

Maui County Water Use & Development Plan Update

*3rd Annual Joint Government Water
Conference*

August 18, 2015

Water Resources & Planning Division
Maui County Department of Water Supply

Here's What You'll Learn

- Status of Maui County Water Use & Development Plan (WUDP) Update
- All you need to know about WUDPs - in 1 slide!
- Maui WUDP approach
- What the WUDP will and won't do
- Challenges in developing a useful and dynamic plan
- Moving *forward* ...

Status of WUDP Update

- Lana'i – 2011
- Maui – 2016
 - *Central Maui, previously not approved, incorporated*
- Moloka'i – 2016 ...

WUDP in a nutshell

- Mandated by State Law and County Code
- Purpose

CWRM: "...to insure that the future water needs of the county are met. The WUDP should also provide guidance to the CWRM for decision-making on water uses and water reservation requests"

County Code: "...to meet the mandate of the State water code relative to statewide water resources planning and aid the commission and the County in the conservation, development, and use of the water resources of the County."

- Implement community planning
- Identifies objectives and seeks to resolve conflicts
- Prepare regional plans for water development
- Allocate water to land use

What the WUDP will and won't do

Yes:

- Implement MIP:
 - Policies, priorities and projections
 - Commensurate level of detail

No:

- Propose different growth rates or locations
- Contain CIP level detail

Caveats:

- *Climate change*
- *Scientific studies*
- *Community objectives*

Lessons: Central WUDP Process

- Central Maui WUDP prepared/not approved
- One WUDP for Maui Island, based on hydrologic units, not DWS centric
- Comprehensive water planning/implement Maui Island Plan/allocate water to land uses
- Traditional and customary Hawaiian rights/DHHL planning

