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Environment Hawai'i
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Pharm Water

The state of Hawai'i has been pushing hard for the expanded use of effluent from sewage treatment plants on cropland.

But if that effluent contains hormones, antibiotics, and other chemicals that can trickle into the aquifer and work their way into the kitchen tap, then it may be appropriate to step back and look more closely at just where and under what circumstances irrigation with effluent is appropriate. As Teresa Dawson reports in this month's cover, state, federal, and even some county agencies are beginning to do just that.

Also in this issue, we review developments on the energy front: the GEMS program of the Hawai'i Green Infrastructure Authority, an agency that, quite literally, has more money than it knows what to do with; and the staff report from the Public Utilities Commission of Hawaiian Electric's cancellation of three solar farms on O'ahu.

IN THIS ISSUE

Several Common Drugs Are Apt to Leach Into O'ahu's Groundwater, Study Finds

Of 11 pharmaceuticals commonly found in sewage, University of Hawai'i graduate student Jeffrey Murl has recently determined that seven of them have the potential to leach into O'ahu's groundwater, one poses an uncertain risk, and the remaining three — which are perhaps the most likely to impact humans and animals at low doses — are unlikely to leach into any aquifers.

Whether or not those "micro-pollutants" pose a threat to human health remains to be seen. Using his research, as well as recent studies conducted by other scientists with the university's Water Resources Research Center (WRRC), the state Department of Health (DOH) is planning to revise its guidelines on wastewater reuse to ensure that any health effects are minimized or avoided altogether.

Murl's findings are part of an effort by the Health Department to determine how and where recycled wastewater should be used, given that it is likely laden with contaminants of emerging concern (CECs).

CECs are ubiquitous and include everyday products such as detergents, cosmetics, antimicrobials, insect repellant, and drugs. As they've only become detectable since the early 2000s, no federal regulatory standards exist regarding their release into the environment, yet studies have shown CECs pose a risk to ecological health. Impacts to humans — from CECs and their metabolites, alone or in combination with others — is poorly understood, although several studies suggest levels in effluent are perhaps too low to have any effect.

What is known is that wastewater treatment processes do a poor job of removing CECs.

No regulatory standards for CECs exist, so government regulatory agencies do not often test for them in treated wastewater, drinking water, or in the ocean. The state DOH has done some limited testing for CECs in coastal and surface waters in Hawai'i. Studies done on the mainland by the U.S. Geological Survey have shown that CECs are commonly found in streams near wastewater treatment plants and in drinking water samples.

PHOTO: LIMTIACO CONSULTING GROUP

The Dole irrigation ditch (pictured here) conveys water that includes effluent from the Wahiawa Wastewater Treatment Plant and Schofield Water Reclamation Facility.

Nearly 40 years ago, the WRRC first assessed the potential for drinking water contamination as a result of irrigating crops with treated wastewater. Testing then for things such as nitrates and viruses on experimental plots of sugarcane in Central O'ahu, researchers concluded that pollutants in effluent were unlikely to find their way into the aquifers below.

Murl's research, however, suggests that may not

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Environment Hawai'i

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NEW AND NOTEWORTHY

PHOTO: BRIAN WALSH

Ka'a'awa Collapse: Every O'ahu resident knows Kamehameha Highway is the main and, in places, the only road that takes you around the island. At several points, the road runs alongside the ocean, with waves overtopping and undercutting it during high tides and strong swells.

Nowhere is that more apparent than in Ka'a'awa. There, last March, the state Department of Transportation undertook emergency repairs to shore up a crumbling shoulder, the scene of earlier emergency repairs.

Now, however, the same section of road is once more in need of first aid. Under the DOT's plans for spot mitigation at areas along the highway in Ka'a'awa, Punalu'u, and Hau'ula, work is expected to be completed in January 2018, says the DOT's Shelly Kunishige. Longer-lasting erosion mitigation measures will be addressed in the department's update of its Statewide Highways Shoreline Protection Study.

At a meeting of the O'ahu Metropolitan Planning Organization last month, the DOT representative said that whenever the road collapses in that area, the DOT will work with the Army Corps of Engineers to respond within one week with emergency repairs.

Seawall Update: The Keaukaha seawall that was built without permits by Robert Iopa may be coming down, according to a source within the state Department of Land and Natural Resources' Office of Conservation and Coastal Lands (OCCL).

Iopa, the source said, agreed to remove the wall, which was the subject of the cover story in the May edition of *Environment Hawai'i*. Because the OCCL did not issue a notice of violation to Iopa, the source stated, if the unauthorized improvements are removed, the matter would be resolved.

In the past, the OCCL has been a stickler for requiring permits even for the removal of unauthorized structures.

When or if the wall is taken down, given the volume of backfill, there is a possibility that some of the fill would enter coastal waters, triggering the need for an Army Corps of Engineers permit before work commences. No Corps permit had been sought by press time.

American Samoa Sues: The National Marine Fisheries Service and Kitty Simonds, longtime executive director of the Western Pacific Fishery Management Council, are among the defendants in a lawsuit brought by the government of American Samoa. At issue is a rule adopted by NMFS in February that expands the so-called Large Vessel Prohibited Area (LVPA). Before the February action, almost all longliners had to fish outside of 50 nautical miles from the territory's coast. The intention was to prevent gear conflicts between the larger vessels and the fleet of smaller fishing boats, generally alia catamarans. The new rule allows the larger vessels to fish as close as 12 nautical miles from shore.

The territory claims in its complaint, filed March 4 in U.S. District Court in Honolulu, that the description of America Samoa's fleet of small boats is in error — that, in fact, the number of small boats that regularly fish in waters close to shore is much larger than what NMFS describes.

The new rule, while recommended to NMFS by the council, was not unanimously endorsed by all council members. The head of the territory's Department of Marine and Wildlife Resources (DMWR), Ruth Tafagi-Motiga, submitted comments on the proposed rule last September, in which she was harshly critical of the expanded fishing zone for large vessels.

Save the Date: *Environment Hawai'i* will have its annual dinner on Sunday, August 21 in Hilo, starting at 6 p.m. at the 'Imiloa Astronomy Center. Special guest speaker will be Robin Baird, a research biologist with the Cascadia Research Collective and author of a forthcoming book, ***The Lives of Hawai'i's Dolphins and Whales*** (scheduled for release later this year by the University of Hawai'i Press).

The cost is $65 per person, which includes a $20 donation to Environment Hawai'i, Inc. Call for reservations: 808 934-0115.

Quote of the Month

"If they leach or are applied directly into the water … we're throwing the dice on the next pandemic possibility."

— Jeffrey Murl, University of Hawai'i

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LETTER

Proclamation Ignores Impacts Of Feral Cats on Wildlife, Humans

We were alarmed to read that Hawai'i County Mayor Billy Kenoi proclaimed March as "advoCats Month" on the Big Island (*Environment Hawai'i*, May 2016). This proclamation, which endorsed Trap-Neuter-Return (TNR) programs, indicates a striking lack of understanding of the impacts of feral cats on people and wildlife.

All the main Hawaiian Islands have a serious feral cat problem, but TNR programs fail to reduce feral cat populations. Instead, they exacerbate the ecological and public health crises. Rather than slowly eliminating feral cats, as the mayor's proclamation would have us believe, TNR programs establish and maintain perpetual colonies of these feral animals.

