Executive Summary of Adaptive Tools

from Water Resources and Climate Change Adaptation in Hawai'i: Adaptive Tools in the Current Law and Policy Framework

2012

Full-length white paper available at http://icap.seagrant.soest.hawaii.edu/icap-publications and www.islandclimate.org

CENTER FOR ISLAND CLIMATE ADAPTATION & POLICY

Pacific RISA

Sea Grant University of Hawai'i

College of Social Sciences

HAWAI'INUIĀKEA School of Hawaiian Knowledge

SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY UNIVERSITY OF HAWAI'I AT MĀNOA

UNIVERSITY of HAWAI'I at MĀNOA WILLIAM S. RICHARDSON SCHOOL OF LAW

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For further information, please contact us:

Center for Island Climate Adaptation and Policy
University of Hawai'i Sea Grant College Program
2525 Correa Road, HIG 212
Honolulu, HI 96822
(808) 956-2865
ICAP@hawaii.edu
www.islandclimate.org

Pacific Regional Integrated Sciences and
Assessments Program (Pacific RISA)
East-West Center
Room 2062
1601 East-West Road
Honolulu, HI 96848-1601
(808) 944-7254
www.PacificRISA.org

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Cover photo: Richard Wallsgrove

Water Resources and Climate Change Adaptation in Hawai'i

Climate change adaptation is the process of increasing resilience and reducing vulnerability to risks related to climate change. From a law and policy perspective, adaptation primarily means: (i) ensuring that current policies and procedures account for climate trends, variability, and uncertainty; and (ii) ensuring that, when decision-makers receive new information from climate scientists in the future, they will be able to appropriately act on that information with the existing policies and procedures. Thus, adaptation is not just about creating new policies, but about routinely considering how the future climate may affect the outcomes of decisions, and using that understanding to make more informed decisions.

The need for adaptive tools is especially sharp in the context of managing vital water resources. Hawai'i's water experts recognize that climate change has the potential to devastate natural resources and human communities. Already, troubling patterns of climate change are being observed in Hawai'i. These observations include:

- *Declining rainfall;*
- *Reduced stream flow;*
- *Increasing air and sea surface temperatures;* and
- *Rising sea level.*

State of Hawai'i Commission on Water Resource Management, 2008

- "The impacts of global climate change in the Hawaiian Islands can potentially devastate our considerable natural resources."
- "Climate change causes alterations in temperature and precipitation patterns, and Hawaii's water resources are almost exclusively dependent on rainfall."
- "Prudent water resource planning should consider the long-term impacts of global climate change and how this could affect Hawaii's water supplies …."

Photo: Zena Grecni

Water flowing in the Waiāhole Stream is fed by ground water from dike-impounded aquifers in the Ko'olau Mountains.

Such trends pose serious consequences for the replenishment and sustainability of both groundwater and surface water resources. These worrisome trends are further compounded by a forecast for rising population and increasing water demand, and by the potential for future climate change phenomena, such as changes in the trade wind regime that drives Hawai'i's orographic rainfall. Together, these trends and risks present a compelling need to carefully manage Hawai'i's water resources.

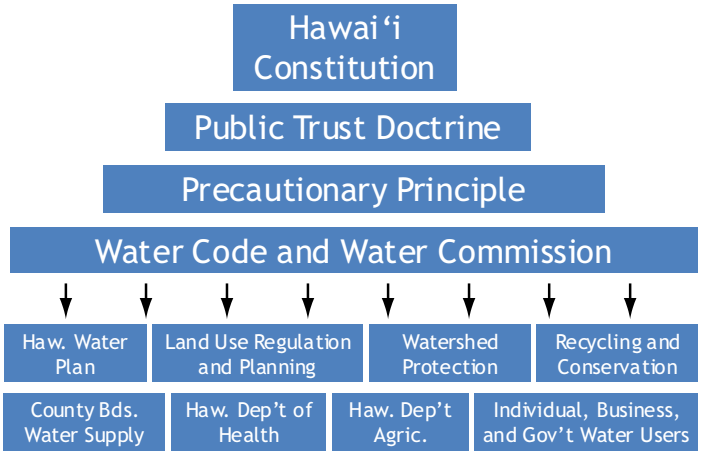
The picture is clear. Hawai'i must adapt to a future that will be different from the present, especially in the realm of water resources.

In *Water Resources and Climate Change Adaptation in Hawai'i: Adaptive Tools in the Current Law and Policy Framework*, the Center for Island Climate Adaptation and Policy ("ICAP") has analyzed Hawai'i's law and policy framework to identify ways of enhancing climate adaptation for Hawai'i's water resources. In broad terms, the following characteristics define the "adaptive capacity" of such laws and policies:

- *Forward-looking*—focused on crisis avoidance over crisis mitigation;
- *Flexible*—able to adjust to changing needs and conditions;
- *Integrated*—able to address climate-related impacts that cut across political and geographical boundaries; and
- *Iterative*—utilizing a continuous loop of monitoring, feedback, and reevaluation.

