

Memorandum



CITY OF DALLAS

Date May 23, 2008

To Members of the Neighborhood Quality of Life Committee: Pauline Medrano, Chair; Vonciel Jones Hill, Vice Chair; Carolyn R. Davis, Angela Hunt; Sheffie Kadane; David A. Neumann; Steve Salazar

Subject City of Dallas Water Utilities
Water Conservation Program Update

Attached for your reference is a copy of the briefing for the Water Conservation Program Update. The briefing will be presented at your committee meeting on May 27, 2008.

Please let me know if you should need additional information.

A handwritten signature in black ink, appearing to read 'R. Miguez'.

Ramon F. Miguez, P.E.
Assistant City Manager

C: Mary K. Suhm, City Manager
Ryan S. Evans, First Assistant City Manager
Jill A. Jordan, P.E., Assistant City Manager
Ramon F. Miguez, P.E., Assistant City Manager
A.C. Gonzalez, Assistant City Manager
David K. Cook, Chief Financial Officer
Deborah A. Watkins, City Secretary
David O. Brown, Interim Assistant City Manager
Thomas P. Perkins, City Attorney
Craig E. Kinton, City Auditor
Judge Jay Robinson
Helena Stevens, Assistant to the City Manager



Water Conservation Program Update

Presented to Neighborhood Quality of Life Committee
May 27, 2008



Briefing Purpose

- ▶ Recap Five-year Strategic Plan rationale
- ▶ Provide update on current and future projects
- ▶ How are we doing?
- ▶ Provide update on city requirements regarding irrigation systems



Five Year Strategic Plan

▶ **Adopted in 2005**

- ▶ **Goal to achieve an average 1% per year reduction in gallons per capita over five years by:**
 - ▶ Reducing seasonal peak demands;
 - ▶ Reducing water loss and waste;
- ▶ **While:**
 - ▶ Maintaining quality of life; and
 - ▶ Allowing for continued growth and economic development



Five-year Strategic Plan Approach

- ▶ **City Leadership & Commitment**
 - ▶ “Lead by example” by reducing the amount of water consumed by City operations
- ▶ **Education & Outreach**
 - ▶ Impact customer attitudes and behaviors through public education efforts
- ▶ **Rebate & Incentive Programs**
 - ▶ Motivate customers to replace and/or retrofit high water use fixtures and devices





City Leadership & Commitment

Landscape Irrigation Maintenance & Design Demonstration Gardens

▶ Kiest Park

- ▶ Upgraded landscape to include water wise plants
- ▶ Redesigned irrigation system to operate more efficiently
- ▶ **Estimated water savings 431,737 gallons annually**



▶ Samuell Grand Recreation Center

- ▶ Conservation staff Installed new earth-kind rose garden
- ▶ Collaborative effort with Texas AgriLife (formerly Texas A&M Cooperative Extension Service)



Water Conservation City Grant Program

- ▶ \$150,000 awarded in FY 06/07
 - ▶ Equipment & Building Service
 - ▶ 80 urinals replaced at 40 Fire Stations
 - ▶ **Estimated water savings 1 million gallons annually**
 - ▶ Parks Department
 - ▶ Upgrading irrigation system at Zoo main entrance
 - ▶ Office of Environmental Quality
 - ▶ Sustainability Program



Irrigation System Audits

- ▶ Stevens Park Golf Course
 - ▶ Conservation Irrigator audited
Tees, Fairways, Greens:
 - ▶ Estimated water savings based on findings and recommendations
 - ▶ **31 million gallons annually**
- ▶ City Hall Median Upgrades
 - ▶ Goal to reduce runoff from fixed spray heads and to reduce amount of water applied during each watering event
 - ▶ MP Rotators® installed
 - ▶ **Estimated water savings 30-40% annually**





Education & Outreach

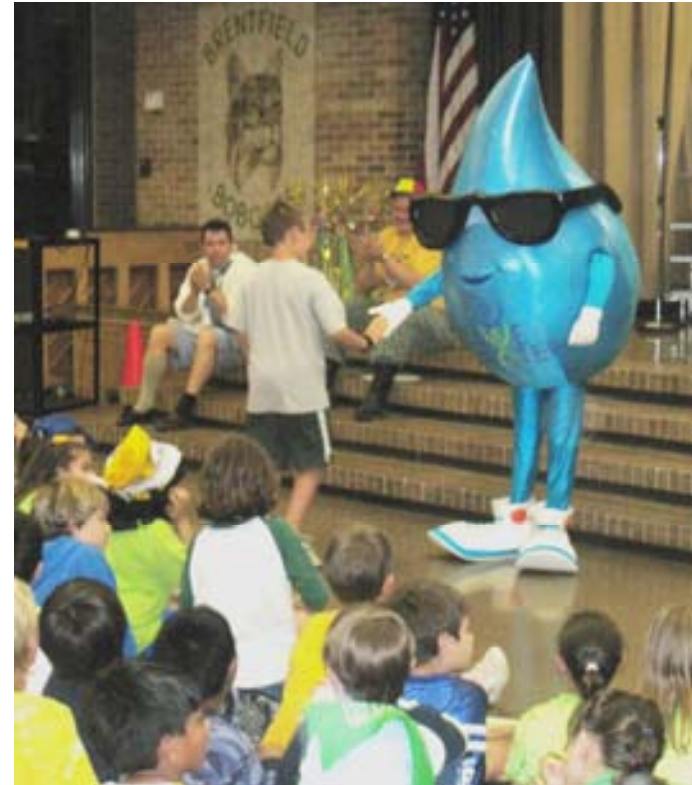
Environmental Education Initiative

- ▶ Collaborative effort with Department of Sanitation
 - ▶ Program expanded to include grades 6-8
 - ▶ Over 8,600 students participated in 2006/2007
 - ▶ Over 200 teachers participated in staff development program



Water Conservation Mascot “DEW”

- ▶ Received 2007 Water Mark Award from Texas American Water Works Association & Water Environment Federation for video “DEW Helps Kids Save Water”
 - ▶ Spot aired on Nickelodeon and the Cartoon Network in Summer 2007