Such colonies pose severe risks to human and wildlife health. *Toxoplasmosis*, for example, is a disease that can cause miscarriages, fetal deformities, blindness, and death in people. New studies have also linked human infection with mental disorders such as schizophrenia.

Toxoplasmosis is spread by cats. Infected cats excrete tiny infectious, parasitic eggs in their feces in parks, beaches, and neighborhoods where they roam, and these eggs persist and remain viable for years in soil and water. Accidentally ingesting or inhaling just one egg is enough to cause infection.

Unfortunately, the evidence indicates that cats have caused widespread environmental contamination throughout Hawai'i. A growing number of these infections with *toxoplasmosis* have killed Hawaiian monk seals, nene (the Hawaiian goose), and 'alala (the Hawaiian crow). For 'alala, which are set to be introduced to Pu'u Maka'ala Natural Area Reserve this year, the threat from cat-spread *toxoplasmosis* is especially concerning. As *Environment Hawai'i* reported last month ("NARS Commission Grants Permit for 'Alala Release at Pu'u Maka'ala"), protecting this highly endangered bird from *toxoplasmosis* is one of the release team's biggest worries. This cat-spread pollution, however, is only made worse by TNR programs, such as those run by advoCats, that maintain feral cats roaming outdoors.

Feral cats are also a major non-native predator that kill endangered native birds such as palila, 'ua'u (Hawaiian petrel), and ae'o (Hawaiian stilt). A single feral cat, hungry or not, can devastate Hawai'i's native birds, many of which are found nowhere else in the world.

We recognize the good intentions behind Mayor Kenoi's proclamation and the work done by advoCats, and we agree wholeheartedly that feral cat populations need to be reduced. What's needed, however, is not TNR but a management strategy that reliably reduces feral cat numbers while simultaneously protecting people and Hawai'i's precious wildlife. The best way to achieve these goals is to remove feral cats to a shelter, where they have the opportunity of finding a forever home, or relocate feral cats into safe and permanent enclosures, where groups such as advoCats can look after them. These solutions offer the best chance of responsibly reducing, and ultimately eliminating, Hawai'i's feral cat problem.

PHOTO: MICHAEL WALTHER / WIKIPEDIA

A feral cat at Honouliuli (O'ahu) with a dead (inset) Hawaiian coot (federally listed endangered species). The cat has a notched ear, indicating that it is part of a managed colony.

Chris Farmer
Hawai'i Program Director
American Bird Conservancy
Hawai'i Volcanoes National Park

Grant Sizemore
Director of Invasive Species
American Bird Conservancy
Washington, D.C.

CECs from page 1

be the case with respect to CECs.

The department's current guidelines, last updated in January, are "not very restrictive," the DOH Safe Drinking Water Branch's Robert Whittier said after Murl presented his findings during a talk last month. As the state encourages more widespread reuse of wastewater, Whittier continued, the DOH would like to monitor CEC levels to ensure any necessary action is taken before they become a problem.

Although Murl says CEC levels found so far in effluent are so low they probably wouldn't even be considered trace contaminants, he cautioned, "We need to keep monitoring these compounds. They have poorly understood impacts, but are frequently detected."

Future Plans

Treated wastewater has been used for irrigation in Hawai'i for nearly a century. According to a 2013 water reuse plan developed for the state Commission on Water Resource Management, recycled water was used on sugarcane fields in Waialua, O'ahu, as early as 1928. And in the 1960s and '70s, the Pioneer Mill Company on Maui blended chlorinated effluent from the Ka'anapali sewage treatment plant with groundwater to irrigate 400 acres of sugarcane fields. By the late 1970s, effluent from nearly 20 wastewater treatment plants was being used to irrigate golf courses, crops, and lawns across the state, mainly on O'ahu. In total, the plants supplied about 10 million gallons a day (mgd).

Over the years, recycled water use has climbed steadily. By the early 2000s, the use of wastewater for irrigation had more than doubled to 23 mgd. By 2011, it had reached more than 30 mgd, which is still less than 20 percent of the total amount of treated wastewater.

As state and county agencies seek to protect potable water supplies, the use of recycled wastewater will probably continue to grow. On O'ahu, in particular, an ordinance instructs the Honolulu Department of Water Supply to require large, landscaped areas such as golf courses, parks, schools, cemeteries and highways be irrigated with non-potable water if it's available. What's more, the Commission on Water Resource Management's 2014 Central O'ahu Non-Potable Water Master Plan identifies treated effluent as the main non-potable water source for state agricultural lands purchased from the former Galbraith Estate and for lands surrounding Kunia Road. Together, those areas are expected to need nearly 20 mgd of non-potable water.

The plan, prepared by the consulting firm Brown & Caldwell, acknowledges concerns surrounding impacts of recycled water use above aquifers used for drinking water, and it notes that the DOH, WRRC, the state Department of Agriculture, the U.S. Geological Survey, and the Honolulu Board of Water Supply had all initiated studies — including Murl's — to assess "the safety and efficacy" of irrigation with treated wastewater, giving particular attention to CECs.

"Once completed, the three studies will result in additional data and further guidance on the issue of long-term application of treated effluent over the potable water aquifer. More definitive information on whether emerging contaminants of concern will impact the underlying potable water aquifer from the application of treated wastewater will help to design and develop appropriate monitoring and further proactive risk assessment modeling, as needed," the plan states.

Narrowing the Field

"Anywhere we're searching for these compounds, we're finding them around the world," Murl said last month during a WRRC talk on his research. Referring to results from a recent USGS-BWS study, where the agencies tested for 62 CECs in Wahiawa Wastewater Treatment Plant effluent, Kaukonahua Stream (which receives the effluent via Lake Wilson), and waters in Haleiwa, he said, "they looked for 62 CECs and found 62 CECs."

What's more, he noted that in the effluent and the stream, one of the CECs found — the antibiotic sulfamethoxazole (SMX) — exceeded the level at which environmental effects have been found.

Although the DOH has never tested drinking water for CECs, Murl said he thinks they're probably there. If they are, it's likely their levels are relatively low. Whittier of the Safe Drinking Water Branch noted that, first of all, recycled water in Hawai'i is applied mostly downgradient from drinking water wells and, second, the further the effluent has to percolate to an aquifer and the longer it takes, the lower the resulting CEC concentrations.

The total number of CECs worldwide may exceed 10,000, Murl said, but current technologies can detect just 600 of them. That makes testing for their presence far too expensive to be undertaken regularly by government agencies, Whittier suggested. "When the USGS did a study in North-Central O'ahu for CECs and other wastewater indicators, the cost per sample set was in the thousands of dollars."

To determine which CECs the DOH might want to test for, Murl chose the 11 drugs that are most frequently detected in effluent and which also are likely to pose the greatest environmental impact.

"The most damaging is estrogen, which can work in 1 nanogram per liter," he said, citing cases where male fish exposed to estrogen in the environment have been found with eggs growing in their gonads. Estrogens are used in hormone therapy and birth control pills; Murl chose to assess three of them.

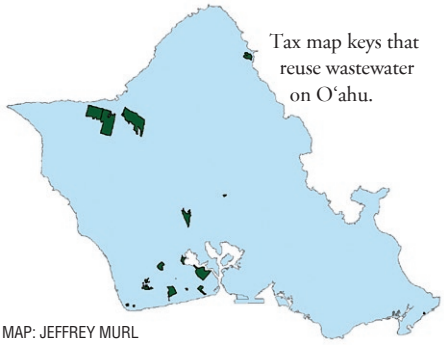
Given growing concerns worldwide about the development of antibiotic-resistant bacteria due to rampant antibiotic use, Murl also assessed six commonly prescribed antibiotics.

