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ALOHA to Water Savings: Honolulu's Innovative Conservation Program

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Overview

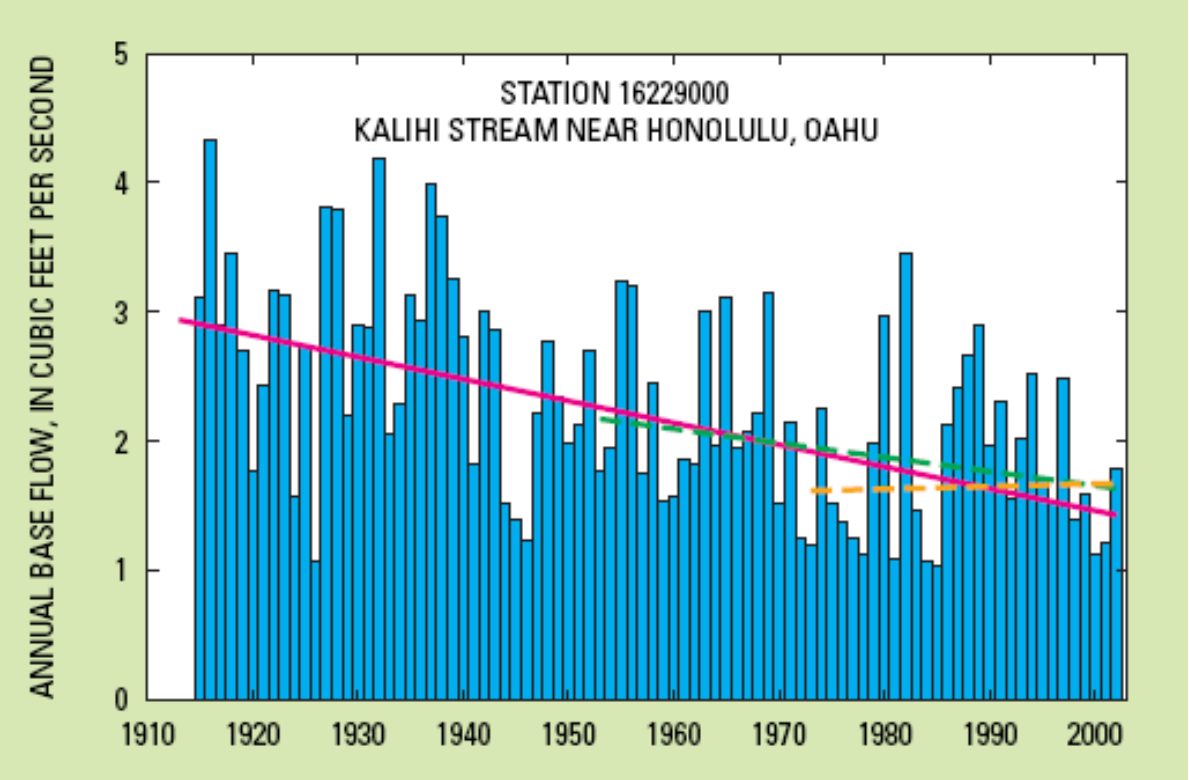
- Highlight local water efficiency drivers and benefits
- Review the program design to address Oahu's unique needs
  - Internal Conservation
  - External Conservation

BWS Background - the Board of Water Supply

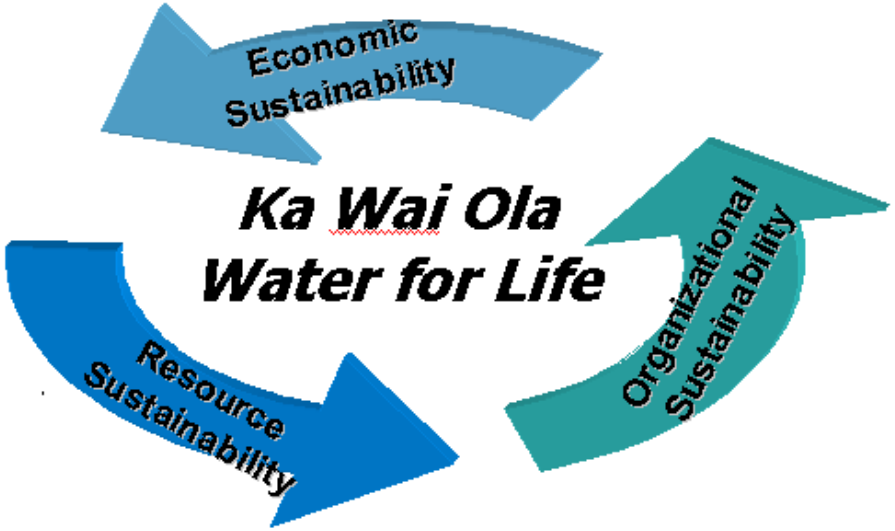
- 1929, Act 96
- 7-member board
- 1 million customers
- 170,000 services
- 150 MGD pumpage
- 2,000 miles

Regional Water Efficiency Drivers

- Need for sustainable water supply
- Declines in sources of groundwater supply
- Not enough developed water for all needs
- Water quality
- Environmental goals
- Droughts
- Energy costs
- Community support
- Beyond basic stewardship



