This presentation premiered at WaterSmart Innovations

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Five Years: Lessons Learned from Central Texas Drought

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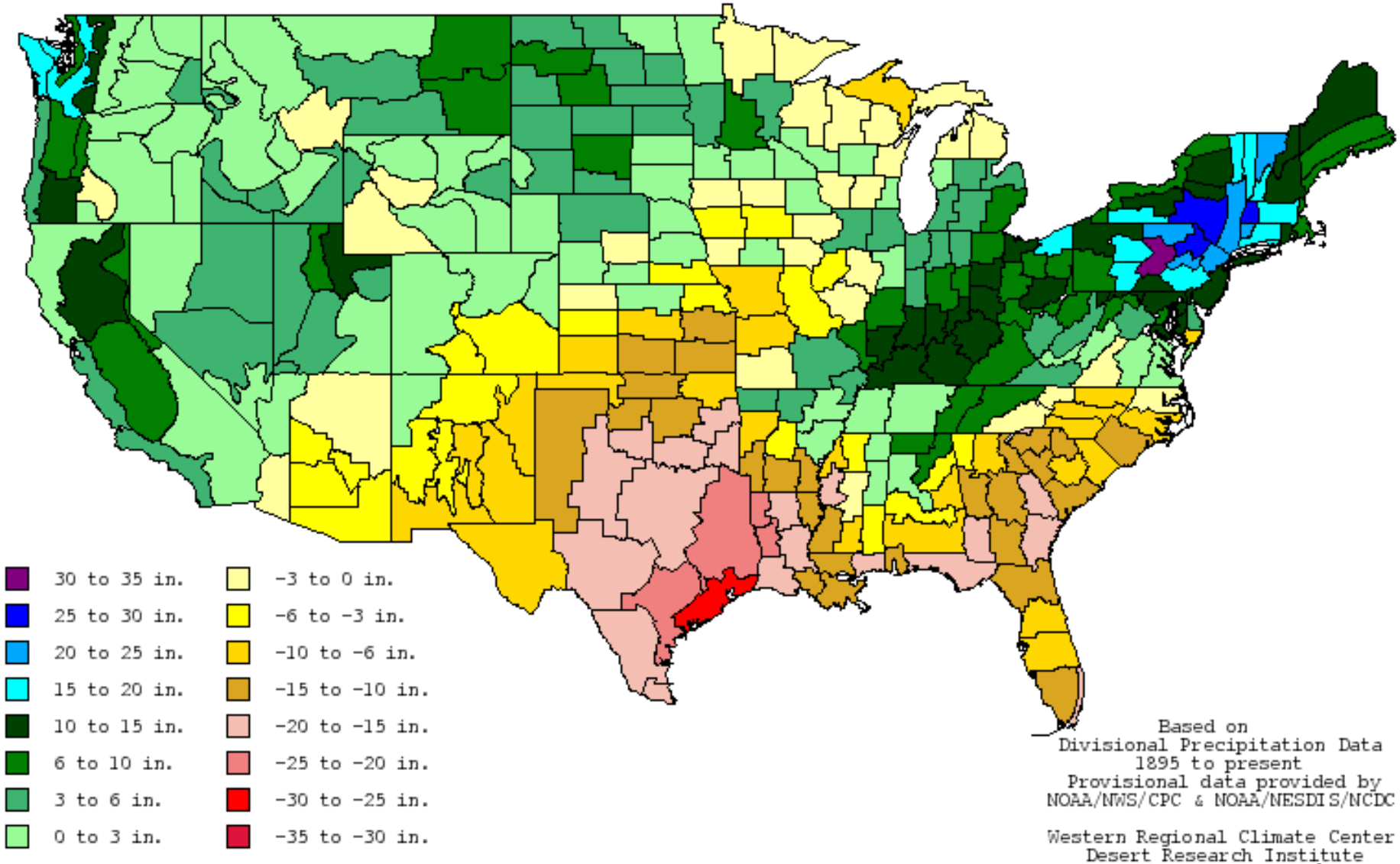
About Austin Water

- Large metropolitan utility
  - 538 sq miles
  - 200,000+ connections
  - 1,000,000 customers
  - Nearly 1,200 employees
- 100% surface water from Lower Colorado River
  - Firm water rights backed by stored water contract up to 325,000 acre-feet
  - Prepayment agreement up to 201,000 acre-feet
  - Peak withdrawal ~ 175,000 acre-feet
- What happens when lakes run dry?