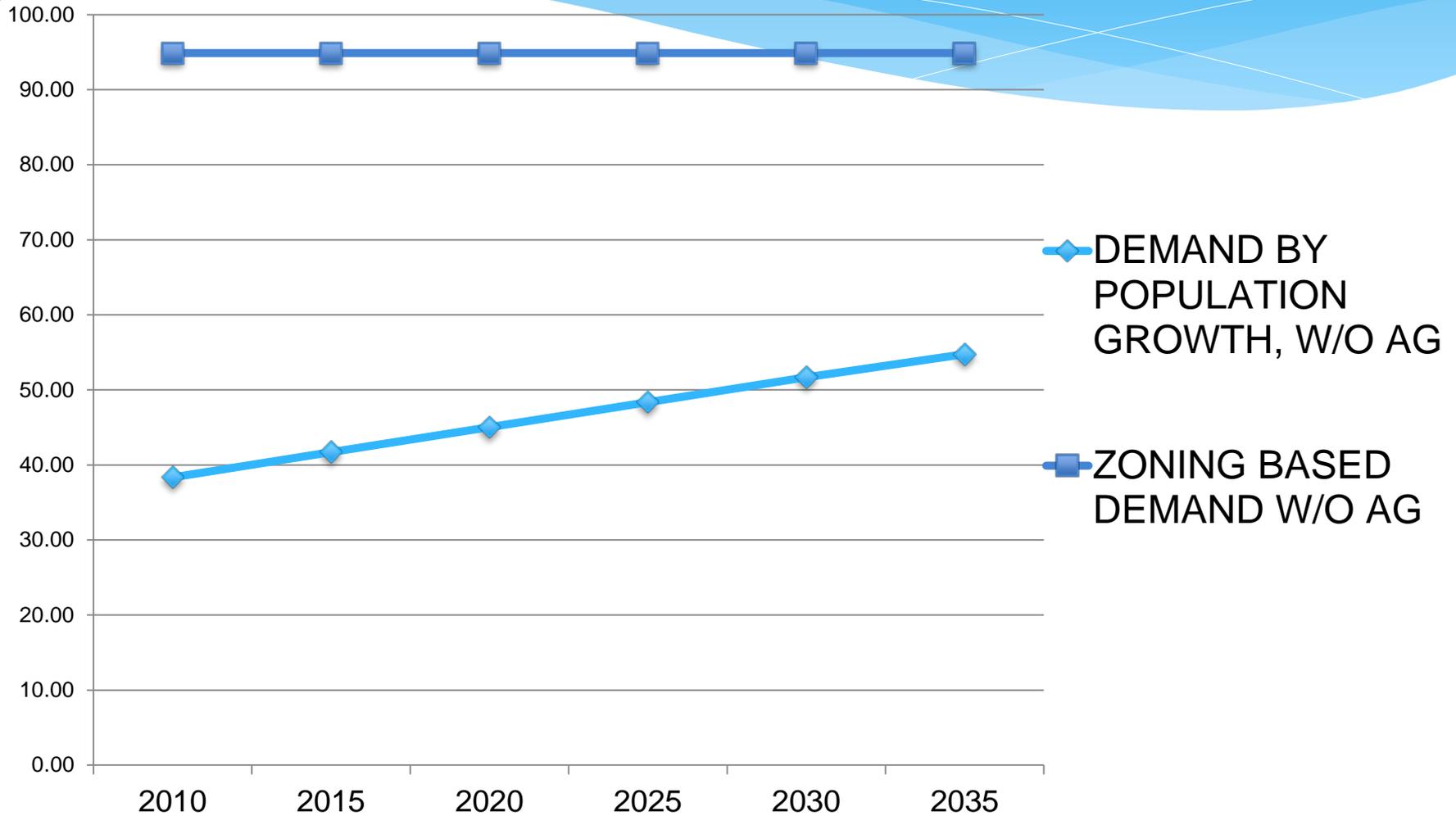
Integrated Planning Process

- Updated data, studies, climate models, court cases
- Planning objectives
- Base year 2014, planning horizon 2015-2035
- Water demand projections
 - 20 year population-based scenarios
 - Full build-out - zoning & DHHL based
- DWS Water Optimization Studies/Optional strategies for privately owned public water systems
- Ongoing public process

Planning Objectives

MIP OBJECTIVES	WUDP OBJECTIVES
<p>More comprehensive approach to water resources planning to effectively protect, recharge and manage water resources including watershed, groundwater, streams and aquifers</p>	<ul style="list-style-type: none"> • Maintain Consistency with General and Community Plans • Maintain Sustainable Resources • Establish Viable Plan
<p>Increase the efficiency and capacity of the water systems in striving to meet the needs and balance the island's water needs.</p>	<ul style="list-style-type: none"> • Provide Adequate Volume of Water Supply • Minimize Cost of Water Supply • Maximize Efficiency of Water Use
<p>Improve water quality and the monitoring of public and private water systems</p>	<ul style="list-style-type: none"> • Maintain Sustainable Resources • Maximize Water Quality • Maximize Reliability of Water Service
<p>Greater protection and enhancement of native ecosystems and species</p>	<ul style="list-style-type: none"> • Protect Water Resources • Protect Cultural Resources • Avoid adverse Environmental Impacts
<p>Enhance the vitality and function of streams while balancing the multiple needs in our community</p>	<ul style="list-style-type: none"> • Protect and Restore Streams • Manage Water Equitably • Provide for agricultural needs • Provide for DHHL Needs

