

Memorandum



CITY OF DALLAS

DATE: August 19, 2011

TO: Honorable Mayor and Members of the City Council

SUBJECT: Water Utilities Department Overview of Proposed FY11-12 Budget Briefing

On Monday, August 22, 2011, you will be briefed on the Water Utilities Department Overview of Proposed FY11-12 Budget. The presentation material is attached for your review.

If you have questions or need additional information, please let me know.

A handwritten signature in black ink, appearing to read 'Forest E. Turner'.

Forest E. Turner
Assistant City Manager

Attachment

cc: Mary K. Suhm, City Manager
Rosa Rios, Interim City Secretary
Thomas P. Perkins, Jr., City Attorney
Craig D. Kinton, City Auditor
C. Victor Lander, Administrative Judge
A.C. Gonzalez, First Assistant City Manager
Ryan S. Evans, Assistant City Manager
Jill A. Jordan, P.E., Assistant City Manager
Joey Zapata, Interim Assistant City Manager
Jeanne Chipperfield, Chief Financial Officer
Frank Libro, Public Information Office
Helena Stevens-Thompson, Assistant to the City Manager

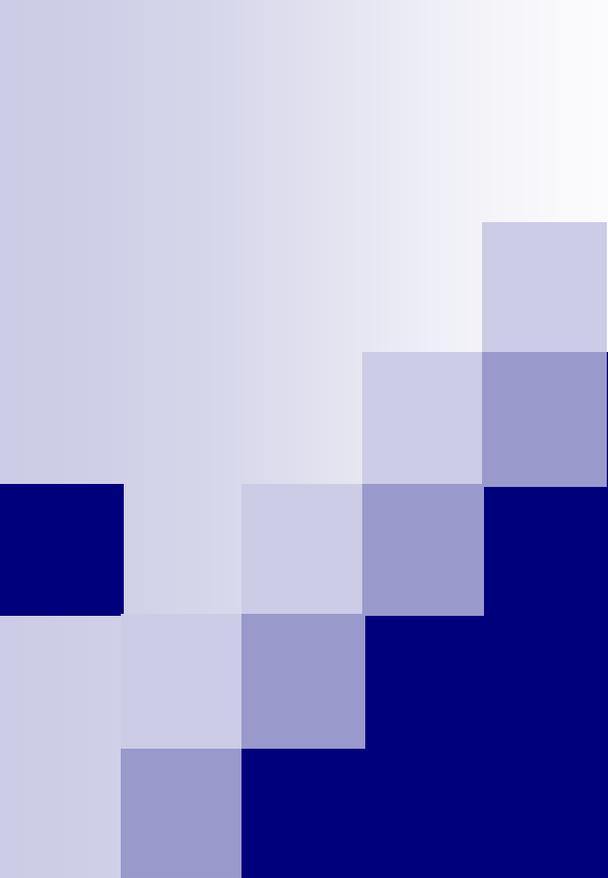
Water Utilities Department

Overview of Proposed FY11 - 12 Budget

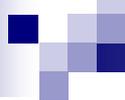
August 22, 2011



CITY OF DALLAS



This Page Left Blank



Purpose

This briefing provides an overview of
Dallas Water Utilities' recommended
FY11-12 Budget

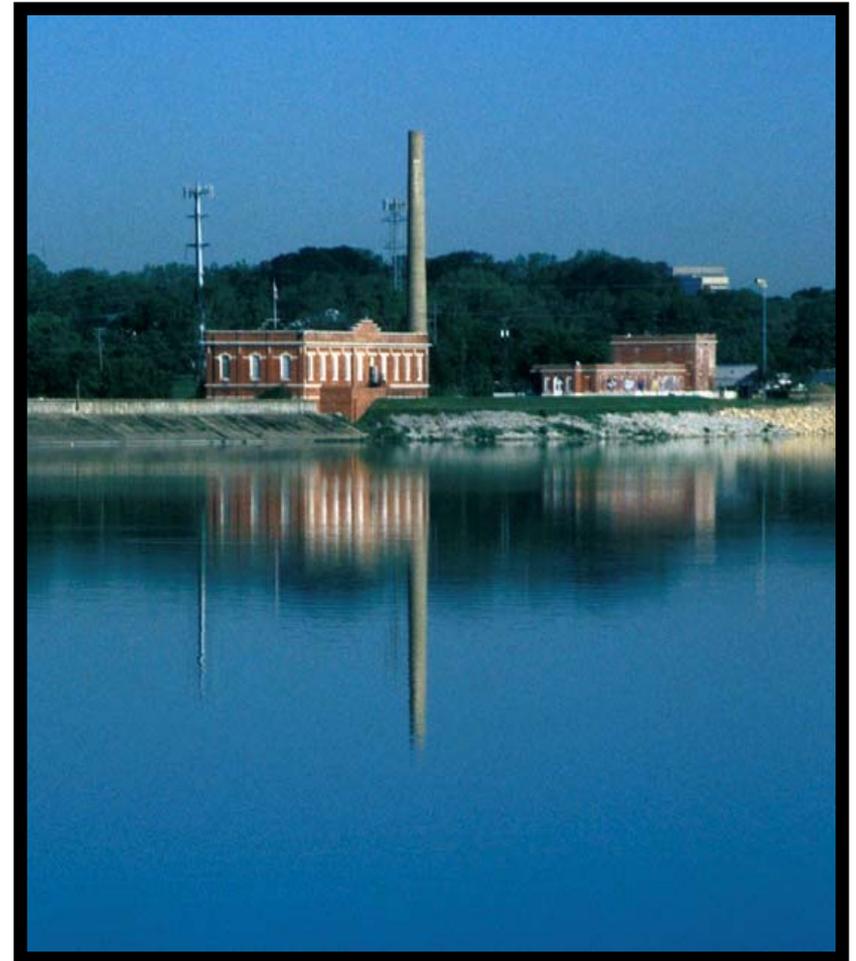
Dallas Water Utilities: FY11-12 Budget Focus

- Dallas Water Utilities is a large, municipally owned regional water/wastewater supplier
 - Costs are driven by infrastructure requirements for both growth and renewal
 - Responsibility for planning to meet water requirements for service area
 - Self-supporting
- Proposed budget continues the focus on maintaining infrastructure and conserving resources through:
 - Water and wastewater systems maintenance
 - Pro-active detection of water system leaks
 - Water conservation efforts
 - Annual replacement rate of 1.5% for aged water and wastewater mains

City of Dallas Water Utilities Fact Sheet

Dallas Water Utilities is funded from water and wastewater revenues and receives no tax dollars

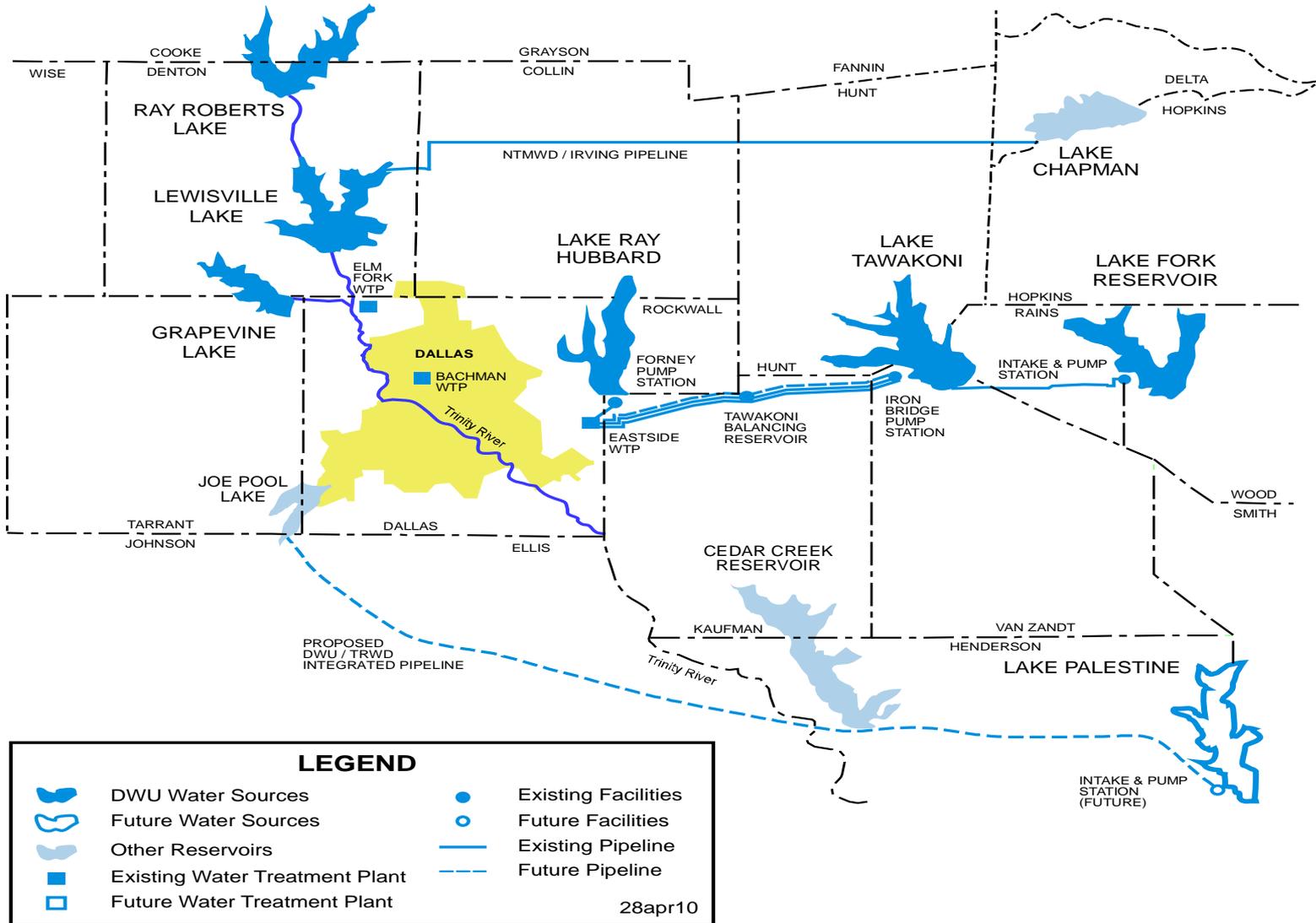
- Approximately 1,500 employees
- Population served (treated water)
 - 1.2 million - City of Dallas
 - 1.1 million wholesale customer cities
- 699 square mile service area
- 306,000 retail customer accounts
- 5,130 miles of water mains
- 4,340 miles of wastewater mains
- 3 water treatment plants
- 2 wastewater treatment plants
- Wholesale customers
 - 23 treated water
 - 3 untreated water
 - 11 wastewater