These "nightmare bacteria" can kill half of those infected with them, he said, adding, "If [antibiotics] leach or are applied directly into the water … we're throwing the dice on the next pandemic possibility."

Murl also assessed Carbamazepine (CBZ), an epilepsy medication that studies have found to be detrimental to mussels and block reproduction of non-biting midges.

"It's not a far stretch to say these CBZs are moving through food chain," he said.

Finally, Murl assessed Propranolol (PPL), a beta blocker used to treat high blood pressure and which has been found to lower egg production of some species of fish.



MAP: JEFFREY MURL

'First Order Swipe'

Using a modified model that was originally devised by the university's Department of Civil and Environmental Engineering to assess the likelihood of pesticides to leach past soils , Murl assessed the leaching potential of CBZ, PPL, SMX, Estrone (E1), Estradiol (E2), Ethinylestradiol (EE2), Azithromycin (AZM), Clarithromycin (CLR), Roxythromycin (RXM), Ciprofloxacin (CIPRO), and Ofloxacin (OFLOX) throughout all of O'ahu.

He found that CBZ, CLR, CIPRO, and PPL were all likely to leach throughout the island (except for conservation areas, where sewage discharge isn't expected.) OFLOX, RXM, and AZM were likely to leach through all but the southwest corner of the island. None of the estrogens were likely to leach. And as for SMX, the model found that it would likely leach in a few scattered areas, but it was uncertain whether it would leach in the rest of the island.

Given his seemingly dire results, one audience member at his recent talk asked whether they mean that wastewater shouldn't be reused on the island.

"I actually think recycling wastewater is great," Murl replied. "The model is just kind of a first-order swipe. It's not a definitive, 'this will happen; this won't happen.'"

Whittier added that part of the motivation behind the study was to narrow down the number of CECs the DOH should test for. If Murl's results are validated with actual monitoring data, the department will be able to use the model to get a good idea of what's likely to be in the aquifer.

"We don't have the budget to sample for 62 CECs. We might have the budget to sample for five. We can take this large data set … and reduce it down to something manageable," he said.

Given Murl's results, Whittier said, "maybe we're applying the recycled water in the wrong spot. Maybe we should do it upslope rather than on the coast."

Keeping recycled wastewater reuse upslope increases the ability of soil to filter out CECs, gives the contaminants more time to degrade, and gives those degraded CECs a chance to be further diluted with groundwater before they're discharged into the coastal zone, he stated in an email.

What's Next?

Even though the DOH's treated wastewater use guidelines were revised recently, Whittier said the department will continue to update them and that it will, at some point, include testing requirements.

"Most states only require basic chemical tests that include pathogens, chlorine, nutrients, some organic contaminants, and disinfection byproducts. … Likely our requirements will be similar," he said.

As the state moves toward more widespread use of recycled water in upslope areas, the DOH intends to periodically sample recycled water as well as water in soils to determine where selected CECs go and what happens to them, he added, noting, "This will be likely be a collaborative partnership between DOH, the recycled water providers and users, and the University of Hawai'i."

In addition to monitoring efforts by the DOH, Michael Cooney, Marek Kirs, and

Land Board Set to Hear Arguments In Dispute Over A&B's Water Lease

Cry me a river.

That's basically what attorneys with the Native Hawaiian Legal Corporation had to say about arguments made last month by Alexander & Baldwin, Inc.'s attorneys that it would cost too much — "several million dollars" — for it to install water meters at every stream diversion on state land that feeds into its East Maui Irrigation System.

Those meters, which the NHLC wants the state Board of Land and Natural Resources to require A&B to employ, would provide the data necessary for the board and the state Commission on Water Resource Management (CWRM) to determine how much water is taken from each stream, thereby enabling them to determine more accurately how much should remain in the streams to protect public trust purposes. Currently, the company provides the state only with information on an estimated aggregate amount of water it diverts to Maui County and to the company's agriculture fields in Central Maui.

In addition to arguing that the meters are "cost-prohibitive" and "physically challenging" to install, A&B's attorneys have called the NHLC's request excessive and unnecessary, noting in a filing with the Land Board last month that CWRM "is already tasked with setting interim instream flow standards (IIFS) to satisfy the public trust." But in a May 20 response, the NHLC challenged A&B's claims of financial hardship, noting that the company is a two billion dollar corporation that has recently spent "millions and millions of dollars" buying real estate in Kailua, Kahala, and Manoa on O'ahu. What's more, the NLHC argues, the company has for decades been paying the state about a quarter of a penny per 1,000 gallons of diverted water and charging the county 24 times that amount to meet the domestic needs of Upcountry Maui. In the meantime, the NHLC's client, Na Moku Aupuni o Ko'olau Hui, has argued that its members lack sufficient water for their taro farms in East Maui and that flows remaining in the diverted streams are inadequate to provide sufficient habitat for culturally important stream organisms.

"[A&B] has been allowed to plunder public waters for over a century, but has never been required to measure how much water it hauls from each stream daily. Neither the BLNR nor the CWRM can make prudent decisions about the use of public streams without basic information as to how much water is being taken," the NHLC stated, adding that Board of Water Supply customers statewide must install meters before any water is supplied.

On June 23, as part of the contested case over A&B's 2001 request for a long-term license to continue diverting East Maui streams, the Land Board will hear arguments from both sides about the meters, as well as Na Moku's other recent requests that the board do the following: halt A&B's diversions except for those necessary to provide up to 8.4 million gallons of water a day needed by the Maui Department of Water Supply, deny A&B's "incomplete" application because it lacks any environmental assessment or impact statement, and order A&B to identify by June 30 its current and future water needs and alternative water sources.

Roger Babcock of the University of Hawai'i are investigating wastewater treatment options that could cheaply and significantly reduce CEC levels in effluent.

"Although technologies exist to treat wastewater to any degree of desired purification, the majority are cost prohibitive and thermodynamically unsustainable from an energy or materials consumption perspective," they write in an abstract of their study. "It is increasingly obvious that the expectation is to have large and massive centralized wastewater treatment facilities upgraded to degrade the emerging micro pollutants and in the process produce reuse water of sufficient quality. …

"Results from our work are expected to show that application of low-energy, low-chemical, anaerobic-aerobic biofilm reactors linked to downstream unit operations employing disinfection (i.e., UV irradiation) and advanced oxidation processes (i.e., UV plus H2O2) can cost-effectively produce reuse water devoid of these emerging pollutants."

Their project is expected to conclude in February of next year. — ***Teresa Dawson***

Emerging Contaminants in the Ocean

While wastewater treatment plants are known havens for contaminants of emerging concern (CECs), some 70 million gallons of untreated sewage a day are discharged into the environment via the tens of thousands of cesspools and septic tanks scattered throughout the state.

Several studies have found chemical indicators of cesspools in the shallow coastal zone, and "since CECs are undoubtedly a component of cesspool effluent, they also are being discharged," says Robert Whittier of the state Department of Health's Safe Drinking Water Branch.

