

ALAN M. ARAKAWA  
Mayor



**DEPARTMENT OF WATER SUPPLY  
COUNTY OF MAUI**

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DAVID TAYLOR, P.E.  
Director

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PAUL J. MEYER  
Deputy Director

OFFICE OF THE MAYOR

August 8, 2016

Honorable Alan M. Arakawa  
Mayor, County of Maui  
200 South High Street  
Wailuku, Hawaii 96793

For Transmittal to:

Honorable Gladys C. Baisa  
Chair, Water Resources Committee  
Maui County Council  
200 South High Street  
Wailuku, Hawaii 96793

APPROVED FOR TRANSMITTAL  
  
Mayor Date

Dear Chair Baisa:

**SUBJECT: WATER AVAILABILITY POLICY (WR-19)**

Thank you for your July 28, 2016 letter regarding the Committee's concerns about future water allocation projections. The Department of Water Supply ("Department") is transmitting for your review and offers the following responses to your requests:

*Question:*

1. *What are the estimated 10-year projections for potable water usage in each of the Department's water systems?*

**Answer:** The estimated range of projected 10-year potable demand for the Department's water systems are as follows applying population growth rate projections to the 5-year monthly average production (FY 2012-2016) and the 10-year peak month production (FY 2007-2016).

Central:	29.0 – 34.9 MGD
West:	7.3 – 9.0 MGD
Upcountry:	7.7 – 11.2 MGD
Hana:	0.5 – 0.7 MGD
Molokai:	1.0 – 1.7 MGD

*"By Water All Things Find Life"*



In terms of projected demand versus available reliable system capacity 10 years into the future, approximate ranges are:

Central:	85-95%
West:	85-95%
Upcountry:	100%
Hana:	70-80%
Molokai:	95-100%

These ranges based on the projections calculated over the past few years, have been previously shared with the Water Resources Committee ("WRC") during various presentations. If this bill is passed into law, the Department will update the projections before implementation.

*Question:*

2. *How were these projections derived?*

**Answer:** There is no universally accepted, mathematically reproducible methodology to determine projections of future demand versus available reliable system capacity. The Department used the following basic methodology to calculate the range above:

#### PROJECTION OF DEMAND

- Identify existing water usage and production. Identify the base case for the intended purpose.
- Identify projected population growth from the Maui County General Plan. The current population growth projections are set forth in the July 2014 Socio-Economic Forecast prepared by the Planning Department which allocates projected population to the various Community Plan districts.
- Water demand is projected based on application of the Community Plan population growth rates to the DWS districts. Projections may be fine-tuned based on evaluation of various factors, such as how regional growth rates relate to DWS service areas.
- Graphically plot future water usage along with 5% and 10% conservation/efficiency scenarios.

#### PROJECTION OF RELIABLE CAPACITY

- Analyze each current system to identify maximum reliable capacity. This effort begins with identifying the maximum output of each individual well and/or treatment plant and conducting an engineering analysis which takes into account estimated reliability and redundancy.

- Identify realistic system improvements which are likely to occur based on technical feasibility and current budget magnitude and their estimated impact on capacity.
- Develop realistic projected schedule for improvements.
- Identify when increased reliable capacity increases occur.
- Graphically plot future reliable capacity projections.

The graphical plots of projected demand versus projected reliable capacity can then be compared. It should be noted that there are many facets to this analysis which are based on various assumptions and engineering judgment. Some of these uncertainties are:

- Individual real estate development projects that may or may not occur.
- Varying precipitation rates.
- County Capital Improvement Program ("CIP") projects which require various subjective approvals and are subject to legal actions.
- Public/private source development agreements that may or may not occur.
- Regulatory actions by Environmental Protection Agency ("EPA"), Department of Health ("DOH") or Commission on Water Resources Management ("CWRM").

In addition, these projections are system specific at the "macro" level, meaning that they do not take into account capacity of distribution systems required to move water from one part of the system to another and storage capacities. Any such improvements are generally the responsibility of the developer.

*Question:*

3. *Were future projects included in the projections? If so, on what basis were the projects included?*

**Answer:** As noted in item 2, above, specific CIP projects that add reliable capacity are included in the projections. Private sector developments that will add to demand are not specifically included. Instead, we used regional population growth projections from the Socio-Economic Forecast that supports the General Plan. As specific developments known to the Planning Department were considered in developing the projections and the relationship of development project locations to DWS service areas are considered we believe that future projects are adequately taken into account.

Question:

4. *If projects were included in the Department's 10-year water usage projection, have project owners paid Water System Development Fees to ensure inclusion? If so, are the fees subject to the three-year time extensions, which includes a two-year extension and two additional six-month extensions for good cause, as noted in Section 14.07.090(B), Maui County Code?*

**Answer:** The projections being discussed are based on long term projections as opposed to day-to-day meter issuance. As such Water System Development Fees ("WSDF") have largely not been paid. Any owners who have paid WSDF will be served as per ordinance.

Question:

5. *Does the 10-year forecast include plans for budgetary considerations and future development of additional water sources to meet the projected potable water usage demands?*

**Answer:** As noted in item 2, above, the 10 year forecast does include realistic budget projections. Over the past several years, the Department has put on a number of presentations to WRC. One of the "centerpieces" of these presentations has been an effort to develop an integrated, cost based plan which is realistic from both a budget and project development approach. These projections were developed to be consistent with these plans.

We hope you find this information useful. Should further clarification be necessary, please feel free to contact me at Ext. 7816.

Sincerely,



DAVID TAYLOR, P.E.  
Director of Water Supply

xc: Paul J. Meyer, Deputy Director  
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