.20
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	10,000	6,000	\$71,000	\$2.60
Low Flow Faucet Aerator Replacement - INDOOR	5,000	11,000	\$40,000	\$0.80
Urinal Replacement Program - INDOOR	6,000	2,800	\$38,000	\$2.98
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	9,000	\$6,000	\$0.15
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	33,000	\$0	\$0.00
Subtotals	22,000	63,200	\$169,000	\$0.59

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	485,000	1,073,000	\$10,262,000	\$2.10

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Bay

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	5 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,588,000
Commercial	1,466,000
Total	11,054,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	86,000	\$810,000	\$2.07
Aggressive Meter Monitoring Program - GLOBAL	173,000	4,204,000	\$5.34
Subtotals	259,000	\$5,014,000	\$4.26

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	74,000	80,000	\$893,000	\$2.45
Ultra Low Flush Toilet Replacement Program - INDOOR	273,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	96,000	96,000	\$1,068,000	\$2.45
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	19,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	191,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	92,000	\$838,000	\$2.00
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	241,000	\$0	\$0.00
Subtotals	514,000	700,000	\$2,799,000	\$0.88

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	1,200	\$12,000	\$2.20
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	10,000	6,000	\$63,000	\$2.31
Low Flow Faucet Aerator Replacement - INDOOR	8,000	8,000	\$29,000	\$0.80
Urinal Replacement Program - INDOOR	6,000	2,300	\$32,000	\$3.06
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	9,000	\$6,000	\$0.15
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	33,000	\$0	\$0.00
Subtotals	25,000	59,500	\$142,000	\$0.52

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	539,000	1,019,000	\$9,546,000	\$2.06

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Bay

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	10 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,588,000
Commercial	1,466,000
Total	11,054,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	86,000	\$810,000	\$2.07
Aggressive Meter Monitoring Program - GLOBAL	173,000	4,204,000	\$5.34
Subtotals	259,000	\$5,014,000	\$4.26

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	90,000	64,000	\$715,000	\$2.46
Ultra Low Flush Toilet Replacement Program - INDOOR	273,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	144,000	48,000	\$534,000	\$2.45
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	19,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	191,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	92,000	\$838,000	\$2.00
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	241,000	\$0	\$0.00
Subtotals	578,000	636,000	\$2,087,000	\$0.72

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	900	\$10,000	\$2.44
Ultra Low Flush Toilet Replacement Program - INDOOR	13,000	3,000	\$27,000	\$1.98
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	12,000	4,000	\$14,000	\$0.77
Urinal Replacement Program - INDOOR	7,000	1,800	\$24,000	\$2.93
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	9,000	\$6,000	\$0.15
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	33,000	\$0	\$0.00
Subtotals	33,000	51,700	\$81,000	\$0.34

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	611,000	947,000	\$8,618,000	\$2.00

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Bay

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	20 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,588,000
Commercial	1,466,000
Total	11,054,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	86,000	\$810,000	\$2.07
Aggressive Meter Monitoring Program - GLOBAL	173,000	4,204,000	\$5.34
Subtotals	259,000	\$5,014,000	\$4.26

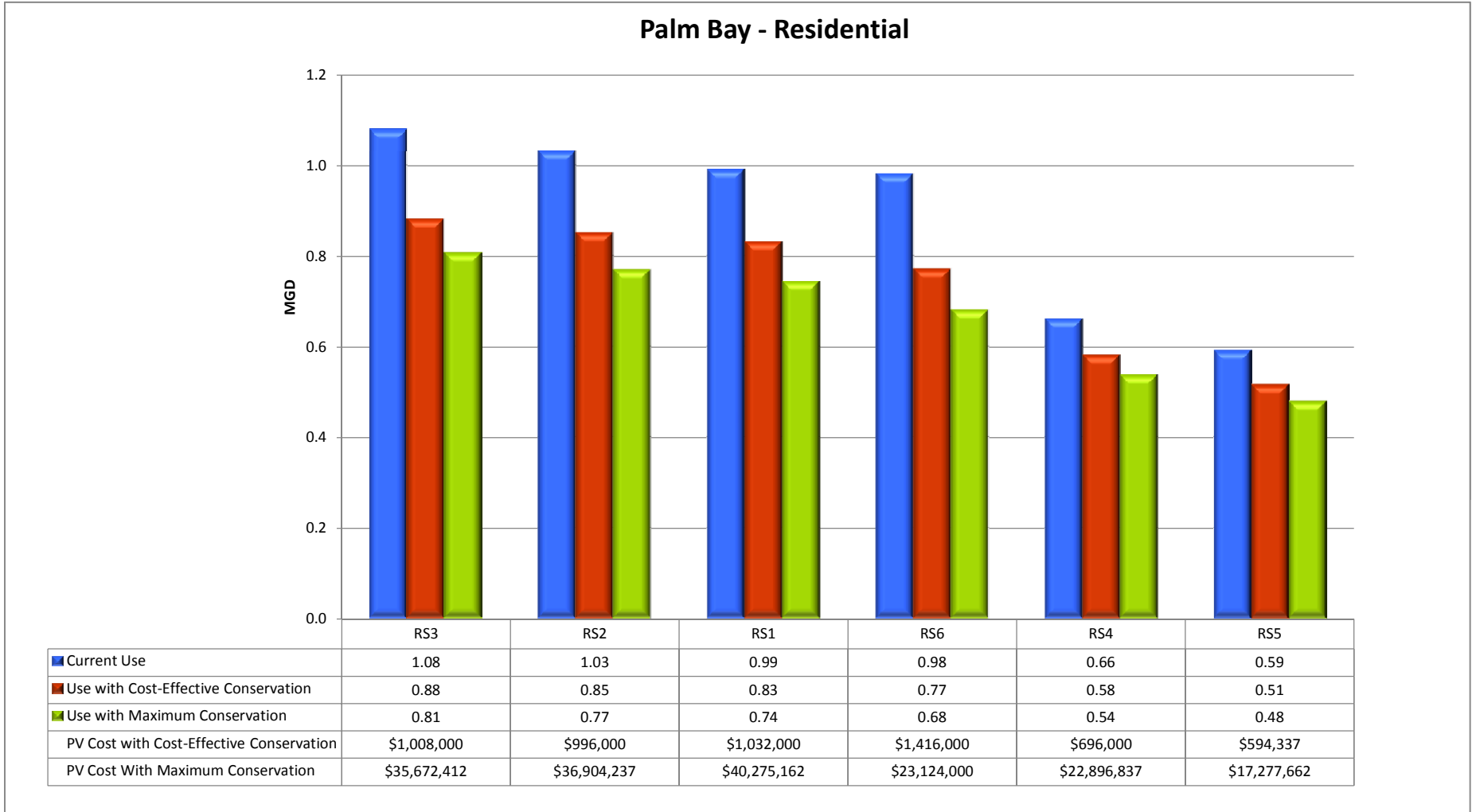
Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	90,000	32,000	\$357,000	\$2.45
Ultra Low Flush Toilet Replacement Program - INDOOR	273,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	192,000	0	\$0	\$0.00
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	19,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	191,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	92,000	\$838,000	\$2.00
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	241,000	\$0	\$0.00
Subtotals	626,000	556,000	\$1,195,000	\$0.47

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	500	\$5,000	\$2.20
Ultra Low Flush Toilet Replacement Program - INDOOR	14,000	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	16,000	0	\$0	\$0.00
Urinal Replacement Program - INDOOR	7,000	600	\$8,000	\$2.93
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	9,000	\$6,000	\$0.15
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	33,000	\$0	\$0.00
Subtotals	38,000	43,100	\$19,000	\$0.10

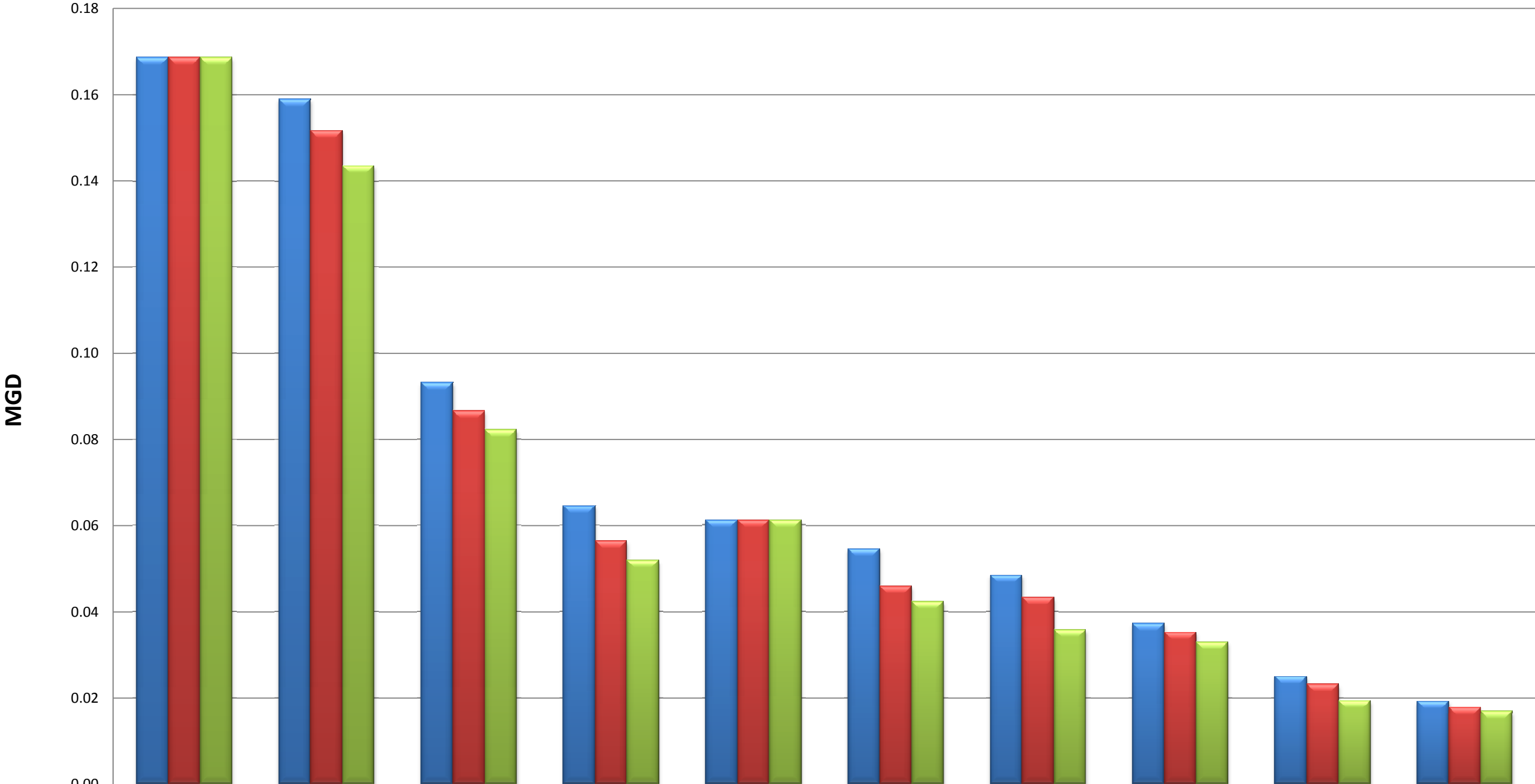
Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	664,000	858,000	\$7,474,000	\$1.92

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon



Palm Bay - Commercial



	MANUFACTURING	RETAIL	OFFICE BUILDINGS	SCHOOLS	AUTO & REPAIR	RESTAURANTS	LIVE-IN CARE	WAREHOUSES/STORAGE	HOTELS	INDOOR RECREATION
■ Current Use	0.17	0.16	0.09	0.06	0.06	0.05	0.05	0.04	0.02	0.02
■ Use with Cost-Eff BMPs	0.17	0.15	0.09	0.06	0.06	0.05	0.04	0.04	0.02	0.02
■ Max Conservation Use	0.17	0.14	0.08	0.05	0.06	0.04	0.04	0.03	0.02	0.02
Cost-Effective PV Cost	\$-	\$6,000	\$-	\$2,400	\$-	\$6,000	\$4,800	\$1,200	\$1,200	\$-
Maximum PV Cost	\$-	\$183,600	\$351,600	\$734,400	\$-	\$70,800	\$1,074,000	\$63,600	\$660,000	\$81,600

J. Residential Conservator Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	6	4	100	-	142,431	\$0	\$0.00
2	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	5	4	100	-	85,648	\$0	\$0.00
3	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	1	4	100	-	82,527	\$0	\$0.00
4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	4	4	100	-	55,611	\$0	\$0.00
5	High Efficiency Toilet Replacement Program - INDOOR	6	2	75	57,331	50,165	\$4,046,840	\$17.73
6	Landscape Replacement Program - OUTDOOR	5	3	50	-	30,386	\$5,177,500	\$37.46
7	Landscape Replacement Program - OUTDOOR	2	2	50	-	29,804	\$8,007,500	\$59.07
8	Landscape Replacement Program - OUTDOOR	3	2	50	-	29,786	\$7,187,500	\$53.05
9	Landscape Replacement Program - OUTDOOR	4	3	50	-	25,801	\$6,832,500	\$58.22
10	High Efficiency Toilet Replacement Program - INDOOR	2	2	75	24,782	21,684	\$944,160	\$9.57
11	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	1	4	100	-	20,915	\$0	\$0.00
12	High Efficiency Toilet Replacement Program - INDOOR	3	2	75	23,356	20,437	\$847,280	\$9.11
13	Landscape Replacement Program - OUTDOOR	1	1	50	-	19,675	\$9,575,000	\$106.99
14	Landscape Replacement Program - OUTDOOR	1	2	50	-	17,098	\$5,140,000	\$66.09
15	Landscape Replacement Program - OUTDOOR	3	3	50	-	15,467	\$4,957,500	\$70.46
16	High Efficiency Toilet Replacement Program - INDOOR	1	1	75	17,505	15,317	\$1,128,960	\$16.20
17	Submetering Billing of Apartment Units - INDOOR	6	2	75	-	14,766	\$8,130,375	\$121.05
18	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	3	75	-	14,347	\$122,100	\$1.87
19	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	3	75	-	14,347	\$91,575	\$1.40
20	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	2	75	-	13,796	\$154,500	\$2.46
21	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	2	75	-	13,796	\$115,875	\$1.85
22	High Efficiency Showerhead Replacement - INDOOR	6	2	75	26,579	13,289	\$289,060	\$4.78
23	High Efficiency Toilet Replacement Program - INDOOR	1	2	75	14,614	12,787	\$605,920	\$10.42
24	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	5	4	100	-	12,497	\$0	\$0.00
25	Landscape Replacement Program - OUTDOOR	2	1	50	-	12,282	\$5,397,500	\$96.61
26	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	3	4	100	-	11,865	\$0	\$0.00
27	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	2	75	-	11,826	\$137,700	\$2.56
28	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	2	75	-	11,826	\$103,275	\$1.92
29	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	3	75	-	10,928	\$131,400	\$2.64
30	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	3	75	-	10,928	\$98,550	\$1.98
31	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	4	4	100	-	10,920	\$0	\$0.00
32	High Efficiency Toilet Replacement Program - INDOOR	2	1	75	10,634	9,305	\$636,440	\$15.04
33	Landscape Replacement Program - OUTDOOR	2	3	50	-	8,721	\$2,812,500	\$70.90
34	Landscape Replacement Program - OUTDOOR	3	1	50	-	8,379	\$3,527,500	\$92.56
35	Landscape Replacement Program - OUTDOOR	4	2	50	-	8,312	\$2,022,500	\$53.49
36	Landscape Replacement Program - OUTDOOR	1	3	50	-	8,271	\$2,707,500	\$71.97
37	High Efficiency Toilet Replacement Program - INDOOR	3	1	75	7,467	6,534	\$415,800	\$13.99
38	High Efficiency Toilet Replacement Program - INDOOR	4	3	75	7,328	6,412	\$1,208,340	\$41.43
39	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	3	75	-	6,213	\$84,600	\$2.99
40	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	3	75	-	6,213	\$63,450	\$2.25
41	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	2	75	-	6,185	\$74,400	\$2.64
42	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	2	75	-	6,185	\$55,800	\$1.98
43	High Efficiency Toilet Replacement Program - INDOOR	4	2	75	7,060	6,177	\$357,840	\$12.74
44	High Efficiency Showerhead Replacement - INDOOR	1	1	75	11,915	5,958	\$80,640	\$2.98

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
45	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	2	4	100	-	5,827	\$0	\$0.00
46	High Efficiency Showerhead Replacement - INDOOR	2	2	75	11,489	5,744	\$50,580	\$1.94
47	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	1	75	-	5,519	\$85,800	\$3.42
48	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	1	75	-	5,519	\$64,350	\$2.56
49	High Efficiency Toilet Replacement Program - INDOOR	5	3	75	6,215	5,438	\$1,220,800	\$49.35
50	High Efficiency Showerhead Replacement - INDOOR	3	2	75	10,828	5,414	\$45,390	\$1.84
51	Landscape Replacement Program - OUTDOOR	5	2	50	-	5,209	\$1,212,500	\$51.18
52	High Efficiency Toilet Replacement Program - INDOOR	3	3	75	5,413	4,736	\$876,540	\$40.69
53	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	2	75	-	4,276	\$51,600	\$2.65
54	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	2	75	-	4,276	\$38,700	\$1.99
55	Efficient Irrigation Systems (non turf) - OUTDOOR	3	2	75	-	4,056	\$530,250	\$28.74
56	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	1	75	-	3,909	\$66,300	\$3.73
57	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	1	75	-	3,909	\$49,725	\$2.80
58	High Efficiency Toilet Replacement Program - INDOOR	5	2	75	4,332	3,791	\$286,160	\$16.60
59	High Efficiency Showerhead Replacement - INDOOR	2	1	75	7,238	3,619	\$34,100	\$2.07
60	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	1	75	-	3,510	\$60,000	\$3.76
61	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	1	75	-	3,510	\$45,000	\$2.82
62	Efficient Irrigation Systems (non turf) - OUTDOOR	2	2	75	-	3,477	\$472,500	\$29.88
63	Efficient Irrigation Systems (non turf) - OUTDOOR	5	3	75	-	3,443	\$341,250	\$21.79
64	High Efficiency Toilet Replacement Program - INDOOR	6	1	75	3,904	3,416	\$298,760	\$19.23
65	High Efficiency Showerhead Replacement - INDOOR	1	2	75	6,775	3,387	\$43,280	\$2.81
66	Landscape Replacement Program - OUTDOOR	5	1	50	-	3,243	\$732,500	\$49.66
67	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	3	75	-	3,008	\$39,900	\$2.92
68	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	3	75	-	3,008	\$29,925	\$2.19
69	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	2	75	-	2,804	\$32,100	\$2.52
70	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	2	75	-	2,804	\$24,075	\$1.89
71	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	3	4	100	-	2,661	\$0	\$0.00
72	Efficient Irrigation Systems (non turf) - OUTDOOR	4	3	75	-	2,623	\$367,500	\$30.80
73	High Efficiency Toilet Replacement Program - INDOOR	2	3	75	2,994	2,620	\$331,520	\$27.82
74	High Efficiency Showerhead Replacement - INDOOR	3	1	75	5,082	2,541	\$22,280	\$1.93
75	High Efficiency Toilet Replacement Program - INDOOR	1	3	75	2,830	2,476	\$319,200	\$28.34
76	Landscape Replacement Program - OUTDOOR	4	1	50	-	2,302	\$922,500	\$88.09
77	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	3	75	-	2,269	\$32,700	\$3.17
78	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	3	75	-	2,269	\$24,525	\$2.38
79	High Efficiency Toilet Replacement Program - INDOOR	6	3	75	2,356	2,062	\$332,920	\$35.50
80	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	1	75	-	1,905	\$21,900	\$2.53
81	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	1	75	-	1,905	\$16,425	\$1.90
82	Efficient Irrigation Systems (non turf) - OUTDOOR	1	2	75	-	1,818	\$255,150	\$30.85
83	High Efficiency Toilet Replacement Program - INDOOR	4	1	75	2,049	1,793	\$162,960	\$19.98
84	High Efficiency Showerhead Replacement - INDOOR	4	2	75	3,273	1,636	\$21,300	\$2.86
85	Efficient Irrigation Systems (non turf) - OUTDOOR	1	1	75	-	1,623	\$294,000	\$39.83
86	Submetering Billing of Apartment Units - INDOOR	6	1	75	-	1,538	\$600,750	\$85.88
87	High Efficiency Toilet Replacement Program - INDOOR	5	1	75	1,744	1,526	\$172,480	\$24.84
88	Efficient Irrigation Systems (non turf) - OUTDOOR	3	3	75	-	1,491	\$237,300	\$34.99

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
89	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	2	4	100	-	1,340	\$0	\$0.00
90	High Efficiency Showerhead Replacement - INDOOR	6	1	75	2,657	1,329	\$21,340	\$3.53
91	Efficient Irrigation Systems (non turf) - OUTDOOR	4	2	75	-	1,257	\$177,450	\$31.03
92	Efficient Irrigation Systems (non turf) - OUTDOOR	2	1	75	-	1,149	\$226,800	\$43.39
93	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	1	75	-	1,110	\$22,500	\$4.45
94	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	1	75	-	1,110	\$16,875	\$3.34
95	Efficient Irrigation Systems (non turf) - OUTDOOR	3	1	75	-	1,032	\$205,800	\$43.84
96	High Efficiency Showerhead Replacement - INDOOR	5	2	75	2,009	1,004	\$17,890	\$3.92
97	Efficient Irrigation Systems (non turf) - OUTDOOR	5	2	75	-	825	\$110,250	\$29.40
98	Submetering Billing of Apartment Units - INDOOR	6	3	75	-	824	\$334,125	\$89.11
99	Efficient Irrigation Systems (non turf) - OUTDOOR	2	3	75	-	722	\$111,300	\$33.89
100	High Efficiency Showerhead Replacement - INDOOR	4	1	75	1,395	697	\$9,700	\$3.06
101	High Efficiency Showerhead Replacement - INDOOR	5	1	75	1,187	594	\$10,780	\$3.99
102	Efficient Irrigation Systems (non turf) - OUTDOOR	5	1	75	-	560	\$75,600	\$29.68
103	Efficient Irrigation Systems (non turf) - OUTDOOR	1	3	75	-	545	\$91,350	\$36.87
104	Efficient Irrigation Systems (non turf) - OUTDOOR	4	1	75	-	326	\$76,650	\$51.62
105	Efficient Irrigation Systems (non turf) - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
106	Efficient Irrigation Systems (non turf) - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
107	Efficient Irrigation Systems (non turf) - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
108	High Efficiency Clothes Washer Replacement - INDOOR	6	3	75	1,327	-	\$0	\$100,000.00
109	High Efficiency Clothes Washer Replacement - INDOOR	6	2	75	11,112	-	\$0	\$100,000.00
110	High Efficiency Clothes Washer Replacement - INDOOR	6	1	75	1,032	-	\$0	\$100,000.00
111	High Efficiency Clothes Washer Replacement - INDOOR	5	3	75	3,501	-	\$0	\$100,000.00
112	High Efficiency Clothes Washer Replacement - INDOOR	5	2	75	840	-	\$0	\$100,000.00
113	High Efficiency Clothes Washer Replacement - INDOOR	5	1	75	461	-	\$0	\$100,000.00
114	High Efficiency Clothes Washer Replacement - INDOOR	4	3	75	4,128	-	\$0	\$100,000.00
115	High Efficiency Clothes Washer Replacement - INDOOR	4	2	75	1,368	-	\$0	\$100,000.00
116	High Efficiency Clothes Washer Replacement - INDOOR	4	1	75	542	-	\$0	\$100,000.00
117	High Efficiency Clothes Washer Replacement - INDOOR	3	3	75	3,049	-	\$0	\$100,000.00
118	High Efficiency Clothes Washer Replacement - INDOOR	3	2	75	4,527	-	\$0	\$100,000.00
119	High Efficiency Clothes Washer Replacement - INDOOR	3	1	75	1,973	-	\$0	\$100,000.00
120	High Efficiency Clothes Washer Replacement - INDOOR	2	3	75	1,687	-	\$0	\$100,000.00
121	High Efficiency Clothes Washer Replacement - INDOOR	2	2	75	4,803	-	\$0	\$100,000.00
122	High Efficiency Clothes Washer Replacement - INDOOR	2	1	75	2,810	-	\$0	\$100,000.00
123	High Efficiency Clothes Washer Replacement - INDOOR	1	3	75	1,594	-	\$0	\$100,000.00
124	High Efficiency Clothes Washer Replacement - INDOOR	1	2	75	2,832	-	\$0	\$100,000.00
125	High Efficiency Clothes Washer Replacement - INDOOR	1	1	75	4,626	-	\$0	\$100,000.00
126	High Efficiency Dishwashers - INDOOR	6	3	75	440	-	\$0	\$100,000.00
127	High Efficiency Dishwashers - INDOOR	6	2	75	3,938	-	\$0	\$100,000.00
128	High Efficiency Dishwashers - INDOOR	6	1	75	410	-	\$0	\$100,000.00
129	High Efficiency Dishwashers - INDOOR	5	3	75	1,159	-	\$0	\$100,000.00
130	High Efficiency Dishwashers - INDOOR	5	2	75	298	-	\$0	\$100,000.00
131	High Efficiency Dishwashers - INDOOR	5	1	75	183	-	\$0	\$100,000.00
132	High Efficiency Dishwashers - INDOOR	4	3	75	1,367	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
133	High Efficiency Dishwashers - INDOOR	4	2	75	485	-	\$0	\$100,000.00
134	High Efficiency Dishwashers - INDOOR	4	1	75	215	-	\$0	\$100,000.00
135	High Efficiency Dishwashers - INDOOR	3	3	75	1,010	-	\$0	\$100,000.00
136	High Efficiency Dishwashers - INDOOR	3	2	75	1,604	-	\$0	\$100,000.00
137	High Efficiency Dishwashers - INDOOR	3	1	75	784	-	\$0	\$100,000.00
138	High Efficiency Dishwashers - INDOOR	2	3	75	559	-	\$0	\$100,000.00
139	High Efficiency Dishwashers - INDOOR	2	2	75	1,702	-	\$0	\$100,000.00
140	High Efficiency Dishwashers - INDOOR	2	1	75	1,117	-	\$0	\$100,000.00
141	High Efficiency Dishwashers - INDOOR	1	3	75	528	-	\$0	\$100,000.00
142	High Efficiency Dishwashers - INDOOR	1	2	75	1,004	-	\$0	\$100,000.00
143	High Efficiency Dishwashers - INDOOR	1	1	75	1,839	-	\$0	\$100,000.00
144	High Efficiency Showerhead Replacement - INDOOR	6	3	75	-	-	\$23,780	\$100,000.00
145	High Efficiency Showerhead Replacement - INDOOR	5	3	75	-	-	\$76,300	\$100,000.00
146	High Efficiency Showerhead Replacement - INDOOR	4	3	75	-	-	\$71,930	\$100,000.00
147	High Efficiency Showerhead Replacement - INDOOR	3	3	75	-	-	\$52,180	\$100,000.00
148	High Efficiency Showerhead Replacement - INDOOR	2	3	75	-	-	\$17,760	\$100,000.00
149	High Efficiency Showerhead Replacement - INDOOR	1	3	75	-	-	\$22,800	\$100,000.00
150	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
151	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
152	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
153	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
154	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
155	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
156	Landscape Replacement Program - OUTDOOR	6	3	50	-	-	\$2,825,000	\$100,000.00
157	Landscape Replacement Program - OUTDOOR	6	2	50	-	-	\$34,325,000	\$100,000.00
158	Landscape Replacement Program - OUTDOOR	6	1	50	-	-	\$2,535,000	\$100,000.00
159	Low Flow Faucet Aerator Replacement - INDOOR	6	3	75	-	-	\$0	\$100,000.00
160	Low Flow Faucet Aerator Replacement - INDOOR	6	2	75	41,817	-	\$0	\$100,000.00
161	Low Flow Faucet Aerator Replacement - INDOOR	6	1	75	4,355	-	\$0	\$100,000.00
162	Low Flow Faucet Aerator Replacement - INDOOR	5	3	75	11,896	-	\$0	\$100,000.00
163	Low Flow Faucet Aerator Replacement - INDOOR	5	2	75	3,160	-	\$0	\$100,000.00
164	Low Flow Faucet Aerator Replacement - INDOOR	5	1	75	1,946	-	\$0	\$100,000.00
165	Low Flow Faucet Aerator Replacement - INDOOR	4	3	75	14,027	-	\$0	\$100,000.00
166	Low Flow Faucet Aerator Replacement - INDOOR	4	2	75	5,149	-	\$0	\$100,000.00
167	Low Flow Faucet Aerator Replacement - INDOOR	4	1	75	2,286	-	\$0	\$100,000.00
168	Low Flow Faucet Aerator Replacement - INDOOR	3	3	75	10,361	-	\$0	\$100,000.00
169	Low Flow Faucet Aerator Replacement - INDOOR	3	2	75	17,036	-	\$0	\$100,000.00
170	Low Flow Faucet Aerator Replacement - INDOOR	3	1	75	8,330	-	\$0	\$100,000.00
171	Low Flow Faucet Aerator Replacement - INDOOR	2	3	75	5,731	-	\$0	\$100,000.00
172	Low Flow Faucet Aerator Replacement - INDOOR	2	2	75	18,076	-	\$0	\$100,000.00
173	Low Flow Faucet Aerator Replacement - INDOOR	2	1	75	11,863	-	\$0	\$100,000.00
174	Low Flow Faucet Aerator Replacement - INDOOR	1	3	75	5,418	-	\$0	\$100,000.00
175	Low Flow Faucet Aerator Replacement - INDOOR	1	2	75	10,659	-	\$0	\$100,000.00
176	Low Flow Faucet Aerator Replacement - INDOOR	1	1	75	19,528	-	\$0	\$100,000.00

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J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
177	Low Flow Volume Showerhead Replacement - INDOOR	6	2	75	9,675	-	\$0	\$100,000.00
178	Low Flow Volume Showerhead Replacement - INDOOR	6	1	75	576	-	\$0	\$100,000.00
179	Low Flow Volume Showerhead Replacement - INDOOR	5	2	75	731	-	\$0	\$100,000.00
180	Low Flow Volume Showerhead Replacement - INDOOR	5	1	75	257	-	\$0	\$100,000.00
181	Low Flow Volume Showerhead Replacement - INDOOR	4	2	75	1,191	-	\$0	\$100,000.00
182	Low Flow Volume Showerhead Replacement - INDOOR	4	1	75	302	-	\$0	\$100,000.00
183	Low Flow Volume Showerhead Replacement - INDOOR	3	2	75	3,941	-	\$0	\$100,000.00
184	Low Flow Volume Showerhead Replacement - INDOOR	3	1	75	1,101	-	\$0	\$100,000.00
185	Low Flow Volume Showerhead Replacement - INDOOR	2	2	75	4,182	-	\$0	\$100,000.00
186	Low Flow Volume Showerhead Replacement - INDOOR	2	1	75	1,568	-	\$0	\$100,000.00
187	Low Flow Volume Showerhead Replacement - INDOOR	1	2	75	2,466	-	\$0	\$100,000.00
188	Low Flow Volume Showerhead Replacement - INDOOR	1	1	75	2,582	-	\$0	\$100,000.00
189	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	6	4	100	-	-	\$0	\$100,000.00
190	Ultra Low Flush Toilet Replacement Program - INDOOR	6	2	75	96,770	-	\$0	\$100,000.00
191	Ultra Low Flush Toilet Replacement Program - INDOOR	6	1	75	4,582	-	\$0	\$100,000.00
192	Ultra Low Flush Toilet Replacement Program - INDOOR	5	2	75	7,313	-	\$0	\$100,000.00
193	Ultra Low Flush Toilet Replacement Program - INDOOR	5	1	75	2,048	-	\$0	\$100,000.00
194	Ultra Low Flush Toilet Replacement Program - INDOOR	4	2	75	11,916	-	\$0	\$100,000.00
195	Ultra Low Flush Toilet Replacement Program - INDOOR	4	1	75	2,405	-	\$0	\$100,000.00
196	Ultra Low Flush Toilet Replacement Program - INDOOR	3	2	75	39,423	-	\$0	\$100,000.00
197	Ultra Low Flush Toilet Replacement Program - INDOOR	3	1	75	8,764	-	\$0	\$100,000.00
198	Ultra Low Flush Toilet Replacement Program - INDOOR	2	2	75	41,829	-	\$0	\$100,000.00
199	Ultra Low Flush Toilet Replacement Program - INDOOR	2	1	75	12,482	-	\$0	\$100,000.00
200	Ultra Low Flush Toilet Replacement Program - INDOOR	1	2	75	24,667	-	\$0	\$100,000.00
201	Ultra Low Flush Toilet Replacement Program - INDOOR	1	1	75	20,547	-	\$0	\$100,000.00

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
1	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	OFFICE BUILDINGS	4	100	-	17,810	\$0	\$0.00
2	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	SCHOOLS	4	100	-	3,561	\$0	\$0.00
3	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RESTAURANTS	4	100	-	3,394	\$0	\$0.00
4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RETAIL	4	100	-	3,296	\$0	\$0.00
5	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	LIVE-IN CARE	4	100	-	2,688	\$0	\$0.00
6	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	3	75	-	2,652	\$1,350	\$0.11
7	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	3	75	-	2,327	\$300,000	\$28.35
8	Waterless Urinal Replacement Program - INDOOR	RETAIL	2	75	-	2,218	\$33,281	\$3.30
9	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	2	75	2,420	2,117	\$19,740	\$2.05
10	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	1	75	-	1,384	\$1,440	\$0.23
11	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	1	75	-	1,358	\$150,000	\$24.27
12	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	2	75	-	1,352	\$179,063	\$29.12
13	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	2	75	1,475	1,291	\$106,960	\$18.21
14	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	2	75	-	1,178	\$810	\$0.15
15	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	-	1,100	\$45,938	\$9.18
16	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	-	1,029	\$49,219	\$10.51
17	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	2	75	-	1,002	\$150,000	\$32.91
18	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	1,123	983	\$29,400	\$6.58
19	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	2	75	-	947	\$630	\$0.15
20	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	1	75	-	903	\$150,000	\$36.52
21	Waterless Urinal Replacement Program - INDOOR	RETAIL	3	75	-	857	\$26,250	\$6.73
22	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	3	75	-	842	\$360	\$0.09
23	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	1	75	-	827	\$88,125	\$23.43
24	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	-	786	\$7,031	\$1.97
25	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	HOTELS	4	100	-	727	\$0	\$0.00
26	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	2	75	-	679	\$75,000	\$24.27
27	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	-	642	\$10,313	\$3.53
28	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	-	590	\$70,781	\$26.38
29	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	-	590	\$47,813	\$17.82
30	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	1	75	-	579	\$540	\$0.20
31	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	WAREHOUSES/STORAGE	4	100	-	569	\$0	\$0.00
32	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	INDOOR RECREATION	4	100	-	524	\$0	\$0.00
33	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	1	75	590	516	\$52,500	\$22.36
34	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	1	75	-	492	\$180	\$0.08
35	Waterless Urinal Replacement Program - INDOOR	RETAIL	1	75	-	471	\$15,000	\$7.00
36	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	-	410	\$7,500	\$4.02
37	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	458	401	\$6,020	\$3.30
38	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	440	385	\$27,300	\$15.58
39	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	421	368	\$28,420	\$16.97
40	Urinal Replacement Program - INDOOR	RETAIL	2	75	1,435	359	\$4,793	\$2.94
41	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	-	349	\$4,219	\$2.66
42	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	-	344	\$30,938	\$19.75

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
43	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	-	338	\$10,781	\$7.02
44	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	3	75	-	336	\$75,000	\$49.07
45	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	381	333	\$5,040	\$3.33
46	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	2	75	370	323	\$36,160	\$24.58
47	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	3	75	343	300	\$15,540	\$11.38
48	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	1	75	336	294	\$8,960	\$6.70
49	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	314	275	\$8,400	\$6.72
50	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	3	75	-	261	\$30,000	\$25.26
51	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	293	256	\$8,960	\$7.69
52	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	2	75	-	246	\$90	\$0.08
53	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	-	237	\$9,844	\$9.13
54	Urinal Replacement Program - INDOOR	SCHOOLS	2	75	875	219	\$25,785	\$25.92
55	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	246	215	\$18,480	\$18.90
56	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	241	211	\$12,880	\$13.43
57	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	-	208	\$5,625	\$5.93
58	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	236	206	\$42,280	\$45.03
59	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	227	199	\$3,220	\$3.56
60	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	396	198	\$1,890	\$2.10
61	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	1	75	218	191	\$19,506	\$22.50
62	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	3	75	-	183	\$540	\$0.65
63	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	-	172	\$24,375	\$31.12
64	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	666	166	\$7,088	\$9.36
65	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	-	166	\$7,500	\$9.91
66	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	188	164	\$14,420	\$19.28
67	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	182	159	\$8,960	\$12.40
68	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	247	124	\$830	\$1.48
69	Urinal Replacement Program - INDOOR	SCHOOLS	1	75	468	117	\$12,690	\$23.83
70	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	440	110	\$6,615	\$13.21
71	High Efficiency Showerhead Replacement - INDOOR	HOTELS	2	75	191	96	\$2,583	\$5.94
72	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	3	75	104	91	\$17,780	\$42.77
73	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	364	91	\$1,485	\$3.59
74	Urinal Replacement Program - INDOOR	RETAIL	3	75	343	86	\$3,780	\$9.69
75	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	334	84	\$6,885	\$18.13
76	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	95	83	\$5,880	\$15.58
77	High Efficiency Showerhead Replacement - INDOOR	HOTELS	1	75	164	82	\$1,393	\$3.73
78	Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	314	79	\$1,013	\$2.83
79	Urinal Replacement Program - INDOOR	RETAIL	1	75	267	67	\$2,160	\$7.12
80	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	130	65	\$640	\$2.17
81	Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	236	59	\$10,193	\$37.99
82	Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	232	58	\$1,080	\$4.09
83	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	-	58	\$5,156	\$19.54
84	Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	226	56	\$608	\$2.37

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Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
85	Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	195	49	\$4,455	\$20.08
86	Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	191	48	\$1,553	\$7.14
87	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	3	75	45	40	\$8,918	\$49.32
88	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	135	34	\$810	\$5.28
89	High Efficiency Showerhead Replacement - INDOOR	HOTELS	3	75	57	29	\$637	\$4.90
90	Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	111	28	\$3,510	\$27.71
91	Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	108	27	\$1,080	\$8.82
92	Urinal Replacement Program - INDOOR	SCHOOLS	3	75	104	26	\$4,320	\$36.37
93	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	95	24	\$1,418	\$13.14
94	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	23	20	\$6,160	\$66.70
95	Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	23	6	\$743	\$28.14
96	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$1,950,000	\$100,000.00
97	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$1,875,000	\$100,000.00
98	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$1,800,000	\$100,000.00
99	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$2,340	\$100,000.00
100	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$2,250	\$100,000.00
101	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$2,160	\$100,000.00
102	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
103	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	384	-	\$0	\$100,000.00
104	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	537	-	\$0	\$100,000.00
105	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	268	-	\$0	\$100,000.00
106	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	246	-	\$0	\$100,000.00
107	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	759	-	\$0	\$100,000.00
108	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
109	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$0	\$100,000.00
110	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$0	\$100,000.00
111	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	-	-	\$0	\$100,000.00
112	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	-	-	\$0	\$100,000.00
113	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	-	-	\$0	\$100,000.00
114	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	3	75	-	-	\$450,000	\$100,000.00
115	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	2	75	-	-	\$525,000	\$100,000.00
116	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	1	75	-	-	\$450,000	\$100,000.00
117	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
118	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	2	75	2,492	-	\$0	\$100,000.00
119	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	1	75	691	-	\$0	\$100,000.00
120	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	3	75	295	-	\$0	\$100,000.00
121	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	2	75	1,597	-	\$0	\$100,000.00
122	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	1	75	977	-	\$0	\$100,000.00
123	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00
124	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	2	75	-	-	\$0	\$100,000.00
125	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	1	75	-	-	\$0	\$100,000.00
126	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	3	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation | Practices orted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
127	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	2	75	-	-	\$0	\$100,000.00
128	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	1	75	-	-	\$0	\$100,000.00
129	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	3	75	-	-	\$3,375,000	\$100,000.00
130	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	2	75	-	-	\$4,275,000	\$100,000.00
131	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	1	75	-	-	\$3,150,000	\$100,000.00
132	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	3	75	-	-	\$4,050	\$100,000.00
133	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	2	75	-	-	\$5,130	\$100,000.00
134	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	1	75	-	-	\$3,780	\$100,000.00
135	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
136	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	2	75	4,088	-	\$0	\$100,000.00
137	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	1	75	394	-	\$0	\$100,000.00
138	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	3	75	968	-	\$0	\$100,000.00
139	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	2	75	2,620	-	\$0	\$100,000.00
140	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	1	75	556	-	\$0	\$100,000.00
141	High Efficiency Showerhead Replacement - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
142	High Efficiency Showerhead Replacement - INDOOR	RETAIL	2	75	-	-	\$0	\$100,000.00
143	High Efficiency Showerhead Replacement - INDOOR	RETAIL	1	75	-	-	\$0	\$100,000.00
144	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	3	75	-	-	\$0	\$100,000.00
145	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	2	75	-	-	\$0	\$100,000.00
146	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	1	75	-	-	\$0	\$100,000.00
147	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	3	75	-	-	\$1,125,000	\$100,000.00
148	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	2	75	-	-	\$675,000	\$100,000.00
149	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	1	75	-	-	\$1,200,000	\$100,000.00
150	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	-	-	\$0	\$100,000.00
151	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	643	-	\$0	\$100,000.00
152	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	343	-	\$0	\$100,000.00
153	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	3	75	887	-	\$0	\$100,000.00
154	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	2	75	412	-	\$0	\$100,000.00
155	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	1	75	484	-	\$0	\$100,000.00
156	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	3	75	-	-	\$150	\$100,000.00
157	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	2	75	-	-	\$90	\$100,000.00
158	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	1	75	-	-	\$160	\$100,000.00
159	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	3	75	-	-	\$0	\$100,000.00
160	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	2	75	-	-	\$0	\$100,000.00
161	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	1	75	-	-	\$0	\$100,000.00
162	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	3	75	-	-	\$2,850,000	\$100,000.00
163	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	2	75	-	-	\$6,300,000	\$100,000.00
164	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	1	75	-	-	\$3,750,000	\$100,000.00
165	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$3,420	\$100,000.00
166	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	2	75	-	-	\$7,560	\$100,000.00
167	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	1	75	-	-	\$4,500	\$100,000.00
168	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
169	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	1,897	-	\$0	\$100,000.00
170	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	493	-	\$0	\$100,000.00
171	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	3	75	1,242	-	\$0	\$100,000.00
172	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	2	75	1,216	-	\$0	\$100,000.00
173	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	1	75	697	-	\$0	\$100,000.00
174	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$0	\$100,000.00
175	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	-	-	\$0	\$100,000.00
176	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	-	-	\$0	\$100,000.00
177	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	-	-	\$0	\$100,000.00
178	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	-	-	\$0	\$100,000.00
179	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	-	-	\$0	\$100,000.00
180	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	-	-	\$0	\$100,000.00
181	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	317	-	\$0	\$100,000.00
182	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	288	-	\$0	\$100,000.00
183	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	3	75	666	-	\$0	\$100,000.00
184	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	2	75	203	-	\$0	\$100,000.00
185	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	1	75	407	-	\$0	\$100,000.00
186	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	-	-	\$0	\$100,000.00
187	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	47	-	\$0	\$100,000.00
188	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	53	-	\$0	\$100,000.00
189	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	3	75	-	-	\$825,000	\$100,000.00
190	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	2	75	-	-	\$1,200,000	\$100,000.00
191	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	1	75	-	-	\$1,725,000	\$100,000.00
192	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	3	75	-	-	\$990	\$100,000.00
193	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	2	75	-	-	\$1,440	\$100,000.00
194	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	1	75	-	-	\$2,070	\$100,000.00
195	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	-	-	\$0	\$100,000.00
196	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	307	-	\$0	\$100,000.00
197	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	282	-	\$0	\$100,000.00
198	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	3	75	65	-	\$0	\$100,000.00
199	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	2	75	197	-	\$0	\$100,000.00
200	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	1	75	399	-	\$0	\$100,000.00
201	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	-	-	\$110	\$100,000.00
202	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	-	-	\$160	\$100,000.00
203	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	-	-	\$230	\$100,000.00
204	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	-	-	\$0	\$100,000.00
205	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	-	-	\$0	\$100,000.00
206	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	-	-	\$0	\$100,000.00
207	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	3	75	-	-	\$90	\$100,000.00
208	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	2	75	-	-	\$180	\$100,000.00
209	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	1	75	-	-	\$180	\$100,000.00
210	Waterless Urinal Replacement Program - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
211	Waterless Urinal Replacement Program - INDOOR	HOTELS	2	75	-	-	\$0	\$100,000.00
212	Waterless Urinal Replacement Program - INDOOR	HOTELS	1	75	-	-	\$0	\$100,000.00
213	Urinal Replacement Program - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
214	Urinal Replacement Program - INDOOR	HOTELS	2	75	-	-	\$0	\$100,000.00
215	Urinal Replacement Program - INDOOR	HOTELS	1	75	-	-	\$0	\$100,000.00
216	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
217	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	2	75	624	-	\$0	\$100,000.00
218	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	1	75	255	-	\$0	\$100,000.00
219	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	3	75	96	-	\$0	\$100,000.00
220	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	2	75	300	-	\$0	\$100,000.00
221	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	1	75	270	-	\$0	\$100,000.00
222	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	3	75	-	-	\$0	\$100,000.00
223	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	2	75	69	-	\$0	\$100,000.00
224	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	1	75	35	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

K. Palm Bay - Efficient Use Benchmarks Per Residential Category and Build Out Condition

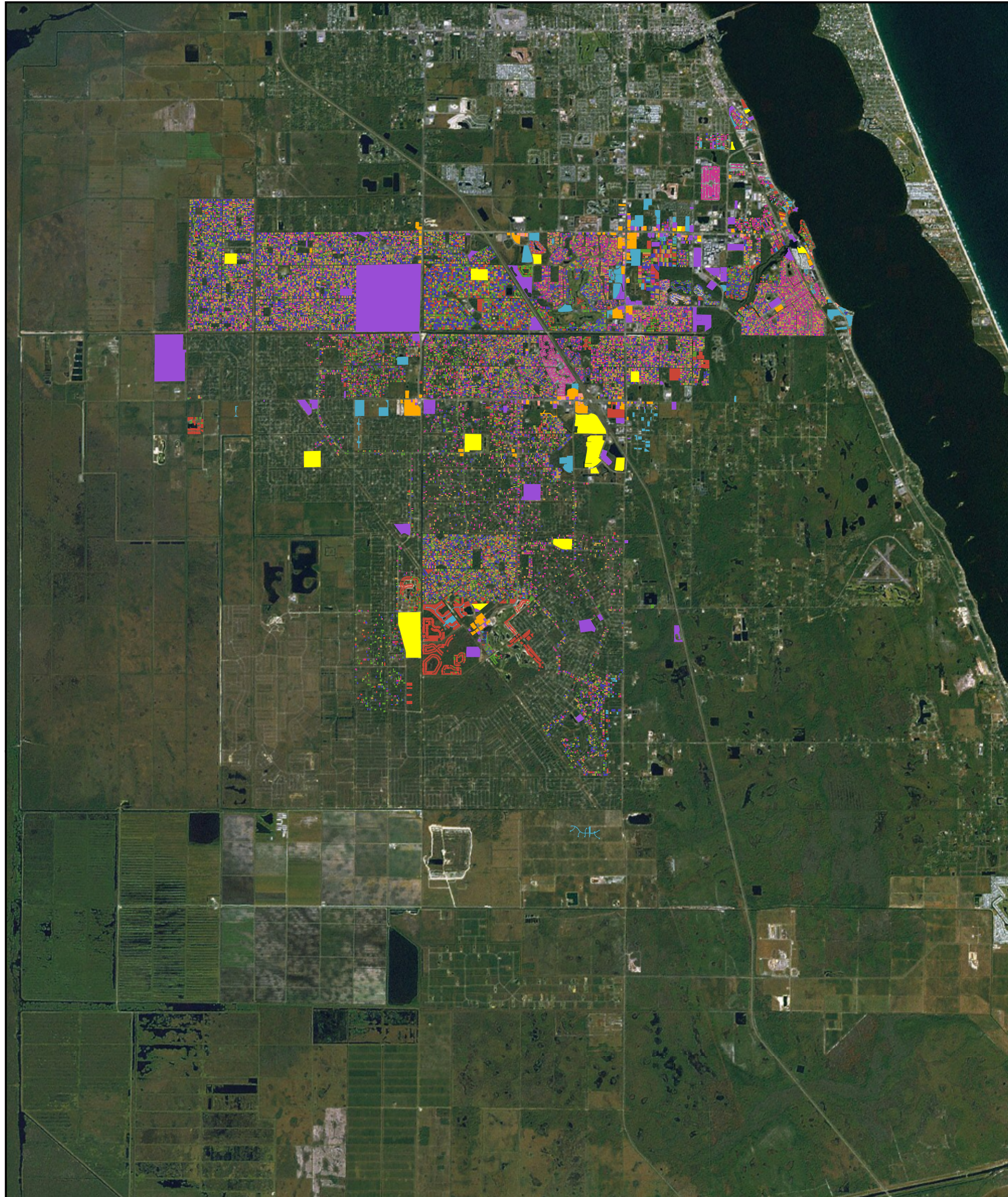
Res Class	Build Out Condition	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	0.064	na	0.003	0.005	0.011
	1984 - 1993	0.060	na	0.004	0.006	0.011
	1994 to Present	0.069	na	0.004	0.007	0.013
	Future	0.062	na	0.004	0.006	0.012
RS2	Pre 1984	0.062	na	0.003	0.005	0.011
	1984 - 1993	0.054	na	0.004	0.007	0.012
	1994 to Present	0.057	na	0.005	0.008	0.013
	Future	0.051	na	0.004	0.007	0.012
RS3	Pre 1984	0.057	na	0.003	0.005	0.011
	1984 - 1993	0.053	na	0.004	0.007	0.011
	1994 to Present	0.052	na	0.005	0.008	0.013
	Future	0.047	na	0.004	0.007	0.012
RS4	Pre 1984	0.053	na	0.003	0.005	0.010
	1984 - 1993	0.049	na	0.004	0.006	0.011
	1994 to Present	0.046	na	0.005	0.009	0.013
	Future	0.040	na	0.004	0.008	0.011
RS5	Pre 1984	0.051	na	0.003	0.004	0.008
	1984 - 1993	0.043	na	0.003	0.005	0.009
	1994 to Present	0.040	na	0.004	0.008	0.011
	Future	0.035	na	0.004	0.007	0.009
HD	Pre 1984	0.051	na	na	na	0.008
	1984 - 1993	0.020	na	na	na	0.004
	1994 to Present	0.041	na	na	na	0.008
	Future	0.040	na	na	na	0.008

Palm Bay - Efficient Use Benchmarks Per Non-Residential Category and Build Out Condition*

	Build Out Condition	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
HOTELS	Pre 1984	0.145	na	0.013
	1984 - 1993	0.086	na	0.031
	1994 to Present	0.121	na	0.036
	Future	0.121	na	0.036
INDOOR RECREATION	Pre 1984	0.038	na	0.007
	1984 - 1993	0.028	na	0.002
	1994 to Present	0.016	na	0.001
	Future	0.016	na	0.001
LIVE-IN CARE	Pre 1984	0.170	na	0.037
	1984 - 1993	0.108	na	0.032
	1994 to Present	0.129	na	0.026
	Future	0.136	na	0.027
MANUFACTURING	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
OFFICE BUILDINGS	Pre 1984	0.037	na	0.005
	1984 - 1993	0.062	na	0.006
	1994 to Present	0.074	na	0.007
	Future	0.074	na	0.007
RESTAURANTS	Pre 1984	0.251	na	0.029
	1984 - 1993	0.342	na	0.035
	1994 to Present	0.422	na	0.032
	Future	0.475	na	0.036
RETAIL	Pre 1984	0.042	na	0.007
	1984 - 1993	0.090	na	0.009
	1994 to Present	0.044	na	0.006
	Future	0.044	na	0.006
SCHOOLS	Pre 1984	0.041	na	0.003
	1984 - 1993	0.032	na	0.003
	1994 to Present	0.039	na	0.005
	Future	0.042	na	0.006
WAREHOUSES/STORAGE	Pre 1984	0.033	na	0.004
	1984 - 1993	0.020	na	0.004
	1994 to Present	0.012	na	0.002
	Future	0.012	na	0.002

* Efficient use benchmarks are not calculated for categories whose end uses are too variable to assign conservation practices to or when there are insufficient data to develop water use benchmarks.