Rainfall Departure from Normal Oct 2010-Sep 2011



Severity of Drought

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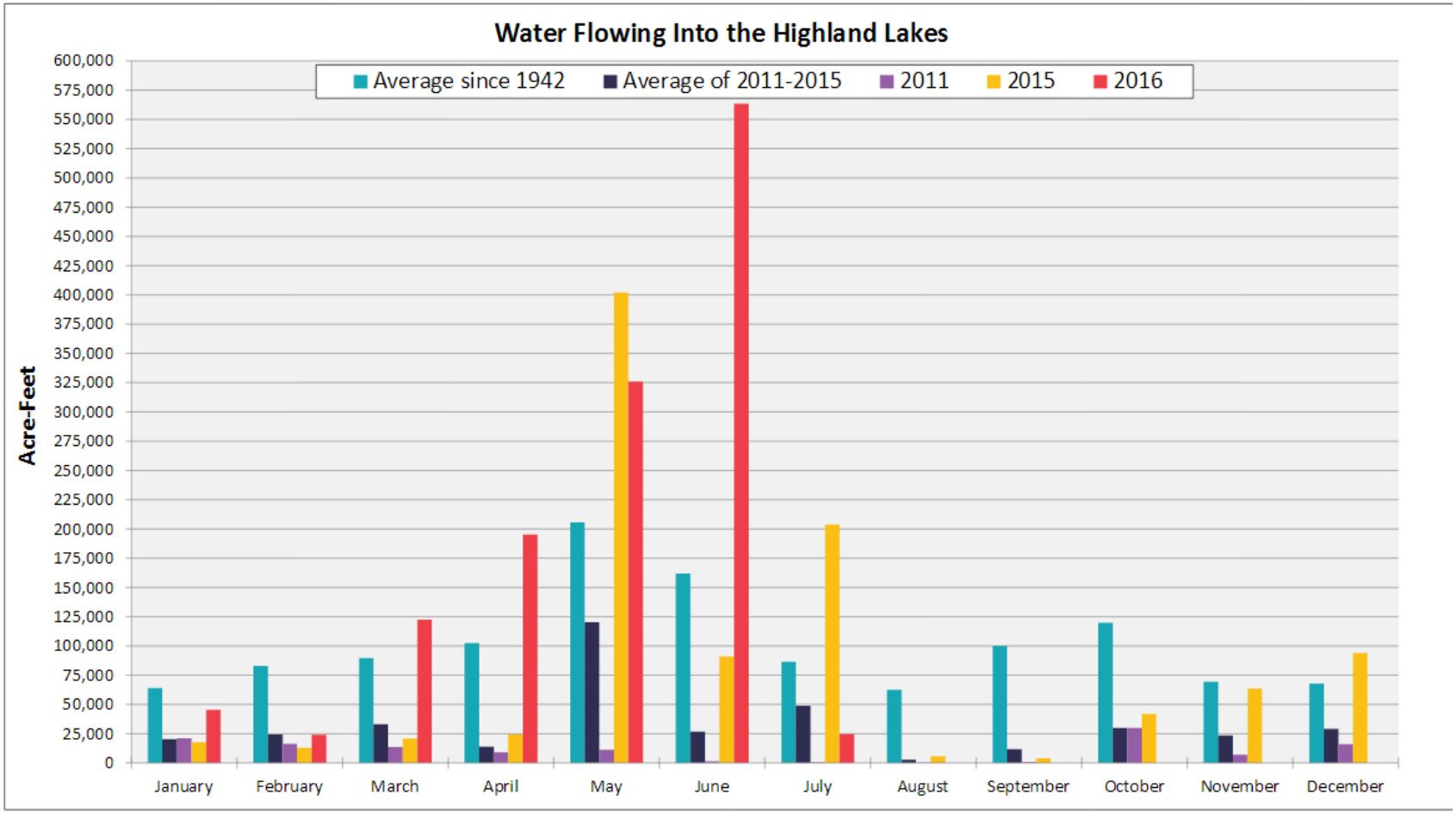


* Inflows: the estimated amount of water flowing into the Highland Lakes from rivers and streams.