Public Outreach Campaign

- ▶ Formed partnership with Tarrant Regional Water District
 - ▶ “Save Water” message expanded beyond Dallas’ borders
 - ▶ Dallas leveraged additional \$450,000 in media exposure as result of partnership



Industrial/Commercial Institutional Outreach Efforts

- ▶ Cooling Tower Audits
 - ▶ Program launched in March 2007
 - ▶ 38 audits performed to date
 - ▶ Follow-ups performed to determine actions taken
 - ▶ **Projected water savings 44 million gallons annually if recommendations implemented**





Rebate & Incentive Programs

Minor Plumbing Repair Program



- ▶ Formerly Volunteers in Plumbing Program
- ▶ 571 families helped in 2006/2007
- ▶ 1,284 fixtures replaced
- ▶ **Estimated water savings 3.3 million gallons annually**



New Throne for Your Home Program



I Have A New Throne For My Home!

Toilets use the most water indoors, consuming up to 7,200 gallons of water per person each year. New technologies have greatly improved the performance of low-flow toilets. Installing one in your home can save 4,320 gallons of water per person each year.

Give your bathroom the royal treatment. If you are a Dallas Water Utilities customer you may qualify for a \$90 voucher through our Throne for Your Home Toilet Voucher Program, (up to two vouchers per household) towards the purchase of a low-flow or ultra low-flow toilet. Visit www.SaveDallasWater.com to print out an application for your voucher and mail it in today!

IT'S ALL IN A DROP!

WWW.SAVEDALLASWATER.COM

- ▶ Toilet voucher program launched in June 2007
- ▶ 3,159 toilets replaced to date
 - ▶ 1,665 single-family
 - ▶ 1,492 multi family
- ▶ **Estimated water savings 14 million gallons annually**



Spray to Save Restaurant Program

- ▶ Pre-rinse spray nozzle program launched in November 2007
 - ▶ Over 200 restaurants participated to date
 - ▶ 889 devices replaced
 - ▶ 293 spray nozzles
 - ▶ 596 faucet aerators
 - ▶ **Estimated water savings 53 million gallons annually**



Environmental Education Initiative

- ▶ Development of High School Summer Intern Program
 - ▶ City awarded grant from Exxon/Mobil “Green Team” Intern Program
 - ▶ Targeted to top science and engineering students
 - ▶ Grades 9-12
 - ▶ Students will study effectiveness of conservation ordinance
 - ▶ Students will study effectiveness of Blue Cart Program for recycling
 - ▶ One-on-one mentoring with conservation and recycling staffs



“Dew” Goes Digital

MySpace.com - Dew - 98 - Male - DALLAS, Texas - www.myspace.com/savedallaswater - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print Mail News RSS H

Links DWU COO Intranet DPL Lawson Verify Email

Address http://www.myspace.com/savedallaswater Go

Dew



"If saving water is wrong, I don't want to be right."

Male
98 years old
DALLAS, Texas
United States

Last Login:
4/2/2008

View My: [Pics](#) | [Videos](#)

Dew is in your extended network

Dew's Latest Blog Entry

[\[Subscribe to this Blog\]](#)

Dallas Time-of-Day Watering Restrictions Resume April 1 [\(view more\)](#)

Water Fun Facts [\(view more\)](#)

Outdoor Water - Wise Tips [\(view more\)](#)

[\[View All Blog Entries\]](#)

Contacting Dew

Send Message	Forward to Friend
Add to Friends	Add to Favorites
IM / Call	Block User
Add to Group	Block User

MySpace URL:
<http://www.myspace.com/savedallaswater>

Dew's Blurbs

About me:

I'll be honest - I'm lying about my age (only because that is as old as MySpace would let me go). In truth, I have literally been around since before we kept track of time. I have lived all over the World, in oceans, clouds, rivers and lakes. In fact, in the average one hundred year period, a water drop like me spends 98 years in the ocean, 20 months as ice, about two weeks in lakes and rivers, and less than a week in the atmosphere.

About three years ago, my travels eventually brought me to Dallas and the kind folks at Dallas Water Utilities finally decided to give me the name "Dew" and a face and body of a giant water drop (yes, I am available for public appearances) to help educate individuals about the importance of water conservation. Because of Dallas' climate and huge population growth, water conservation is a serious issue for the City. In fact, by 2050 nearly 30 percent of the water supply will need to come from

Once in a Lifetime by Talking Heads
00:10

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Looking Ahead to FY 2008/2009

- ▶ **Rebate & Incentive Programs**
 - ▶ Continue to expand ICI programs
 - ▶ Increase funding by \$100K to offer rebates for soil moisture sensors and high efficiency sprinkler heads
 - ▶ Increase funding by \$300K to expand toilet/urinal replacement efforts
 - ▶ Discussions underway with Brinker International to retrofit all Dallas area restaurants with pre-rinse spray nozzles
 - ▶ Chili's, On the Border, Macaroni Grill and Maggiano's
 - ▶ Increase funding for Minor Plumbing Repair Program
 - ▶ Increase funding by \$200K
 - ▶ Due to overwhelming success of program
- ▶ **State Updates & Five-year Plan Revised**
 - ▶ Submit state required Conservation and Drought Contingency Plans
 - ▶ Increase funding by \$150K to hire consultant to help update plans
 - ▶ Due May, 2009
 - ▶ Review and revise Five-year Strategic Plan (2009-2014)
 - ▶ Increase funding by \$200K to hire consultant to help update plan