So which releases more CECs into the environment, WWTPs or on-site disposal systems (OSDS) such as cesspools and septic tanks? According to Whittier, it may not be the amount that matters as much as the effect.

WWTPs release more than twice the amount of wastewater than do OSDS. "However, this is an apples and oranges comparison," he says, noting that most treated wastewater is discharged through deep ocean outfalls, while the rest is injected into the ground or used for irrigation.

"The impact footprint of wastewater injection is likely more intense, but distributed over a smaller area than that of recycled water application and OSDS discharge," he continues. "Recycled water is distributed over a larger area and benefits from a high level of treatment and natural remediation processes in the shallow subsurface after it is applied. OSDS effluent like recycled water is distributed over a wide area due to the distance between residences using this type of wastewater disposal. However, OSDS effluent receives no treatment (cesspools) or much less treatment (septic systems) than wastewater that is either injected or recycled. The comparison between WWTP wastewater impacts and that of OSDS would have to be done on a case-by-case basis." — ***T.D.***

Filings to the Land Board last month from A&B and Na Moku suggest the hearing will be lively, to say the least.

Halting the Water

In January, the 1st Circuit Court ruled that the four permits governing A&B's water diversions were invalid, prompting the state Legislature to pass House Bill 2501 to circumvent the court's ruling to keep the water flowing in A&B's ditches while its subsidiary Hawaiian Commercial & Sugar completes its final sugarcane harvest and it prepares to transition its fields into diversified agriculture. The bill would allow A&B to obtain a "holdover" of its diversions until a final decision is made on its lease application, so long as the Land Board determines the holdover is consistent with the public trust doctrine. Gov. David Ige had not signed the bill by press time.

Whether the bill becomes law or not, the Land Board must decide whether A&B's continued diversions comply with the public trust doctrine, which calls for the protection of instream uses and the provision of water to meet traditional and customary practices, among other things. As the NHLC pointed out in its May 20 filing, the Hawai'i Supreme Court's December 2015 ruling in the legal challenge to the Conservation District permit allowing construction of the Thirty Meter Telescope states, "[I]t is manifest that a government body is precluded from allowing an applicant's proposed use to impact the public trust in the absence of an affirmative showing that the use does not conflict with those principles and purposes."

In arguing for the continuation of the status quo, A&B's attorneys noted that the integrated nature of the East Maui Irrigation system makes it impossible to isolate the sections that provide water to the county while "shutting down everything else." The attorneys added that the company also needs to be able to access the permit areas to maintain those portions of the ditch system that serve the county.

"If [East Maui Irrigation Co., A&B's subsidiary] were to stop maintaining the access roads to such portions of the system … they would become impassable due to overgrowth within just a few months. Reopening the roads after an extended period of non-maintenance will then again take several months and would end up being more costly than simply continuing to maintain them," the attorneys wrote.

Altering the irrigation system to completely restore stream flow would take years and cost millions of dollars, and would cost millions more to reverse should diversions be allowed to resume in the future, they continued. They also raised a new argument not mentioned during any legislative hearings: Requiring diversions to cease would be inconsistent with a March 18, 1938, agreement between the Territory of Hawai'i and A&B, which gives the company the "right to access and operate diversions on state land."

A&B's attorneys pointed out that the company plans to permanently restore water to all streams important to East Maui taro farmers and that it supports a recommendation from the hearing officer in a contested case before the Water Commission on East Maui IIFS that some 18 mgd be immediately released into several East Maui streams while the commission decides on revised flow standards that reflect A&B's change in current and future water needs.

The Maui DWS joined A&B's memo in opposition to the NHLC's proposals.

Delay

In its response to A&B, the NHLC attorneys disputed each and every one of the company's arguments against halting the diversions. For one thing, they note, the Circuit Court's decision invalidated the company's permits to divert the water. They also argued that the 1938 easement agreement does not give A&B the right to divert East Maui streams and they questioned the company's claims that it is incapable of limiting ditch flow to meet only the county's needs.

"There is no legal basis for A&B to be diverting any water within the areas covered by revocable permits [S7263-7266] except for those diversions needed to provide up to 8.4 million gallons of water daily to the Maui County Board of Water Supply, as ordered by the court," they wrote. "Furthermore, all the evidence before the BLNR demonstrates that A&B has no current use for any of the water taken from East Maui."

They cited a number of state Supreme Court decisions that require water applicants to, among other things, demonstrate their actual needs and the absence of practicable alternative sources. The NHLC noted that A&B has the ability to pump some 70 mgd of groundwater. (The hearing officer in the Water Commission's contested case hearing estimated the company could safely pump more than 80 mgd from its brackish well.)

A&B's claims that it has moved to permanently restore certain streams and that it supports the interim release of 18 mgd are unsupported, they continued.

"Without any evidence — and without any numbers — A&B claims that 'significant amounts of water have been returned to East Maui streams.' How much water has been returned to each stream?" they asked.

With regard to the interim release, they wrote, "A&B's agreement comes with a plethora of vague caveats, making its promises unenforceable. Actual implementation of the interim releases is subject to its unilateral concerns regarding 'weather conditions' (no releases if there is a drought?) and operational considerations (A&B wants to continue diverting water for its operations?) … In any case, the hearing officer's recommendation provides far less water than the streams require."

"A&B's reasons to deny the halting of diversions boil down to one word: delay. A&B wishes to delay its day of reckoning as long as possible," they wrote.

Should the Land Board decide not to halt the diversions or reject A&B's application, the board should at least require the company to install the meters, they argued.

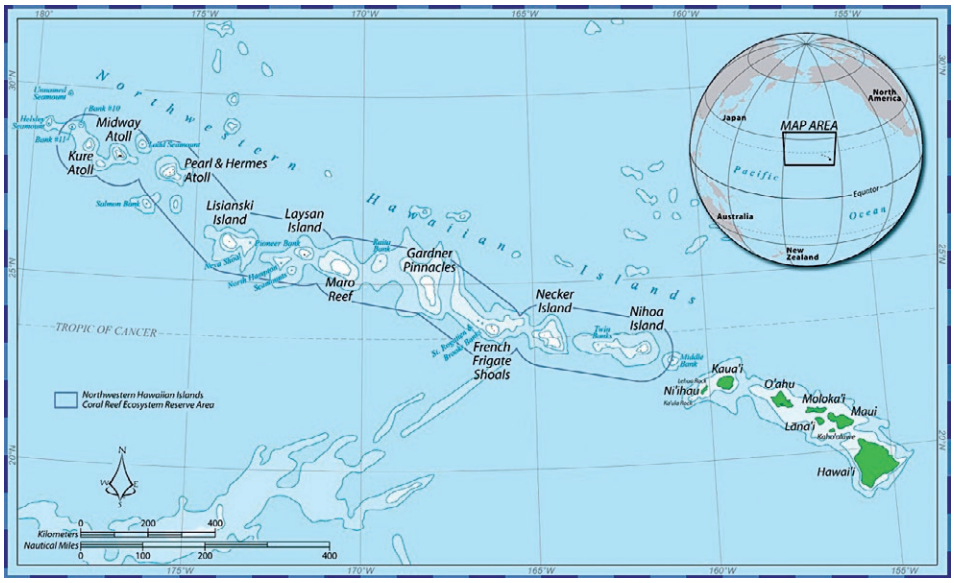
"As a public trustee, the board must demand all information necessary to safeguard the resource. … If A&B does not provide that information, it should not be permitted to take water from the streams," they wrote.