Data for 2015 and 2016 is preliminary and subject to change.

Period: January-July	(acre-feet)
Since 1942, January-July Average:	**800,435**
January-July 2011:	**73,706**
January-July 2012:	**346,883**
January-July 2013:	**98,073**
January-July 2014:	**147,765**
January-July 2015:	**771,952**
January-July 2016:	**1,300,877**

Top 5 Lessons Learned

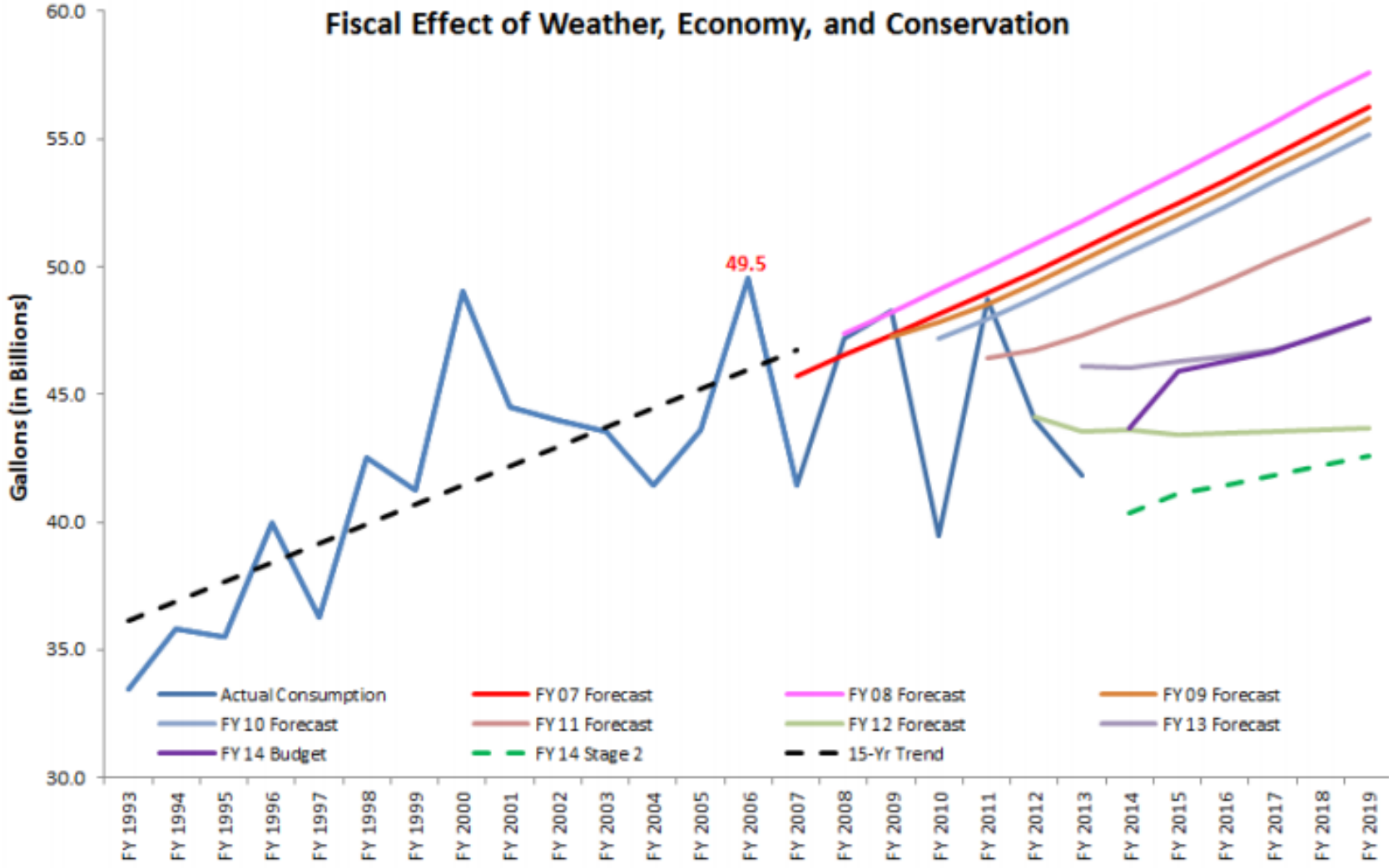
- Build a conservation culture early
- Prepare for financial impacts
- Understand effects of drought and drought response on operations
- Prioritize community's values
- Capitalize on drought for long-term planning support