Where We Are Today

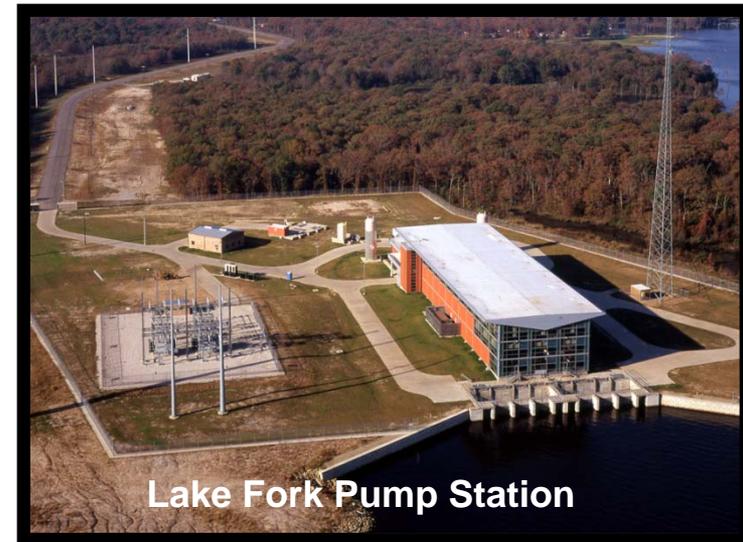
- Surface water is “owned” by the State of Texas, who in turn, grants permits for its beneficial use
- Dallas’ existing water rights were granted by the State based on serving the needs of Dallas and its customer cities
- Both Dallas and customer cities enjoy lower water rates because of a regional approach to water acquisition and supply
 - Dallas has had a successful relationship with its customer cities for more than 50 years, and has shared costs with customer cities based on a 30-year Memorandum of Agreement (MOA)
 - FY12 budget includes wholesale rate increase of 3.2%
- Dallas currently has water to meet its needs, but even with conservation and reuse, additional water supply sources will be needed by 2035
- Dallas and other area water agencies are looking for additional water sources to meet projected needs through 2060
 - Regional approach for new water sources is more efficient and reduces costs
- Since Senate Bill 1 was passed in 1997, Dallas has been part of the Region C Planning Group, which includes a 16 county area

DALLAS WATER SERVICE AREA



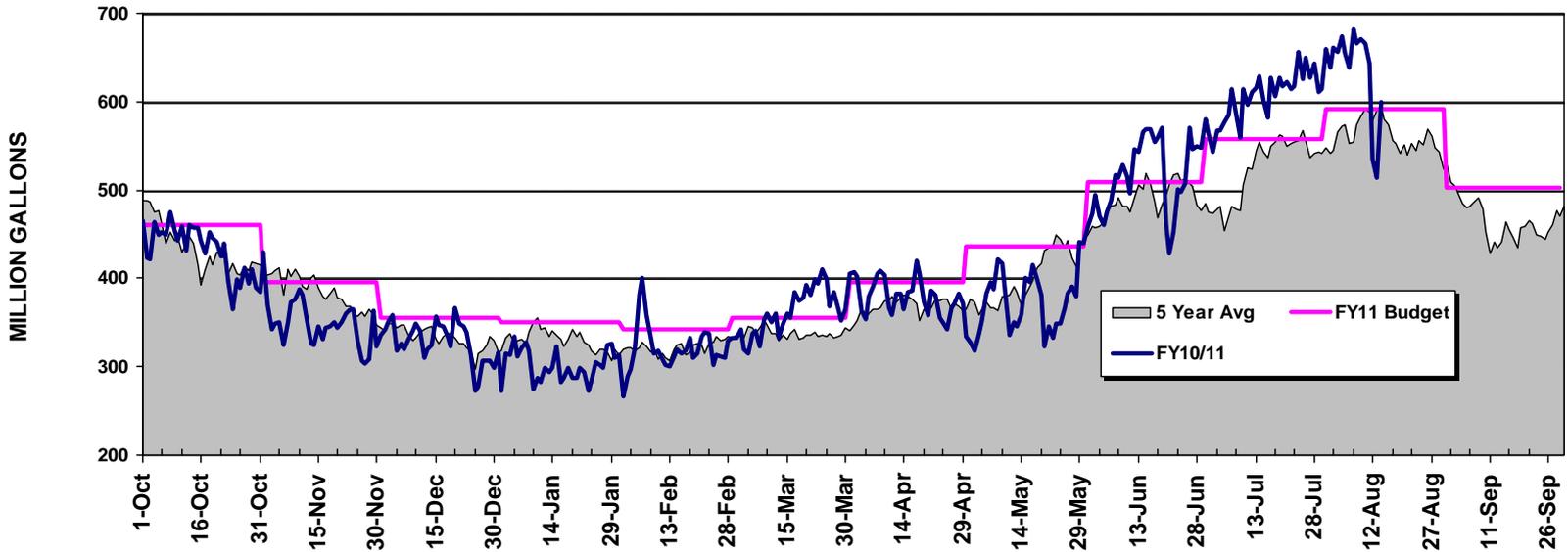
Utility Overview

- Capital intensive operation with assets of over \$4.8B including:
 - Water Supply-\$0.5B
 - Treatment Plants-\$1.5B
 - Water/Wastewater Pipeline-\$2.8B
- Utilize 10 year capital improvement program (CIP) supported by system master planning
- Use Financial Management Performance Criteria (FMPC), including:
 - Dallas Water Utilities funds solely for use of the utility
 - Commercial Paper used for interim financing of capital projects
 - Long-term debt used only for capital infrastructure (30 year debt)
 - Debt service coverage should be at least 1.3 times at all times and 1.5 times at fiscal year-end
- Customer cities rates based on 2010 MOA and contractual agreement
- Strict adherence to TCEQ/EPA regulations



Dallas Water Utilities System

Daily Water Consumption (FY11 Budget and 5 Year Average)



As of 8/15/11 FY11 consumption is 3% or 5.3 BG below FY11 Budget.

Sustainability Actions

- Dallas built its water system to meet the drought of record
 - The drought of record is the worst recorded drought used for planning municipal water supplies
 - Dallas' drought of record was a seven year period in the 1950's
- To minimize water usage, Dallas has undertaken several sustainability actions
 - Leak detection
 - Maintenance and repair
 - Conservation and reuse
- Actions are to sustain what we have, and add new sources to meet future growth

Sustainability Initiatives

■ Major Maintenance Initiatives

- Continuing to reduce water loss by expanding leak detection program
- Unaccounted For Water was 9.7% for FY10 and 9.6% year to date for FY11 with an industry goal of 10%
- Increased large wastewater main assessment and replacement
- Maintains an annual replacement rate of 1.5% for aged mains

■ Focus on Infrastructure Rehabilitation and Maintenance

- For the prior four years, approximately half of the Capital Program went for the maintenance of existing infrastructure
- For FY12, \$164.5M of the \$276.7M capital program is budgeted for water/wastewater main replacements and infrastructure rehab

■ Dividends from enhanced conservation initiatives

- 36 MGD savings in water from 2001 to 2010
- Equates to 76% of the 47.4 MGD goal for 2060

■ Reuse Initiatives – 88 MGD identified in current efforts

- Working with other agencies for reuse water
 - 40 MGD to Lake Ray Hubbard
 - 48 MGD to Lake Lewisville
- Cedar Crest golf course (less than 1 MGD), and Stevens Park under construction

Dallas' Water Supply

- Dallas' plan is to have enough water during a drought equal to the 1950s drought of record
- Dallas' planned new water supply sources are based on:
 - Costs – capital construction and power
 - Efficiency
 - Environmental impact
 - Likelihood for development
- Water located closer to the City is generally less expensive
 - Lower infrastructure costs due to shorter pipelines
 - Lower pumping (energy) costs – a recurring, annual expense
- Close-in water has been 100% allocated by the State
- Future water will be farther away and much more expensive
- Working with other area water providers to achieve greater economies of scale in an effort to reduce costs

