

Department of Water Supply County of Maui

Conservation Program

August 18, 2016
BOARD OF WATER SUPPLY

Presentation Outline

- Conservation Framework
- Water Use & Demand
- DWS Conservation Program
- Water Use & Development Plan Resource Strategies
- BWS Policy Guidance

Conservation Framework

CWRM: Hawai'i Water Plan

- ✓ Policy and strategy framework
- ✓ All water resources, uses and users



County Water Use & Development Plan:

- ✓ Policy and strategy framework
- ✓ All water resources & users
- ✓ Resource, demand & supply side measures



DWS Conservation Program

DWS CIP

CWRM: Hawaii Water Conservation Plan

- ✓ Strategy and policy framework
- ✓ Water efficiency measures
- ✓ Coordination, funding, technical assistance



Statewide Plans & Manuals:

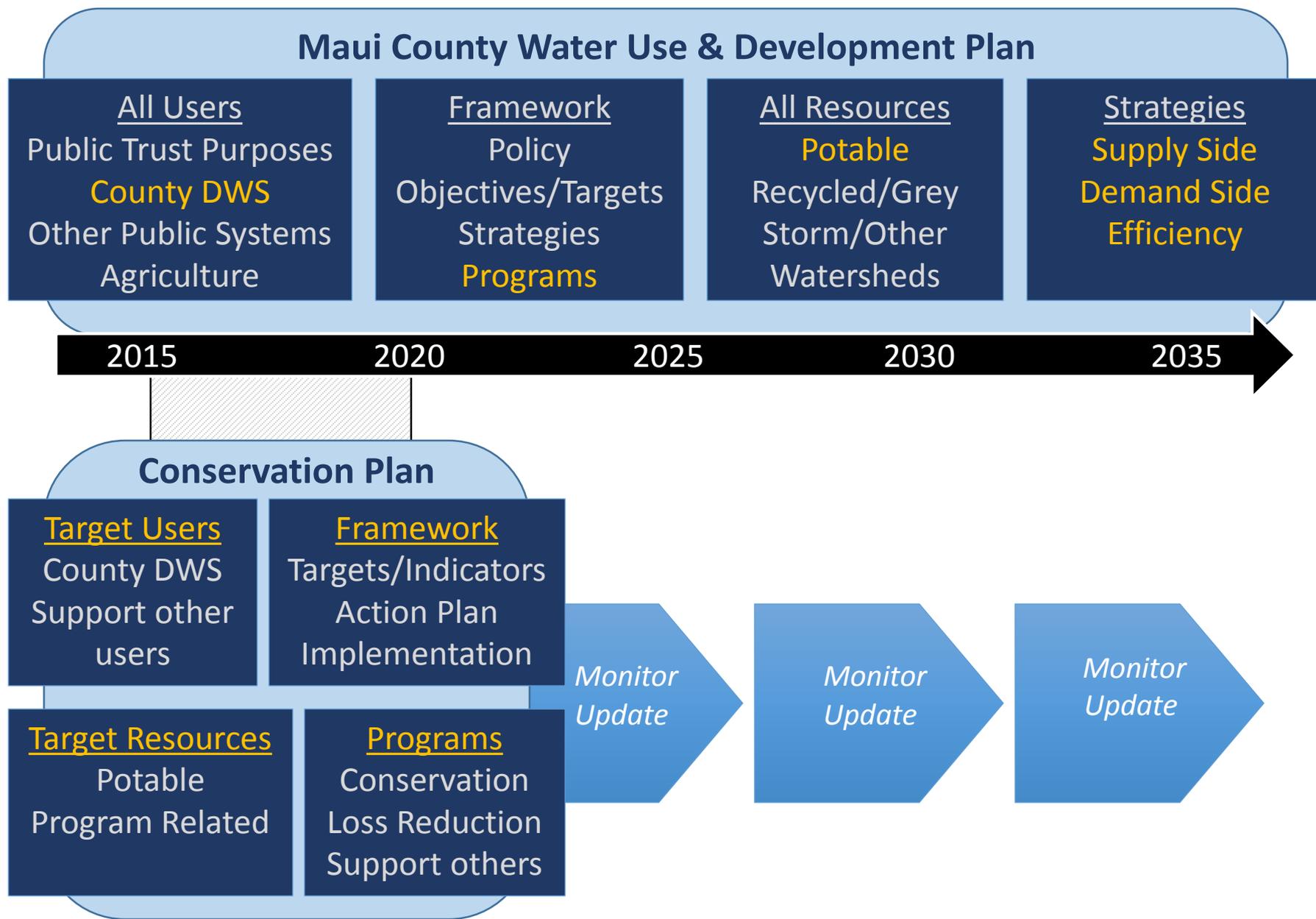
- ✓ Landscape Industry Council of Hawaii BMP Manual
- ✓ DLNR Prototype Water Conservation Plan
- ✓ Water Conservation Manual for State facilities