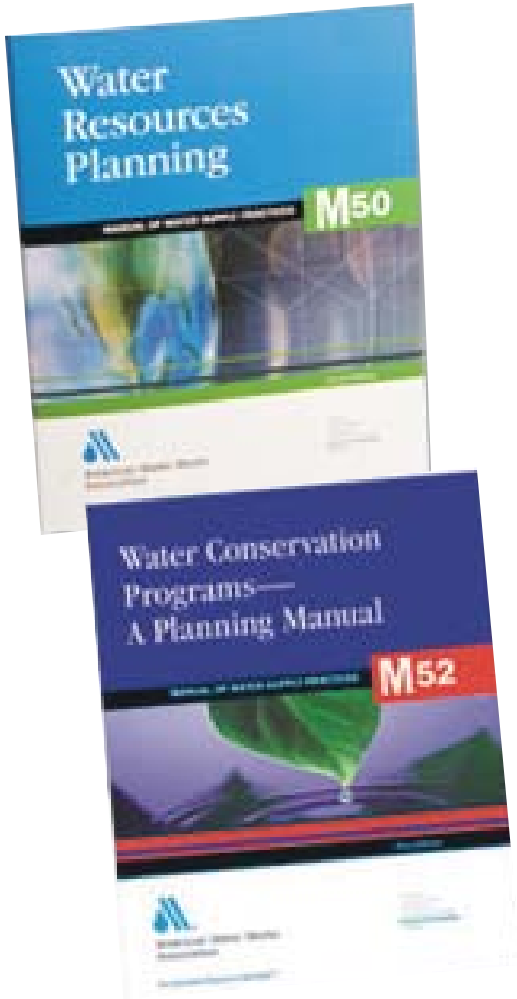
Honolulu Board of Water Supply



Triple Bottomline Benefits

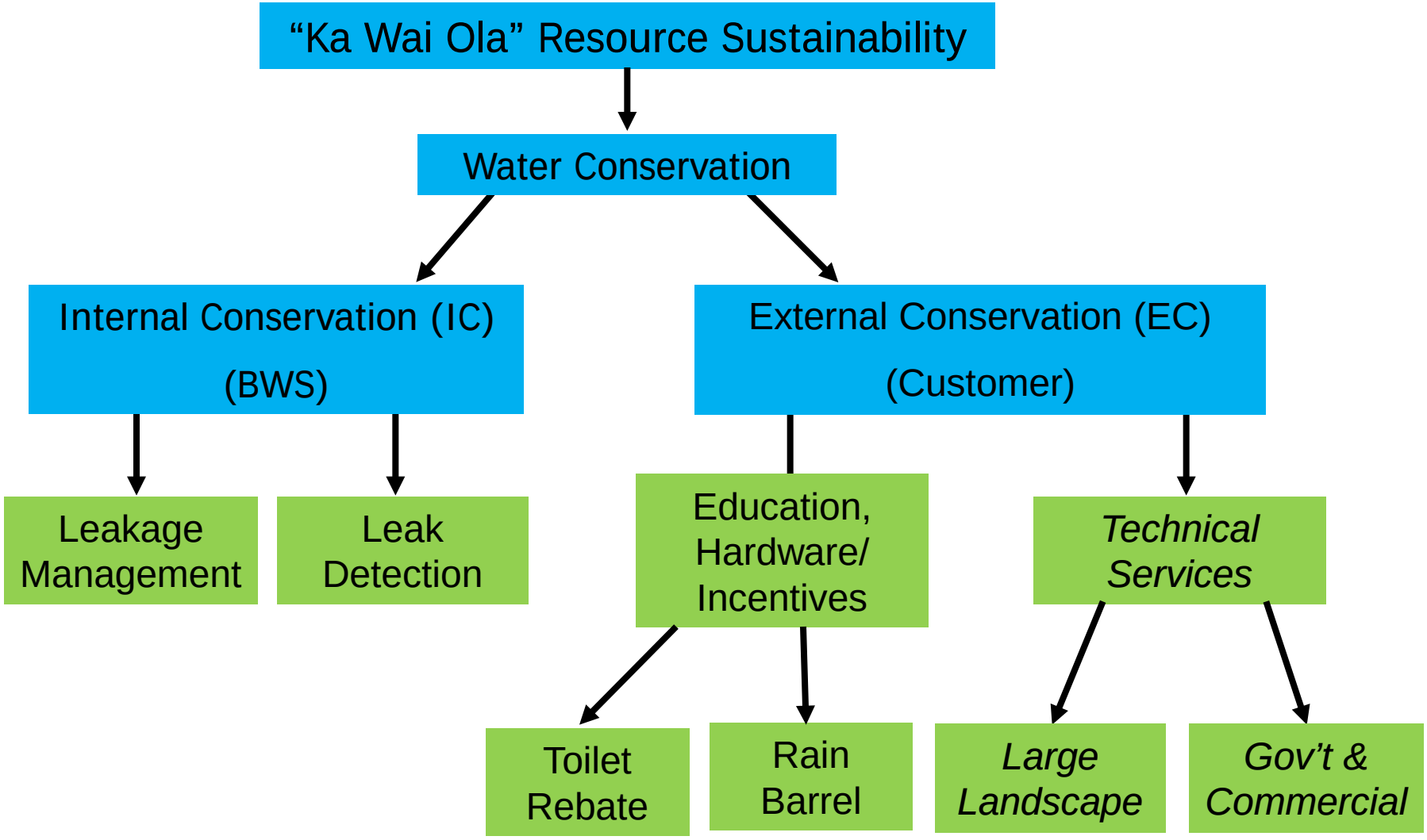
- Economic: Honolulu Board of Water Supply
  - deferred capital projects
  - reduced O&M
  - water, energy and greenhouse gas emissions savings
  - more reliable supplies
- Environmental: Watershed Quality
  - increased stream flows, ditch flows
  - higher groundwater table, especially Ewa District
  - more sustainable ecosystems improves quality
- Social: Customer Perspective
  - lower water/sewer bill
  - lower energy bill
  - “green” actions for better quality of life