Build a Conservation Culture

- Austin conservation programs since mid-1980s
- Early emphasis on efficient fixtures
- Later emphasis on efficient practices & regulations
- Important for customers to know water source
  - 2004 WaterIQ research project
  - 98% of Texas residents think water conservation important
  - 28% “definitely know” drinking water source

Prepare for Financial Impacts

Shifting Water Consumption



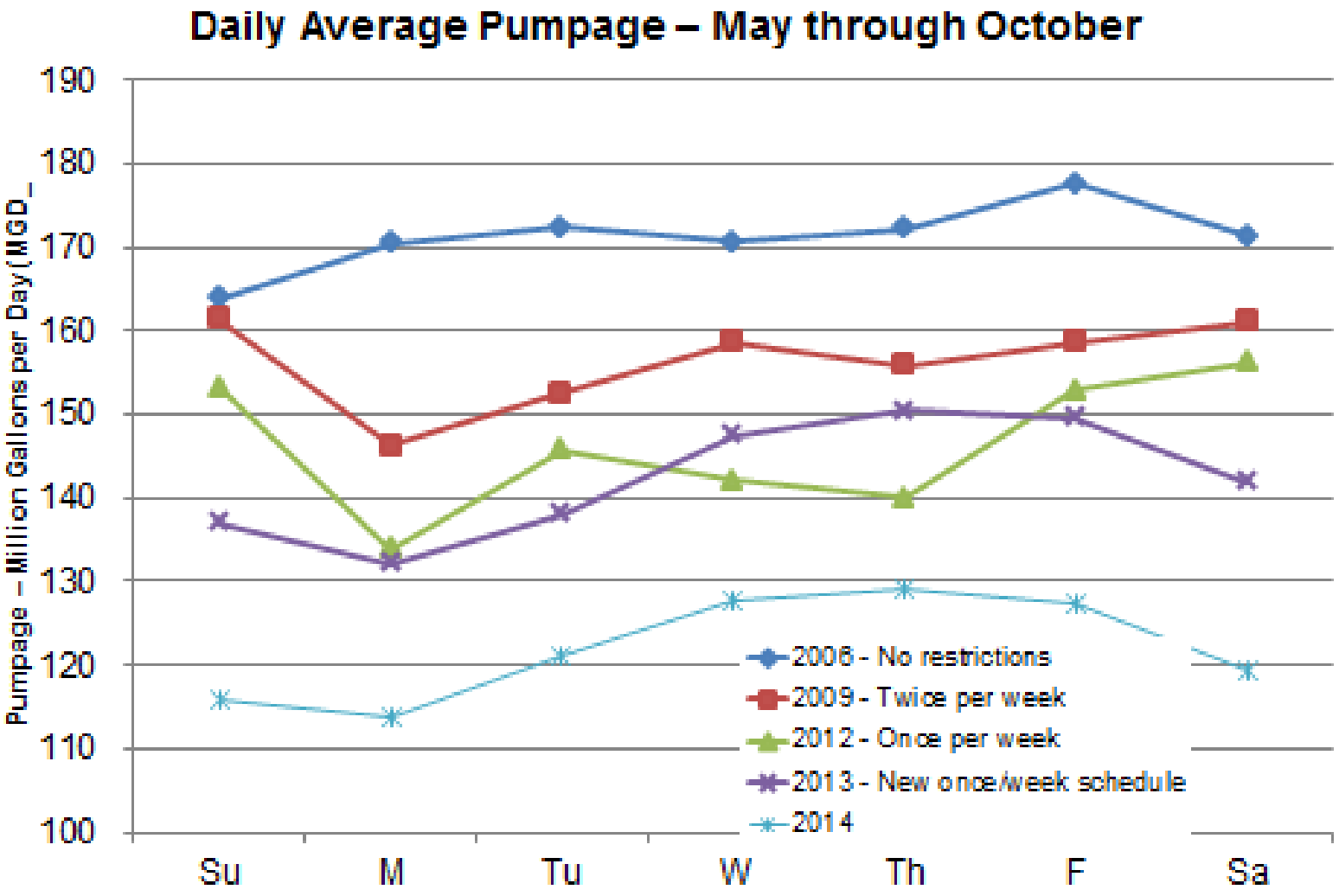
Prepare for Financial Impacts

- Steeply tiered inverted block rates for residential
  - Commercial customers have seasonal rates
- City Council policies focused on rate increases by percentage, resulting in steeper tiers and low-use subsidies
- Conservation has reduced high use
- ~ 67% of customer usage below cost-of service
- Since 2010, conservation included in revenue forecasting meetings
  - Abandoned 20-year average forecasting method
- Created Revenue Stability Fund in 2011
- Drought rates added in 2015 for Stages 3 and 4

Effects on Operations

- Dry ground increased frequency and severity of transmission & distribution breaks
  - Increased scheduled replacement
  - Added second shift for leak response
- Lower lake levels changed incoming water quality
- Reduced wastewater flow changed nutrient concentrations
  - Planning for additional chemicals
- Once-per-week irrigation schedule led to large pumping swings
  - Adjusted irrigation schedule

Effects on Operations



Prioritize Community Values

- Series of public meetings 2011 – 2012
- Additional public input in 2015
- High priority on protection of trees
- Protect responsible water-using businesses
  - Efficient car washes
  - Health-and-safety pressure washing
- Eliminate difficult-to-enforce restrictions with low potential savings
  - Backyard pool fill valves
  - Recreational sprinklers
- Enable landscape establishment for new development

Evolution of Water Use Restrictions

- 1990s – Voluntary, once per 5 days
- 2000 – First time mandatory five-day schedule (Stage 2)
- 2007 – Twice per week schedule (Stage 1)
  - Year-round for commercial & multifamily
  - May-September for single-family
  - Water waste prohibited
  - Class C Misdemeanor
- 2009 – Mandatory once-per week restrictions (Stage 2)