"If A&B reacts petulantly to the terms of use that the BLNR imposes, then restore East Maui streams and let A&B cry itself a river of its own making," the NHLC concluded.

— T.D.

PHOTO: BISHOP MUSEUM
HAWAI'I DIVISION OF AQUATIC RESOURCES

Diversion at Honopou Stream in East Maui, which takes 100 percent of the flow.



Advisory Council Debates Details Of Proposed Monument Expansion

I'm all for expanding marine protected areas. The bigger the better, as you know. The devil is in the details," the Hawai'i Audubon Society's Linda Paul said last month of the proposed expansion of the Papahanaumokuakea Marine National Monument's boundaries in the Northwestern Hawaiian Islands (NWHI) from 50 nautical miles out to 200.

Last month, she and her fellow members of the NWHI Ecosystem Reserve Advisory Council (RAC) agreed to generally support the monument expansion, so long as the reserve's boundaries are similarly expanded to ensure the entire area continues to be managed by the National Oceanic and Atmospheric Administration's marine sanctuaries office and not the National Marine Fisheries Service. The RAC also voted to allow permitted vessels to discharge wastewater within the expanded area and to support the provision of additional resources for management and enforcement. But the council stopped short of endorsing the full proposal floated earlier this year by several prominent native Hawaiian leaders. Specifically, the council did not reach consensus on whether the state Office of Hawaiian Affairs should become co-trustee of the monument and whether waters around Middle Bank just north of the Main Hawaiian Islands should be left out of the expansion so people from Ni'ihau and Kaua'i can continue to fish there.

The RAC, which is currently lacking any representatives from the fishing industry (they resigned), is expected to meet again to discuss the expansion further and perhaps reach consensus on a number of outstanding issues. If and when it meets again, the issue of who gets to continue to fish and where will certainly be revisited.

Middle Bank

In the original letter from Polynesian Voyaging Society director Nainoa Thompson, former state Department of Land and Natural Resources director William Aila, Office of Hawaiian Affairs director Kamanaopono Crabbe, and others to President Barack Obama, one of the main arguments for an expanded monument was that it would help protect travel routes of several protected species, including the endangered Hawaiian monk seal.

At last month's meeting, Paul stood her ground against the proposal to keep part of Middle Bank — an important foraging area for monk seals — open to fishing. She cited David Laist of the Marine Mammal Commission, who has said more than once, "If you protect half a bank, you protect none of it."

When asked by Paul to explain the reasoning behind the compromise, Bob Richmond, a coral reef expert working with the Pew Charitable Trust and a proponent of the expansion, replied, "There has to be a reality check. There's science and what's realistic. There was some realization there must be some balance. … On a particular bank, there are things that may be discussed. Frankly, we're looking at the big picture."

And what he means by 'big picture' is the effect a monument expansion will have not only on local fish stocks, but on ecosystems worldwide.

"If Hawai'i does this, I guarantee there's going to be competition for the largest MPA [marine protected area]," he said.

Despite Richmond's explanation, Paul said she would not consider ceding Middle Bank without hearing from the Marine Mammal Commission.

Even though it would be "politically expedient" to leave the bank out, the area is biologically important to monk seals, she said. "I'm not willing to give up. I've been hearing for too many years we've got a monk seal population that's sliding down. It's this group's responsibility to protect that population," she said.

To this, Richmond warned, "Don't let the perfect be the enemy of the good."

Longliners

At the meeting last month, a presentation by NOAA's Daniel Wagner on the results of recent research cruises in the monument and proposed expansion area convinced at least one skeptical RAC member that there are vast natural resources outside the current boundaries that are worthy of protection.

Among other things, Wagner noted that 40 seamounts have now been mapped within the monument and there are many more that are known but haven't yet been mapped. What's more, he added, there are probably just as many seamounts outside the monument, within the U.S. Exclusive Economic Zone.

"I've been a doubter of expansion, envisioning this space as empty water … I was picturing an abyssal wasteland," said RAC member and University of Hawai'i marine biology professor Cynthia Hunter. "The abyssal plains were not that at all, but high-density biological communities … I'm converted completely."

While Wagner suggested the sea floor, rich in manganese, might one day be targeted for destructive mining, others, including Paul, suggested the threat was not imminent. Mining concerns aside, RAC member Eric Roberts, a U.S. Coast Guard representative, and Joshua DeMello of the Western Pacific Fishery Management Council (Wespac) asked Richmond what he saw as the resource threats in the unprotected area.

"What is the problem that you're trying to solve that needs expansion? … Fishing is probably the only thing going on. There is no science that says there is overfishing in that area," DeMello said.

In recent years, Hawai'i-based longliners set nearly 10 percent of their hooks in waters around the NWHI and caught about five

PUC Staff Excoriates Hawaiian Electric Over Cancellation of 3 O'ahu Solar Farms

The Public Utilities Commission staff investigated Hawaiian Electric's cancellation earlier this year of contracts for three utility-scale solar farms on O'ahu, all owned by subsidiaries of the financially troubled SunEdison, Inc., and the resulting report casts Hawai'i's electric utility giant in a light that is anything but flattering.

Although the report concluded that HECO's actions "cannot be viewed as serving the best interests of the state or the people of Hawai`i," it is ultimately up to the commission to make a formal determination on this question. That determination, the report states, could become relevant should there be an attempt to recover costs associated with these power purchase agreements (PPAs) from ratepayers, costs and/or damages associated with any failure to meet legislatively mandated renewable portfolio standard goals due to the termination of these projects, or costs associated with efforts to get commission approval of replacement PPAs, among other things.

The three solar farms – at Waiawa, Mililani, and Kawailoa – were designed to have a total capacity of 112 megawatts. They and one other solar farm (EE Waianae Solar Project) were all approved last summer by the PUC, which, in a press release, stated that the four projects "were based on the commission's determination that [they] represent the best likelihood of providing long-term customer value and are reasonable and in the public interest." The three SunEdison projects accounted for more than 81 percent of the total capacity to be developed by all four plants.

A 'Premature' Decision

Commission chair Randy Iwase asked the PUC staff to explore "the relevant facts and circumstances surrounding HECO's decision to terminate the PPAs," a decision announced by HECO in early February.

Up until the start of the year, the report states, "the projects were progressing normally – that is, some things proceeded smoothly while others did not. Generally, accommodations were made between the parties with respect to various delays and other problems, and construction moved forward." The three projects were in various stages of construction, with SunEdison having sunk into them more than $42 million (for land, design and engineering, site work, and equipment, among other things) while also paying HECO $31.4 million for interconnection work.

Even as work on the projects was proceeding, SunEdison was experiencing financial difficulties, with its stock prices plunging in the second half of 2015. By late December, the company had found a willing buyer for the three solar farms in D.E.

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to six percent of their total haul there, according to logbook reports. Richmond said he believed such a small cut in total catch is worth it given the potential environmental returns, especially when longliners catch the vast majority of their fish outside the U.S. exclusive economic zone.

When Roberts pressed Richmond to define the threat to the area's resources, Richmond responded that it was the "overfishing issue," and pointed to the decline in tuna stocks. "If we don't take major action now, game over." (Hawai'i longliners fish mainly for bigeye tuna, which has been found to be subject to overfishing in the Western and Central Pacific and is considered by some to be overfished. However, effort to catch bigeye is far heavier in the Western Pacific than it is in waters around Hawai'i.)