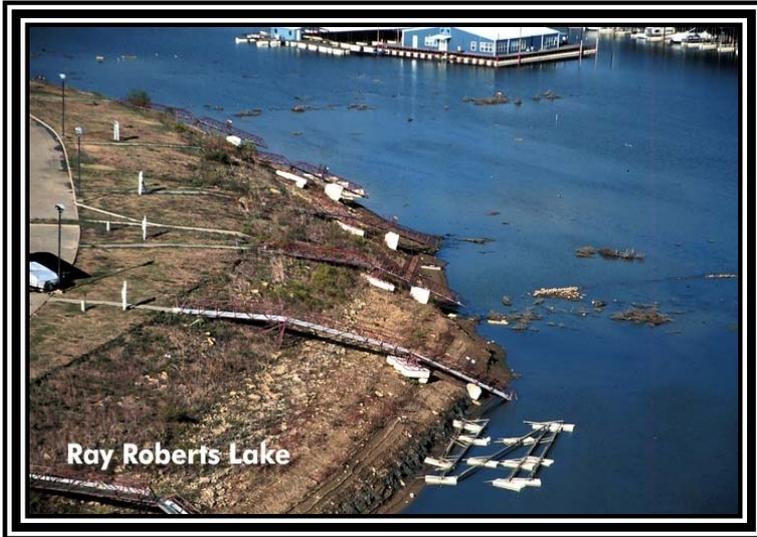
Economic Impacts of an Inadequate Water Supply

If water is unavailable, State's 2060 estimates for Region C, including Dallas:

- Population reduced by one million (7%)
- Employment off by 700,000 jobs (17%)
- Income shrinks by \$58.8 billion (21%)



Lake Tawakoni 2006, (down 12.6 feet);
currently down 5 feet



Ray Roberts Lake during 2000 drought (down 17.1 feet);
currently down 3 feet

Providing sufficient water comes at a price:

- Even with \$200M in savings from regional participation in the Council adopted IPL project, it will cost Dallas approximately \$1B to connect Lake Palestine
- Plan is to spread costs out 10+ yrs
- Results in annual rate increases



FY11-12 Proposed Operating Budget

2012 Budget Provides the Following Services

- 157.6 BG of water treated and delivered
- 70.0 BG of wastewater treated
- Capital Improvement Program of \$276.7M
- Continuation of plant expansion at Eastside Water Treatment Plant and replacement of aged water and wastewater mains
- Meets all Financial Management Performance Criteria
- Meets all State and Federal water and wastewater quality requirements
- Continues conservation initiatives to reduce water use

Major Expenditure Impacts

- Recommended Expenditures of \$551.6M
 - Integrated Pipeline Project to connect Lake Palestine - \$3.8M
 - Capital Funding increase - \$10.9M
 - Revenue bond sale of \$185M Spring 2012
 - Last year of PILOT phase-in from 90% to 100% - \$3.1M
 - Conservation program additions - Industrial, Commercial and Institutional (ICI) customers incentives and training - \$1.3M
 - Other O&M costs, including full year funding for leak detection and repair crews and operations for Lake Fork Pump Station - \$1.4M

FY 12 Capital Budget Funding

- Proposed Capital Budget of \$276.7M funded by:
 - Cash Transfer - \$70.1M
 - Commercial Paper (CP) for interim financing
 - Lower interest rates
 - Greater financing flexibility
 - Revenue bond debt
 - Approved by City Council
 - Used to pay off short term debt (CP)
 - 30 year term
- Meets all FMPC requirements
 - Bond Coverage budgeted at 1.61
 - Equity Funding of 25%



Lake Fork pipeline construction 18

FY12 Capital Improvement Program

- Capital Improvement Program (CIP) of \$276.7M
- CIP includes projects categorized as:
 - Rehab and Replacement \$164.5M
 - Regulatory \$68.2M
 - Growth \$44.0M
- Major FY12 projects include:
 - Pipeline Program - \$80.6M
 - Construct 57 miles of pipeline as part of the replacement, relocation, growth, and private development programs
 - Elm Fork Improvements - \$49.7M
 - Replace and renew obsolete and deteriorated equipment for improved reliability and efficiency
 - Clean sludge lagoons to ensure uninterrupted water production
 - Construct new Chlorine containment facility to secure long-term safety and reliability of the plant

FY12 Capital Improvement Program

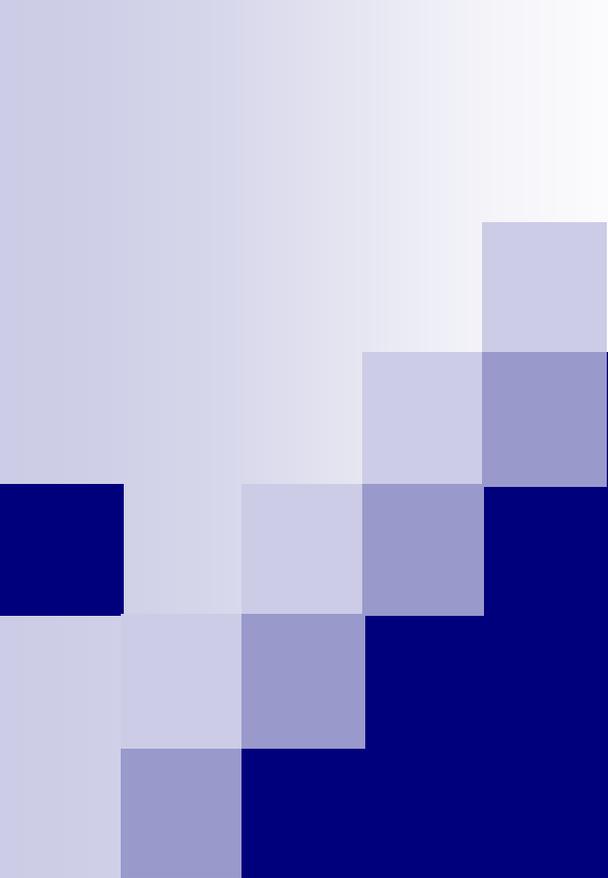
- Major FY12 projects include:
 - Central WWTP Improvements - \$44.1M
 - Rehabilitation of grit removal equipment at both Dallas and White Rock headworks to improve overall efficiency and reliability
 - Replace obsolete electrical infrastructures for improved reliability – transformers, high voltage cables, and switchgears
 - Renewal of badly deteriorated diversion structures to minimize the risk of sewer overflows and to improve flow diversion between plants
 - East Side WTP Expansion and Improvements - \$29.0M
 - Filter media replacement and hydraulic improvements for meeting treated water regulations and reduced backwashing frequencies
 - Construct new electrical substation and distribution system to supply sufficient power to meet the 540 MGD plant expansion needs
 - Southside WWTP Improvements - \$9.6M
 - Rehab and replace obsolete and/or deteriorated equipment and instrumentation for improved reliability

FY12 Proposed Retail Revenue Requirement

Proposed FY12 Budget	\$551,600,305
Preliminary Revenues at Current Rates	<u>(\$525,827,810)</u>
FY12 Preliminary Additional Revenue Requirement	\$25,772,495

= 5.9%* Proposed Retail Rate Increase

* A 7.4% preliminary rate increase was identified in the August 2010 Future Outlook Briefing to Council



Retail Rate Impact

Impact of Proposed Rate Adjustment to Residential Water and Sewer Bills

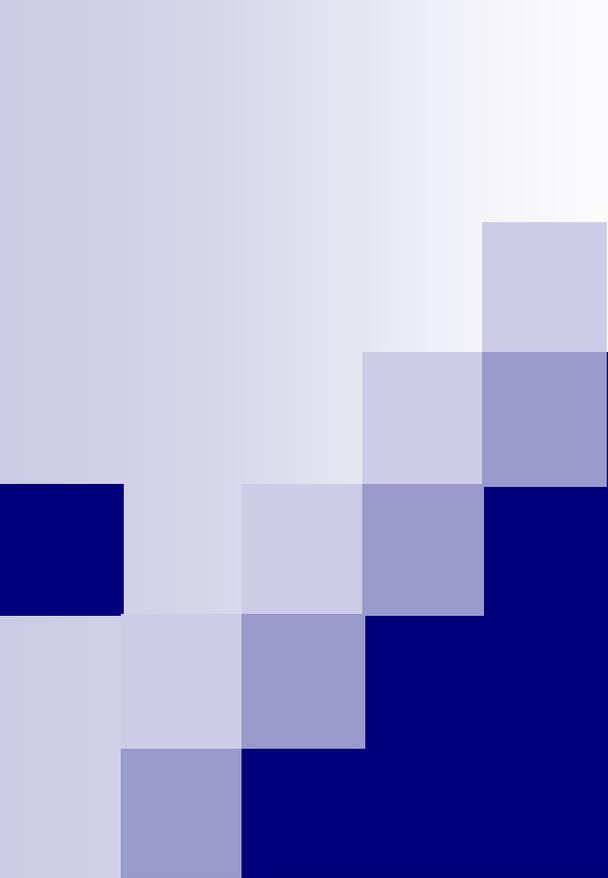
Customer Usage in Range	Average Bill at Current Rates	Proposed Average Rates	Proposed Increase	% Increase	Number of Customers Impacted	% of Customers in Range
0 to 4,000 gallons	\$21.52	\$22.56	\$1.03 ^a	4.8%	73,876	31.3%
4,001 to 10,000 gallons	\$50.02	\$52.84	\$2.81 ^b	5.6%	98,507	41.8%
10,001 to 15,000 gallons	\$70.10	\$74.24	\$4.14 ^c	5.9%	27,702	11.8%
Above 15,000 gallons (Includes conservation tier rate)	\$171.49	\$183.40	\$11.90 ^d	6.9%	<u>35,661</u>	<u>15.1%</u>
Total					235,746	100.0%

Note: 85% of residential customers will see an average monthly bill increase of \$4.14 or less. Data based on January 2010 through December 2010 usage.