BWS Goal: Internal and External Conservation Programs



- Theme: most savings for least cost
- Launch and continue to focus on “cleaning house” first
  - credibility with customers
  - production cost savings
- Set example for customers by reducing visible waste on part of utility and other government agencies (e.g., gutter flooding from parks)
- Target highest water conservation potential (leakage, residential and commercial, irrigation)
- Develop strategic plan with stakeholder support through a planning process like “shared vision”

Current and Future Conservation Program



Current Internal BWS Efforts - Leak Detection Program

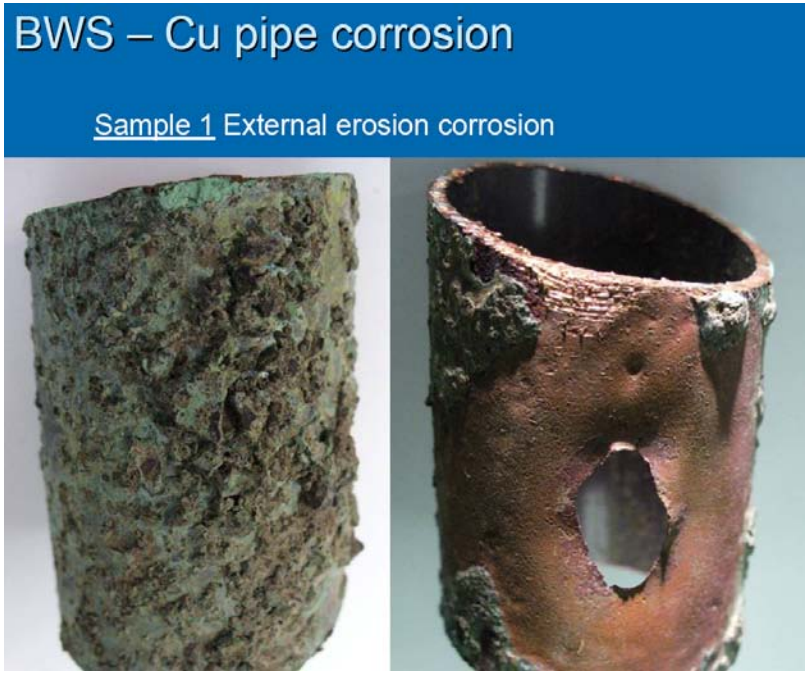
Statistics for 2009:

- 116 leaks recovered = 506 MG/YR
- $208,000 O&M savings

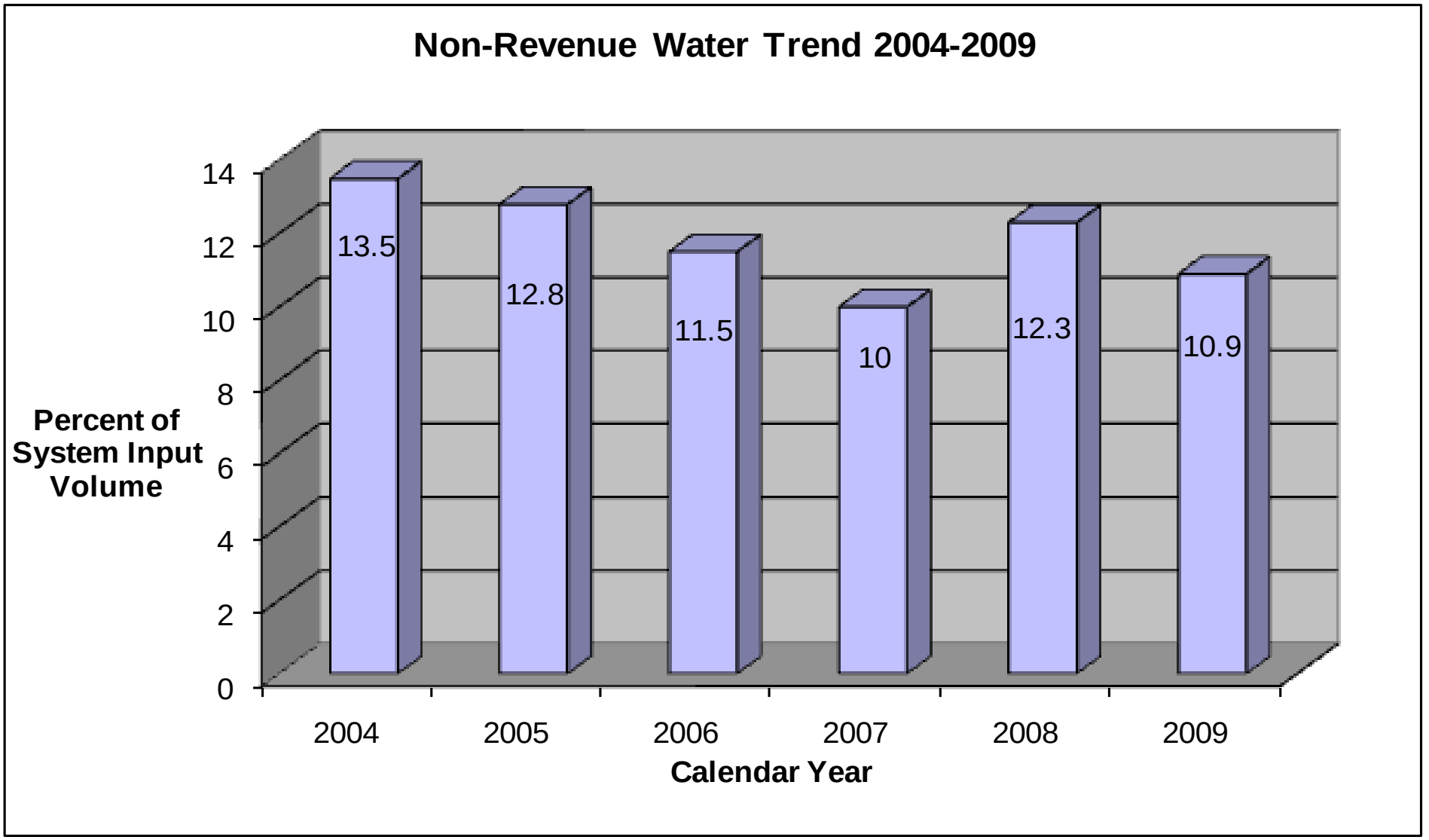
Leak Loggers
Fixed, Drive by Program

Pipeline Failure Analysis Program

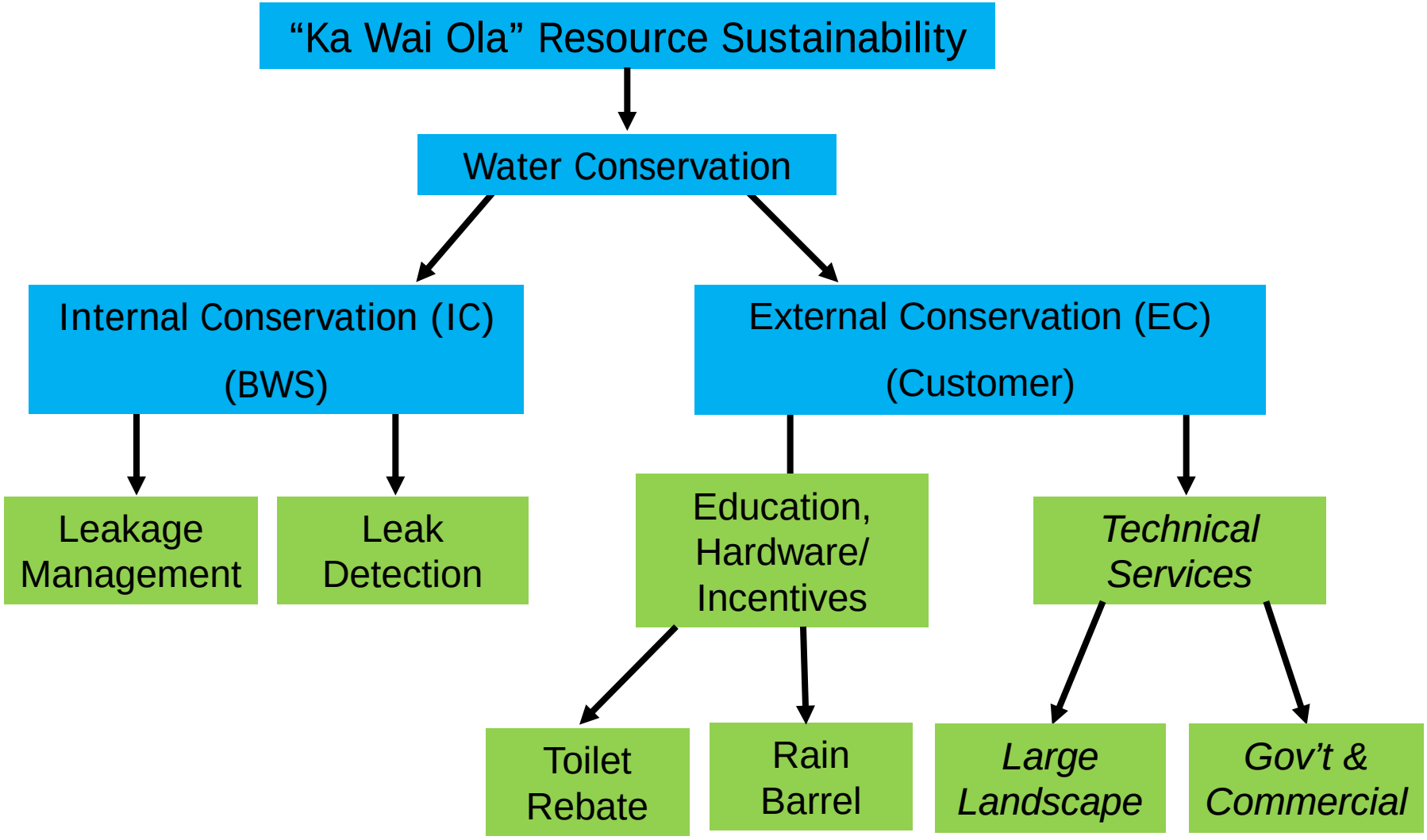
Cathodic Protection



Current Internal BWS Efforts - Water Trend



Current and Future Conservation Program

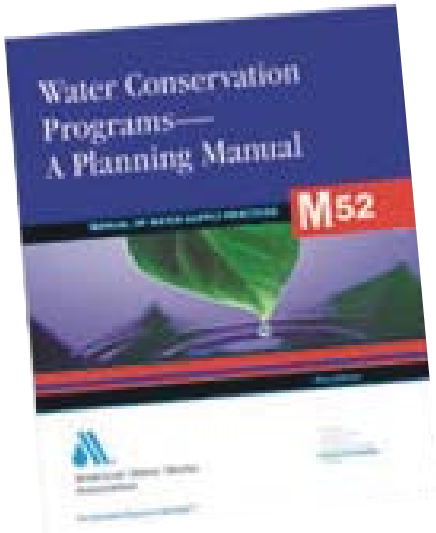


External BWS Efforts - Building on Existing Momentum

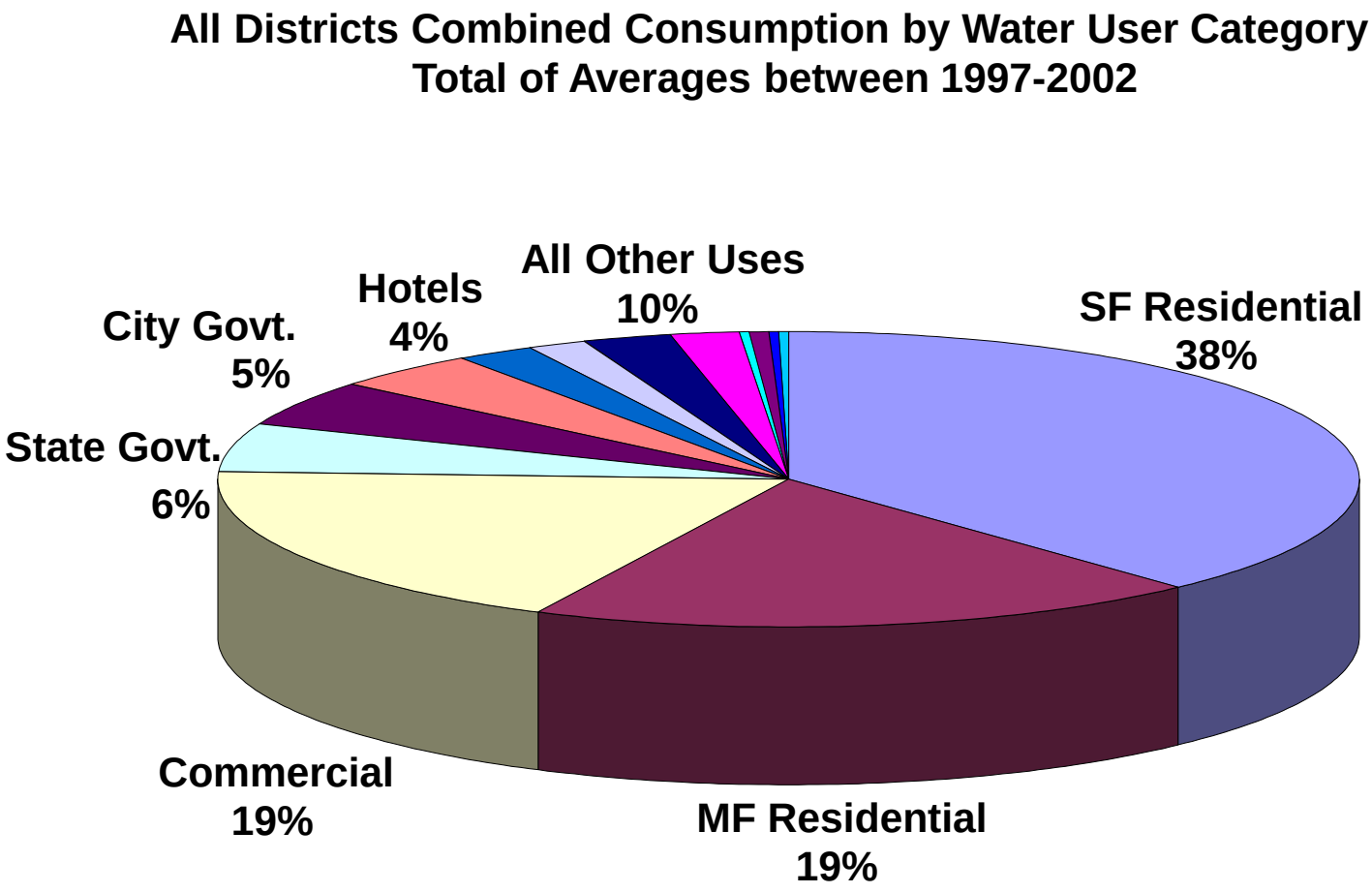
- Utilize successful lessons learned from BWS and other utility conservation programs
- Develop programs specific to Oahu
- Consider triple bottom-line benefits from deferring development of additional supplies

Planning Process for BWS Program

- Overall Water Conservation Program (WCP)
  - Phase 1 pilot projects
    - Conceptual measures reviewed and screened
    - Pilot project development and implementation
  - Phase 2 cost-effectiveness analysis
    - Market Penetration Study
    - Conservation Measures Final Selection
    - Demand Side Management Least Cost Planning Decision Support System Model (DSS Model)
  - Phase 3 implementation plan



Tailor Programs to Target Potential: BWS Demand Profile



Current External BWS Efforts - Pilot Projects

- BWS screened and ranked 10 potential pilot projects against criteria
- Top four ranked projects selected
- Data collection
  - Effectiveness
  - End use demand
- Insight for full-scale program
- Education and outreach
  - Program participants
  - Honolulu BWS

