

One giant ice maker and other energy innovations hitting Cayman

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cent industry generates.

A decision about raising the limit to 5MW was due Feb. 1, but has been delayed.

"The 4MW limit is close to being fully subscribed," said CUC President Richard Hew. "CUC and [industry overseer] the Electricity Regulatory Authority are currently reviewing the program to determine if there should be a further extension to the available capacity.

"The uptake for CORE has certainly been very positive since its introduction. CUC remains committed to promoting and developing renewable energy as a source of electricity generation," he said.

James Whittaker, chairman of the Cayman Islands Renewable Energy Association, was modest in his dissent.

"The ERA and CREA have been in consultation, looking at the long-term future, analyzing the cost-benefit of CORE," he said, describing as dubious CUC's claim that the grid can handle only minimum renewable contributions.

The CORE cap "is frozen at the moment, but we are thrashing it out. We are trying to get CORE to raise the limit by 1MW for another year."

He also worries that the imminent start of utility-scale solar generation on a 5MW solar farm in Bodden Town may work against expanding "distributed generation," small rooftop solar arrays for individual homes and businesses.

"The whole point is that the country needs both," Whittaker says. "The 5MW give us scale and pricing, but the 'distributed' creates jobs and economic activity."

Bodden Town solar farm

The start of utility-scale generation has, however, been delayed, at least in the short term. David March is managing partner at Entropy Investment Management, the company building the solar project in Bodden Town. He is also Smith's engineering partner in the Health City project.

The 22-acre 5MW, \$18 million system was approved by the ERA on Oct. 30 after protracted talks among the three parties. Entropy later said it planned groundbreaking for the array in late February, a date the managing director said had slipped due to financing.

"These things always take longer than one thinks. We hope to have the ground breaking in the next few weeks."

The project, he said, "should take about seven or eight months."

Both ERA Managing Director Charles Farrington and CUC's Hew said, however, they expected to commission the array on the original schedule.

"ERA was not given a firm groundbreaking date only a target commercial operation date of October 2016, which ERA understands has not been changed," Farrington said.

Hew offered a little more insight, suggesting a delay in completion and hoping for a formal announcement this month: "The solar project is on schedule for end of 2016 completion," he said. "An announcement on the ground breaking will be made in April."

Ocean power

Similarly, a longstanding proposal for ocean thermal energy conversion appears to have hit another obstacle, throwing doubt on an already nebulous situation.

Baltimore-based OTEC International at least two years ago proposed a 140 feet by 200 feet floating platform one mile off the coast of North Side, exploiting temperature differences between warm surface water and deep-sea currents, driving an on-board turbine, producing between 6MW and 6.5MW of power, delivered to an onshore CUC interconnection.

The technology remains relatively unproven, however, and has not been commercially demonstrated.

OTEC International has missed a handful of local deadlines, most recently a promise to submit to the

ERA by the end of March, an agreement with CUC to purchase OTEC-generated power.

In early February OTEC President Eileen O'Rourke told the *Journal* "significant progress" had been made with CUC, and that OTEC had "provided more data on the project" for an environmental impact assessment by the Department of Environment.

"The company," she said, "plans to submit the information to DoE within 30 days after the [power purchase agreement]/[impact assessment] documents have been submitted to ERA.

"Ocean Thermal International hopes that all documents will be before the Cayman regulatory authorities in the first quarter of 2016."

In mid-March, however, she indicated shifting dates: The company was "in the late stages of negotiations with CUC for the [power purchase agreement] and [impact assessment] with the goal of submitting to the ERA in the first or second quarter of 2016," and pointed to the project's "reliability, predictability, sustainability and flexibility," saying "Cayman OTEC could initially provide 6.25MW of annually averaged wholesale electric power to CUC within the first year of operation."

Farrington, however, said the ERA had seen nothing from the company and did not "have an expectation with a time frame attached.

"The ERA's most recent information on this proposal as of last week of January 2016 was that OTI and CUC were continuing to discuss a potential PPA [power purchase agreement]," he said.

CUC was noncommittal: "OTEC is still proceeding. They are currently at the PPA and environmental impact assessment drafting stage. They will be presented to the ERA once completed."

Smart meters and 'time of use'

Elsewhere, the utility will complete installation of "smart meters" in all 28,000 customer premises by the end of July, enabling clients to micro-manage times and amounts of use.

Initially, episodes of overheating and even combustion occurred throughout the U.S. and Canada when smart meters first appeared prior to 2010, particularly with equipment from North Carolina manufacturer Sensus, which supplies much of CUC's equipment.

Inaugurating the \$5 million replacement program in 2011, CUC initially confronted similar setbacks, but appears to have resolved the problems, positioning the company to launch a much-rumored "time of use" scheme, in which customer costs are reduced during off-peak hours.

"TOU," employed by utilities through North America, Europe and Australia, refers to cuts in the cost of electricity during non-peak hours. It enables customers to plan power consumption – such as doing laundry at 3:00 a.m. – reducing not only their own costs, but also relieving demand on the grid and enabling smoother load management.

CUC has been looking at a TOU scheme since at least 2015 – and probably earlier. The company has remained tight-lipped, however, saying last April that while its smart meters would enable the company to design a plan, "CUC does not offer time of use rates at this time. By changing its meters to the smart meter type, CUC will be able to consider the introduction of TOU rates in the future."