SB 2645: Water audit implementation
HB 2040: Water Security Pilot Project

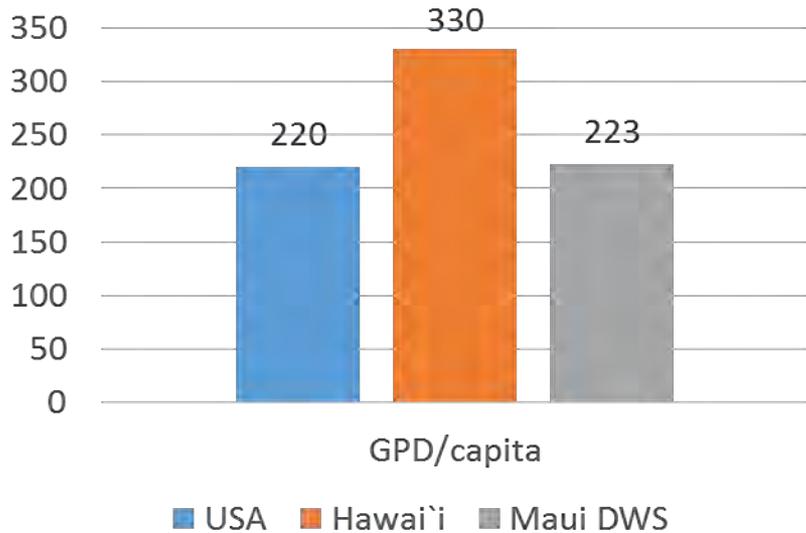
Maui County Code Chapter 14.06A

- ✓ Monitor water consumption & issue high-consumption notices
- ✓ Prioritize replacement of old and leak-prone mains
- ✓ Distribute leak detection tablets & encourage water leak reporting
- ✓ Promote water conservation education
- ✓ Provide water-efficient fixtures to consumers
- ✓ Implement incentives to replace toilets and old water fixtures with water efficient models (Ord. No. 4178, § 5, 2014)

County Plan Relationships



Water Use and Demand



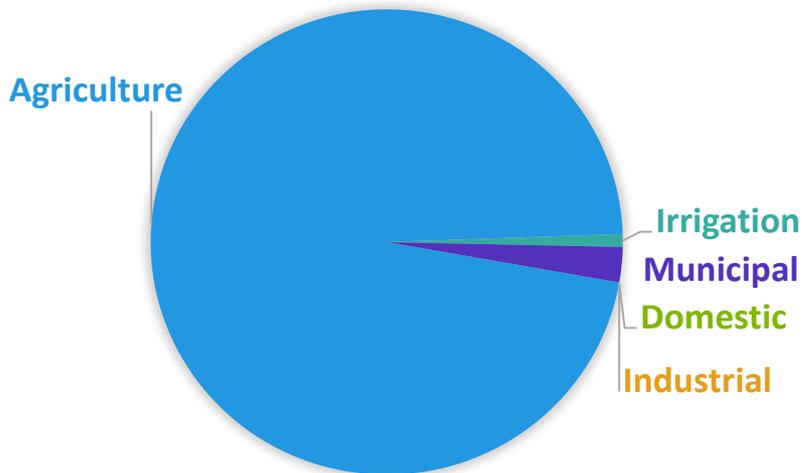
Hawaii:

- Largest water use sectors are municipal and agriculture
- Residential sector 2/3 of municipal water use, followed by commercial, institutional and hotel

Maui County:

- Agriculture 90% of water use
- DWS 90% of municipal water use

MAUI COUNTY WATER USE 2014

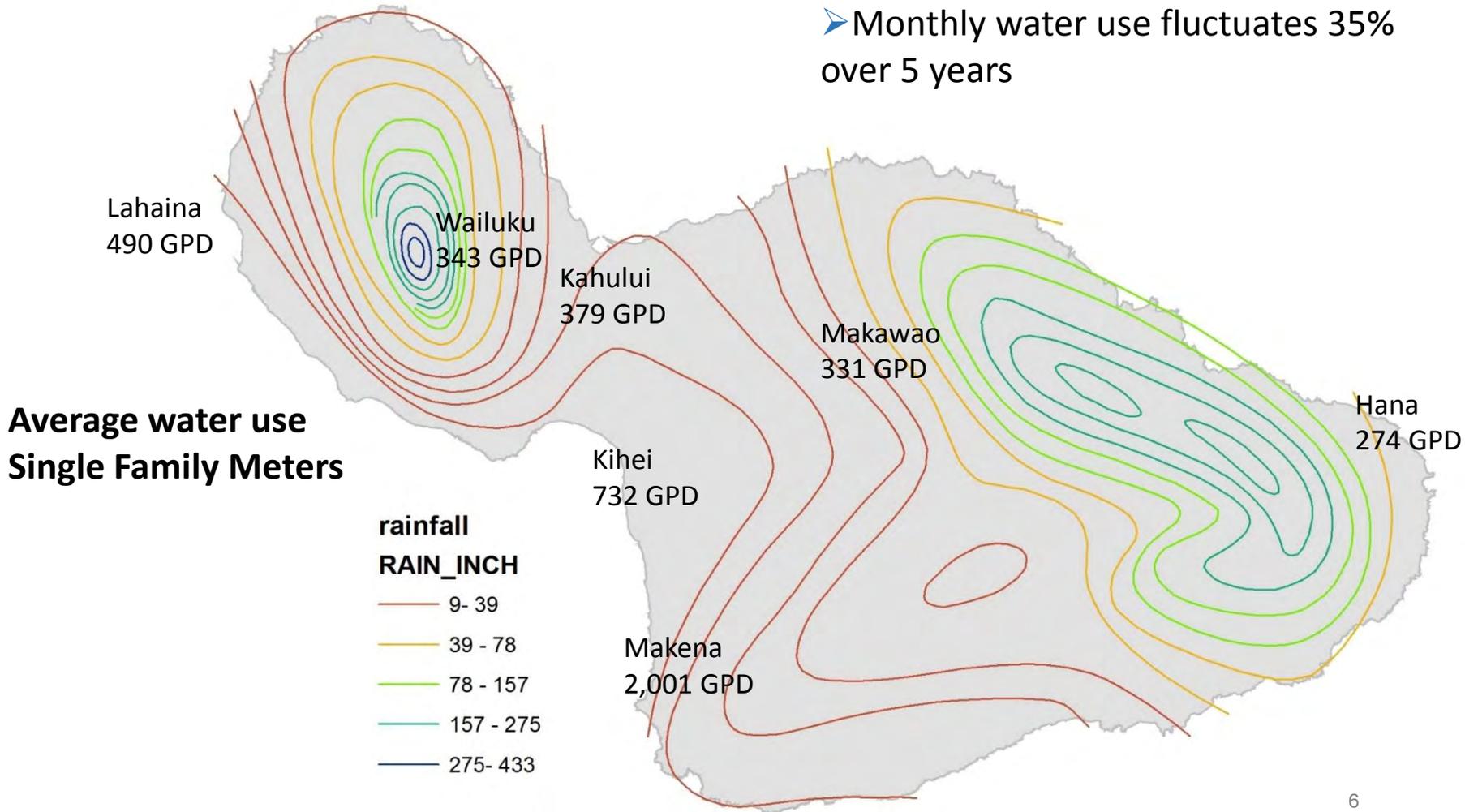


DWS:

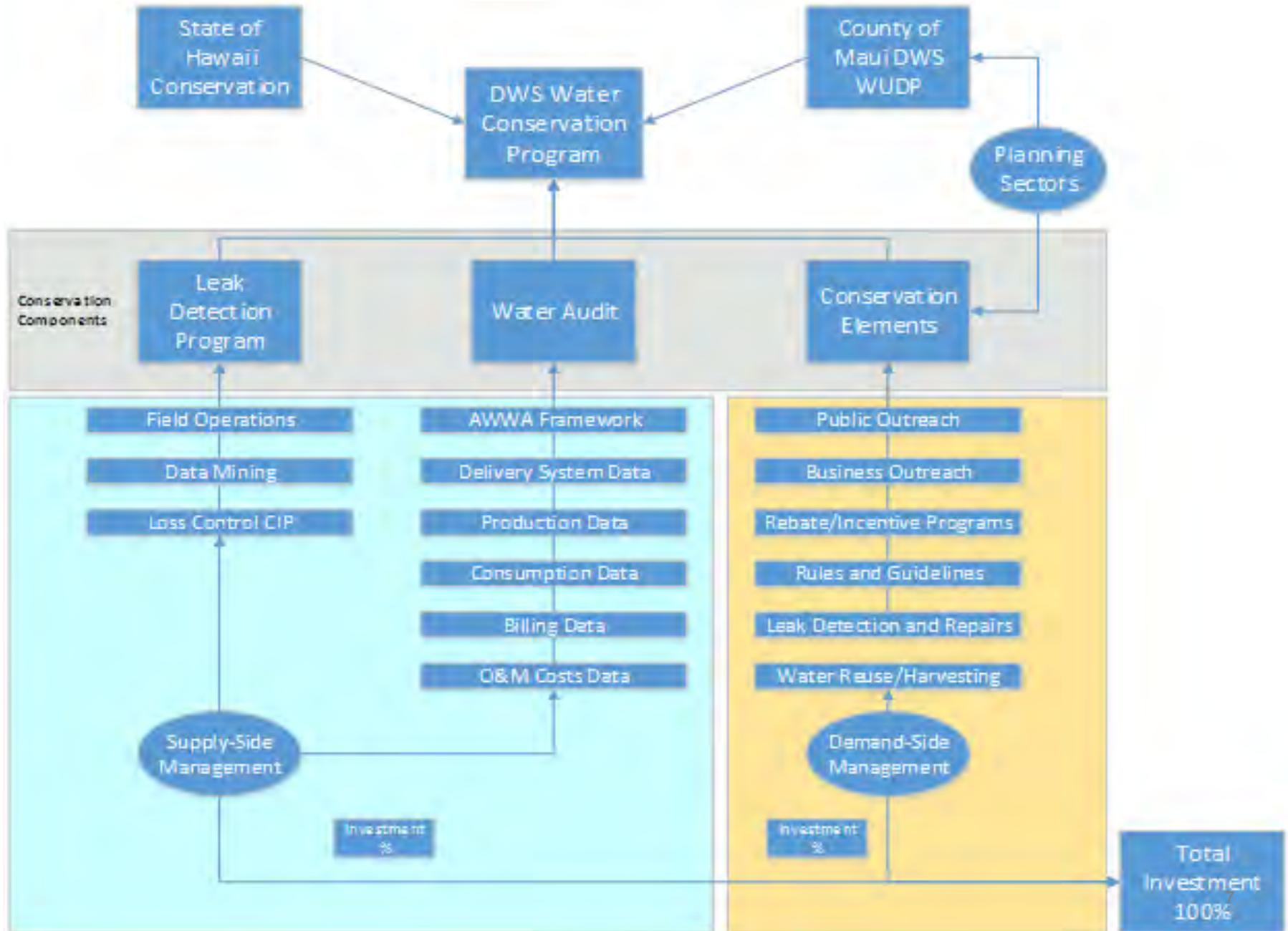
Residential sector 2/3 of water use, followed by commercial and hotel

DWS Water Use and Demand

- Demand not necessarily tied to micro climate
- Strong seasonal outdoor water use
- Monthly water use fluctuates 35% over 5 years



DWS Water Conservation Program



DWS Water Conservation Program

Conservation Program Elements	FY 2017	SUCCESSES	WEAKNESSES	OPPORTUNITIES	THREATS
Domestic	Expenses (\$)				
Toilet rebate program (FY2017-FY2019)	\$ 25,000.00				
Grey water rebate program for high use Residential (FY2017-FY2019)	\$ 12,750.00				
Rainwater harvesting (FY2017-FY2019)					
Grey water rebate program for high use Non-Residential (FY2017-FY2019)	\$ 50,000.00				
Govt. buildings low flow fixture replacement (FY2017) (COUNTY ONLY)	\$20,000				
Retail mall outreach advertisements	\$ 2,500.00				
Restaurant water service					
Municipal (public)					
Public school toilet/urinal upgrade/cost-sharing w/DOE (ending 2016-2017)	\$23,779				
Grey water rebate program (concept)					
County Fair	\$ 3,500.00				
Water Conservation Grade-School Poster Contest	\$ 12,000.00				
Turf replacement program (concept)					
Agriculture					
Irrigation metering checkup (concept)					
Irrigation Incentives/technical assistance	\$ 10,000.00				
Ag working/user group workshops	\$ 750.00				
Climate workgroup	\$ 750.00				
County-wide					
Radio advertisements	\$ 10,000.00				
TV advertisements					
Newspaper/magazine advertisements	\$ 20,000.00				
Low flow fixture purchases (supplies)	\$ 10,000.00				
Market Surveys about water conservation (concept)	\$ 300.00				
Electronics Equipment and software for Outreach and Data Collection/Analysis	\$ 3,600.00				
Xeriscape landscaping guidelines and assistance (Plants)	\$ 750.00				
Online media outreach and mobile applications	\$ 250.00				
Maui Water Conservation Recognition Program (concept)	\$ 750.00				
WaterSense as minimum standard EPA (concept)					
Overall Conservation (not incl watershed, O&M, or CIP)	\$ 162,900.00				

Develop and Analyze Best Management Practices

- Cost-effectiveness
- Technology/market maturity
- Service area match
- Customer acceptance/equity
- Better measure available
- SWOT

DWS Water Conservation Program

Leak Detection

- ✓ Conduct water audit: analyze metered, unmetered, revenue and production data, discrepancies
- ✓ Analyze system & existing processes
- ✓ Identify DWS priority areas for leak detection:



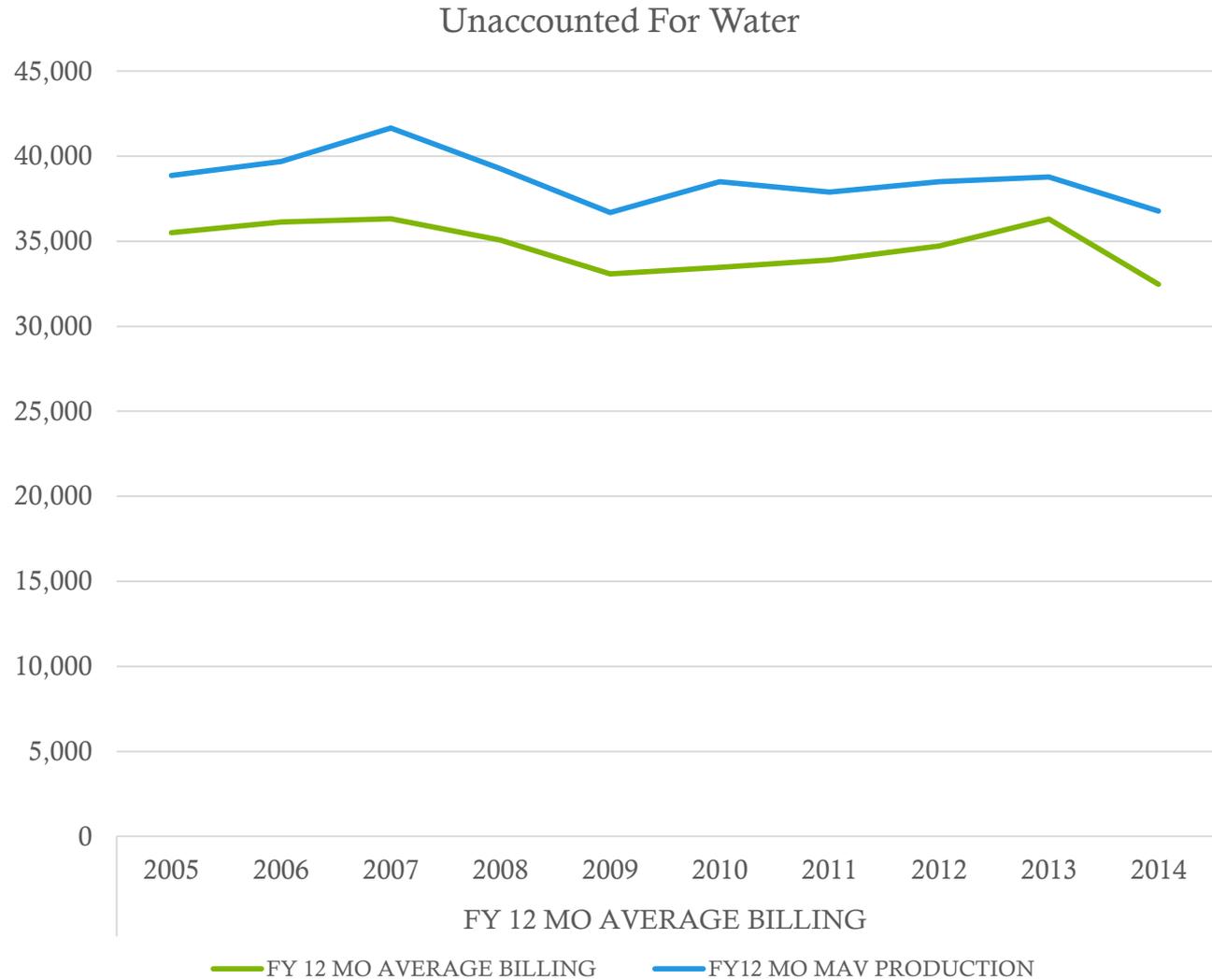
- Large population affected by pipe breaks
- Suspected water loss areas with potential for larger water savings
- Pipe materials prone to breaking, (PE, asbestos concrete, cast iron, and galvanized)
- Past unexpected water pressure flux caused pipe breaks
- Recommendations from engineers and field operations

- ✓ Field work and inspections to validate
- ✓ Repair/replace/rehabilitate
- ✓ Constraints: technology, training, application, operational, manpower, system