Hawai'i's existing law and policy framework can support climate change adaptation because these characteristics are already incorporated into various mandates and policies. Examples include: a forward-looking constitutional mandate for long-term water resource protection; the flexibility of the Water Commission to continuously update and refine estimates of the sustainable yield (the amount of water that can be sustainably drawn from each aquifer); the integrated four-part Hawai'i Water Plan, with input from virtually every corner of the state; and the iterative requirement that salinity and other measures of water sustainability must be vigilantly monitored.

Law and Policy Framework for Water Resource Management in Hawai'i



Twelve Adaptive Tools for Water Resource Management in Hawai'i

Because Hawai'i's existing law and policy framework can support sound adaptation, the critical next step is to identify appropriate tools for implementation. ICAP has identified twelve such tools, in three categories: (1)

policy and planning-based tools, centered largely around the Hawai'i Water Plan; (2) regulatory tools, based on the Water Commission's broad jurisdiction to regulate all water uses and resources in the state; and (3) market-based tools, tied to the cost of protecting water resources.

The tables below provide an overview of these twelve tools, which are described and analyzed in more detail in the full-length white paper. The tables briefly identify existing models that have been tested in Hawai'i and elsewhere; estimate implementation time frames and costs; suggest lead and supporting agencies for initiating action; and recommend initial steps for implementation. Decision-makers should consider that each tool requires further refinement "on the ground" through collaboration, education, and outreach.

These twelve tools are consistent with Hawai'i's existing law and policy framework, and each can enhance Hawai'i's ability to adapt to climate change

Adaptive Policy and Planning Tools

1 – Incorporate Climate Change Planning Into the Hawai'i Water Plan

The Hawai'i Water Plan is a comprehensive tool to aid long-term planning for water resources. However, to make that tool more effective, all four parts of the Water Plan should expressly address climate change issues and climate change scenario planning.

Existing Model(s): **Long-term climate scenario planning** (e.g., California Water Plan)

Implementation Time Frame[1]: **Long** Implementation Cost[2]: **Moderate**

Lead Agency: **Water Commission**

Initial Steps: Revise Water Commission's Statewide Framework for the Hawai'i Water Plan, with express directive to incorporate climate change planning into each Plan component.

2 – Enforce Five-Year Updates to the Hawai'i Water Plan

The process for updating the Water Plan is in flux. Some portions have been updated recently, while others have not changed since 1990. Regular, iterative updates are necessary for the Water Plan to serve as an adaptive tool.

Existing Model(s): E.g., **California Water Plan**, **Melbourne Water Supply and Demand Strategy**

Implementation Time Frame: **Medium** Implementation Cost: **Moderate**

Lead Agency: **Water Commission** Support: All agencies involved in the Hawai'i Water Plan.

Initial Steps: Water Commission directive to update all elements of the Hawai'i Water Plan on a five-year cycle. Identification of most effective enforcement options.

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[1] A "Long" implementation time frame means approximately twenty years or more, which is consistent with the commonly used planning horizon. A "Short" implementation time frame means the near future. These are broad estimates that could vary with other factors such as cost and resource availability.

[2] A "High" implementation cost means that the tool could require large amounts of specially designated agency funding or staffing. A "Low" implementation cost means that existing processes and programs can be used to implement the tool, or that the tool has a potentially high cost-saving value.

Adaptive Policy and Planning Tools (continued)

3 – Expand Models of Water- and Climate-Conscious Land Use Plans and Policies

Continued integration of land use and water resource planning, as illustrated by Maui's Water Availability Policy, empowers an integrated and adaptive approach.

Existing Model(s): **Maui County Water Availability Policy**

Implementation Time Frame: **Medium** Implementation Cost: **Low**

Lead Agency: **County councils**

Initial Steps: Counties to adopt appropriate policies, ordinances, and plans to more fully integrate land use and water planning.

4 – Adopt Existing Models to Integrate Watershed Conservation with Water Resource Planning

Combining the watershed protection process with the Hawai'i Water Plan (via each county's Water Use and Development Plan) can empower the adaptive goals of monitoring and integration.

Existing Model(s): **O'ahu Water Use and Development Plan ("WUDP") and Watershed Management Plans**

Implementation Time Frame: **Medium** Implementation Cost: **Moderate to High**

Lead Agency: **County Water Supply** Support: **Water Commission; Dep't of Land and Nat. Res.**

Initial Steps: Counties to revise internal process for WUDP preparation.

5 – Finalize and Implement Mandatory Water Conservation and Recycling Plans

The counties have taken some initial steps toward compiling mandatory water conservation and recycling plans, and should finalize and implement those plans.