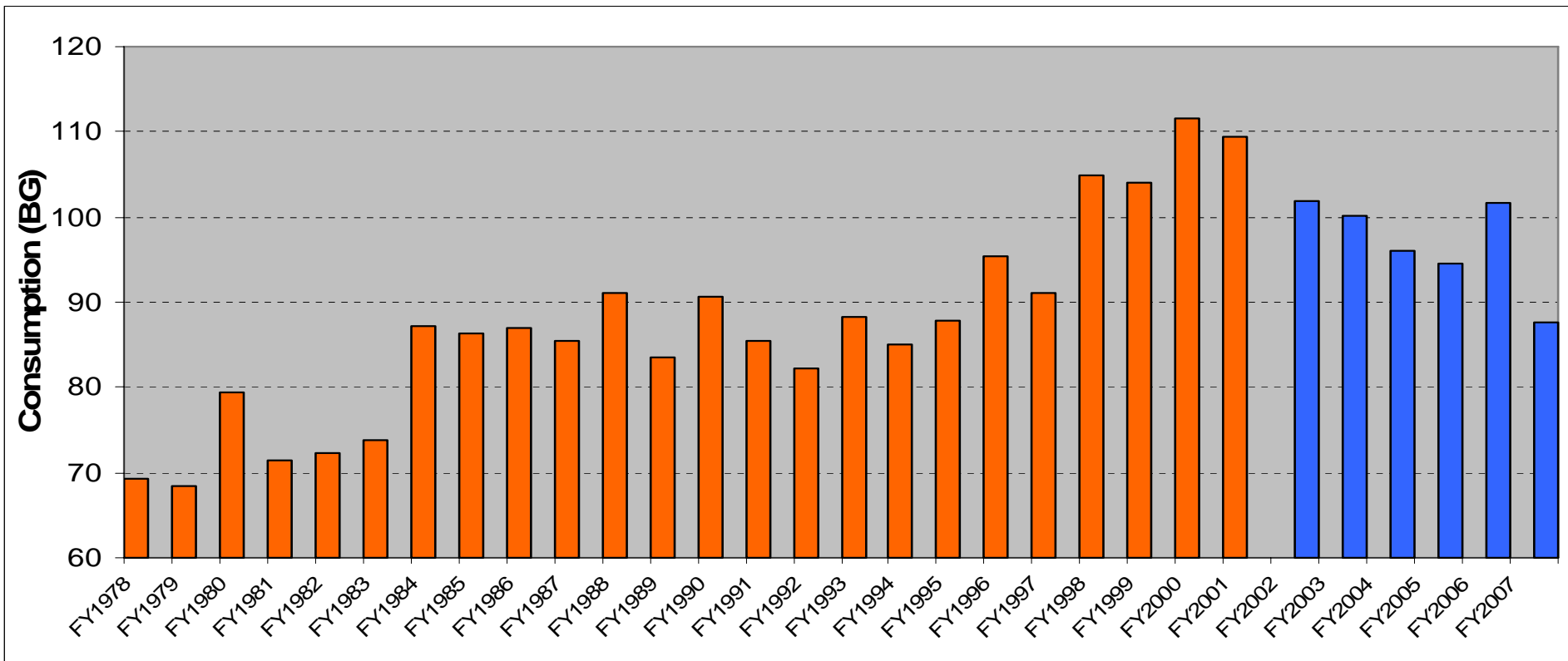




How Are We Doing?

DWU Water Savings

- Consumption trend shows the reduced demand
- But, how much water was saved by conservation programs ?