DWS Water Conservation Program

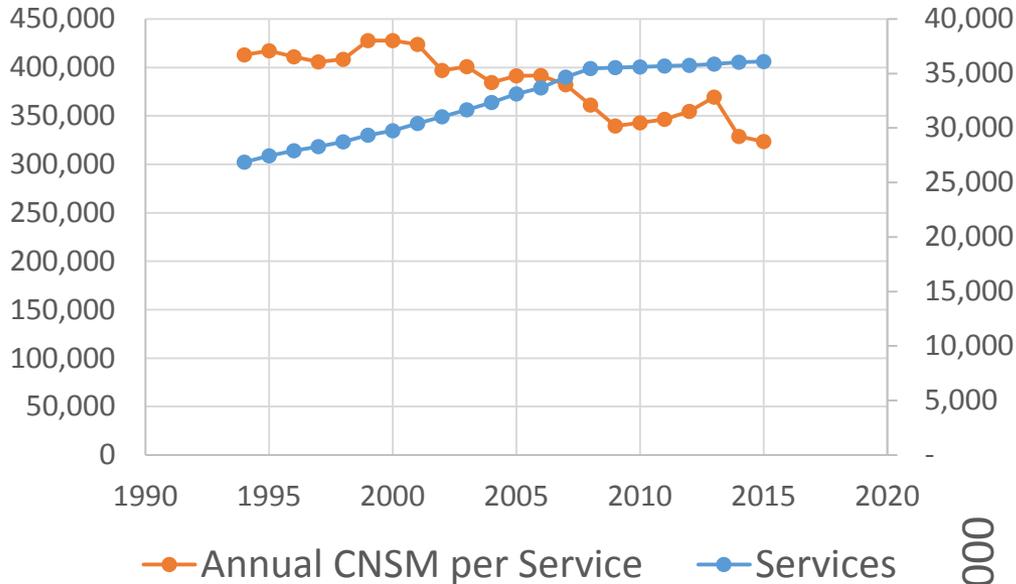
CIP

- \$1M P.E. Driscoll Service Lateral Replacement project currently in the contractor design phase
- Comprehensive technologies evaluated: Automated 24/7 leak monitoring, non-metallic pipes, data analysis