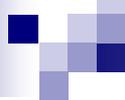
- a Average water and sewer use: 2,271 gallons
- b Average water use 6,497 gallons and sewer use: 6,400 gallons
- c Average water use 12,087 gallons and sewer use: 6,400 gallons
- d Average water use 30,308 gallons and sewer use: 6,400 gallons

Impact of Proposed 5.9% Rate Increase

- Typical monthly residential water and wastewater bill would increase from \$55.69 to \$58.87
 - Based on water use of 8,300 gallons and 6,400 gallons Winter Months Average for sewer
- US EPA affordability guideline for wastewater bills is 2% of median income
 - Dallas' wastewater bills would be 1.7% of median income

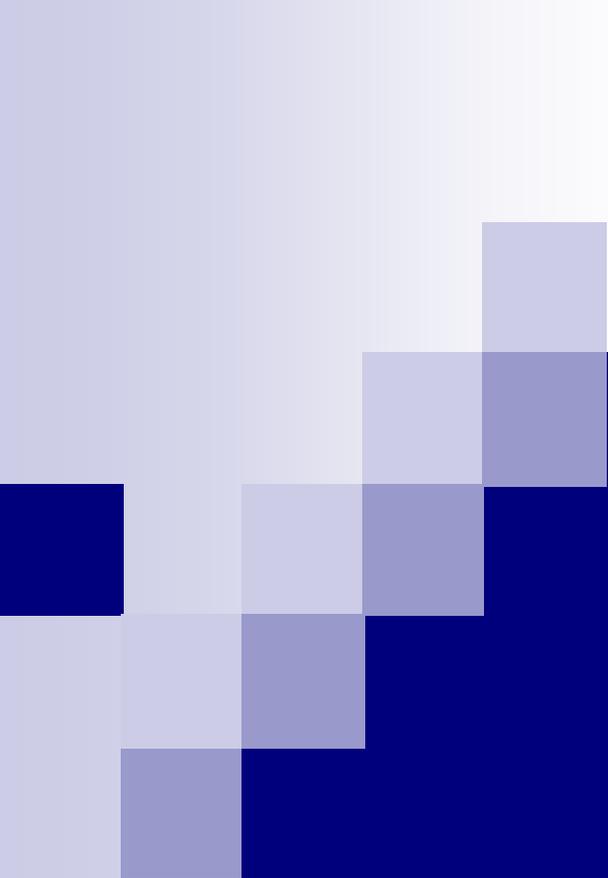


Future Outlook



Future Forecast Considerations

- Continued maintenance of water and wastewater systems
- Trends in power, fuel, chemicals and contracts with others
- Trends in water sales, conservation and the weather
- Implementation of the Integrated Pipeline Project
- Implementation of master plan and major maintenance recommendations for capital improvements program (CIP)
- Forecasts will change as numbers are refined



Five Year Capital Improvement Program

Basis for Capital Planning

- CIP includes three major categories:

- Regulatory

- Projects initiated due to changes in regulation by the Federal, State, or local governing agencies in regards to treatment processes, security issues, power reduction, air quality, dam safety, building codes, etc.

- Growth

- Projects identified in master planning efforts as required in anticipation of growth demands and projects in support of private development needs.

- Rehab and Replacement

- Projects requiring renewal of existing infrastructure or equipment that are beyond their useful life and causing operational inefficiency, costly maintenance, or repeated failure that negatively impacts customer service delivery. This category also includes replacement of pipelines in concert with proposed paving projects.

Capital Program Development

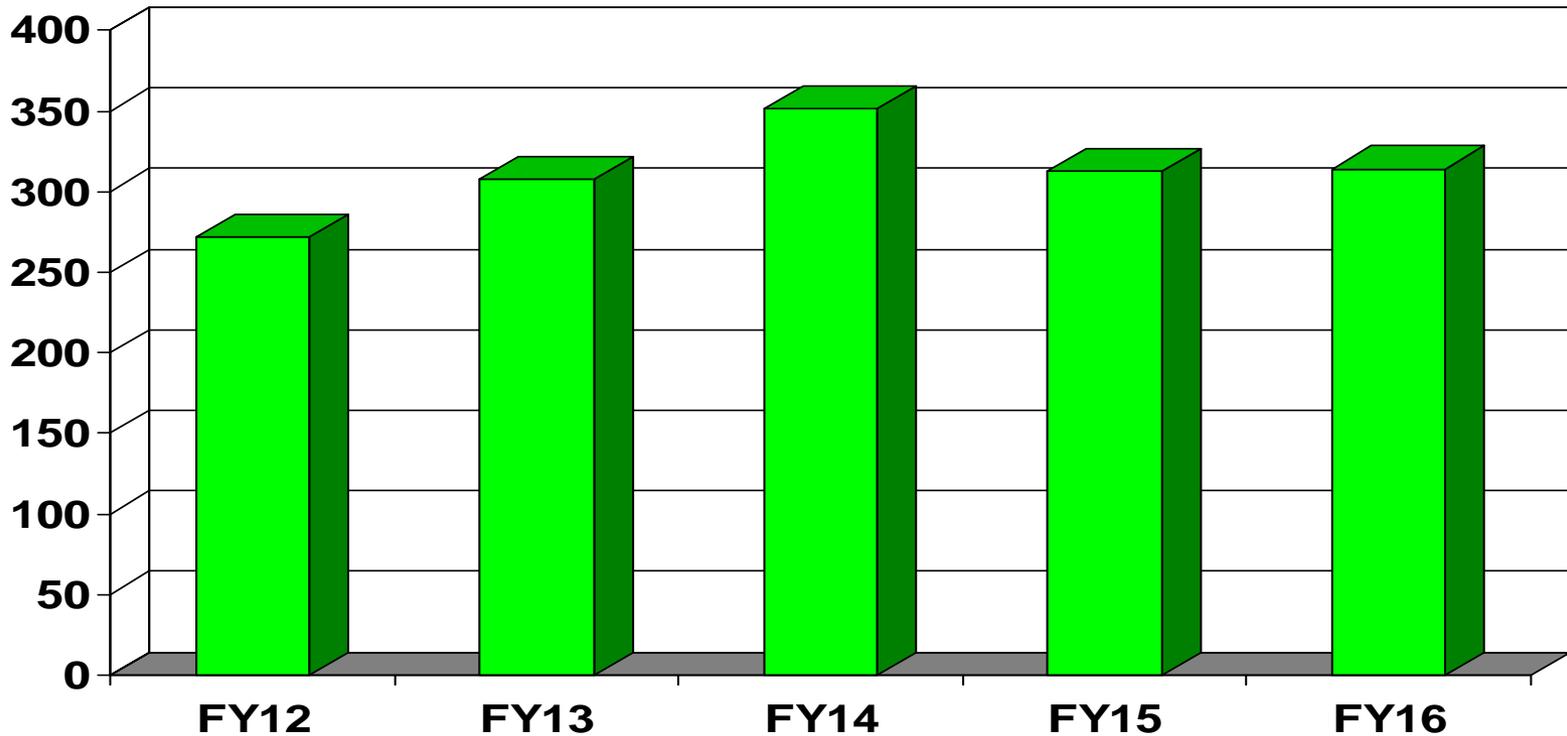
- Major capital improvements are guided by master plans and consider:
 - impending legislation for regulatory impact
 - population growth patterns
 - usage and demand patterns
 - scheduled maintenance
- 5 and 10 year Capital Program projections are developed to prioritize and schedule projects enabling the City's water and wastewater systems to operate efficiently and economically
- Council approves Capital Program funding annually as part of the budget process
- Capital Program is typically funded by a combination of cash and debt

FY12 - FY 16 Capital Improvement Programs

	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	Total
Regulatory	\$68.2M	\$51.1M	\$28.0M	\$40.6M	\$4.6M	\$192.5M
Growth	\$44.0M	\$65.7M	\$22.6M	\$32.1M	\$150.9M	\$315.3M
Rehab and Replacement	\$164.5M	\$195.5M	\$305.9M	\$244.1M	\$162.5M	\$1,072.5M
Total	\$276.7M	\$312.3M	\$356.5M	\$316.8M	\$318.0M	\$1,580.3M

Future Outlook: Capital Improvement Program

(Amounts in Million Dollars)



Note: Does not include cost of additional future water supply acquisitions

FY12 - FY 16 Capital Project Systems

- **Raw Water Supply, Reservoirs, Dams, Pumping, and Transmission - \$82.1M**
 - Rehab Iron Bridge Pump Station to improve reliability and increase capacity
 - Repair Carrollton, California Crossing, Frasier, and Bachman Dams to meet safety regulations
- **W & WW Pipelines, Pump Stations, Storage Facilities, and Meter Vaults - \$589.2M**
 - Continue replacement of deteriorated infrastructures and pipelines
 - Continue building new infrastructures to support development and growth demands
- **Elm Fork Water Treatment Plant Improvements - \$343.7M**
 - Complete all water quality projects to convert to enhanced coagulation and biological active filtration to meet regulatory requirements
 - Sedimentation basin conversion to enhanced coagulation
 - Filter backwash and solids handling to facilitate biological active filtration
 - Modification to chemical addition lines and facilities – ammonia, chlorine, orthophosphate, ferric sulfate
 - Sludge handling improvements
 - Rehab deteriorated pump station #1 for improved reliability