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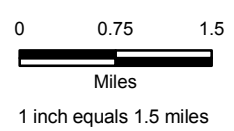
- RS1
- RS2
- RS3
- RS4
- RS5
- RS6
- Office Buildings
- Restaurants
- Retail
- Schools

Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	0.99	0.74
RES-2	1.03	0.77
RES-3	1.05	0.81
RES-4	0.66	0.54
RES-5	0.59	0.48
RES-6	0.98	0.68
Manufacturing	0.17	0.17
Retail	0.16	0.14
Office Buildings	0.09	0.08
Schools	0.06	0.05



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**Geographic Distribution of Top Water Use Categories,
Typical Use, & Conservation Savings Gain
Palm Bay Utilities**



M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS1	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	82,527	\$0	\$0.00
RS1	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	20,915	\$0	\$0.00
RS1	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	6,185	\$55,800	\$1.98
RS1	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	2,269	\$24,525	\$2.38
RS1	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	5,519	\$64,350	\$2.56
RS1	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	6,185	\$74,400	\$2.64
RS1	2	High Efficiency Showerhead Replacement - INDOOR	75	6,775	3,387	\$43,280	\$2.81
RS1	1	High Efficiency Showerhead Replacement - INDOOR	75	11,915	5,958	\$80,640	\$2.98
RS1	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	2,269	\$32,700	\$3.17
RS1	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	5,519	\$85,800	\$3.42
RS1	2	High Efficiency Toilet Replacement Program - INDOOR	75	14,614	12,787	\$605,920	\$10.42
RS1	1	High Efficiency Toilet Replacement Program - INDOOR	75	17,505	15,317	\$1,128,960	\$16.20
RS1	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,830	2,476	\$319,200	\$28.34
RS1	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,818	\$255,150	\$30.85
RS1	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	545	\$91,350	\$36.87
RS1	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,623	\$294,000	\$39.83
RS1	2	Landscape Replacement Program - OUTDOOR	50	-	17,098	\$5,140,000	\$66.09
RS1	3	Landscape Replacement Program - OUTDOOR	50	-	8,271	\$2,707,500	\$71.97
RS1	1	Landscape Replacement Program - OUTDOOR	50	-	19,675	\$9,575,000	\$106.99
RS1	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,594	-	\$0	\$100,000.00
RS1	2	High Efficiency Clothes Washer Replacement - INDOOR	75	2,832	-	\$0	\$100,000.00
RS1	1	High Efficiency Clothes Washer Replacement - INDOOR	75	4,626	-	\$0	\$100,000.00
RS1	3	High Efficiency Dishwashers - INDOOR	75	528	-	\$0	\$100,000.00
RS1	2	High Efficiency Dishwashers - INDOOR	75	1,004	-	\$0	\$100,000.00
RS1	1	High Efficiency Dishwashers - INDOOR	75	1,839	-	\$0	\$100,000.00
RS1	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$22,800	\$100,000.00
RS1	3	Low Flow Faucet Aerator Replacement - INDOOR	75	5,418	-	\$0	\$100,000.00
RS1	2	Low Flow Faucet Aerator Replacement - INDOOR	75	10,659	-	\$0	\$100,000.00
RS1	1	Low Flow Faucet Aerator Replacement - INDOOR	75	19,528	-	\$0	\$100,000.00
RS1	2	Low Flow Volume Showerhead Replacement - INDOOR	75	2,466	-	\$0	\$100,000.00
RS1	1	Low Flow Volume Showerhead Replacement - INDOOR	75	2,582	-	\$0	\$100,000.00
RS1	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	24,667	-	\$0	\$100,000.00
RS1	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	20,547	-	\$0	\$100,000.00
RS2	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	5,827	\$0	\$0.00
RS2	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	1,340	\$0	\$0.00
RS2	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	11,826	\$103,275	\$1.92
RS2	2	High Efficiency Showerhead Replacement - INDOOR	75	11,489	5,744	\$50,580	\$1.94
RS2	1	High Efficiency Showerhead Replacement - INDOOR	75	7,238	3,619	\$34,100	\$2.07
RS2	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,008	\$29,925	\$2.19
RS2	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	11,826	\$137,700	\$2.56
RS2	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,909	\$49,725	\$2.80

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS2	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,008	\$39,900	\$2.92
RS2	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,909	\$66,300	\$3.73
RS2	2	High Efficiency Toilet Replacement Program - INDOOR	75	24,782	21,684	\$944,160	\$9.57
RS2	1	High Efficiency Toilet Replacement Program - INDOOR	75	10,634	9,305	\$636,440	\$15.04
RS2	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,994	2,620	\$331,520	\$27.82
RS2	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	3,477	\$472,500	\$29.88
RS2	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	722	\$111,300	\$33.89
RS2	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,149	\$226,800	\$43.39
RS2	2	Landscape Replacement Program - OUTDOOR	50	-	29,804	\$8,007,500	\$59.07
RS2	3	Landscape Replacement Program - OUTDOOR	50	-	8,721	\$2,812,500	\$70.90
RS2	1	Landscape Replacement Program - OUTDOOR	50	-	12,282	\$5,397,500	\$96.61
RS2	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,687	-	\$0	\$100,000.00
RS2	2	High Efficiency Clothes Washer Replacement - INDOOR	75	4,803	-	\$0	\$100,000.00
RS2	1	High Efficiency Clothes Washer Replacement - INDOOR	75	2,810	-	\$0	\$100,000.00
RS2	3	High Efficiency Dishwashers - INDOOR	75	559	-	\$0	\$100,000.00
RS2	2	High Efficiency Dishwashers - INDOOR	75	1,702	-	\$0	\$100,000.00
RS2	1	High Efficiency Dishwashers - INDOOR	75	1,117	-	\$0	\$100,000.00
RS2	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$17,760	\$100,000.00
RS2	3	Low Flow Faucet Aerator Replacement - INDOOR	75	5,731	-	\$0	\$100,000.00
RS2	2	Low Flow Faucet Aerator Replacement - INDOOR	75	18,076	-	\$0	\$100,000.00
RS2	1	Low Flow Faucet Aerator Replacement - INDOOR	75	11,863	-	\$0	\$100,000.00
RS2	2	Low Flow Volume Showerhead Replacement - INDOOR	75	4,182	-	\$0	\$100,000.00
RS2	1	Low Flow Volume Showerhead Replacement - INDOOR	75	1,568	-	\$0	\$100,000.00
RS2	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	41,829	-	\$0	\$100,000.00
RS2	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	12,482	-	\$0	\$100,000.00
RS3	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	11,865	\$0	\$0.00
RS3	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	2,661	\$0	\$0.00
RS3	2	High Efficiency Showerhead Replacement - INDOOR	75	10,828	5,414	\$45,390	\$1.84
RS3	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	13,796	\$115,875	\$1.85
RS3	1	High Efficiency Showerhead Replacement - INDOOR	75	5,082	2,541	\$22,280	\$1.93
RS3	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	6,213	\$63,450	\$2.25
RS3	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	13,796	\$154,500	\$2.46
RS3	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,510	\$45,000	\$2.82
RS3	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	6,213	\$84,600	\$2.99
RS3	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,510	\$60,000	\$3.76
RS3	2	High Efficiency Toilet Replacement Program - INDOOR	75	23,356	20,437	\$847,280	\$9.11
RS3	1	High Efficiency Toilet Replacement Program - INDOOR	75	7,467	6,534	\$415,800	\$13.99
RS3	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	4,056	\$530,250	\$28.74
RS3	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,491	\$237,300	\$34.99
RS3	3	High Efficiency Toilet Replacement Program - INDOOR	75	5,413	4,736	\$876,540	\$40.69
RS3	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,032	\$205,800	\$43.84

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS3	2	Landscape Replacement Program - OUTDOOR	50	-	29,786	\$7,187,500	\$53.05
RS3	3	Landscape Replacement Program - OUTDOOR	50	-	15,467	\$4,957,500	\$70.46
RS3	1	Landscape Replacement Program - OUTDOOR	50	-	8,379	\$3,527,500	\$92.56
RS3	3	High Efficiency Clothes Washer Replacement - INDOOR	75	3,049	-	\$0	\$100,000.00
RS3	2	High Efficiency Clothes Washer Replacement - INDOOR	75	4,527	-	\$0	\$100,000.00
RS3	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,973	-	\$0	\$100,000.00
RS3	3	High Efficiency Dishwashers - INDOOR	75	1,010	-	\$0	\$100,000.00
RS3	2	High Efficiency Dishwashers - INDOOR	75	1,604	-	\$0	\$100,000.00
RS3	1	High Efficiency Dishwashers - INDOOR	75	784	-	\$0	\$100,000.00
RS3	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$52,180	\$100,000.00
RS3	3	Low Flow Faucet Aerator Replacement - INDOOR	75	10,361	-	\$0	\$100,000.00
RS3	2	Low Flow Faucet Aerator Replacement - INDOOR	75	17,036	-	\$0	\$100,000.00
RS3	1	Low Flow Faucet Aerator Replacement - INDOOR	75	8,330	-	\$0	\$100,000.00
RS3	2	Low Flow Volume Showerhead Replacement - INDOOR	75	3,941	-	\$0	\$100,000.00
RS3	1	Low Flow Volume Showerhead Replacement - INDOOR	75	1,101	-	\$0	\$100,000.00
RS3	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	39,423	-	\$0	\$100,000.00
RS3	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	8,764	-	\$0	\$100,000.00
RS4	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	55,611	\$0	\$0.00
RS4	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	10,920	\$0	\$0.00
RS4	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	10,928	\$98,550	\$1.98
RS4	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	4,276	\$38,700	\$1.99
RS4	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	10,928	\$131,400	\$2.64
RS4	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	4,276	\$51,600	\$2.65
RS4	2	High Efficiency Showerhead Replacement - INDOOR	75	3,273	1,636	\$21,300	\$2.86
RS4	1	High Efficiency Showerhead Replacement - INDOOR	75	1,395	697	\$9,700	\$3.06
RS4	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	1,110	\$16,875	\$3.34
RS4	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	1,110	\$22,500	\$4.45
RS4	2	High Efficiency Toilet Replacement Program - INDOOR	75	7,060	6,177	\$357,840	\$12.74
RS4	1	High Efficiency Toilet Replacement Program - INDOOR	75	2,049	1,793	\$162,960	\$19.98
RS4	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,623	\$367,500	\$30.80
RS4	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,257	\$177,450	\$31.03
RS4	3	High Efficiency Toilet Replacement Program - INDOOR	75	7,328	6,412	\$1,208,340	\$41.43
RS4	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	326	\$76,650	\$51.62
RS4	2	Landscape Replacement Program - OUTDOOR	50	-	8,312	\$2,022,500	\$53.49
RS4	3	Landscape Replacement Program - OUTDOOR	50	-	25,801	\$6,832,500	\$58.22
RS4	1	Landscape Replacement Program - OUTDOOR	50	-	2,302	\$922,500	\$88.09
RS4	3	High Efficiency Clothes Washer Replacement - INDOOR	75	4,128	-	\$0	\$100,000.00
RS4	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,368	-	\$0	\$100,000.00
RS4	1	High Efficiency Clothes Washer Replacement - INDOOR	75	542	-	\$0	\$100,000.00
RS4	3	High Efficiency Dishwashers - INDOOR	75	1,367	-	\$0	\$100,000.00
RS4	2	High Efficiency Dishwashers - INDOOR	75	485	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS4	1	High Efficiency Dishwashers - INDOOR	75	215	-	\$0	\$100,000.00
RS4	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$71,930	\$100,000.00
RS4	3	Low Flow Faucet Aerator Replacement - INDOOR	75	14,027	-	\$0	\$100,000.00
RS4	2	Low Flow Faucet Aerator Replacement - INDOOR	75	5,149	-	\$0	\$100,000.00
RS4	1	Low Flow Faucet Aerator Replacement - INDOOR	75	2,286	-	\$0	\$100,000.00
RS4	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,191	-	\$0	\$100,000.00
RS4	1	Low Flow Volume Showerhead Replacement - INDOOR	75	302	-	\$0	\$100,000.00
RS4	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	11,916	-	\$0	\$100,000.00
RS4	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,405	-	\$0	\$100,000.00
RS5	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	85,648	\$0	\$0.00
RS5	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	12,497	\$0	\$0.00
RS5	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	14,347	\$91,575	\$1.40
RS5	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	14,347	\$122,100	\$1.87
RS5	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	2,804	\$24,075	\$1.89
RS5	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	1,905	\$16,425	\$1.90
RS5	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	2,804	\$32,100	\$2.52
RS5	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	1,905	\$21,900	\$2.53
RS5	2	High Efficiency Showerhead Replacement - INDOOR	75	2,009	1,004	\$17,890	\$3.92
RS5	1	High Efficiency Showerhead Replacement - INDOOR	75	1,187	594	\$10,780	\$3.99
RS5	2	High Efficiency Toilet Replacement Program - INDOOR	75	4,332	3,791	\$286,160	\$16.60
RS5	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	3,443	\$341,250	\$21.79
RS5	1	High Efficiency Toilet Replacement Program - INDOOR	75	1,744	1,526	\$172,480	\$24.84
RS5	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	825	\$110,250	\$29.40
RS5	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	560	\$75,600	\$29.68
RS5	3	Landscape Replacement Program - OUTDOOR	50	-	30,386	\$5,177,500	\$37.46
RS5	3	High Efficiency Toilet Replacement Program - INDOOR	75	6,215	5,438	\$1,220,800	\$49.35
RS5	1	Landscape Replacement Program - OUTDOOR	50	-	3,243	\$732,500	\$49.66
RS5	2	Landscape Replacement Program - OUTDOOR	50	-	5,209	\$1,212,500	\$51.18
RS5	3	High Efficiency Clothes Washer Replacement - INDOOR	75	3,501	-	\$0	\$100,000.00
RS5	2	High Efficiency Clothes Washer Replacement - INDOOR	75	840	-	\$0	\$100,000.00
RS5	1	High Efficiency Clothes Washer Replacement - INDOOR	75	461	-	\$0	\$100,000.00
RS5	3	High Efficiency Dishwashers - INDOOR	75	1,159	-	\$0	\$100,000.00
RS5	2	High Efficiency Dishwashers - INDOOR	75	298	-	\$0	\$100,000.00
RS5	1	High Efficiency Dishwashers - INDOOR	75	183	-	\$0	\$100,000.00
RS5	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$76,300	\$100,000.00
RS5	3	Low Flow Faucet Aerator Replacement - INDOOR	75	11,896	-	\$0	\$100,000.00
RS5	2	Low Flow Faucet Aerator Replacement - INDOOR	75	3,160	-	\$0	\$100,000.00
RS5	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,946	-	\$0	\$100,000.00
RS5	2	Low Flow Volume Showerhead Replacement - INDOOR	75	731	-	\$0	\$100,000.00
RS5	1	Low Flow Volume Showerhead Replacement - INDOOR	75	257	-	\$0	\$100,000.00
RS5	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	7,313	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS5	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,048	-	\$0	\$100,000.00
RS6	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	142,431	\$0	\$0.00
RS6	1	High Efficiency Showerhead Replacement - INDOOR	75	2,657	1,329	\$21,340	\$3.53
RS6	2	High Efficiency Showerhead Replacement - INDOOR	75	26,579	13,289	\$289,060	\$4.78
RS6	2	High Efficiency Toilet Replacement Program - INDOOR	75	57,331	50,165	\$4,046,840	\$17.73
RS6	1	High Efficiency Toilet Replacement Program - INDOOR	75	3,904	3,416	\$298,760	\$19.23
RS6	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,356	2,062	\$332,920	\$35.50
RS6	1	Submetering Billing of Apartment Units - INDOOR	75	-	1,538	\$600,750	\$85.88
RS6	3	Submetering Billing of Apartment Units - INDOOR	75	-	824	\$334,125	\$89.11
RS6	2	Submetering Billing of Apartment Units - INDOOR	75	-	14,766	\$8,130,375	\$121.05
RS6	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,327	-	\$0	\$100,000.00
RS6	2	High Efficiency Clothes Washer Replacement - INDOOR	75	11,112	-	\$0	\$100,000.00
RS6	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,032	-	\$0	\$100,000.00
RS6	3	High Efficiency Dishwashers - INDOOR	75	440	-	\$0	\$100,000.00
RS6	2	High Efficiency Dishwashers - INDOOR	75	3,938	-	\$0	\$100,000.00
RS6	1	High Efficiency Dishwashers - INDOOR	75	410	-	\$0	\$100,000.00
RS6	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$23,780	\$100,000.00
RS6	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Landscape Replacement Program - OUTDOOR	50	-	-	\$2,825,000	\$100,000.00
RS6	2	Landscape Replacement Program - OUTDOOR	50	-	-	\$34,325,000	\$100,000.00
RS6	1	Landscape Replacement Program - OUTDOOR	50	-	-	\$2,535,000	\$100,000.00
RS6	3	Low Flow Faucet Aerator Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Low Flow Faucet Aerator Replacement - INDOOR	75	41,817	-	\$0	\$100,000.00
RS6	1	Low Flow Faucet Aerator Replacement - INDOOR	75	4,355	-	\$0	\$100,000.00
RS6	2	Low Flow Volume Showerhead Replacement - INDOOR	75	9,675	-	\$0	\$100,000.00
RS6	1	Low Flow Volume Showerhead Replacement - INDOOR	75	576	-	\$0	\$100,000.00
RS6	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	-	\$0	\$100,000.00
RS6	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	96,770	-	\$0	\$100,000.00
RS6	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	4,582	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
HOTELS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	727	\$0	\$0.00
HOTELS	1	High Efficiency Showerhead Replacement - INDOOR	75	164	82	\$1,393	\$3.73
HOTELS	3	High Efficiency Showerhead Replacement - INDOOR	75	57	29	\$637	\$4.90
HOTELS	2	High Efficiency Showerhead Replacement - INDOOR	75	191	96	\$2,583	\$5.94
HOTELS	1	High Efficiency Toilet Replacement Program - INDOOR	75	218	191	\$19,506	\$22.50
HOTELS	2	High Efficiency Toilet Replacement Program - INDOOR	75	370	323	\$36,160	\$24.58
HOTELS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	1,002	\$150,000	\$32.91
HOTELS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	903	\$150,000	\$36.52
HOTELS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	336	\$75,000	\$49.07
HOTELS	3	High Efficiency Toilet Replacement Program - INDOOR	75	45	40	\$8,918	\$49.32
HOTELS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$90	\$100,000.00
HOTELS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$180	\$100,000.00
HOTELS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$180	\$100,000.00
HOTELS	3	Waterless Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Waterless Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	1	Waterless Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	3	Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	1	Urinal Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	624	-	\$0	\$100,000.00
HOTELS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	255	-	\$0	\$100,000.00
HOTELS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	96	-	\$0	\$100,000.00
HOTELS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	300	-	\$0	\$100,000.00
HOTELS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	270	-	\$0	\$100,000.00
HOTELS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
HOTELS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	69	-	\$0	\$100,000.00
HOTELS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	35	-	\$0	\$100,000.00
INDOOR RECREATION	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	524	\$0	\$0.00
INDOOR RECREATION	1	Waterless Urinal Replacement Program - INDOOR	75	-	338	\$10,781	\$7.02
INDOOR RECREATION	1	Urinal Replacement Program - INDOOR	75	191	48	\$1,553	\$7.14
INDOOR RECREATION	2	Urinal Replacement Program - INDOOR	75	108	27	\$1,080	\$8.82
INDOOR RECREATION	2	Waterless Urinal Replacement Program - INDOOR	75	-	166	\$7,500	\$9.91
INDOOR RECREATION	2	High Efficiency Toilet Replacement Program - INDOOR	75	182	159	\$8,960	\$12.40
INDOOR RECREATION	1	High Efficiency Toilet Replacement Program - INDOOR	75	241	211	\$12,880	\$13.43
INDOOR RECREATION	3	Waterless Urinal Replacement Program - INDOOR	75	-	58	\$5,156	\$19.54
INDOOR RECREATION	3	Urinal Replacement Program - INDOOR	75	23	6	\$743	\$28.14
INDOOR RECREATION	3	High Efficiency Toilet Replacement Program - INDOOR	75	23	20	\$6,160	\$66.70
INDOOR RECREATION	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$825,000	\$100,000.00
INDOOR RECREATION	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,200,000	\$100,000.00
INDOOR RECREATION	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,725,000	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
INDOOR RECREATION	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$990	\$100,000.00
INDOOR RECREATION	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$1,440	\$100,000.00
INDOOR RECREATION	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$2,070	\$100,000.00
INDOOR RECREATION	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	307	-	\$0	\$100,000.00
INDOOR RECREATION	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	282	-	\$0	\$100,000.00
INDOOR RECREATION	3	Low Flow Faucet Aerator Replacement - INDOOR	75	65	-	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Faucet Aerator Replacement - INDOOR	75	197	-	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Faucet Aerator Replacement - INDOOR	75	399	-	\$0	\$100,000.00
INDOOR RECREATION	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$110	\$100,000.00
INDOOR RECREATION	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$160	\$100,000.00
INDOOR RECREATION	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$230	\$100,000.00
INDOOR RECREATION	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
LIVE-IN CARE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	2,688	\$0	\$0.00
LIVE-IN CARE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	246	\$90	\$0.08
LIVE-IN CARE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	492	\$180	\$0.08
LIVE-IN CARE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	842	\$360	\$0.09
LIVE-IN CARE	1	High Efficiency Showerhead Replacement - INDOOR	75	247	124	\$830	\$1.48
LIVE-IN CARE	3	High Efficiency Showerhead Replacement - INDOOR	75	396	198	\$1,890	\$2.10
LIVE-IN CARE	2	High Efficiency Showerhead Replacement - INDOOR	75	130	65	\$640	\$2.17
LIVE-IN CARE	1	High Efficiency Toilet Replacement Program - INDOOR	75	246	215	\$18,480	\$18.90
LIVE-IN CARE	2	High Efficiency Toilet Replacement Program - INDOOR	75	188	164	\$14,420	\$19.28
LIVE-IN CARE	1	Waterless Urinal Replacement Program - INDOOR	75	-	344	\$30,938	\$19.75
LIVE-IN CARE	1	Urinal Replacement Program - INDOOR	75	195	49	\$4,455	\$20.08
LIVE-IN CARE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	679	\$75,000	\$24.27
LIVE-IN CARE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	1,358	\$150,000	\$24.27
LIVE-IN CARE	3	Waterless Urinal Replacement Program - INDOOR	75	-	590	\$70,781	\$26.38
LIVE-IN CARE	2	Urinal Replacement Program - INDOOR	75	111	28	\$3,510	\$27.71
LIVE-IN CARE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	2,327	\$300,000	\$28.35
LIVE-IN CARE	2	Waterless Urinal Replacement Program - INDOOR	75	-	172	\$24,375	\$31.12
LIVE-IN CARE	3	Urinal Replacement Program - INDOOR	75	236	59	\$10,193	\$37.99
LIVE-IN CARE	3	High Efficiency Toilet Replacement Program - INDOOR	75	236	206	\$42,280	\$45.03
LIVE-IN CARE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
LIVE-IN CARE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	317	-	\$0	\$100,000.00
LIVE-IN CARE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	288	-	\$0	\$100,000.00
LIVE-IN CARE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	666	-	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	203	-	\$0	\$100,000.00
LIVE-IN CARE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	407	-	\$0	\$100,000.00
LIVE-IN CARE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00

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Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
LIVE-IN CARE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	47	-	\$0	\$100,000.00
LIVE-IN CARE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	53	-	\$0	\$100,000.00
OFFICE BUILDINGS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	17,810	\$0	\$0.00
OFFICE BUILDINGS	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,123	983	\$29,400	\$6.58
OFFICE BUILDINGS	3	Waterless Urinal Replacement Program - INDOOR	75	-	1,100	\$45,938	\$9.18
OFFICE BUILDINGS	2	Urinal Replacement Program - INDOOR	75	666	166	\$7,088	\$9.36
OFFICE BUILDINGS	2	Waterless Urinal Replacement Program - INDOOR	75	-	1,029	\$49,219	\$10.51
OFFICE BUILDINGS	3	Urinal Replacement Program - INDOOR	75	440	110	\$6,615	\$13.21
OFFICE BUILDINGS	3	High Efficiency Toilet Replacement Program - INDOOR	75	440	385	\$27,300	\$15.58
OFFICE BUILDINGS	1	High Efficiency Toilet Replacement Program - INDOOR	75	421	368	\$28,420	\$16.97
OFFICE BUILDINGS	1	Waterless Urinal Replacement Program - INDOOR	75	-	590	\$47,813	\$17.82
OFFICE BUILDINGS	1	Urinal Replacement Program - INDOOR	75	334	84	\$6,885	\$18.13
OFFICE BUILDINGS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$2,850,000	\$100,000.00
OFFICE BUILDINGS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$6,300,000	\$100,000.00
OFFICE BUILDINGS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,750,000	\$100,000.00
OFFICE BUILDINGS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$3,420	\$100,000.00
OFFICE BUILDINGS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$7,560	\$100,000.00
OFFICE BUILDINGS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$4,500	\$100,000.00
OFFICE BUILDINGS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,897	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	493	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,242	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,216	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	697	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	3,394	\$0	\$0.00
RESTAURANTS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	2,652	\$1,350	\$0.11
RESTAURANTS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	1,178	\$810	\$0.15
RESTAURANTS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	1,384	\$1,440	\$0.23
RESTAURANTS	3	Waterless Urinal Replacement Program - INDOOR	75	-	786	\$7,031	\$1.97
RESTAURANTS	2	Urinal Replacement Program - INDOOR	75	226	56	\$608	\$2.37
RESTAURANTS	2	Waterless Urinal Replacement Program - INDOOR	75	-	349	\$4,219	\$2.66
RESTAURANTS	3	Urinal Replacement Program - INDOOR	75	314	79	\$1,013	\$2.83
RESTAURANTS	2	High Efficiency Toilet Replacement Program - INDOOR	75	381	333	\$5,040	\$3.33
RESTAURANTS	1	Waterless Urinal Replacement Program - INDOOR	75	-	410	\$7,500	\$4.02
RESTAURANTS	1	Urinal Replacement Program - INDOOR	75	232	58	\$1,080	\$4.09

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
RESTAURANTS	3	High Efficiency Toilet Replacement Program - INDOOR	75	314	275	\$8,400	\$6.72
RESTAURANTS	1	High Efficiency Toilet Replacement Program - INDOOR	75	293	256	\$8,960	\$7.69
RESTAURANTS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,125,000	\$100,000.00
RESTAURANTS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$675,000	\$100,000.00
RESTAURANTS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,200,000	\$100,000.00
RESTAURANTS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	643	-	\$0	\$100,000.00
RESTAURANTS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	343	-	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	887	-	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	412	-	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	484	-	\$0	\$100,000.00
RESTAURANTS	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$150	\$100,000.00
RESTAURANTS	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$90	\$100,000.00
RESTAURANTS	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$160	\$100,000.00
RESTAURANTS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	3,296	\$0	\$0.00
RETAIL	2	High Efficiency Toilet Replacement Program - INDOOR	75	2,420	2,117	\$19,740	\$2.05
RETAIL	2	Urinal Replacement Program - INDOOR	75	1,435	359	\$4,793	\$2.94
RETAIL	2	Waterless Urinal Replacement Program - INDOOR	75	-	2,218	\$33,281	\$3.30
RETAIL	1	High Efficiency Toilet Replacement Program - INDOOR	75	336	294	\$8,960	\$6.70
RETAIL	3	Waterless Urinal Replacement Program - INDOOR	75	-	857	\$26,250	\$6.73
RETAIL	1	Waterless Urinal Replacement Program - INDOOR	75	-	471	\$15,000	\$7.00
RETAIL	1	Urinal Replacement Program - INDOOR	75	267	67	\$2,160	\$7.12
RETAIL	3	Urinal Replacement Program - INDOOR	75	343	86	\$3,780	\$9.69
RETAIL	3	High Efficiency Toilet Replacement Program - INDOOR	75	343	300	\$15,540	\$11.38
RETAIL	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,375,000	\$100,000.00
RETAIL	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$4,275,000	\$100,000.00
RETAIL	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$3,150,000	\$100,000.00
RETAIL	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$4,050	\$100,000.00
RETAIL	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$5,130	\$100,000.00
RETAIL	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$3,780	\$100,000.00
RETAIL	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	4,088	-	\$0	\$100,000.00
RETAIL	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	394	-	\$0	\$100,000.00
RETAIL	3	Low Flow Faucet Aerator Replacement - INDOOR	75	968	-	\$0	\$100,000.00
RETAIL	2	Low Flow Faucet Aerator Replacement - INDOOR	75	2,620	-	\$0	\$100,000.00
RETAIL	1	Low Flow Faucet Aerator Replacement - INDOOR	75	556	-	\$0	\$100,000.00
RETAIL	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
RETAIL	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RETAIL	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	3,561	\$0	\$0.00
SCHOOLS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	947	\$630	\$0.15
SCHOOLS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	579	\$540	\$0.20
SCHOOLS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	183	\$540	\$0.65
SCHOOLS	2	High Efficiency Toilet Replacement Program - INDOOR	75	1,475	1,291	\$106,960	\$18.21
SCHOOLS	1	High Efficiency Toilet Replacement Program - INDOOR	75	590	516	\$52,500	\$22.36
SCHOOLS	1	Waterless Urinal Replacement Program - INDOOR	75	-	827	\$88,125	\$23.43
SCHOOLS	1	Urinal Replacement Program - INDOOR	75	468	117	\$12,690	\$23.83
SCHOOLS	3	Waterless Urinal Replacement Program - INDOOR	75	-	261	\$30,000	\$25.26
SCHOOLS	2	Urinal Replacement Program - INDOOR	75	875	219	\$25,785	\$25.92
SCHOOLS	2	Waterless Urinal Replacement Program - INDOOR	75	-	1,352	\$179,063	\$29.12
SCHOOLS	3	Urinal Replacement Program - INDOOR	75	104	26	\$4,320	\$36.37
SCHOOLS	3	High Efficiency Toilet Replacement Program - INDOOR	75	104	91	\$17,780	\$42.77
SCHOOLS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$450,000	\$100,000.00
SCHOOLS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$525,000	\$100,000.00
SCHOOLS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$450,000	\$100,000.00
SCHOOLS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,492	-	\$0	\$100,000.00
SCHOOLS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	691	-	\$0	\$100,000.00
SCHOOLS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	295	-	\$0	\$100,000.00
SCHOOLS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	1,597	-	\$0	\$100,000.00
SCHOOLS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	977	-	\$0	\$100,000.00
SCHOOLS	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
SCHOOLS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	569	\$0	\$0.00
WAREHOUSES/STORAGE	1	High Efficiency Toilet Replacement Program - INDOOR	75	458	401	\$6,020	\$3.30
WAREHOUSES/STORAGE	1	Waterless Urinal Replacement Program - INDOOR	75	-	642	\$10,313	\$3.53
WAREHOUSES/STORAGE	2	High Efficiency Toilet Replacement Program - INDOOR	75	227	199	\$3,220	\$3.56
WAREHOUSES/STORAGE	1	Urinal Replacement Program - INDOOR	75	364	91	\$1,485	\$3.59
WAREHOUSES/STORAGE	2	Urinal Replacement Program - INDOOR	75	135	34	\$810	\$5.28
WAREHOUSES/STORAGE	2	Waterless Urinal Replacement Program - INDOOR	75	-	208	\$5,625	\$5.93
WAREHOUSES/STORAGE	3	Waterless Urinal Replacement Program - INDOOR	75	-	237	\$9,844	\$9.13
WAREHOUSES/STORAGE	3	Urinal Replacement Program - INDOOR	75	95	24	\$1,418	\$13.14

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Commercial Category	Buildout Condition	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)*
WAREHOUSES/STORAGE	3	High Efficiency Toilet Replacement Program - INDOOR	75	95	83	\$5,880	\$15.58
WAREHOUSES/STORAGE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,950,000	\$100,000.00
WAREHOUSES/STORAGE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,875,000	\$100,000.00
WAREHOUSES/STORAGE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	-	-	\$1,800,000	\$100,000.00
WAREHOUSES/STORAGE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$2,340	\$100,000.00
WAREHOUSES/STORAGE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$2,250	\$100,000.00
WAREHOUSES/STORAGE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	-	-	\$2,160	\$100,000.00
WAREHOUSES/STORAGE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	384	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	537	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	268	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	246	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	759	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00
WAREHOUSES/STORAGE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	-	-	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

APPENDIX K

PALM COAST ANALYSIS PACKAGE

Appendix K

Palm Coast

- A. Account Level Screening
- B. Benchmarks Per Residential Category and Build-out Condition for Accounts with No Seasonal Behavior
- C. Benchmarks per Residential Category and Build-out Condition for All Accounts
- D. Benchmarks per Non-Residential Category and Build-out Condition for All Accounts
- E. Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use
- F. Percentage of Accounts Likely using an In-Ground Irrigation System connected to the Public Water Supply
- G. Analysis of Accounts with Irrigation Meters
- H. Bill Frequency Analysis
- I. Cost Effective Water Conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 year Planning Horizon
- J. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon
- K. Residential and Commercial BMP Conservation Practices with a 1 year Implementation Period sorted by Program Water Savings
- L. Efficient Water Use Benchmarks
- M. GIS Maps Illustrating the Geographic Distribution of the Top Water Use Categories within the Service Area Boundary

N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year
Planning Horizon Period for a 1 year Program Implementation Period

A. Account Level Data Screening to Generate Benchmarks for Single Family Accounts

Background:

Account level water consumption data is complex, variable and unique to each utility. Joining the account water consumption data with District population and property appraiser geospatial data results in inconsistencies and anomalies that need to be recognized, evaluated and cleaned in order to generate meaningful water consumption benchmarks and statistics. The following summarizes the analysis performed to calculate water consumption benchmarks and statistics.

Analysis	Reason for Step in Analysis	Utility Specific Notes
Initial screens		
Screen Accounts with no total consumption	Removes accounts with no consumption over period of analysis less than 15,000 gallons total water use.	NA
Screen Accounts with population less than one	Removes accounts with population less than one person to avoid overestimating per capita use	NA
Screen by Department of Revenue Code	Isolate account that are single family in account billing records and property appraisal database	NA
Isolate period of analysis for each utility	Look at aggregate billing data anomalies to find abnormal consumption trends: abnormally low, low/high switching, abnormally high.	Palm Coast- Jan'08 was dropped, SJUD does not include Nov,Dec-'09, Palm Bay does not in Oct, Nov, Dec-09. Leesburg November data was consider for removal due to numerous skipped reads.
Evaluate accounts with no seasonal or transient behavior		
Screen for Year Built	Capture accounts with water consumption for three build out conditions	
Capture accounts that have min month above min threshold	Develop a clean data set to compare against industry benchmarks for occupied homes and develop an understanding for indoor/outdoor use characteristics. Use this dataset to run tests and to check quality of analyses on large accounts dataset that include accounts with transient behavior.	Minimum threshold developed for each utility as the average population per account multiplied by the min indoor usage of 60 gallons per person per day.
Evaluate all accounts		
Separate transient accounts from accounts with anomalously low consumption	If account has less than 15,000 gallons of consumption for period of analysis it is exclude from analysis. There are accounts with population, but look to be vacated over the period of the analysis.	This analysis keeps accounts that average at least 1000 gallons per month. There are many account in Palm Bay and Palm Coast that have low and continuous consumption between 1000 and 3000 gallons per month.
Assign indoor use to transient accounts that have minimum month of zero.	For accounts with a min month of zero, the min month hydrograph separation will assign all water consumption as outdoor. For accounts with min month equaling zero and consumption in other months, indoor consumption in months with consumption is set to the average consumption for the period.	This has the tendency to over predict indoor consumption in transient accounts. But checks against clean datasets are within reason.
Screen for minimum irrigable area	Used in calculating outdoor benchmarks and to avoid small denominators from benchmark calculations (Subtracting house area from parcel area can lead to small or negative numbers).	

B. Palm Coast - Benchmarks Per Residential Category and Build Out Condition for Accounts with No Seasonal Behavior

Res Class	Build Out Condition	Population	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)
RS1	Pre 1984	837	7.13	70.85	77.98
	1984 - 1993	2,048	5.73	66.88	72.61
	1994 to Present	2,045	5.48	57.28	62.76
RS2	Pre 1984	532	8.87	77.92	86.80
	1984 - 1993	3,787	8.27	67.17	75.44
	1994 to Present	14,103	5.75	58.56	64.31
RS3	Pre 1984	111	4.29	67.90	72.19
	1984 - 1993	1,243	10.97	68.41	79.38
	1994 to Present	11,967	8.90	62.02	70.92
RS4	Pre 1984	208	8.24	72.37	80.61
	1984 - 1993	1,221	14.81	75.09	89.90
	1994 to Present	4,481	14.09	68.22	82.32
RS5	Pre 1984	108	8.32	77.21	85.54
	1984 - 1993	473	17.88	82.54	100.42
	1994 to Present	1,685	23.08	76.81	99.89

C. Palm Coast - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Number of Records	Avg Yr Built	Average Monthly Average (gal/month)	Average Monthly Max (gal/month)	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)	StdDev of Per Capita Total (gpcd)
RS1	Pre 1984	481	1980	3,890	8,515	18.62	44.04	62.66	36.38
	1984 - 1993	1,063	1988	3,959	8,657	16.90	43.04	59.93	34.80
	1994 to Present	969	1999	3,991	8,869	15.68	40.29	55.97	32.10
RS2	Pre 1984	302	1980	4,276	10,186	22.36	52.00	74.36	43.70
	1984 - 1993	1,902	1989	4,401	10,269	20.87	45.98	66.86	40.59
	1994 to Present	6,481	2001	4,258	9,490	17.63	43.65	61.28	35.95
RS3	Pre 1984	62	1980	3,926	8,911	21.45	47.65	69.10	32.94
	1984 - 1993	609	1990	4,999	11,573	28.05	50.90	78.96	49.78
	1994 to Present	5,406	2002	4,882	10,820	23.12	48.67	71.79	44.62
RS4	Pre 1984	113	1979	4,527	11,727	28.38	51.15	79.52	44.25
	1984 - 1993	639	1989	5,790	13,787	38.13	59.10	97.24	56.87
	1994 to Present	2,127	2001	5,618	12,707	33.18	53.55	86.73	57.80
RS5	Pre 1984	54	1976	4,878	16,015	22.09	58.26	80.34	61.33
	1984 - 1993	248	1989	6,002	19,048	39.57	62.80	102.37	86.57
	1994 to Present	862	2001	6,442	15,450	44.63	62.82	107.46	91.26
HD	Pre 1984	13	1980	2,082	5,445	- *	- *	23.11	9.19
	1984 - 1993	125	1989	3,902	8,806	- *	- *	37.13	18.22
	1994 to Present	526	2003	3,593	7,531	- *	- *	34.40	16.38

* Multi family water use was assumed to be used primarily indoors.

Palm Coast - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)	StdDev of Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	10,854	2,215	1,383	0.042	0.066	0.004	0.007	0.012	0.007
	1984 - 1993	10,548	2,063	1,343	0.046	0.071	0.004	0.006	0.012	0.007
	1994 to Present	10,414	1,708	1,161	0.056	0.081	0.004	0.006	0.012	0.007
RS2	Pre 1984	11,949	2,622	1,698	0.039	0.059	0.004	0.007	0.012	0.007
	1984 - 1993	11,353	2,559	1,749	0.039	0.058	0.004	0.008	0.013	0.008
	1994 to Present	10,673	2,267	1,603	0.045	0.063	0.004	0.007	0.013	0.007
RS3	Pre 1984	12,106	2,832	1,912	0.033	0.051	0.004	0.007	0.011	0.005
	1984 - 1993	13,075	3,050	2,161	0.036	0.051	0.005	0.009	0.013	0.008
	1994 to Present	11,274	2,876	2,106	0.038	0.052	0.005	0.009	0.014	0.009
RS4	Pre 1984	12,453	2,775	1,749	0.037	0.059	0.004	0.009	0.012	0.007
	1984 - 1993	9,271	2,644	1,796	0.047	0.070	0.010	0.022	0.024	0.018
	1994 to Present	12,611	3,223	2,325	0.036	0.051	0.007	0.014	0.017	0.014
RS5	Pre 1984	22,260	2,946	1,960	0.043	0.065	0.002	0.004	0.009	0.009
	1984 - 1993	13,072	3,546	2,292	0.036	0.057	0.008	0.024	0.019	0.018
	1994 to Present	17,533	3,755	2,599	0.034	0.050	0.007	0.016	0.017	0.015
HD	Pre 1984	12,410	2,664	1,940	0.026	0.035	- *	- *	0.006	0.003
	1984 - 1993	12,106	3,143	2,337	0.041	0.055	- *	- *	0.010	0.005
	1994 to Present	10,912	3,411	2,472	0.035	0.048	- *	- *	0.011	0.004

* Multi family water use was assumed to be used primarily indoors.

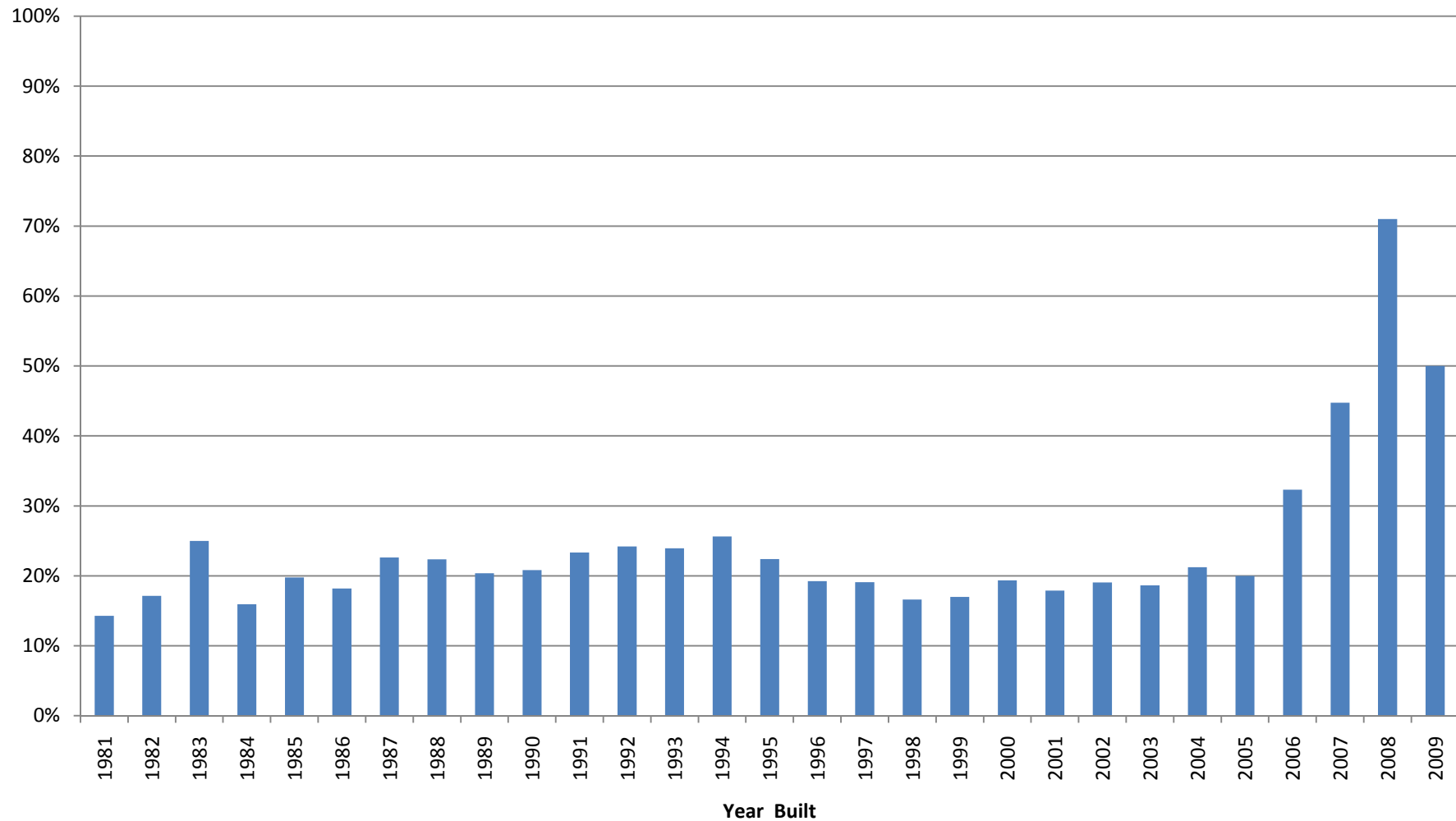
D. Palm Coast - Benchmarks Per Non-Residential Category and Build Out Condition for All Accounts

	Build Out Condition	Number of Records	Avg Yr Built	Avg Use Per Account (gpd)	Average Max Use (gpd)	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)	Stdev WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	2	1980	234	529	39,936	4,354	2,222	0.05	0.11	0.01	0.00
	1984 - 1993	4	1990	520	837	45,052	4,052	3,298	0.16	0.19	0.01	0.01
	1994 to Present	18	1999	898	2,037	99,927	8,464	6,789	0.16	0.20	0.01	0.03
HOTELS	Pre 1984	na	na	na	na	na	na	na	na	na	na	na
	1984 - 1993	na	na	na	na	na	na	na	na	na	na	na
	1994 to Present	7	2002	5,093	9,777	170,127	48,501	47,098	0.13	0.14	0.03	0.01
INDOOR RECREATION	Pre 1984	1	1983	221	1,234	219,526	7,400	6,800	0.03	0.03	0.00	0.00
	1984 - 1993	5	1989	422	741	206,057	12,707	12,008	0.04	0.04	0.00	0.00
	1994 to Present	13	2000	840	1,792	253,740	11,746	11,201	0.07	0.07	0.00	0.00
LIVE-IN CARE	Pre 1984	na	na	na	na	na	na	na	na	na	na	na
	1984 - 1993	na	na	na	na	na	na	na	na	na	na	na
	1994 to Present	4	2000	4,409	6,863	464,693	48,209	38,240	0.09	0.11	0.02	0.02
MANUFACTURING	Pre 1984	na	na	na	na	na	na	na	na	na	na	na
	1984 - 1993	11	1989	1,886	3,789	172,017	27,868	27,530	0.04	0.05	0.01	0.01
	1994 to Present	7	1998	159	998	86,648	14,410	14,324	0.02	0.02	0.00	0.00
OFFICE BUILDINGS	Pre 1984	2	1976	89	1,055	12,684	1,442	1,366	0.06	0.07	0.01	0.01
	1984 - 1993	17	1989	653	2,273	210,645	7,019	6,429	0.09	0.10	0.01	0.01
	1994 to Present	71	2001	825	3,352	117,336	9,166	8,066	0.12	0.15	0.01	0.02
OUTDOOR RECREATION	Pre 1984	1	1980	7,324	12,184	485,032	13,932	12,829	0.53	0.57	0.02	0.00
	1984 - 1993	1	1992	112	335	1,008,967	399	399	0.28	0.28	0.00	0.00
	1994 to Present	2	2007	5,045	6,954	1,492,093	6,214	4,372	0.58	0.81	0.40	0.56
RESTAURANTS	Pre 1984	na	na	na	na	na	na	na	na	na	na	na
	1984 - 1993	3	1988	1,229	2,551	34,300	4,317	3,848	0.30	0.34	0.04	0.02
	1994 to Present	14	2000	2,780	5,127	65,577	4,740	4,573	0.65	0.66	0.04	0.02
RETAIL	Pre 1984	na	na	na	na	na	na	na	na	na	na	na
	1984 - 1993	1	1992	746	1,608	345,825	58,553	54,211	0.01	0.01	0.00	0.00
	1994 to Present	41	2001	1,739	2,875	159,092	37,747	26,197	0.05	0.06	0.01	0.01
SCHOOLS	Pre 1984	na	na	na	na	na	na	na	na	na	na	na
	1984 - 1993	3	1985	3,852	18,226	1,476,550	51,906	51,906	0.04	0.04	0.01	0.01
	1994 to Present	4	2005	7,027	12,677	2,154,412	88,012	83,651	0.63	0.65	0.00	0.00

E. Palm Coast - Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use

Res Class	Build Out Condition	% of Homes with Irrigation Systems	% of Outdoor Water used by Irrigation Systems
RS1	Pre 1984	14%	38%
	1984 - 1993	13%	32%
	1994 to Present	12%	30%
RS2	Pre 1984	18%	41%
	1984 - 1993	18%	41%
	1994 to Present	16%	39%
RS3	Pre 1984	18%	36%
	1984 - 1993	24%	51%
	1994 to Present	21%	47%
RS4	Pre 1984	36%	58%
	1984 - 1993	41%	72%
	1994 to Present	30%	61%
RS5	Pre 1984	28%	50%
	1984 - 1993	40%	75%
	1994 to Present	38%	74%

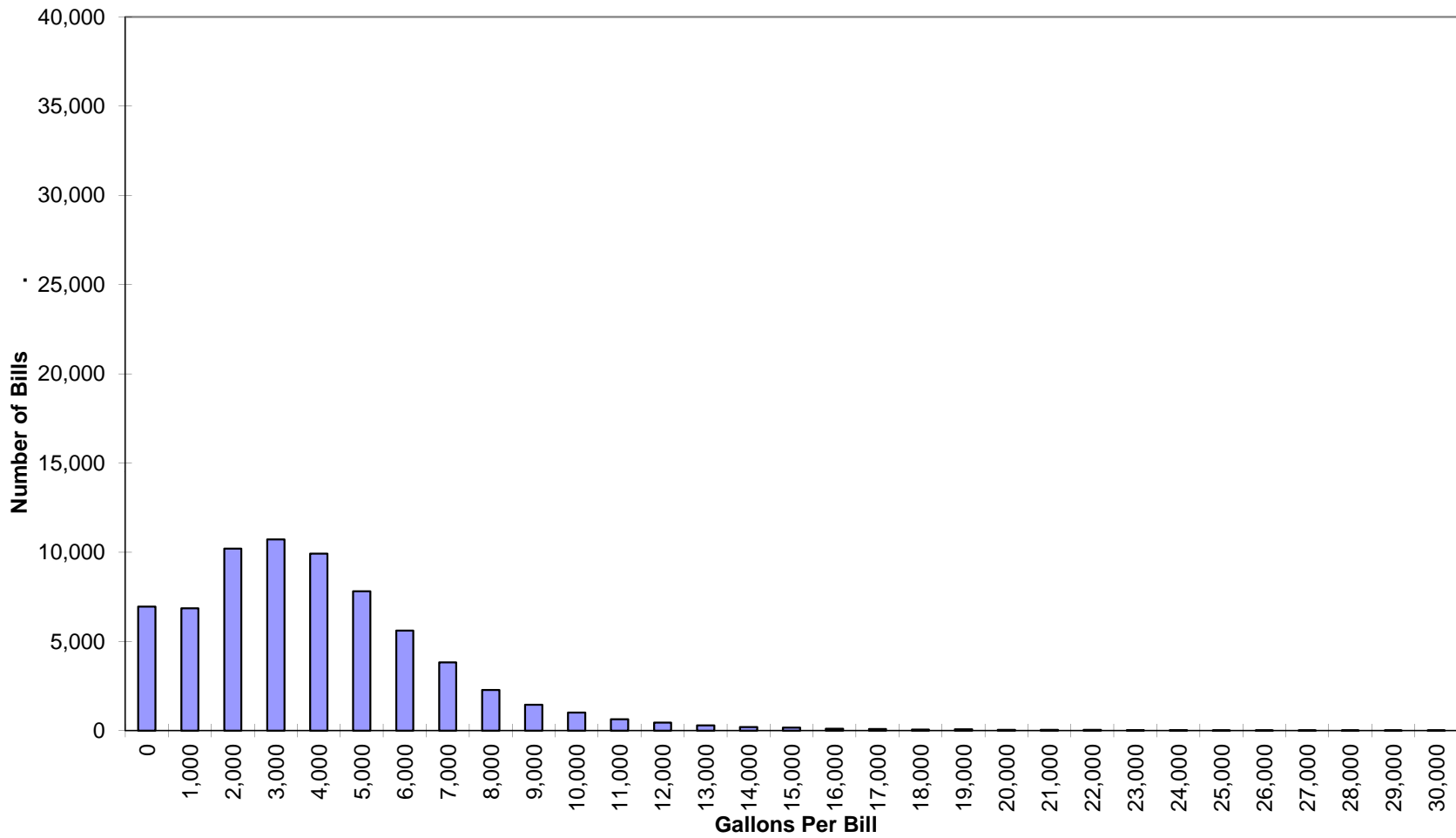
F. Percentage of Accounts in Palm Coast Likely Using an In-Ground Irrigation System connected to the Public Water Supply



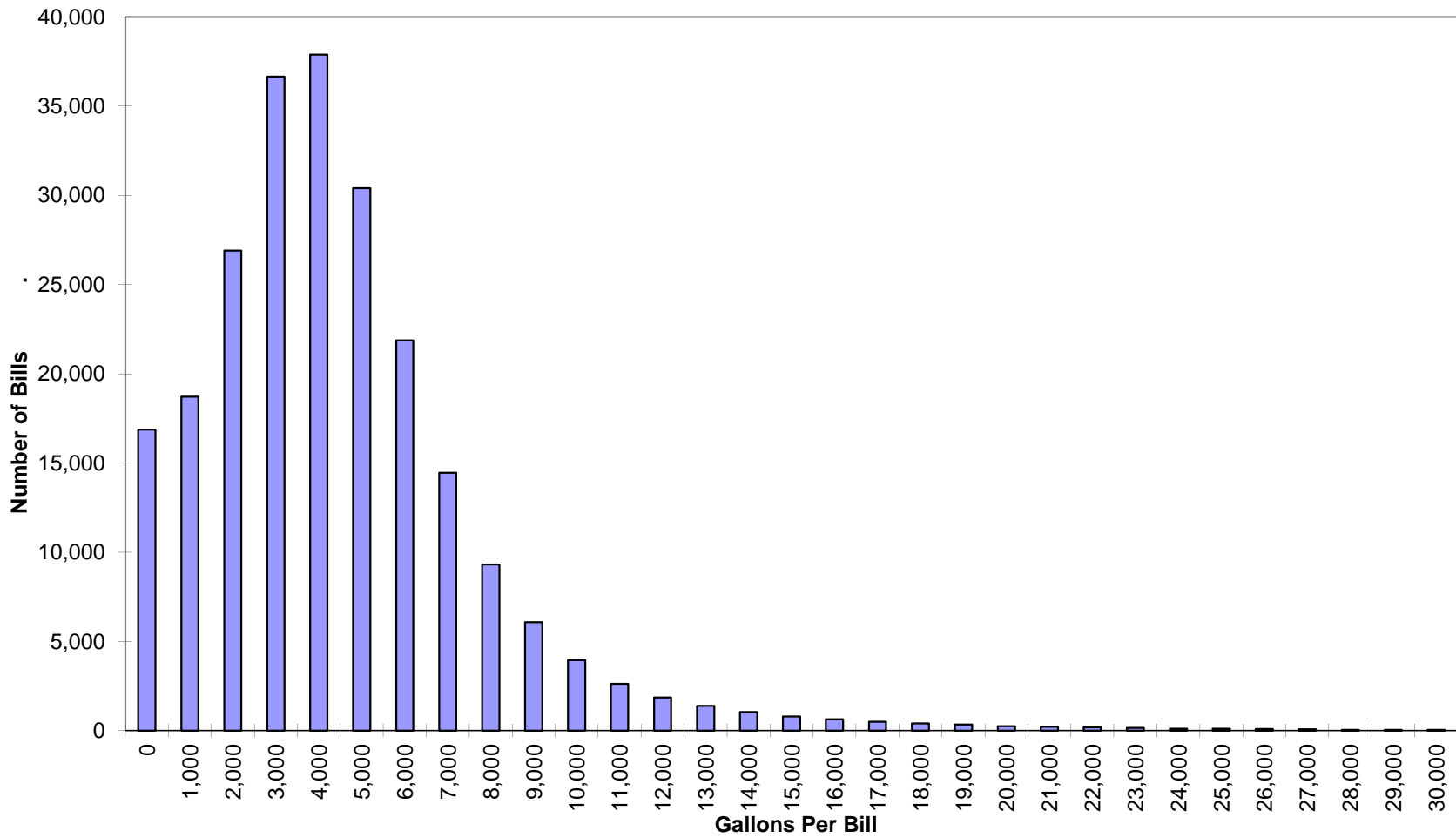
G. Palm Coast Accounts with Irrigation Meters

Res Class	Build Out Condition	Population 2010	Indoor Per Capita with Irrigation Meters (gpcd)	Indoor Per Capita w/o Irrigation Meters (gpcd)	Population 2010	Outdoor Per Capita with Irrigation Meters (gpcd)	Outdoor Per Capita w/o Irrigation Meters (gpcd)
RS1	Pre 1984	410	49.13	44.04	419	28.84	18.62
	1984 - 1993	415	47.69	43.04	428	18.32	16.90
	1994 to Present	37	51.21	40.29	39	21.33	15.68
RS2	Pre 1984	240	55.22	52.00	232	34.91	22.36
	1984 - 1993	1,493	55.04	45.98	1,507	35.59	20.87
	1994 to Present	1,474	63.24	43.65	1,496	98.48	17.63
RS3	Pre 1984	129	55.28	47.65	140	33.27	21.45
	1984 - 1993	944	55.47	50.90	916	35.82	28.05
	1994 to Present	1,138	62.25	48.67	1,175	98.12	23.12
RS4	Pre 1984	151	60.55	51.15	139	45.37	28.38
	1984 - 1993	840	58.51	59.10	920	43.24	38.13
	1994 to Present	1,138	63.89	53.55	1,104	114.20	33.18
RS5	Pre 1984	140	58.55	58.26	178	43.25	22.09
	1984 - 1993	769	56.47	62.80	811	44.16	39.57
	1994 to Present	956	67.04	62.82	965	126.61	44.63

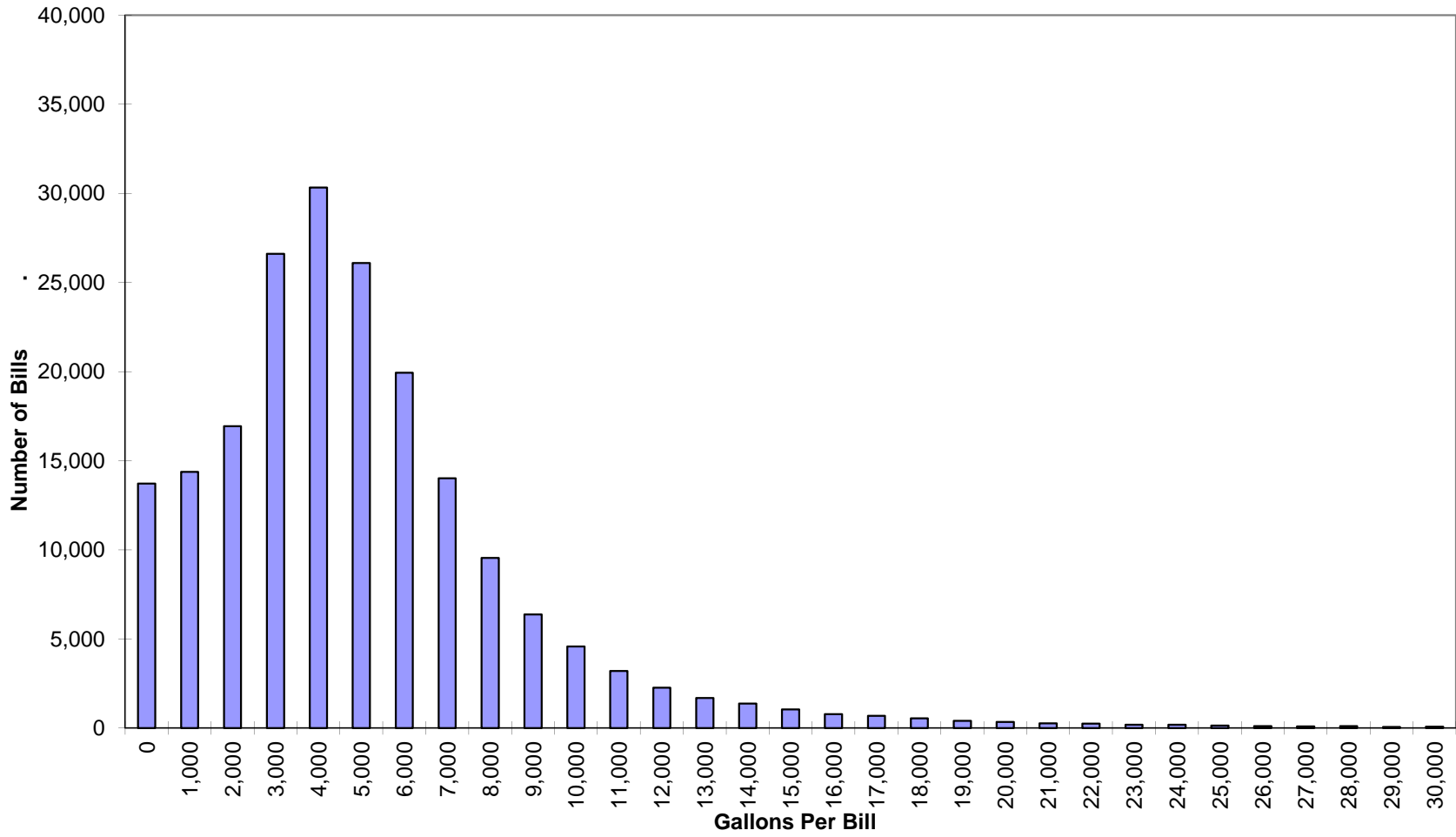
H. Palm Coast Bill Frequency Analysis - RS1 (February 2008 to December 2009)



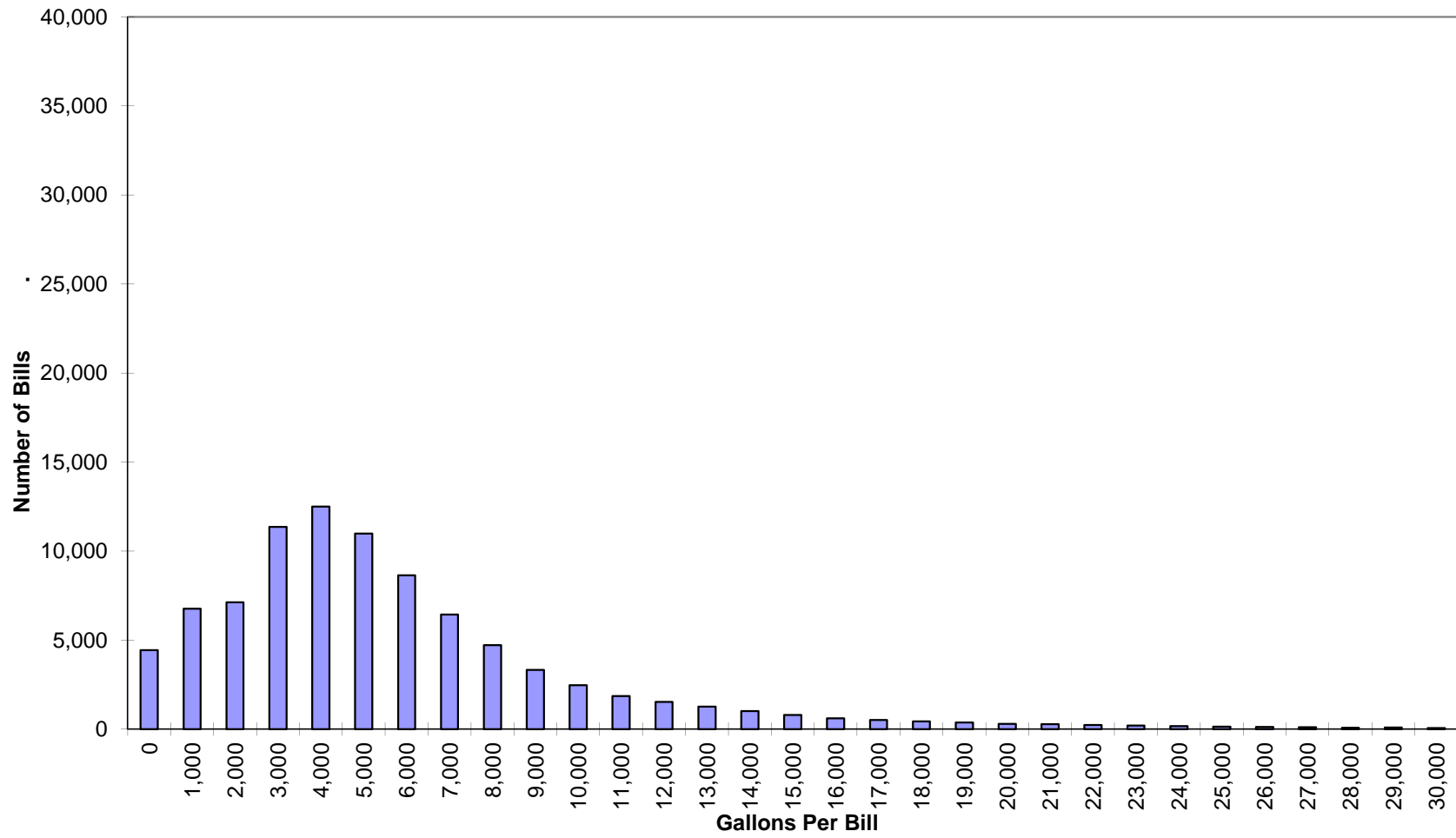
Palm Coast Bill Frequency Analysis - RS2 (February 2008 to December 2009)