RAC member Rick Gaffney said he thought it would benefit fishers to have a large protected area that would feed surrounding waters.

"If we have to displace a small portion of the fishing industry, which happen to be newcomers … I don't have a problem with that," he said.

But apparently some state legislators — copied on an opposition letter Wespac sent to the White House — did. Last month, several of them sent their own letters denouncing the expansion for some of the same reasons Wespac had given. Given that, Tim Johns, RAC chair and also a former DLNR director, suggested at the meeting that longliners could be accommodated within the monument expansion and asked DeMello whether, if that were the case, Wespac would support expansion.

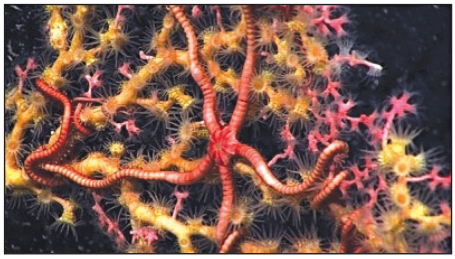
"Probably. We could get council members and all fishermen to support that," DeMello replied.

Paul saw the controversy over longlining in the monument as an opportunity to gain greater protection for monk seals.

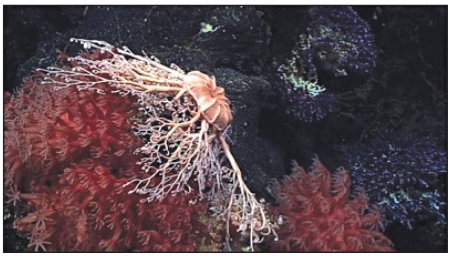
"Politics is horse trading. If we're going to do some horse trading, I'd rather give something to the longliners and get Middle Bank. I think Middle Bank is more important. I feel sorry for Kaua'i fishermen, but what about longliners? They're fishermen, too. You're going to protect one group of fishermen at the expense of another. If we're concerned about fishermen, we've got to be concerned about all of them, not some of them," she said.

When it came down to voting on whether or not to support an accommodation for longliners, however, only a few RAC members, including Johns and Paul, supported it. Hunter also lamented that her concerns about manganese mining were brushed off.

After the final votes, Johns, apparently eager to have a decision on the matter made by September when the International Union for Conservation and Nature will hold its meeting in Honolulu, pressed the RAC to meet again so it can send an official letter to the White House this month. (Johns is the chair of the congress's National Host Committee.) ***— T.D.***



Parazoanthidae *Bullagummizoanthus emilyacadiaarum*



Alcyoniidae *Bellonella* sp.?

Corymorphidae

PHOTOS: NOAA OCEAN EXPLORATION AND RESEARCH

Shaw Renewable Investments, Inc., a company with deep pockets and a solid history of managing large projects such as those SunEdison was developing. Shaw already owns two facilities on O'ahu: the Kawailoa wind farm and Kalaeloa Two, a solar farm on the south side of the island.

"SunEdison's financial condition was certainly no secret to HECO," the report states, "and prompted the developers and SunEdison to seek remedies that would keep the project on schedule and assure completion." However, HECO seemed to have little interest in the proposal to sell the projects to Shaw and, the report continues, adding, "Instead, HECO appeared to devote the majority of its efforts to pursuing termination."

By January, as SunEdison was attempting to close the sale to Shaw of its O'ahu projects, it fell behind in certain milestones set forth in the power purchase agreements, including locking in construction financing.

As late as January 22, HECO was negotiating with SunEdison and Shaw, offering to forgo exercising its option to terminate contracts for the three projects if the developers met certain conditions. The PUC staff noted that in a January 26 letter, Shaw accepted "virtually all of these conditions and requested several modifications."

"Nevertheless," the report continues, "rather than continue negotiations and attempt to complete the agreement, HECO decided that the conditions it had proposed could 'no longer provide adequate assurance that the projects will be completed consistent with the terms of the approved PPAs…' Thus, on February 1, 2016, HECO revoked its proposed offer to forbear its termination rights under the PPAs. SunEdison's proposed exceptions to terms contained in HECO's January 22 offer, the company said, were "extremely broad and unreasonable given Seller's [SunEdison's] current status of performance."

In addition, HECO was now raising concerns about how a potential SunEdison bankruptcy could stall the sale to Shaw and ultimately delay the projects. Just a day later, HECO notified SunEdison that it was considering its option to terminate the power-purchase agreements.

SunEdison replied on February 5, noting that it was going to cure the defaults by selling the projects to Shaw, with the deals for all three being completed by April 15. In addition, construction at all three sites would be completed by the guaranteed commercial operations date. "As such, while the intermediate milestone of financing was not achieved by the planned date, the much more significant final milestone of finishing the projects will be achieved on time, so that the low-cost renewable energy will be available to HECO and its customers on schedule." It was HECO itself that was identified as the obstacle to moving forward with this plan: "to date, HECO has refused to forbear from terminating the PPAs to enable the financing to close. HECO's forbearance is the last remaining significant item required for sellers to complete the sale to D.E. Shaw, finance the projects, and resolve the missed milestones."

HECO was unmoved. On February 12, it issued termination notices to SunEdison for each of the three projects. As summarized in the PUC staff report, the rationale for termination was given as: "(1) the alleged failure of all three project deelopers to meet the construction financing closing milestone and (2) the alleged failure of two of the three project developers to make a timely payment, although in each case payment was made after the due date. With respect to the latter, HECO has not stated, to staff's knowledge, that there is any irreparable harm to HECO as a consequence of these failures."

> *"SunEdison's financial condition was certainly no secret to HECO."*
> ***— PUC staff report***

In fact, far from harming the company or its ratepayers, SunEdison and Shaw were offering to make concessions that would significantly lower the price of electricity sold to HECO. On February 23, they filed a reply to HECO's termination notice with the PUC, disputing the claims made by HECO and noting that they had offered to sell power to HECO at 12.378 cents per kilowatt hour, a reduction of roughly 9 percent from the price stipulated in the power purchase agreements. They also pointed out, the PUC staff noted, how HECO's intention to replace the three projects with other developments "would extend, not shorten, the time necessary to get projects of this size into operation (end of 2016 versus at least 20 to 30 months to do a new solicitation, obtain approvals, and build)."

'Voluminous … Documents'

In March, the PUC staff scheduled a conference on March 11, intended to allow it "to follow up as necessary with respect to the various responses" to information requests made to all parties involved.

"On March 4, 2016, the commission's chief clerk was informed that … HECO planned to file 4,500 pages of non-confidential material (4,000 pages of which are copies of various emails) and 1,500 pages of confidential material (which are copies of various emails)," the report notes. Because of the time required to read through this material — a task which, the staff observes in a footnote, "was greatly hampered by HECO's failure to provide copies of the thousands of pages of emails in searchable format" — the conference was rescheduled to March 18. (A transcript of the hearing, frequently cited in the staff report, is available for review at the PUC office in Honolulu.)

Still, by April 12, the staff, led by chief PUC counsel Thomas Gorak, had completed its work and filed its report. Its conclusions are highly critical of HECO.

First, there is the matter of SunEdison's precarious financial position. Even given this, the report states, in light of Shaw's "expressed willingness to acquire, construct and operate the three projects, HECO could and should have aggressively pursued a way by which to ensure that construction of these projects would continue … even if a SunEdison bankruptcy occurred."