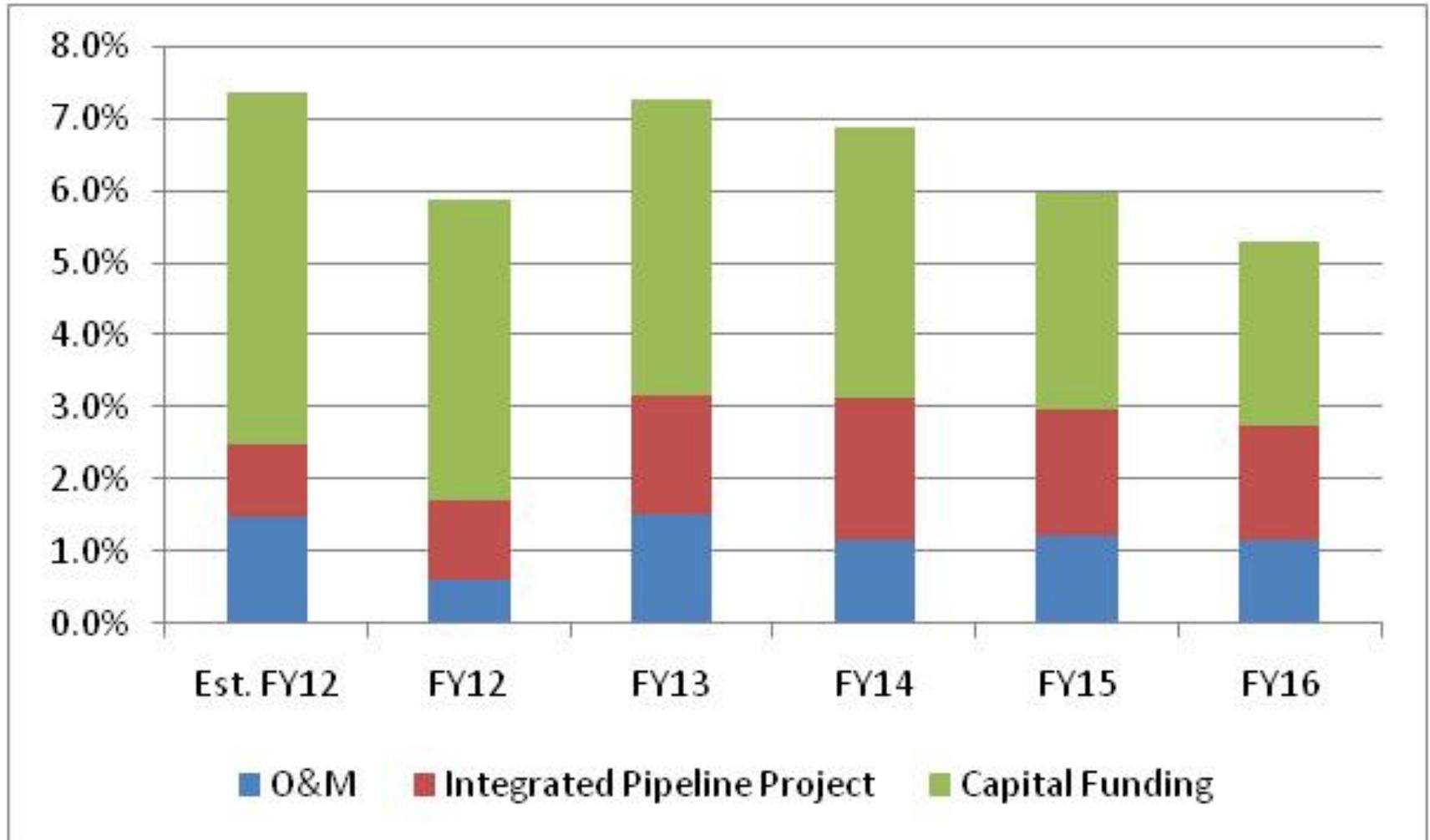
FY12 - FY 16 Capital Project Systems

- **Bachman Water Treatment Plant Improvements - \$58.1M**
 - Complete all water quality projects to convert to enhanced coagulation and biological active filtration to meet regulatory requirements
 - Chemical rapid mix improvements to optimize chemical addition and settlement of floc
 - Modification of ammonia and chlorine addition feed points eliminate nitrification and improve water stability and pH control
 - Sludge lagoon cleaning
 - Rehab of pump station #1
- **Eastside Water Treatment Plant Improvements - \$166.9M**
 - Complete all water quality projects to convert to enhanced coagulation and biological active filtration to meet regulatory requirements
 - Sedimentation basin conversion to improve water stability
 - Filter/hydraulic improvements to optimize organics removal causing nitrification
 - Residuals recovery to improve overall plant efficiency and eliminate recycling of filter backwash
 - Complete 540 MGD plant expansion
 - Construct Stage 4 sedimentation basins to meet future demands
 - Construct Stage 5 filters to increase plant capacity and meet future demands ³³

FY12 - FY 16 Capital Project Systems

- Southside WW Treatment Plant Improvements - \$94.8M
 - Build new peak flow basin #5 and rehab peak flow basin #'s 1, 2 &3 to better manage wet weather flow events
 - Construct new grease digestion facility to maximize co-generation facility to increase power generation
 - Replace deteriorated grit removal system with more efficient system to reduce power consumption at the plant
 - Hickory Creek Interceptor Improvements
- Central WW Treatment Plant Improvements - \$179.6M
 - Rehab badly deteriorated primary clarifiers to extend the life of the facility
 - Rehab deteriorated White Rock pump station to improve reliability
 - Construct new peak flow basin D to increase storage capacity and better manage wet weather flows
 - Construct stormwater facilities to eliminate run-off and eliminate flooding at the plant
 - Construct chemical feed polishing facility for enhanced biological phosphorus removal to meet regulatory change

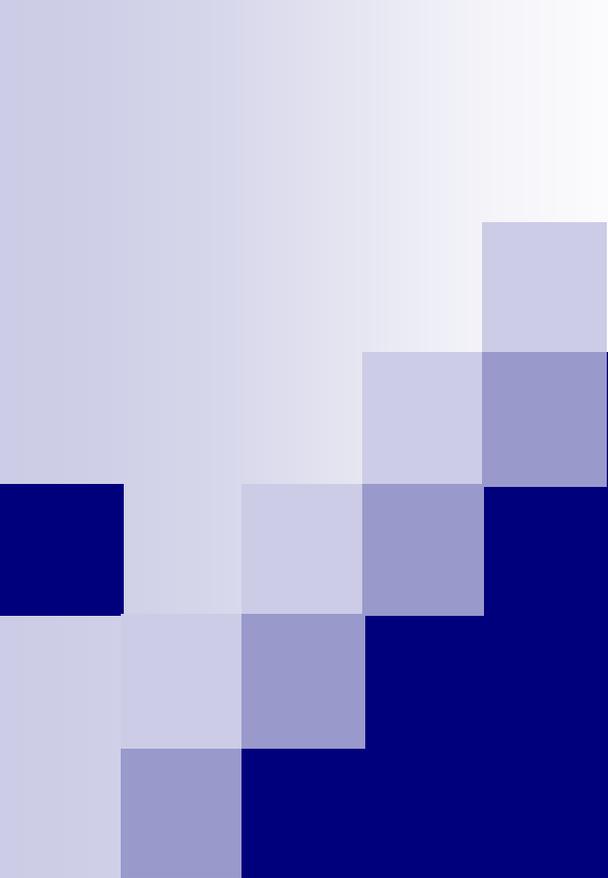
Future Outlook: Retail Rate Increases



Note: Dallas Estimated Share of IPL project is \$832M; with estimated capital savings of \$196M

Summary

- Dallas Water Utilities is a large, municipally owned regional water/wastewater utility provider
 - Self-supporting
 - Costs are driven by infrastructure requirements for both growth and renewal
 - Responsibility for planning to meet water requirements for Dallas and service area
- Recommend Proposed Operating Budget of \$551.6M
 - Average retail rate increase of 5.9%
 - Typical bill increases \$3.18/month
- Recommend Proposed Capital Budget of \$276.7M
- Budget increase primarily driven by increases in debt to fund capital projects



APPENDIX

Services by Key Focus Areas

Service Number		FY 11 Budget	FY 11 Estimate as of June FTA	FY 12 Proposed Budget
Economic Vibrancy				
2.61	Water Capital Funding	\$ 252,754,883	\$ 235,983,531	\$ 267,111,055
2.62	Water Production & Delivery	\$ 100,404,142	\$ 98,575,150	\$ 100,886,708
2.63	Water Utilities Capital Program Management	\$ 13,213,687	\$ 12,930,406	\$ 13,464,228
Clean Healthy Environment				
3.36	Wastewater Collection	\$ 16,477,259	\$ 16,419,676	\$ 16,758,918
3.37	Wastewater Treatment	\$ 48,411,040	\$ 48,153,595	\$ 48,796,287
3.39	Water Conservation	\$ 5,391,708	\$ 5,388,834	\$ 6,607,759
E3 Government				
6.71	Water Planning, Financial and Rate Services	\$ 3,244,995	\$ 2,757,552	\$ 3,160,024
6.72	Water Utilities Customer Account Services	\$ 21,471,647	\$ 21,281,672	\$ 21,543,938
6.70	Vital Statistics	\$ -	\$ -	\$ -
6.73	DWU General Expense	\$ 69,870,934	\$ 68,749,905	\$ 72,859,818
6.21	City GIS Services	\$ 100,202	\$ 18,235	\$ 411,570
Totals		\$ 531,340,497	\$ 510,258,556	\$ 551,600,305

Components of Water Utilities Revenues

Interest Income **\$ 4.0M**

Interest earned on cash in various department funds

Other Fees & Charges **\$ 4.7M**

Includes full cost recovery for miscellaneous fees and charges such as permits and cross connection fees