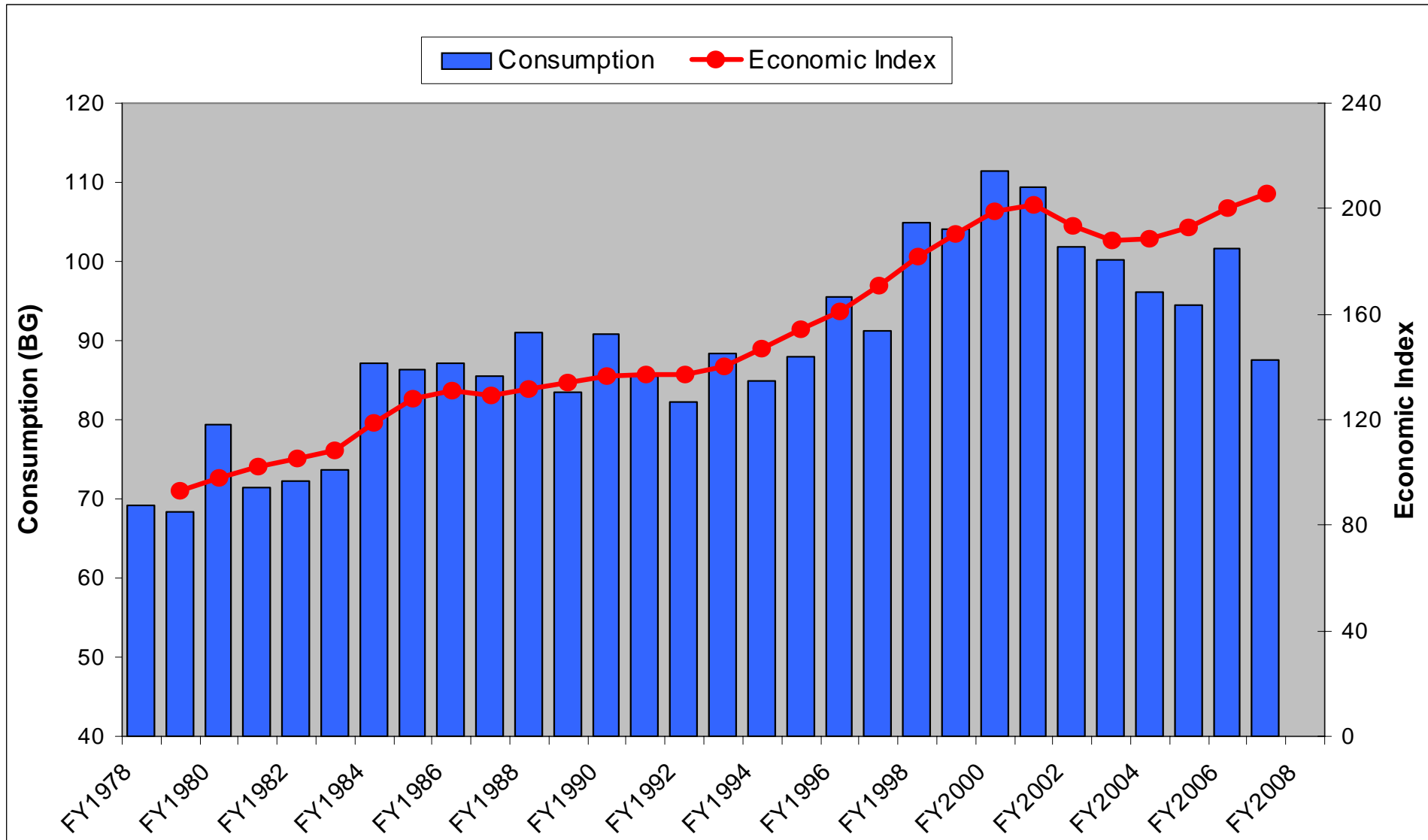


What Factors Impact Consumption?

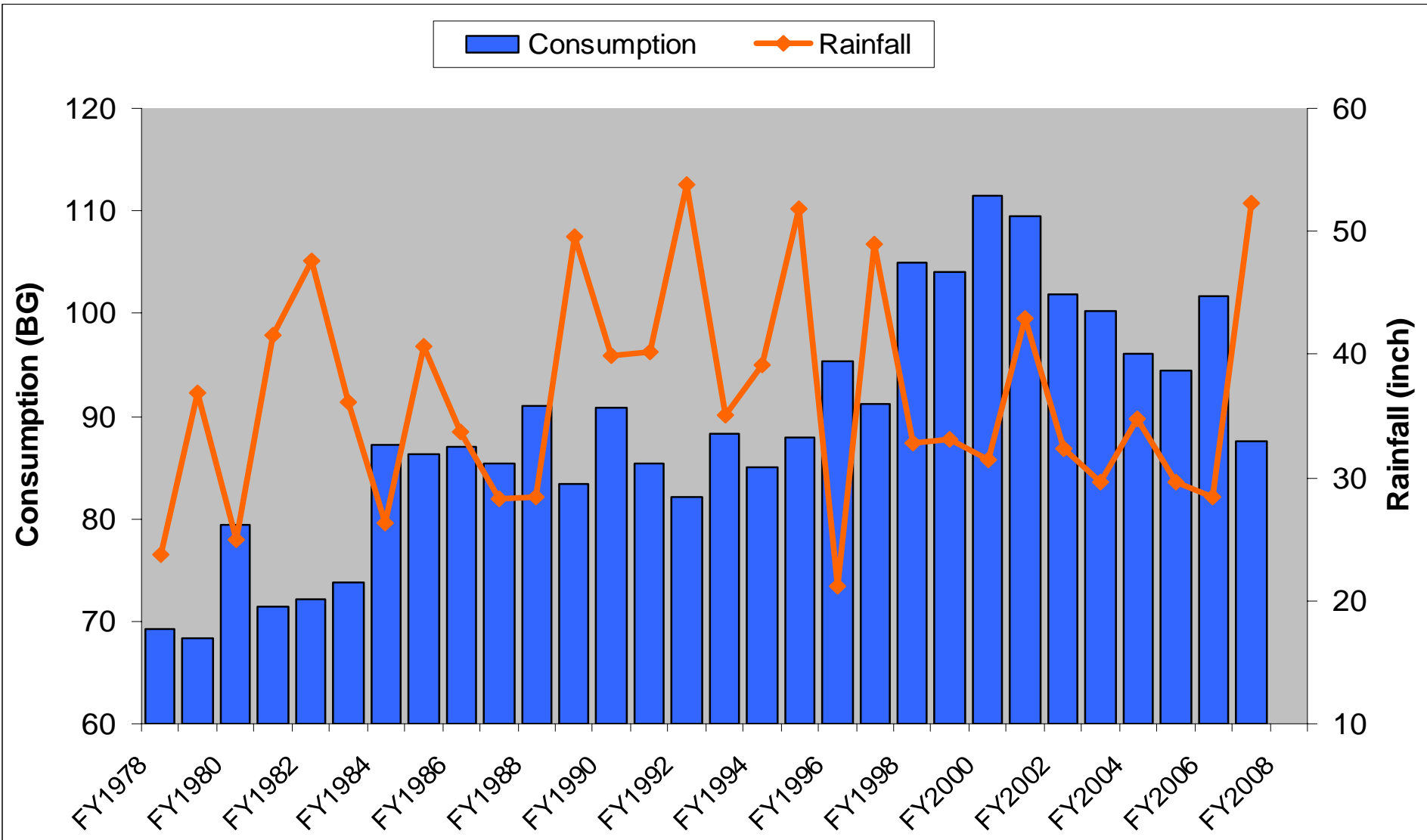
- Economy
- Weather (rainfall, temperature)
- Pricing
- Population growth
- Conservation efforts
- Others ...