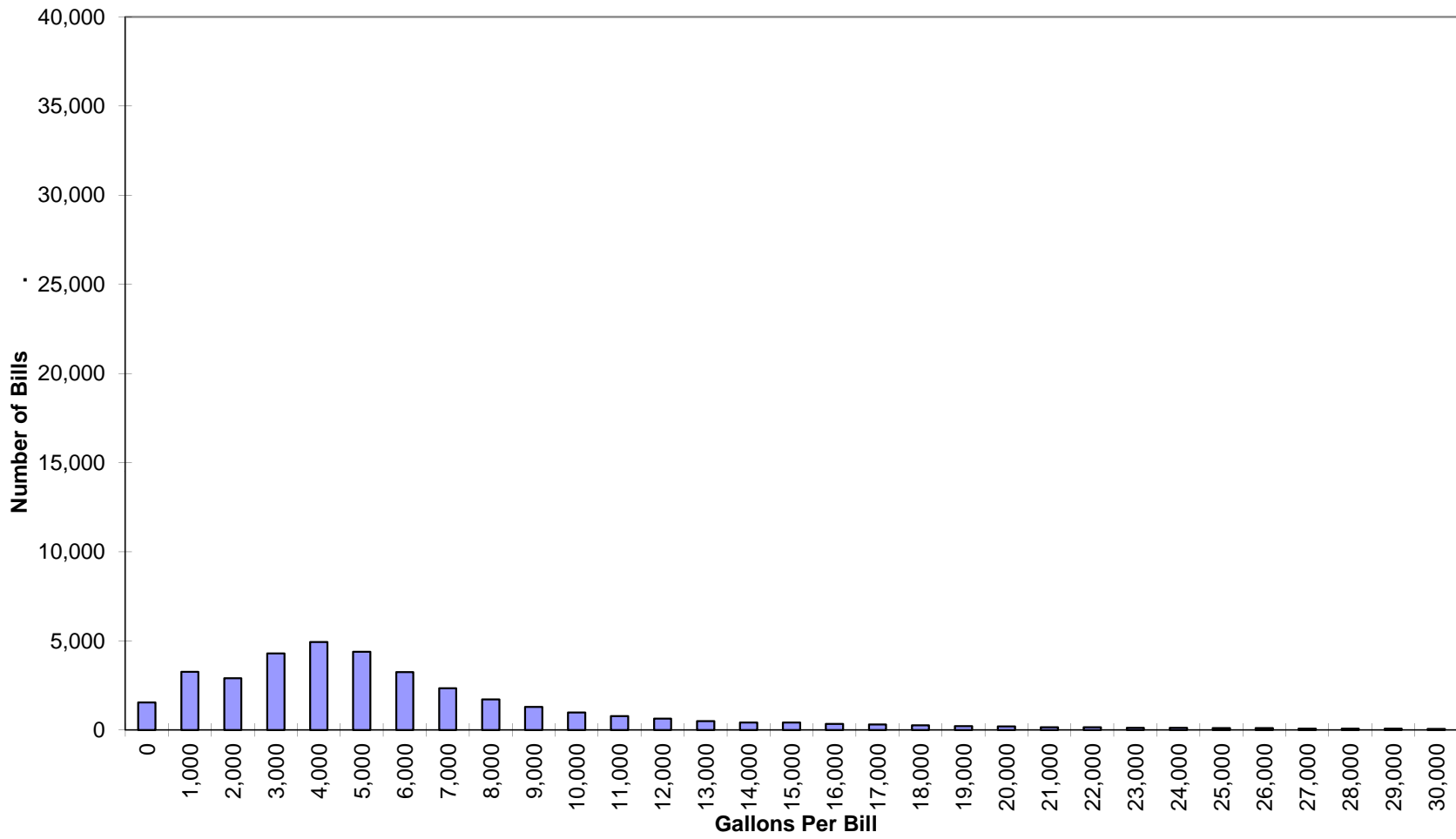
Palm Coast Bill Frequency Analysis - RS3 (February 2008 to December 2009)



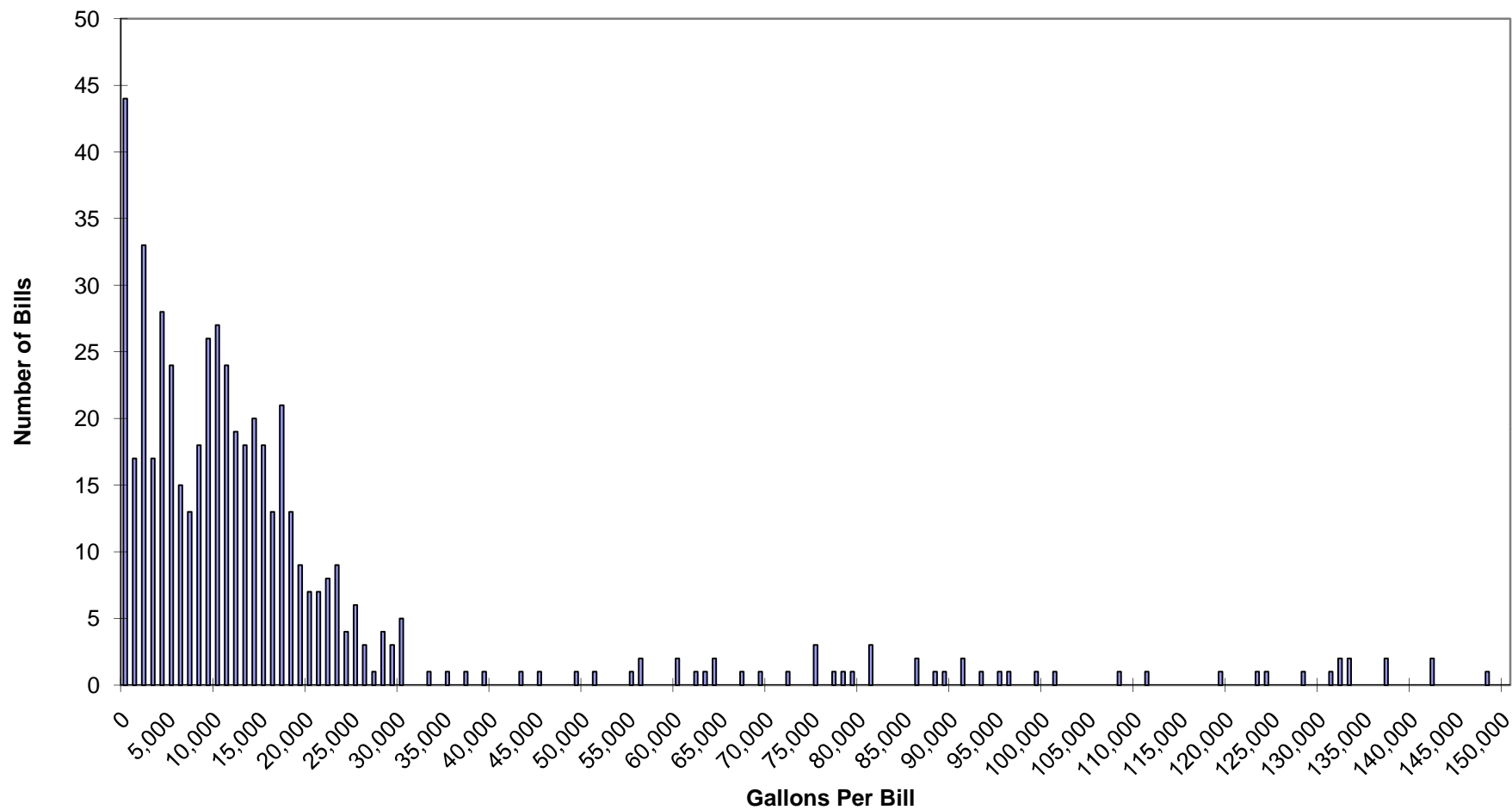
Palm Coast Bill Frequency Analysis - RS4 (February 2008 to December 2009)



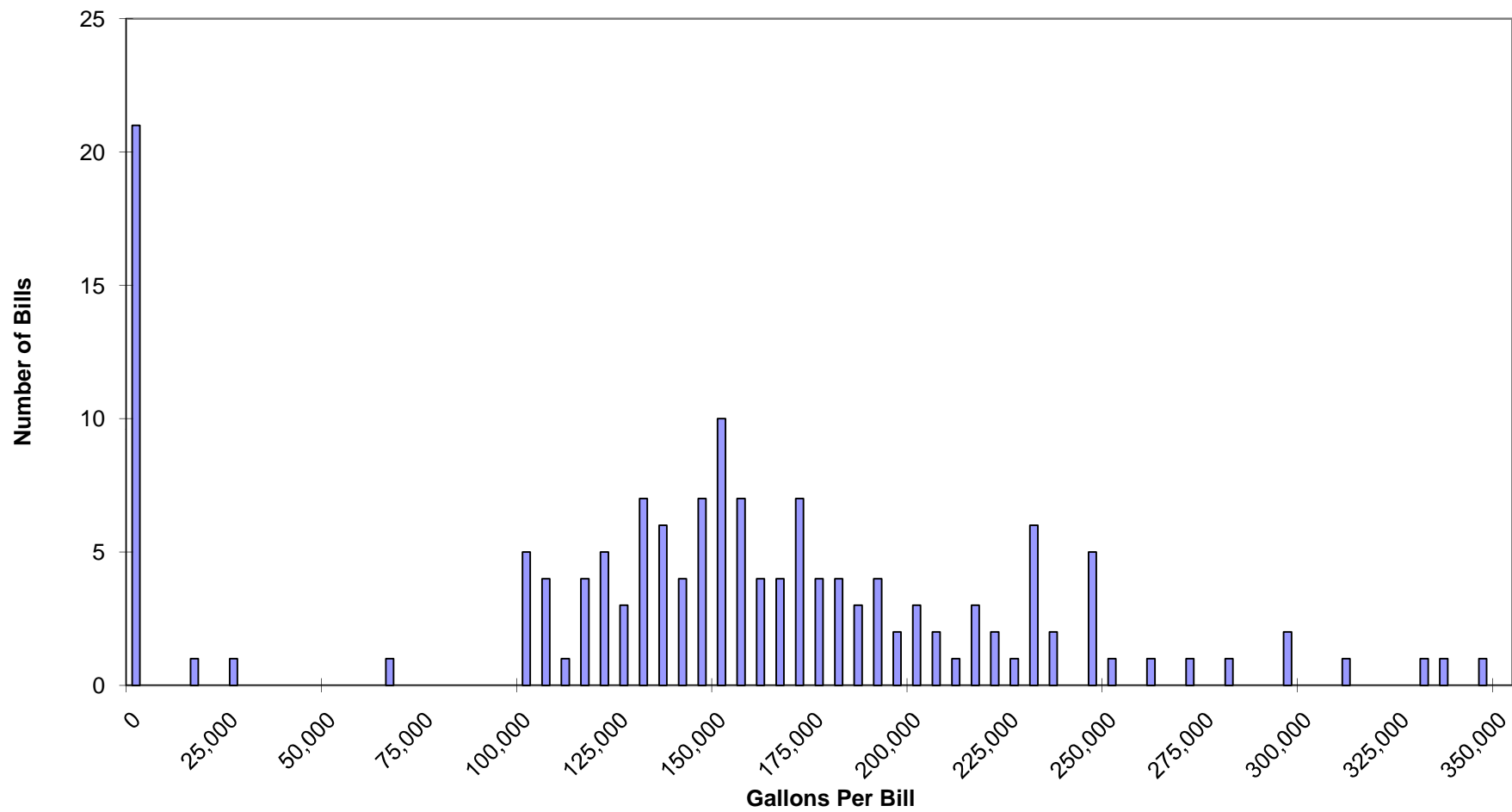
Palm Coast Bill Frequency Analysis - RS5 (February 2008 to December 2009)



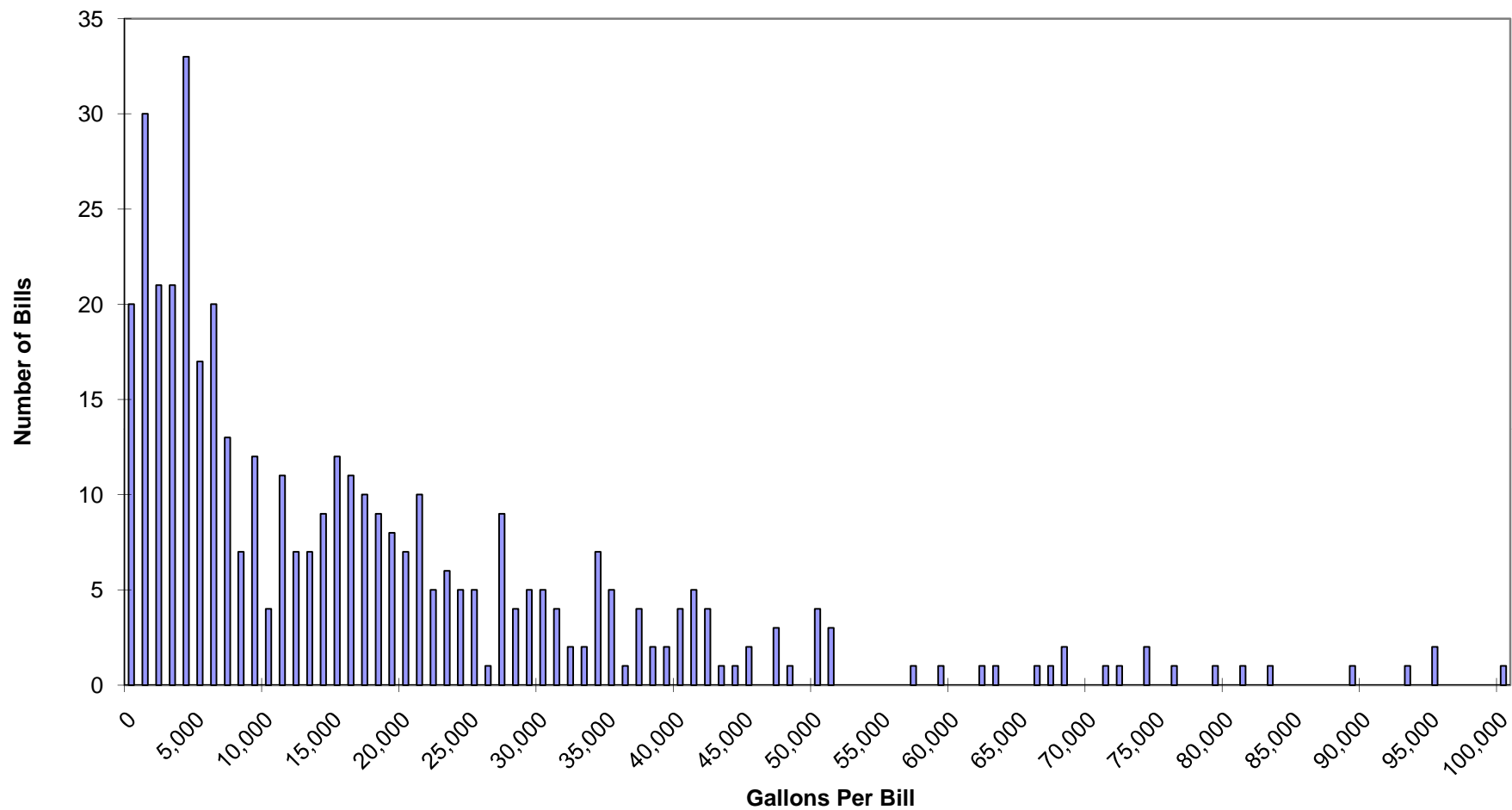
**Palm Coast Bill Frequency Analysis - AUTO & REPAIR
(February 2008 to December 2009)**



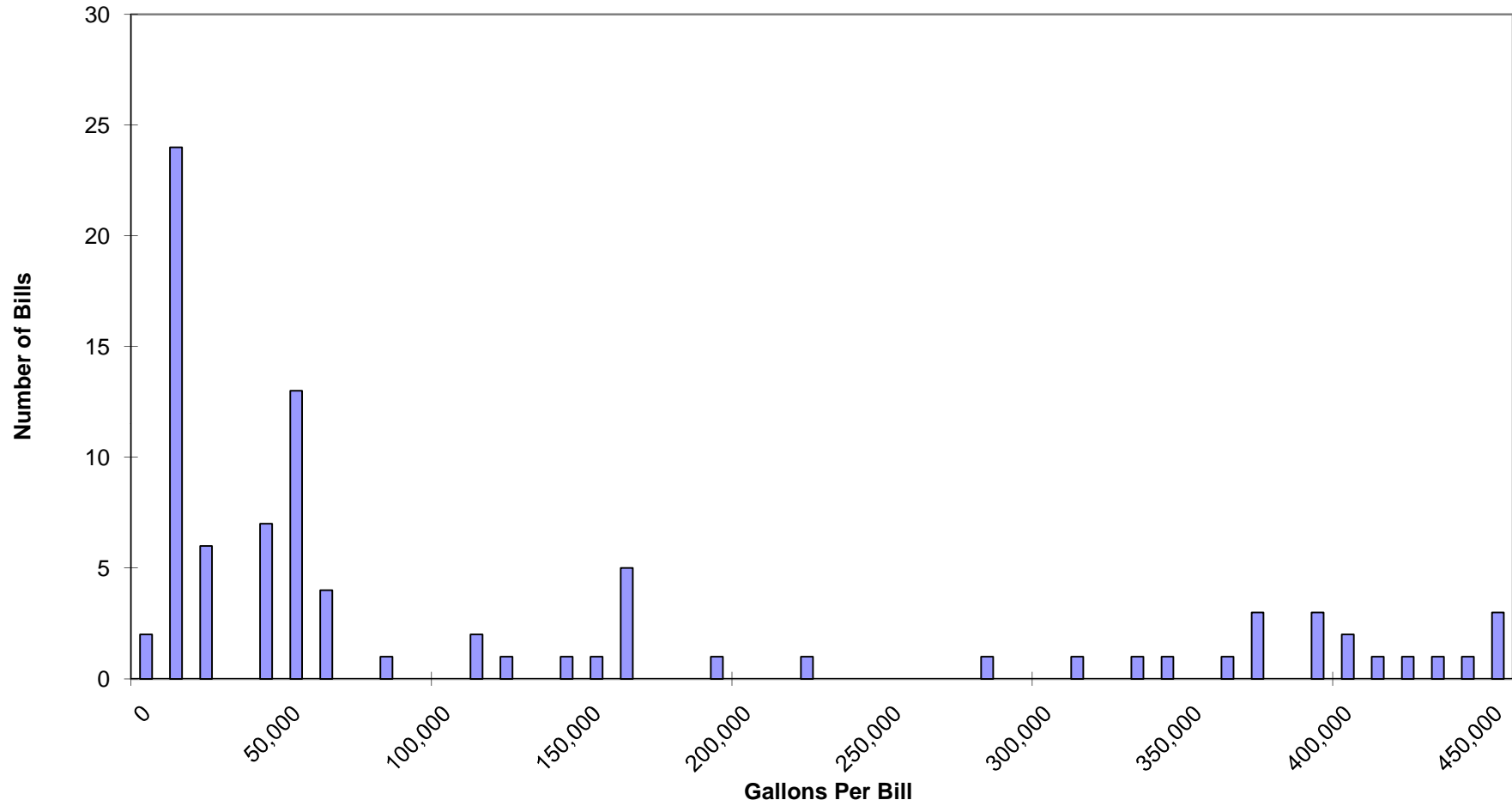
Palm Coast Bill Frequency Analysis - HOTELS (February 2008 to December 2009)



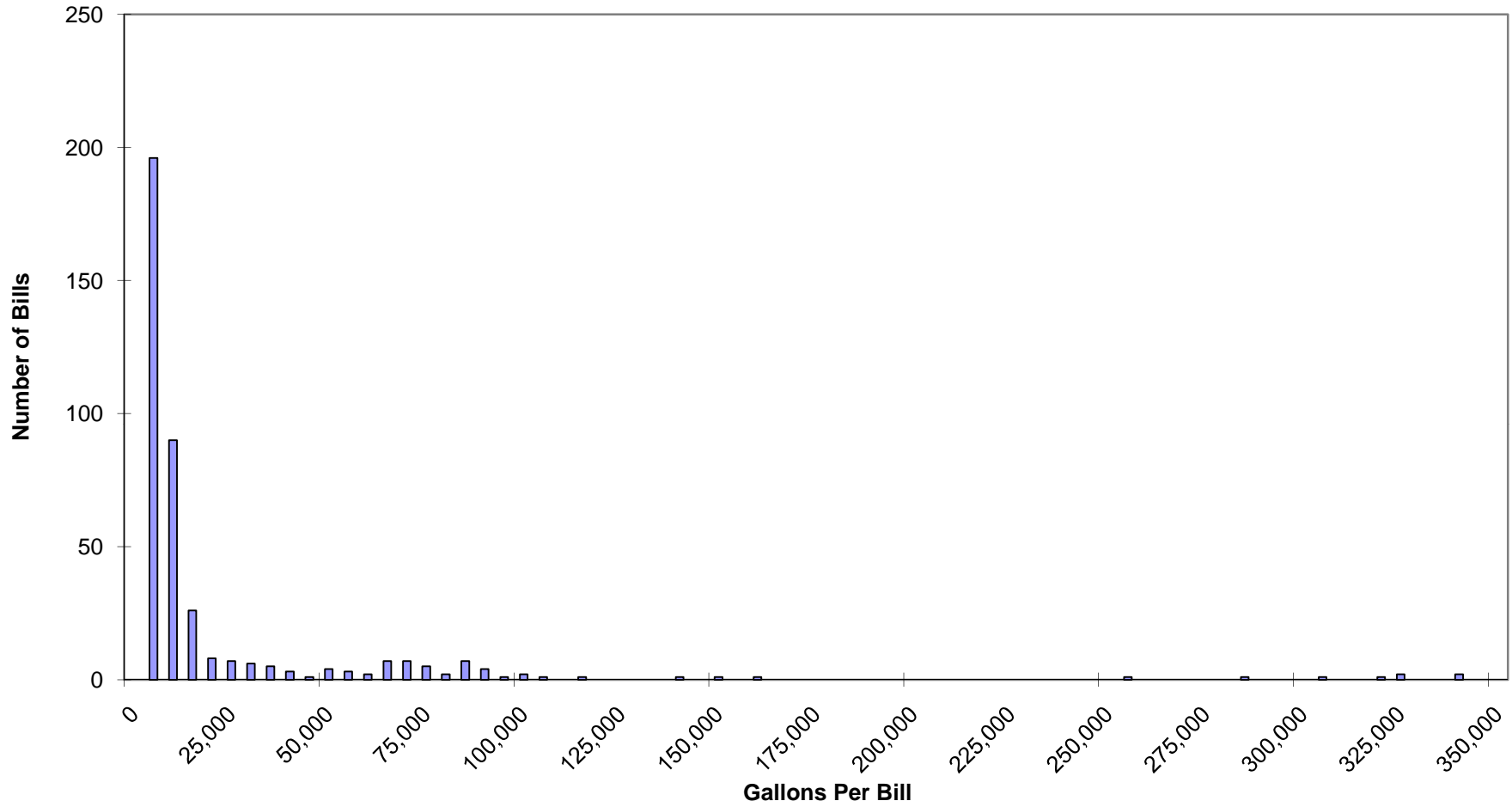
**Palm Coast Bill Frequency Analysis - INDOOR RECREATION
(February 2008 to December 2009)**



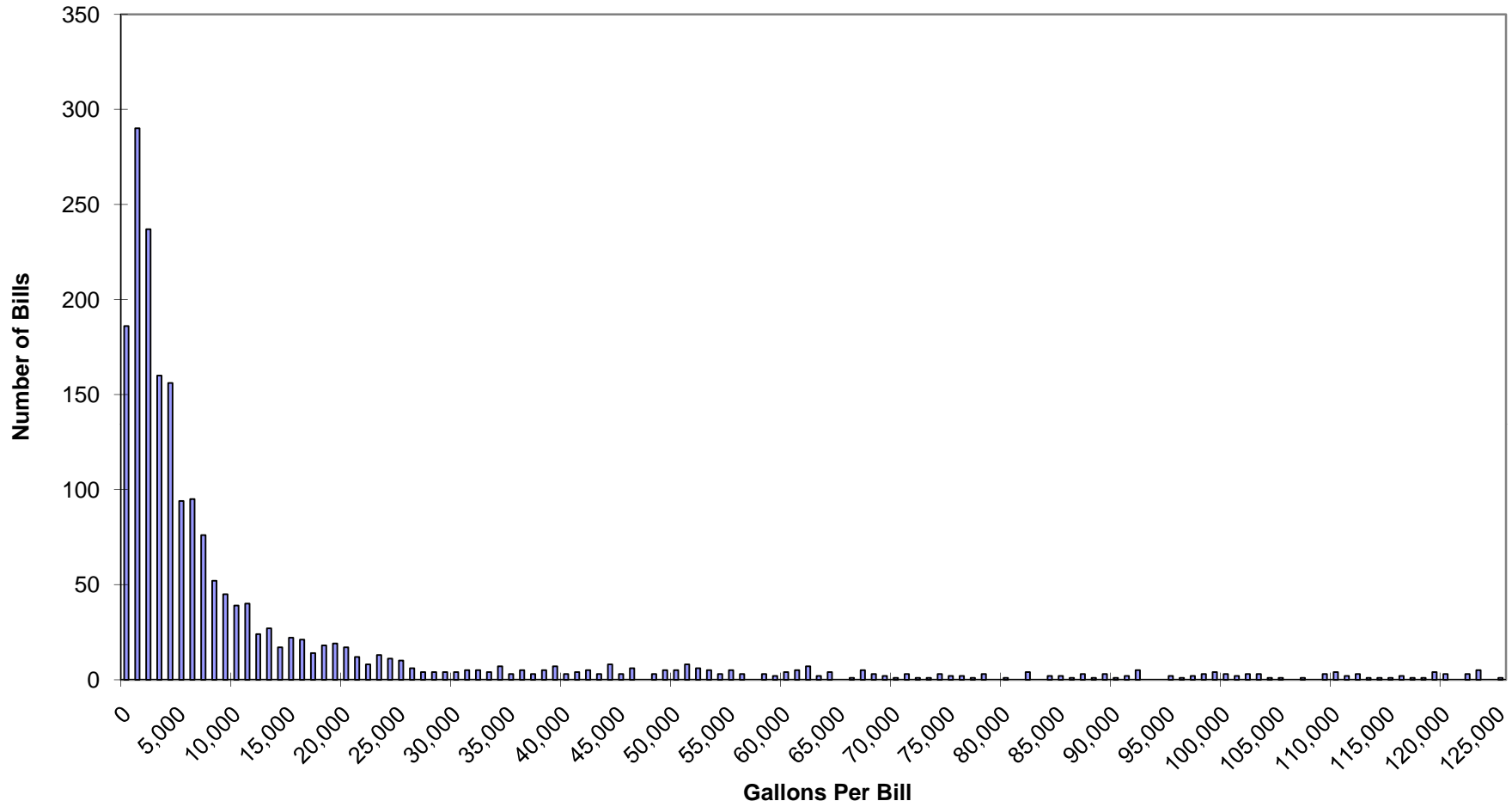
**Palm Coast Bill Frequency Analysis - LIVE-IN CARE
(February 2008 to December 2009)**



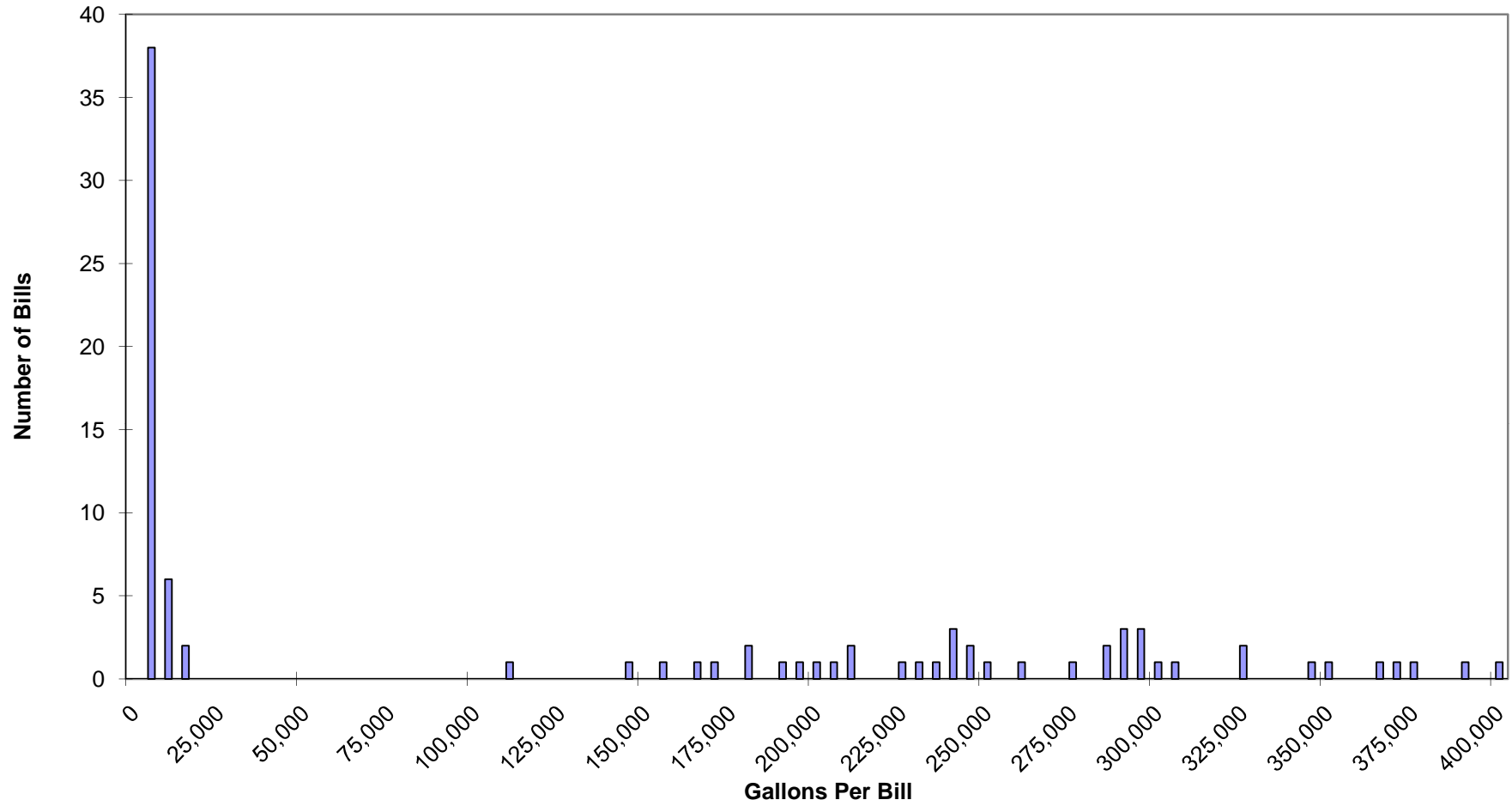
Palm Coast Bill Frequency Analysis - MANUFACTURING
(February 2008 to December 2009)



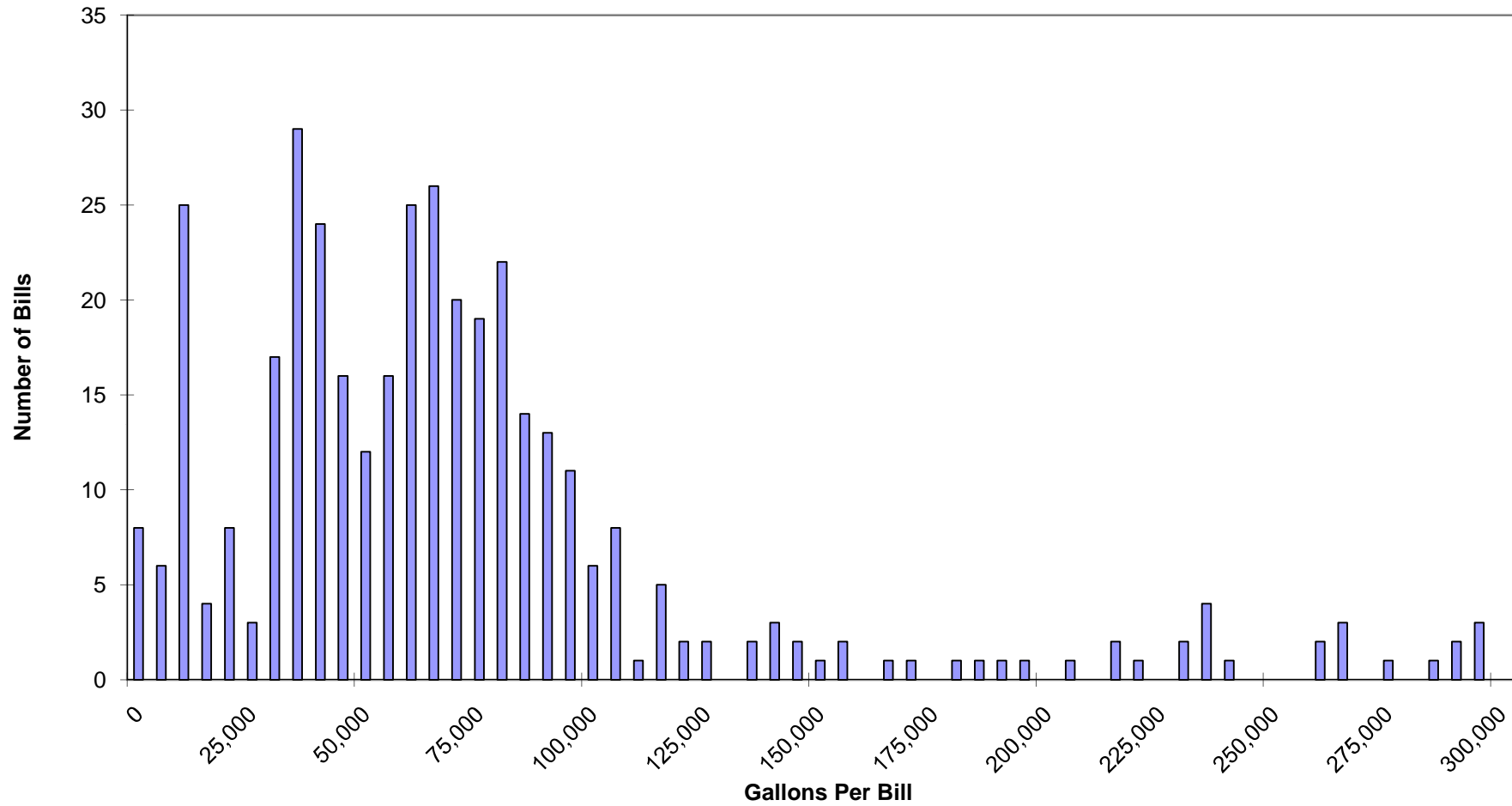
Palm Coast Bill Frequency Analysis - OFFICE BUILDINGS
(February 2008 to December 2009)



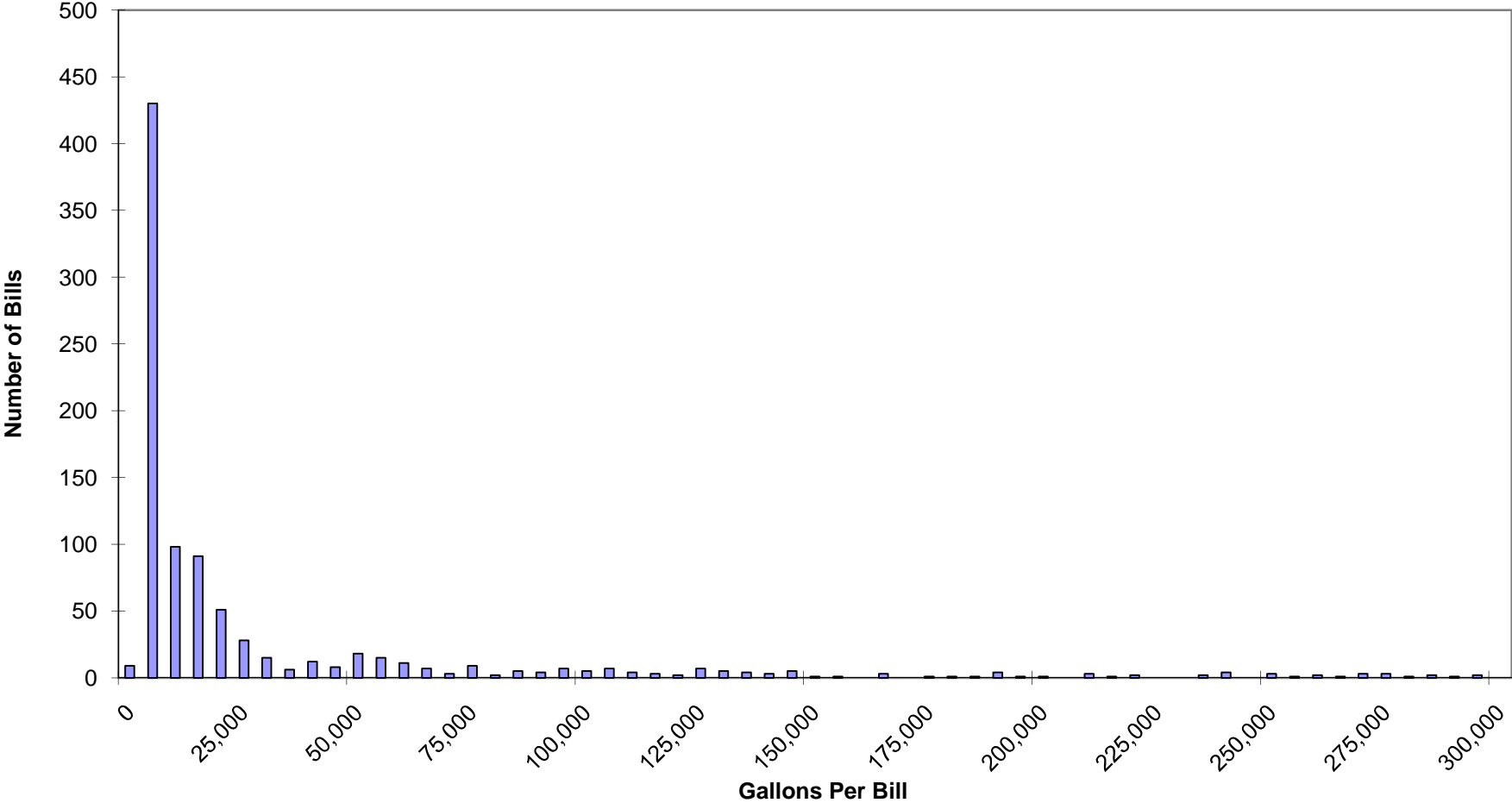
Palm Coast Bill Frequency Analysis - OUTDOOR RECREATION
(February 2008 to December 2009)



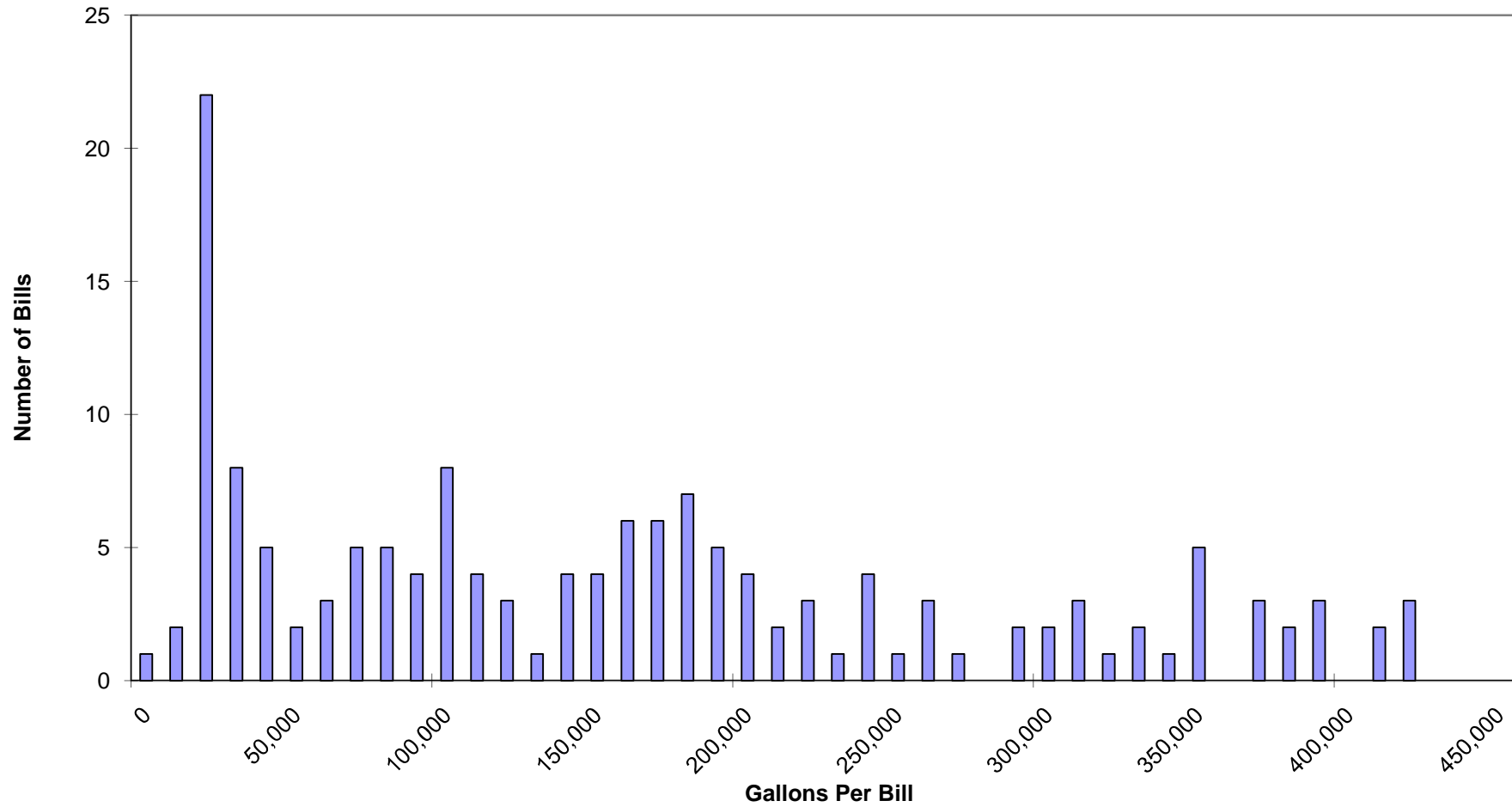
Palm Coast Bill Frequency Analysis - RESTAURANTS
(February 2008 to December 2009)



Palm Coast Bill Frequency Analysis - RETAIL
(February 2008 to December 2009)



**Palm Coast Bill Frequency Analysis - Schools
(February 2008 to December 2009)**



I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Coast

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	1 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,039,000
Commercial	2,008,000
Total	11,047,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	81,000	\$810,000	\$2.20
Aggressive Meter Monitoring Program - GLOBAL	163,000	2,947,000	\$3.97
Subtotals	244,000	\$3,757,000	\$3.39

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	18,000	47,000	\$612,000	\$2.86
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	136,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	54,000	125,000	\$1,264,000	\$2.22
High Efficiency Clothes Washer Replacement - INDOOR	53,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	129,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	175,000	\$1,574,000	\$1.98
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	442,000	\$0	\$0.00
Subtotals	279,000	918,000	\$3,450,000	\$0.83

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	600	\$8,000	\$2.93
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	7,000	1,000	\$6,000	\$1.32
Low Flow Faucet Aerator Replacement - INDOOR	5,000	12,000	\$32,000	\$0.59
Urinal Replacement Program - INDOOR	6,000	800	\$6,000	\$1.65
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	10,000	\$6,000	\$0.13
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	41,000	\$0	\$0.00
Subtotals	19,000	65,400	\$58,000	\$0.19

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	298,000	1,227,000	\$8,718,000	\$1.56

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Coast

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	5 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,039,000
Commercial	2,008,000
Total	11,047,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	81,000	\$810,000	\$2.20
Aggressive Meter Monitoring Program - GLOBAL	163,000	2,947,000	\$3.97
Subtotals	244,000	\$3,757,000	\$3.39

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	24,000	41,000	\$527,000	\$2.83
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	136,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	89,000	89,000	\$903,000	\$2.23
High Efficiency Clothes Washer Replacement - INDOOR	53,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	129,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	175,000	\$1,574,000	\$1.98
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	442,000	\$0	\$0.00
Subtotals	320,000	876,000	\$3,004,000	\$0.75

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	600	\$8,000	\$2.93
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	7,000	0	\$5,000	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	8,000	8,000	\$23,000	\$0.63
Urinal Replacement Program - INDOOR	6,000	700	\$5,000	\$1.57
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	10,000	\$6,000	\$0.13
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	41,000	\$0	\$0.00
Subtotals	22,000	60,300	\$47,000	\$0.17

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	342,000	1,180,000	\$8,170,000	\$1.52

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Coast

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	10 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,039,000
Commercial	2,008,000
Total	11,047,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	81,000	\$810,000	\$2.20
Aggressive Meter Monitoring Program - GLOBAL	163,000	2,947,000	\$3.97
Subtotals	244,000	\$3,757,000	\$3.39

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	33,000	33,000	\$422,000	\$2.81
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	136,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	134,000	45,000	\$451,000	\$2.20
High Efficiency Clothes Washer Replacement - INDOOR	52,000	104	\$15,708	\$33.15
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	129,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	175,000	\$1,574,000	\$1.98
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	442,000	\$0	\$0.00
Subtotals	373,000	824,104	\$2,462,708	\$0.66

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	600	\$8,000	\$2.93
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	7,000	0	\$4,000	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	13,000	4,000	\$12,000	\$0.66
Urinal Replacement Program - INDOOR	6,000	500	\$4,000	\$1.76
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	10,000	\$6,000	\$0.13
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	41,000	\$0	\$0.00
Subtotals	27,000	56,100	\$34,000	\$0.13

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	400,000	1,124,000	\$7,505,000	\$1.47

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

Palm Coast

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	20 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	9,039,000
Commercial	2,008,000
Total	11,047,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	81,000	\$810,000	\$2.20
Aggressive Meter Monitoring Program - GLOBAL	163,000	2,947,000	\$3.97
Subtotals	244,000	\$3,757,000	\$3.39

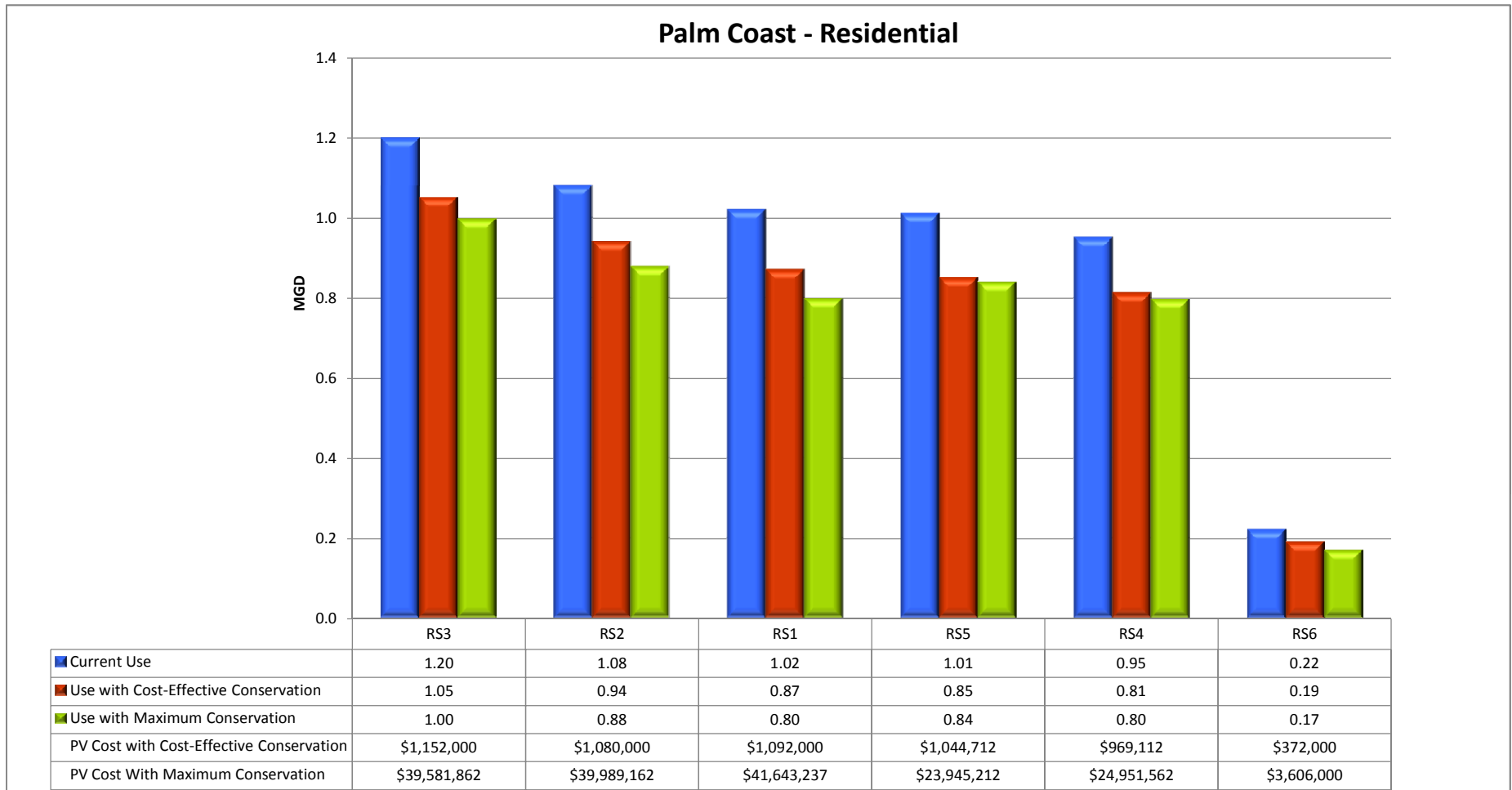
Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	33,000	16,000	\$211,000	\$2.90
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	136,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	179,000	0	\$0	\$0.00
High Efficiency Clothes Washer Replacement - INDOOR	53,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	129,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	175,000	\$1,574,000	\$1.98
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	442,000	\$0	\$0.00
Subtotals	419,000	762,000	\$1,785,000	\$0.51

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	1,000	600	\$8,000	\$2.93
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	7,000	0	\$3,000	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	17,000	0	\$0	\$0.00
Urinal Replacement Program - INDOOR	6,000	200	\$1,000	\$1.10
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	10,000	\$6,000	\$0.13
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	41,000	\$0	\$0.00
Subtotals	31,000	51,800	\$18,000	\$0.08

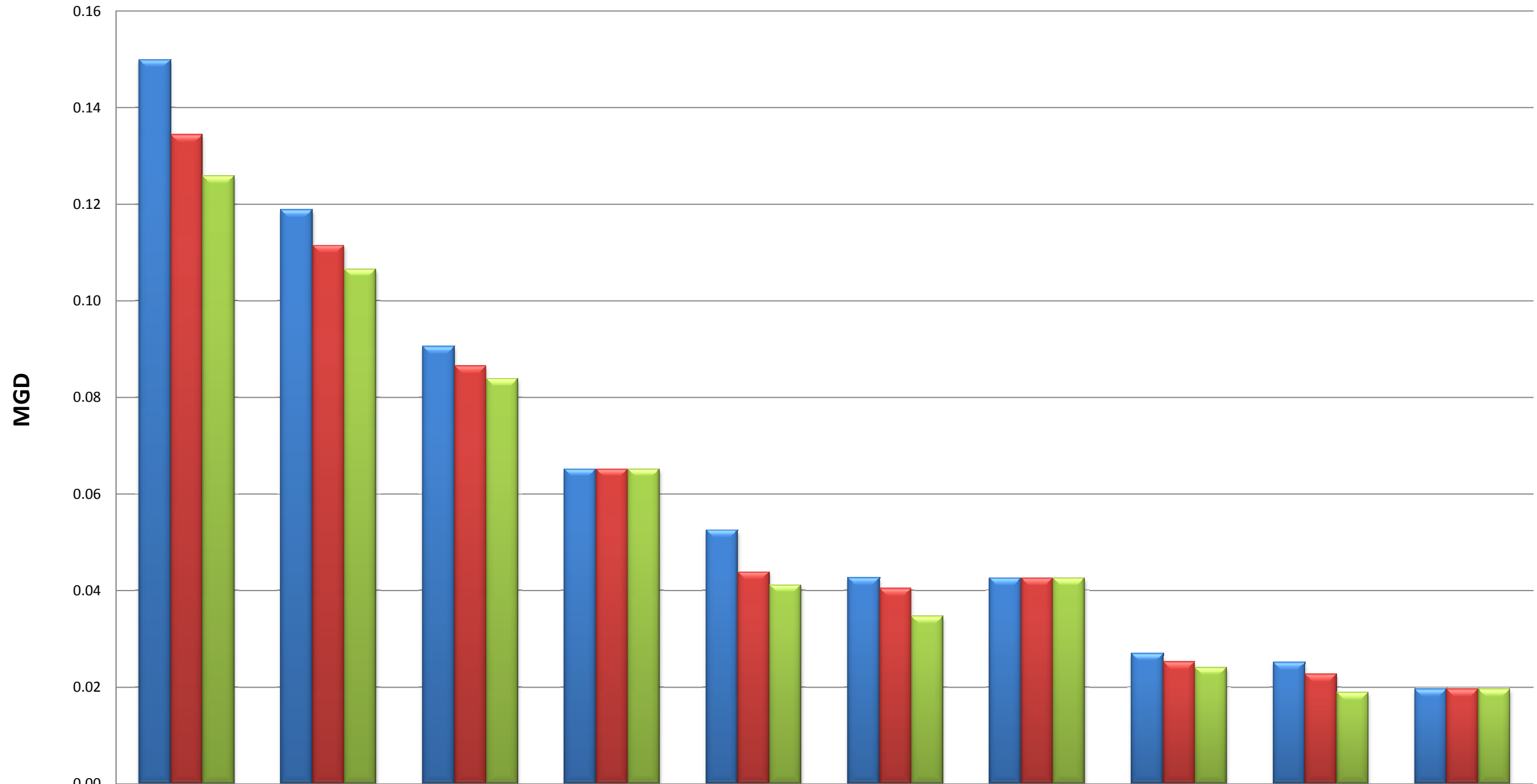
Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	450,000	1,058,000	\$6,672,000	\$1.39

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

J. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon



Palm Coast - Commercial



	SCHOOLS	OFFICE BUILDINGS	RETAIL	MANUFACTURING	RESTAURANTS	HOTELS	AUTO & REPAIR	INDOOR RECREATION	LIVE-IN CARE	OUTDOOR RECREATION
Current Use	0.15	0.12	0.09	0.07	0.05	0.04	0.04	0.03	0.03	0.02
Use with Cost-Eff BMPs	0.13	0.11	0.09	0.07	0.04	0.04	0.04	0.03	0.02	0.02
Max Conservation Use	0.13	0.11	0.08	0.07	0.04	0.03	0.04	0.02	0.02	0.02
Cost-Effective PV Cost	\$1,200	\$-	\$-	\$-	\$7,200	\$-	\$-	\$-	\$6,000	\$-
Maximum PV Cost	\$540,000	\$252,000	\$156,000	\$-	\$36,000	\$1,056,000	\$-	\$48,000	\$4,188,000	\$-

K. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	1	4	100	0	242,124	\$0	\$0.00
2	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	1	4	100	0	85,666	\$0	\$0.00
3	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	5	4	100	0	83,492	\$0	\$0.00
4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	4	4	100	0	77,255	\$0	\$0.00
5	Landscape Replacement Program - OUTDOOR	3	3	50	0	52,340	\$15,440,000	\$64.85
6	Landscape Replacement Program - OUTDOOR	5	3	50	0	48,390	\$7,890,000	\$35.85
7	Landscape Replacement Program - OUTDOOR	4	3	50	0	44,921	\$9,192,500	\$44.99
8	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	3	75	0	42,737	\$374,400	\$1.93
9	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	3	75	0	42,737	\$280,800	\$1.44
10	Landscape Replacement Program - OUTDOOR	2	3	50	0	36,902	\$14,060,000	\$83.76
11	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	3	75	0	32,928	\$348,300	\$2.33
12	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	3	75	0	32,928	\$261,225	\$1.74
13	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	3	75	0	29,547	\$415,500	\$3.09
14	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	3	75	0	29,547	\$311,625	\$2.32
15	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	3	4	100	0	22,409	\$0	\$0.00
16	Landscape Replacement Program - OUTDOOR	1	3	50	0	21,062	\$8,755,000	\$91.38
17	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	3	75	0	17,017	\$276,000	\$3.57
18	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	3	75	0	17,017	\$207,000	\$2.67
19	High Efficiency Toilet Replacement Program - INDOOR	1	2	75	19,340	16,922	\$804,160	\$10.45
20	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	2	4	100	0	16,584	\$0	\$0.00
21	Landscape Replacement Program - OUTDOOR	1	2	50	0	16,335	\$6,820,000	\$91.79
22	High Efficiency Toilet Replacement Program - INDOOR	3	3	75	18,667	16,334	\$2,730,420	\$36.75
23	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	4	4	100	0	15,980	\$0	\$0.00
24	Landscape Replacement Program - OUTDOOR	5	2	50	0	15,931	\$2,462,500	\$33.98
25	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	2	75	0	14,203	\$123,600	\$1.91
26	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	2	75	0	14,203	\$92,700	\$1.43
27	High Efficiency Toilet Replacement Program - INDOOR	2	3	75	15,625	13,672	\$1,657,600	\$26.65
28	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	5	4	100	0	13,568	\$0	\$0.00
29	Landscape Replacement Program - OUTDOOR	4	2	50	0	10,617	\$1,792,500	\$37.12
30	High Efficiency Toilet Replacement Program - INDOOR	4	3	75	11,866	10,383	\$1,625,820	\$34.42
31	Efficient Irrigation Systems (non turf) - OUTDOOR	5	3	75	0	10,257	\$1,048,950	\$22.48
32	Landscape Replacement Program - OUTDOOR	2	2	50	0	10,245	\$3,415,000	\$73.28
33	High Efficiency Toilet Replacement Program - INDOOR	5	3	75	11,021	9,643	\$1,860,320	\$42.41
34	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	2	75	0	9,145	\$93,300	\$2.24
35	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	2	75	0	9,145	\$69,975	\$1.68
36	High Efficiency Toilet Replacement Program - INDOOR	2	2	75	10,282	8,997	\$402,640	\$9.84
37	High Efficiency Toilet Replacement Program - INDOOR	5	2	75	9,257	8,100	\$580,720	\$15.76
38	High Efficiency Toilet Replacement Program - INDOOR	1	3	75	9,136	7,994	\$1,032,080	\$28.38
39	Efficient Irrigation Systems (non turf) - OUTDOOR	4	3	75	0	7,903	\$975,450	\$27.14
40	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	3	75	0	7,434	\$127,800	\$3.78
41	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	3	75	0	7,434	\$95,850	\$2.83
42	Landscape Replacement Program - OUTDOOR	3	2	50	0	7,393	\$1,840,000	\$54.72
43	Efficient Irrigation Systems (non turf) - OUTDOOR	3	3	75	0	7,091	\$1,163,400	\$36.07
44	Landscape Replacement Program - OUTDOOR	1	1	50	0	6,857	\$2,742,500	\$87.93
45	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	2	75	0	6,349	\$111,000	\$3.84
46	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	2	75	0	6,349	\$83,250	\$2.88
47	High Efficiency Toilet Replacement Program - INDOOR	6	2	75	6,860	6,002	\$381,920	\$13.99
48	High Efficiency Toilet Replacement Program - INDOOR	4	2	75	6,639	5,809	\$317,100	\$12.00
49	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	3	4	100	0	5,730	\$0	\$0.00
50	High Efficiency Toilet Replacement Program - INDOOR	3	2	75	6,008	5,257	\$217,000	\$9.08
51	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	2	4	100	0	5,144	\$0	\$0.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

K. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
52	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	2	75	0	5,046	\$76,200	\$3.32
53	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	2	75	0	5,046	\$57,150	\$2.49
54	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	2	75	0	4,514	\$56,400	\$2.75
55	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	2	75	0	4,514	\$42,300	\$2.06
56	High Efficiency Showerhead Replacement - INDOOR	1	2	75	8,966	4,483	\$57,440	\$2.82
57	High Efficiency Toilet Replacement Program - INDOOR	1	1	75	4,928	4,312	\$323,400	\$7.70
58	Efficient Irrigation Systems (non turf) - OUTDOOR	5	2	75	0	4,176	\$424,200	\$22.33
59	Efficient Irrigation Systems (non turf) - OUTDOOR	2	3	75	0	4,084	\$772,800	\$41.60
60	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	1	75	0	3,098	\$46,800	\$3.32
61	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	1	75	0	3,098	\$35,100	\$2.49
62	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	6	4	100	0	2,977	\$0	\$0.00
63	Efficient Irrigation Systems (non turf) - OUTDOOR	4	2	75	0	2,689	\$320,250	\$26.19
64	High Efficiency Toilet Replacement Program - INDOOR	6	3	75	3,067	2,684	\$416,920	\$34.15
65	High Efficiency Showerhead Replacement - INDOOR	2	2	75	4,767	2,383	\$21,570	\$1.99
66	High Efficiency Showerhead Replacement - INDOOR	5	2	75	4,291	2,146	\$36,300	\$3.72
67	Efficient Irrigation Systems (non turf) - OUTDOOR	1	2	75	0	1,867	\$381,150	\$44.89
68	Efficient Irrigation Systems (non turf) - OUTDOOR	1	3	75	0	1,784	\$358,050	\$44.12
69	Submetering Billing of Apartment Units - INDOOR	6	2	75	0	1,767	\$767,250	\$95.47
70	Landscape Replacement Program - OUTDOOR	4	1	50	0	1,715	\$477,500	\$61.20
71	High Efficiency Showerhead Replacement - INDOOR	1	1	75	3,354	1,677	\$23,100	\$1.01
72	High Efficiency Showerhead Replacement - INDOOR	6	2	75	3,180	1,590	\$27,280	\$3.77
73	High Efficiency Showerhead Replacement - INDOOR	4	2	75	3,078	1,539	\$18,880	\$2.70
74	Efficient Irrigation Systems (non turf) - OUTDOOR	2	2	75	0	1,483	\$261,450	\$38.74
75	High Efficiency Showerhead Replacement - INDOOR	3	2	75	2,785	1,393	\$11,630	\$1.84
76	Landscape Replacement Program - OUTDOOR	5	1	50	0	1,359	\$400,000	\$64.72
77	Efficient Irrigation Systems (non turf) - OUTDOOR	3	2	75	0	1,327	\$194,250	\$32.18
78	Landscape Replacement Program - OUTDOOR	2	1	50	0	1,284	\$447,500	\$76.62
79	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	1	75	0	1,188	\$21,900	\$4.05
80	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	1	75	0	1,188	\$16,425	\$3.04
81	Submetering Billing of Apartment Units - INDOOR	6	3	75	0	1,073	\$418,500	\$85.74
82	Efficient Irrigation Systems (non turf) - OUTDOOR	1	1	75	0	911	\$160,650	\$38.77
83	High Efficiency Toilet Replacement Program - INDOOR	5	1	75	977	855	\$94,080	\$24.20
84	High Efficiency Toilet Replacement Program - INDOOR	4	1	75	945	827	\$84,420	\$22.45
85	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	1	75	0	816	\$14,100	\$3.80
86	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	1	75	0	816	\$10,575	\$2.85
87	High Efficiency Toilet Replacement Program - INDOOR	2	1	75	888	777	\$52,640	\$14.90
88	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	1	75	0	624	\$10,200	\$3.59
89	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	1	75	0	624	\$7,650	\$2.69
90	Landscape Replacement Program - OUTDOOR	3	1	50	0	440	\$162,500	\$81.19
91	Efficient Irrigation Systems (non turf) - OUTDOOR	4	1	75	0	349	\$74,550	\$46.94
92	High Efficiency Showerhead Replacement - INDOOR	5	1	75	665	332	\$5,880	\$3.89
93	High Efficiency Showerhead Replacement - INDOOR	4	1	75	643	322	\$5,030	\$3.44
94	High Efficiency Showerhead Replacement - INDOOR	2	1	75	604	302	\$2,820	\$2.05
95	High Efficiency Toilet Replacement Program - INDOOR	3	1	75	292	256	\$19,040	\$16.37
96	Efficient Irrigation Systems (non turf) - OUTDOOR	5	1	75	0	240	\$48,300	\$44.28
97	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	1	75	0	188	\$3,600	\$4.21
98	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	1	75	0	188	\$2,700	\$3.16
99	Efficient Irrigation Systems (non turf) - OUTDOOR	2	1	75	0	184	\$35,700	\$42.77
100	High Efficiency Showerhead Replacement - INDOOR	3	1	75	199	99	\$1,020	\$2.25
101	Efficient Irrigation Systems (non turf) - OUTDOOR	3	1	75	0	55	\$12,600	\$50.18

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

K. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
102	High Efficiency Toilet Replacement Program - INDOOR	6	1	75	62	54	\$9,800	\$39.97
103	Submetering Billing of Apartment Units - INDOOR	6	1	75	0	24	\$20,250	\$183.47
104	High Efficiency Showerhead Replacement - INDOOR	6	1	75	42	21	\$700	\$7.34
105	Efficient Irrigation Systems (non turf) - OUTDOOR	6	3	75	0	0	\$0	\$100,000.00
106	Efficient Irrigation Systems (non turf) - OUTDOOR	6	2	75	0	0	\$0	\$100,000.00
107	Efficient Irrigation Systems (non turf) - OUTDOOR	6	1	75	0	0	\$0	\$100,000.00
108	High Efficiency Clothes Washer Replacement - INDOOR	1	1	75	1,302	0	\$0	\$0.00
109	High Efficiency Clothes Washer Replacement - INDOOR	6	3	75	1,728	0	\$0	\$100,000.00
110	High Efficiency Clothes Washer Replacement - INDOOR	6	2	75	1,330	0	\$0	\$100,000.00
111	High Efficiency Clothes Washer Replacement - INDOOR	6	1	75	16	0	\$0	\$100,000.00
112	High Efficiency Clothes Washer Replacement - INDOOR	5	3	75	6,208	0	\$0	\$100,000.00
113	High Efficiency Clothes Washer Replacement - INDOOR	5	2	75	1,794	0	\$0	\$100,000.00
114	High Efficiency Clothes Washer Replacement - INDOOR	5	1	75	258	0	\$0	\$100,000.00
115	High Efficiency Clothes Washer Replacement - INDOOR	4	3	75	6,684	0	\$0	\$100,000.00
116	High Efficiency Clothes Washer Replacement - INDOOR	4	2	75	1,287	0	\$0	\$100,000.00
117	High Efficiency Clothes Washer Replacement - INDOOR	4	1	75	250	0	\$0	\$100,000.00
118	High Efficiency Clothes Washer Replacement - INDOOR	3	3	75	10,515	0	\$0	\$100,000.00
119	High Efficiency Clothes Washer Replacement - INDOOR	3	2	75	1,164	0	\$0	\$100,000.00
120	High Efficiency Clothes Washer Replacement - INDOOR	3	1	75	77	0	\$0	\$100,000.00
121	High Efficiency Clothes Washer Replacement - INDOOR	2	3	75	8,801	0	\$0	\$100,000.00
122	High Efficiency Clothes Washer Replacement - INDOOR	2	2	75	1,993	0	\$0	\$100,000.00
123	High Efficiency Clothes Washer Replacement - INDOOR	2	1	75	235	0	\$0	\$100,000.00
124	High Efficiency Clothes Washer Replacement - INDOOR	1	3	75	5,146	0	\$0	\$100,000.00
125	High Efficiency Clothes Washer Replacement - INDOOR	1	2	75	3,748	0	\$0	\$100,000.00
126	High Efficiency Dishwashers - INDOOR	1	1	75	518	0	\$0	\$0.00
127	High Efficiency Dishwashers - INDOOR	6	3	75	572	0	\$0	\$100,000.00
128	High Efficiency Dishwashers - INDOOR	6	2	75	471	0	\$0	\$100,000.00
129	High Efficiency Dishwashers - INDOOR	6	1	75	6	0	\$0	\$100,000.00
130	High Efficiency Dishwashers - INDOOR	5	3	75	2,056	0	\$0	\$100,000.00
131	High Efficiency Dishwashers - INDOOR	5	2	75	636	0	\$0	\$100,000.00
132	High Efficiency Dishwashers - INDOOR	5	1	75	103	0	\$0	\$100,000.00
133	High Efficiency Dishwashers - INDOOR	4	3	75	2,214	0	\$0	\$100,000.00
134	High Efficiency Dishwashers - INDOOR	4	2	75	456	0	\$0	\$100,000.00
135	High Efficiency Dishwashers - INDOOR	4	1	75	99	0	\$0	\$100,000.00
136	High Efficiency Dishwashers - INDOOR	3	3	75	3,483	0	\$0	\$100,000.00
137	High Efficiency Dishwashers - INDOOR	3	2	75	413	0	\$0	\$100,000.00
138	High Efficiency Dishwashers - INDOOR	3	1	75	31	0	\$0	\$100,000.00
139	High Efficiency Dishwashers - INDOOR	2	3	75	2,915	0	\$0	\$100,000.00
140	High Efficiency Dishwashers - INDOOR	2	2	75	706	0	\$0	\$100,000.00
141	High Efficiency Dishwashers - INDOOR	2	1	75	93	0	\$0	\$100,000.00
142	High Efficiency Dishwashers - INDOOR	1	3	75	1,704	0	\$0	\$100,000.00
143	High Efficiency Dishwashers - INDOOR	1	2	75	1,328	0	\$0	\$100,000.00
144	High Efficiency Showerhead Replacement - INDOOR	6	3	75	0	0	\$29,780	\$100,000.00
145	High Efficiency Showerhead Replacement - INDOOR	5	3	75	0	0	\$116,270	\$100,000.00
146	High Efficiency Showerhead Replacement - INDOOR	4	3	75	0	0	\$96,780	\$100,000.00
147	High Efficiency Showerhead Replacement - INDOOR	3	3	75	0	0	\$162,530	\$100,000.00
148	High Efficiency Showerhead Replacement - INDOOR	2	3	75	0	0	\$88,800	\$100,000.00
149	High Efficiency Showerhead Replacement - INDOOR	1	3	75	0	0	\$73,720	\$100,000.00
150	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	3	75	0	0	\$0	\$100,000.00
151	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	2	75	0	0	\$0	\$100,000.00

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K. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
152	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	1	75	0	0	\$0	\$100,000.00
153	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	3	75	0	0	\$0	\$100,000.00
154	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	2	75	0	0	\$0	\$100,000.00
155	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	1	75	0	0	\$0	\$100,000.00
156	Landscape Replacement Program - OUTDOOR	6	3	50	0	0	\$3,537,500	\$100,000.00
157	Landscape Replacement Program - OUTDOOR	6	2	50	0	0	\$3,240,000	\$100,000.00
158	Landscape Replacement Program - OUTDOOR	6	1	50	0	0	\$82,500	\$100,000.00
159	Low Flow Faucet Aerator Replacement - INDOOR	1	1	75	5,497	0	\$0	\$0.00
160	Low Flow Faucet Aerator Replacement - INDOOR	6	3	75	0	0	\$0	\$100,000.00
161	Low Flow Faucet Aerator Replacement - INDOOR	6	2	75	5,004	0	\$0	\$100,000.00
162	Low Flow Faucet Aerator Replacement - INDOOR	6	1	75	69	0	\$0	\$100,000.00
163	Low Flow Faucet Aerator Replacement - INDOOR	5	3	75	21,096	0	\$0	\$100,000.00
164	Low Flow Faucet Aerator Replacement - INDOOR	5	2	75	6,752	0	\$0	\$100,000.00
165	Low Flow Faucet Aerator Replacement - INDOOR	5	1	75	1,090	0	\$0	\$100,000.00
166	Low Flow Faucet Aerator Replacement - INDOOR	4	3	75	22,714	0	\$0	\$100,000.00
167	Low Flow Faucet Aerator Replacement - INDOOR	4	2	75	4,842	0	\$0	\$100,000.00
168	Low Flow Faucet Aerator Replacement - INDOOR	4	1	75	1,054	0	\$0	\$100,000.00
169	Low Flow Faucet Aerator Replacement - INDOOR	3	3	75	35,732	0	\$0	\$100,000.00
170	Low Flow Faucet Aerator Replacement - INDOOR	3	2	75	4,382	0	\$0	\$100,000.00
171	Low Flow Faucet Aerator Replacement - INDOOR	3	1	75	326	0	\$0	\$100,000.00
172	Low Flow Faucet Aerator Replacement - INDOOR	2	3	75	29,909	0	\$0	\$100,000.00
173	Low Flow Faucet Aerator Replacement - INDOOR	2	2	75	7,500	0	\$0	\$100,000.00
174	Low Flow Faucet Aerator Replacement - INDOOR	2	1	75	990	0	\$0	\$100,000.00
175	Low Flow Faucet Aerator Replacement - INDOOR	1	3	75	17,488	0	\$0	\$100,000.00
176	Low Flow Faucet Aerator Replacement - INDOOR	1	2	75	14,106	0	\$0	\$100,000.00
177	Low Flow Volume Showerhead Replacement - INDOOR	1	1	75	727	0	\$0	\$0.00
178	Low Flow Volume Showerhead Replacement - INDOOR	6	2	75	1,158	0	\$0	\$100,000.00
179	Low Flow Volume Showerhead Replacement - INDOOR	6	1	75	9	0	\$0	\$100,000.00
180	Low Flow Volume Showerhead Replacement - INDOOR	5	2	75	1,562	0	\$0	\$100,000.00
181	Low Flow Volume Showerhead Replacement - INDOOR	5	1	75	144	0	\$0	\$100,000.00
182	Low Flow Volume Showerhead Replacement - INDOOR	4	2	75	1,120	0	\$0	\$100,000.00
183	Low Flow Volume Showerhead Replacement - INDOOR	4	1	75	139	0	\$0	\$100,000.00
184	Low Flow Volume Showerhead Replacement - INDOOR	3	2	75	1,014	0	\$0	\$100,000.00
185	Low Flow Volume Showerhead Replacement - INDOOR	3	1	75	43	0	\$0	\$100,000.00
186	Low Flow Volume Showerhead Replacement - INDOOR	2	2	75	1,735	0	\$0	\$100,000.00
187	Low Flow Volume Showerhead Replacement - INDOOR	2	1	75	131	0	\$0	\$100,000.00
188	Low Flow Volume Showerhead Replacement - INDOOR	1	2	75	3,264	0	\$0	\$100,000.00
189	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	6	4	100	0	0	\$0	\$100,000.00
190	Ultra Low Flush Toilet Replacement Program - INDOOR	6	2	75	11,579	0	\$0	\$100,000.00
191	Ultra Low Flush Toilet Replacement Program - INDOOR	6	1	75	72	0	\$0	\$100,000.00
192	Ultra Low Flush Toilet Replacement Program - INDOOR	5	2	75	15,624	0	\$0	\$100,000.00
193	Ultra Low Flush Toilet Replacement Program - INDOOR	5	1	75	1,147	0	\$0	\$100,000.00
194	Ultra Low Flush Toilet Replacement Program - INDOOR	4	2	75	11,206	0	\$0	\$100,000.00
195	Ultra Low Flush Toilet Replacement Program - INDOOR	4	1	75	1,109	0	\$0	\$100,000.00
196	Ultra Low Flush Toilet Replacement Program - INDOOR	3	2	75	10,140	0	\$0	\$100,000.00
197	Ultra Low Flush Toilet Replacement Program - INDOOR	3	1	75	343	0	\$0	\$100,000.00
198	Ultra Low Flush Toilet Replacement Program - INDOOR	2	2	75	17,356	0	\$0	\$100,000.00
199	Ultra Low Flush Toilet Replacement Program - INDOOR	2	1	75	1,042	0	\$0	\$100,000.00
200	Ultra Low Flush Toilet Replacement Program - INDOOR	1	2	75	32,644	0	\$0	\$100,000.00
201	Ultra Low Flush Toilet Replacement Program - INDOOR	1	1	75	5,784	0	\$0	\$100,000.00

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Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	OFFICE BUILDINGS	4	100	0	31,245	\$0	\$0.00
2	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	3	75	0	5,003	\$191,250	\$8.40
3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	3	75	0	4,110	\$1,260	\$0.07
4	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	3	75	0	3,838	\$525,000	\$30.07
5	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	3	75	0	3,504	\$720	\$0.05
6	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RETAIL	4	100	0	3,137	\$0	\$0.00
7	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	0	2,801	\$78,750	\$6.18
8	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	SCHOOLS	4	100	0	2,420	\$0	\$0.00
9	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	3	75	0	2,260	\$2,175,000	\$211.59
10	Waterless Urinal Replacement Program - INDOOR	RETAIL	3	75	0	1,951	\$56,719	\$6.39
11	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RESTAURANTS	4	100	0	1,818	\$0	\$0.00
12	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	3	75	2,001	1,751	\$114,100	\$14.33
13	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	0	1,217	\$6,563	\$1.19
14	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	HOTELS	4	100	0	1,052	\$0	\$0.00
15	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	1,120	980	\$46,900	\$10.52
16	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	INDOOR RECREATION	4	100	0	921	\$0	\$0.00
17	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	2	75	0	905	\$450	\$0.11
18	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	3	75	0	818	\$2,610	\$0.70
19	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	LIVE-IN CARE	4	100	0	720	\$0	\$0.00
20	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	3	75	780	683	\$33,880	\$10.91
21	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	0	662	\$23,906	\$7.93
22	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	723	633	\$14,140	\$4.91
23	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	2	75	0	595	\$22,969	\$8.49
24	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	0	577	\$9,375	\$3.57
25	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	0	573	\$105,469	\$40.48
26	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	2	75	649	568	\$13,580	\$5.26
27	Urinal Replacement Program - INDOOR	SCHOOLS	3	75	2,001	500	\$27,540	\$12.10
28	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	3	75	519	454	\$103,328	\$50.03
29	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	487	426	\$7,840	\$4.05
30	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	2	75	0	417	\$450	\$0.24
31	High Efficiency Showerhead Replacement - INDOOR	HOTELS	3	75	653	327	\$7,381	\$4.97
32	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	1,120	280	\$11,340	\$8.90
33	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	0	268	\$2,344	\$1.92
34	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	293	256	\$2,800	\$2.40
35	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	0	202	\$4,688	\$5.10
36	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	231	202	\$11,200	\$12.20
37	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	229	200	\$62,860	\$68.92
38	Urinal Replacement Program - INDOOR	RETAIL	3	75	780	195	\$8,168	\$9.20
39	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	220	193	\$5,600	\$6.39
40	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	384	192	\$2,810	\$3.21
41	Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	487	122	\$945	\$1.71
42	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	429	107	\$3,443	\$7.06
43	Urinal Replacement Program - INDOOR	SCHOOLS	2	75	385	96	\$3,308	\$7.56
44	Waterless Urinal Replacement Program - INDOOR	RETAIL	2	75	0	70	\$7,969	\$25.02
45	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	2	75	76	67	\$4,620	\$15.19
46	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	1	75	0	63	\$3,750	\$13.03
47	Urinal Replacement Program - INDOOR	INDOOR RECREATION	3	75	231	58	\$1,350	\$5.15

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Commercial Conservation Practices : sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
48	Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	229	57	\$15,188	\$58.28
49	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	1	75	0	44	\$90	\$0.45
50	Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	173	43	\$338	\$1.71
51	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	1	75	45	40	\$2,100	\$11.69
52	Urinal Replacement Program - INDOOR	INDOOR RECREATION	2	75	131	33	\$675	\$4.55
53	Urinal Replacement Program - INDOOR	RETAIL	2	75	45	11	\$1,148	\$22.28
54	Urinal Replacement Program - INDOOR	SCHOOLS	1	75	36	9	\$540	\$13.25
55	Waterless Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	0	6	\$469	\$16.00
56	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	0	5	\$469	\$18.87
57	High Efficiency Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	5	4	\$560	\$30.61
58	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	4	3	\$420	\$27.08
59	Urinal Replacement Program - INDOOR	INDOOR RECREATION	1	75	4	1	\$68	\$16.27
60	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	3	1	\$68	\$19.19
61	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	WAREHOUSES/STORAGE	4	100	0	0	\$0	\$100,000.00
62	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
63	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
64	Water Reuse/Recycling Laundry Machines – INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
65	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
66	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
67	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
68	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
69	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
70	Waterless Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
71	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
72	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
73	Urinal Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
74	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
75	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
76	High Efficiency Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
77	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
78	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
79	Ultra Low Flush Toilet Replacement Program - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
80	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
81	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
82	Low Flow Faucet Aerator Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
83	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
84	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
85	High Efficiency Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
86	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	3	75	0	0	\$0	\$100,000.00
87	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	2	75	0	0	\$0	\$100,000.00
88	Low Flow Volume Showerhead Replacement - INDOOR	WAREHOUSES/STORAGE	1	75	0	0	\$0	\$100,000.00
89	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	3	75	0	0	\$600,000	\$100,000.00
90	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	2	75	0	0	\$375,000	\$100,000.00
91	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	1	75	0	0	\$75,000	\$100,000.00
92	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	3	75	0	0	\$0	\$100,000.00
93	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	2	75	1,096	0	\$0	\$100,000.00
94	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	1	75	53	0	\$0	\$100,000.00

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Commercial Conservation Practices : sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
95	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	3	75	5,648	0	\$0	\$100,000.00
96	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	2	75	703	0	\$0	\$100,000.00
97	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	1	75	75	0	\$0	\$100,000.00
98	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	3	75	0	0	\$0	\$100,000.00
99	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	2	75	0	0	\$0	\$100,000.00
100	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	1	75	0	0	\$0	\$100,000.00
101	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	3	75	0	0	\$0	\$100,000.00
102	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	2	75	0	0	\$0	\$100,000.00
103	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	1	75	0	0	\$0	\$100,000.00
104	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	3	75	0	0	\$3,525,000	\$100,000.00
105	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	2	75	0	0	\$225,000	\$100,000.00
106	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
107	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	3	75	0	0	\$4,230	\$100,000.00
108	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	2	75	0	0	\$270	\$100,000.00
109	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
110	Waterless Urinal Replacement Program - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
111	Urinal Replacement Program - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
112	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
113	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
114	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	2	75	129	0	\$0	\$100,000.00
115	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
116	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	3	75	2,203	0	\$0	\$100,000.00
117	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	2	75	83	0	\$0	\$100,000.00
118	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
119	High Efficiency Showerhead Replacement - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
120	High Efficiency Showerhead Replacement - INDOOR	RETAIL	2	75	0	0	\$0	\$100,000.00
121	High Efficiency Showerhead Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
122	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
123	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	2	75	0	0	\$0	\$100,000.00
124	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
125	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	3	75	0	0	\$1,050,000	\$100,000.00
126	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	2	75	0	0	\$375,000	\$100,000.00
127	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
128	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
129	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
130	Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
131	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
132	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	0	0	\$0	\$100,000.00
133	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	494	0	\$0	\$100,000.00
134	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
135	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	3	75	1,374	0	\$0	\$100,000.00
136	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	2	75	317	0	\$0	\$100,000.00
137	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
138	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	3	75	0	0	\$140	\$100,000.00
139	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	2	75	0	0	\$50	\$100,000.00
140	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
141	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	3	75	0	0	\$0	\$100,000.00

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Commercial Conservation Practices : sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
142	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	2	75	0	0	\$43	\$100,000.00
143	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
144	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	3	75	0	0	\$6,375,000	\$100,000.00
145	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	2	75	0	0	\$3,675,000	\$100,000.00
146	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	1	75	0	0	\$150,000	\$100,000.00
147	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$7,650	\$100,000.00
148	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$4,410	\$100,000.00
149	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$180	\$100,000.00
150	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
151	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	1,221	0	\$0	\$100,000.00
152	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	5	0	\$0	\$100,000.00
153	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	3	75	3,162	0	\$0	\$100,000.00
154	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	2	75	783	0	\$0	\$100,000.00
155	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	1	75	6	0	\$0	\$100,000.00
156	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
157	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$0	\$100,000.00
158	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$0	\$100,000.00
159	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
160	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$0	\$100,000.00
161	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$0	\$100,000.00
162	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	2	75	0	0	\$450,000	\$100,000.00
163	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	1	75	0	0	\$75,000	\$100,000.00
164	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	2	75	0	0	\$540	\$100,000.00
165	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	1	75	0	0	\$90	\$100,000.00
166	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	0	0	\$9,844	\$100,000.00
167	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	0	0	\$1,875	\$100,000.00
168	Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	0	0	\$1,418	\$100,000.00
169	Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	0	0	\$270	\$100,000.00
170	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	0	0	\$5,880	\$100,000.00
171	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	0	0	\$980	\$100,000.00
172	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	0	0	\$0	\$100,000.00
173	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	0	0	\$0	\$100,000.00
174	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	0	0	\$0	\$100,000.00
175	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	3	75	647	0	\$0	\$100,000.00
176	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	2	75	0	0	\$0	\$100,000.00
177	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	1	75	0	0	\$0	\$100,000.00
178	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	0	0	\$260	\$100,000.00
179	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	0	0	\$40	\$100,000.00
180	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	0	0	\$0	\$100,000.00
181	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	0	0	\$223	\$100,000.00
182	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	0	0	\$20	\$100,000.00
183	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	3	75	0	0	\$1,500,000	\$100,000.00
184	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	2	75	0	0	\$750,000	\$100,000.00
185	Water Reuse/Recycling Laundry Machines – INDOOR	INDOOR RECREATION	1	75	0	0	\$75,000	\$100,000.00
186	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	3	75	0	0	\$1,800	\$100,000.00
187	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	2	75	0	0	\$900	\$100,000.00
188	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	INDOOR RECREATION	1	75	0	0	\$90	\$100,000.00

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Commercial Conservation Practices : sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
189	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	3	75	0	0	\$0	\$100,000.00
190	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	2	75	372	0	\$0	\$100,000.00
191	Ultra Low Flush Toilet Replacement Program - INDOOR	INDOOR RECREATION	1	75	5	0	\$0	\$100,000.00
192	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	3	75	651	0	\$0	\$100,000.00
193	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	2	75	238	0	\$0	\$100,000.00
194	Low Flow Faucet Aerator Replacement - INDOOR	INDOOR RECREATION	1	75	8	0	\$0	\$100,000.00
195	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	0	0	\$200	\$100,000.00
196	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	0	0	\$100	\$100,000.00
197	High Efficiency Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	0	0	\$10	\$100,000.00
198	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	3	75	0	0	\$0	\$100,000.00
199	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	2	75	0	0	\$86	\$100,000.00
200	Low Flow Volume Showerhead Replacement - INDOOR	INDOOR RECREATION	1	75	0	0	\$5	\$100,000.00
201	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	2	75	0	0	\$75,000	\$100,000.00
202	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
203	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	3	75	0	0	\$630	\$100,000.00
204	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	2	75	0	0	\$90	\$100,000.00
205	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
206	Waterless Urinal Replacement Program - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
207	Waterless Urinal Replacement Program - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
208	Waterless Urinal Replacement Program - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
209	Urinal Replacement Program - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
210	Urinal Replacement Program - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
211	Urinal Replacement Program - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
212	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
213	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
214	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
215	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
216	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
217	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	3	75	1,098	0	\$0	\$100,000.00
218	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
219	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
220	High Efficiency Showerhead Replacement - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
221	High Efficiency Showerhead Replacement - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
222	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
223	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
224	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
225	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	HOSPITALS	4	100	0	0	\$0	\$100,000.00
226	Water Reuse/Recycling Laundry Machines – INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
227	Water Reuse/Recycling Laundry Machines – INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
228	Water Reuse/Recycling Laundry Machines – INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
229	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
230	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
231	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
232	Waterless Urinal Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
233	Waterless Urinal Replacement Program - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
234	Waterless Urinal Replacement Program - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
235	Urinal Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00

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Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
236	Urinal Replacement Program - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
237	Urinal Replacement Program - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
238	High Efficiency Toilet Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
239	High Efficiency Toilet Replacement Program - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
240	High Efficiency Toilet Replacement Program - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
241	Ultra Low Flush Toilet Replacement Program - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
242	Ultra Low Flush Toilet Replacement Program - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
243	Ultra Low Flush Toilet Replacement Program - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
244	Low Flow Faucet Aerator Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
245	Low Flow Faucet Aerator Replacement - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
246	Low Flow Faucet Aerator Replacement - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
247	High Efficiency Showerhead Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
248	High Efficiency Showerhead Replacement - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
249	High Efficiency Showerhead Replacement - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00
250	Low Flow Volume Showerhead Replacement - INDOOR	HOSPITALS	3	75	0	0	\$0	\$100,000.00
251	Low Flow Volume Showerhead Replacement - INDOOR	HOSPITALS	2	75	0	0	\$0	\$100,000.00
252	Low Flow Volume Showerhead Replacement - INDOOR	HOSPITALS	1	75	0	0	\$0	\$100,000.00

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L. Palm Coast - Efficient Use Benchmarks Per Residential Category and Build Out Condition

Res Class	Build Out Condition	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	0.035	0.056	0.003	0.005	0.010
	1984 - 1993	0.038	0.058	0.003	0.005	0.010
	1994 to Present	0.049	0.072	0.003	0.005	0.011
	Future	0.047	0.069	0.003	0.005	0.010
RS2	Pre 1984	0.033	0.050	0.003	0.006	0.010
	1984 - 1993	0.032	0.048	0.003	0.006	0.010
	1994 to Present	0.040	0.056	0.003	0.006	0.011
	Future	0.037	0.053	0.003	0.006	0.011
RS3	Pre 1984	0.028	0.043	0.003	0.006	0.009
	1984 - 1993	0.029	0.042	0.004	0.008	0.011
	1994 to Present	0.034	0.046	0.004	0.008	0.013
	Future	0.031	0.043	0.004	0.008	0.012
RS4	Pre 1984	0.030	0.049	0.004	0.007	0.010
	1984 - 1993	0.037	0.056	0.008	0.018	0.019
	1994 to Present	0.032	0.044	0.006	0.012	0.014
	Future	0.029	0.041	0.005	0.012	0.013
RS5	Pre 1984	0.035	0.054	0.002	0.004	0.008
	1984 - 1993	0.028	0.046	0.006	0.019	0.015
	1994 to Present	0.029	0.043	0.006	0.013	0.014
	Future	0.027	0.039	0.006	0.012	0.013
HD	Pre 1984	0.021	0.029	na	na	0.005
	1984 - 1993	0.032	0.043	na	na	0.008
	1994 to Present	0.032	0.044	na	na	0.010
	Future	0.032	0.044	na	na	0.010

Palm Coast - Efficient Use Benchmarks Per Non-Residential Category and Build Out Condition*

	Build Out Condition	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
HOTELS	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	0.119	0.128	0.030
	Future	0.120	0.129	0.030
INDOOR RECREATION	Pre 1984	0.028	0.030	0.001
	1984 - 1993	0.035	0.038	0.002
	1994 to Present	0.062	0.065	0.004
	Future	0.062	0.066	0.004
LIVE-IN CARE	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	0.084	0.103	0.014
	Future	0.089	0.109	0.015
MANUFACTURING	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
OFFICE BUILDINGS	Pre 1984	0.060	0.067	0.005
	1984 - 1993	0.084	0.094	0.007
	1994 to Present	0.109	0.141	0.013
	Future	0.110	0.142	0.013
OUTDOOR RECREATION	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
RESTAURANTS	Pre 1984	na	na	na
	1984 - 1993	0.236	0.268	0.028
	1994 to Present	0.548	0.562	0.034
	Future	0.617	0.632	0.038
RETAIL	Pre 1984	na	na	na
	1984 - 1993	0.012	0.013	0.002
	1994 to Present	0.046	0.053	0.008
	Future	0.046	0.053	0.008
SCHOOLS	Pre 1984	na	na	na
	1984 - 1993	0.039	0.039	0.006
	1994 to Present	0.568	0.582	0.004
	Future	0.600	0.616	0.004

* Efficient use benchmarks are not calculated for categories whose end uses are too variable to assign conservation practices to or when there are insufficient data to develop water use benchmarks.

Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	1.02	0.80
RES-2	1.08	0.88
RES-3	1.20	1.00
RES-4	0.95	0.80
RES-5	1.01	0.84
RES-6	0.22	0.17
Schools	0.15	0.13
Office Buildings	0.12	0.11
Retail	0.09	0.08
Manufacturing	0.07	0.07



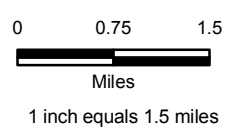
Legend

- RS1
- RS2
- RS3
- RS4
- RS5
- RS6
- Office Buildings
- Restaurants
- Retail
- Schools

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M.
**Geographic Distribution of Top Water Use Categories,
 Typical Use, & Conservation Savings Gain
 Palm Coast Utilities**



N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Residential Category	Buildout Condition	Residential Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS1	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	0	242,124	\$0	\$0.00
RS1	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	85,666	\$0	\$0.00
RS1	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,302	0	\$0	\$0.00
RS1	1	High Efficiency Dishwashers - INDOOR	75	518	0	\$0	\$0.00
RS1	1	Low Flow Faucet Aerator Replacement - INDOOR	75	5,497	0	\$0	\$0.00
RS1	1	Low Flow Volume Showerhead Replacement - INDOOR	75	727	0	\$0	\$0.00
RS1	1	High Efficiency Showerhead Replacement - INDOOR	75	3,354	1,677	\$23,100	\$1.01
RS1	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	3,098	\$35,100	\$2.49
RS1	2	High Efficiency Showerhead Replacement - INDOOR	75	8,966	4,483	\$57,440	\$2.82
RS1	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	7,434	\$95,850	\$2.83
RS1	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	6,349	\$83,250	\$2.88
RS1	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	3,098	\$46,800	\$3.32
RS1	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	7,434	\$127,800	\$3.78
RS1	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	6,349	\$111,000	\$3.84
RS1	1	High Efficiency Toilet Replacement Program - INDOOR	75	4,928	4,312	\$323,400	\$7.70
RS1	2	High Efficiency Toilet Replacement Program - INDOOR	75	19,340	16,922	\$804,160	\$10.45
RS1	3	High Efficiency Toilet Replacement Program - INDOOR	75	9,136	7,994	\$1,032,080	\$28.38
RS1	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	911	\$160,650	\$38.77
RS1	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	1,784	\$358,050	\$44.12
RS1	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	1,867	\$381,150	\$44.89
RS1	1	Landscape Replacement Program - OUTDOOR	50	0	6,857	\$2,742,500	\$87.93
RS1	3	Landscape Replacement Program - OUTDOOR	50	0	21,062	\$8,755,000	\$91.38
RS1	2	Landscape Replacement Program - OUTDOOR	50	0	16,335	\$6,820,000	\$91.79
RS1	3	High Efficiency Clothes Washer Replacement - INDOOR	75	5,146	0	\$0	\$100,000.00
RS1	2	High Efficiency Clothes Washer Replacement - INDOOR	75	3,748	0	\$0	\$100,000.00
RS1	3	High Efficiency Dishwashers - INDOOR	75	1,704	0	\$0	\$100,000.00
RS1	2	High Efficiency Dishwashers - INDOOR	75	1,328	0	\$0	\$100,000.00
RS1	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$73,720	\$100,000.00
RS1	3	Low Flow Faucet Aerator Replacement - INDOOR	75	17,488	0	\$0	\$100,000.00
RS1	2	Low Flow Faucet Aerator Replacement - INDOOR	75	14,106	0	\$0	\$100,000.00
RS1	2	Low Flow Volume Showerhead Replacement - INDOOR	75	3,264	0	\$0	\$100,000.00
RS1	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	32,644	0	\$0	\$100,000.00
RS1	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5,784	0	\$0	\$100,000.00
RS2	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	0	16,584	\$0	\$0.00
RS2	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	5,144	\$0	\$0.00
RS2	2	High Efficiency Showerhead Replacement - INDOOR	75	4,767	2,383	\$21,570	\$1.99
RS2	1	High Efficiency Showerhead Replacement - INDOOR	75	604	302	\$2,820	\$2.05
RS2	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	5,046	\$57,150	\$2.49
RS2	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	17,017	\$207,000	\$2.67
RS2	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	624	\$7,650	\$2.69
RS2	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	5,046	\$76,200	\$3.32
RS2	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	17,017	\$276,000	\$3.57
RS2	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	624	\$10,200	\$3.59
RS2	2	High Efficiency Toilet Replacement Program - INDOOR	75	10,282	8,997	\$402,640	\$9.84
RS2	1	High Efficiency Toilet Replacement Program - INDOOR	75	888	777	\$52,640	\$14.90
RS2	3	High Efficiency Toilet Replacement Program - INDOOR	75	15,625	13,672	\$1,657,600	\$26.65
RS2	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	1,483	\$261,450	\$38.74

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Residential Category	Buildout Condition	Residential Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS2	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	4,084	\$772,800	\$41.60
RS2	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	184	\$35,700	\$42.77
RS2	2	Landscape Replacement Program - OUTDOOR	50	0	10,245	\$3,415,000	\$73.28
RS2	1	Landscape Replacement Program - OUTDOOR	50	0	1,284	\$447,500	\$76.62
RS2	3	Landscape Replacement Program - OUTDOOR	50	0	36,902	\$14,060,000	\$83.76
RS2	3	High Efficiency Clothes Washer Replacement - INDOOR	75	8,801	0	\$0	\$100,000.00
RS2	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,993	0	\$0	\$100,000.00
RS2	1	High Efficiency Clothes Washer Replacement - INDOOR	75	235	0	\$0	\$100,000.00
RS2	3	High Efficiency Dishwashers - INDOOR	75	2,915	0	\$0	\$100,000.00
RS2	2	High Efficiency Dishwashers - INDOOR	75	706	0	\$0	\$100,000.00
RS2	1	High Efficiency Dishwashers - INDOOR	75	93	0	\$0	\$100,000.00
RS2	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$88,800	\$100,000.00
RS2	3	Low Flow Faucet Aerator Replacement - INDOOR	75	29,909	0	\$0	\$100,000.00
RS2	2	Low Flow Faucet Aerator Replacement - INDOOR	75	7,500	0	\$0	\$100,000.00
RS2	1	Low Flow Faucet Aerator Replacement - INDOOR	75	990	0	\$0	\$100,000.00
RS2	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,735	0	\$0	\$100,000.00
RS2	1	Low Flow Volume Showerhead Replacement - INDOOR	75	131	0	\$0	\$100,000.00
RS2	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	17,356	0	\$0	\$100,000.00
RS2	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,042	0	\$0	\$100,000.00
RS3	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	0	22,409	\$0	\$0.00
RS3	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	5,730	\$0	\$0.00
RS3	2	High Efficiency Showerhead Replacement - INDOOR	75	2,785	1,393	\$11,630	\$1.84
RS3	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	4,514	\$42,300	\$2.06
RS3	1	High Efficiency Showerhead Replacement - INDOOR	75	199	99	\$1,020	\$2.25
RS3	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	29,547	\$311,625	\$2.32
RS3	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	4,514	\$56,400	\$2.75
RS3	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	29,547	\$415,500	\$3.09
RS3	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	188	\$2,700	\$3.16
RS3	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	188	\$3,600	\$4.21
RS3	2	High Efficiency Toilet Replacement Program - INDOOR	75	6,008	5,257	\$217,000	\$9.08
RS3	1	High Efficiency Toilet Replacement Program - INDOOR	75	292	256	\$19,040	\$16.37
RS3	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	1,327	\$194,250	\$32.18
RS3	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	7,091	\$1,163,400	\$36.07
RS3	3	High Efficiency Toilet Replacement Program - INDOOR	75	18,667	16,334	\$2,730,420	\$36.75
RS3	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	55	\$12,600	\$50.18
RS3	2	Landscape Replacement Program - OUTDOOR	50	0	7,393	\$1,840,000	\$54.72
RS3	3	Landscape Replacement Program - OUTDOOR	50	0	52,340	\$15,440,000	\$64.85
RS3	1	Landscape Replacement Program - OUTDOOR	50	0	440	\$162,500	\$81.19
RS3	3	High Efficiency Clothes Washer Replacement - INDOOR	75	10,515	0	\$0	\$100,000.00
RS3	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,164	0	\$0	\$100,000.00
RS3	1	High Efficiency Clothes Washer Replacement - INDOOR	75	77	0	\$0	\$100,000.00
RS3	3	High Efficiency Dishwashers - INDOOR	75	3,483	0	\$0	\$100,000.00
RS3	2	High Efficiency Dishwashers - INDOOR	75	413	0	\$0	\$100,000.00
RS3	1	High Efficiency Dishwashers - INDOOR	75	31	0	\$0	\$100,000.00
RS3	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$162,530	\$100,000.00
RS3	3	Low Flow Faucet Aerator Replacement - INDOOR	75	35,732	0	\$0	\$100,000.00
RS3	2	Low Flow Faucet Aerator Replacement - INDOOR	75	4,382	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Residential Category	Buildout Condition	Residential Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS3	1	Low Flow Faucet Aerator Replacement - INDOOR	75	326	0	\$0	\$100,000.00
RS3	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,014	0	\$0	\$100,000.00
RS3	1	Low Flow Volume Showerhead Replacement - INDOOR	75	43	0	\$0	\$100,000.00
RS3	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	10,140	0	\$0	\$100,000.00
RS3	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	343	0	\$0	\$100,000.00
RS4	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	0	77,255	\$0	\$0.00
RS4	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	15,980	\$0	\$0.00
RS4	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	9,145	\$69,975	\$1.68
RS4	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	32,928	\$261,225	\$1.74
RS4	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	9,145	\$93,300	\$2.24
RS4	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	32,928	\$348,300	\$2.33
RS4	2	High Efficiency Showerhead Replacement - INDOOR	75	3,078	1,539	\$18,880	\$2.70
RS4	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	1,188	\$16,425	\$3.04
RS4	1	High Efficiency Showerhead Replacement - INDOOR	75	643	322	\$5,030	\$3.44
RS4	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	1,188	\$21,900	\$4.05
RS4	2	High Efficiency Toilet Replacement Program - INDOOR	75	6,639	5,809	\$317,100	\$12.00
RS4	1	High Efficiency Toilet Replacement Program - INDOOR	75	945	827	\$84,420	\$22.45
RS4	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	2,689	\$320,250	\$26.19
RS4	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	7,903	\$975,450	\$27.14
RS4	3	High Efficiency Toilet Replacement Program - INDOOR	75	11,866	10,383	\$1,625,820	\$34.42
RS4	2	Landscape Replacement Program - OUTDOOR	50	0	10,617	\$1,792,500	\$37.12
RS4	3	Landscape Replacement Program - OUTDOOR	50	0	44,921	\$9,192,500	\$44.99
RS4	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	349	\$74,550	\$46.94
RS4	1	Landscape Replacement Program - OUTDOOR	50	0	1,715	\$477,500	\$61.20
RS4	3	High Efficiency Clothes Washer Replacement - INDOOR	75	6,684	0	\$0	\$100,000.00
RS4	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,287	0	\$0	\$100,000.00
RS4	1	High Efficiency Clothes Washer Replacement - INDOOR	75	250	0	\$0	\$100,000.00
RS4	3	High Efficiency Dishwashers - INDOOR	75	2,214	0	\$0	\$100,000.00
RS4	2	High Efficiency Dishwashers - INDOOR	75	456	0	\$0	\$100,000.00
RS4	1	High Efficiency Dishwashers - INDOOR	75	99	0	\$0	\$100,000.00
RS4	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$96,780	\$100,000.00
RS4	3	Low Flow Faucet Aerator Replacement - INDOOR	75	22,714	0	\$0	\$100,000.00
RS4	2	Low Flow Faucet Aerator Replacement - INDOOR	75	4,842	0	\$0	\$100,000.00
RS4	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,054	0	\$0	\$100,000.00
RS4	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,120	0	\$0	\$100,000.00
RS4	1	Low Flow Volume Showerhead Replacement - INDOOR	75	139	0	\$0	\$100,000.00
RS4	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	11,206	0	\$0	\$100,000.00
RS4	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,109	0	\$0	\$100,000.00
RS5	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	0	83,492	\$0	\$0.00
RS5	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	13,568	\$0	\$0.00
RS5	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	14,203	\$92,700	\$1.43
RS5	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	42,737	\$280,800	\$1.44
RS5	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	14,203	\$123,600	\$1.91
RS5	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	42,737	\$374,400	\$1.93
RS5	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	816	\$10,575	\$2.85
RS5	2	High Efficiency Showerhead Replacement - INDOOR	75	4,291	2,146	\$36,300	\$3.72
RS5	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	816	\$14,100	\$3.80

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Residential Category	Buildout Condition	Residential Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS5	1	High Efficiency Showerhead Replacement - INDOOR	75	665	332	\$5,880	\$3.89
RS5	2	High Efficiency Toilet Replacement Program - INDOOR	75	9,257	8,100	\$580,720	\$15.76
RS5	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	4,176	\$424,200	\$22.33
RS5	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	10,257	\$1,048,950	\$22.48
RS5	1	High Efficiency Toilet Replacement Program - INDOOR	75	977	855	\$94,080	\$24.20
RS5	2	Landscape Replacement Program - OUTDOOR	50	0	15,931	\$2,462,500	\$33.98
RS5	3	Landscape Replacement Program - OUTDOOR	50	0	48,390	\$7,890,000	\$35.85
RS5	3	High Efficiency Toilet Replacement Program - INDOOR	75	11,021	9,643	\$1,860,320	\$42.41
RS5	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	240	\$48,300	\$44.28
RS5	1	Landscape Replacement Program - OUTDOOR	50	0	1,359	\$400,000	\$64.72
RS5	3	High Efficiency Clothes Washer Replacement - INDOOR	75	6,208	0	\$0	\$100,000.00
RS5	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,794	0	\$0	\$100,000.00
RS5	1	High Efficiency Clothes Washer Replacement - INDOOR	75	258	0	\$0	\$100,000.00
RS5	3	High Efficiency Dishwashers - INDOOR	75	2,056	0	\$0	\$100,000.00
RS5	2	High Efficiency Dishwashers - INDOOR	75	636	0	\$0	\$100,000.00
RS5	1	High Efficiency Dishwashers - INDOOR	75	103	0	\$0	\$100,000.00
RS5	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$116,270	\$100,000.00
RS5	3	Low Flow Faucet Aerator Replacement - INDOOR	75	21,096	0	\$0	\$100,000.00
RS5	2	Low Flow Faucet Aerator Replacement - INDOOR	75	6,752	0	\$0	\$100,000.00
RS5	1	Low Flow Faucet Aerator Replacement - INDOOR	75	1,090	0	\$0	\$100,000.00
RS5	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,562	0	\$0	\$100,000.00
RS5	1	Low Flow Volume Showerhead Replacement - INDOOR	75	144	0	\$0	\$100,000.00
RS5	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	15,624	0	\$0	\$100,000.00
RS5	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,147	0	\$0	\$100,000.00
RS6	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	2,977	\$0	\$0.00
RS6	2	High Efficiency Showerhead Replacement - INDOOR	75	3,180	1,590	\$27,280	\$3.77
RS6	1	High Efficiency Showerhead Replacement - INDOOR	75	42	21	\$700	\$7.34
RS6	2	High Efficiency Toilet Replacement Program - INDOOR	75	6,860	6,002	\$381,920	\$13.99
RS6	3	High Efficiency Toilet Replacement Program - INDOOR	75	3,067	2,684	\$416,920	\$34.15
RS6	1	High Efficiency Toilet Replacement Program - INDOOR	75	62	54	\$9,800	\$39.97
RS6	3	Submetering Billing of Apartment Units - INDOOR	75	0	1,073	\$418,500	\$85.74
RS6	2	Submetering Billing of Apartment Units - INDOOR	75	0	1,767	\$767,250	\$95.47
RS6	1	Submetering Billing of Apartment Units - INDOOR	75	0	24	\$20,250	\$183.47
RS6	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	3	High Efficiency Clothes Washer Replacement - INDOOR	75	1,728	0	\$0	\$100,000.00
RS6	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,330	0	\$0	\$100,000.00
RS6	1	High Efficiency Clothes Washer Replacement - INDOOR	75	16	0	\$0	\$100,000.00
RS6	3	High Efficiency Dishwashers - INDOOR	75	572	0	\$0	\$100,000.00
RS6	2	High Efficiency Dishwashers - INDOOR	75	471	0	\$0	\$100,000.00
RS6	1	High Efficiency Dishwashers - INDOOR	75	6	0	\$0	\$100,000.00
RS6	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$29,780	\$100,000.00
RS6	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

N. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Residential Category	Buildout Condition	Residential Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS6	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	0	0	\$0	\$100,000.00
RS6	3	Landscape Replacement Program - OUTDOOR	50	0	0	\$3,537,500	\$100,000.00
RS6	2	Landscape Replacement Program - OUTDOOR	50	0	0	\$3,240,000	\$100,000.00
RS6	1	Landscape Replacement Program - OUTDOOR	50	0	0	\$82,500	\$100,000.00
RS6	3	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RS6	2	Low Flow Faucet Aerator Replacement - INDOOR	75	5,004	0	\$0	\$100,000.00
RS6	1	Low Flow Faucet Aerator Replacement - INDOOR	75	69	0	\$0	\$100,000.00
RS6	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,158	0	\$0	\$100,000.00
RS6	1	Low Flow Volume Showerhead Replacement - INDOOR	75	9	0	\$0	\$100,000.00
RS6	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	0	0	\$0	\$100,000.00
RS6	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	11,579	0	\$0	\$100,000.00
RS6	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	72	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
HOTELS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	1,052	\$0	\$0.00
HOTELS	3	High Efficiency Showerhead Replacement - INDOOR	75	653	327	\$7,381	\$4.97
HOTELS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	3,838	\$525,000	\$30.07
HOTELS	3	High Efficiency Toilet Replacement Program - INDOOR	75	519	454	\$103,328	\$50.03
HOTELS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
HOTELS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$630	\$100,000.00
HOTELS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$90	\$100,000.00
HOTELS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,098	0	\$0	\$100,000.00
HOTELS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	921	\$0	\$0.00
INDOOR RECREATION	3	Waterless Urinal Replacement Program - INDOOR	75	0	577	\$9,375	\$3.57
INDOOR RECREATION	2	Urinal Replacement Program - INDOOR	75	131	33	\$675	\$4.55
INDOOR RECREATION	2	Waterless Urinal Replacement Program - INDOOR	75	0	202	\$4,688	\$5.10
INDOOR RECREATION	3	Urinal Replacement Program - INDOOR	75	231	58	\$1,350	\$5.15
INDOOR RECREATION	2	High Efficiency Toilet Replacement Program - INDOOR	75	220	193	\$5,600	\$6.39
INDOOR RECREATION	3	High Efficiency Toilet Replacement Program - INDOOR	75	231	202	\$11,200	\$12.20
INDOOR RECREATION	1	Waterless Urinal Replacement Program - INDOOR	75	0	6	\$469	\$16.00
INDOOR RECREATION	1	Urinal Replacement Program - INDOOR	75	4	1	\$68	\$16.27
INDOOR RECREATION	1	High Efficiency Toilet Replacement Program - INDOOR	75	5	4	\$560	\$30.61
INDOOR RECREATION	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$1,500,000	\$100,000.00
INDOOR RECREATION	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$750,000	\$100,000.00
INDOOR RECREATION	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
INDOOR RECREATION	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$1,800	\$100,000.00
INDOOR RECREATION	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$900	\$100,000.00
INDOOR RECREATION	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$90	\$100,000.00
INDOOR RECREATION	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
INDOOR RECREATION	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	372	0	\$0	\$100,000.00
INDOOR RECREATION	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5	0	\$0	\$100,000.00
INDOOR RECREATION	3	Low Flow Faucet Aerator Replacement - INDOOR	75	651	0	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Faucet Aerator Replacement - INDOOR	75	238	0	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Faucet Aerator Replacement - INDOOR	75	8	0	\$0	\$100,000.00
INDOOR RECREATION	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$200	\$100,000.00
INDOOR RECREATION	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$100	\$100,000.00
INDOOR RECREATION	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$10	\$100,000.00
INDOOR RECREATION	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$86	\$100,000.00
INDOOR RECREATION	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$5	\$100,000.00
LIVE-IN CARE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	720	\$0	\$0.00
LIVE-IN CARE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	818	\$2,610	\$0.70
LIVE-IN CARE	3	High Efficiency Showerhead Replacement - INDOOR	75	384	192	\$2,810	\$3.21
LIVE-IN CARE	3	Waterless Urinal Replacement Program - INDOOR	75	0	573	\$105,469	\$40.48
LIVE-IN CARE	3	Urinal Replacement Program - INDOOR	75	229	57	\$15,188	\$58.28
LIVE-IN CARE	3	High Efficiency Toilet Replacement Program - INDOOR	75	229	200	\$62,860	\$68.92
LIVE-IN CARE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	2,260	\$2,175,000	\$211.59
LIVE-IN CARE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$450,000	\$100,000.00
LIVE-IN CARE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
LIVE-IN CARE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$540	\$100,000.00
LIVE-IN CARE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$90	\$100,000.00
LIVE-IN CARE	2	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$9,844	\$100,000.00
LIVE-IN CARE	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$1,875	\$100,000.00
LIVE-IN CARE	2	Urinal Replacement Program - INDOOR	75	0	0	\$1,418	\$100,000.00
LIVE-IN CARE	1	Urinal Replacement Program - INDOOR	75	0	0	\$270	\$100,000.00
LIVE-IN CARE	2	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$5,880	\$100,000.00
LIVE-IN CARE	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$980	\$100,000.00
LIVE-IN CARE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	647	0	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$260	\$100,000.00
LIVE-IN CARE	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$40	\$100,000.00
LIVE-IN CARE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$223	\$100,000.00
LIVE-IN CARE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$20	\$100,000.00
OFFICE BUILDINGS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	31,245	\$0	\$0.00
OFFICE BUILDINGS	2	High Efficiency Toilet Replacement Program - INDOOR	75	723	633	\$14,140	\$4.91
OFFICE BUILDINGS	3	Waterless Urinal Replacement Program - INDOOR	75	0	2,801	\$78,750	\$6.18
OFFICE BUILDINGS	2	Urinal Replacement Program - INDOOR	75	429	107	\$3,443	\$7.06
OFFICE BUILDINGS	2	Waterless Urinal Replacement Program - INDOOR	75	0	662	\$23,906	\$7.93
OFFICE BUILDINGS	3	Urinal Replacement Program - INDOOR	75	1,120	280	\$11,340	\$8.90

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
OFFICE BUILDINGS	3	High Efficiency Toilet Replacement Program - INDOOR	75	1,120	980	\$46,900	\$10.52
OFFICE BUILDINGS	1	Waterless Urinal Replacement Program - INDOOR	75	0	5	\$469	\$18.87
OFFICE BUILDINGS	1	Urinal Replacement Program - INDOOR	75	3	1	\$68	\$19.19
OFFICE BUILDINGS	1	High Efficiency Toilet Replacement Program - INDOOR	75	4	3	\$420	\$27.08
OFFICE BUILDINGS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$6,375,000	\$100,000.00
OFFICE BUILDINGS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,675,000	\$100,000.00
OFFICE BUILDINGS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$150,000	\$100,000.00
OFFICE BUILDINGS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$7,650	\$100,000.00
OFFICE BUILDINGS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$4,410	\$100,000.00
OFFICE BUILDINGS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$180	\$100,000.00
OFFICE BUILDINGS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,221	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	3,162	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	783	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	6	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	1,818	\$0	\$0.00
RESTAURANTS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	4,110	\$1,260	\$0.07
RESTAURANTS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	905	\$450	\$0.11
RESTAURANTS	3	Waterless Urinal Replacement Program - INDOOR	75	0	1,217	\$6,563	\$1.19
RESTAURANTS	3	Urinal Replacement Program - INDOOR	75	487	122	\$945	\$1.71
RESTAURANTS	2	Urinal Replacement Program - INDOOR	75	173	43	\$338	\$1.71
RESTAURANTS	2	Waterless Urinal Replacement Program - INDOOR	75	0	268	\$2,344	\$1.92
RESTAURANTS	2	High Efficiency Toilet Replacement Program - INDOOR	75	293	256	\$2,800	\$2.40
RESTAURANTS	3	High Efficiency Toilet Replacement Program - INDOOR	75	487	426	\$7,840	\$4.05
RESTAURANTS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$1,050,000	\$100,000.00
RESTAURANTS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$375,000	\$100,000.00
RESTAURANTS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	494	0	\$0	\$100,000.00
RESTAURANTS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,374	0	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	317	0	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$140	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RESTAURANTS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$50	\$100,000.00
RESTAURANTS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$43	\$100,000.00
RESTAURANTS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	3,137	\$0	\$0.00
RETAIL	3	Waterless Urinal Replacement Program - INDOOR	75	0	1,951	\$56,719	\$6.39
RETAIL	3	Urinal Replacement Program - INDOOR	75	780	195	\$8,168	\$9.20
RETAIL	3	High Efficiency Toilet Replacement Program - INDOOR	75	780	683	\$33,880	\$10.91
RETAIL	2	High Efficiency Toilet Replacement Program - INDOOR	75	76	67	\$4,620	\$15.19
RETAIL	2	Urinal Replacement Program - INDOOR	75	45	11	\$1,148	\$22.28
RETAIL	2	Waterless Urinal Replacement Program - INDOOR	75	0	70	\$7,969	\$25.02
RETAIL	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,525,000	\$100,000.00
RETAIL	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$225,000	\$100,000.00
RETAIL	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$4,230	\$100,000.00
RETAIL	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$270	\$100,000.00
RETAIL	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	129	0	\$0	\$100,000.00
RETAIL	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Low Flow Faucet Aerator Replacement - INDOOR	75	2,203	0	\$0	\$100,000.00
RETAIL	2	Low Flow Faucet Aerator Replacement - INDOOR	75	83	0	\$0	\$100,000.00
RETAIL	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	2,420	\$0	\$0.00
SCHOOLS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	3,504	\$720	\$0.05
SCHOOLS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	417	\$450	\$0.24
SCHOOLS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	44	\$90	\$0.45
SCHOOLS	2	High Efficiency Toilet Replacement Program - INDOOR	75	649	568	\$13,580	\$5.26
SCHOOLS	2	Urinal Replacement Program - INDOOR	75	385	96	\$3,308	\$7.56
SCHOOLS	3	Waterless Urinal Replacement Program - INDOOR	75	0	5,003	\$191,250	\$8.40
SCHOOLS	2	Waterless Urinal Replacement Program - INDOOR	75	0	595	\$22,969	\$8.49
SCHOOLS	1	High Efficiency Toilet Replacement Program - INDOOR	75	45	40	\$2,100	\$11.69
SCHOOLS	3	Urinal Replacement Program - INDOOR	75	2,001	500	\$27,540	\$12.10
SCHOOLS	1	Waterless Urinal Replacement Program - INDOOR	75	0	63	\$3,750	\$13.03
SCHOOLS	1	Urinal Replacement Program - INDOOR	75	36	9	\$540	\$13.25

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Measure	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
SCHOOLS	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,001	1,751	\$114,100	\$14.33
SCHOOLS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$600,000	\$100,000.00
SCHOOLS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$375,000	\$100,000.00
SCHOOLS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
SCHOOLS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,096	0	\$0	\$100,000.00
SCHOOLS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	53	0	\$0	\$100,000.00
SCHOOLS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	5,648	0	\$0	\$100,000.00
SCHOOLS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	703	0	\$0	\$100,000.00
SCHOOLS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	75	0	\$0	\$100,000.00
SCHOOLS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

APPENDIX L

ST. JOHNS COUNTY ANALYSIS PACKAGE

Appendix L

St. Johns County Utility Department

- A. Account Level Screening
- B. Benchmarks Per Residential Category and Build-out Condition for Accounts with No Seasonal Behavior
- C. Benchmarks per Residential Category and Build-out Condition for All Accounts
- D. Benchmarks per Non-Residential Category and Build-out Condition for All Accounts
- E. Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use
- F. Percentage of Accounts Likely using an In-Ground Irrigation System connected to the Public Water Supply
- G. Bill Frequency Analysis
- H. Cost Effective Water Conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 year Planning Horizon
- I. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon
- J. Residential and Commercial BMP Conservation Practices with a 1 year Implementation Period sorted by Program Water Savings
- K. Efficient Water Use Benchmarks
- L. GIS Maps Illustrating the Geographic Distribution of the Top Water Use Categories within the Service Area Boundary
- M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon Period for a 1 year Program Implementation Period

A. Account Level Data Screening to Generate Benchmarks for Single Family Accounts

Background:

Account level water consumption data is complex, variable and unique to each utility. Joining the account water consumption data with District population and property appraiser geospatial data results in inconsistencies and anomalies that need to be recognized, evaluated and cleaned in order to generate meaningful water consumption benchmarks and statistics. The following summarizes the analysis performed to calculate water consumption benchmarks and statistics.