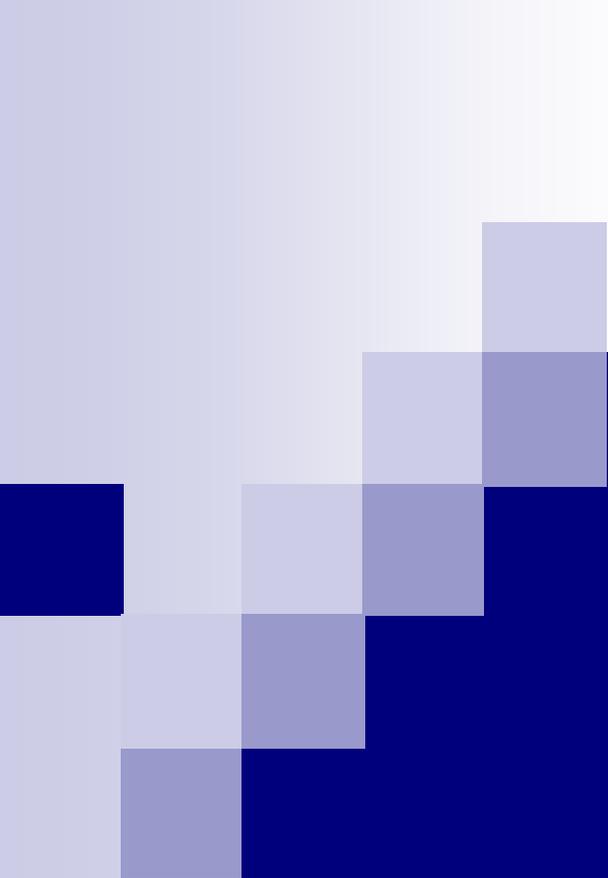
Wholesale Sales **\$ 82.5M**

Revenue earned from sales to wholesale customers for treated water, untreated water and wastewater services

Retail Sales **\$460.4M**

Revenue from sales to retail customers for water and wastewater services including residential, commercial, industrial and municipal

Total Revenues **\$551.6M**



Retail Rates

Dallas Water Utilities Monthly Payment Rates

Customer Charge		Current	Proposed	Current	Proposed	Combined	Proposed
		Water	Water	Sewer	Sewer		Combined
5/8	Inch Meter	\$4.18	\$4.20	3.95	4.10	\$8.13	\$8.30
3/4	Inch Meter	5.45	5.79	4.94	5.25	\$10.39	\$11.04
1	Inch Meter	7.90	8.40	7.16	7.61	\$15.06	\$16.01
1 1/2	Inch Meter	14.88	15.81	13.51	14.36	\$28.39	\$30.17
2	Inch Meter	23.21	24.67	21.09	22.41	\$44.30	\$47.08
3	Inch Meter	55.68	59.18	50.61	53.79	\$106.29	\$112.97
4	Inch Meter	92.80	98.63	84.33	89.62	\$177.13	\$188.25
6	Inch Meter	185.57	197.22	168.66	179.25	\$354.23	\$376.47
8	Inch Meter	310.70	330.20	282.51	300.24	\$593.21	\$630.44
10	Inch Meter or larger	475.11	504.93	430.08	457.08	\$905.19	\$962.01

Usage Charge per 1,000 gallons

	Current	Proposed	Current	Proposed
	Water	Water	Sewer	Sewer
Residential				
Up to 4,000 gallons	1.56	1.68	4.34	4.60
4,001 to 10,000 gallons	3.15	3.35	4.34	4.60
10,001 to 15,000 gallons	4.33	4.63	4.34	4.60
Above 15,000 gallons	5.80	6.25	4.34	4.60
General Services				
Up to 10,000 gallons	2.14	2.35	2.85	3.04
Above 10,000 gallons	2.61	2.85	2.85	3.04
Above 10,000 gallons for usage more than 1.4 times annual monthly average	3.83	4.12	2.85	3.04
Optional General Services				
1st million gallons or less (minimum)	1,650.21	1,753.79	2.79	2.92
Above 1 million gallons (per 1,000 gallons)	2.15	2.29	2.79	2.92

Proposed rates effective Oct. 1, 2011

The above Prompt Payment Rates apply if payment is received on or before the due date shown on the bill. These represent a 5% discount from the Standard Rates.

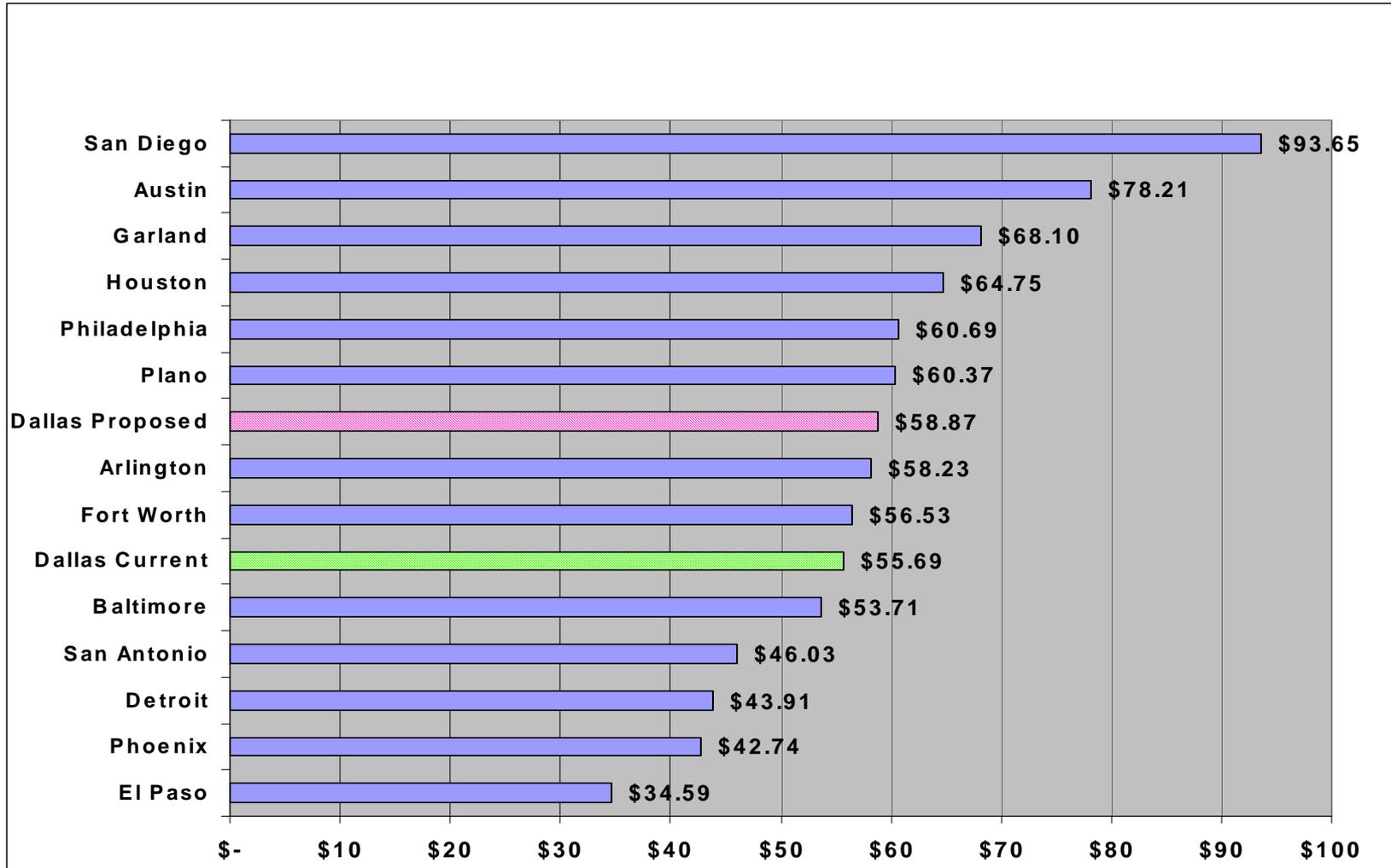
* Sewer Charges for residential accounts are calculated on an average of the water billed in December, January, February and March (40,000 gallons maximum) or the actual month's water consumption, whichever is less. Sewer charges for general services and optional general services accounts are based on the month's water consumption unless sewer is metered separately.

Industrial wastewater discharges containing concentrations of BOD and/or Suspended Solids greater than 250 milligrams per liter are assessed sewer surcharges. Certain commercial users such as restaurants, bars/lounges, small food processors and equipment service facilities are assessed standard surcharges. These surcharges are included as part of the monthly bill.