How the Economy Impacts Consumption

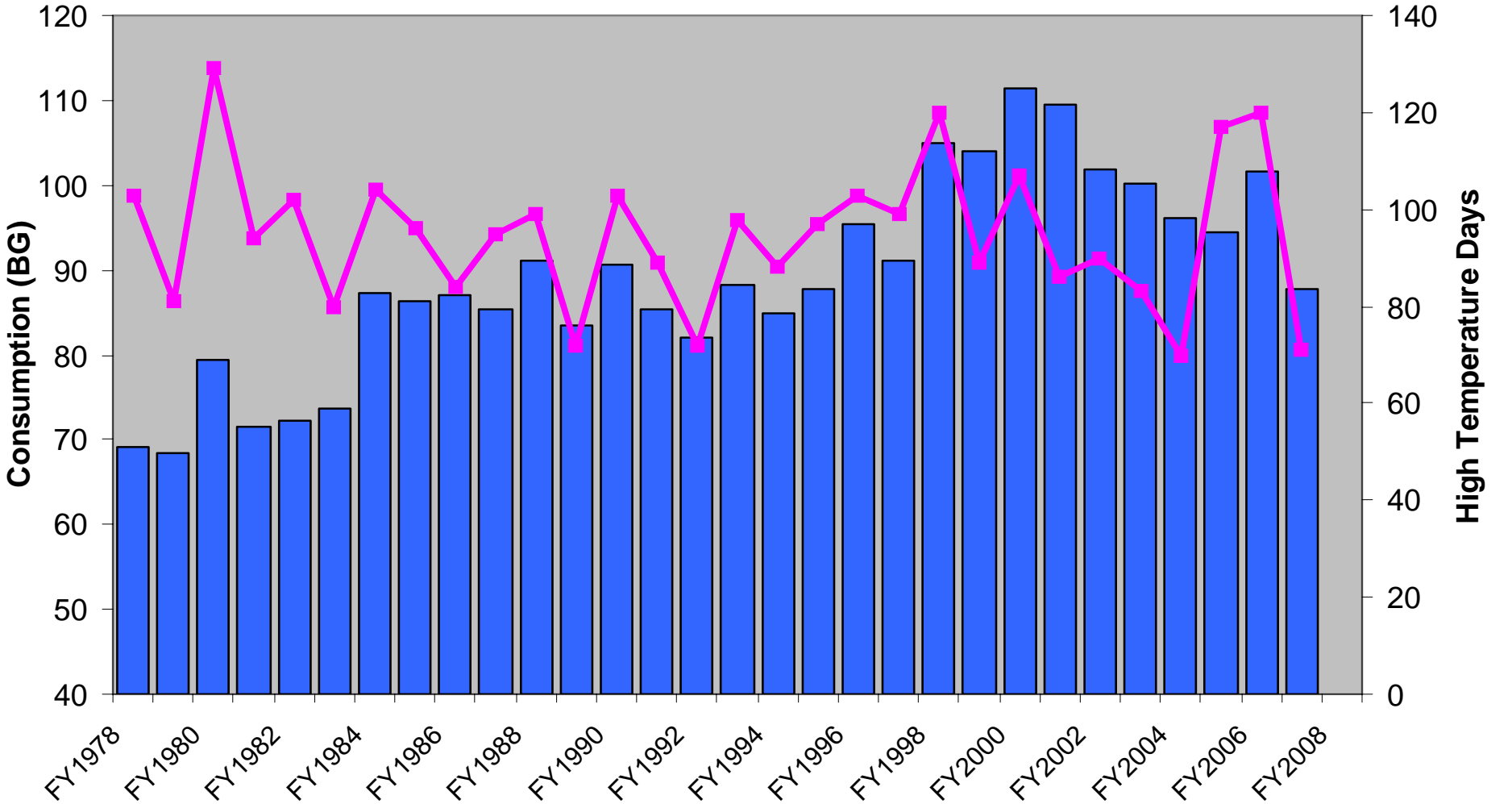


How Rainfall Impacts Consumption



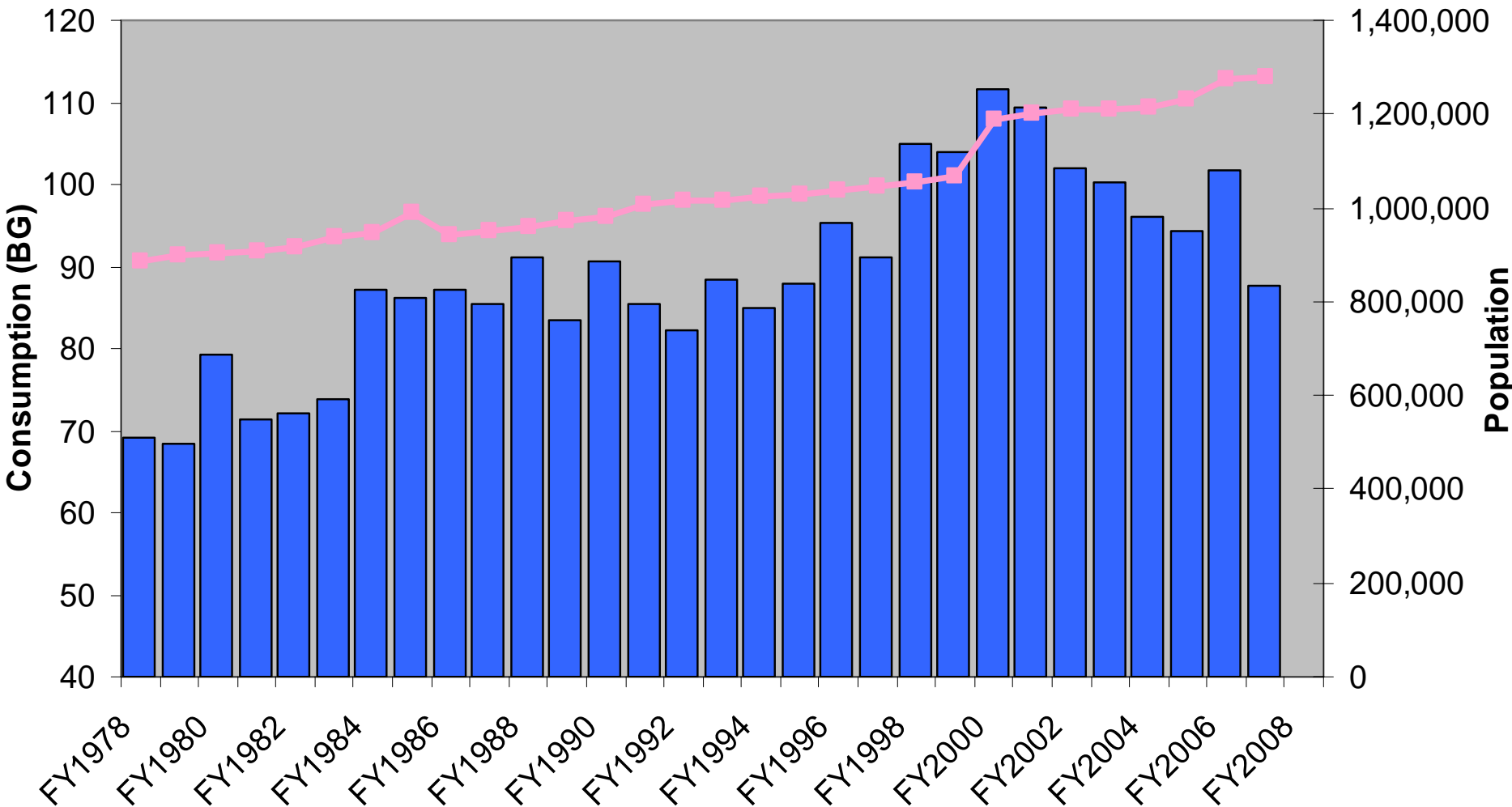