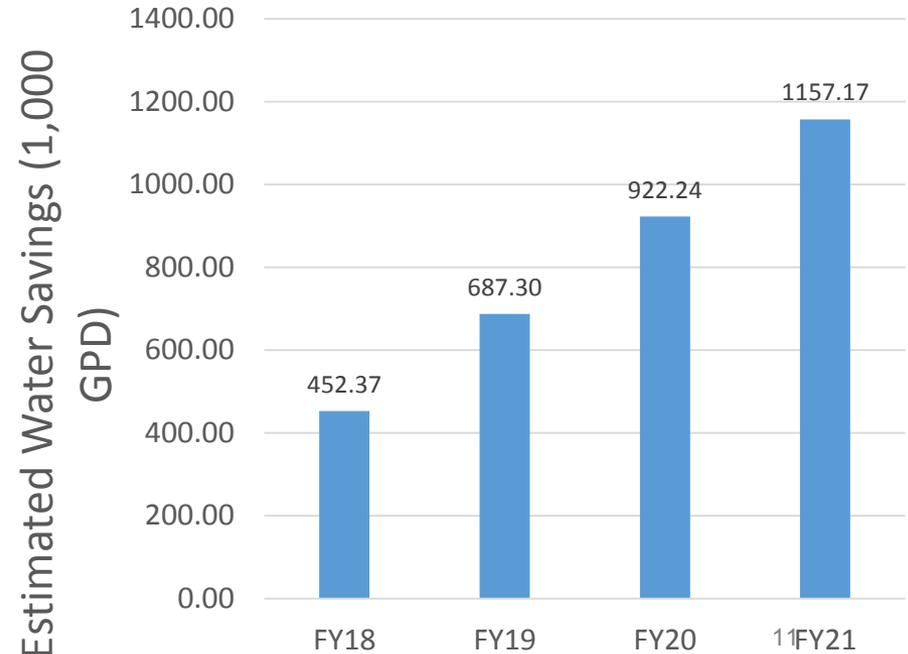


DWS Water Conservation Program

Savings

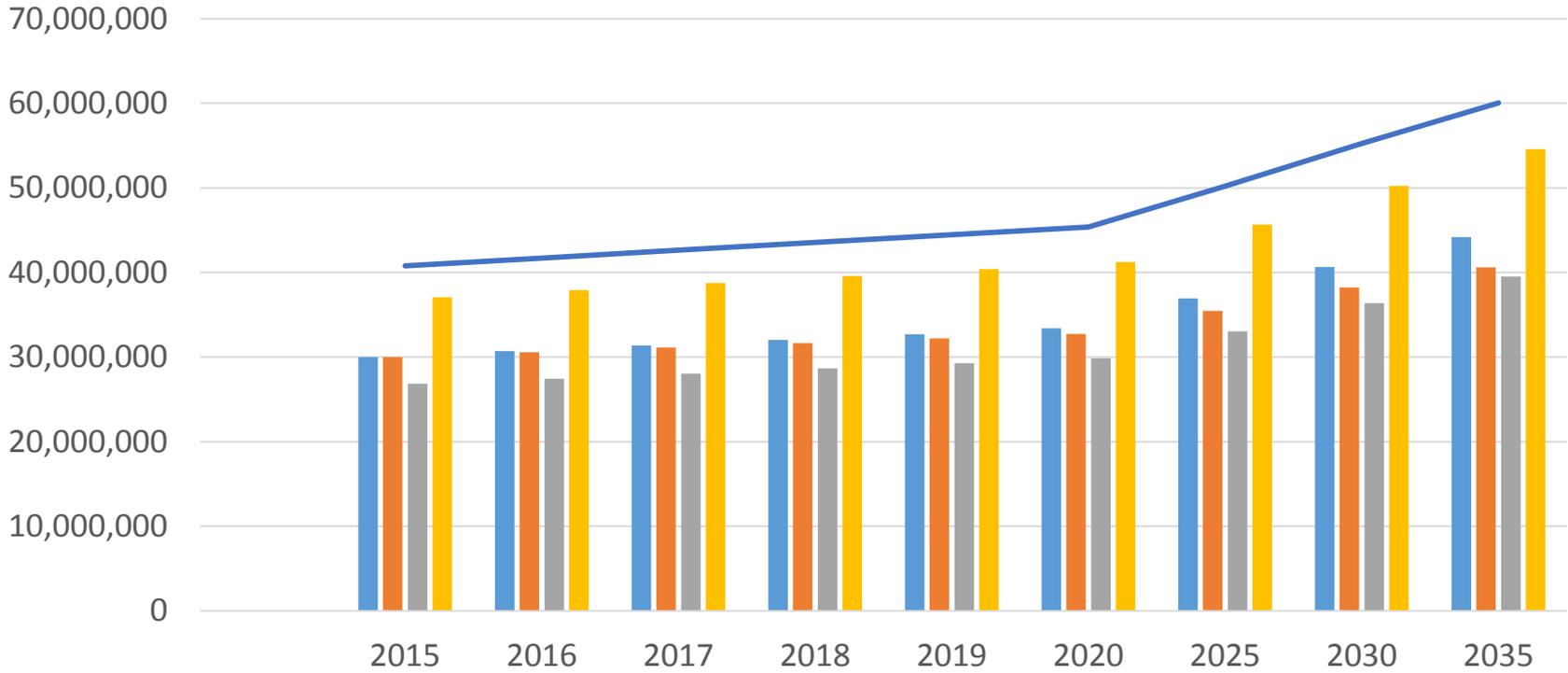


Estimated Compounded Water Savings in 1,000 Gallons Per Day by FY



- Freshwater Initiative 2030 Blueprint:** Improve efficiency of water use by 8% in 2030...

WUDP Demand Projection



- CNSM BASE CASE
- CNSM BASE CASE W 8% CONSERVATION
- CNSM LOW CASE
- CNSM HIGH CASE
- W/ UNBILLED WATER (10%) CNSM HIGH CASE

WUDP Conservation Strategies

Survey and Feedback

ON LINE SURVEY (Agree/Disagree/No Opinion or Not Sure)

- A. Adopt a restrictive water conservation standard for NEW development
- B. Provide low and no cost water fixture retrofit programs for existing development
- C. Existing and new development should EQUALLY bear the responsibility for water conservation
- D. Adopt outdoor water use and wasting controls that apply to everyone (must use a hose nozzle, do not allow water to run off your property when irrigating or washing car, etc.)
- E. Adopt water-conserving landscape requirements for resorts, golf courses, and public facilities-- even in cases where reclaimed water is used
- F. Provide incentive programs to convert existing landscape to water-conserving landscape
- G. Require aggressive conservation measures in NEW development in ALL AREAS of Maui Island
- H. Require more aggressive landscape water-conserving measures in DRY areas than in wet areas
- I. Pursue a policy of aggressive water conservation AT ALL TIMES (not just during drought)
- J. Continue to use water rates as way to encourage conservation (equity can be an issue)

Questionnaire Feedback

Highly Rated	% Agree
Require water conserving landscaping in new development	96
Require low flow fixtures in new development	93
Require all new landscape irrigation systems to be water conserving	87
Require existing large commercial users to reduce landscape water use	80
Program to retrofit toilets in existing development	79
Moderately Rated	
Rebates to convert existing landscaping	71
Restrict watering periods in certain areas (ex. Evening/early morning, days of week, no runoff)	64
Low Rating	
Apply rules equally, regardless whether in dry or wet area	41
Allocate high maximum amount of water for different types of water use (significantly penalize more use)	41

WUDP Resource Strategies

Resource Protection:

- ✓ Watershed partnership programs: expand and quantify
- ✓ Protect and recharge ground water during non drought periods to stabilize supply
- ✓ Use drought conditions as baseline to evaluate water supply and effects of water use

Alternative Resources:

- ✓ Use the appropriate level of water for the use
- ✓ Maximize R-1 reclaimed wastewater system capacity and use
- ✓ Explore greywater system programs and incentives for catchment
- ✓ Low impact project design for onsite water retention

Reliability:

- ✓ Diversify conventional resources to account for climate change and longer droughts

Conservation

- ✓ **WaterSense standard for new development, retrofit programs for existing development**
- ✓ **Climate appropriate landscaping; ag focus on climate appropriate crops**
- ✓ **More aggressive landscape water conservation measures in dry areas than wet areas to minimize water transport**
- ✓ **Combination tiered water rates, water waste control, incentive programs and targeted community education**

BWS ROLE

Policy guidance:

- Rates sufficient to address high uses, outdoor use?
- Restrictive behavioral measures?
- What partnerships would facilitate conservation? (examples R-1 extensions, storm water capture, business pilot projects)
- How to curb non potable use of potable source (climate appropriate crops, dual system, UV sterilize irrigation water)
- DWS role in ag water efficiency?
- Water efficient design (new development)
- Increased resources to support DWS program and/or shift investment to businesses?
- What incentives would you like to see and why?

Mahalo!

Links:

Water Conservation:

<http://www.co.maui.hi.us/index.aspx?nid=227>

WUDP Survey Monkey:

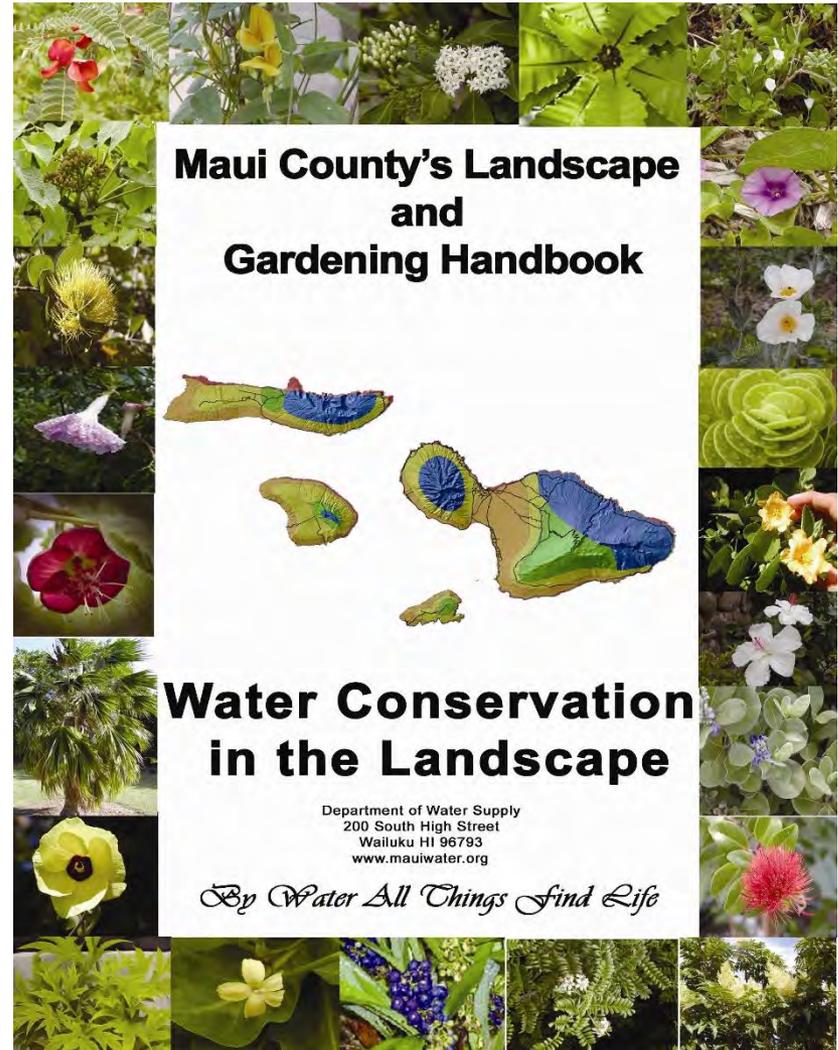
<http://www.mauicounty.gov/2051/Maui-Island-Water-Use-Development-Plan>

Drought:

<http://droughtmonitor.unl.edu>

Grey water:

http://health.hawaii.gov/wastewater/files/2013/06/graywater_guidelines.pdf



Department of Water Supply

Water Resources & Planning Division