The February 12 termination notices "were issued summarily, that is, they were issued before Shaw's ability to acquire the projects and the issues related to SunEdison's bankruptcy were fully explored," the staff report states. By terminating the contracts, HECO put itself in a position "of being able to dictate terms in exchange for its agreement to withdraw the February 12 termination notices without complying with any of the requirements contained in the now-defunct PPAs as approved by the commission."

The staff also takes note of the role HECO suitor NextEra played in shaping the eventual outcome. In the weeks before the notices were issued, "HECO stated that it was operating on parallel tracks," the report says. "That is, according to HECO, it began to consider terminating the PPAs on or about January 27, 2016, and requested NextEra's approval to do so on February 10, 2016. Thus, while HECO was considering termination, it was, at the same time, both (a) continuing to work with SunEdison and Shaw … and (2) continuing 'business as usual' with respect to interconnection work."

Solar Coalition Asks PUC to Raise Cap on New Rooftop PV Systems

On May 16, a coalition of photovoltaic system installers and solar energy advocates filed a motion with the state Public Utilities Commission, formally asking it to lift the 35 megawatt cap it put in place last fall when it ended the net-metering program.

The "accelerating pace of [customer grid supply] tariff applications may fill any remaining capacity on some islands by as early as the first week of June 2016 and will likely fill any remaining capacity on all islands by the beginning of August 2016," the coalition stated in its motion. In addition, adjustment of the cap would "help maintain the industry's interim viability." According to the Hawai'i Solar Energy Association, 73 percent of solar installers surveyed "report workforce reductions of 35 percent on average" since the cap was imposed, with further reductions likely when the remaining net-energy metering projects have been installed.

Under the PUC's order, the 35 MW of new rooftop solar capacity added under the grid-supply option is distributed among the service areas of Hawaiian Electric. O'ahu is allowed 25 MW, Maui County is allowed 5, and Hawai'i island is allowed 5. As of late April, the company reported that on O'ahu, 9.5 MW of grid-supply solar had been installed or in the pipeline; 1.3 MW on Maui; and 2.4 MW on Hawai'i island. That means 38 percent of the total allowed capacity for new rooftop solar systems is already spoken for.

In each week in April, the average amount of capacity added to the grid each week came to 1.16 MW (with 0.77 MW on O'ahu; 0.27 on Maui; and 0.12 on the Big Island). If this number holds steady, the cap on new Maui systems could be reached in the first week of July, that on O'ahu by the end of August, and that for Hawai'i island by early November.

But, the coalition argues, that pace will likely accelerate "as customer familiarity with the [customer grid-supply] tariff continues to grow and pressure to install projects builds with in response to the impending cap." A "more realistic" scenario, the motion states, has the O'ahu cap being reached in early July; that for Hawai'i island by August 12; and that for Maui topping out by June 10.

The PUC also needs to increase the cap, the solar parties state, so that the grid-supply option "can continue to serve its purpose as a bridge between [net metering] and more permanent [distributed energy resource] market structures." The customer self-supply option has been slow, they add, with just one system having come online to date.

Finally, the solar parties take note of the fact that Hawaiian Electric has cancelled three utility-scale projects that would have added 112 megawatts of solar power to O'ahu's grid. "Given that the HECO companies have no 'shovel ready' replacements for these projects and may not be able to replace the capacity of these projects for at least 20-30 months," the motion states, "there should be little or no detriment in allowing a fraction of that 112 MW shortfall to be filled by" the grid-supply customers.

— P.T.

As late as March 16, Shaw expressed its willingness to find a solution to the issues. A representative of Shaw "remained eager to find a commercially reasonable solution to the issues and was available to engage in face-to-face meetings in Hawai'i over a ten day period following the letter," the report states. But when HECO was asked at the March 18 conference whether it had agreed to meet, HECO responded, "No, Mr. Oshima" — Alan Oshima, the utility's CEO — "is away in Washington, D.C. He has received the letter and reviewed it but I'm not aware that there's been any discussions. He should be back in town next week."

To staff, this response suggested that "HECO did not feel any sense of urgency to attempt to resolve the issues."

Chief PUC counsel Gorak then asked HECO, SunEdison, and Shaw to report back to the commission by March 22 on the status of negotiations. "If there are any negotiations or if there simply won't be or aren't or they're finished, we would like to know that," he stated.

Bryan Martin of Shaw indicated that his firm was eager to move forward with the acquisition of the three solar farms and that he was "prepared to travel to Hawai'i for meetings this Thursday and Friday, March 24th and 25th."

Oshima, on the other hand, was not interested. His filing with the PUC on March 22 stated, "we do not anticipate our customers will be negatively impacted by an incremental delay… With continued declines in PV technology costs, coupled with the extension of the investment tax credit, our primary objective is to procure projects in a timely manner that offer the greatest benefit to our customers while furthering our progress in achieving Hawai'i's renewable energy goals."

As to that point, the PUC staff was highly critical. The statement by HECO that it did not anticipate harm to ratepayers given low oil prices and the expected decline in technology costs "is troubling to staff," the report states.

First, it notes, "HECO does not currently have an RFP [request for proposals] issued to replace the [SunEdison] projects. … Typical projects of this nature take 20 to 30 months to develop, obtain approvals, and construct. Moreover, staff observes that HECO initially sought waivers for approval of these projects in order that they be developed quickly. HECO's comments concerning delay at this point appear to be at odds with its original requests."

Second, "staff is concerned that HECO believes that decreasing prices are a reason to investigate and pursue ways to terminate commission-approved PPAs. … [I]f one waits to execute contracts in an era when solar prices continue to decrease, projects may never be built as one will always be waiting fot the next lowest price. Such an approach will not assist the state in reaching its RPS goals and ignores the time spent by the commission in analyzing and approving a given PPA." ***— Patricia Tummons***

For Further Reading

The PUC staff report is available on the Public Utilities Commission website. Go to http://puc.hawaii.gov. Select the "Dockets" menu, then enter 2014-0356 in the "Dockets Quick Link" box. Click on the "Documents" tab, then scroll down the list of documents to the April 12, 2016, entry. This is the link to the pdf file containing the full staff report.

HECO Customers Keep Paying Vig On Unused $144 Million in GEMS Fund

For a short while earlier this year, it looked as though the $144 million in the state's bond-financed Green Energy Market Securitization (GEMS) account might actually get used. Among the bills in the legislative package of Governor David Ige was a proposal to lend $100 million of that to the Department of Education. The money, he said, was to achieve his goal of cooling 1,000 classrooms by the end of the year.

To many, this seemed to fly in the face of the very rationale behind the GEMS program. When the Legislature established it in 2013, it was intended to reduce energy use, not support the purchase of equipment, such as air conditioners, that would in all likelihood increase demand. Also, the fund was supposed to make energy-saving systems, such as photovoltaic installations, affordable to people who otherwise would not be able to purchase them. Diverting such a large chunk of GEMS funds to public schools could have left this class of consumers without the ability to take advantage of the program in the way the Legislature had anticipated.

But by the time this year's legislative session wrapped up, any concerns over a disconnect between Ige's proposal and GEMS goals were moot. The Legislature opted to give the Department of Education $100 million in general funds to mitigate high temperatures in classrooms while increasing the schools' overall energy efficiency. Language in Senate Bill 3126 gave the rationale for rejecting the GEMS means of financing.

