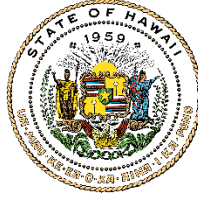


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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

Testimony of
DAWN N. S. CHANG
Chairperson

Before the House Committee on
WATER & LAND

Thursday, February 9, 2023
9:30 AM

State Capitol, Conference Room 430 & Videoconference

In consideration of
HOUSE BILL 906
RELATING TO THE COMMISSION ON WATER RESOURCE MANAGEMENT

House Bill 906 proposes to require the Commission on Water Resource Management (Commission) of the Department of Land and Natural Resources (Department) to conduct an audit of the State's surface water transmission systems, except those used by kalo farmers, to determine the integrity of each system and whether each system is being properly operated. The measure also requires the Commission to submit a report of its findings and recommendations no later than twenty days prior to the convening of the 2024 Legislative Session. **The Department appreciates the intent of this measure and offers the following comments.**

Water audits are an important tool to account for water in a distribution or transmission system. The Commission notes that there is no national standard for irrigation system audits, whereas the American Water Works Association (AWWA) has established its AWWA water audit methodology and water audit software for drinking water utilities. The general principles of water auditing may be applied to a surface water supplied irrigation system.

While water audits are simple in concept, it is critical to start with accurate data to achieve meaningful results. The two most important data sets are the volume of water supplied to the distribution or transmission system and the volume of water consumed from the system. For surface water systems, this would be the volume of water diverted from a stream(s) and the volume of water taken by the end user, respectively. Unfortunately, data on the amount of water diverted by a system is often lacking due to a variety of reasons including, but not limited to, system operator turnover; gaging system errors due to storm damage, high turbidity of stream

water, and communication failures; remoteness of diversion locations; and the high costs associated with gage maintenance. Often, there is even less data on the amount of water taken by each end user since many of them do not have flow meters or flow measurement devices. Measuring surface water flows and maintaining gaging equipment to ensure accurate readings is a fairly labor-intensive, highly skilled task that many system owners have trouble with.

Over the last decade, the Commission staff has worked diligently with irrigation system owners and operators to install new gaging instrumentation and helped to educate new system operators on monitoring procedures and online water use reporting towards a goal of achieving 100-percent reporting compliance on the volume of water diverted from streams each month. Measuring every stream diversion input and end use from these irrigation systems is extremely challenging and the Commission is working with system owners to develop consistent protocols to account for water entering and leaving their systems.

Unlike closed-pipe systems typical of municipal drinking water systems, irrigation systems are often open systems consisting of ditches and tunnels that experience seepage loss (loss of water due to seepage into the ground in unlined or partially-lined channels), evaporation, inputs from rainfall, and groundwater gains as they flow through tunnels. In 2011, the Commission entered into a joint funding agreement with the U.S. Geological Survey to conduct a 1.5-year reconnaissance level study of seepage into or from the four main ditches in the East Maui Irrigation (EMI) System. The total cost of the study was \$130,000. The EMI System alone consists of roughly 388 separate stream-water intakes, 12 inverted siphons, four primary level ditches and six additional interconnected ditches totaling some 24 miles, along with 50 miles of tunnels and numerous small feeders, dams, intakes, pipes, and flumes. This study highlighted the complexity of assessing large irrigation systems.

The 2019 Agricultural Water Use and Development Plan Update, prepared by the Hawai'i Department of Agriculture, identified roughly 28 large irrigation systems statewide. The Commission has been able to work closely with a number of these system operators to inventory and understand the detailed workings of each system. However, the Commission has largely focused its efforts on determining the amount of surface water diverted and the amount of water needed offstream to help support its development of interim instream flow standards. The Commission currently receives water use reports from approximately one-quarter of system operators and has been working with two-quarters of them to install gaging equipment to begin reporting. The remaining quarter of system operators have either not yet been contacted due to prioritization, the systems are primarily groundwater-sourced, or they are limited in use and continued operation is in limbo. An audit of irrigation systems statewide would require more in-depth analysis to determine more precisely the inputs and outputs of each system. These efforts would require a considerable amount of money, time, and hydrologic expertise to complete.

Mahalo for the opportunity to comment on this measure.