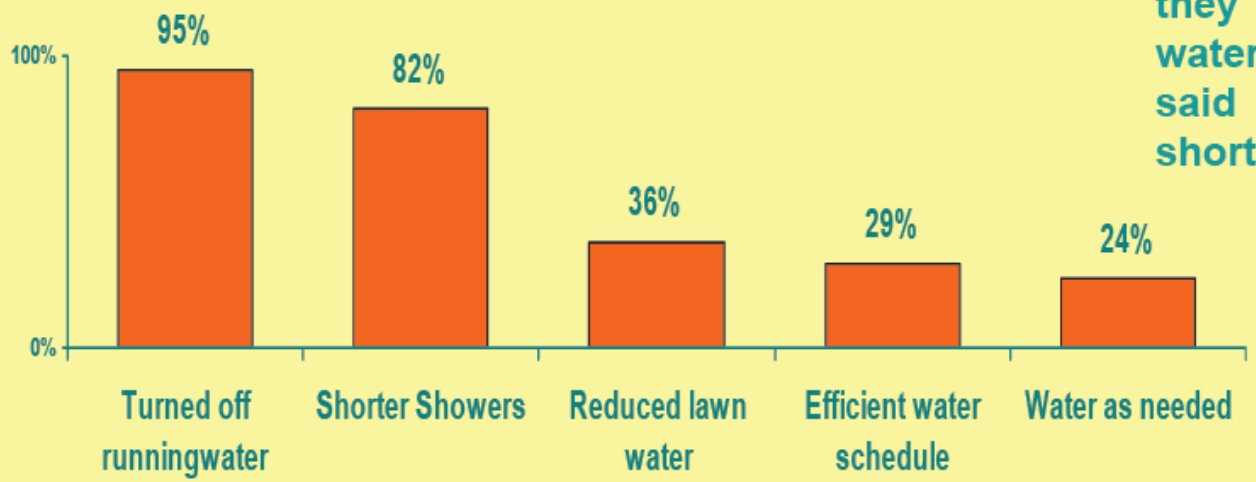
EPA WaterSense PARTNER

Photo Source:
http://www.roadsideamerica.com/hotels_motels/images-hotel/h25404/1.jpg

2009 Market Penetration Study Results

Over 90% of all households said they made personal efforts to cut down on excessive water use inside or outside their homes.

% Reporting Personal Efforts to Conserve Water



Almost everyone said they turn off running water and over 80% said they try to take shorter showers.

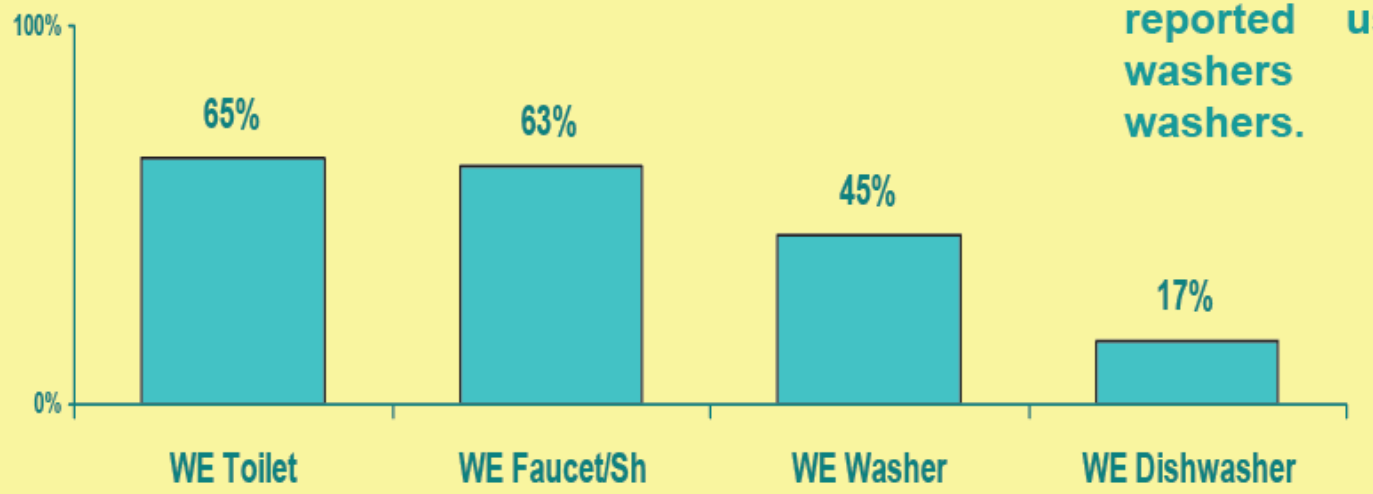
	HONOLULU	WINDWARD	LEEWARD/ KAPOLEI	WAIANAE	NORTH SHORE
BASE	178	117	219	28	27
Turn off indoor water	96%	95%	93%	98%	90%
Shorter showers	81%	84%	78%	92%	90%
Less lawn water	34%	42%	32%	44%	46%
Efficient watering	27%	23%	33%	49%	27%

Base: 601 single family home residents on Oahu

WE Indoor Devices – Study Results
Separately field verified by BWS staff

Sixty-five percent of single family households reported having WE toilets, and 63% have WE faucets and showerheads in the home.

% Reporting Use of a Water Efficient Device

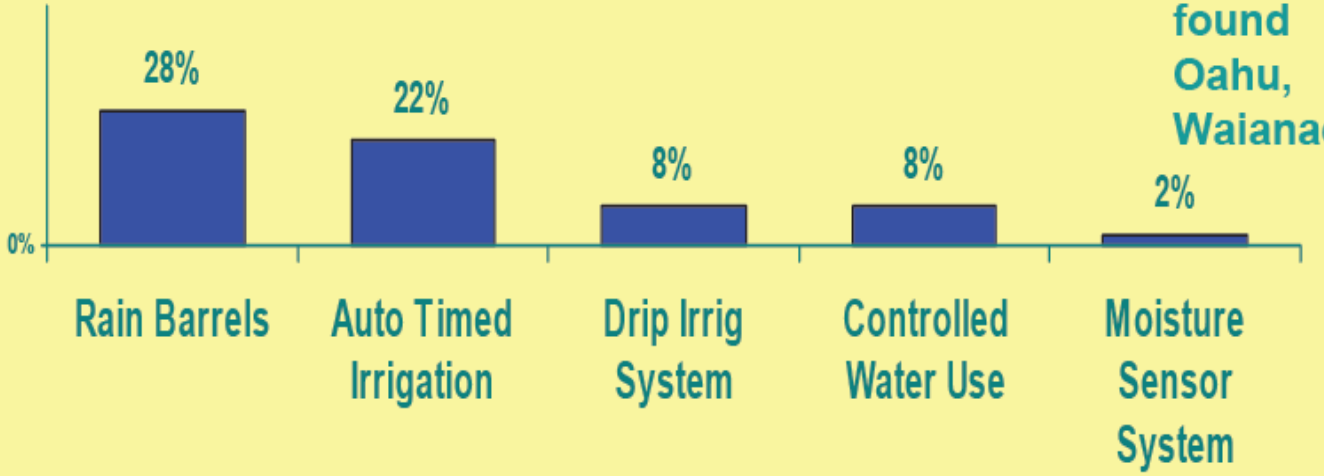


By comparison, less than half of respondents reported use of WE washers or dish-washers.