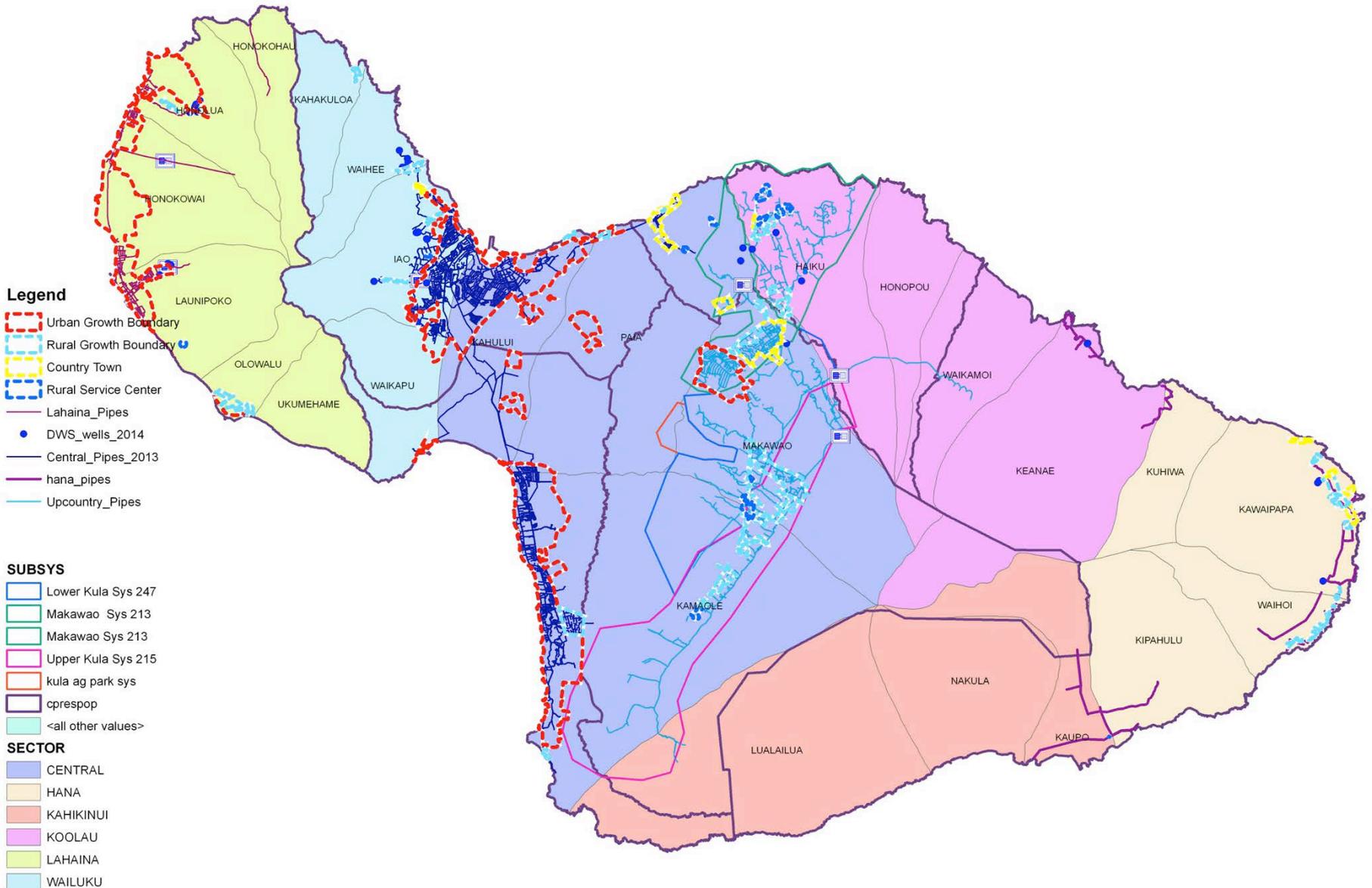
Demand Projections



Demand Projections

CWRM Use Category	Zoning District	Water Use Rate (GPD)	Acres	Projected Water Demand (MGD)
DOMESTIC (RESIDENTIAL)	R-0, R-1, R-2, R-3 Residential	3,000	15,630.34	51.44
	D Duplex	3,000		
	A-1, A-2 Apartment	5,000		
	MF Residential	5,000		
	RU-0.5 Rural - 1/2 Acre	3,000		
	R Rural Residential	3,000		
DOMESTIC (NONRESIDENTIAL)	B-1 Business - Neighborhood	6,000	1,297.61	15.58
	B-2 Business - Community	6,000		
	B-3 Business - Central District	6,000		
	BR Business - Resort	6,000		
	BCT Business - Country Town	6,000		
	H Hotel	17,000		
	SBR Service Business Residential	6,000		
INDUSTRIAL	Kihei Research & Tech Park	6,000	1,732.16	10.39
	M-1 Light Industrial	6,000		
AGRICULTURE	AG Agriculture	3,400	230,843.91	860.70
	AG (Sugar Cane HC&S)	5,556		
IRRIGATED	GC Golf Course	1,700	1,642.62	1.72
	PK-4 Park – Golf Course	1,700		
MUNICIPAL	AP Airport	6,000	3,943.22	15.74
	P-1 Public/Quasi-Public	6,000		
	P Public	6,000		
	PK Park	1,700		
MILITARY	None	--	--	0
Total			259,033.08	955.57

Geographic Boundaries



On-going Efforts

Resource Efficiency

- Conservation program
- Leak detection
- Pump efficiency
- Storage capacity
- Tiered rates

Resource Protection and Water Quality

- Interdepartmental well siting criteria
- Wellhead protection program
- Watershed protection program
- Granular Activated Carbon installation at Pi'iholo water treatment plant

Source Augmentation

- DWS water optimization study
- Waikamoi flume rehabilitation
- High lift booster pumps at Kamole water treatment plant
- Olinda sedimentation basin relining
- Waikamoi reservoir improvements
- Redistribution of pumpage within 'Iao aquifer
- 'Iao treatment plant design
- West Maui exploratory well
- Well development in Waihe'e aquifer

Impacts of Climate Change on Ground Water Availability

Maui Groundwater Project

- Interdisciplinary research – Pacific RISA lead, UH, USGS, East-West Center, over 50 stakeholders
- New hydrologic model assesses the impact of changing climate and land cover on groundwater recharge
- Assess & inform decision-making

Preliminary Findings

Future climate projections for Maui island include:

- Temperature increases at all elevations
- Wet areas get wetter
- Dry regions are mixed (some wetter, some drier)
- Mean annual rainfall increases (seasonal patterns show May-September drying in Central Maui)
- Mean annual reference evapotranspiration increases
- Little change in cloud-base elevation and trade-wind inversion height

Challenges in developing a useful & dynamic plan

- Land use plans v. decision making
 - Link between MIP and CIP
 - Consistency of political decisions
- Right size
 - Flexibility
 - Corresponding to MIP
- Balance of interests
 - Objectives, policies, action items in MIP
 - How to resolve conflicting interests?
- Data
 - Inconsistency among hydrologic, land use planning and water system boundaries
 - Inconsistent time horizons – MIP, Community Plans, forecasts
 - Inaccuracy and lack of data
- Traditional and customary rights/Court cases
 - Na Wai ‘Eha water rights
 - East Maui streams contested case
- Format
 - Ease in updating

Recap: Maui's WUDP

- Mandated by State Law and County Code
- Guidance document
- Implements community planning/MIP
- Identifies objectives & seek to resolve conflicts
- Prepare regional plans for water development
- Allocate water to land use
- Objective: useful & dynamic plan, easily updated

Moving *forward* ...

Maui Island



Internal Review	Summer 2015
Board of Water Supply	Fall 2015
CWRM Briefings	Fall 2015 – Winter 2016
Community Input	Fall 2015 – Winter 2016
Council Committee	Fall 2015 – Winter 2016
County Council	Spring 2016
CWRM Approval	Summer 2016

Moloka'i

Commence Draft Spring 2016

Mahalo

Maui County DWS Water Resources & Planning

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