Proposed Miscellaneous Fee Changes

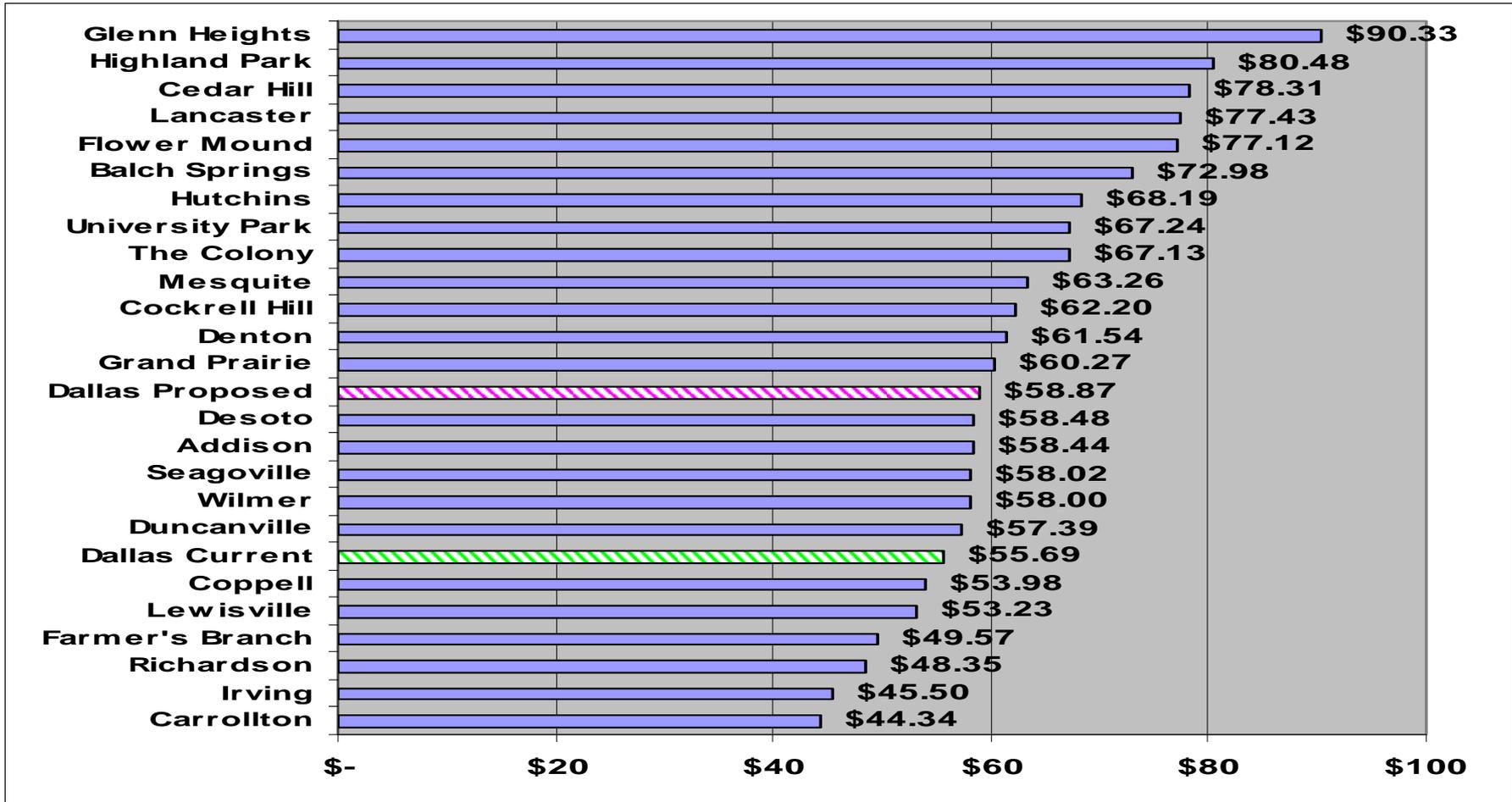
	<u>Existing Fee</u>	<u>Proposed Fee</u>
<u>Applications & Deposits</u>		
1. Service Application Fee	\$13	\$15
<u>Charges for Use of Fire Hydrants</u>		
2. Monthly Fire Hydrant Service Charge	\$55.68	\$59.18

Index Cities Comparison of Average Monthly Water & Sewer Residential Bills

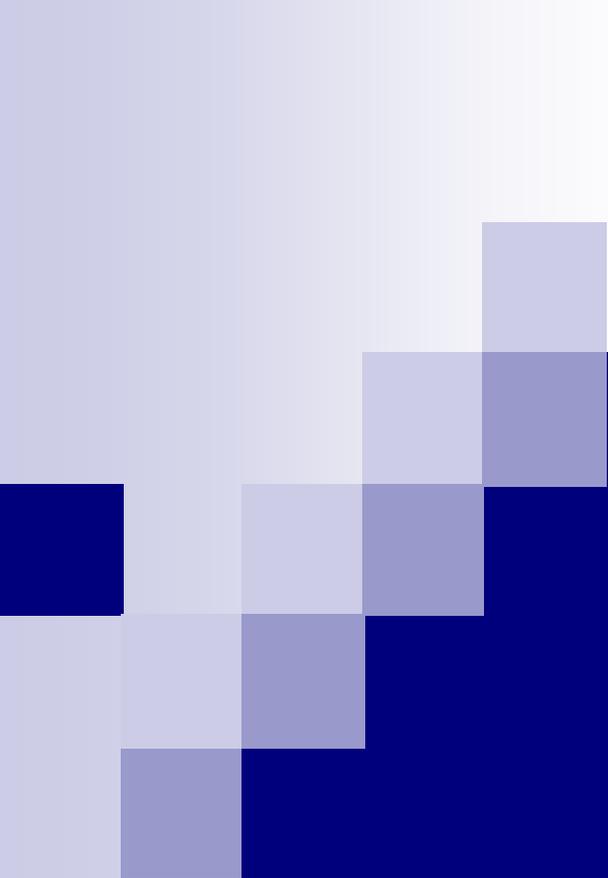


Note: Bill comparison based on rates effective June 2011; water consumption of 8,300 gallons; and, 6,400 gallon Winter Months Average for sewer

Customer Cities Comparison of Average Monthly Water & Sewer Residential Bills



Note: Bill comparison based on rates effective June 2011; water consumption of 8,300 gallons; and, 6,400 gallon Winter Months Average for sewer



Water Conservation Program

Dallas' Water Conservation Program

- Conservation measures adopted by the City Council in Oct 2001 have been positive
 - Added 4th tier water rate for usage over 15,000 gallons
 - Passed an ordinance regulating lawn and landscape irrigation:
 - Avoiding water runoff and waste
 - Maintaining sprinkler systems
 - Summer daytime watering restrictions from June 1 to September 30 annually
 - No watering during any form of precipitation
 - Installation of rain and freeze sensors by 2005
- In 2007, the City extended the time of day watering restriction to April 1 through October 31
- Dallas continues to aggressively pursue conservation strategies
 - 25% of future water will be met by conservation and reuse