Existing Model(s): **Dep't of Land and Nat. Res. Prototype Water Conservation Plan; Maui County Conservation Policy; Victoria, Australia Water Saving Rules; 2008 Water Resource Protection Plan**

Implementation Time Frame: **Medium** Implementation Cost: **Moderate to High**

Lead Agency: **County Water Supply** Support: **Dep't of Health**; **Water Commission**; **legislators**

Initial Steps: Counties to work with federal and state agencies, subject matter experts, and water users to identify appropriate conservation and recycling tools, and to adopt appropriate policies, ordinances, and plans.

Adaptive Regulatory Tools

6 – Adopt Climate-Conscious Sustainable Yield and Instream Flow Standards

Sustainable yield and instream flow standards form the heart of the water planning process under the Water Code. They should account for climate change and potential impacts, and they should be reevaluated on a regularly scheduled basis.

Existing Model(s): **"Clearly Sustainable Yield"**

Implementation Time Frame: **Medium** Implementation Cost: **Low**

Lead Agency: **Water Commission**

Initial Steps: In connection with a climate-conscious Hawai'i Water Plan, Water Commission to establish long-term schedule for reevaluating sustainable yields and instream flow standards, with direct links to updated climate change data products.

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Adaptive Regulatory Tools (continued)

7 – Enforce and Expand Statewide Water Use Monitoring and Reporting

Monitoring and reporting requirements contained in water use permits (for designated Water Management Areas) and reporting of water use (even in non-designated areas) are critical components of adaptive water resource management. These requirements must be enforced.

Existing Model(s): **State Water Code**

Implementation Time Frame: **Short** Implementation Cost: **Moderate**

Lead Agency: **Water Commission**

Initial Steps: Support and expedite existing efforts to streamline and digitize the reporting process, and expand it to include automated internet publication of all reported data.

8 – Expand Water Management Areas ("WMAs")

Under the Water Code, more adaptive tools and strategies are applicable in WMAs than in non-designated areas. Designating WMAs for both surface water and groundwater resources could enhance protection against climate hazards.

Existing Model(s): **Existing WMAs**; **1994 Review Commission Report on the State Water Code**

Implementation Time Frame: **Long** Implementation Cost: **High**

Lead Agency: **Water Commission** Support: **County WUDP**; **state legislature**

Initial Steps: Water Commission to assess climate change impacts and identify non-designated areas that are most threatened, or that have the greatest adaptive potential for protecting recharge and watersheds.

9 – Adopt More Adaptive Conditions for Water Use, Well Construction, and Stream Diversion Permits

The standard and special conditions applicable to such permits should be amended to enhance adaptive capabilities such as monitoring and forward-looking flexibility. The suggested amendments could empower use monitoring, rain and stream monitoring, and permit compliance inspections.

Existing Model(s): **Existing permit conditions**

Implementation Time Frame: **Short** Implementation Cost: **Low**

Lead Agency: **Water Commission**

Initial Steps: Water Commission to revise the standard conditions for new water use permits, and identify opportunities to revise existing permit conditions.

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Photo: Zena Grecni

Orographic clouds, like those pictured here on O'ahu's Ko'olau Mountains, produce rain and fog drip that is critical to groundwater recharge.

Adaptive Market-Based Tools

10 – Encourage Water-Conscious Construction and Modifications with Green-Building Benefits and Credits

New development, and redevelopment, present an opportunity to incorporate water-conserving infrastructure and practices. State and local government should enhance "green-building" efforts with (1) county rebates and utility credits and (2) state income tax credits directed specifically at water conservation.

Existing Model(s): **Hawai'i Energy Program**; **Hawai'i renewable energy tax credit**; **Haw. Rev. Stat. § 46-19.6** (expediting building permit process for green-building projects).

Implementation Time Frame: **Long** Implementation Cost: **Moderate**

Lead Agency: **County Water Supply** Support: **County councils and state legislature**

Initial Steps: County and state agencies to identify appropriate conservation incentives.

11 – Relate Water Commission Fees More Closely to the Cost of Water Management and Watershed Protection

It appears that the fees presently charged in connection with obtaining and maintaining water-related permits are not consistent with the Water Commission's cost of managing water resources. Changes to the fee structure, and the collection of penalties for non-compliance, can help to narrow that gap.

Existing Model(s): **Dep't of Land and Nat. Res. dam safety regulations** (proposed H.A.R. § 13-190)

Implementation Time Frame: **Short** Implementation Cost: **Moderate**

Lead Agency: **Water Commission**

Initial Steps: Water Commission to identify areas for appropriate and reasonable fees.

12 – Adopt a Public Goods Charge for Water Use

An across-the-board fee for water use can impart a conservation price signal, and fund the cost of water management and conservation.

Existing Model(s): **California energy public goods charge**; **county property tax regime**

Implementation Time Frame: **Medium** Implementation Cost: **Low**

Lead Agency: **Water Commission** Support: **County water supply**; **county councils and state legislature**

Initial Steps: Identify appropriate mechanisms for assessing and collecting a public goods charge.

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