- 2011 – Stage 2 restrictions enacted, threat of Stage 3

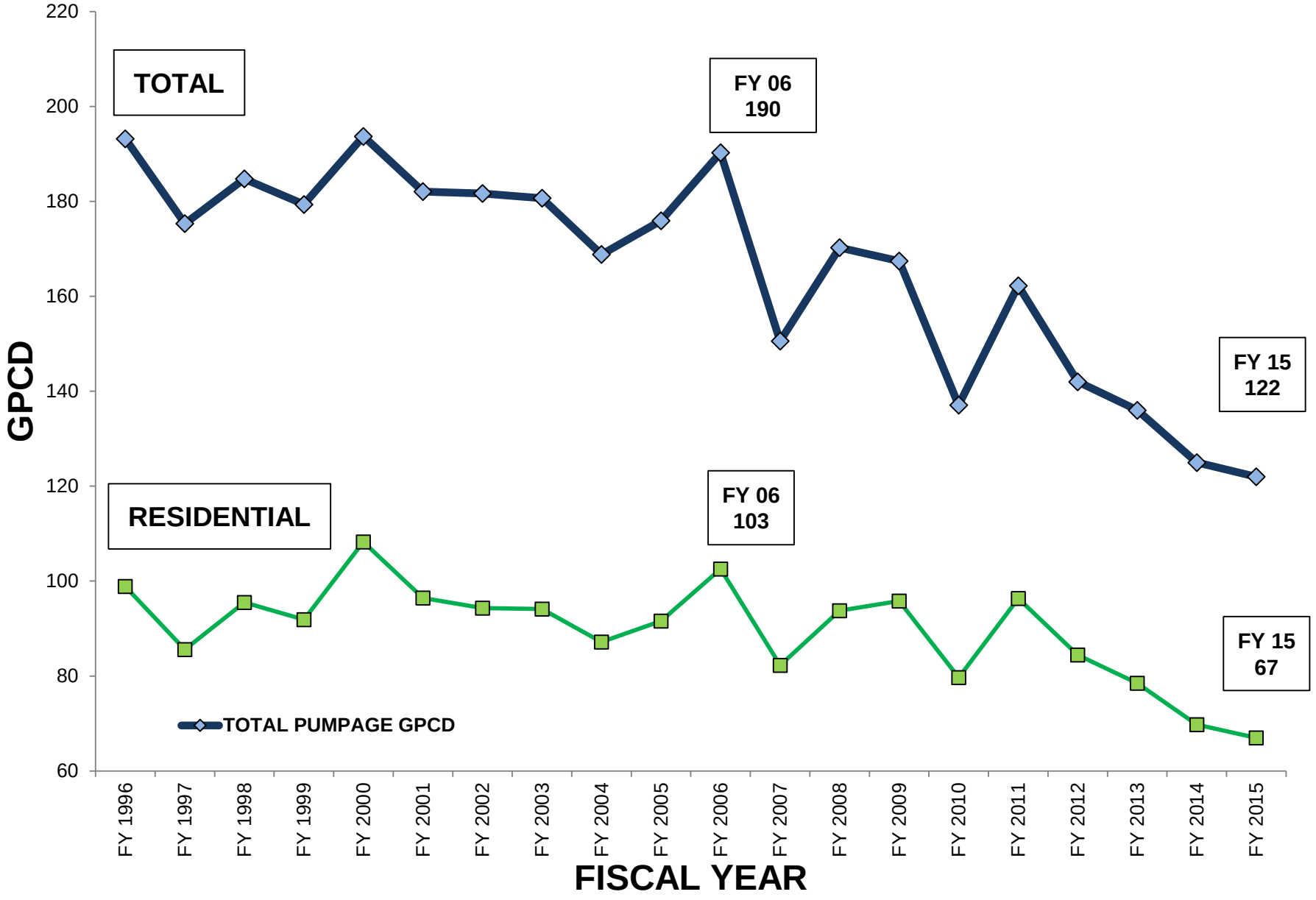
Evolution of Water Use Restrictions

- 2012 – Code changes
  - Mandatory, year-round watering restrictions (2x/week)
  - Exemptions for drip irrigation, tree bubblers & soaker hoses
  - Biennial irrigation inspections for properties over 1 acre
  - Car wash certification required
  - On-bill fines from $50-$500 per violation
- 2015 – Code changes
  - Permanent 1x/week limits for automatic spray irrigation
  - No more than 2x/week with hose-end sprinklers

Capitalize on Drought for Long-Term Planning

- Beginning in 2011, presentations to Council to educate about drought and operational/financial impacts
- Citywide publications to inform about drought and actions taken
- Efforts to improve regional water management plan
- New Task Forces established to evaluate additional water sources
- Financial Task Forces to gain support for needed rate increases and financial policies to reduce volatility
- Began process to create 100-year water plan with demand and supply-side strategies (Water Forward)

Water Use – Gallons Per Capita Per Day (GPCD)



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