First, it says, general funds will give the DOE more flexibility: "The types of projects that the Department of Education would have been able to fund with green infrastructure loan funds were unclear and apparently limited to energy efficiency and conservation projects." Second, with general funds, there would be no need for the DOE to pay interest on a loan, as opposed to funds obtained through GEMS. Third, the measure points out, "the green infrastructure loan funds will remain available for projects that truly promote renewable energy and energy efficiency and conservation."

As a result, the GEMS program, administered by the Hawai'i Green Infrastructure Authority (HGIA), is right back where it was at the first of the year: with an account balance of more than $144 million, on which Hawaiian Electric utility customers are paying interest, principal, and associated fees of around $14 million a year. And while HGIA is attempting to devise new programs that might be supported with GEMS loans, for now, the class of potential GEMS beneficiaries seems to be shrinking practically by the hour.

'Dramatically Altered Prospects'

On April 29, the HGIA filed with the Public Utilities Commission its report on activities in the first quarter of 2016. To account for its ongoing difficulties in lending out capital in the way legislators intended, HGIA executive Tara Young referred to the PUC's decision to end the net-metering program last fall and to limit new solar grid-supply hookups to a total of 35 megawatts. "While the authority funded its first consumer photovoltaic ('PV') loans in January 2016, market demand for this product has declined precipitously," she wrote.

Still, she continued, the authority was "moving aggressively to retool existing programs and develop new means of deploying capital to get ahead of trends in the market."

But the list of accomplishments in the first quarter of 2016 suggest that HGIA is still in the rearguard when it comes to adapting its methods to the kinds of technologies that consumers have come to expect. Only in March, for example, did it finally allow loan applicants to submit forms online. "Prior to the online application," Young writes, "applicants were required to mail in or fax applications."

By the time the online application process was in place, however, applications for GEMS loans were all but dried up.

Not that there were ever that many in the first place. Of the 186 applications GEMS has received since the program began through March 31, which marks the end of the first quarter of 2016, credit was approved for just 20 and just four applicants had actually received loans, with a total value of $137,437. (In April, five more loans were approved having a total value of $160,673, making a total of nine loans underwritten with GEMS funds.)

New Directions

Among the initiatives described in the quarterly report and in HGIA's annual plan for the coming fiscal year is a loan product that would finance the purchase of battery storage systems, a technology not included in the current list of products approved for GEMS financing. The plan calls for earmarking $5 million in GEMS funds for loans for this purpose.

The state consumer advocate has raised concerns that this approach would further disadvantage lower-income ratepayers. In comments on the annual plan, the Division of Consumer Advocacy noted that the most likely class of ratepayers who would want battery storage would be those who had opted for the self-supply systems: "To the extent that the customer self supply option

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appeals to customers who have sufficient income and assets to pay for the still very expensive battery storage and are on circuits that already have high PV penetration levels, such customers are likely to be wealthier and in higher income brackets than the average customer who cannot afford to pay for battery storage."

Although repeating its support for distributed storage and advanced inverter technologies, the Division of Consumer Advocacy stated that it was concerned "with the use of ratepayer funds to finance investments for relatively affluent consumers, especially given the lack of evidence to date that the GEMS program has significantly benefited the truly underserved (i.e., low-income and hard-to-reach consumers)."

Young responded to this in the quarterly report. The agency's focus, she writes, "will shift to solutions that include PV with battery storage, which will be increasingly compelling solutions for all consumers, not only the affluent or early adopters, in the evolving renewable energy market. PV systems without battery storage will not be viable in the future once grid supply has been fully subscribed, possibly year-end 2016 or early 2017." (As discussed in a related article, the 35 megawatt ceiling on photovoltaic systems that feed into the electric grid could be reached much earlier than this.)

Commercial Products

HGIA also indicated in its annual plan that it was considering joining with local financial institutions in developing PV projects for commercial and non-profit customers. Although HGIA did have a non-profit loan product approved, the financial institution it had partnered with to handle loans in that sector dropped out last December.

This time, HGIA stated, it would work with local banks in a way that would give HGIA access to "other institutions' pipelines for loans," allowing it to "compete with agility in a crowded marketplace for renewable energy lending." For this, HGIA anticipates earmarking $10 million in GEMS funds.

Once again, the consumer advocate raised concerns, asking HGIA to "clarify how the commercial PV product differs from the non-profit and small business PV product that was terminated in December 2015. … The consumer advocate reiterates that it is critical to establish how the GEMS program product is materially expanding access to financing for customers, particularly underserved customers," especially given what HGIA acknowledges as the already "crowded marketplace for renewable energy lending."

'Serving Stakeholders'

No matter how nimble HGIA becomes in addressing consumer needs, it still faces numerous obstacles before its offerings are attractive and affordable enough to reach the targeted lower-income homeowner or compete with institutions that offer loans on the open market.

There's the fact that people whose homes are held in trust are excluded from receiving GEMS loans. According to the quarterly report, "almost half of the rejected applications to date" were from homeowners whose property was placed in a trust. Young says the HGIA will work to address this in the current quarter. When asked whether she thought it likely that this obstacle would be fixed in time to allow homeowners to take advantage of the grid-supply option before the 35MW ceiling is reached, Young stated that she was hoping to "develop a trust product and processing guidelines which may be available at the end of the summer."

Another obstacle is the high interest rates that borrowers with lower credit scores are asked to pay. "Currently the interest rate on the consumer [photovoltaic] loan is 6.5 percent to 9.875 percent, depending on the borrower's FICO score" Young writes in the quarterly report. "This tiered interest rate structure results in the underserved being charged higher, above-market rates." This practice, too, would be undergoing re-evaluation in the current quarter, she states.

Yet another feature of GEMS loans that makes them unattractive to homeowners of any income level is the fact that anyone wishing to write a check to pay their monthly loan balance is charged an additional $15. This is over and above the interest charge – which, at nearly 10 percent for homeowners with poor credit, can itself be challenging to meet.

Young was asked about this practice. "The policy was intended to cover the material cost and complexity of processing checks and create an incentive to use electronic payments, which significantly reduce program costs," she replied. "We are constantly reviewing policies like these to ensure that they are fair, transparent, and serve the needs of our stakeholders. This is one that we will certainly revisit in the coming weeks."

One of the means of financing loans issued under the GEMS program was intended to be the on-bill financing mechanism that Hawaiian Electric and other parties were developing in a separate PUC proceeding launched in 2011 and renewed in 2014. Last month, the PUC suspended the effort, citing a lack of interest among qualified parties in administering the program, among other things.

'Disappointing Uptake'

A year and a half ago, the Department of Business, Economic Development, and Tourism put a $150 million lien on HECO customers that won't be paid off until 2028. Since then, costs of administering the program through March 31 were $1.6 million. Ratepayers have been charged $14 million over the last year in interest, principal and fees to service the debt.

Meanwhile, the GEMS fund balance of $145 million, still sits in the Bank of New York Mellon, earning interest at less than one-tenth of one percent a year.

"On a positive note," Young writes in the quarterly report, "the first GEMS loans were funded in January and nine consumer PV loans have been funded to date totaling approximately $300,000. In spite of this positive milestone, uptake of this program has been disappointing."

— Patricia Tummons