Analysis	Reason for Step in Analysis	Utility Specific Notes
Initial screens		
Screen Accounts with no total consumption	Removes accounts with no consumption over period of analysis less than 15,000 gallons total water use.	NA
Screen Accounts with population less than one	Removes accounts with population less than one person to avoid overestimating per capita use	NA
Screen by Department of Revenue Code	Isolate account that are single family in account billing records and property appraisal database	NA
Isolate period of analysis for each utility	Look at aggregate billing data anomalies to find abnormal consumption trends: abnormally low, low/high switching, abnormally high.	Palm Coast- Jan'08 was dropped, SJUD does not include Nov,Dec-'09, Palm Bay does not in Oct, Nov, Dec-09. Leesburg November data was consider for removal due to numerous skipped reads.
Evaluate accounts with no seasonal or transient behavior		
Screen for Year Built	Capture accounts with water consumption for three build out conditions	
Capture accounts that have min month above min threshold	Develop a clean data set to compare against industry benchmarks for occupied homes and develop an understanding for indoor/outdoor use characteristics. Use this dataset to run tests and to check quality of analyses on large accounts dataset that include accounts with transient behavior.	Minimum threshold developed for each utility as the average population per account multiplied by the min indoor usage of 60 gallons per person per day.
Evaluate all accounts		
Separate transient accounts from accounts with anomalously low consumption	If account has less than 15,000 gallons of consumption for period of analysis it is exclude from analysis. There are accounts with population, but look to be vacated over the period of the analysis.	This analysis keeps accounts that average at least 1000 gallons per month. There are many account in Palm Bay and Palm Coast that have low and continuous consumption between 1000 and 3000 gallons per month.
Assign indoor use to transient accounts that have minimum month of zero.	For accounts with a min month of zero, the min month hydrograph separation will assign all water consumption as outdoor. For accounts with min month equaling zero and consumption in other months, indoor consumption in months with consumption is set to the average consumption for the period.	This has the tendency to over predict indoor consumption in transient accounts. But checks against clean datasets are within reason.
Screen for minimum irrigable area	Used in calculating outdoor benchmarks and to avoid small denominators from benchmark calculations (Subtracting house area from parcel area can lead to small or negative numbers).	

B. SJCUD - Benchmarks Per Residential Category and Build Out Condition for Accounts with No Seasonal Behavior

Res Class	Build Out Condition	Population	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)
RS1	Pre 1984	684	38.79	69.31	108.10
	1984 - 1993	335	38.04	71.57	109.62
	1994 to Present	456	51.04	69.55	120.58
RS2	Pre 1984	310	34.78	67.24	102.02
	1984 - 1993	505	38.28	66.05	104.34
	1994 to Present	1,290	54.97	69.77	124.74
RS3	Pre 1984	298	37.41	62.12	99.54
	1984 - 1993	433	32.26	63.97	96.23
	1994 to Present	1,838	63.52	71.84	135.36
RS4	Pre 1984	137	46.51	64.78	111.28
	1984 - 1993	251	42.03	74.04	116.06
	1994 to Present	1,153	68.26	73.24	141.50
RS5	Pre 1984	119	76.04	88.88	164.93
	1984 - 1993	129	80.99	94.29	175.29
	1994 to Present	738	87.93	84.18	172.11

C. SJCUD - Benchmarks Per Residential Category and Build Out Condition for All Accounts

Res Class	Build Out Condition	Number of Records	Avg Yr Built	Average Monthly Average (gal/month)	Average Monthly Max (gal/month)	Average Per Capita Outdoor (gpcd)	Average Per Capita Indoor (gpcd)	Average Per Capita Total (gpcd)	StdDev of Per Capita Total (gpcd)
RS1	Pre 1984	1,665	1974	3,890	8,811	24.14	40.89	65.02	40.50
	1984 - 1993	535	1987	4,558	9,736	26.54	45.17	71.71	43.87
	1994 to Present	701	2001	5,379	11,504	36.27	44.81	81.07	47.59
RS2	Pre 1984	692	1972	4,244	10,235	25.54	40.03	65.57	38.05
	1984 - 1993	766	1989	4,615	10,149	26.90	44.36	71.26	37.23
	1994 to Present	2,122	2002	5,269	11,863	36.93	45.73	82.66	55.59
RS3	Pre 1984	520	1972	4,252	10,168	25.97	39.92	65.89	40.89
	1984 - 1993	619	1989	4,494	10,094	25.88	45.01	70.89	40.93
	1994 to Present	2,963	2003	5,825	13,657	44.94	48.76	93.70	72.66
RS4	Pre 1984	299	1972	4,228	11,244	29.46	41.62	71.07	46.18
	1984 - 1993	395	1989	4,796	10,922	31.43	48.26	79.70	47.25
	1994 to Present	1,699	2002	6,431	15,180	51.72	51.95	103.67	87.59
RS5	Pre 1984	277	1963	5,192	16,207	43.39	55.20	98.60	108.90
	1984 - 1993	215	1989	6,281	17,760	49.55	64.82	114.37	83.97
	1994 to Present	1,043	2002	7,116	17,324	61.61	58.73	120.34	96.80
HD	Pre 1984	183	1962	3,734	8,790	- *	- *	56.42	43.26
	1984 - 1993	92	1986	3,566	7,981	- *	- *	47.65	32.86
	1994 to Present	69	1999	4,514	11,516	- *	- *	74.82	57.38

* Multi family water use was assumed to be used primarily indoors.

SJCUD - Benchmarks Per Residential Category and Build Out Condition for All Accounts

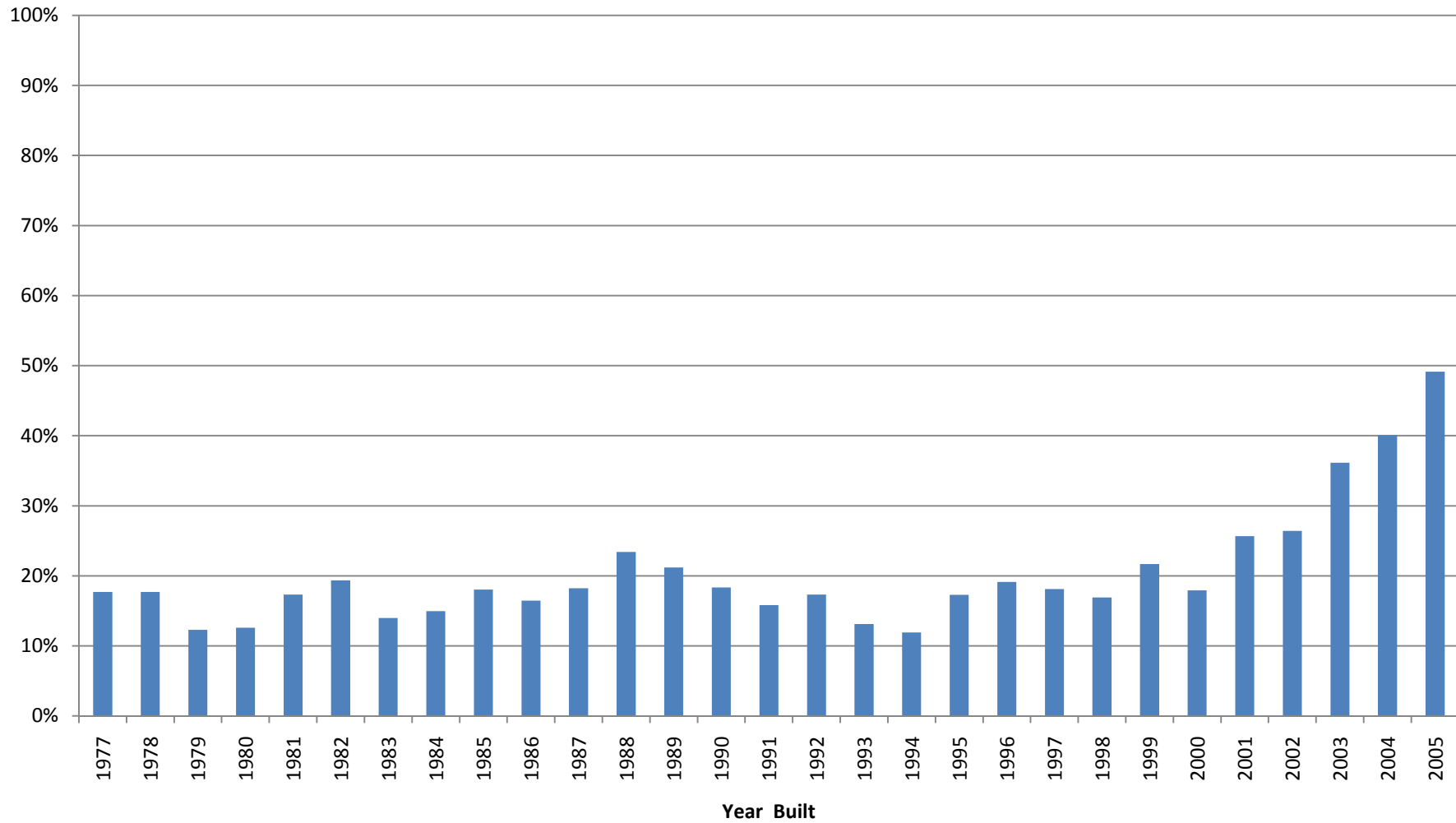
Res Class	Build Out Condition	Avg Parcel Size (sqft)	Avg Bld Area (sqft)	Avg Heated Area (sqft)	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)	StdDev of Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	6,877	1,721	1,227	0.071	0.098	0.008	0.019	0.022	0.017
	1984 - 1993	6,304	1,920	1,309	0.073	0.106	0.011	0.029	0.029	0.020
	1994 to Present	6,878	1,824	1,319	0.092	0.125	0.012	0.027	0.027	0.017
RS2	Pre 1984	9,474	2,238	1,571	0.059	0.084	0.008	0.022	0.020	0.017
	1984 - 1993	10,362	2,320	1,583	0.062	0.090	0.008	0.024	0.022	0.018
	1994 to Present	8,959	2,371	1,698	0.067	0.094	0.010	0.024	0.022	0.017
RS3	Pre 1984	11,624	2,596	1,787	0.053	0.077	0.007	0.019	0.017	0.014
	1984 - 1993	13,637	2,783	1,930	0.050	0.072	0.005	0.014	0.014	0.011
	1994 to Present	11,034	2,886	2,084	0.061	0.084	0.010	0.023	0.020	0.017
RS4	Pre 1984	12,998	2,834	1,921	0.048	0.072	0.007	0.019	0.016	0.013
	1984 - 1993	14,098	3,317	2,262	0.045	0.066	0.005	0.013	0.013	0.011
	1994 to Present	14,707	3,522	2,515	0.055	0.077	0.009	0.023	0.018	0.017
RS5	Pre 1984	22,129	3,442	2,147	0.050	0.081	0.006	0.017	0.014	0.019
	1984 - 1993	19,012	4,623	2,935	0.043	0.067	0.006	0.016	0.014	0.012
	1994 to Present	18,781	4,949	3,425	0.044	0.064	0.008	0.024	0.016	0.015
HD	Pre 1984	17,830	2,792	1,722	0.044	0.071	- *	- *	0.017	0.011
	1984 - 1993	14,651	2,887	2,039	0.041	0.058	- *	- *	0.019	0.016
	1994 to Present	17,636	4,264	2,440	0.035	0.061	- *	- *	0.016	0.014

* Multi family water use was assumed to be used primarily indoors.

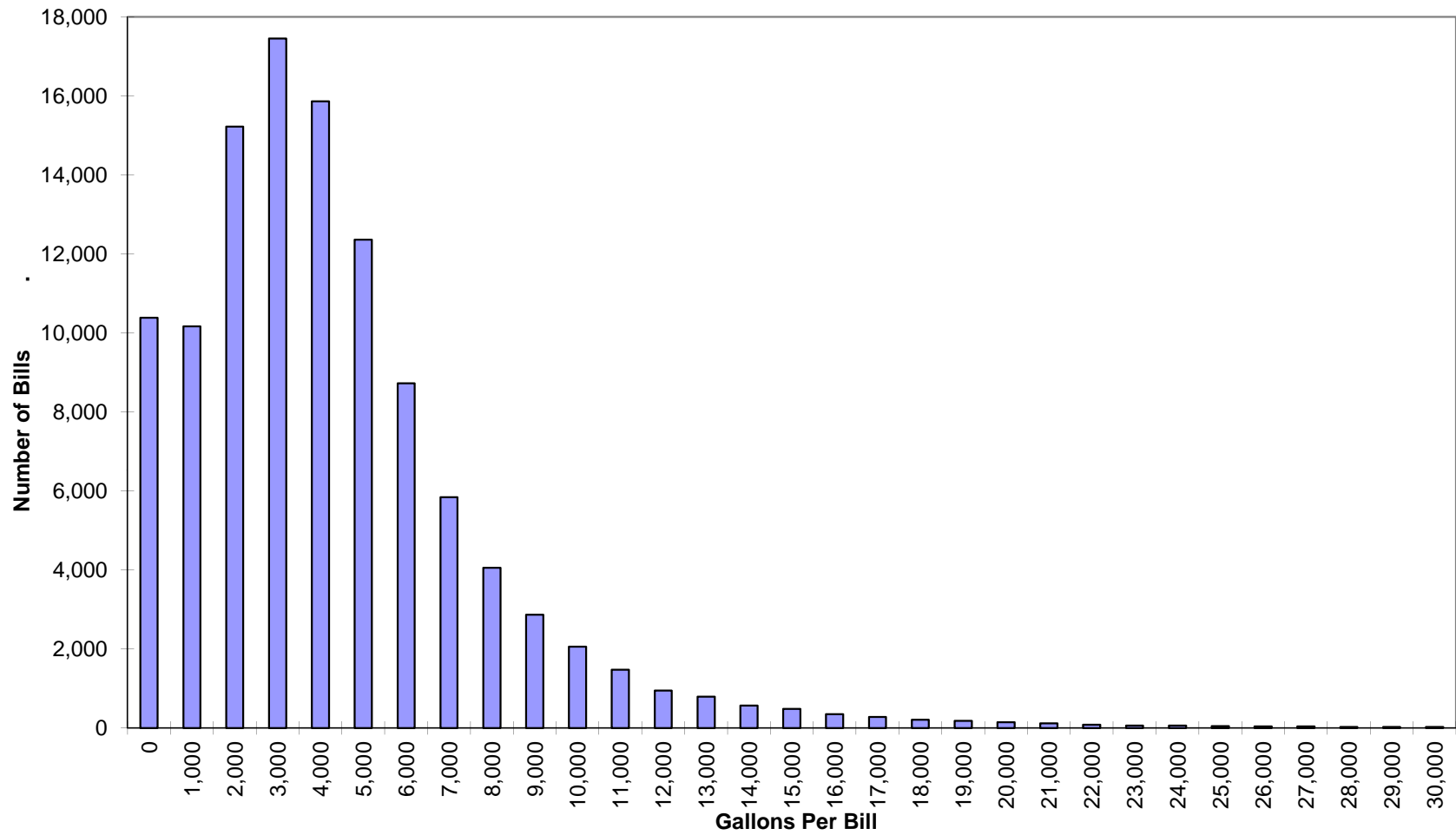
E. SJCUD - Estimated Percentage of In-Ground Irrigation Systems and Outdoor Water Use

Res Class	Build Out Condition	% of Homes with Irrigation Systems	% of Outdoor Water used by Irrigation Systems
RS1	Pre 1984	15%	40%
	1984 - 1993	15%	39%
	1994 to Present	25%	57%
RS2	Pre 1984	17%	42%
	1984 - 1993	17%	39%
	1994 to Present	28%	64%
RS3	Pre 1984	14%	38%
	1984 - 1993	16%	38%
	1994 to Present	33%	72%
RS4	Pre 1984	20%	49%
	1984 - 1993	20%	48%
	1994 to Present	33%	73%
RS5	Pre 1984	29%	67%
	1984 - 1993	35%	68%
	1994 to Present	39%	76%

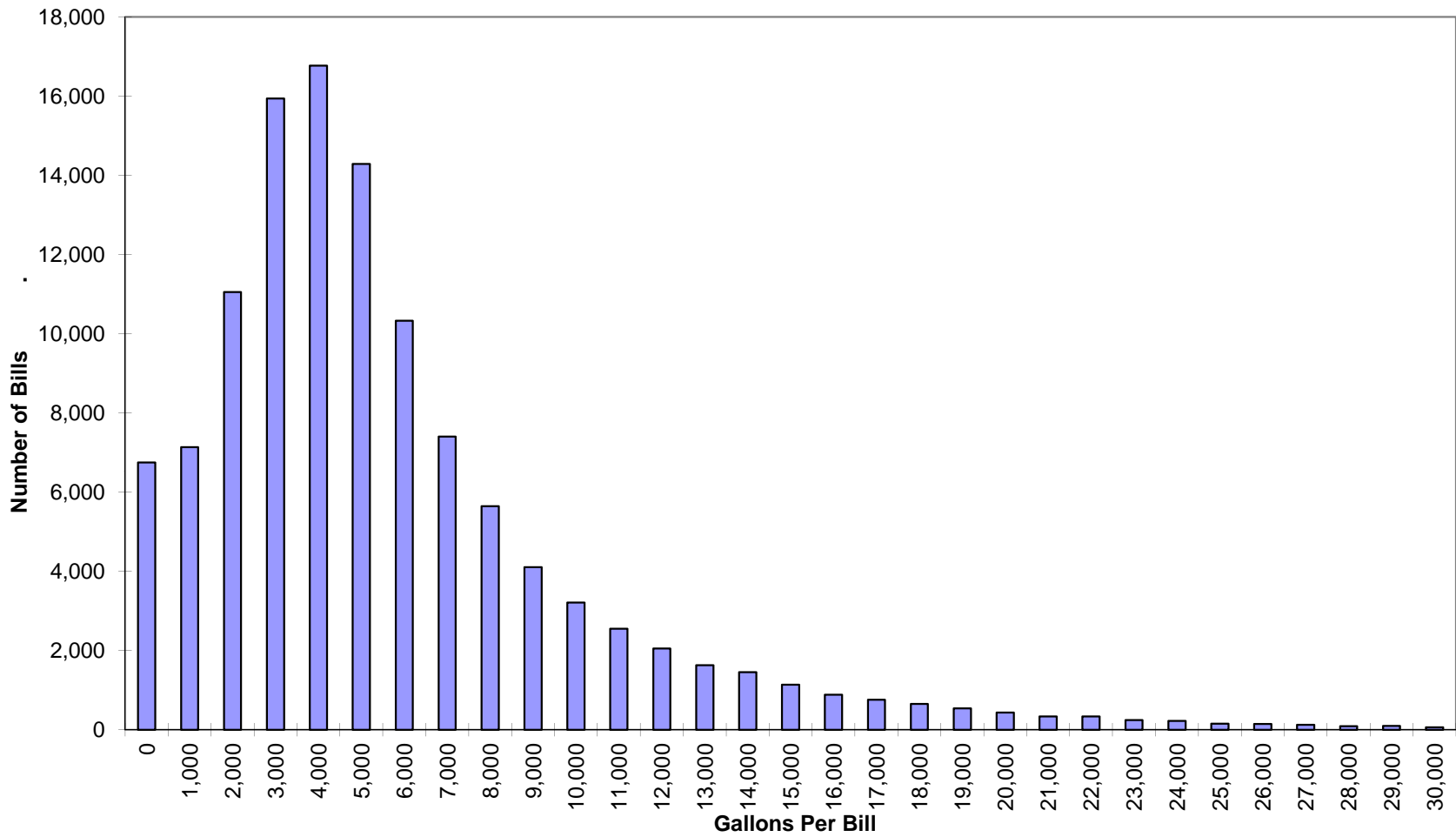
F. Percentage of Accounts in SJUD Likely Using an In-Ground Irrigation System connected to the Public Water Supply



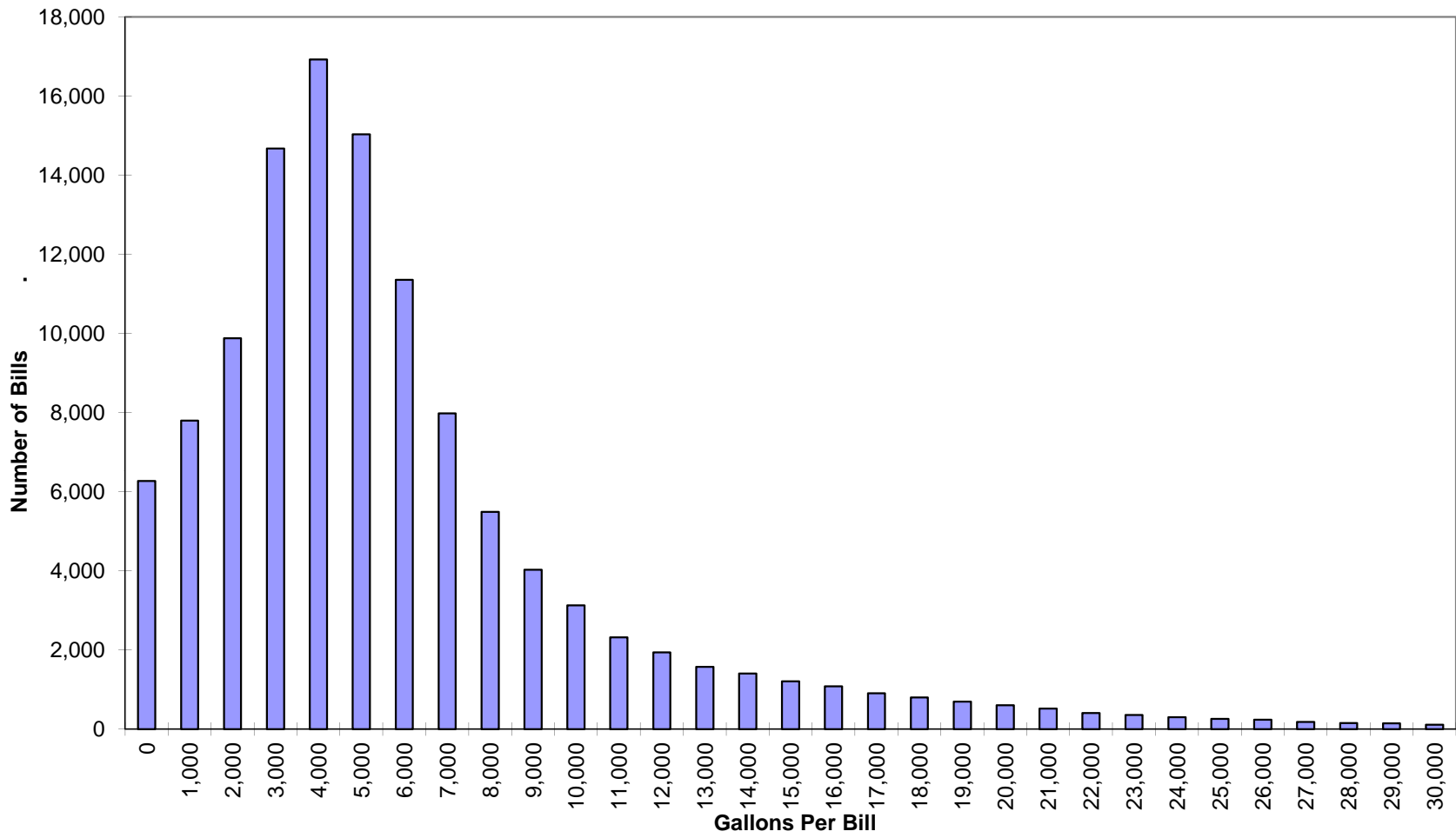
G. SJCUD Bill Frequency Analysis - RS1 (January 2008 to October 2009)



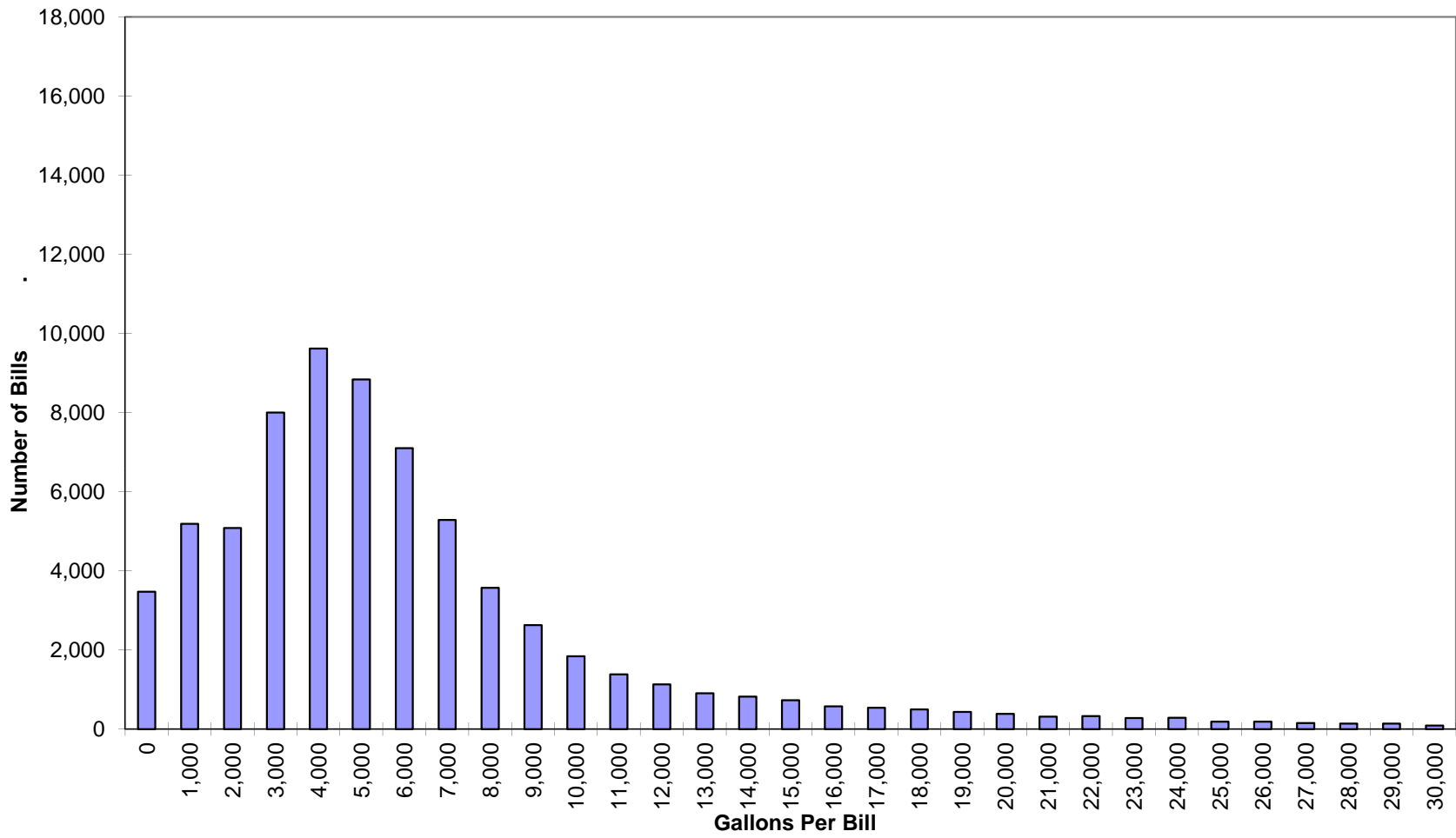
SJCUD Bill Frequency Analysis - RS2 (January 2008 to October 2009)



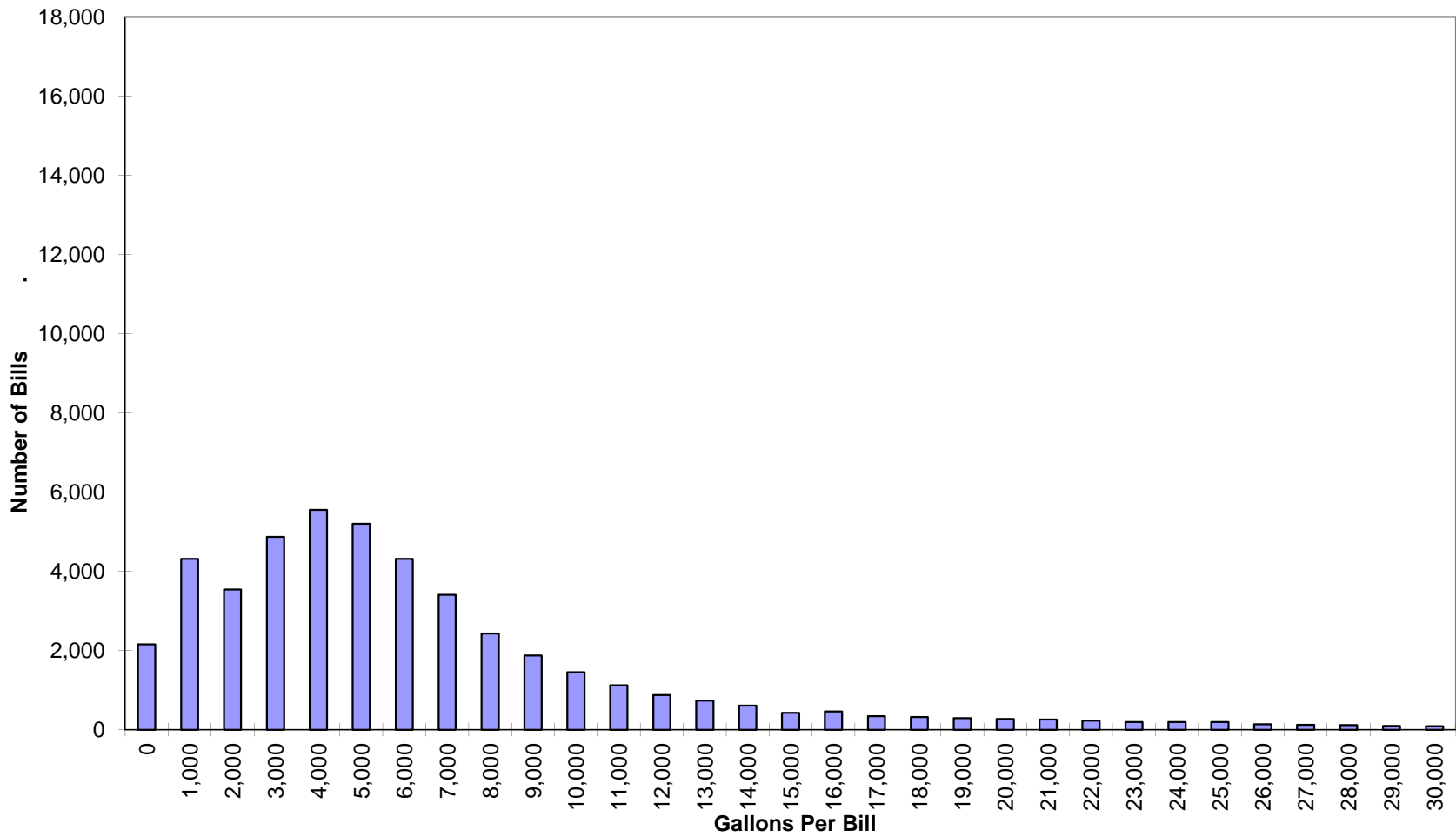
SJCUD Bill Frequency Analysis - RS3 (January 2008 to October 2009)



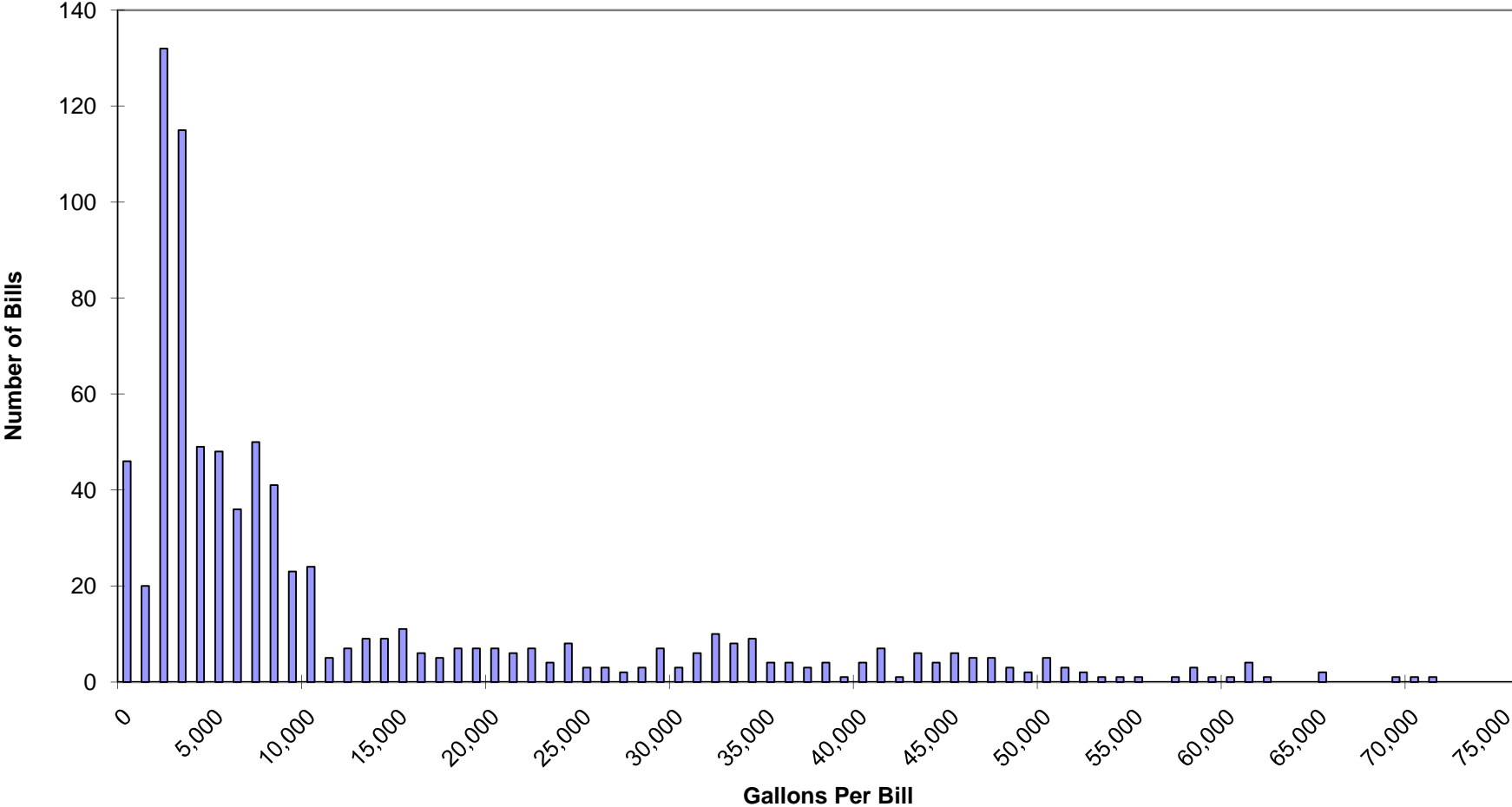
SJCUD Bill Frequency Analysis - RS4 (January 2008 to October 2009)



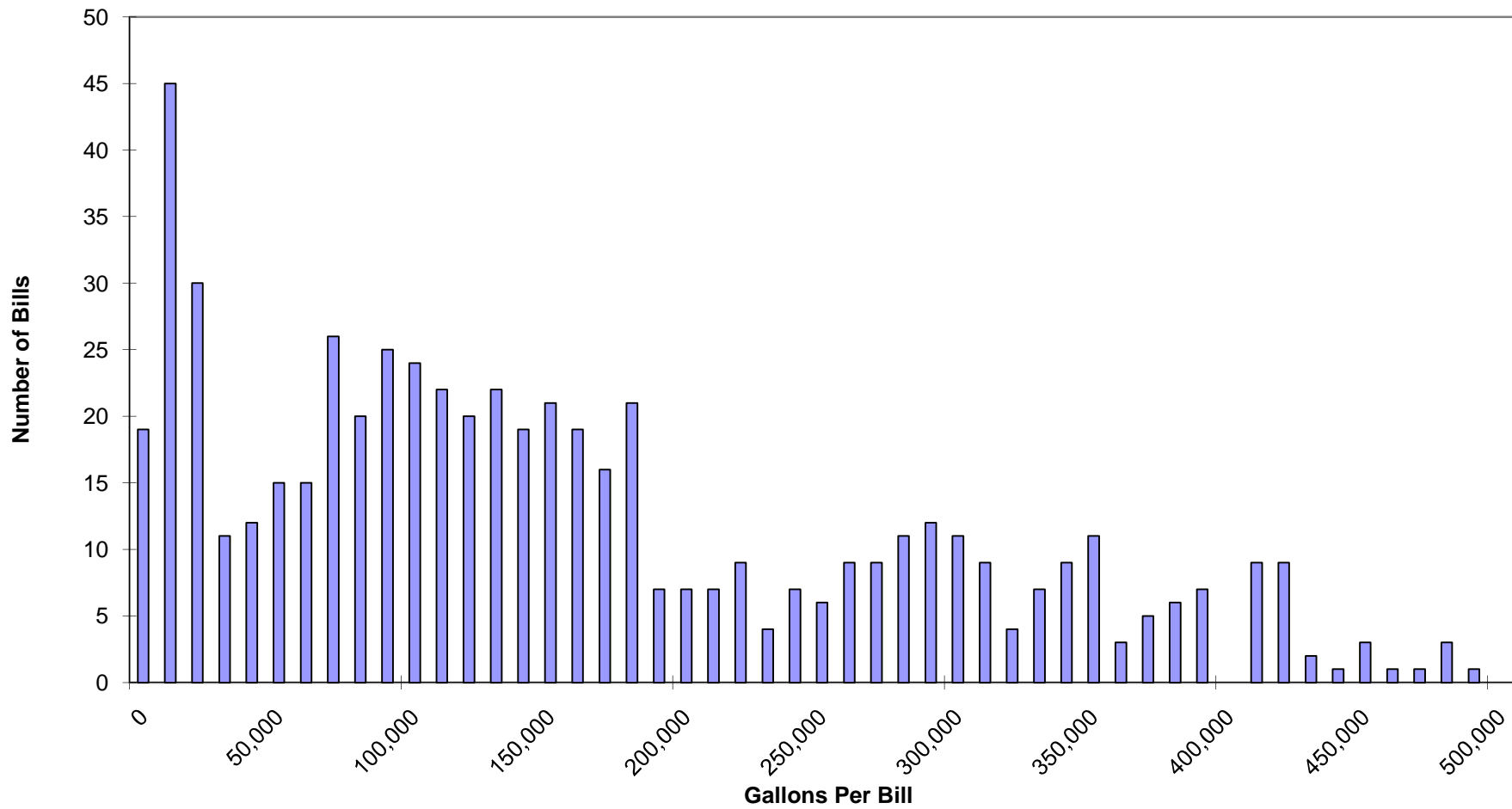
SJCUD Bill Frequency Analysis - RS5 (January 2008 to October 2009)



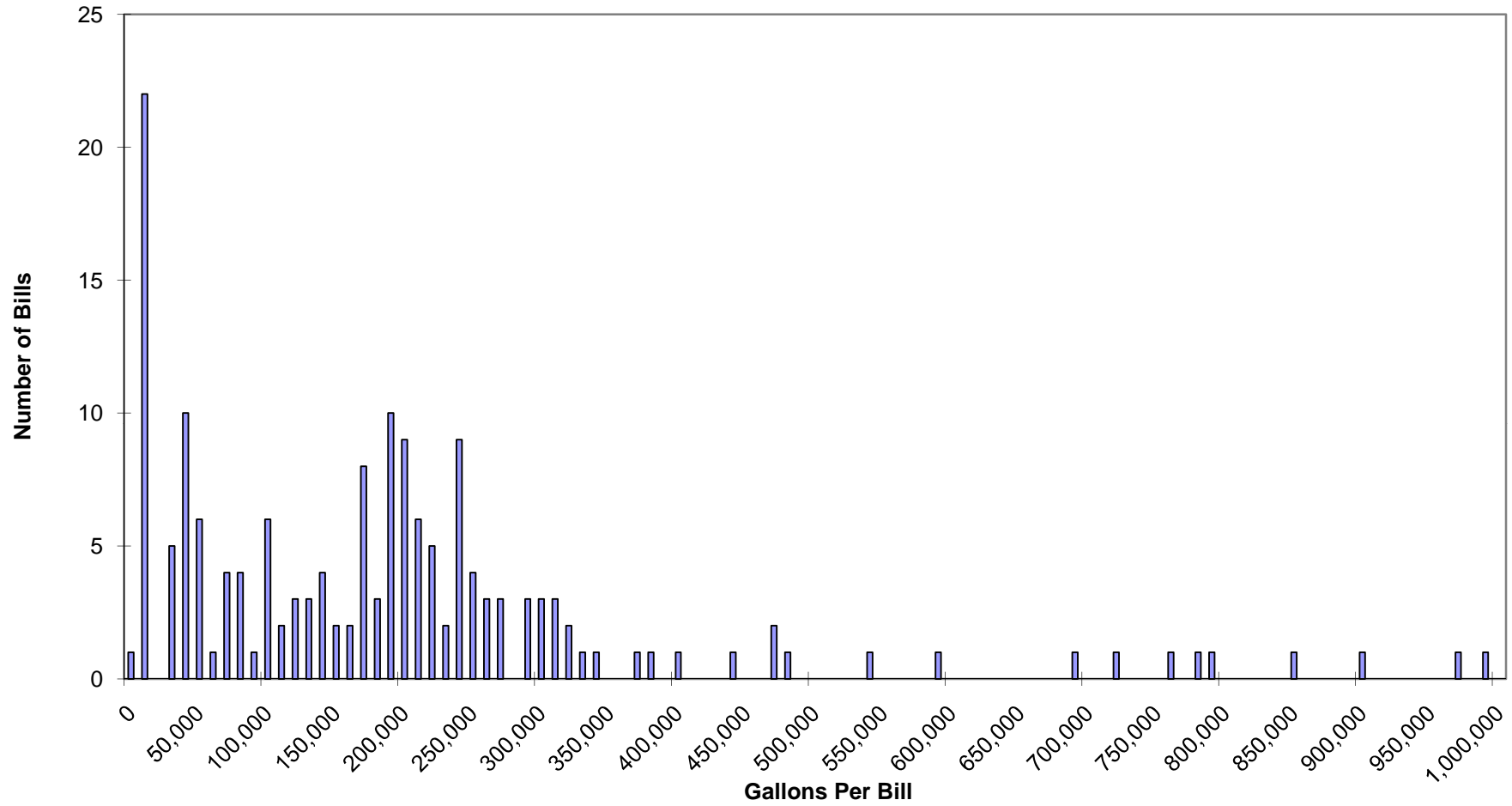
**SJCUD Bill Frequency Analysis - AUTO & REPAIR
(January 2008 to October 2009)**



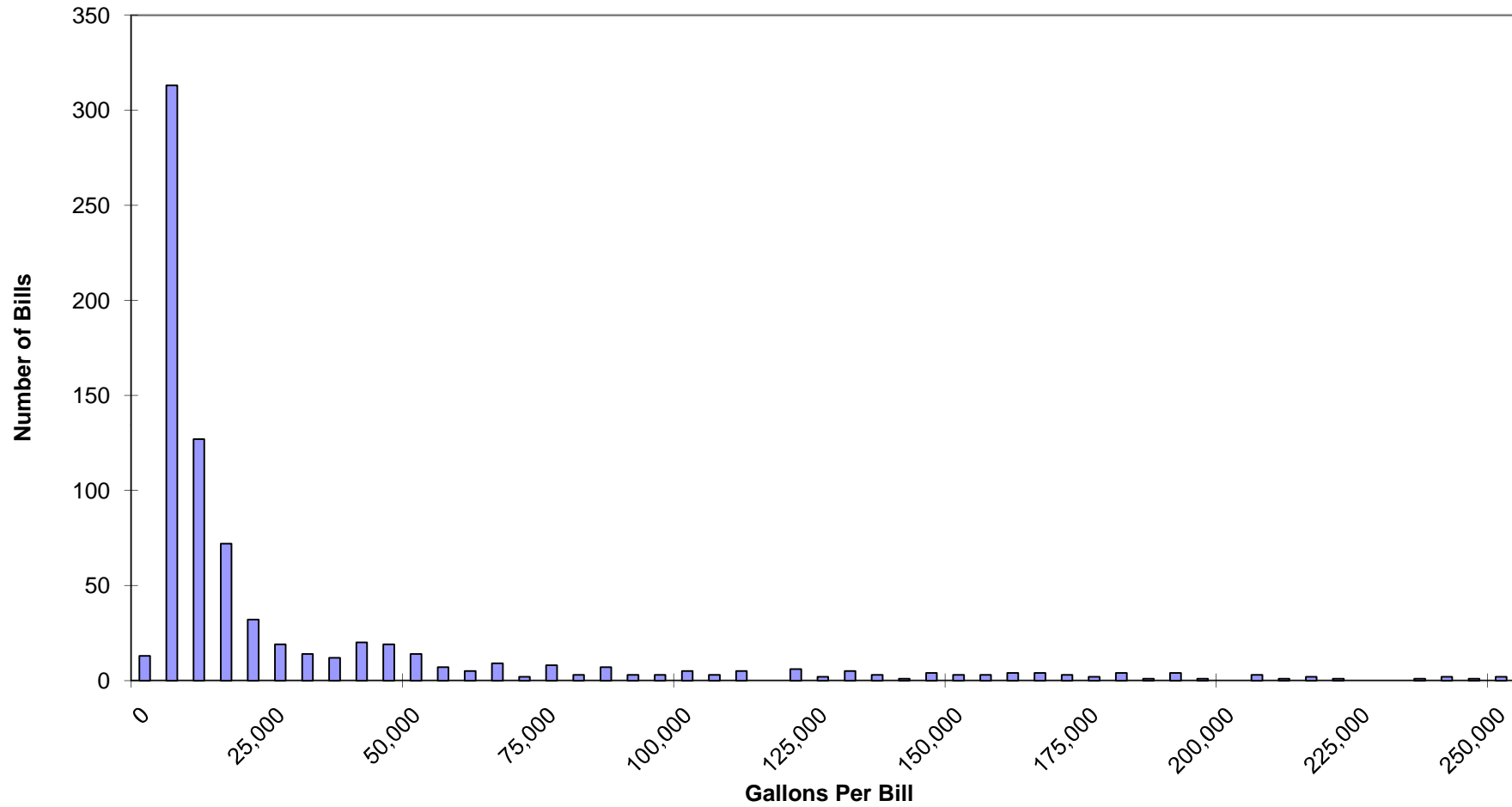
SJCUD Bill Frequency Analysis - HOTELS (January 2008 to October 2009)



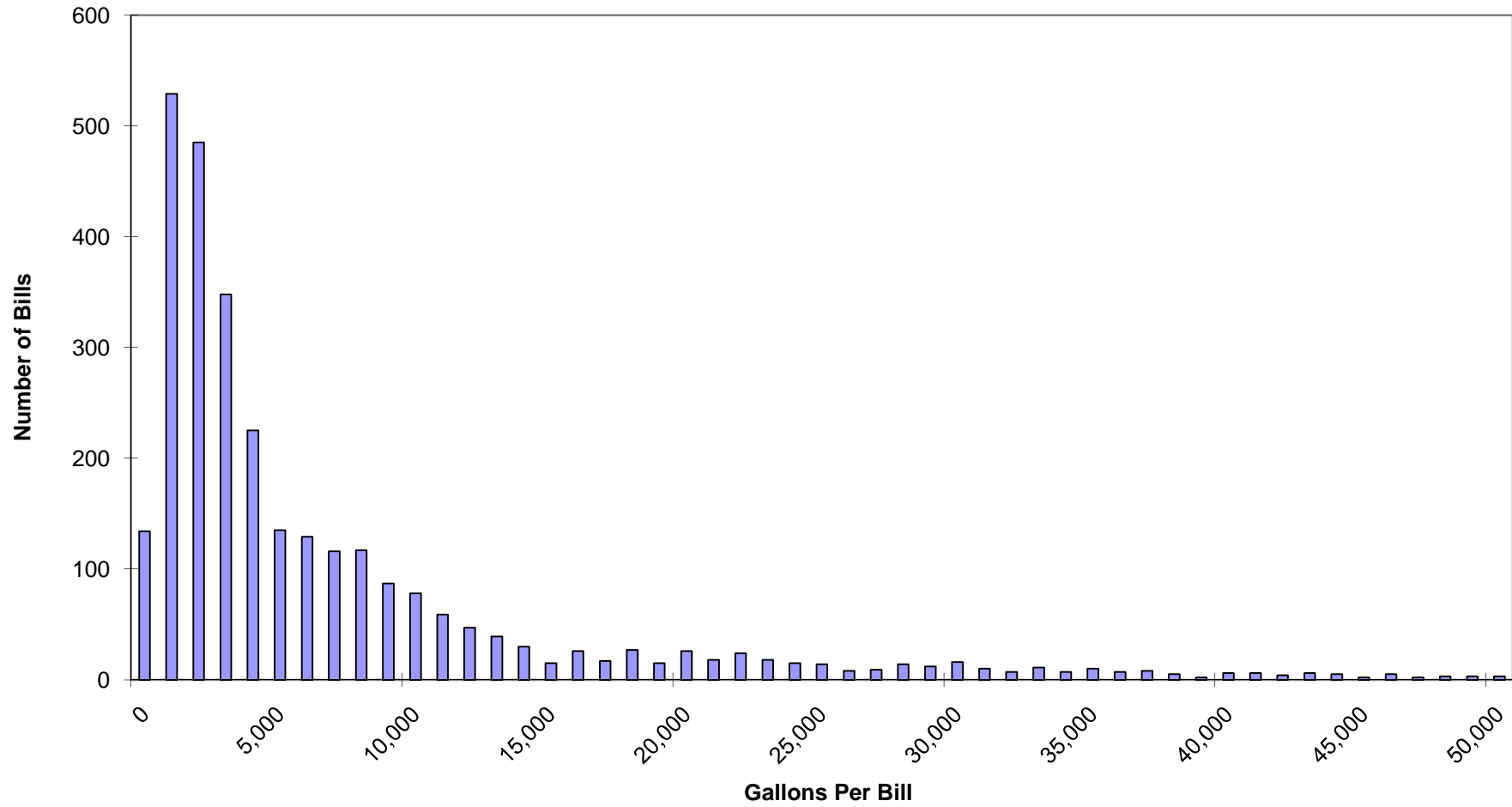
SJCUD Bill Frequency Analysis - LIVE-IN CARE (January 2008 to October 2009)



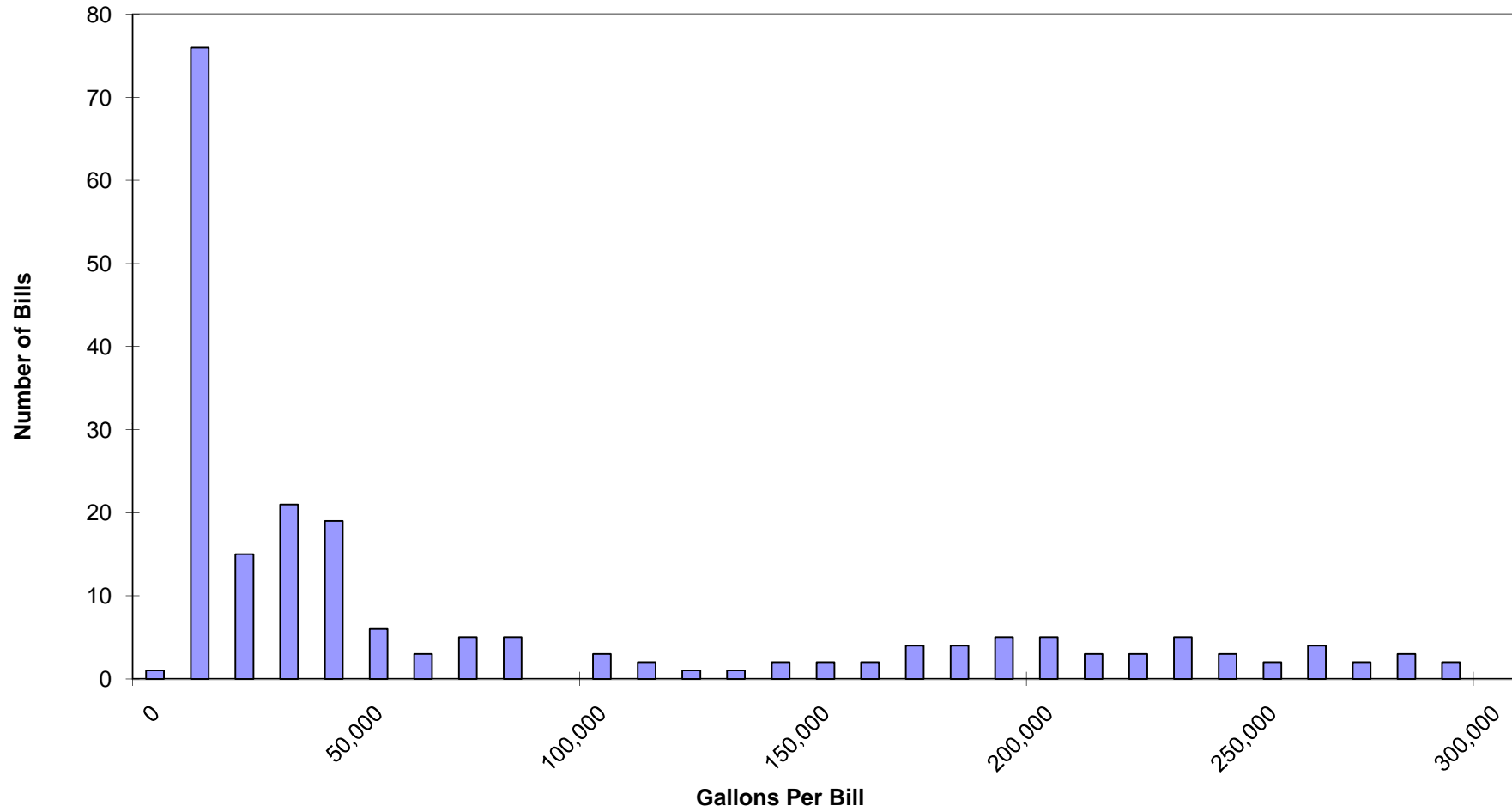
SJCUD Bill Frequency Analysis - MISCELLANEOUS
(January 2008 to October 2009)