Consumption vs. High Temperature

Consumption Deg90

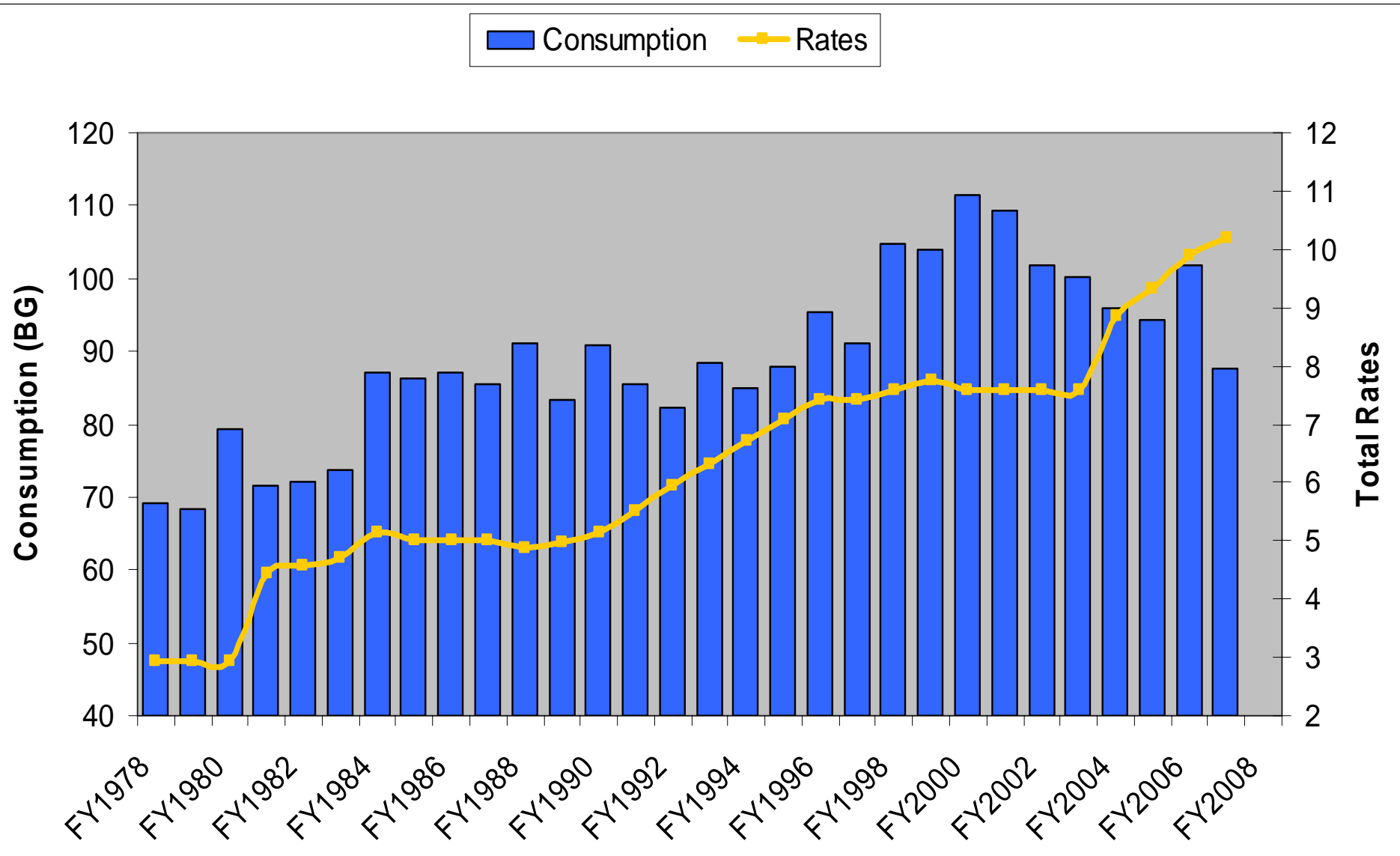


Population Effect?

Consumption Population



Increasing Rates Effect?