	HONOLULU	WINDWARD	LEEWARD/KAPOLEI	WAIANAE	NORTH SHORE
BASE	178	117	219	28	27
WE Toilet	62%	75%	64%	60%	55%
WE Faucet/Shwhd	57%	65%	64%	77%	59%
WE Washer	38%	56%	46%	39%	54%
WE Dishwasher	18%	19%	17%	7%	12%

Outdoor watering practices:
Separately field verified by BWS staff

% of households with lawns, gardens or water features reporting outdoor systems



Highest usage of *timed irrigation* was found in Leeward Oahu, Kapolei and Waianae (table).

	HONOLULU	WINDWARD	LEEWARD/ KAPOLEI	WAIANAE	NORTH SHORE
BASE	117	75	155	20	16
Rain Barrels	30%	36%	20%	17%	42%
Timed Irrigation	20%	9%	32%	36%	5%
Drip Irrigation	10%	7%	8%	11%	5%
Control Water	6%	11%	7%	4%	7%
Moisture Sensor	1%	2%	3%	2%	0%

Base: 601 Oahu single family home residents

Summary of Conservation Measures Selected for Business Case Analyses

15 measures were considered for business case evaluation in DSS model

Internal Elements:

1. Water loss control (leak detection)

External Program Elements:

1. Commercial/govt water surveys
2. Hotel/motel/condo water surveys
3. Large landscape surveys (parks)
4. Water budgets
5. Cooling tower program
6. Weather-based controller rebates
7. Coin-operated laundries
8. Restaurant incentives program

External Program Elements (con't):

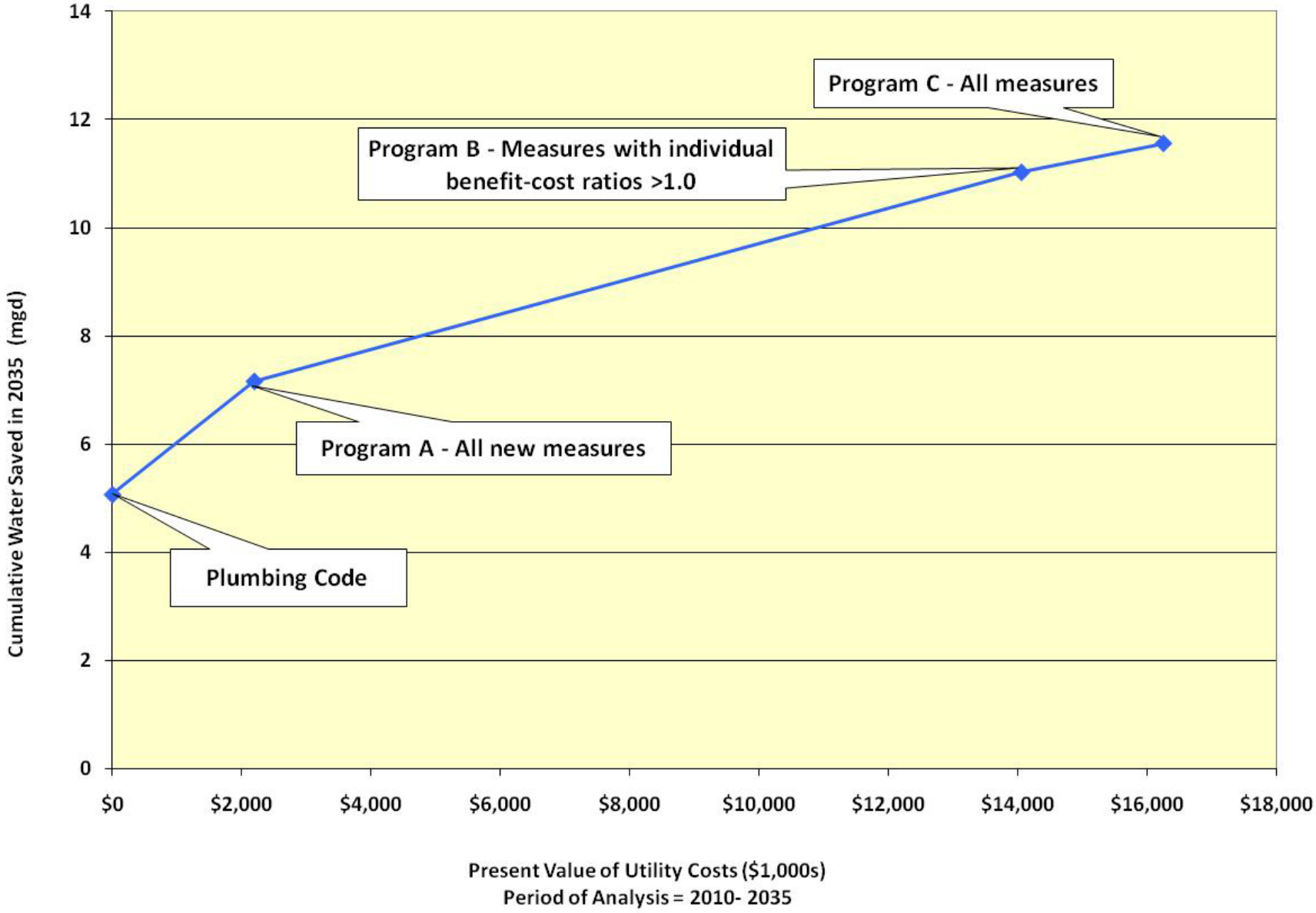
9. High efficiency clothes washers rebate
10. Residential HET rebate
11. Residential rain barrel incentive program
12. Rain barrel for large properties or commercial properties
13. Financial incentives for irrigation upgrades
14. Pre-rinse valve