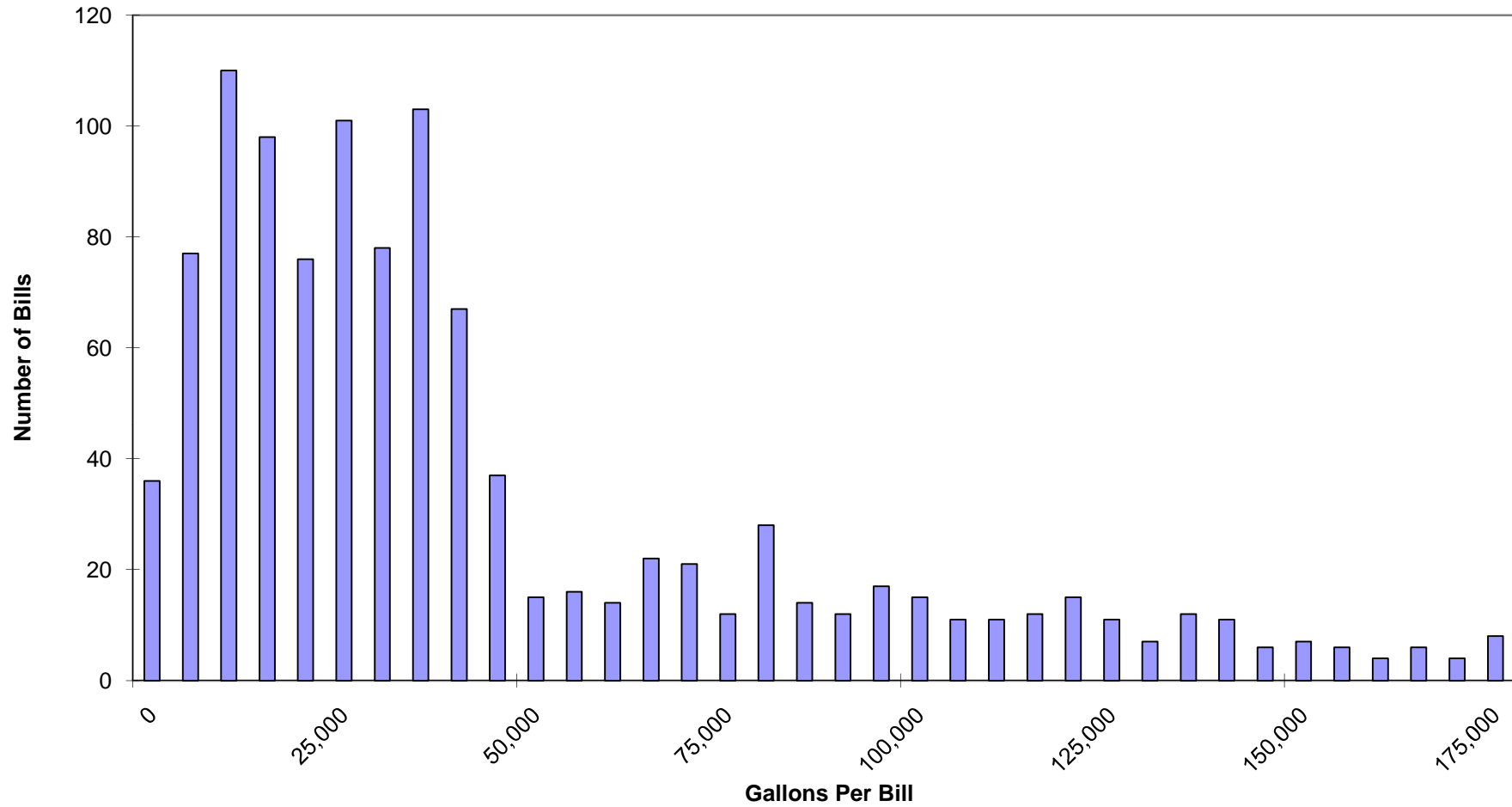
SJCUD Bill Frequency Analysis - OFFICE BUILDINGS
(January 2008 to October 2009)



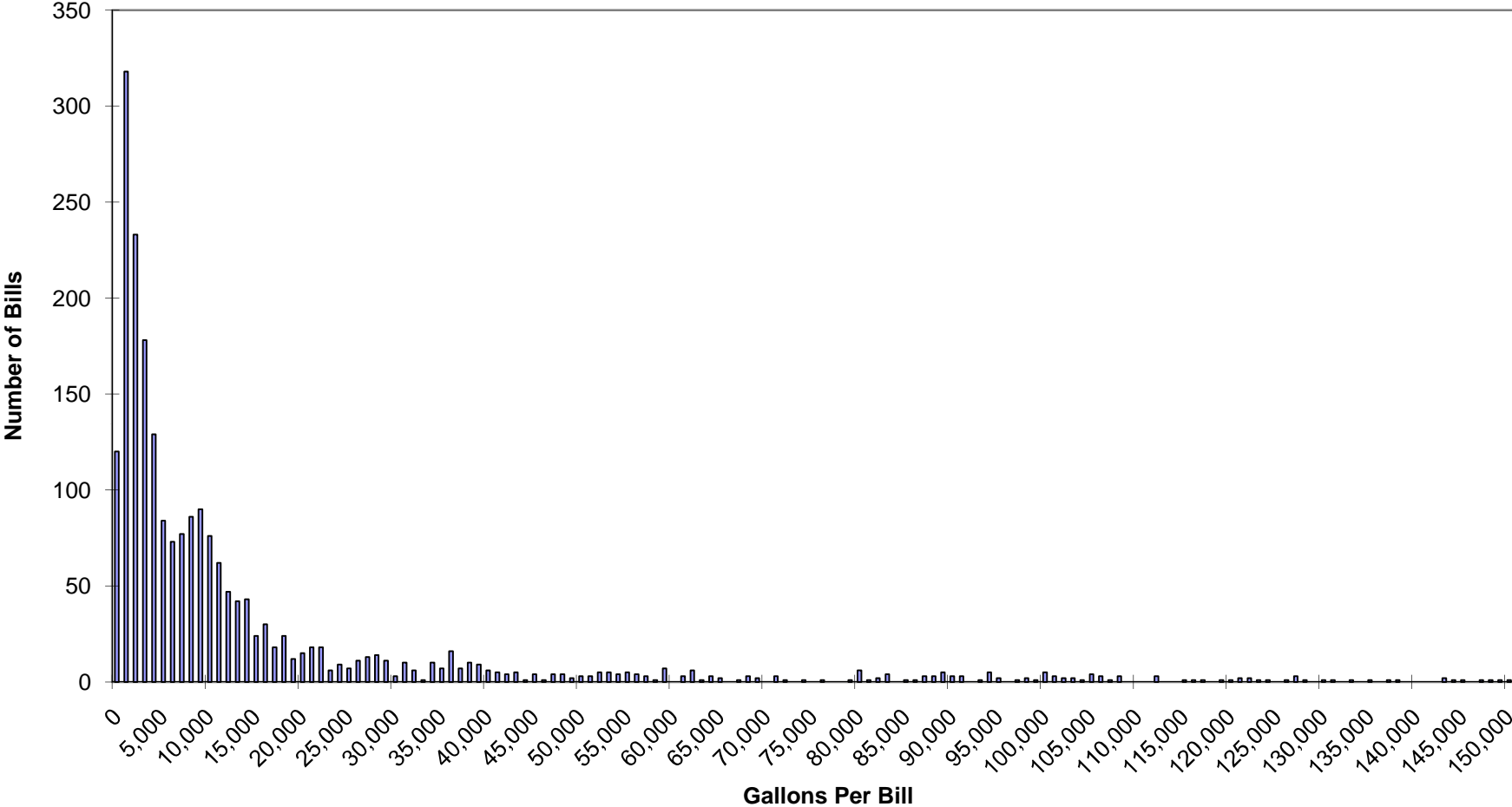
SJCUD Bill Frequency Analysis - OUTDOOR RECREATION
(January 2008 to October 2009)



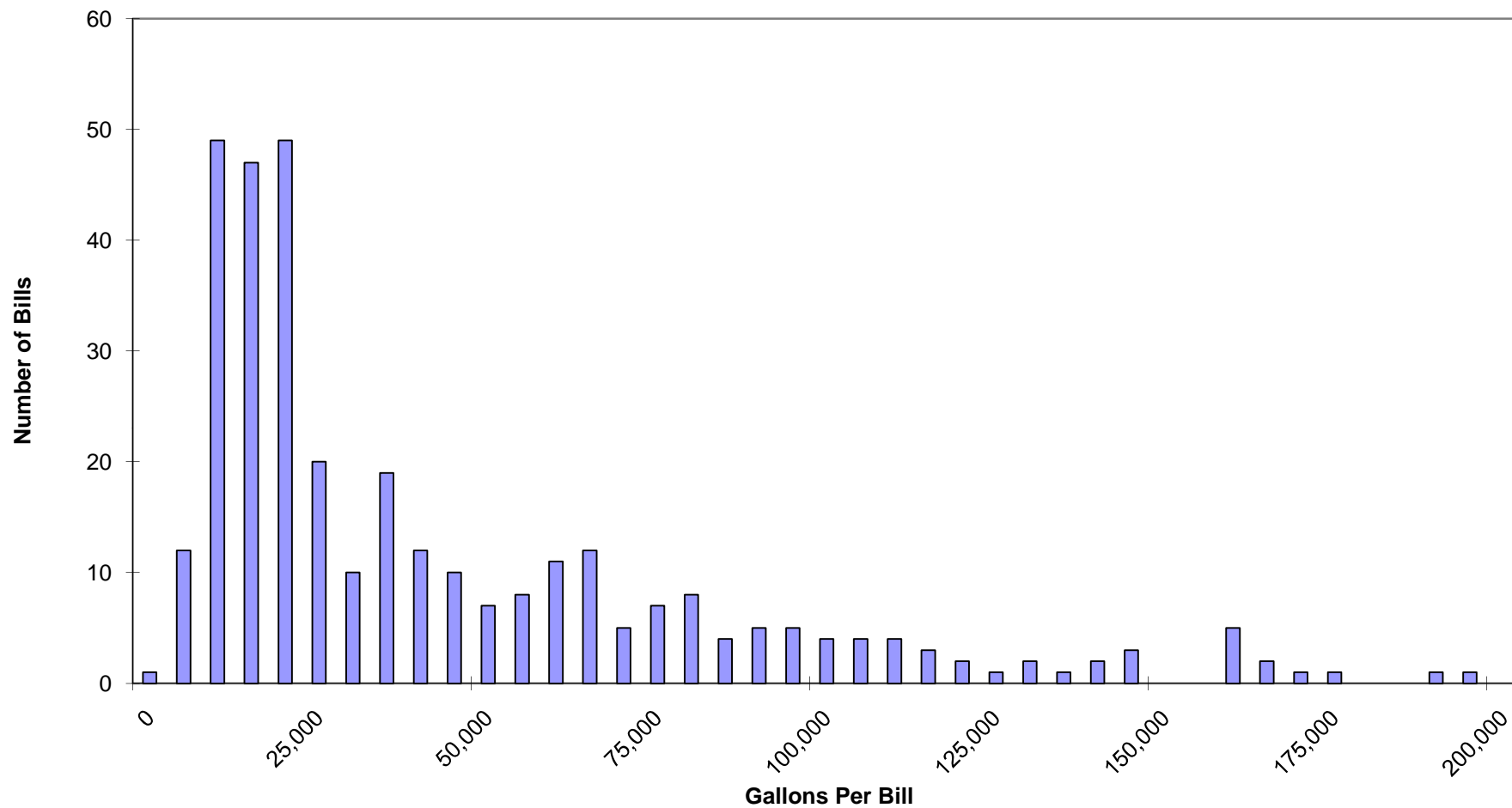
SJCUD Bill Frequency Analysis - RESTAURANTS
(January 2008 to October 2009)



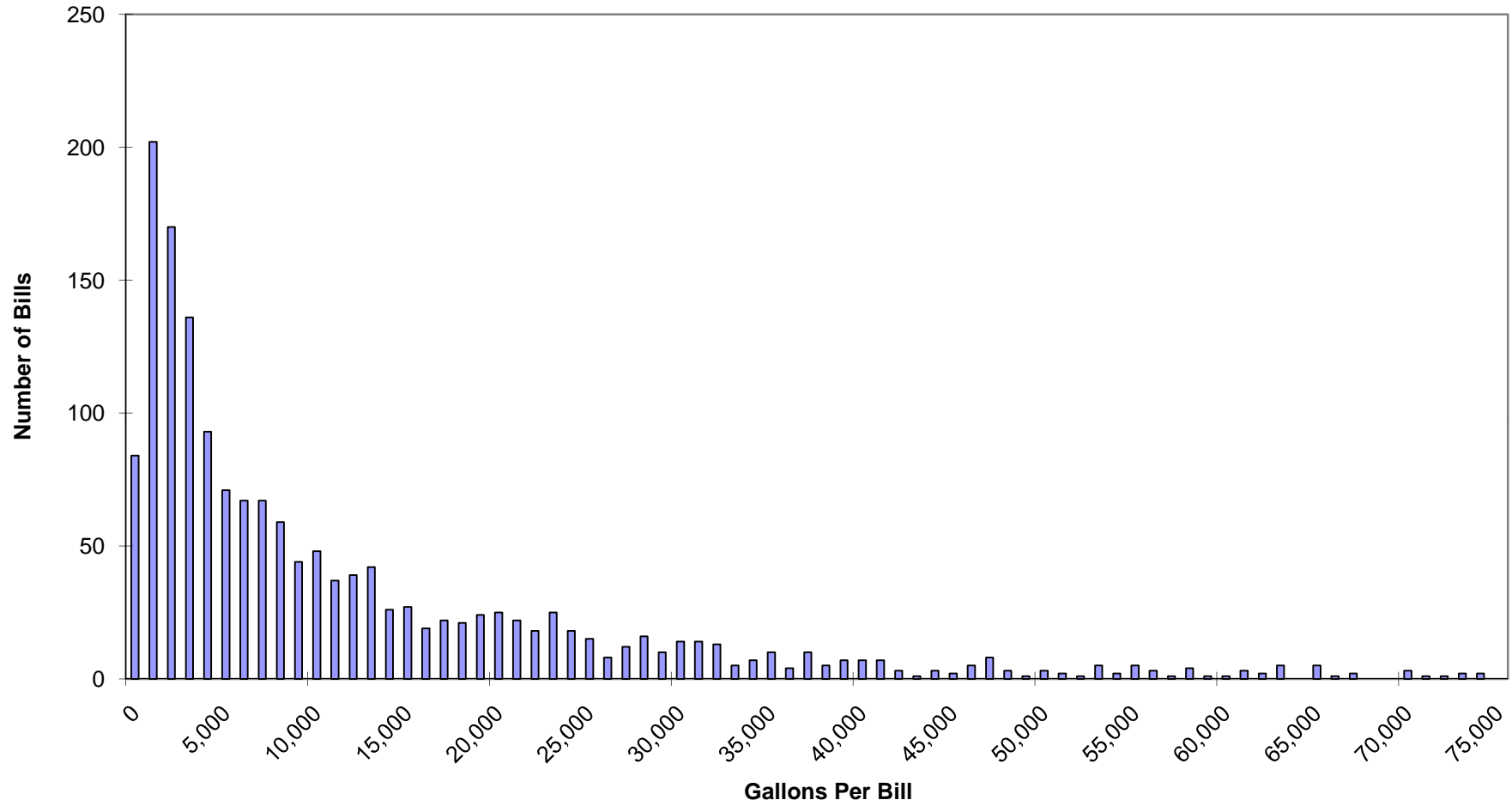
SJCUD Bill Frequency Analysis - RETAIL
(January 2008 to October 2009)



SJCUD Bill Frequency Analysis - SCHOOLS (January 2008 to October 2009)



**SJCUD Bill Frequency Analysis - UNKNOWN
(January 2008 to October 2009)**



H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

St. Johns County Utility

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	1 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	12,803,000
Commercial	2,757,000
Total	15,560,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	115,000	\$810,000	\$1.55
Aggressive Meter Monitoring Program - GLOBAL	230,000	3,420,000	\$3.27
Subtotals	345,000	\$4,230,000	\$2.70

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	28,000	55,000	\$494,000	\$1.97
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	142,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	63,000	122,000	\$798,000	\$1.44
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	246,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	221,000	\$1,247,000	\$1.24
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	994,000	\$0	\$0.00
Subtotals	303,000	1,638,000	\$2,539,000	\$0.34

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	3,000	1,600	\$20,000	\$2.75
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	12,000	5,000	\$53,000	\$2.33
Low Flow Faucet Aerator Replacement - INDOOR	6,000	14,000	\$60,000	\$0.94
Urinal Replacement Program - INDOOR	6,000	1,900	\$19,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	13,000	\$8,000	\$0.14
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	85,000	\$0	\$0.00
Subtotals	27,000	120,500	\$160,000	\$0.29

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	330,000	2,104,000	\$8,315,000	\$0.87

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

St. Johns County Utility

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	5 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	12,803,000
Commercial	2,757,000
Total	15,560,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	115,000	\$810,000	\$1.55
Aggressive Meter Monitoring Program - GLOBAL	230,000	3,420,000	\$3.27
Subtotals	345,000	\$4,230,000	\$2.70

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	35,000	47,000	\$426,000	\$1.99
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	142,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	98,000	87,000	\$570,000	\$1.44
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	246,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	221,000	\$1,247,000	\$1.24
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	994,000	\$0	\$0.00
Subtotals	345,000	1,595,000	\$2,243,000	\$0.31

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	3,000	1,400	\$17,000	\$2.67
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	12,000	4,000	\$48,000	\$2.64
Low Flow Faucet Aerator Replacement - INDOOR	10,000	10,000	\$43,000	\$0.95
Urinal Replacement Program - INDOOR	7,000	1,600	\$16,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	13,000	\$8,000	\$0.14
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	85,000	\$0	\$0.00
Subtotals	32,000	115,000	\$132,000	\$0.25

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	377,000	2,055,000	\$7,926,000	\$0.85

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

St. Johns County Utility

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	10 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	12,803,000
Commercial	2,757,000
Total	15,560,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	115,000	\$810,000	\$1.55
Aggressive Meter Monitoring Program - GLOBAL	230,000	3,420,000	\$3.27
Subtotals	345,000	\$4,230,000	\$2.70

Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	45,000	38,000	\$341,000	\$1.97
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	142,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	142,000	44,000	\$285,000	\$1.42
High Efficiency Clothes Washer Replacement - INDOOR	52,000	300	\$34,272	\$25.09
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	246,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	221,000	\$1,247,000	\$1.24
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	994,000	\$0	\$0.00
Subtotals	399,000	1,543,300	\$1,907,272	\$0.27

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	4,000	1,100	\$14,000	\$2.80
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	12,000	4,000	\$40,000	\$2.20
Low Flow Faucet Aerator Replacement - INDOOR	15,000	5,000	\$22,000	\$0.97
Urinal Replacement Program - INDOOR	7,000	1,200	\$12,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	13,000	\$8,000	\$0.14
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	85,000	\$0	\$0.00
Subtotals	38,000	109,300	\$96,000	\$0.19

Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	437,000	1,998,000	\$7,480,000	\$0.82

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

H. Cost Effective Water conservation Potential at 1, 5, 10, and 20 year Implementation Periods over a 20 Year Planning Horizon

St. Johns County Utility

Conservation Program Variables

Discount Rate	5 %
Program Implementation Period	20 yrs
Unit Cost Threshold	\$4.00 (\$/kgal)

2030 Baseline Retail Water Use Conditions*

	Water Use (gpd)
Residential	12,803,000
Commercial	2,757,000
Total	15,560,000

Global Conservation Practice	Program Savings (gpd)	O&M Cost (PV)	Unit Cost (\$/kgal)
Conservation Coordinator and Customer Education – GLOBAL	115,000	\$810,000	\$1.55
Aggressive Meter Monitoring Program - GLOBAL	230,000	3,420,000	\$3.27
Subtotals	345,000	\$4,230,000	\$2.70

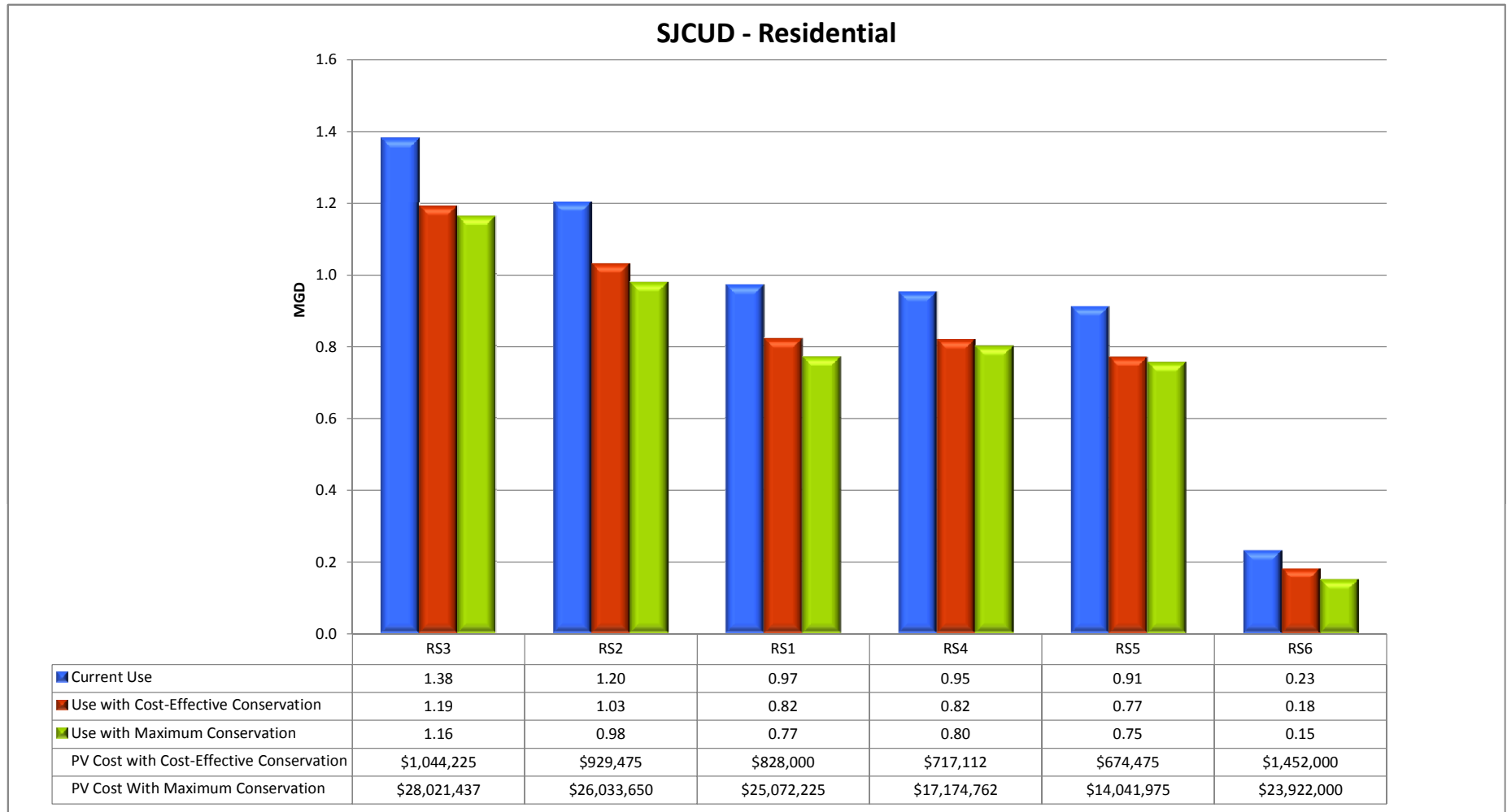
Residential Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	45,000	19,000	\$170,000	\$1.97
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	142,000	0	\$0	\$0.00
Low Flow Faucet Aerator Replacement - INDOOR	186,000	0	\$0	\$0.00
High Efficiency Clothes Washer Replacement - INDOOR	52,000	0	\$0	\$0.00
High Efficiency Dishwashers - INDOOR	18,000	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	246,000	\$0	\$0.00
Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	0	221,000	\$1,247,000	\$1.24
Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	0	0	\$0	\$0.00
Submetering Billing of Apartment Units - INDOOR	0	0	\$0	\$0.00
Efficient Irrigation Systems (non turf) - OUTDOOR	0	0	\$0	\$0.00
Landscape Replacement Program - OUTDOOR	0	0	\$0	\$0.00
Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	0	994,000	\$0	\$0.00
Subtotals	443,000	1,480,000	\$1,417,000	\$0.21

Commercial Conservation Practice	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Low Flow Volume Showerhead Replacement - INDOOR	0	0	\$0	\$0.00
High Efficiency Showerhead Replacement - INDOOR	4,000	600	\$7,000	\$2.56
Ultra Low Flush Toilet Replacement Program - INDOOR	0	0	\$0	\$0.00
High Efficiency Toilet Replacement Program - INDOOR	12,000	2,000	\$26,000	\$2.86
Low Flow Faucet Aerator Replacement - INDOOR	21,000	0	\$0	\$0.00
Urinal Replacement Program - INDOOR	7,000	400	\$4,000	\$2.20
Waterless Urinal Replacement Program - INDOOR	0	0	\$0	\$0.00
Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	0	13,000	\$8,000	\$0.14
Water Reuse/Recycling Laundry Machines – INDOOR	0	0	\$0	\$0.00
Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	0	85,000	\$0	\$0.00
Subtotals	44,000	101,000	\$45,000	\$0.10

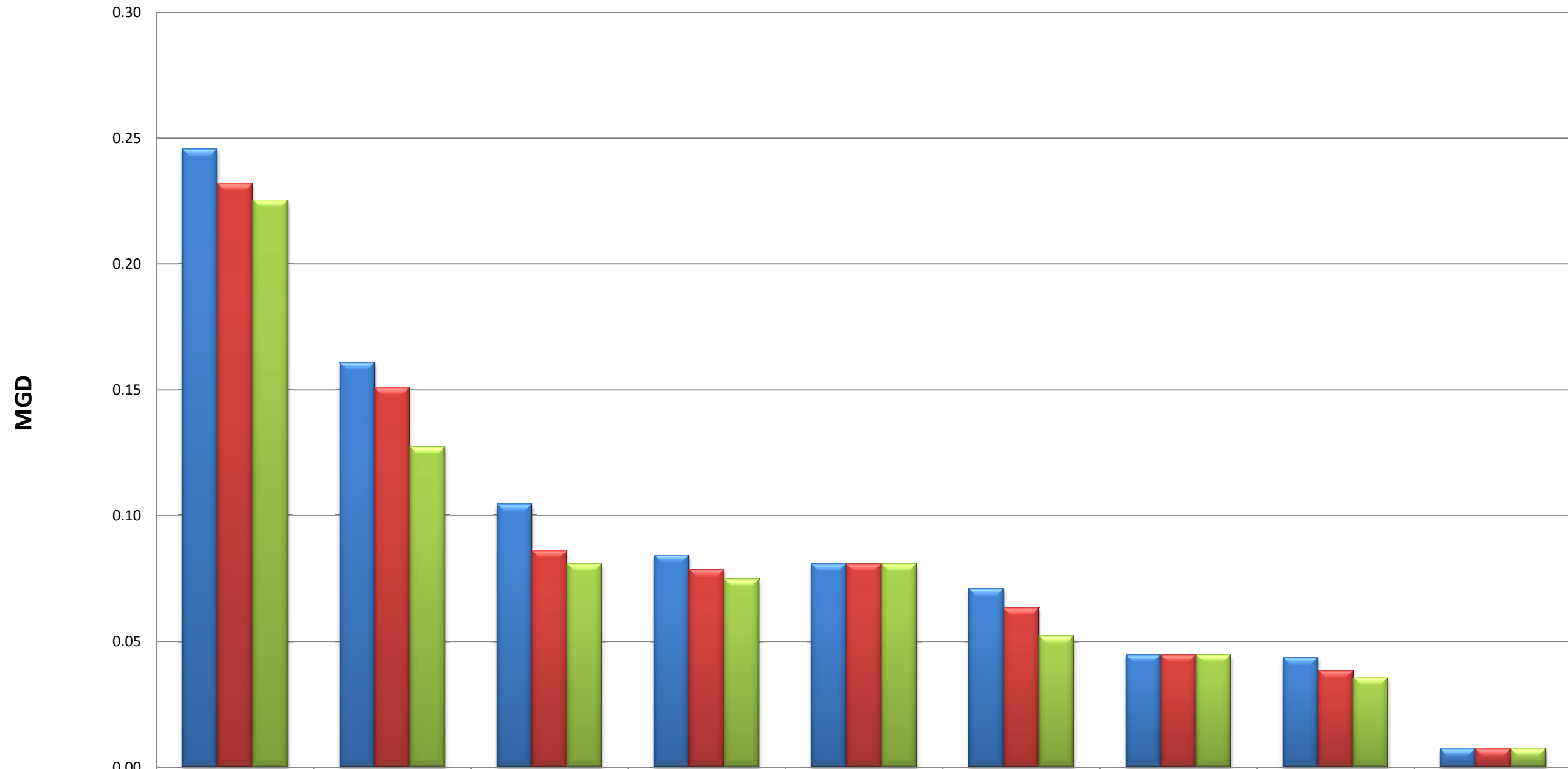
Summary	Passive Savings (gpd)	Program Savings (gpd)	Capital (PV)	Unit Cost (\$/kgal)
Total Savings and Program Cost with 20% Contingency over 20-yr Horizon	487,000	1,926,000	\$6,830,000	\$0.78

* Baseline Retail Water Use is the estimated water use on the customer side of the meter for the top water using residential and commercial DOR categories and does not include plant or delivery system loss.

I. Water Use Pareto Graphs for 2010 Customer Base including Cost-Effective Conservation Use and Maximum Conservation Use over a 20 year Planning Horizon



SJCUD - Commercial



	RETAIL	HOTELS	RESTAURANTS	OFFICE BUILDINGS	MISCELLANEOUS	LIVE-IN CARE	AUTO & REPAIR	SCHOOLS	OUTDOOR RECREATION
■ Current Use	0.25	0.16	0.10	0.08	0.08	0.07	0.04	0.04	0.01
■ Use with Cost-Eff BMPs	0.23	0.15	0.09	0.08	0.08	0.06	0.04	0.04	0.01
■ Max Conservation Use	0.23	0.13	0.08	0.07	0.08	0.05	0.04	0.04	0.01
Cost-Effective PV Cost	\$22,800	\$-	\$19,200	\$-	\$-	\$9,600	\$-	\$2,400	\$-
Maximum PV Cost	\$240,000	\$3,888,000	\$108,000	\$336,000	\$-	\$1,632,000	\$-	\$504,000	\$-

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	1	4	100	-	864,632	\$0	\$0.00
2	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	1	4	100	-	213,544	\$0	\$0.00
3	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	2	4	100	-	60,045	\$0	\$0.00
4	Landscape Replacement Program - OUTDOOR	3	3	50	-	58,729	\$9,585,000	\$35.88
5	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	3	75	-	50,468	\$403,200	\$1.76
6	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	3	75	-	50,468	\$302,400	\$1.32
7	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	5	4	100	-	49,139	\$0	\$0.00
8	Landscape Replacement Program - OUTDOOR	4	3	50	-	44,388	\$5,687,500	\$28.17
9	Landscape Replacement Program - OUTDOOR	2	3	50	-	41,951	\$7,632,500	\$40.00
10	Landscape Replacement Program - OUTDOOR	5	3	50	-	39,066	\$4,015,000	\$22.59
11	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	3	75	-	38,657	\$240,000	\$1.36
12	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	3	75	-	38,657	\$180,000	\$1.02
13	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	3	75	-	35,359	\$196,800	\$1.22
14	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	3	75	-	35,359	\$147,600	\$0.92
15	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	3	75	-	31,993	\$267,000	\$1.83
16	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	3	75	-	31,993	\$200,250	\$1.38
17	Landscape Replacement Program - OUTDOOR	1	1	50	-	21,291	\$5,980,000	\$61.75
18	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	3	4	100	-	19,268	\$0	\$0.00
19	Landscape Replacement Program - OUTDOOR	1	3	50	-	17,590	\$3,330,000	\$41.62
20	High Efficiency Toilet Replacement Program - INDOOR	3	3	75	18,466	16,158	\$1,695,120	\$23.06
21	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	2	4	100	-	14,301	\$0	\$0.00
22	Landscape Replacement Program - OUTDOOR	2	2	50	-	13,135	\$2,402,500	\$40.21
23	High Efficiency Toilet Replacement Program - INDOOR	6	2	75	14,206	12,430	\$4,319,560	\$76.40
24	High Efficiency Toilet Replacement Program - INDOOR	1	1	75	14,205	12,430	\$705,040	\$5.82
25	Efficient Irrigation Systems (non turf) - OUTDOOR	3	3	75	-	12,112	\$1,129,800	\$20.51
26	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	3	75	-	12,039	\$105,600	\$1.93
27	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	3	75	-	12,039	\$79,200	\$1.45
28	High Efficiency Toilet Replacement Program - INDOOR	2	3	75	13,372	11,700	\$899,920	\$16.91
29	High Efficiency Toilet Replacement Program - INDOOR	4	3	75	12,108	10,595	\$1,005,900	\$20.87
30	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	1	75	-	10,247	\$109,800	\$2.36
31	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	1	75	-	10,247	\$82,350	\$1.77
32	Landscape Replacement Program - OUTDOOR	5	1	50	-	9,649	\$1,140,000	\$25.97
33	Landscape Replacement Program - OUTDOOR	2	1	50	-	9,414	\$2,055,000	\$47.99
34	Efficient Irrigation Systems (non turf) - OUTDOOR	4	3	75	-	9,278	\$672,000	\$15.92
35	High Efficiency Toilet Replacement Program - INDOOR	2	2	75	10,238	8,958	\$283,360	\$6.95
36	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	5	4	100	-	8,862	\$0	\$0.00
37	Landscape Replacement Program - OUTDOOR	1	2	50	-	8,582	\$1,975,000	\$50.59
38	Efficient Irrigation Systems (non turf) - OUTDOOR	5	3	75	-	8,486	\$551,250	\$14.28
39	High Efficiency Toilet Replacement Program - INDOOR	5	3	75	9,635	8,431	\$946,960	\$24.69
40	Landscape Replacement Program - OUTDOOR	3	2	50	-	8,421	\$1,827,500	\$47.71
41	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	1	75	-	7,716	\$41,700	\$1.19
42	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	1	75	-	7,716	\$31,275	\$0.89
43	Efficient Irrigation Systems (non turf) - OUTDOOR	2	3	75	-	7,678	\$747,600	\$21.41

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
44	Landscape Replacement Program - OUTDOOR	5	2	50	-	7,498	\$1,080,000	\$31.67
45	High Efficiency Toilet Replacement Program - INDOOR	1	2	75	8,314	7,275	\$232,960	\$7.04
46	Landscape Replacement Program - OUTDOOR	3	1	50	-	6,995	\$1,425,000	\$44.78
47	High Efficiency Toilet Replacement Program - INDOOR	3	2	75	7,606	6,656	\$215,320	\$7.11
48	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	2	75	-	6,143	\$53,100	\$1.90
49	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	2	75	-	6,143	\$39,825	\$1.43
50	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	5	2	75	-	6,067	\$47,400	\$1.72
51	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	5	2	75	-	6,067	\$35,550	\$1.29
52	High Efficiency Toilet Replacement Program - INDOOR	5	2	75	6,340	5,547	\$254,800	\$10.10
53	Landscape Replacement Program - OUTDOOR	4	2	50	-	5,517	\$1,190,000	\$47.42
54	High Efficiency Toilet Replacement Program - INDOOR	1	3	75	6,136	5,369	\$392,560	\$16.07
55	Landscape Replacement Program - OUTDOOR	4	1	50	-	5,028	\$905,000	\$39.57
56	High Efficiency Showerhead Replacement - INDOOR	1	1	75	9,669	4,835	\$50,360	\$0.76
57	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	2	1	75	-	4,692	\$44,100	\$2.07
58	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	2	1	75	-	4,692	\$33,075	\$1.55
59	High Efficiency Toilet Replacement Program - INDOOR	2	1	75	5,293	4,632	\$242,200	\$11.50
60	High Efficiency Toilet Replacement Program - INDOOR	4	2	75	5,291	4,630	\$210,420	\$9.99
61	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	6	4	100	-	4,605	\$0	\$0.00
62	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	3	4	100	-	3,994	\$0	\$0.00
63	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	1	2	75	-	3,992	\$38,100	\$2.10
64	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	1	2	75	-	3,992	\$28,575	\$1.57
65	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	2	75	-	3,807	\$36,900	\$2.13
66	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	2	75	-	3,807	\$27,675	\$1.60
67	Submetering Billing of Apartment Units - INDOOR	6	2	75	-	3,659	\$8,678,250	\$521.44
68	High Efficiency Toilet Replacement Program - INDOOR	3	1	75	3,820	3,342	\$168,000	\$11.05
69	High Efficiency Toilet Replacement Program - INDOOR	5	1	75	3,798	3,323	\$268,800	\$17.78
70	High Efficiency Showerhead Replacement - INDOOR	6	2	75	6,586	3,293	\$308,540	\$20.60
71	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	2	75	-	3,195	\$30,600	\$2.11
72	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	2	75	-	3,195	\$22,950	\$1.58
73	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	3	1	75	-	3,193	\$25,500	\$1.76
74	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	3	1	75	-	3,193	\$19,125	\$1.32
75	Efficient Irrigation Systems (non turf) - OUTDOOR	1	1	75	-	3,013	\$375,900	\$27.43
76	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	4	1	75	-	2,941	\$22,500	\$1.68
77	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	4	1	75	-	2,941	\$16,875	\$1.26
78	Efficient Irrigation Systems (non turf) - OUTDOOR	1	3	75	-	2,889	\$295,050	\$22.45
79	High Efficiency Showerhead Replacement - INDOOR	2	2	75	4,746	2,373	\$15,180	\$1.41
80	Efficient Irrigation Systems (non turf) - OUTDOOR	5	1	75	-	2,269	\$142,800	\$13.84
81	High Efficiency Toilet Replacement Program - INDOOR	4	1	75	2,403	2,102	\$160,020	\$16.73
82	High Efficiency Showerhead Replacement - INDOOR	1	2	75	3,854	1,927	\$16,640	\$1.90
83	Efficient Irrigation Systems (non turf) - OUTDOOR	2	2	75	-	1,806	\$181,650	\$22.11
84	High Efficiency Showerhead Replacement - INDOOR	2	1	75	3,603	1,802	\$12,980	\$1.58
85	Efficient Irrigation Systems (non turf) - OUTDOOR	5	2	75	-	1,784	\$161,700	\$19.93
86	High Efficiency Showerhead Replacement - INDOOR	3	2	75	3,526	1,763	\$11,540	\$1.44

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
87	High Efficiency Showerhead Replacement - INDOOR	5	2	75	2,939	1,470	\$15,930	\$2.38
88	Efficient Irrigation Systems (non turf) - OUTDOOR	2	1	75	-	1,379	\$151,200	\$24.10
89	High Efficiency Showerhead Replacement - INDOOR	3	1	75	2,600	1,300	\$9,000	\$1.52
90	High Efficiency Showerhead Replacement - INDOOR	5	1	75	2,585	1,293	\$16,800	\$2.86
91	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	4	4	100	-	1,269	\$0	\$0.00
92	High Efficiency Showerhead Replacement - INDOOR	4	2	75	2,453	1,226	\$12,530	\$2.25
93	Efficient Irrigation Systems (non turf) - OUTDOOR	1	2	75	-	1,174	\$131,250	\$24.58
94	Efficient Irrigation Systems (non turf) - OUTDOOR	3	2	75	-	1,119	\$127,050	\$24.96
95	Efficient Irrigation Systems (non turf) - OUTDOOR	4	2	75	-	939	\$105,000	\$24.57
96	Efficient Irrigation Systems (non turf) - OUTDOOR	3	1	75	-	939	\$87,150	\$20.41
97	Efficient Irrigation Systems (non turf) - OUTDOOR	4	1	75	-	865	\$76,650	\$19.49
98	High Efficiency Showerhead Replacement - INDOOR	4	1	75	1,636	818	\$9,530	\$2.56
99	High Efficiency Toilet Replacement Program - INDOOR	6	1	75	542	475	\$241,080	\$111.69
100	High Efficiency Toilet Replacement Program - INDOOR	6	3	75	390	341	\$253,960	\$163.50
101	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	4	4	100	-	236	\$0	\$0.00
102	Submetering Billing of Apartment Units - INDOOR	6	1	75	-	214	\$484,875	\$498.98
103	High Efficiency Showerhead Replacement - INDOOR	6	1	75	369	185	\$17,220	\$20.51
104	Submetering Billing of Apartment Units - INDOOR	6	3	75	-	137	\$255,375	\$411.26
105	Efficient Irrigation Systems (non turf) - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
106	Efficient Irrigation Systems (non turf) - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
107	Efficient Irrigation Systems (non turf) - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
108	High Efficiency Clothes Washer Replacement - INDOOR	1	1	75	3,754	-	\$0	\$100,000.00
109	High Efficiency Clothes Washer Replacement - INDOOR	6	3	75	220	-	\$0	\$100,000.00
110	High Efficiency Clothes Washer Replacement - INDOOR	6	2	75	2,753	-	\$0	\$100,000.00
111	High Efficiency Clothes Washer Replacement - INDOOR	6	1	75	143	-	\$0	\$100,000.00
112	High Efficiency Clothes Washer Replacement - INDOOR	5	3	75	5,427	-	\$0	\$100,000.00
113	High Efficiency Clothes Washer Replacement - INDOOR	5	2	75	1,229	-	\$0	\$100,000.00
114	High Efficiency Clothes Washer Replacement - INDOOR	5	1	75	1,004	-	\$0	\$100,000.00
115	High Efficiency Clothes Washer Replacement - INDOOR	4	3	75	6,820	-	\$0	\$100,000.00
116	High Efficiency Clothes Washer Replacement - INDOOR	4	2	75	1,026	-	\$0	\$100,000.00
117	High Efficiency Clothes Washer Replacement - INDOOR	4	1	75	635	-	\$0	\$100,000.00
118	High Efficiency Clothes Washer Replacement - INDOOR	3	3	75	10,402	-	\$0	\$100,000.00
119	High Efficiency Clothes Washer Replacement - INDOOR	3	2	75	1,474	-	\$0	\$100,000.00
120	High Efficiency Clothes Washer Replacement - INDOOR	3	1	75	1,009	-	\$0	\$100,000.00
121	High Efficiency Clothes Washer Replacement - INDOOR	2	3	75	7,532	-	\$0	\$100,000.00
122	High Efficiency Clothes Washer Replacement - INDOOR	2	2	75	1,984	-	\$0	\$100,000.00
123	High Efficiency Clothes Washer Replacement - INDOOR	2	1	75	1,399	-	\$0	\$100,000.00
124	High Efficiency Clothes Washer Replacement - INDOOR	1	3	75	3,456	-	\$0	\$100,000.00
125	High Efficiency Clothes Washer Replacement - INDOOR	1	2	75	1,611	-	\$0	\$100,000.00
126	High Efficiency Dishwashers - INDOOR	1	1	75	1,492	-	\$0	\$100,000.00
127	High Efficiency Dishwashers - INDOOR	6	3	75	73	-	\$0	\$100,000.00
128	High Efficiency Dishwashers - INDOOR	6	2	75	976	-	\$0	\$100,000.00
129	High Efficiency Dishwashers - INDOOR	6	1	75	57	-	\$0	\$100,000.00

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J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
130	High Efficiency Dishwashers - INDOOR	5	3	75	1,798	-	\$0	\$100,000.00
131	High Efficiency Dishwashers - INDOOR	5	2	75	435	-	\$0	\$100,000.00
132	High Efficiency Dishwashers - INDOOR	5	1	75	399	-	\$0	\$100,000.00
133	High Efficiency Dishwashers - INDOOR	4	3	75	2,259	-	\$0	\$100,000.00
134	High Efficiency Dishwashers - INDOOR	4	2	75	363	-	\$0	\$100,000.00
135	High Efficiency Dishwashers - INDOOR	4	1	75	252	-	\$0	\$100,000.00
136	High Efficiency Dishwashers - INDOOR	3	3	75	3,445	-	\$0	\$100,000.00
137	High Efficiency Dishwashers - INDOOR	3	2	75	522	-	\$0	\$100,000.00
138	High Efficiency Dishwashers - INDOOR	3	1	75	401	-	\$0	\$100,000.00
139	High Efficiency Dishwashers - INDOOR	2	3	75	2,495	-	\$0	\$100,000.00
140	High Efficiency Dishwashers - INDOOR	2	2	75	703	-	\$0	\$100,000.00
141	High Efficiency Dishwashers - INDOOR	2	1	75	556	-	\$0	\$100,000.00
142	High Efficiency Dishwashers - INDOOR	1	3	75	1,145	-	\$0	\$100,000.00
143	High Efficiency Dishwashers - INDOOR	1	2	75	571	-	\$0	\$100,000.00
144	High Efficiency Showerhead Replacement - INDOOR	6	3	75	-	-	\$18,140	\$100,000.00
145	High Efficiency Showerhead Replacement - INDOOR	5	3	75	-	-	\$59,190	\$100,000.00
146	High Efficiency Showerhead Replacement - INDOOR	4	3	75	-	-	\$59,880	\$100,000.00
147	High Efficiency Showerhead Replacement - INDOOR	3	3	75	-	-	\$100,900	\$100,000.00
148	High Efficiency Showerhead Replacement - INDOOR	2	3	75	-	-	\$48,210	\$100,000.00
149	High Efficiency Showerhead Replacement - INDOOR	1	3	75	-	-	\$28,040	\$100,000.00
150	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
151	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
152	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
153	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	3	75	-	-	\$0	\$100,000.00
154	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	2	75	-	-	\$0	\$100,000.00
155	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	6	1	75	-	-	\$0	\$100,000.00
156	Landscape Replacement Program - OUTDOOR	6	3	50	-	-	\$2,155,000	\$100,000.00
157	Landscape Replacement Program - OUTDOOR	6	2	50	-	-	\$36,640,000	\$100,000.00
158	Landscape Replacement Program - OUTDOOR	6	1	50	-	-	\$2,045,000	\$100,000.00
159	Low Flow Faucet Aerator Replacement - INDOOR	1	1	75	15,847	-	\$0	\$100,000.00
160	Low Flow Faucet Aerator Replacement - INDOOR	6	3	75	-	-	\$0	\$100,000.00
161	Low Flow Faucet Aerator Replacement - INDOOR	6	2	75	10,362	-	\$0	\$100,000.00
162	Low Flow Faucet Aerator Replacement - INDOOR	6	1	75	605	-	\$0	\$100,000.00
163	Low Flow Faucet Aerator Replacement - INDOOR	5	3	75	18,444	-	\$0	\$100,000.00
164	Low Flow Faucet Aerator Replacement - INDOOR	5	2	75	4,624	-	\$0	\$100,000.00
165	Low Flow Faucet Aerator Replacement - INDOOR	5	1	75	4,237	-	\$0	\$100,000.00
166	Low Flow Faucet Aerator Replacement - INDOOR	4	3	75	23,177	-	\$0	\$100,000.00
167	Low Flow Faucet Aerator Replacement - INDOOR	4	2	75	3,859	-	\$0	\$100,000.00
168	Low Flow Faucet Aerator Replacement - INDOOR	4	1	75	2,680	-	\$0	\$100,000.00
169	Low Flow Faucet Aerator Replacement - INDOOR	3	3	75	35,348	-	\$0	\$100,000.00
170	Low Flow Faucet Aerator Replacement - INDOOR	3	2	75	5,548	-	\$0	\$100,000.00
171	Low Flow Faucet Aerator Replacement - INDOOR	3	1	75	4,261	-	\$0	\$100,000.00
172	Low Flow Faucet Aerator Replacement - INDOOR	2	3	75	25,595	-	\$0	\$100,000.00

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J. Residential Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Residential Conservation Practices	Residential Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
173	Low Flow Faucet Aerator Replacement - INDOOR	2	2	75	7,468	-	\$0	\$100,000.00
174	Low Flow Faucet Aerator Replacement - INDOOR	2	1	75	5,905	-	\$0	\$100,000.00
175	Low Flow Faucet Aerator Replacement - INDOOR	1	3	75	11,745	-	\$0	\$100,000.00
176	Low Flow Faucet Aerator Replacement - INDOOR	1	2	75	6,064	-	\$0	\$100,000.00
177	Low Flow Volume Showerhead Replacement - INDOOR	1	1	75	2,095	-	\$0	\$100,000.00
178	Low Flow Volume Showerhead Replacement - INDOOR	6	2	75	2,397	-	\$0	\$100,000.00
179	Low Flow Volume Showerhead Replacement - INDOOR	6	1	75	80	-	\$0	\$100,000.00
180	Low Flow Volume Showerhead Replacement - INDOOR	5	2	75	1,070	-	\$0	\$100,000.00
181	Low Flow Volume Showerhead Replacement - INDOOR	5	1	75	560	-	\$0	\$100,000.00
182	Low Flow Volume Showerhead Replacement - INDOOR	4	2	75	893	-	\$0	\$100,000.00
183	Low Flow Volume Showerhead Replacement - INDOOR	4	1	75	354	-	\$0	\$100,000.00
184	Low Flow Volume Showerhead Replacement - INDOOR	3	2	75	1,284	-	\$0	\$100,000.00
185	Low Flow Volume Showerhead Replacement - INDOOR	3	1	75	563	-	\$0	\$100,000.00
186	Low Flow Volume Showerhead Replacement - INDOOR	2	2	75	1,728	-	\$0	\$100,000.00
187	Low Flow Volume Showerhead Replacement - INDOOR	2	1	75	781	-	\$0	\$100,000.00
188	Low Flow Volume Showerhead Replacement - INDOOR	1	2	75	1,403	-	\$0	\$100,000.00
189	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	6	4	100	-	-	\$0	\$100,000.00
190	Ultra Low Flush Toilet Replacement Program - INDOOR	6	2	75	23,978	-	\$0	\$100,000.00
191	Ultra Low Flush Toilet Replacement Program - INDOOR	6	1	75	637	-	\$0	\$100,000.00
192	Ultra Low Flush Toilet Replacement Program - INDOOR	5	2	75	10,701	-	\$0	\$100,000.00
193	Ultra Low Flush Toilet Replacement Program - INDOOR	5	1	75	4,458	-	\$0	\$100,000.00
194	Ultra Low Flush Toilet Replacement Program - INDOOR	4	2	75	8,931	-	\$0	\$100,000.00
195	Ultra Low Flush Toilet Replacement Program - INDOOR	4	1	75	2,820	-	\$0	\$100,000.00
196	Ultra Low Flush Toilet Replacement Program - INDOOR	3	2	75	12,839	-	\$0	\$100,000.00
197	Ultra Low Flush Toilet Replacement Program - INDOOR	3	1	75	4,483	-	\$0	\$100,000.00
198	Ultra Low Flush Toilet Replacement Program - INDOOR	2	2	75	17,281	-	\$0	\$100,000.00
199	Ultra Low Flush Toilet Replacement Program - INDOOR	2	1	75	6,213	-	\$0	\$100,000.00
200	Ultra Low Flush Toilet Replacement Program - INDOOR	1	2	75	14,033	-	\$0	\$100,000.00
201	Ultra Low Flush Toilet Replacement Program - INDOOR	1	1	75	16,674	-	\$0	\$100,000.00

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Commercial Conservator Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
1	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	HOTELS	4	100	0	65,570	\$0	\$0.00
2	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	1	75	0	6,795	\$1,050,000	\$33.97
3	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	OFFICE BUILDINGS	4	100	0	6,638	\$0	\$0.00
4	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	3	75	0	5,701	\$675,000	\$26.03
5	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RESTAURANTS	4	100	0	4,475	\$0	\$0.00
6	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	RETAIL	4	100	0	4,297	\$0	\$0.00
7	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	3	75	0	3,895	\$150,000	\$8.47
8	Waterless Urinal Replacement Program - INDOOR	RETAIL	3	75	0	3,861	\$59,531	\$3.39
9	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	3	75	0	3,486	\$1,890	\$0.12
10	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	2	75	0	3,312	\$1,080	\$0.07
11	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	LIVE-IN CARE	4	100	0	3,282	\$0	\$0.00
12	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RESTAURANTS	1	75	0	3,206	\$2,250	\$0.15
13	Water Reuse/Recycling Laundry Machines – INDOOR	HOTELS	2	75	0	1,970	\$525,000	\$58.58
14	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	2	75	0	1,857	\$375,000	\$44.39
15	Waterless Urinal Replacement Program - INDOOR	RETAIL	2	75	0	1,444	\$31,875	\$4.85
16	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	1	75	1,639	1,434	\$172,040	\$26.38
17	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	3	75	0	1,410	\$180	\$0.03
18	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	2	75	1,576	1,379	\$18,900	\$3.01
19	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	3	75	1,544	1,351	\$35,560	\$5.79
20	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	SCHOOLS	4	100	0	1,153	\$0	\$0.00
21	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	0	1,046	\$72,656	\$15.27
22	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	0	1,032	\$9,844	\$2.10
23	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	0	987	\$198,281	\$44.15
24	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	0	981	\$5,625	\$1.26
25	Waterless Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	0	949	\$11,719	\$2.71
26	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	1,070	937	\$6,720	\$1.58
27	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	0	762	\$36,563	\$10.55
28	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	3	75	0	717	\$150,000	\$46.00
29	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	3	75	771	674	\$129,110	\$42.09
30	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	2	75	0	672	\$450	\$0.15
31	Waterless Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	0	650	\$25,781	\$8.72
32	High Efficiency Toilet Replacement Program - INDOOR	HOTELS	2	75	727	636	\$48,315	\$16.70
33	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	709	620	\$15,260	\$5.41
34	High Efficiency Showerhead Replacement - INDOOR	HOTELS	1	75	1,236	618	\$12,289	\$4.37
35	Water Reuse/Recycling Laundry Machines – INDOOR	LIVE-IN CARE	1	75	0	613	\$150,000	\$53.77
36	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	677	593	\$14,000	\$5.19
37	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	3	75	0	502	\$720	\$0.32
38	High Efficiency Showerhead Replacement - INDOOR	HOTELS	3	75	970	485	\$9,222	\$4.18
39	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	2	75	0	477	\$34,688	\$15.98
40	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	544	476	\$21,700	\$10.03
41	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	0	471	\$47,344	\$22.11
42	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	2	75	521	456	\$20,580	\$9.93
43	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	514	450	\$28,280	\$13.83
44	Waterless Urinal Replacement Program - INDOOR	SCHOOLS	1	75	0	448	\$17,344	\$8.51
45	Urinal Replacement Program - INDOOR	RETAIL	3	75	1,544	386	\$8,573	\$4.88
46	High Efficiency Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	418	366	\$43,260	\$25.98
47	High Efficiency Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	413	361	\$11,760	\$7.15

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Commercial Conservator Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
48	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	395	346	\$118,440	\$75.35
49	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	2	75	0	334	\$270	\$0.18
50	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	663	331	\$5,290	\$3.51
51	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	SCHOOLS	1	75	0	314	\$720	\$0.50
52	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	1	75	320	280	\$10,360	\$8.14
53	High Efficiency Toilet Replacement Program - INDOOR	SCHOOLS	3	75	287	251	\$89,460	\$78.39
54	Urinal Replacement Program - INDOOR	RETAIL	2	75	934	234	\$4,590	\$4.32
55	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	LIVE-IN CARE	1	75	0	222	\$180	\$0.18
56	High Efficiency Showerhead Replacement - INDOOR	HOTELS	2	75	376	188	\$3,451	\$4.04
57	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	354	177	\$1,270	\$1.58
58	Waterless Urinal Replacement Program - INDOOR	RETAIL	1	75	0	176	\$4,688	\$5.86
59	Urinal Replacement Program - INDOOR	RESTAURANTS	2	75	635	159	\$810	\$1.12
60	Waterless Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	0	155	\$14,531	\$20.55
61	Urinal Replacement Program - INDOOR	RESTAURANTS	1	75	538	134	\$1,688	\$2.76
62	High Efficiency Toilet Replacement Program - INDOOR	RETAIL	1	75	126	110	\$2,800	\$5.60
63	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	431	108	\$5,265	\$10.73
64	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	420	105	\$3,713	\$7.77
65	Urinal Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	418	105	\$10,463	\$21.99
66	Urinal Replacement Program - INDOOR	RESTAURANTS	3	75	413	103	\$1,418	\$3.02
67	Urinal Replacement Program - INDOOR	LIVE-IN CARE	3	75	395	99	\$28,553	\$63.57
68	High Efficiency Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	111	97	\$8,680	\$19.66
69	Urinal Replacement Program - INDOOR	SCHOOLS	2	75	309	77	\$4,995	\$14.22
70	Urinal Replacement Program - INDOOR	LIVE-IN CARE	2	75	305	76	\$6,818	\$19.68
71	Urinal Replacement Program - INDOOR	SCHOOLS	3	75	287	72	\$21,600	\$66.25
72	Urinal Replacement Program - INDOOR	SCHOOLS	1	75	254	63	\$2,498	\$8.65
73	High Efficiency Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	112	56	\$390	\$1.54
74	Urinal Replacement Program - INDOOR	RETAIL	1	75	100	25	\$675	\$5.96
75	Urinal Replacement Program - INDOOR	LIVE-IN CARE	1	75	88	22	\$2,093	\$20.90
76	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	3	75	0	0	\$810	\$100,000.00
77	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	2	75	0	0	\$630	\$100,000.00
78	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	HOTELS	1	75	0	0	\$1,260	\$100,000.00
79	Waterless Urinal Replacement Program - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
80	Waterless Urinal Replacement Program - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
81	Waterless Urinal Replacement Program - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
82	Urinal Replacement Program - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
83	Urinal Replacement Program - INDOOR	HOTELS	2	75	0	0	\$0	\$100,000.00
84	Urinal Replacement Program - INDOOR	HOTELS	1	75	0	0	\$0	\$100,000.00
85	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
86	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	2	75	1,228	0	\$0	\$100,000.00
87	Ultra Low Flush Toilet Replacement Program - INDOOR	HOTELS	1	75	1,920	0	\$0	\$100,000.00
88	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	3	75	1,632	0	\$0	\$100,000.00
89	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	2	75	590	0	\$0	\$100,000.00
90	Low Flow Faucet Aerator Replacement - INDOOR	HOTELS	1	75	2,035	0	\$0	\$100,000.00
91	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	3	75	0	0	\$0	\$100,000.00
92	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	2	75	135	0	\$0	\$100,000.00
93	Low Flow Volume Showerhead Replacement - INDOOR	HOTELS	1	75	267	0	\$0	\$100,000.00
94	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	3	75	0	0	\$0	\$100,000.00