Time-Series Model: ARIMAX

- ARIMA model: AutoRegressive Integrated Moving-Average
- *Hypothesis:*

Consumption =

Economy + High Temperature + Population Growth

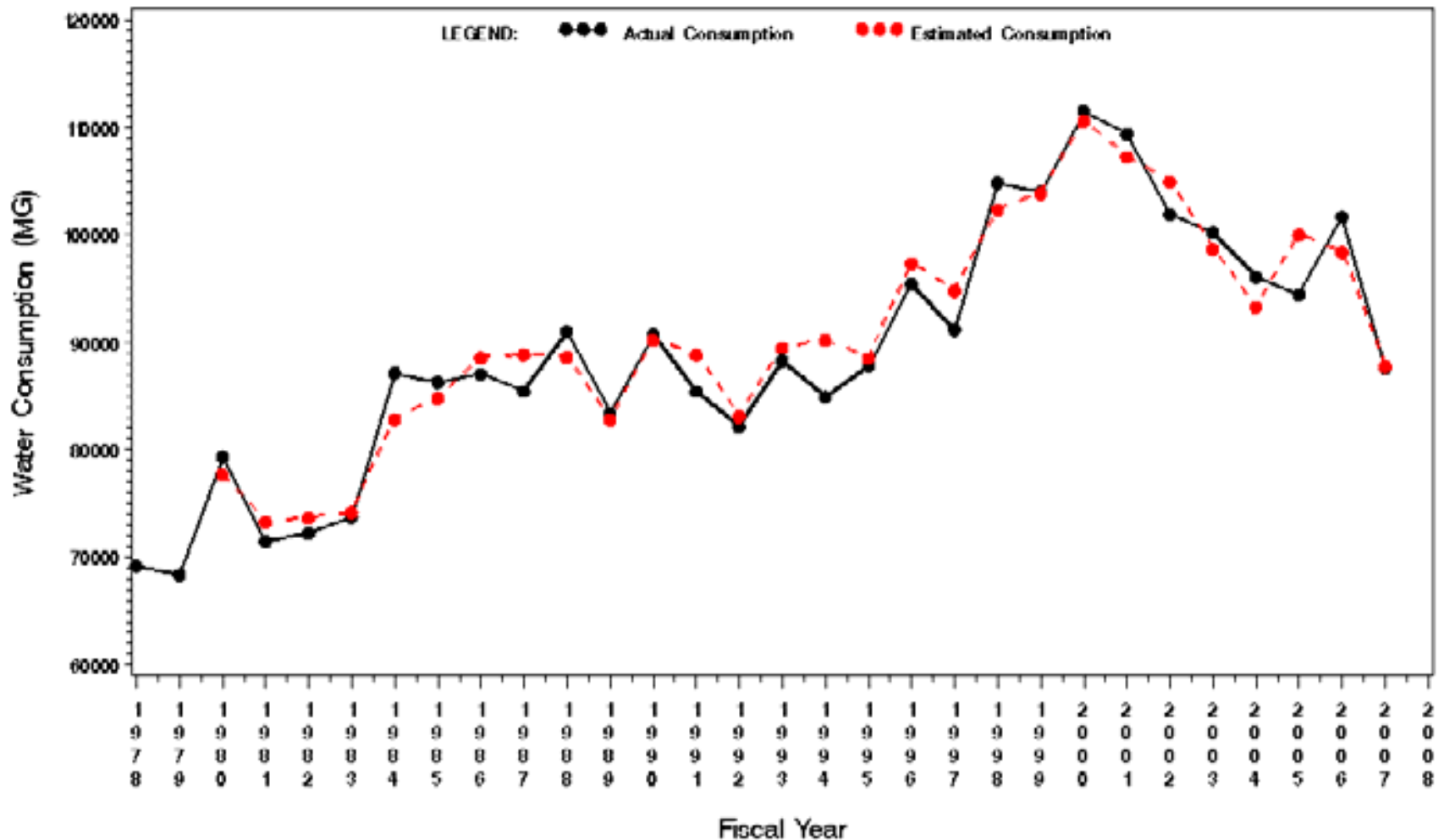
- Rainfall – Conservation – Increasing Rates