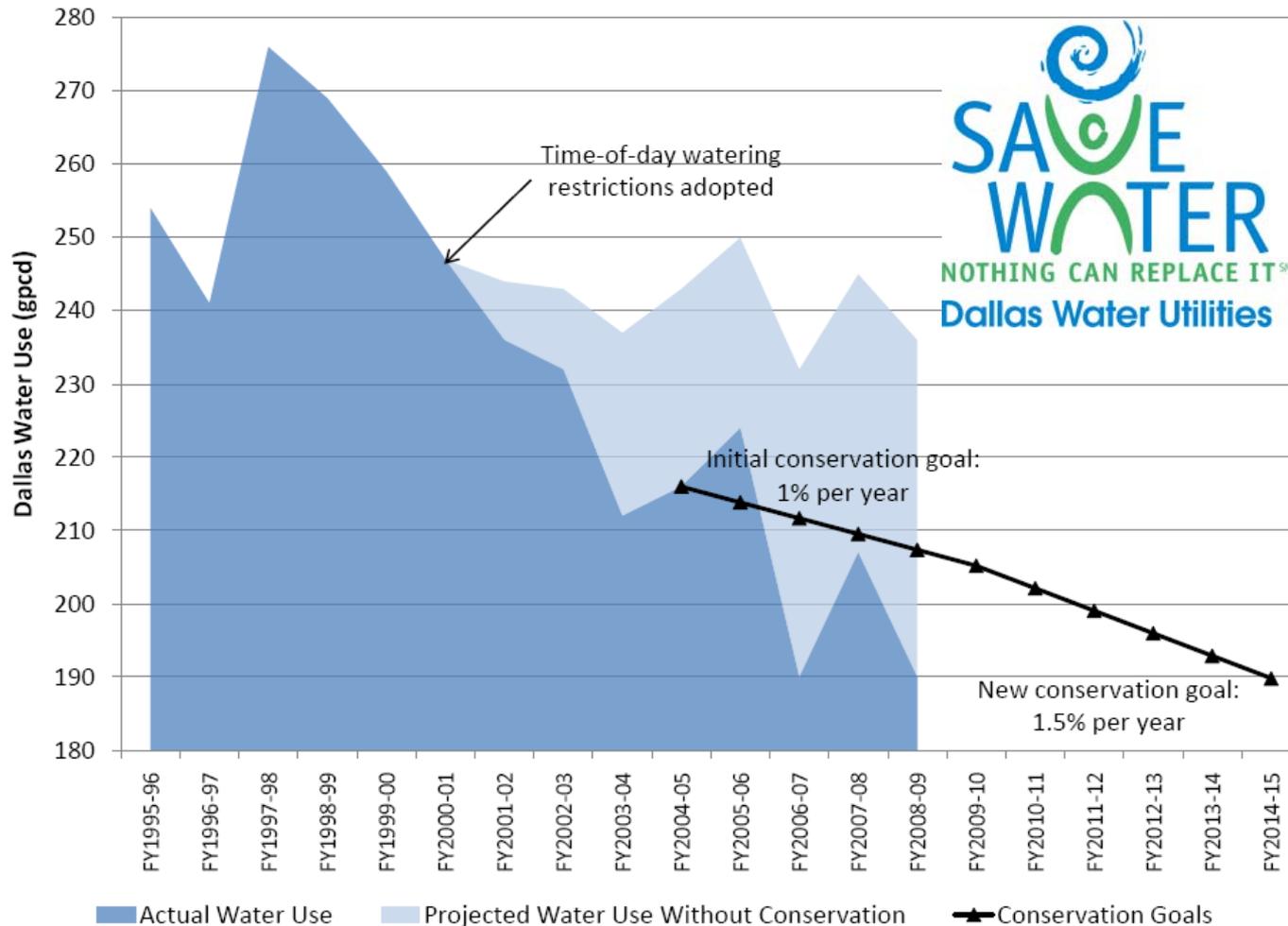


Water Conservation Five-Year Strategic Plan 2010 Update

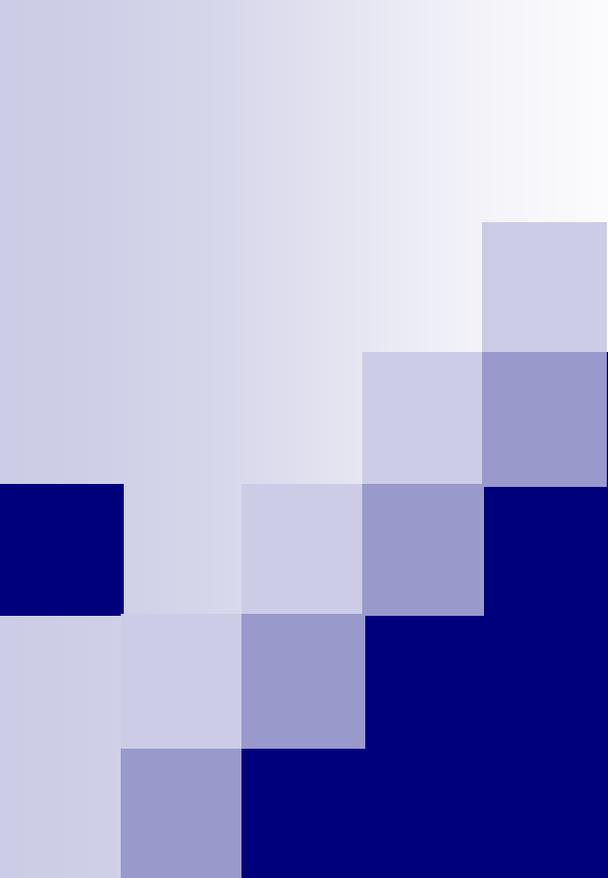
- City's long-term planning tool to help curb water waste and improve water efficiency management
- Serves as foundation for state mandated water conservation plan
- Strategies include projected long-term water savings and reductions in gallons per capita usage
- Updated plan adopted by the City Council in June 2010



Dallas GPCD Trends



Over 120 billion gallons saved since 2001



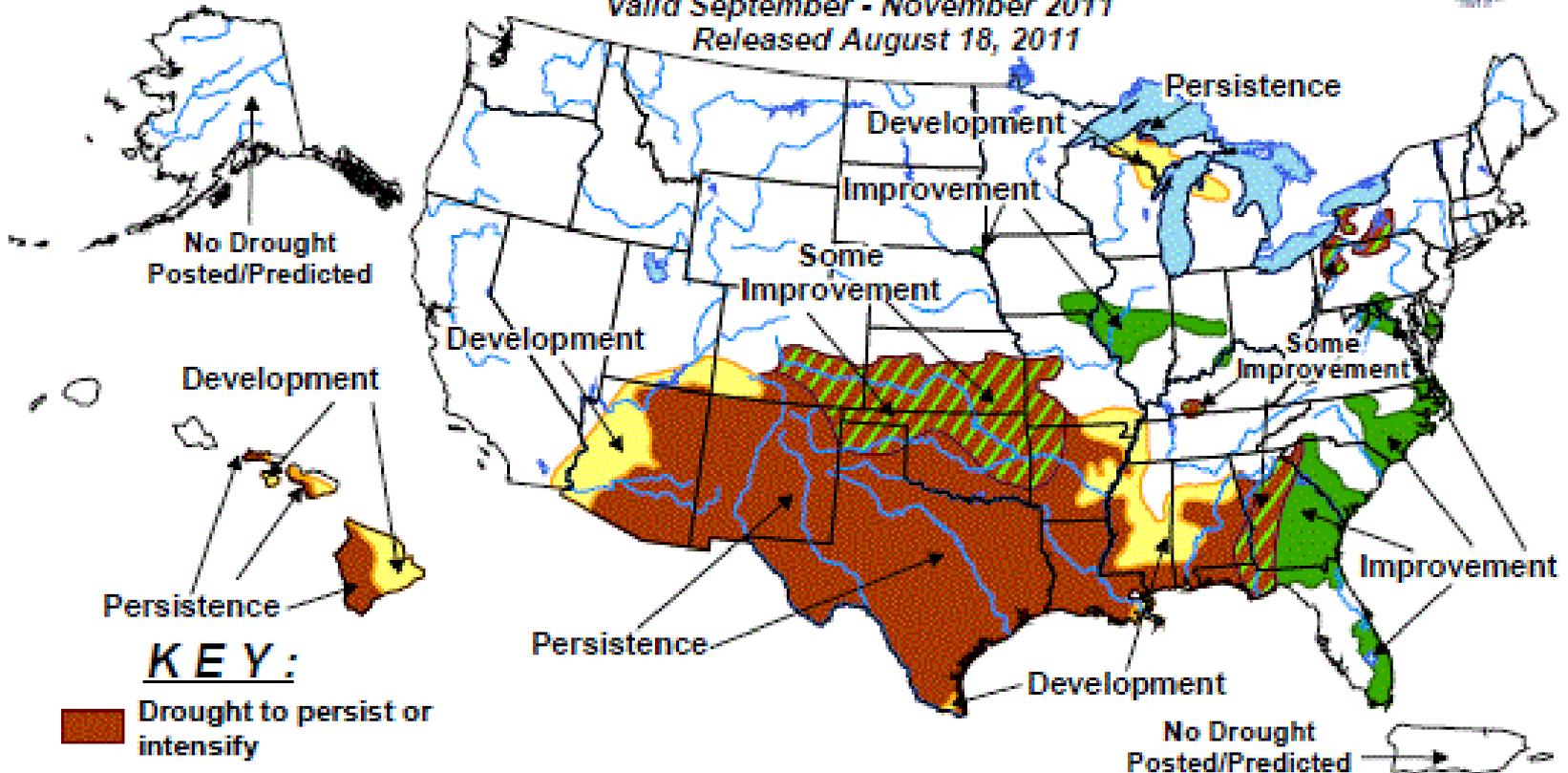
Water Supply



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid September - November 2011
Released August 18, 2011



KEY:

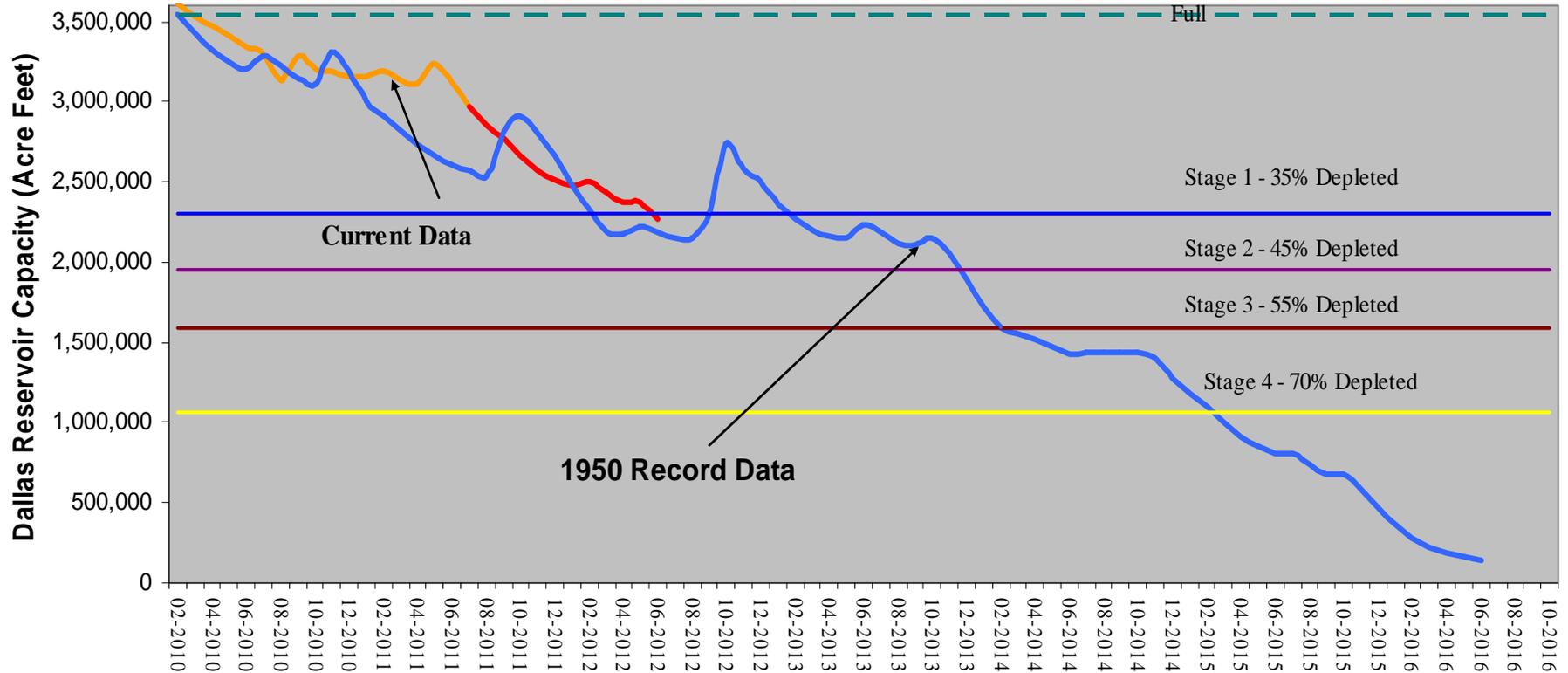
-  Drought to persist or intensify
-  Drought ongoing, some improvement
-  Drought likely to improve, impacts ease
-  Drought development likely

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events – such as individual storms – cannot be accurately forecast more than a few days in advance. Use caution for applications – such as crops – that can be affected by such events. "Ongoing" drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: the green Improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

DALLAS WATER SUPPLY SYSTEM CONNECTED RESERVOIRS

Lewisville Ray Roberts Grapevine Ray Hubbard Tawakoni Lake Fork

Historical Dallas Drought vs. Current Drought



Region C