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Commercial Conservator Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

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95	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	2	75	868	0	\$0	\$100,000.00
96	Ultra Low Flush Toilet Replacement Program - INDOOR	LIVE-IN CARE	1	75	130	0	\$0	\$100,000.00
97	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	3	75	1,115	0	\$0	\$100,000.00
98	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	2	75	556	0	\$0	\$100,000.00
99	Low Flow Faucet Aerator Replacement - INDOOR	LIVE-IN CARE	1	75	184	0	\$0	\$100,000.00
100	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	3	75	0	0	\$0	\$100,000.00
101	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	2	75	128	0	\$0	\$100,000.00
102	Low Flow Volume Showerhead Replacement - INDOOR	LIVE-IN CARE	1	75	24	0	\$0	\$100,000.00
103	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	3	75	0	0	\$5,700,000	\$100,000.00
104	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	2	75	0	0	\$4,125,000	\$100,000.00
105	Water Reuse/Recycling Laundry Machines – INDOOR	OFFICE BUILDINGS	1	75	0	0	\$3,225,000	\$100,000.00
106	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$6,840	\$100,000.00
107	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$4,950	\$100,000.00
108	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$3,870	\$100,000.00
109	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
110	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	2	75	1,197	0	\$0	\$100,000.00
111	Ultra Low Flush Toilet Replacement Program - INDOOR	OFFICE BUILDINGS	1	75	637	0	\$0	\$100,000.00
112	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	3	75	1,181	0	\$0	\$100,000.00
113	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	2	75	767	0	\$0	\$100,000.00
114	Low Flow Faucet Aerator Replacement - INDOOR	OFFICE BUILDINGS	1	75	900	0	\$0	\$100,000.00
115	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
116	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$0	\$100,000.00
117	High Efficiency Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$0	\$100,000.00
118	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	3	75	0	0	\$0	\$100,000.00
119	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	2	75	0	0	\$0	\$100,000.00
120	Low Flow Volume Showerhead Replacement - INDOOR	OFFICE BUILDINGS	1	75	0	0	\$0	\$100,000.00
121	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	3	75	0	0	\$1,575,000	\$100,000.00
122	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	2	75	0	0	\$900,000	\$100,000.00
123	Water Reuse/Recycling Laundry Machines – INDOOR	RESTAURANTS	1	75	0	0	\$1,875,000	\$100,000.00
124	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	3	75	0	0	\$0	\$100,000.00
125	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	2	75	1,808	0	\$0	\$100,000.00
126	Ultra Low Flush Toilet Replacement Program - INDOOR	RESTAURANTS	1	75	794	0	\$0	\$100,000.00
127	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	3	75	1,166	0	\$0	\$100,000.00
128	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	2	75	1,159	0	\$0	\$100,000.00
129	Low Flow Faucet Aerator Replacement - INDOOR	RESTAURANTS	1	75	1,122	0	\$0	\$100,000.00
130	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	3	75	0	0	\$210	\$100,000.00
131	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	2	75	0	0	\$120	\$100,000.00
132	High Efficiency Showerhead Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$250	\$100,000.00
133	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	3	75	0	0	\$0	\$100,000.00
134	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	2	75	0	0	\$0	\$100,000.00
135	Low Flow Volume Showerhead Replacement - INDOOR	RESTAURANTS	1	75	0	0	\$0	\$100,000.00
136	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	3	75	0	0	\$3,825,000	\$100,000.00
137	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	2	75	0	0	\$2,025,000	\$100,000.00
138	Water Reuse/Recycling Laundry Machines – INDOOR	RETAIL	1	75	0	0	\$2,250,000	\$100,000.00
139	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	3	75	0	0	\$4,590	\$100,000.00
140	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	2	75	0	0	\$2,430	\$100,000.00
141	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	RETAIL	1	75	0	0	\$2,700	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

Commercial Conservation Practices sorted by Largest to Smallest Water Conservation Potential by Water Volume over a 20 year Planning Horizon for a 1 year Program Implementation Period

Rank	Commercial Conservation Practices	Commercial Category	Buildout Condition	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
142	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
143	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	2	75	2,662	0	\$0	\$100,000.00
144	Ultra Low Flush Toilet Replacement Program - INDOOR	RETAIL	1	75	147	0	\$0	\$100,000.00
145	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	3	75	4,359	0	\$0	\$100,000.00
146	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	2	75	1,706	0	\$0	\$100,000.00
147	Low Flow Faucet Aerator Replacement - INDOOR	RETAIL	1	75	208	0	\$0	\$100,000.00
148	High Efficiency Showerhead Replacement - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
149	High Efficiency Showerhead Replacement - INDOOR	RETAIL	2	75	0	0	\$0	\$100,000.00
150	High Efficiency Showerhead Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
151	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	3	75	0	0	\$0	\$100,000.00
152	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	2	75	0	0	\$0	\$100,000.00
153	Low Flow Volume Showerhead Replacement - INDOOR	RETAIL	1	75	0	0	\$0	\$100,000.00
154	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	3	75	0	0	\$600,000	\$100,000.00
155	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	2	75	0	0	\$225,000	\$100,000.00
156	Water Reuse/Recycling Laundry Machines – INDOOR	SCHOOLS	1	75	0	0	\$600,000	\$100,000.00
157	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	3	75	0	0	\$0	\$100,000.00
158	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	2	75	880	0	\$0	\$100,000.00
159	Ultra Low Flush Toilet Replacement Program - INDOOR	SCHOOLS	1	75	375	0	\$0	\$100,000.00
160	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	3	75	809	0	\$0	\$100,000.00
161	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	2	75	564	0	\$0	\$100,000.00
162	Low Flow Faucet Aerator Replacement - INDOOR	SCHOOLS	1	75	529	0	\$0	\$100,000.00
163	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	3	75	0	0	\$0	\$100,000.00
164	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	2	75	0	0	\$0	\$100,000.00
165	High Efficiency Showerhead Replacement - INDOOR	SCHOOLS	1	75	0	0	\$0	\$100,000.00
166	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	3	75	0	0	\$0	\$100,000.00
167	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	2	75	0	0	\$0	\$100,000.00
168	Low Flow Volume Showerhead Replacement - INDOOR	SCHOOLS	1	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

K. SJCUD - Efficient Use Benchmarks Per Residential Category and Build Out Condition

Res Class	Build Out Condition	Average Indoor Water Use Per Building Area (gpd/sqft)	Average Indoor Water Use Per Heated Area (gpd/sqft)	Average Outdoor Water Use Per Parcel Area (gpd/sqft)	Average Outdoor Water Use Per Irrigable Area (gpd/sqft)	Average Total Water User Per Parcel (gpd/sqft)
RS1	Pre 1984	0.059	0.082	0.007	0.016	0.018
	1984 - 1993	0.060	0.087	0.009	0.024	0.024
	1994 to Present	0.080	0.109	0.011	0.023	0.024
	Future	0.075	0.102	0.010	0.022	0.022
RS2	Pre 1984	0.050	0.071	0.006	0.018	0.017
	1984 - 1993	0.050	0.074	0.007	0.019	0.018
	1994 to Present	0.058	0.081	0.008	0.020	0.019
	Future	0.055	0.076	0.008	0.019	0.018
RS3	Pre 1984	0.045	0.065	0.006	0.016	0.014
	1984 - 1993	0.041	0.059	0.004	0.011	0.012
	1994 to Present	0.052	0.072	0.008	0.020	0.017
	Future	0.049	0.067	0.008	0.019	0.016
RS4	Pre 1984	0.040	0.060	0.006	0.015	0.013
	1984 - 1993	0.037	0.054	0.004	0.010	0.011
	1994 to Present	0.047	0.066	0.008	0.020	0.015
	Future	0.044	0.061	0.007	0.018	0.014
RS5	Pre 1984	0.041	0.066	0.005	0.014	0.012
	1984 - 1993	0.034	0.054	0.005	0.013	0.011
	1994 to Present	0.038	0.054	0.007	0.020	0.013
	Future	0.035	0.050	0.006	0.019	0.013
HD	Pre 1984	0.036	0.059	na	na	0.014
	1984 - 1993	0.032	0.046	na	na	0.015
	1994 to Present	0.032	0.056	na	na	0.015
	Future	0.032	0.056	na	na	0.015

SJCUD - Efficient Use Benchmarks Per Non-Residential Category and Build Out Condition*

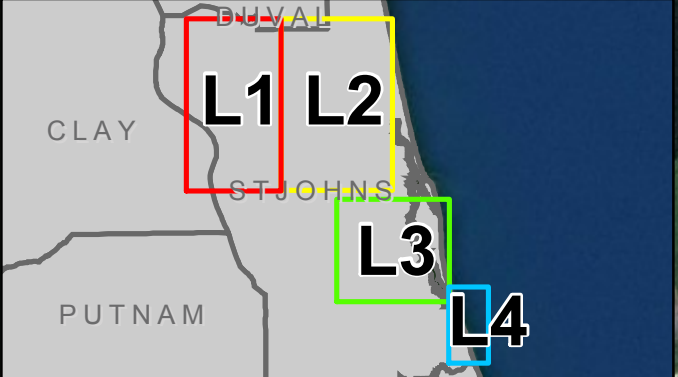
	Build Out Condition	Avg WU/ Building Area (gpd/sqft)	Avg WU/ Heated Area (gpd/sqft)	Avg WU/ Parcel Area (gpd/sqft)
AUTO & REPAIR	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
HOTELS	Pre 1984	0.125	0.403	0.055
	1984 - 1993	0.127	0.174	0.255
	1994 to Present	0.141	0.213	0.657
	Future	0.142	0.214	0.661
LIVE-IN CARE	Pre 1984	0.164	2.100	0.010
	1984 - 1993	0.149	0.170	0.019
	1994 to Present	0.077	3.365	0.036
	Future	0.081	3.558	0.039
MISCELLANEOUS	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
OFFICE BUILDINGS	Pre 1984	0.063	0.087	0.009
	1984 - 1993	0.077	0.110	0.011
	1994 to Present	0.044	0.053	0.009
	Future	0.045	0.054	0.009
OUTDOOR RECREATION	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na
RESTAURANTS	Pre 1984	0.317	0.391	0.151
	1984 - 1993	0.208	0.249	0.045
	1994 to Present	0.315	0.395	0.039
	Future	0.354	0.445	0.044
RETAIL	Pre 1984	0.050	0.073	0.012
	1984 - 1993	0.059	0.105	0.014
	1994 to Present	0.087	0.128	0.017
	Future	0.087	0.128	0.017
SCHOOLS	Pre 1984	0.113	0.199	0.006
	1984 - 1993	0.060	0.229	0.009
	1994 to Present	0.021	0.022	0.003
	Future	0.023	0.023	0.003
UNKNOWN	Pre 1984	na	na	na
	1984 - 1993	na	na	na
	1994 to Present	na	na	na
	Future	na	na	na

* Efficient use benchmarks are not calculated for categories whose end uses are too variable to assign conservation practices to or when there are insufficient data to develop water use benchmarks.

Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	0.97	0.77
RES-2	1.20	0.98
RES-3	1.38	1.16
RES-4	0.95	0.80
RES-5	0.91	0.75
RES-6	0.23	0.15
Retail	0.25	0.23
Hotels	0.16	0.13
Restaurants	0.10	0.08
Office Buildings	0.08	0.07



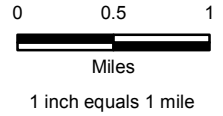
- Legend**
- RS1
 - RS2
 - RS3
 - RS4
 - RS5
 - RS6
 - Hotels
 - Live-in Care
 - Restaurants
 - Retail

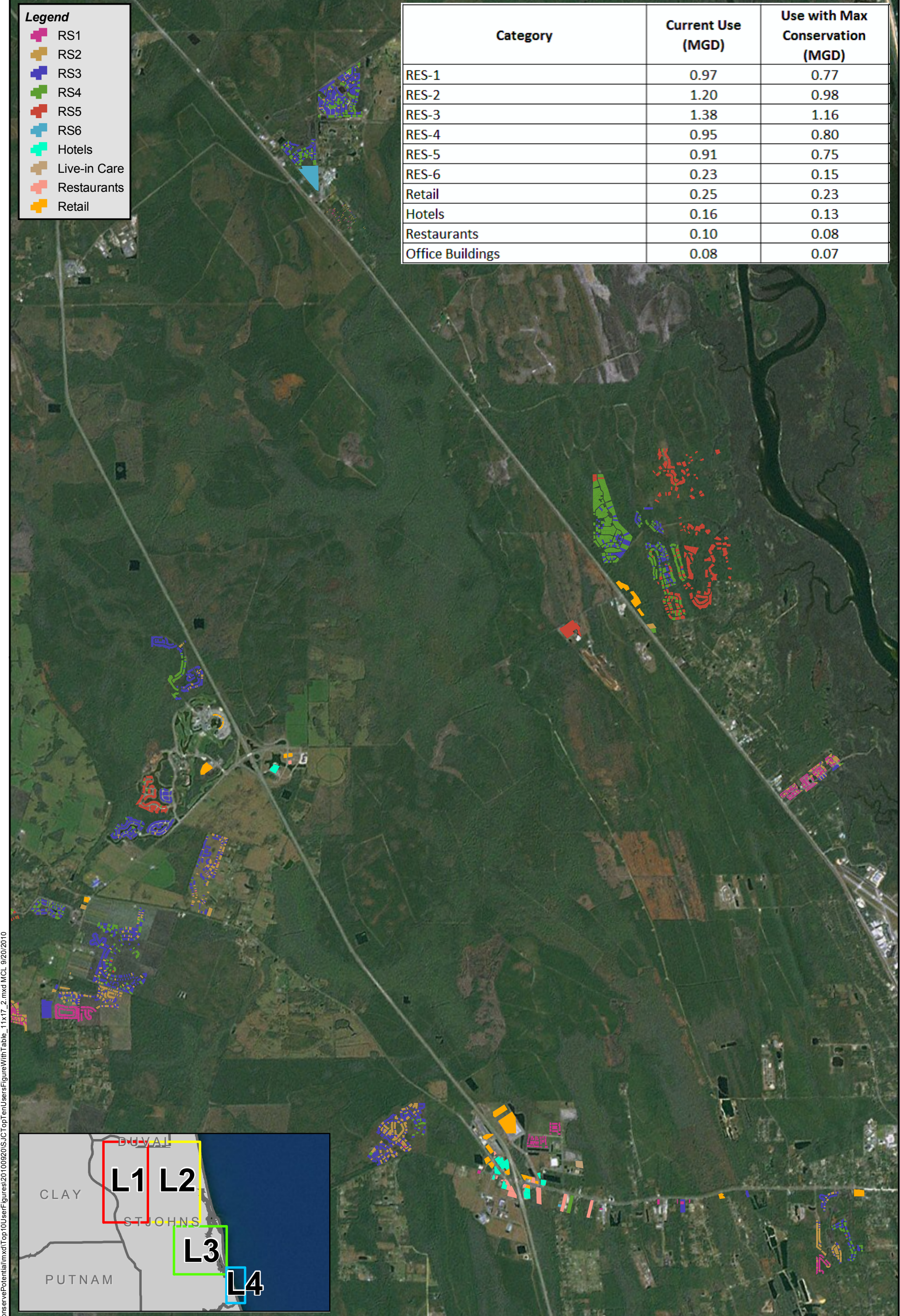


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Figure L1
Geographic Distribution of Top Water Use Categories, Typical Use, & Conservation Savings Gain
St. Johns County Utilities





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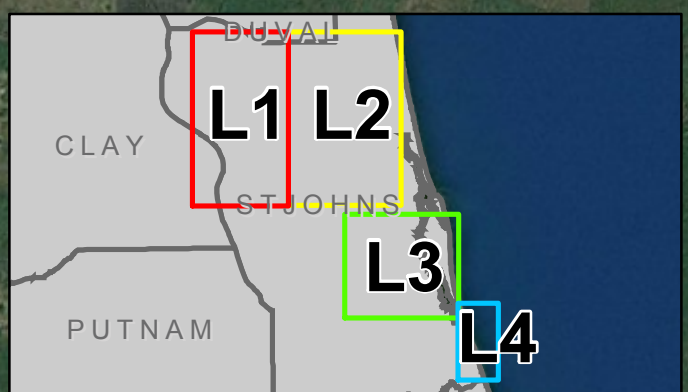
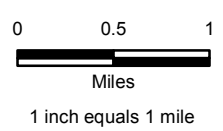


Figure L2
Geographic Distribution of Top Water Use Categories,
Typical Use, & Conservation Savings Gain
St. Johns County Utilities



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Legend	
	RS1
	RS2
	RS3
	RS4
	RS5
	RS6
	Hotels
	Live-in Care
	Restaurants
	Retail

Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	0.97	0.77
RES-2	1.20	0.98
RES-3	1.38	1.16
RES-4	0.95	0.80
RES-5	0.91	0.75
RES-6	0.23	0.15
Retail	0.25	0.23
Hotels	0.16	0.13
Restaurants	0.10	0.08
Office Buildings	0.08	0.07

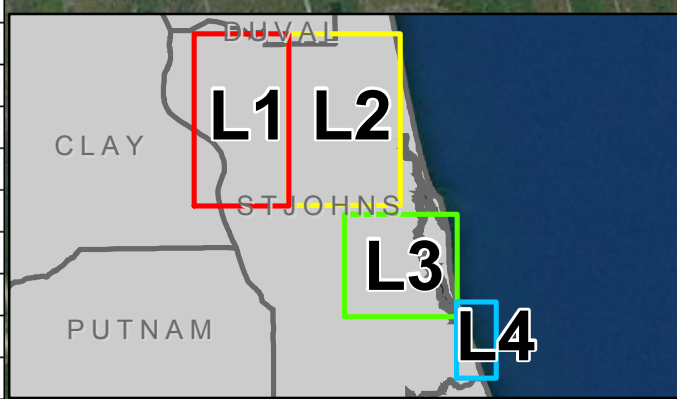
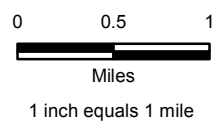


Figure L3
Geographic Distribution of Top Water Use Categories,
Typical Use, & Conservation Savings Gain
St. Johns County Utilities



Category	Current Use (MGD)	Use with Max Conservation (MGD)
RES-1	0.97	0.77
RES-2	1.20	0.98
RES-3	1.38	1.16
RES-4	0.95	0.80
RES-5	0.91	0.75
RES-6	0.23	0.15
Retail	0.25	0.23
Hotels	0.16	0.13
Restaurants	0.10	0.08
Office Buildings	0.08	0.07



- Legend**
- RS1
 - RS2
 - RS3
 - RS4
 - RS5
 - RS6
 - Hotels
 - Live-in Care
 - Restaurants
 - Retail

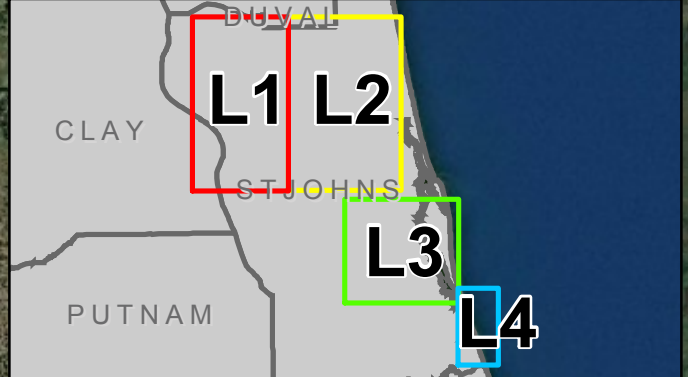
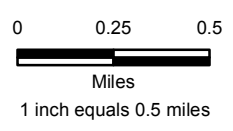


Figure L4
Geographic Distribution of Top Water Use Categories, Typical Use, & Conservation Savings Gain
St. Johns County Utilities



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M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS1	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	864,632	\$0	\$0.00
RS1	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	213,544	\$0	\$0.00
RS1	1	High Efficiency Clothes Washer Replacement - INDOOR	75	3,754	-	\$0	\$0.00
RS1	1	High Efficiency Dishwashers - INDOOR	75	1,492	-	\$0	\$0.00
RS1	1	Low Flow Faucet Aerator Replacement - INDOOR	75	15,847	-	\$0	\$0.00
RS1	1	Low Flow Volume Showerhead Replacement - INDOOR	75	2,095	-	\$0	\$0.00
RS1	1	High Efficiency Showerhead Replacement - INDOOR	75	9,669	4,835	\$50,360	\$0.76
RS1	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	12,039	\$79,200	\$1.45
RS1	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,992	\$28,575	\$1.57
RS1	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	10,247	\$82,350	\$1.77
RS1	2	High Efficiency Showerhead Replacement - INDOOR	75	3,854	1,927	\$16,640	\$1.90
RS1	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	12,039	\$105,600	\$1.93
RS1	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,992	\$38,100	\$2.10
RS1	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	10,247	\$109,800	\$2.36
RS1	1	High Efficiency Toilet Replacement Program - INDOOR	75	14,205	12,430	\$705,040	\$5.82
RS1	2	High Efficiency Toilet Replacement Program - INDOOR	75	8,314	7,275	\$232,960	\$7.04
RS1	3	High Efficiency Toilet Replacement Program - INDOOR	75	6,136	5,369	\$392,560	\$16.07
RS1	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,889	\$295,050	\$22.45
RS1	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,174	\$131,250	\$24.58
RS1	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	3,013	\$375,900	\$27.43
RS1	3	Landscape Replacement Program - OUTDOOR	50	-	17,590	\$3,330,000	\$41.62
RS1	2	Landscape Replacement Program - OUTDOOR	50	-	8,582	\$1,975,000	\$50.59
RS1	1	Landscape Replacement Program - OUTDOOR	50	-	21,291	\$5,980,000	\$61.75
RS1	3	High Efficiency Clothes Washer Replacement - INDOOR	75	3,456	-	\$0	\$100,000.00
RS1	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,611	-	\$0	\$100,000.00
RS1	3	High Efficiency Dishwashers - INDOOR	75	1,145	-	\$0	\$100,000.00
RS1	2	High Efficiency Dishwashers - INDOOR	75	571	-	\$0	\$100,000.00
RS1	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$28,040	\$100,000.00
RS1	3	Low Flow Faucet Aerator Replacement - INDOOR	75	11,745	-	\$0	\$100,000.00
RS1	2	Low Flow Faucet Aerator Replacement - INDOOR	75	6,064	-	\$0	\$100,000.00
RS1	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,403	-	\$0	\$100,000.00
RS1	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	14,033	-	\$0	\$100,000.00
RS1	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	16,674	-	\$0	\$100,000.00
RS2	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	60,045	\$0	\$0.00
RS2	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	14,301	\$0	\$0.00
RS2	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	31,993	\$200,250	\$1.38
RS2	2	High Efficiency Showerhead Replacement - INDOOR	75	4,746	2,373	\$15,180	\$1.41
RS2	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	6,143	\$39,825	\$1.43
RS2	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	4,692	\$33,075	\$1.55
RS2	1	High Efficiency Showerhead Replacement - INDOOR	75	3,603	1,802	\$12,980	\$1.58
RS2	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	31,993	\$267,000	\$1.83

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS2	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	6,143	\$53,100	\$1.90
RS2	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	4,692	\$44,100	\$2.07
RS2	2	High Efficiency Toilet Replacement Program - INDOOR	75	10,238	8,958	\$283,360	\$6.95
RS2	1	High Efficiency Toilet Replacement Program - INDOOR	75	5,293	4,632	\$242,200	\$11.50
RS2	3	High Efficiency Toilet Replacement Program - INDOOR	75	13,372	11,700	\$899,920	\$16.91
RS2	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	7,678	\$747,600	\$21.41
RS2	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,806	\$181,650	\$22.11
RS2	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,379	\$151,200	\$24.10
RS2	3	Landscape Replacement Program - OUTDOOR	50	-	41,951	\$7,632,500	\$40.00
RS2	2	Landscape Replacement Program - OUTDOOR	50	-	13,135	\$2,402,500	\$40.21
RS2	1	Landscape Replacement Program - OUTDOOR	50	-	9,414	\$2,055,000	\$47.99
RS2	3	High Efficiency Clothes Washer Replacement - INDOOR	75	7,532	-	\$0	\$100,000.00
RS2	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,984	-	\$0	\$100,000.00
RS2	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,399	-	\$0	\$100,000.00
RS2	3	High Efficiency Dishwashers - INDOOR	75	2,495	-	\$0	\$100,000.00
RS2	2	High Efficiency Dishwashers - INDOOR	75	703	-	\$0	\$100,000.00
RS2	1	High Efficiency Dishwashers - INDOOR	75	556	-	\$0	\$100,000.00
RS2	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$48,210	\$100,000.00
RS2	3	Low Flow Faucet Aerator Replacement - INDOOR	75	25,595	-	\$0	\$100,000.00
RS2	2	Low Flow Faucet Aerator Replacement - INDOOR	75	7,468	-	\$0	\$100,000.00
RS2	1	Low Flow Faucet Aerator Replacement - INDOOR	75	5,905	-	\$0	\$100,000.00
RS2	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,728	-	\$0	\$100,000.00
RS2	1	Low Flow Volume Showerhead Replacement - INDOOR	75	781	-	\$0	\$100,000.00
RS2	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	17,281	-	\$0	\$100,000.00
RS2	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	6,213	-	\$0	\$100,000.00
RS3	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	19,268	\$0	\$0.00
RS3	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	3,994	\$0	\$0.00
RS3	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,193	\$19,125	\$1.32
RS3	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	50,468	\$302,400	\$1.32
RS3	2	High Efficiency Showerhead Replacement - INDOOR	75	3,526	1,763	\$11,540	\$1.44
RS3	1	High Efficiency Showerhead Replacement - INDOOR	75	2,600	1,300	\$9,000	\$1.52
RS3	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,807	\$27,675	\$1.60
RS3	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,193	\$25,500	\$1.76
RS3	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	50,468	\$403,200	\$1.76
RS3	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,807	\$36,900	\$2.13
RS3	2	High Efficiency Toilet Replacement Program - INDOOR	75	7,606	6,656	\$215,320	\$7.11
RS3	1	High Efficiency Toilet Replacement Program - INDOOR	75	3,820	3,342	\$168,000	\$11.05
RS3	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	939	\$87,150	\$20.41
RS3	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	12,112	\$1,129,800	\$20.51
RS3	3	High Efficiency Toilet Replacement Program - INDOOR	75	18,466	16,158	\$1,695,120	\$23.06
RS3	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,119	\$127,050	\$24.96

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS3	3	Landscape Replacement Program - OUTDOOR	50	-	58,729	\$9,585,000	\$35.88
RS3	1	Landscape Replacement Program - OUTDOOR	50	-	6,995	\$1,425,000	\$44.78
RS3	2	Landscape Replacement Program - OUTDOOR	50	-	8,421	\$1,827,500	\$47.71
RS3	3	High Efficiency Clothes Washer Replacement - INDOOR	75	10,402	-	\$0	\$100,000.00
RS3	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,474	-	\$0	\$100,000.00
RS3	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,009	-	\$0	\$100,000.00
RS3	3	High Efficiency Dishwashers - INDOOR	75	3,445	-	\$0	\$100,000.00
RS3	2	High Efficiency Dishwashers - INDOOR	75	522	-	\$0	\$100,000.00
RS3	1	High Efficiency Dishwashers - INDOOR	75	401	-	\$0	\$100,000.00
RS3	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$100,900	\$100,000.00
RS3	3	Low Flow Faucet Aerator Replacement - INDOOR	75	35,348	-	\$0	\$100,000.00
RS3	2	Low Flow Faucet Aerator Replacement - INDOOR	75	5,548	-	\$0	\$100,000.00
RS3	1	Low Flow Faucet Aerator Replacement - INDOOR	75	4,261	-	\$0	\$100,000.00
RS3	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,284	-	\$0	\$100,000.00
RS3	1	Low Flow Volume Showerhead Replacement - INDOOR	75	563	-	\$0	\$100,000.00
RS3	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	12,839	-	\$0	\$100,000.00
RS3	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	4,483	-	\$0	\$100,000.00
RS4	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	1,269	\$0	\$0.00
RS4	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	236	\$0	\$0.00
RS4	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	38,657	\$180,000	\$1.02
RS4	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	2,941	\$16,875	\$1.26
RS4	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	38,657	\$240,000	\$1.36
RS4	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	3,195	\$22,950	\$1.58
RS4	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	2,941	\$22,500	\$1.68
RS4	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	3,195	\$30,600	\$2.11
RS4	2	High Efficiency Showerhead Replacement - INDOOR	75	2,453	1,226	\$12,530	\$2.25
RS4	1	High Efficiency Showerhead Replacement - INDOOR	75	1,636	818	\$9,530	\$2.56
RS4	2	High Efficiency Toilet Replacement Program - INDOOR	75	5,291	4,630	\$210,420	\$9.99
RS4	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	9,278	\$672,000	\$15.92
RS4	1	High Efficiency Toilet Replacement Program - INDOOR	75	2,403	2,102	\$160,020	\$16.73
RS4	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	865	\$76,650	\$19.49
RS4	3	High Efficiency Toilet Replacement Program - INDOOR	75	12,108	10,595	\$1,005,900	\$20.87
RS4	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	939	\$105,000	\$24.57
RS4	3	Landscape Replacement Program - OUTDOOR	50	-	44,388	\$5,687,500	\$28.17
RS4	1	Landscape Replacement Program - OUTDOOR	50	-	5,028	\$905,000	\$39.57
RS4	2	Landscape Replacement Program - OUTDOOR	50	-	5,517	\$1,190,000	\$47.42
RS4	3	High Efficiency Clothes Washer Replacement - INDOOR	75	6,820	-	\$0	\$100,000.00
RS4	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,026	-	\$0	\$100,000.00
RS4	1	High Efficiency Clothes Washer Replacement - INDOOR	75	635	-	\$0	\$100,000.00
RS4	3	High Efficiency Dishwashers - INDOOR	75	2,259	-	\$0	\$100,000.00
RS4	2	High Efficiency Dishwashers - INDOOR	75	363	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS4	1	High Efficiency Dishwashers - INDOOR	75	252	-	\$0	\$100,000.00
RS4	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$59,880	\$100,000.00
RS4	3	Low Flow Faucet Aerator Replacement - INDOOR	75	23,177	-	\$0	\$100,000.00
RS4	2	Low Flow Faucet Aerator Replacement - INDOOR	75	3,859	-	\$0	\$100,000.00
RS4	1	Low Flow Faucet Aerator Replacement - INDOOR	75	2,680	-	\$0	\$100,000.00
RS4	2	Low Flow Volume Showerhead Replacement - INDOOR	75	893	-	\$0	\$100,000.00
RS4	1	Low Flow Volume Showerhead Replacement - INDOOR	75	354	-	\$0	\$100,000.00
RS4	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	8,931	-	\$0	\$100,000.00
RS4	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	2,820	-	\$0	\$100,000.00
RS5	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	49,139	\$0	\$0.00
RS5	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	8,862	\$0	\$0.00
RS5	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	7,716	\$31,275	\$0.89
RS5	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	35,359	\$147,600	\$0.92
RS5	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	7,716	\$41,700	\$1.19
RS5	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	35,359	\$196,800	\$1.22
RS5	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	6,067	\$35,550	\$1.29
RS5	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	6,067	\$47,400	\$1.72
RS5	2	High Efficiency Showerhead Replacement - INDOOR	75	2,939	1,470	\$15,930	\$2.38
RS5	1	High Efficiency Showerhead Replacement - INDOOR	75	2,585	1,293	\$16,800	\$2.86
RS5	2	High Efficiency Toilet Replacement Program - INDOOR	75	6,340	5,547	\$254,800	\$10.10
RS5	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	2,269	\$142,800	\$13.84
RS5	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	8,486	\$551,250	\$14.28
RS5	1	High Efficiency Toilet Replacement Program - INDOOR	75	3,798	3,323	\$268,800	\$17.78
RS5	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	1,784	\$161,700	\$19.93
RS5	3	Landscape Replacement Program - OUTDOOR	50	-	39,066	\$4,015,000	\$22.59
RS5	3	High Efficiency Toilet Replacement Program - INDOOR	75	9,635	8,431	\$946,960	\$24.69
RS5	1	Landscape Replacement Program - OUTDOOR	50	-	9,649	\$1,140,000	\$25.97
RS5	2	Landscape Replacement Program - OUTDOOR	50	-	7,498	\$1,080,000	\$31.67
RS5	3	High Efficiency Clothes Washer Replacement - INDOOR	75	5,427	-	\$0	\$100,000.00
RS5	2	High Efficiency Clothes Washer Replacement - INDOOR	75	1,229	-	\$0	\$100,000.00
RS5	1	High Efficiency Clothes Washer Replacement - INDOOR	75	1,004	-	\$0	\$100,000.00
RS5	3	High Efficiency Dishwashers - INDOOR	75	1,798	-	\$0	\$100,000.00
RS5	2	High Efficiency Dishwashers - INDOOR	75	435	-	\$0	\$100,000.00
RS5	1	High Efficiency Dishwashers - INDOOR	75	399	-	\$0	\$100,000.00
RS5	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$59,190	\$100,000.00
RS5	3	Low Flow Faucet Aerator Replacement - INDOOR	75	18,444	-	\$0	\$100,000.00
RS5	2	Low Flow Faucet Aerator Replacement - INDOOR	75	4,624	-	\$0	\$100,000.00
RS5	1	Low Flow Faucet Aerator Replacement - INDOOR	75	4,237	-	\$0	\$100,000.00
RS5	2	Low Flow Volume Showerhead Replacement - INDOOR	75	1,070	-	\$0	\$100,000.00
RS5	1	Low Flow Volume Showerhead Replacement - INDOOR	75	560	-	\$0	\$100,000.00
RS5	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	10,701	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

M. Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Program Implementation Period

Residential Category	Buildout Condition	Residential Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RS5	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	4,458	-	\$0	\$100,000.00
RS6	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	-	4,605	\$0	\$0.00
RS6	1	High Efficiency Showerhead Replacement - INDOOR	75	369	185	\$17,220	\$20.51
RS6	2	High Efficiency Showerhead Replacement - INDOOR	75	6,586	3,293	\$308,540	\$20.60
RS6	2	High Efficiency Toilet Replacement Program - INDOOR	75	14,206	12,430	\$4,319,560	\$76.40
RS6	1	High Efficiency Toilet Replacement Program - INDOOR	75	542	475	\$241,080	\$111.69
RS6	3	High Efficiency Toilet Replacement Program - INDOOR	75	390	341	\$253,960	\$163.50
RS6	3	Submetering Billing of Apartment Units - INDOOR	75	-	137	\$255,375	\$411.26
RS6	1	Submetering Billing of Apartment Units - INDOOR	75	-	214	\$484,875	\$498.98
RS6	2	Submetering Billing of Apartment Units - INDOOR	75	-	3,659	\$8,678,250	\$521.44
RS6	3	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Efficient Irrigation Systems (non turf) - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	High Efficiency Clothes Washer Replacement - INDOOR	75	220	-	\$0	\$100,000.00
RS6	2	High Efficiency Clothes Washer Replacement - INDOOR	75	2,753	-	\$0	\$100,000.00
RS6	1	High Efficiency Clothes Washer Replacement - INDOOR	75	143	-	\$0	\$100,000.00
RS6	3	High Efficiency Dishwashers - INDOOR	75	73	-	\$0	\$100,000.00
RS6	2	High Efficiency Dishwashers - INDOOR	75	976	-	\$0	\$100,000.00
RS6	1	High Efficiency Dishwashers - INDOOR	75	57	-	\$0	\$100,000.00
RS6	3	High Efficiency Showerhead Replacement - INDOOR	75	-	-	\$18,140	\$100,000.00
RS6	3	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Single Family Advanced ET Irrigation Controllers - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	1	Install Soil Moisture Sensor Shut-off Devices - OUTDOOR	75	-	-	\$0	\$100,000.00
RS6	3	Landscape Replacement Program - OUTDOOR	50	-	-	\$2,155,000	\$100,000.00
RS6	2	Landscape Replacement Program - OUTDOOR	50	-	-	\$36,640,000	\$100,000.00
RS6	1	Landscape Replacement Program - OUTDOOR	50	-	-	\$2,045,000	\$100,000.00
RS6	3	Low Flow Faucet Aerator Replacement - INDOOR	75	-	-	\$0	\$100,000.00
RS6	2	Low Flow Faucet Aerator Replacement - INDOOR	75	10,362	-	\$0	\$100,000.00
RS6	1	Low Flow Faucet Aerator Replacement - INDOOR	75	605	-	\$0	\$100,000.00
RS6	2	Low Flow Volume Showerhead Replacement - INDOOR	75	2,397	-	\$0	\$100,000.00
RS6	1	Low Flow Volume Showerhead Replacement - INDOOR	75	80	-	\$0	\$100,000.00
RS6	4	Modifications to Land Development Regulations (LDR) Limiting Water Use - OUTDOOR	100	-	-	\$0	\$100,000.00
RS6	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	23,978	-	\$0	\$100,000.00
RS6	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	637	-	\$0	\$100,000.00

* For practices that do not achieve any program savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
HOTELS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	1,052	\$0	\$0.00
HOTELS	3	High Efficiency Showerhead Replacement - INDOOR	75	653	327	\$7,381	\$4.97
HOTELS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	3,838	\$525,000	\$30.07
HOTELS	3	High Efficiency Toilet Replacement Program - INDOOR	75	519	454	\$103,328	\$50.03
HOTELS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
HOTELS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$630	\$100,000.00
HOTELS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$90	\$100,000.00
HOTELS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,098	0	\$0	\$100,000.00
HOTELS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
HOTELS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	921	\$0	\$0.00
INDOOR RECREATION	3	Waterless Urinal Replacement Program - INDOOR	75	0	577	\$9,375	\$3.57
INDOOR RECREATION	2	Urinal Replacement Program - INDOOR	75	131	33	\$675	\$4.55
INDOOR RECREATION	2	Waterless Urinal Replacement Program - INDOOR	75	0	202	\$4,688	\$5.10
INDOOR RECREATION	3	Urinal Replacement Program - INDOOR	75	231	58	\$1,350	\$5.15
INDOOR RECREATION	2	High Efficiency Toilet Replacement Program - INDOOR	75	220	193	\$5,600	\$6.39
INDOOR RECREATION	3	High Efficiency Toilet Replacement Program - INDOOR	75	231	202	\$11,200	\$12.20
INDOOR RECREATION	1	Waterless Urinal Replacement Program - INDOOR	75	0	6	\$469	\$16.00
INDOOR RECREATION	1	Urinal Replacement Program - INDOOR	75	4	1	\$68	\$16.27
INDOOR RECREATION	1	High Efficiency Toilet Replacement Program - INDOOR	75	5	4	\$560	\$30.61
INDOOR RECREATION	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$1,500,000	\$100,000.00
INDOOR RECREATION	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$750,000	\$100,000.00
INDOOR RECREATION	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
INDOOR RECREATION	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$1,800	\$100,000.00
INDOOR RECREATION	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$900	\$100,000.00
INDOOR RECREATION	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$90	\$100,000.00
INDOOR RECREATION	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
INDOOR RECREATION	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	372	0	\$0	\$100,000.00
INDOOR RECREATION	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5	0	\$0	\$100,000.00
INDOOR RECREATION	3	Low Flow Faucet Aerator Replacement - INDOOR	75	651	0	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Faucet Aerator Replacement - INDOOR	75	238	0	\$0	\$100,000.00
INDOOR RECREATION	1	Low Flow Faucet Aerator Replacement - INDOOR	75	8	0	\$0	\$100,000.00
INDOOR RECREATION	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$200	\$100,000.00
INDOOR RECREATION	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$100	\$100,000.00
INDOOR RECREATION	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$10	\$100,000.00
INDOOR RECREATION	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
INDOOR RECREATION	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$86	\$100,000.00
INDOOR RECREATION	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$5	\$100,000.00
LIVE-IN CARE	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	720	\$0	\$0.00
LIVE-IN CARE	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	818	\$2,610	\$0.70
LIVE-IN CARE	3	High Efficiency Showerhead Replacement - INDOOR	75	384	192	\$2,810	\$3.21
LIVE-IN CARE	3	Waterless Urinal Replacement Program - INDOOR	75	0	573	\$105,469	\$40.48
LIVE-IN CARE	3	Urinal Replacement Program - INDOOR	75	229	57	\$15,188	\$58.28
LIVE-IN CARE	3	High Efficiency Toilet Replacement Program - INDOOR	75	229	200	\$62,860	\$68.92
LIVE-IN CARE	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	2,260	\$2,175,000	\$211.59
LIVE-IN CARE	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$450,000	\$100,000.00
LIVE-IN CARE	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
LIVE-IN CARE	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$540	\$100,000.00
LIVE-IN CARE	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$90	\$100,000.00
LIVE-IN CARE	2	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$9,844	\$100,000.00
LIVE-IN CARE	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$1,875	\$100,000.00
LIVE-IN CARE	2	Urinal Replacement Program - INDOOR	75	0	0	\$1,418	\$100,000.00
LIVE-IN CARE	1	Urinal Replacement Program - INDOOR	75	0	0	\$270	\$100,000.00
LIVE-IN CARE	2	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$5,880	\$100,000.00
LIVE-IN CARE	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$980	\$100,000.00
LIVE-IN CARE	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	3	Low Flow Faucet Aerator Replacement - INDOOR	75	647	0	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$260	\$100,000.00
LIVE-IN CARE	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$40	\$100,000.00
LIVE-IN CARE	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
LIVE-IN CARE	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$223	\$100,000.00
LIVE-IN CARE	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$20	\$100,000.00
OFFICE BUILDINGS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	31,245	\$0	\$0.00
OFFICE BUILDINGS	2	High Efficiency Toilet Replacement Program - INDOOR	75	723	633	\$14,140	\$4.91
OFFICE BUILDINGS	3	Waterless Urinal Replacement Program - INDOOR	75	0	2,801	\$78,750	\$6.18
OFFICE BUILDINGS	2	Urinal Replacement Program - INDOOR	75	429	107	\$3,443	\$7.06
OFFICE BUILDINGS	2	Waterless Urinal Replacement Program - INDOOR	75	0	662	\$23,906	\$7.93
OFFICE BUILDINGS	3	Urinal Replacement Program - INDOOR	75	1,120	280	\$11,340	\$8.90

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
OFFICE BUILDINGS	3	High Efficiency Toilet Replacement Program - INDOOR	75	1,120	980	\$46,900	\$10.52
OFFICE BUILDINGS	1	Waterless Urinal Replacement Program - INDOOR	75	0	5	\$469	\$18.87
OFFICE BUILDINGS	1	Urinal Replacement Program - INDOOR	75	3	1	\$68	\$19.19
OFFICE BUILDINGS	1	High Efficiency Toilet Replacement Program - INDOOR	75	4	3	\$420	\$27.08
OFFICE BUILDINGS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$6,375,000	\$100,000.00
OFFICE BUILDINGS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,675,000	\$100,000.00
OFFICE BUILDINGS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$150,000	\$100,000.00
OFFICE BUILDINGS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$7,650	\$100,000.00
OFFICE BUILDINGS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$4,410	\$100,000.00
OFFICE BUILDINGS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$180	\$100,000.00
OFFICE BUILDINGS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,221	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	5	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	3,162	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	783	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	6	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
OFFICE BUILDINGS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	1,818	\$0	\$0.00
RESTAURANTS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	4,110	\$1,260	\$0.07
RESTAURANTS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	905	\$450	\$0.11
RESTAURANTS	3	Waterless Urinal Replacement Program - INDOOR	75	0	1,217	\$6,563	\$1.19
RESTAURANTS	3	Urinal Replacement Program - INDOOR	75	487	122	\$945	\$1.71
RESTAURANTS	2	Urinal Replacement Program - INDOOR	75	173	43	\$338	\$1.71
RESTAURANTS	2	Waterless Urinal Replacement Program - INDOOR	75	0	268	\$2,344	\$1.92
RESTAURANTS	2	High Efficiency Toilet Replacement Program - INDOOR	75	293	256	\$2,800	\$2.40
RESTAURANTS	3	High Efficiency Toilet Replacement Program - INDOOR	75	487	426	\$7,840	\$4.05
RESTAURANTS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$1,050,000	\$100,000.00
RESTAURANTS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$375,000	\$100,000.00
RESTAURANTS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	494	0	\$0	\$100,000.00
RESTAURANTS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	1,374	0	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	317	0	\$0	\$100,000.00
RESTAURANTS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$140	\$100,000.00

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
RESTAURANTS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$50	\$100,000.00
RESTAURANTS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RESTAURANTS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$43	\$100,000.00
RESTAURANTS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	3,137	\$0	\$0.00
RETAIL	3	Waterless Urinal Replacement Program - INDOOR	75	0	1,951	\$56,719	\$6.39
RETAIL	3	Urinal Replacement Program - INDOOR	75	780	195	\$8,168	\$9.20
RETAIL	3	High Efficiency Toilet Replacement Program - INDOOR	75	780	683	\$33,880	\$10.91
RETAIL	2	High Efficiency Toilet Replacement Program - INDOOR	75	76	67	\$4,620	\$15.19
RETAIL	2	Urinal Replacement Program - INDOOR	75	45	11	\$1,148	\$22.28
RETAIL	2	Waterless Urinal Replacement Program - INDOOR	75	0	70	\$7,969	\$25.02
RETAIL	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$3,525,000	\$100,000.00
RETAIL	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$225,000	\$100,000.00
RETAIL	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$4,230	\$100,000.00
RETAIL	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$270	\$100,000.00
RETAIL	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Waterless Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Urinal Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	High Efficiency Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	129	0	\$0	\$100,000.00
RETAIL	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Low Flow Faucet Aerator Replacement - INDOOR	75	2,203	0	\$0	\$100,000.00
RETAIL	2	Low Flow Faucet Aerator Replacement - INDOOR	75	83	0	\$0	\$100,000.00
RETAIL	1	Low Flow Faucet Aerator Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
RETAIL	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	4	Ordinances Adopting Higher Indoor Efficiency Standards - INDOOR	100	0	2,420	\$0	\$0.00
SCHOOLS	3	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	3,504	\$720	\$0.05
SCHOOLS	2	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	417	\$450	\$0.24
SCHOOLS	1	Commercial Kitchen Pre-Rinse Spray Valve Replacement - INDOOR	75	0	44	\$90	\$0.45
SCHOOLS	2	High Efficiency Toilet Replacement Program - INDOOR	75	649	568	\$13,580	\$5.26
SCHOOLS	2	Urinal Replacement Program - INDOOR	75	385	96	\$3,308	\$7.56
SCHOOLS	3	Waterless Urinal Replacement Program - INDOOR	75	0	5,003	\$191,250	\$8.40
SCHOOLS	2	Waterless Urinal Replacement Program - INDOOR	75	0	595	\$22,969	\$8.49
SCHOOLS	1	High Efficiency Toilet Replacement Program - INDOOR	75	45	40	\$2,100	\$11.69
SCHOOLS	3	Urinal Replacement Program - INDOOR	75	2,001	500	\$27,540	\$12.10
SCHOOLS	1	Waterless Urinal Replacement Program - INDOOR	75	0	63	\$3,750	\$13.03
SCHOOLS	1	Urinal Replacement Program - INDOOR	75	36	9	\$540	\$13.25

* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

Conservation Practices per Water Use Category sorted by Unit Cost over a 20 year Planning Horizon for a 1 year Implementation Period

Commercial Category	Buildout	Commercial Conservation Practices	Saturation Goal (%)	Passive Savings (gpd)	Program Savings (gpd)	Program Costs (PV)	2030 Unit Cost (\$/kgal)
SCHOOLS	3	High Efficiency Toilet Replacement Program - INDOOR	75	2,001	1,751	\$114,100	\$14.33
SCHOOLS	3	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$600,000	\$100,000.00
SCHOOLS	2	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$375,000	\$100,000.00
SCHOOLS	1	Water Reuse/Recycling Laundry Machines – INDOOR	75	0	0	\$75,000	\$100,000.00
SCHOOLS	3	Ultra Low Flush Toilet Replacement Program - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	2	Ultra Low Flush Toilet Replacement Program - INDOOR	75	1,096	0	\$0	\$100,000.00
SCHOOLS	1	Ultra Low Flush Toilet Replacement Program - INDOOR	75	53	0	\$0	\$100,000.00
SCHOOLS	3	Low Flow Faucet Aerator Replacement - INDOOR	75	5,648	0	\$0	\$100,000.00
SCHOOLS	2	Low Flow Faucet Aerator Replacement - INDOOR	75	703	0	\$0	\$100,000.00
SCHOOLS	1	Low Flow Faucet Aerator Replacement - INDOOR	75	75	0	\$0	\$100,000.00
SCHOOLS	3	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	2	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	1	High Efficiency Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	3	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	2	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00
SCHOOLS	1	Low Flow Volume Showerhead Replacement - INDOOR	75	0	0	\$0	\$100,000.00

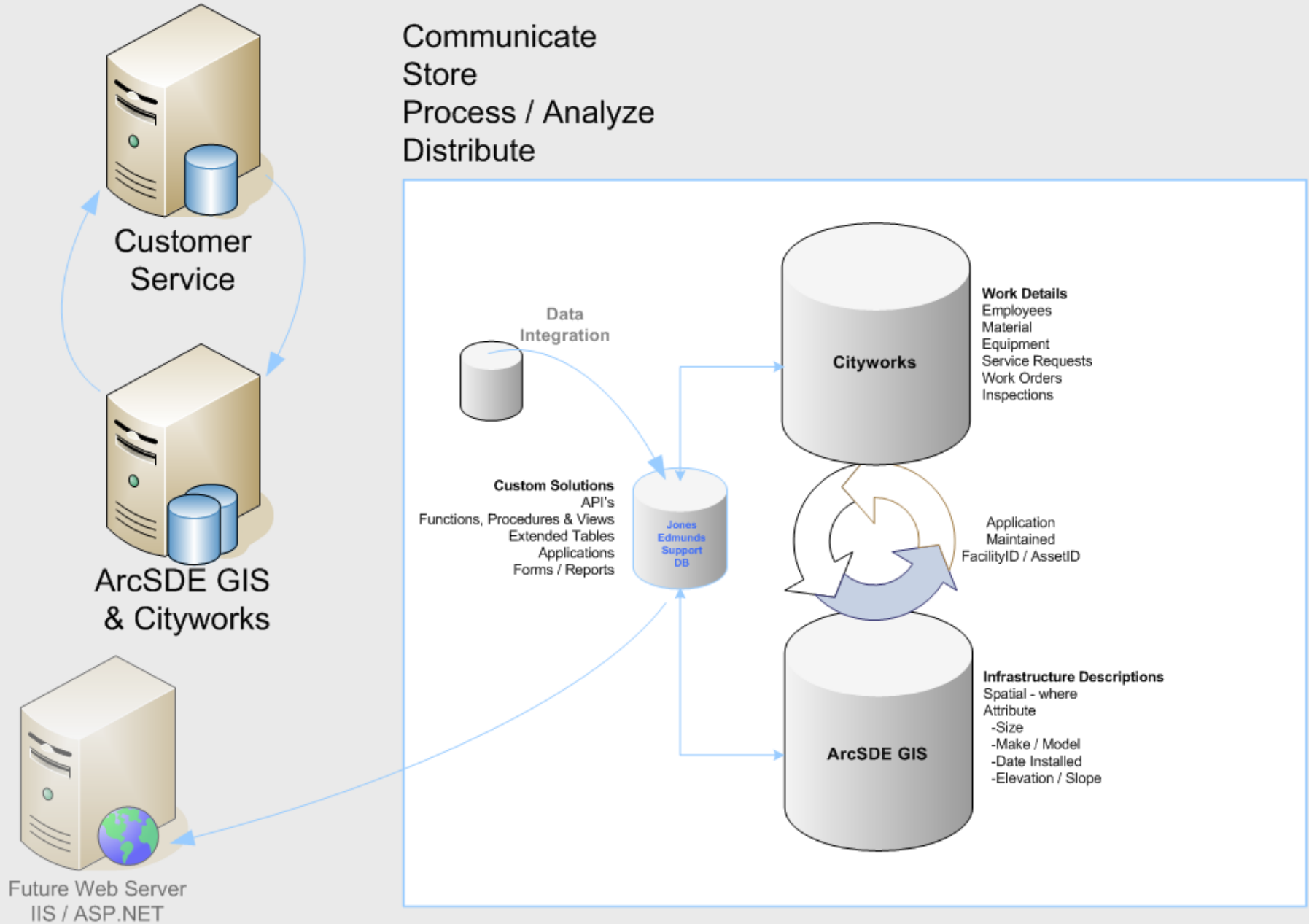
* For practices that do not achieve any program water savings, the 2030 unit cost defaults to \$100,000.

APPENDIX M

Computerized Maintenance Management System (CMMS) Mock-up

Establishing the "System"

Communicate
Store
Process / Analyze
Distribute



Establishing the “Logic”

What if...
How many...
How much...
Where is...

Custom Solutions
API's
Functions, Procedures & Views
Extended Tables
Applications
Forms / Reports



Demo based upon some pre-determined logic:

Identify threshold *exceedances* (moving average)

For *all records* within a particular residential classification:

$$2008 (Q_{avg} + (Q_{stdv} * (1.0))) = 2009 Q_{threshold}$$

Multiple custom triggers can be established to meet organization's business practices.