+ (Autoregressive, Moving average) Autocorrelation Errors

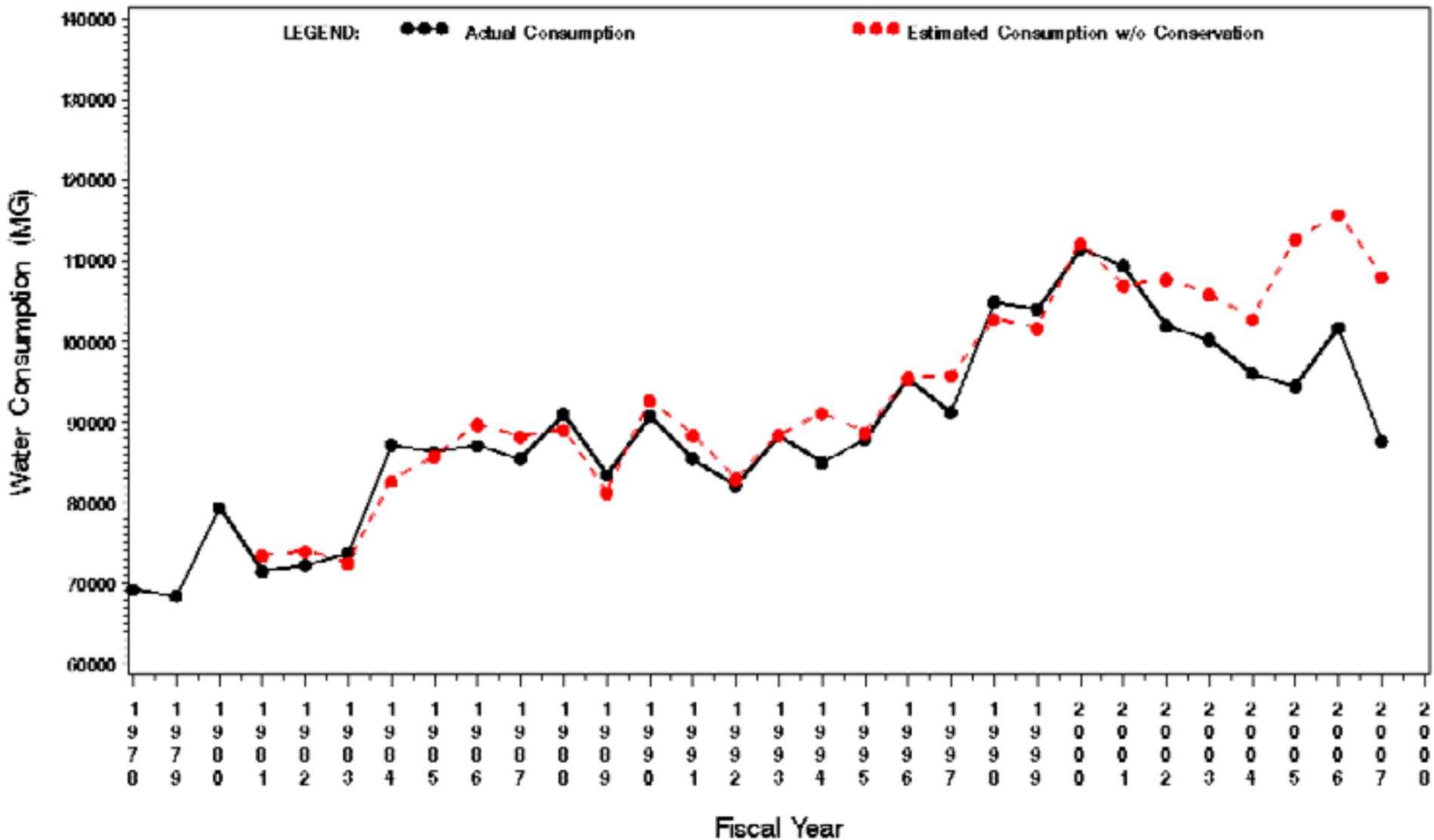


ARIMAX(A): Forecasting

(Solid line: actual consumption, dashed line: model forecasts)



How Much Water Saved?



Water Savings

FY	Actual Consumption (MG)	Estimated Consumption (MG)	Conservation Water Savings (MG)
2002	101,918.0	107,877.5	5,959.5
2003	100,214.0	105,978.8	5,764.8
2004	96,040.0	102,933.9	6,893.9
2005	94,428.0	112,792.3	18,364.3
2006	103,032.4	116,162.0	13,129.6
2007	88,504.3	109,221.6	20,717.3
Total	584,136.7	654,966.1	70,829.4



Summary

- ▶ Five-year Strategic Plan is working
 - ▶ Average 2.8% reduction in gallons per capita annually
 - ▶ Goal is average 1% reduction in GPCD per year over five years
- ▶ System-wide efforts worked in tandem to save over 70 billion gallons since 2001
- ▶ Conservation and Drought Plans continue to be reviewed and revised in accordance with state mandates and internal goals and objectives





City Requirements Regarding Irrigation Systems

▶ **House Bill 1656 Background**

- ▶ Signed into Texas Law in June 2007
- ▶ Focused on the design, installation and operation of irrigation systems; water conservation; and the duties and responsibilities of licensed irrigators
- ▶ Requires the Texas Commission on Environmental Quality (TCEQ) to adopt rules which go into effect in January 2009



House Bill 1656 (What is Required?)

▶ Requirements H.B. 1656

- ▶ Municipalities with a population of 20,000 or more must adopt rules that require the irrigation installer to obtain permits
- ▶ Adopt standards and specifications of design, installing and operating irrigation systems
- ▶ Municipalities may employ or contract with licensed plumbing inspectors or licensed irrigation inspectors to inspect installed and repaired irrigation systems for compliance with adopted ordinances and TCEQ Rules



▶ **Requirements H.B. 1656**

- ▶ Permits Municipalities to charge fee's to cover the cost of implementation and enforcement of H.B. 1656
- ▶ Requires development of an irrigation plan for each irrigation system installed
- ▶ Requires licensed irrigator or irrigation technician to be on job site at all times during the installation of irrigation system
- ▶ Provide training to owner of the irrigations system on the proper operation of the irrigation system



▶ Requirements H.B. 1656

▶ Requires Irrigation Inspector (plumbing inspector or licensed irrigation inspector) to:

- ▶ Enforce ordinances of municipality and TCEQ
- ▶ Verify appropriate required permits
- ▶ Inspect irrigation system, including backflow prevention
- ▶ Investigate complaints related to installation, maintenance, alterations, repairs, or service
- ▶ Maintain inspection records for a period of 3 years



Inspection Procedures

▶ **Rough Inspection (1st Inspection) Appointment Required**

▶ Review proposed irrigation plan including irrigator seal

(TAC Ch.344.63)

▶ Water conservation methods (TAC 344.72)

▶ Backflow prevention (TAC 344.73)

▶ Sprinkler head spacing (TAC 344.77(a))

▶ Installation of precipitation rate of 2.75 inches per hour

(TAC 344.77(d) (2))

▶ Irrigation Designer shall provide hydraulic calculations for irrigation design

▶ Verify installation of rain and freeze sensors (TAC 344.77(g))



Inspection Procedures

- ▶ **Rough Inspection (1st Inspection) Appointment Required**
 - ▶ Approved water connection including:
 - ▶ Materials
 - ▶ Jointing
 - ▶ Backflow protection
 - ▶ Backflow testing report
 - ▶ Sprinkle piping minimum depth of piping (TAC 344.77 (e) (1))
 - ▶ Sprinkler piping depth below utilities, structures or tree roots (TAC 344.77 (e) (2))
 - ▶ Control Wiring (TAC 344.77 (f))
 - ▶ Approved material & Installation underground
 - ▶ Verification of head coverage



Inspection Procedures

- ▶ **Final inspection (2nd Inspection) Appointment Required**
 - ▶ Verify controller settings (DWU Ord. #24745 sec. 49-21.1(b)).
 - ▶ Verify compliance that a substantial amount of water is not falling upon impervious areas instead of upon the lawn or landscape. (DWU Ord. #24745 sec. 49-21.1(2 (a)))
 - ▶ Verify all spray heads are properly installed
 - ▶ Verify installation of backflow device including valve box and collect backflow test report.
 - ▶ Verify installation of rain and freeze sensors. (DWU Ord. #24745 sec. 49-21.1(2 (a)))



Implementation of H.B. 1656

- ▶ Requires changes to CHAPTER 52, "ADMINISTRATIVE PROCEDURES FOR THE CONSTRUCTION CODES

(Effective April 1, 2008)

- ▶ Cost Recovery Fee's for implementation of H.B. 1656
- ▶ Requires addition of 4 plumbing inspectors for irrigation inspections
 - ▶ Licensing for inspectors
 - ▶ Developmental Training on irrigation systems and inspections procedures and TCEQ Rules (on going)