DSS Model Overview, Purpose and Process

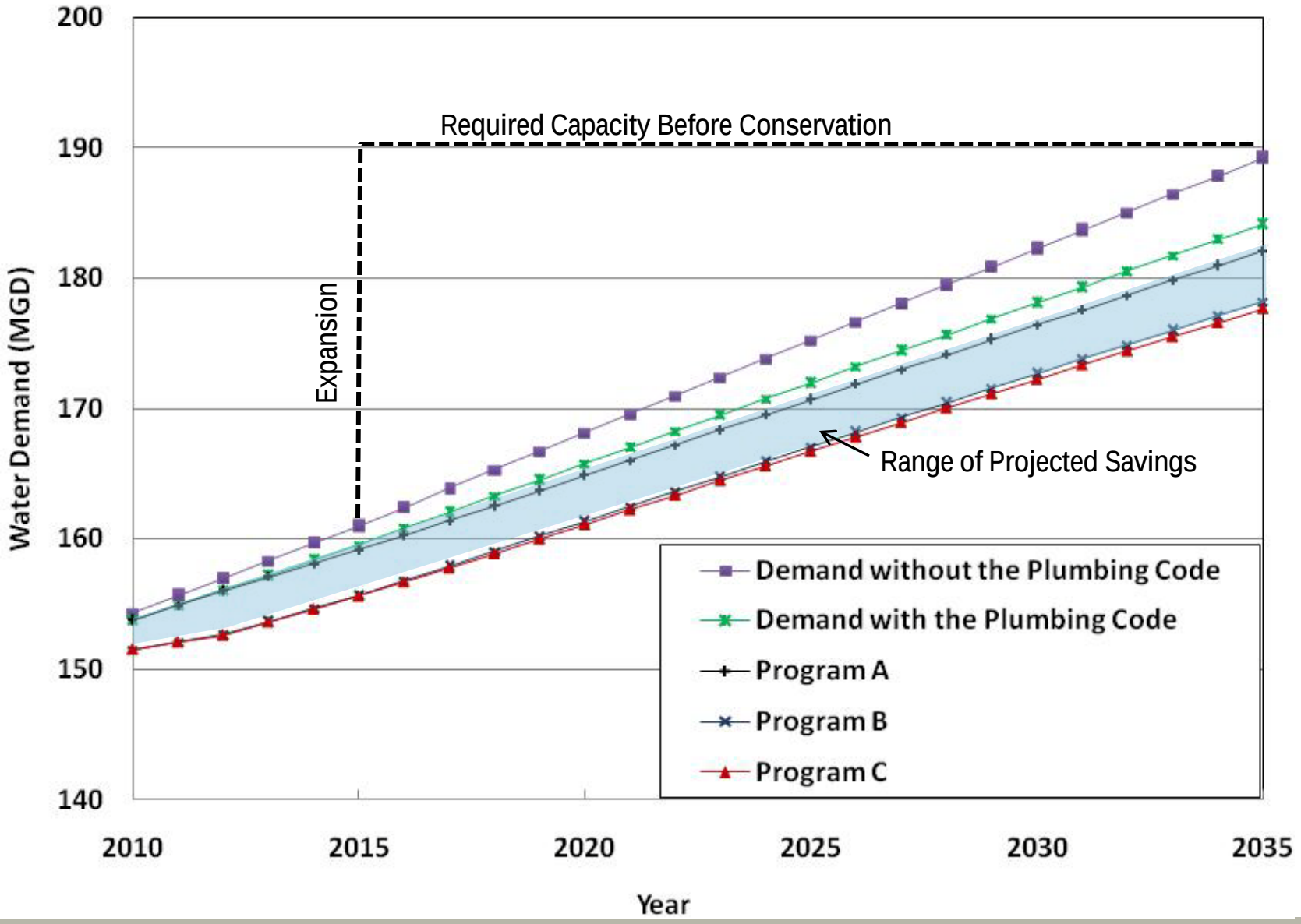
- Baseline Information
  - Population and demand projections
  - Water use
  - End uses by type
- Savings Data
  - Operational costs
  - Energy savings
  - Capital works savings
- Pricing
- Fixture models
- Measure worksheets
- Water loss
- Conservation program (benefit-cost) summary

Waikele Stream at Waipahu, Oahu
Photo Source: USGS

Conservation Program Results



Honolulu BWS WCP Economic Benefits



Overall Summary of Future Program Goals

- Internal
  - Water loss
- External
  - Residential
    - Education and Outreach
    - Indoor Incentives
    - Outdoor Incentives
  - Non-Residential
    - Surveys
    - Possible Incentives
  - Large Landscape
    - Surveys (parks)
    - Water Budgets
    - Possible Incentives

Resources for Additional Information

- Thanks to WaterSmart Innovations
- Honolulu BWS
  www.hbws.org
- AWWA WaterWiser
  www.waterwiser.org
- US EPA WaterSense
  www.epa.gov/watersense
- California Urban Water Conservation Council
  www.cuwcc.org
- National Drought Mitigation Center
  drought.unl.edu

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