Identify candidates for application of BMP's like:

Soil Moisture Sensors







Column	Alias	Table	Output	Sort Type	Sort Order
RESClassification		vw_3_FIVOT	<input checked="" type="checkbox"/>	Ascending	1
CAST(Value AS INT)	ValueSum		<input checked="" type="checkbox"/>		
CAST(Value AS DEC(10,2))	ValueAvg		<input checked="" type="checkbox"/>		
Value	ValueSTD	vw_3_FIVOT	<input checked="" type="checkbox"/>		
*	Count		<input checked="" type="checkbox"/>		
Reading		vw_3_FIVOT	<input type="checkbox"/>		
Reading		vw_3_FIVOT	<input type="checkbox"/>		

```
SELECT TOP(100) PERCENT RESClassification, SUM(CAST(Value AS INT)) AS ValueSum, AVG(CAST(Value AS DEC(10,2))) AS ValueAvg, STDDEV(Value) AS ValueSTD, COUNT(*) AS Count
FROM dbo.vw_3_FIVOT
WHERE (Reading LIKE '%09') AND (Feading IN (SELECT Reading
FROM dbo.vw_3_FIVOT AS vw_3_FIVOT_1
WHERE (Reading LIKE 'APR%' OR (Reading LIKE 'MAY%') OR (Reading LIKE 'JUN%'))))
GROUP BY RESClassification
ORDER BY RESClassification
```

RESClassification	ValueSum	ValueAvg	ValueSTD	Count
RS1	947000	6070	4583.43747531 ..	156
RS2	2955000	5794	4958.64674187 ..	510
RS3	1920000	6503	7511.42397270 ..	294
RS4	824000	7042	6478.60292835 ..	117
RS5	156000	8666	13137.2841673 ..	13

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Legend

-  Gatorville Parcel
- January 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5

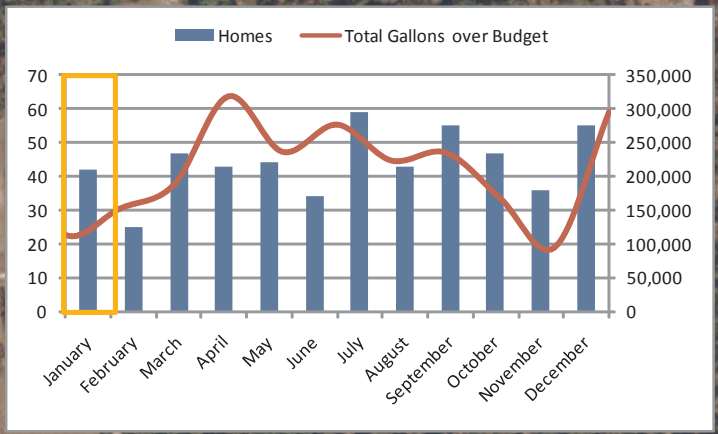
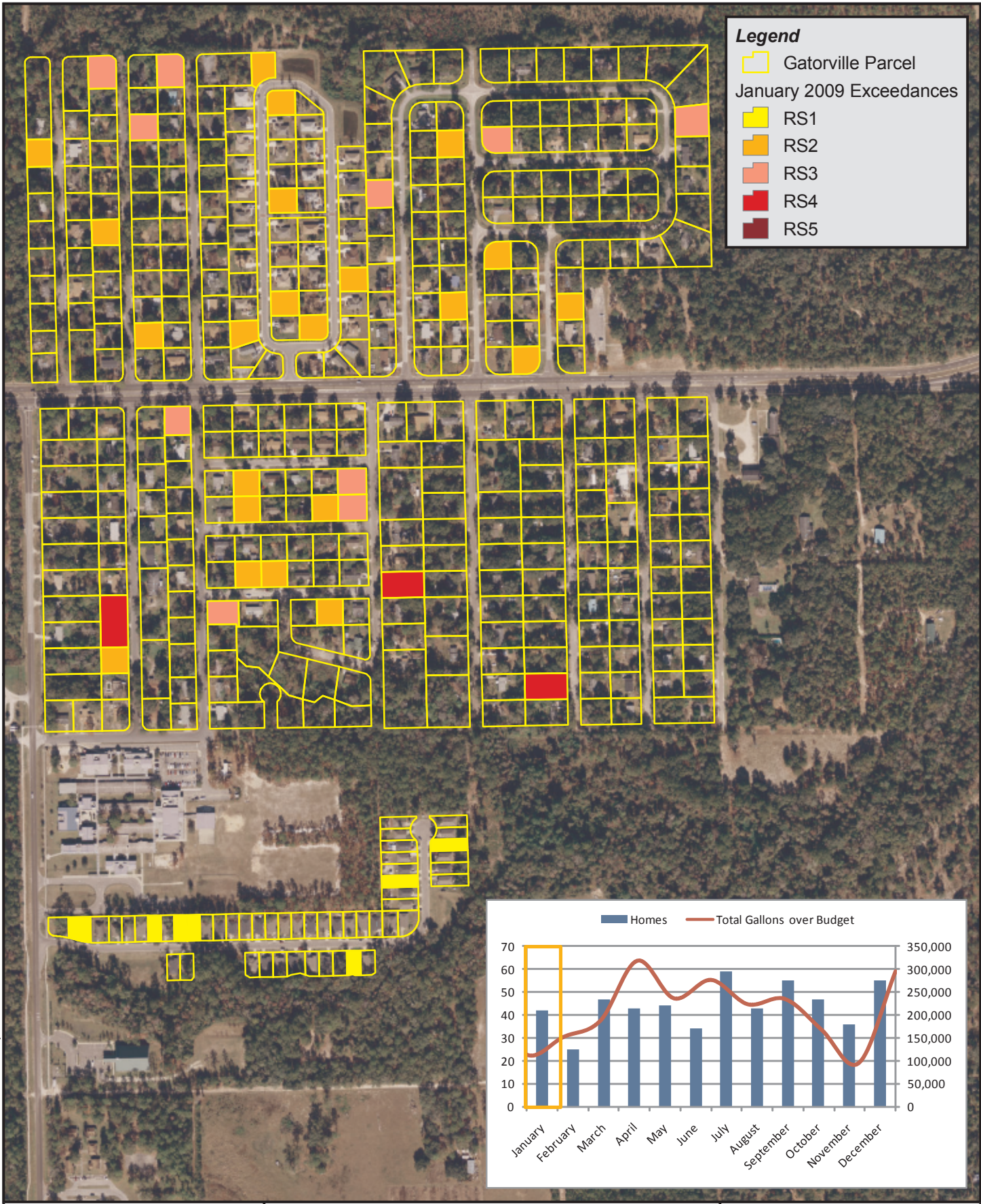
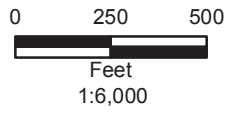






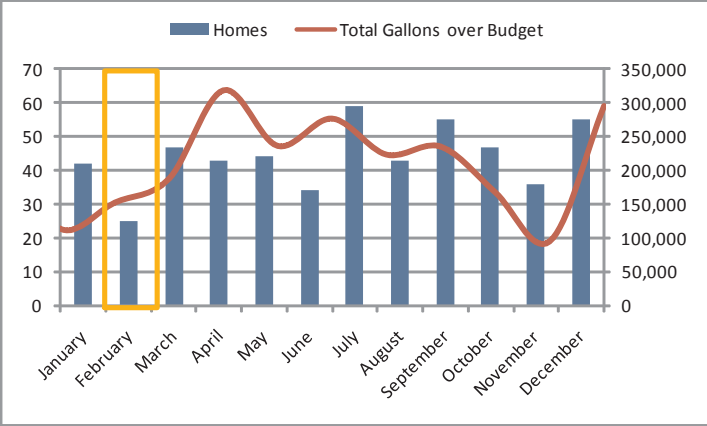
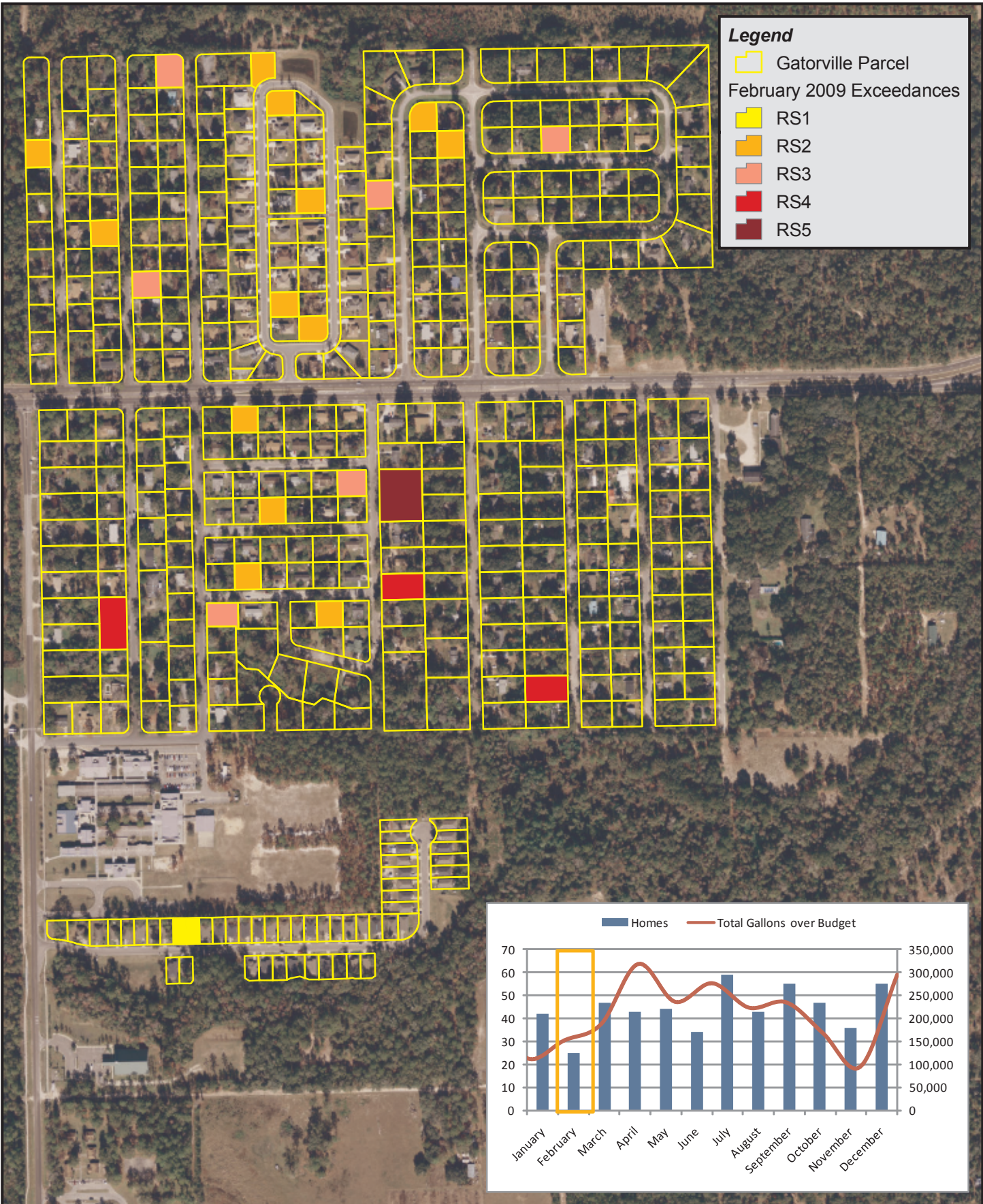


Figure 1
January 2009 Water Use Exceedances
St. Johns River Water Management District



Legend

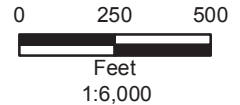
-  Gatorville Parcel
- February 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5









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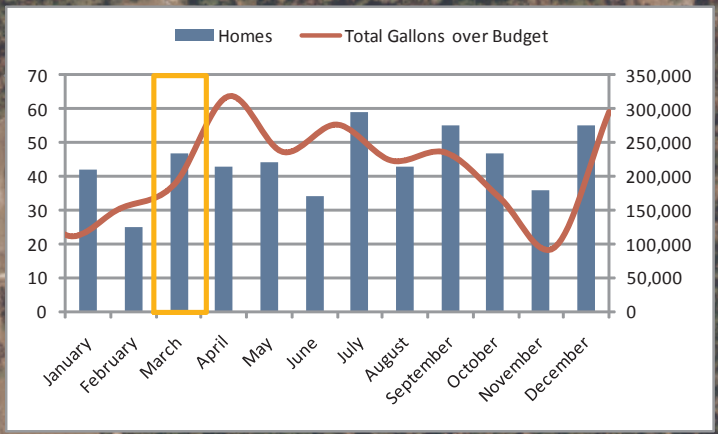
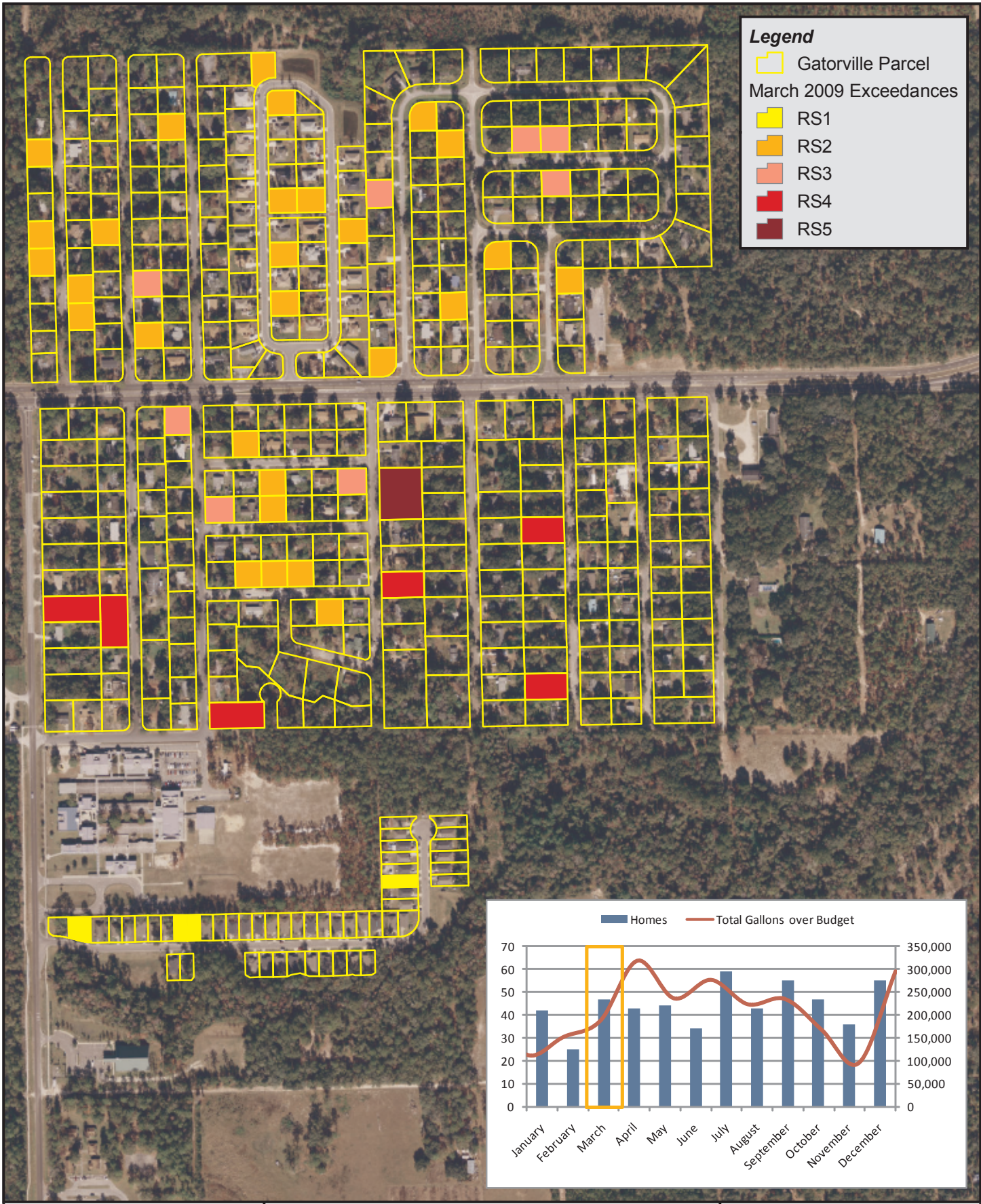


Figure 2
February 2009 Water Use Exceedances
St. Johns River Water Management District



Legend


-  Gatorville Parcel
- March 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5




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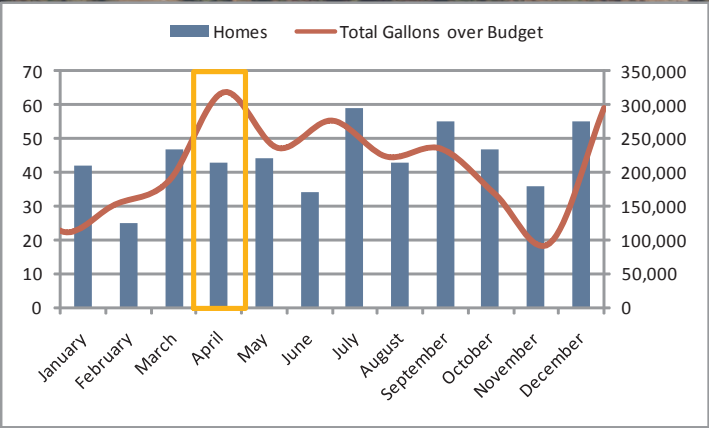
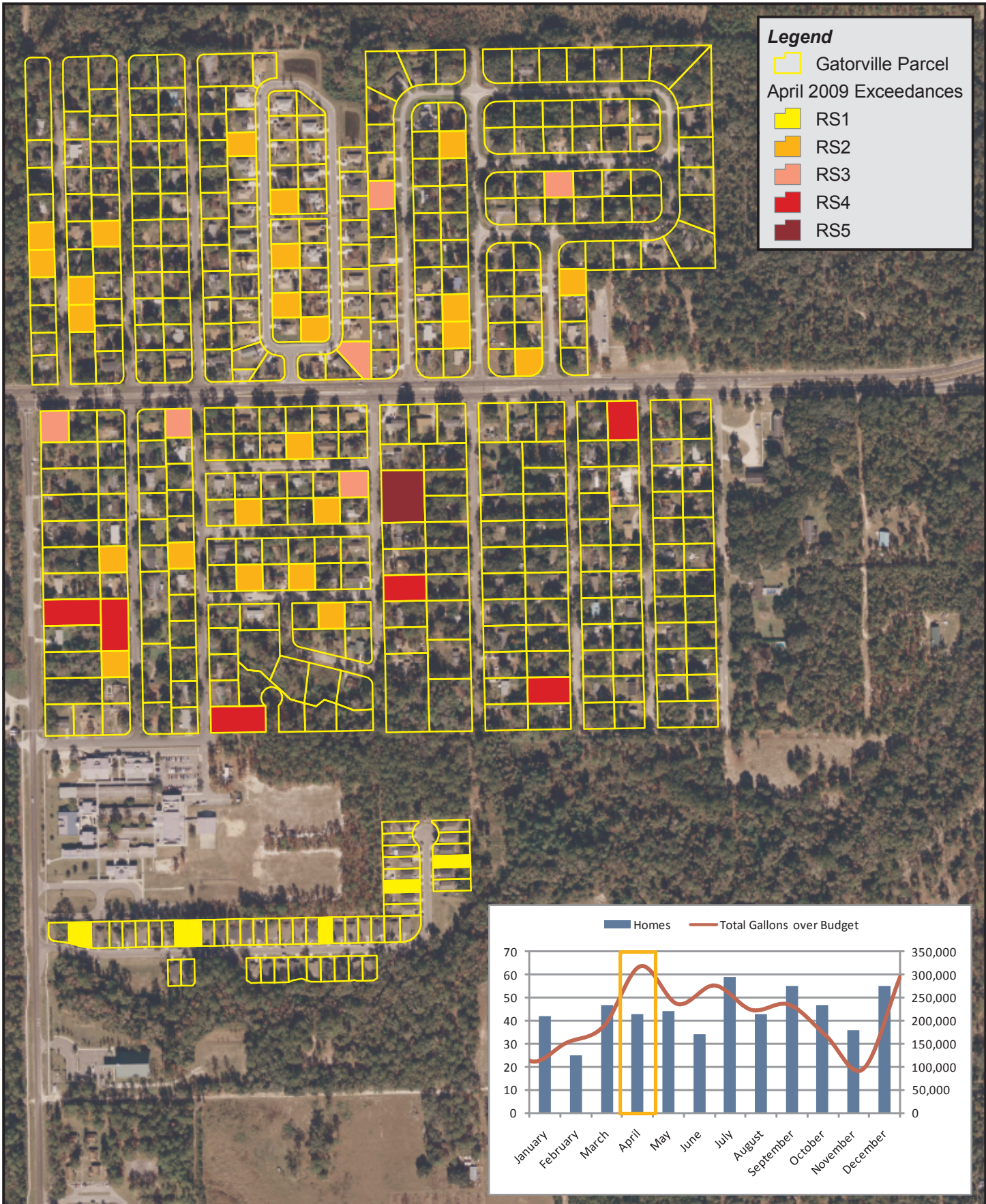
Figure 3
March 2009 Water Use Exceedances
St. Johns River Water Management District

0 250 500

 Feet
 1:6,000


 N

Legend

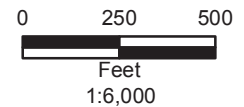
-  Gatorville Parcel
- April 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5









Q:\19750_S\JRWMD\043_ConservePotential\mxd\Demo\April2009.mxd MCL 5/12/2010

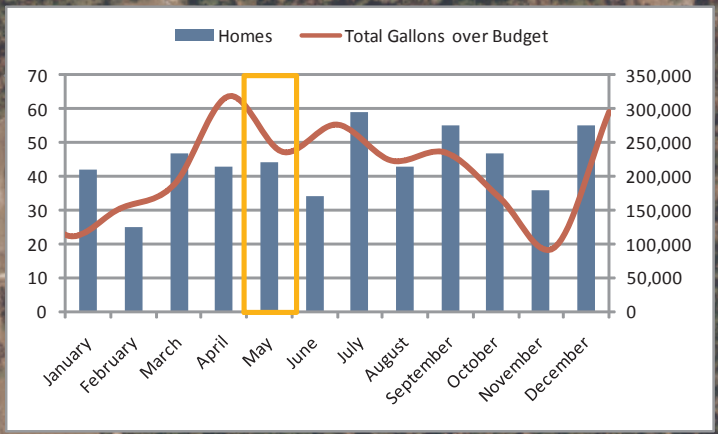
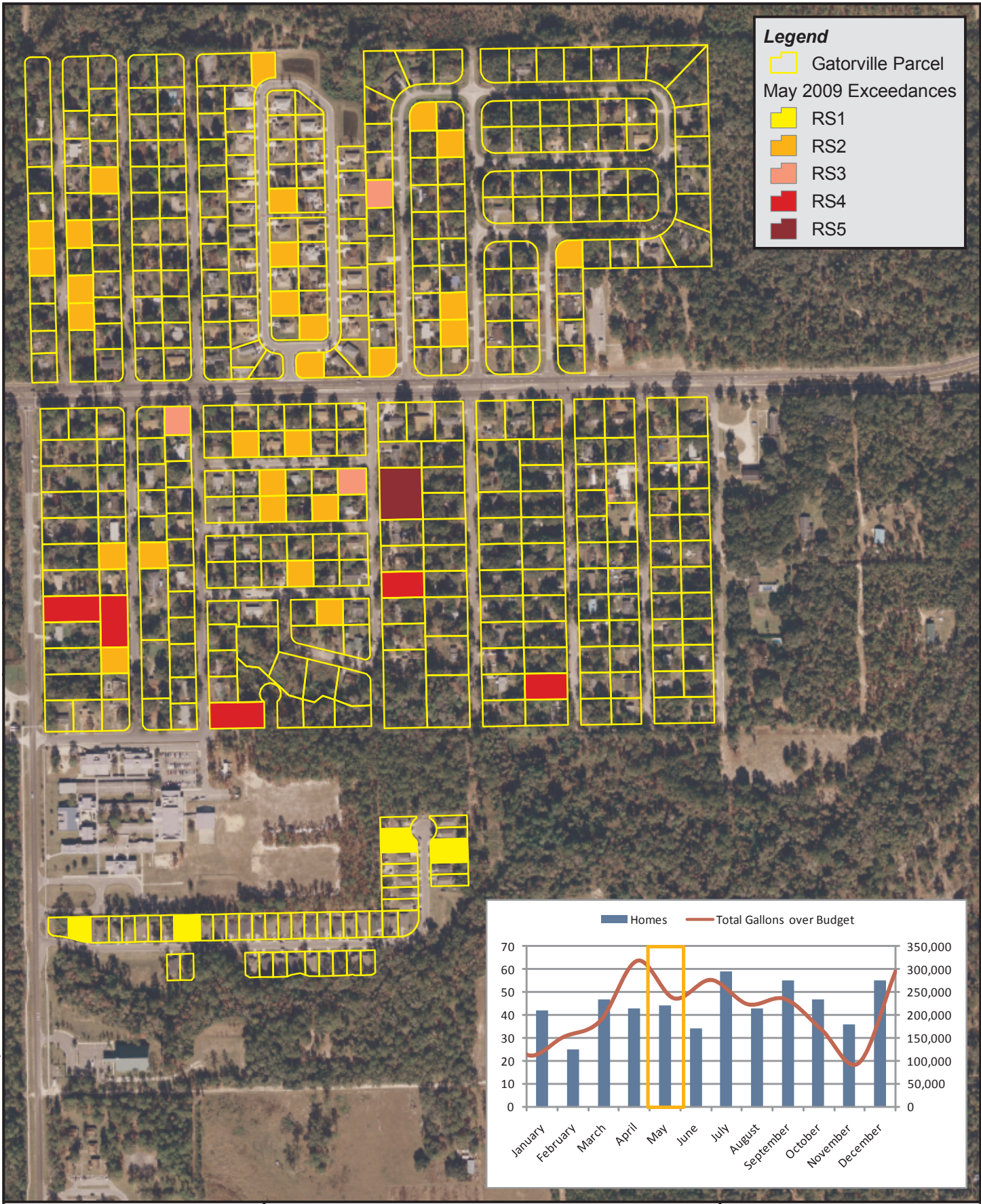


Figure 4
April 2009 Water Use Exceedances
St. Johns River Water Management District



Legend

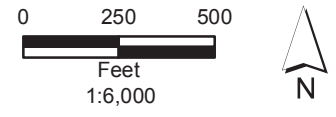
-  Gatorville Parcel
- May 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5



Q:\19750_S\JRWMD\043_ConservePotential\mxd\Demo\May2009.mxd MCL 5/12/2010



Figure 5
May 2009 Water Use Exceedances
 St. Johns River Water Management District



Q:\19750_S\JRWMD\043_ConservePotential\mxd\Demo\June2009.mxd MCL 5/12/2010

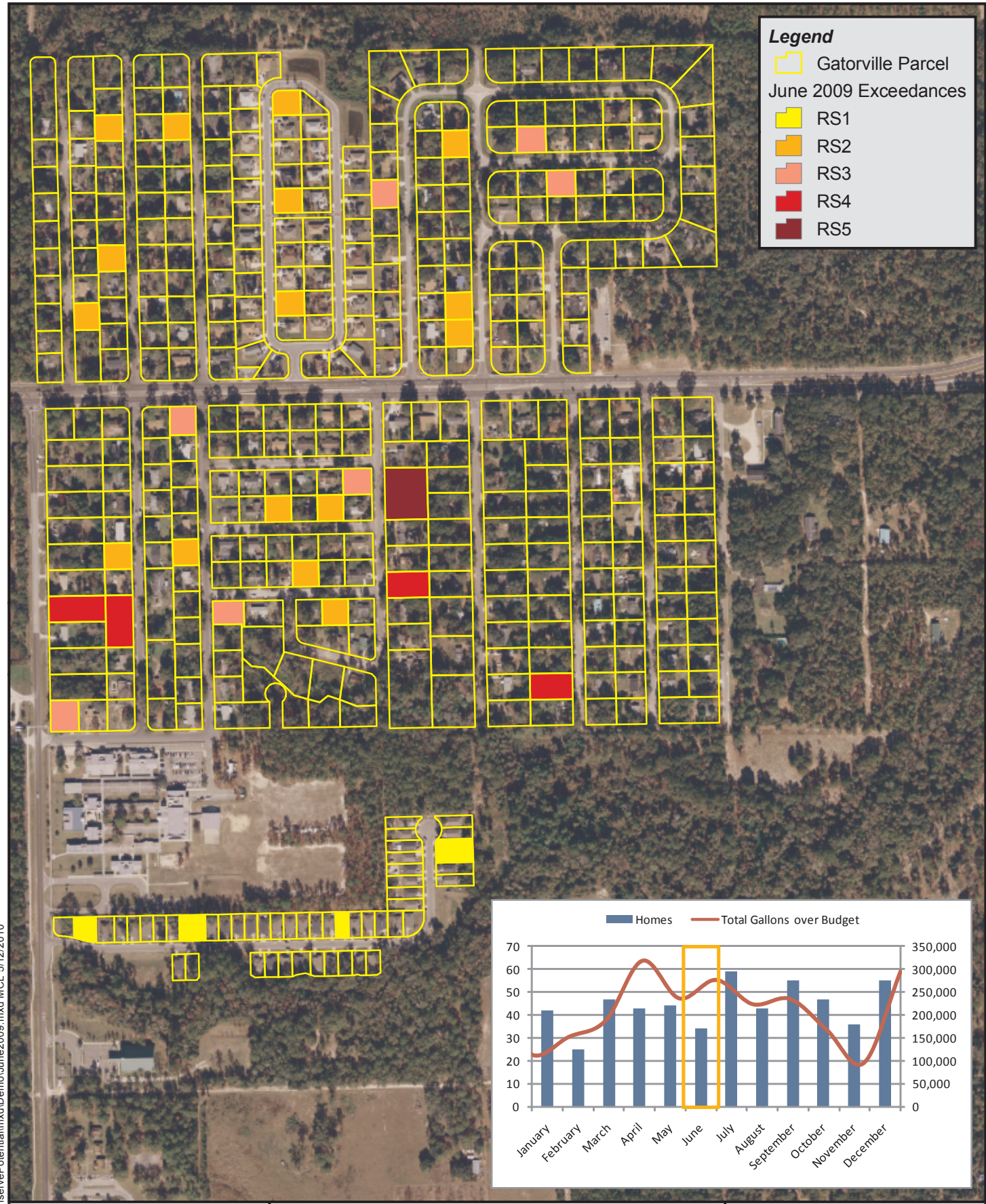
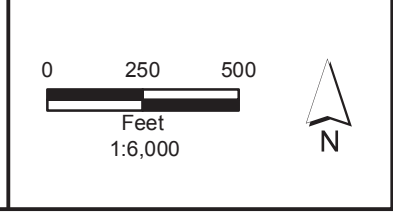






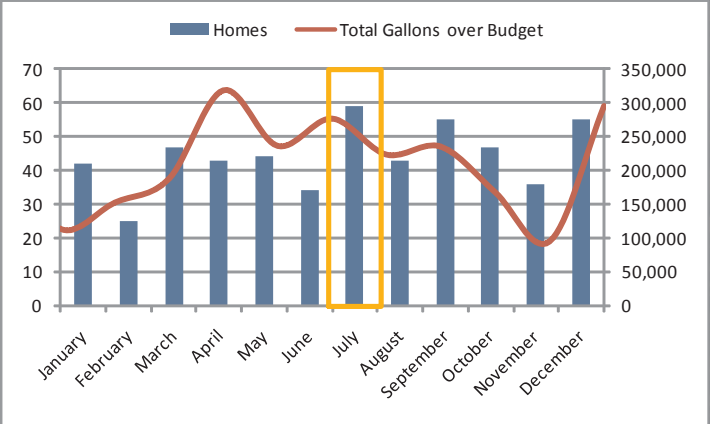
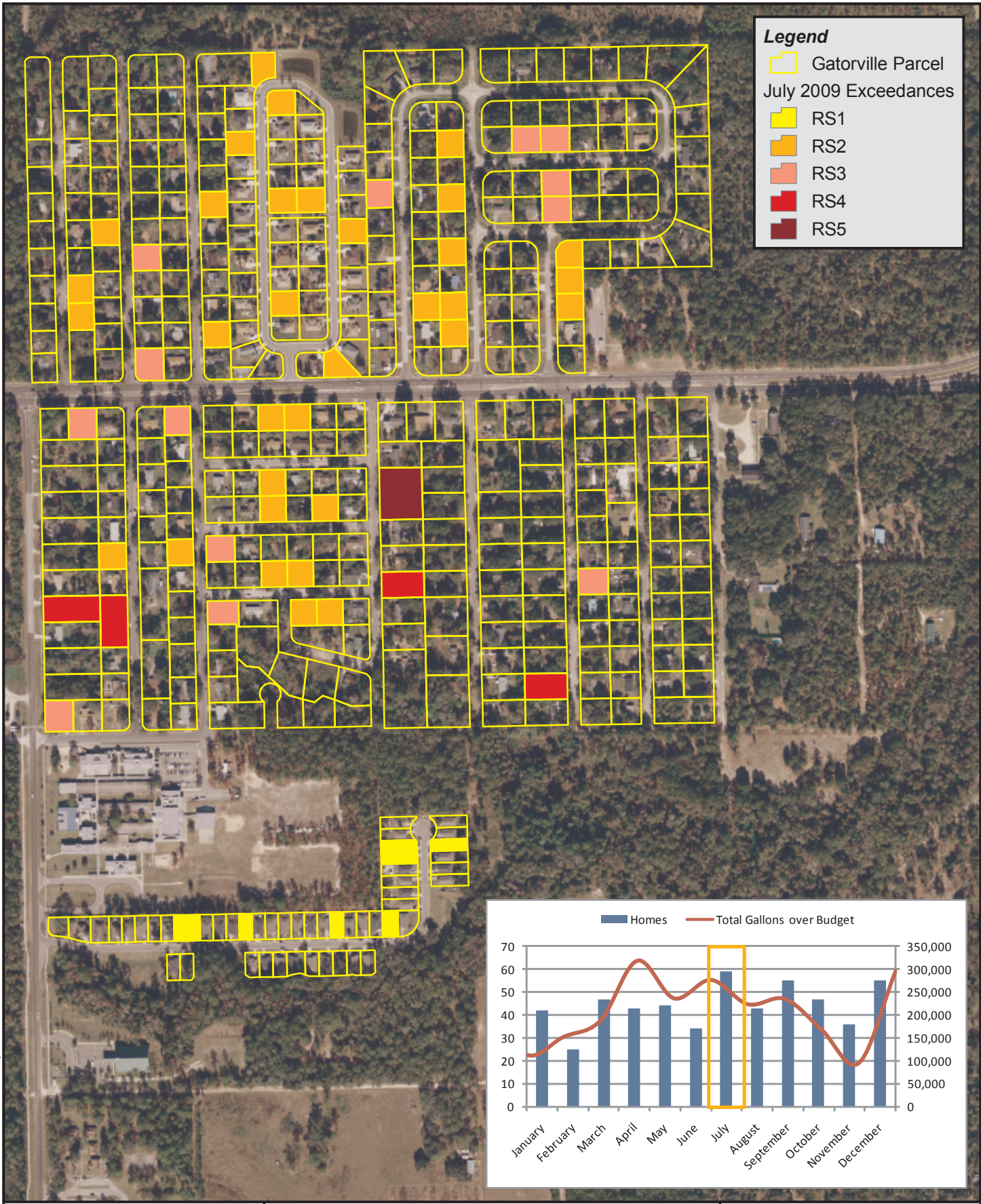


Figure 6
June 2009 Water Use Exceedances
St. Johns River Water Management District



Legend

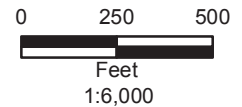
-  Gatorville Parcel
- July 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5









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Figure 7
July 2009 Water Use Exceedances
St. Johns River Water Management District



Legend

-  Gatorville Parcel
- August 2009 Exceedances**
-  RS1
-  RS2
-  RS3
-  RS4
-  RS5

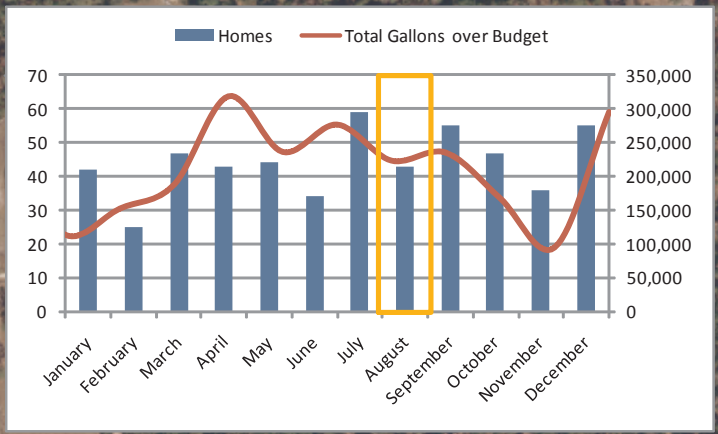
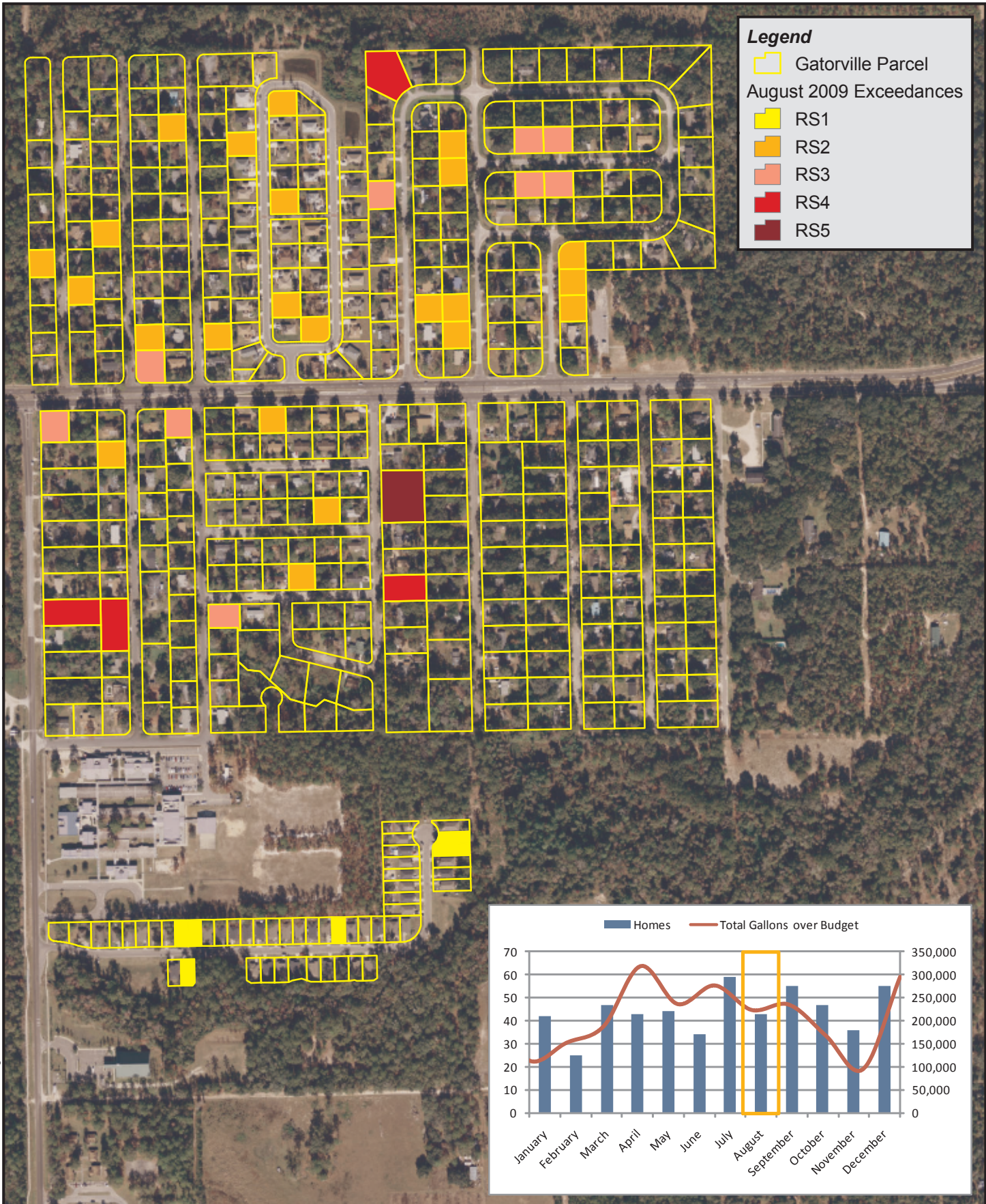
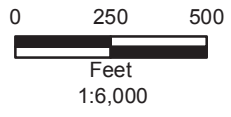


Figure 8
August 2009 Water Use Exceedances
 St. Johns River Water Management District



Q:\19750_S\JRWMD\043_ConservePotential\mxd\Demo\September2009.mxd MCL 5/12/2010

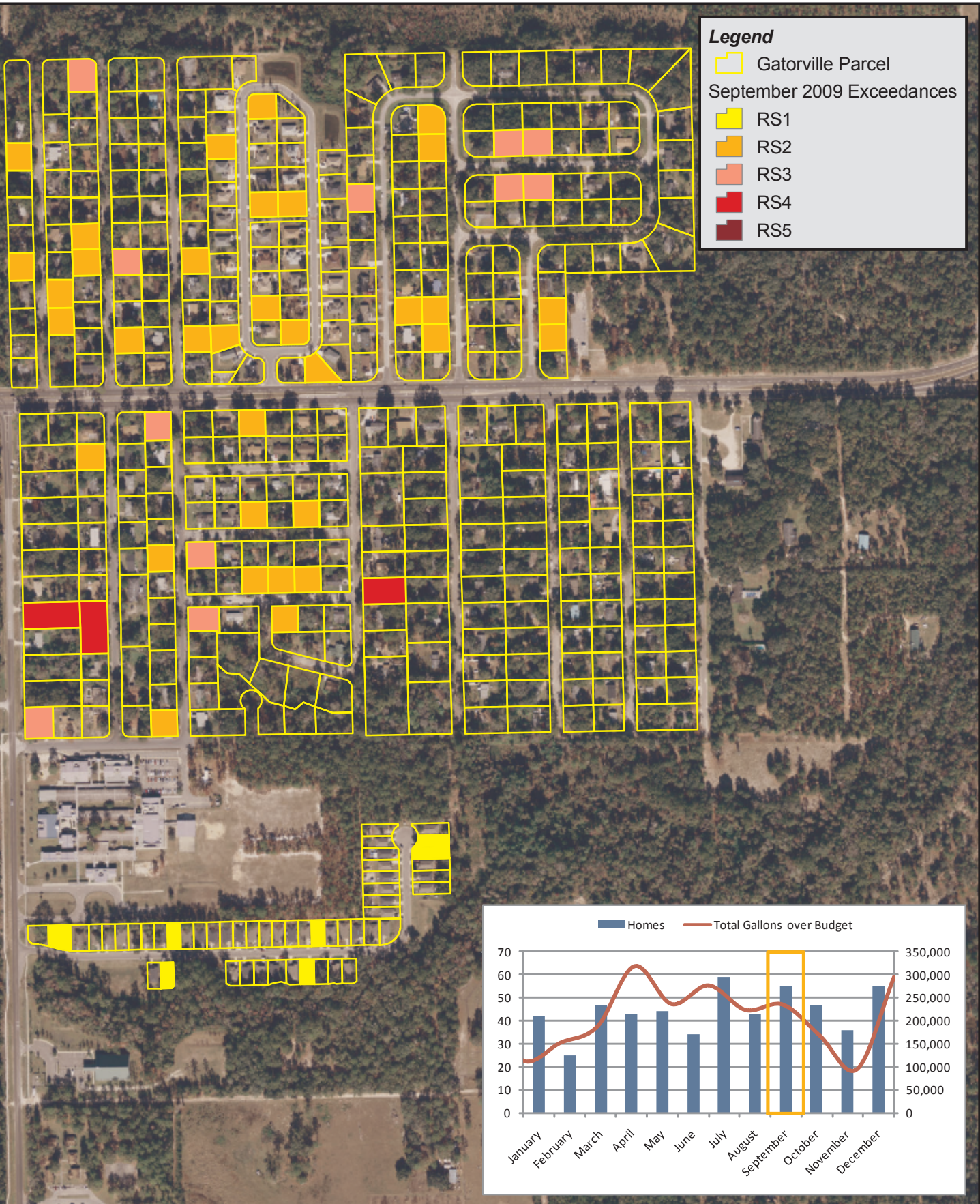
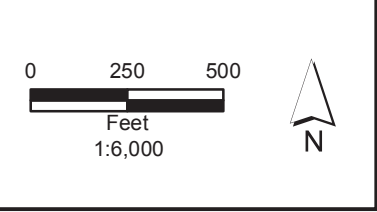


Figure 9
September 2009 Water Use Exceedances
St. Johns River Water Management District



Q:\19750_S\JRWMD\043_ConservePotential\mxd\Demo\October2009.mxd MCL5/12/2010

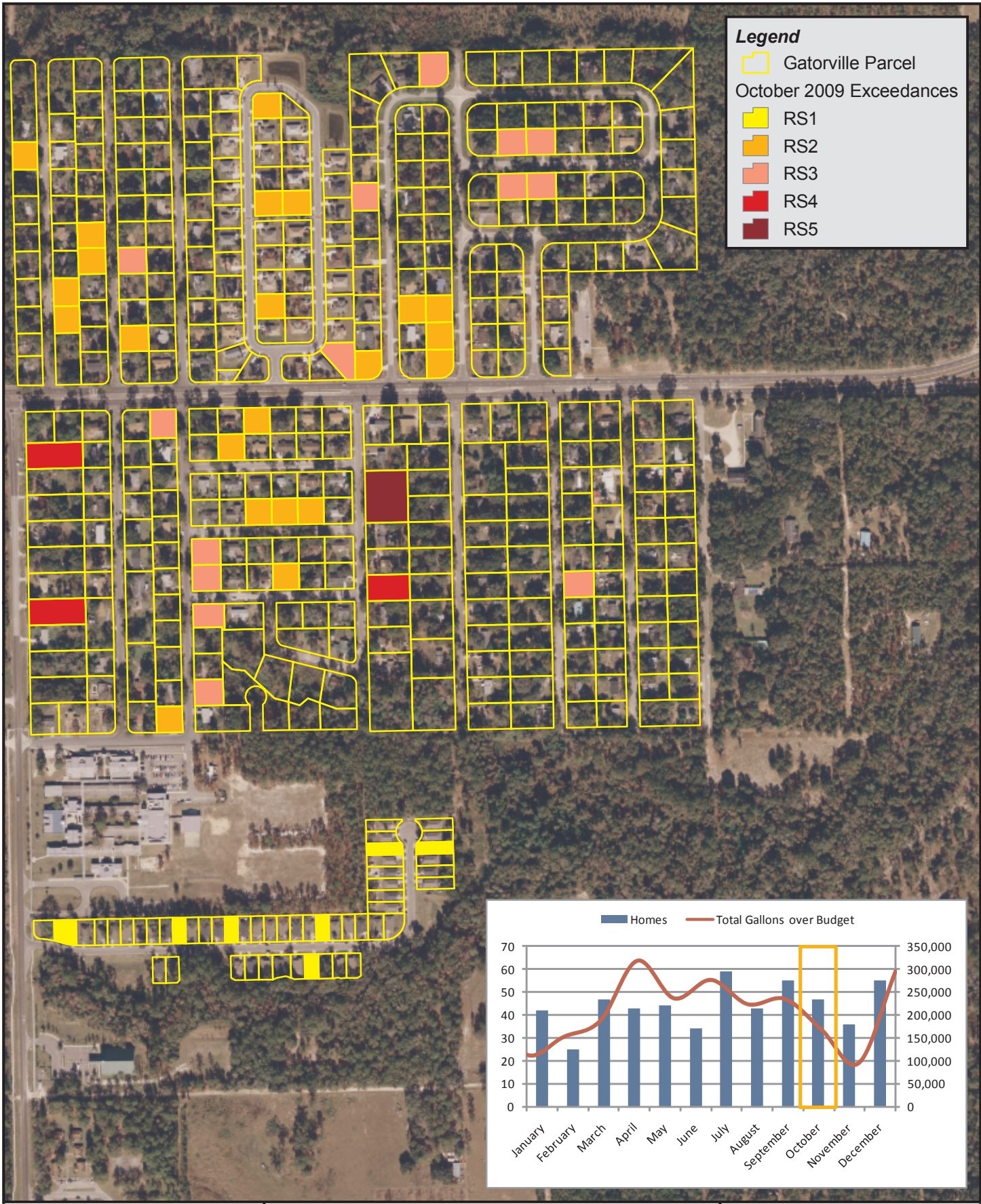
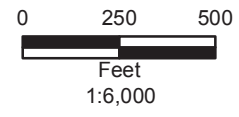


Figure 10
October 2009 Water Use Exceedances
St. Johns River Water Management District



Q:\19750_S\JRWMD\043_ConservePotential\mxd\Demo\November2009.mxd MCL_5/12/2010

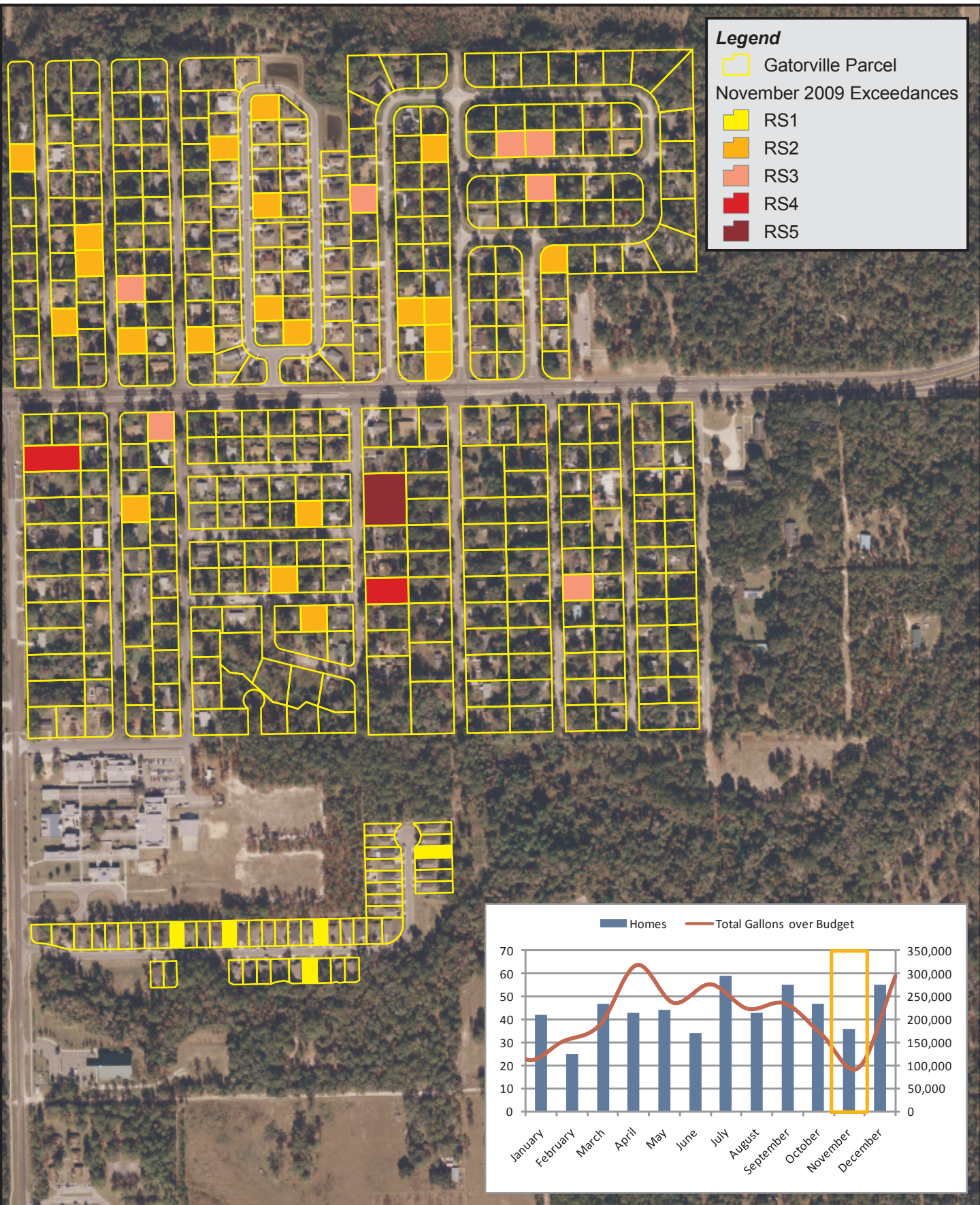
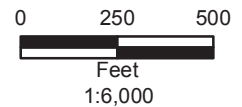


Figure 11
November 2009 Water Use Exceedances
St. Johns River Water Management District



Q:\19750_SJR\WMD\043_ConservePotential\mxd\Demo\December2009.mxd MCL_5/12/2010

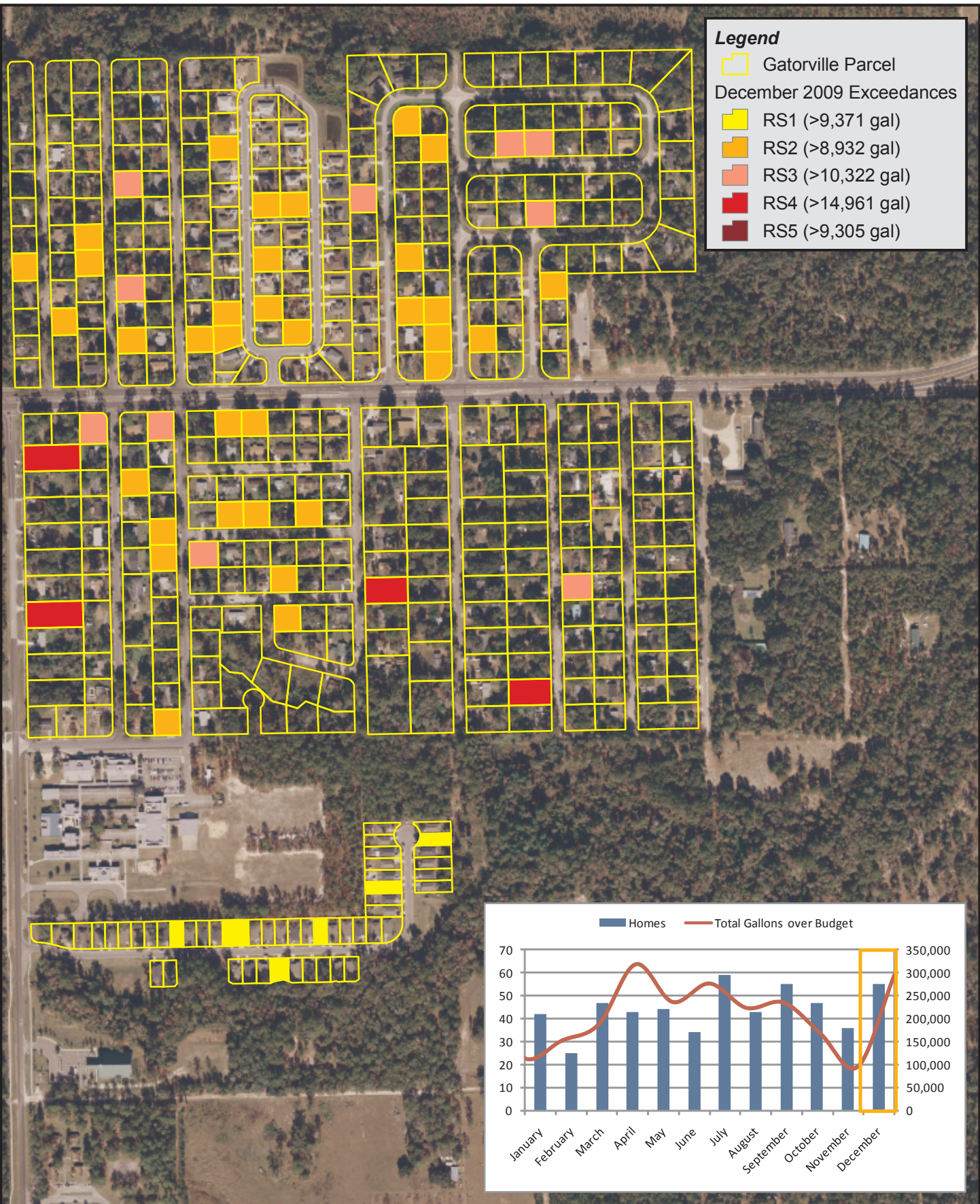
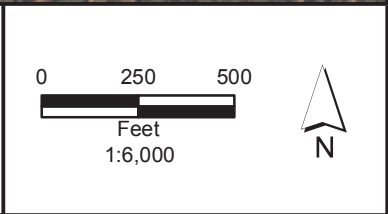
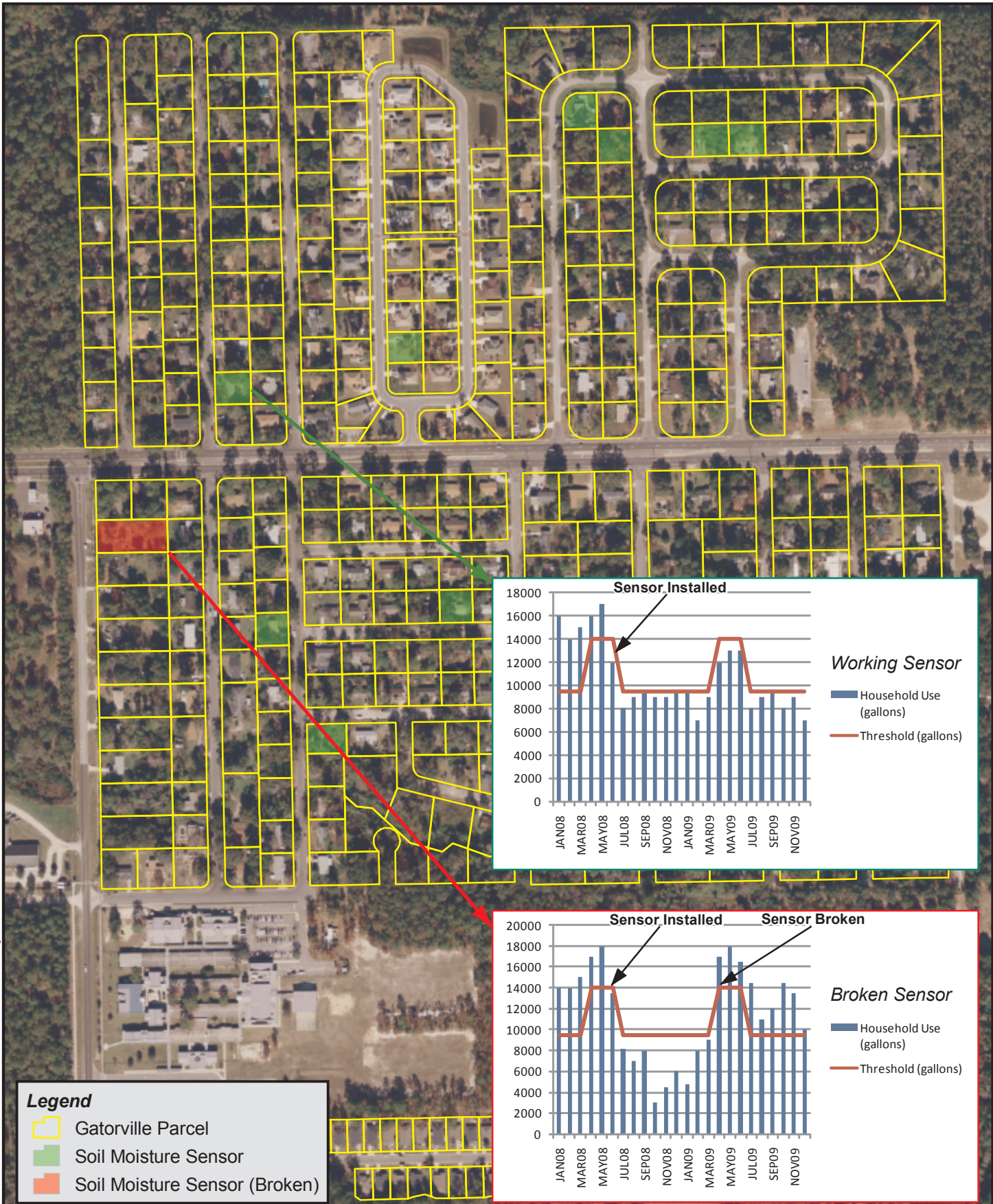


Figure 12
December 2009 Water Use Exceedances
St. Johns River Water Management District





Legend

- Gatorville Parcel
- Soil Moisture Sensor
- Soil Moisture Sensor (Broken)

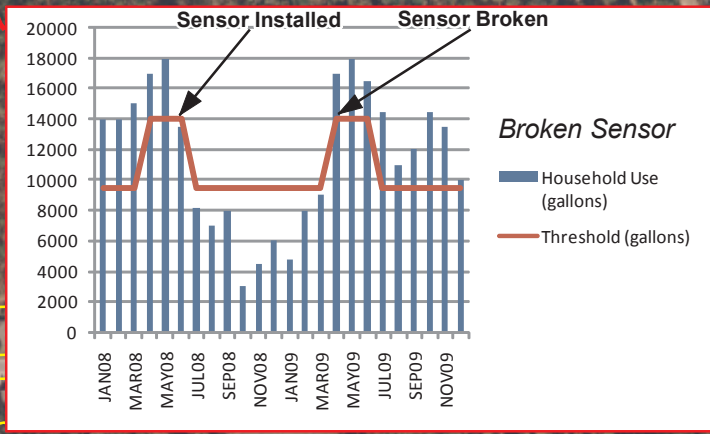
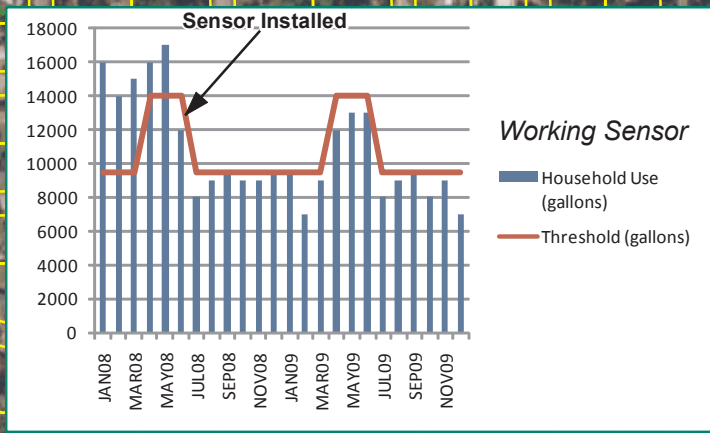


Figure 13
Soil Sensor Monitoring
 St. Johns River Water Management District