In December, the company indicated the plan was moving ahead: "We are aware that some customers have expressed an interest in 'Time of Use' rates and we are reviewing.

"However, CUC is not about to make any announcement on the subject at this time."

Finally, last week, the company reiterated its position, but did not deny plans for the scheme: "CUC is always exploring new rate structures. However, we do not have anything to report on this right now."

One of the things a TOU scheme may boost is overnight charging of Cayman's growing fleet of electric vehicles.



Dart Realty and Cayman Solar installed 302 photovoltaic panels that produce 76 kilowatts of renewable energy at 89 Nexus Way in Camana Bay.

Corporate renewable energy taking off

A "time of use" scheme joins CUC's CORE program as an appeal to customers who are increasingly familiar with renewable energy generation not only at the individual and household level, but, increasingly at the corporate level.

For example, the Security Centre, at the Elgin Avenue Roundabout, is designed to be entirely "off grid," unconnected to CUC, supplying its own heating, cooling and electric power through both solar and geothermal systems.

Individual homes are also going off grid. Security Centre designer Jim Knapp years ago designed his own home to supply its own power. Dart Realty's off-grid Bela Verde, built by GreenTech founder and CREA chairman James Whittaker, was completed – and sold almost instantly – nine months ago.

Today Whittaker is building new homes, helping with solar systems for Grand Harbour's 85-unit Periwinkle, and West Bay's North View, which, he says, will be "energy positive," generating more power than it consumes, using solar panels, PowerWall storage batteries, low-consumption LED (light emitting diode) lighting and specially designed floors and fans.

He is working on a home in Crystal Harbour and even building a 3MW utility-scale solar array in St. Lucia.

Most of the materials and systems Whittaker uses can be viewed – and purchased – at his new Green Building Center, a 1,000 square foot showcase of all

things renewable that opened on March 17 inside A.L. Thompson's at the Butterfield Roundabout. The new shop replaces the old coffee-break cafe

"We've been working on it for about two years," Whittaker said. "We wanted people to have a place to go where they could see and touch this stuff. A lot of it has been only in the abstract and in magazines before now. There was nowhere to go, for example, for courses, and we will educate people on renewable technology."

Available are solar panels, power inverters, sustainable materials, battery-storage systems, management systems, eco-friendly flooring and materials, fans, LEDs, salt water batteries "and much more," he says.

He is also responsible for the installation of Cayman's largest rooftop solar system, scheduled for commissioning in November when Dart's Kimpton Seafire Resort and Spa opens.

Designers for the Kimpton and its 62-unit neighboring property, The Residences at Seafire, built to Leadership in Energy and Environmental Design standards. Originally created in 1993 by the Washington, D.C.-based non-profit US Green Building Council, LEED designates four certification levels for new construction – certified, silver, gold and platinum – corresponding to five design categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality.

The Kimpton's 503 Sunpower panels will produce 143 kilowatts. The building itself uses purely LED lighting, which produces less heat than standard bulbs, requires less maintenance, uses at least 75 percent less energy, lasts 25 times longer and, by 2027, according to the U.S. Department of Energy, if used sufficiently widely, could save power consumption equivalent to 44 power plants of 1,000MW and \$30 billion.

Additionally, according to Dart Realty, the hotel will employ the most-efficient geothermal air-conditioning system in the Cayman Islands.

It also will also employ a large cistern to collect rainwater for irrigation.

Rainwater is also used at Camana Bay's 18 Forum Lane office building to flush toilets. The new building has the largest rooftop array – 100kW – that CUC allows commercial customers under its CORE program.

Its next-door neighbor, One Nexus Way, will also feature a 100kW rooftop array.

"Camana Bay is growing quickly, but our cost per square foot is diminishing as we introduce more environmentally sound practices such as LED lighting, solar power and rainwater harvesting," said Chip Ogilvie, senior manager for facilities.

Already the town center in the residential/commercial community boasts seven solar arrays, ranging upward from 18kW, one of them powering the EV charging station – Cayman's first.

Electric vehicles and Tesla ascendant

John Felder, president of Cayman Automotive and the island's only vendor of electric vehicles, says nearly 35 of the cars are on local roads, with another two on the Bac. That total, he says, almost quadruples the 10 in the Bahamas. He predicts steady, if gradual, growth as he launches imports of U.S.-built Tesla cars.

Already, he has sold at least three, including Tesla's latest design – an SUV boasting a startling gull-wing design – and two "S" models: The P-85 "performance" sedan will be the first right-hand drive electric vehicle in the Caribbean, he says.

The cars are expensive – the SUV tops \$100,000. Nonetheless, Felder believes a local market exists, and anticipates moving 10 units per year.

"We service everything we sell," he says, which includes Chevy and Ford EVs and hybrids, as well as China-made, Japan-made and U.S.-made combustion-engine cars and trucks. An authorized Tesla mechanic will visit Cayman every six months or, Felder says, "as needed" when a vehicle requires maintenance.

However, on March 31 in Los Angeles, Tesla chief Elon Musk announced a potential "game changer": a four-door EV sedan priced at US\$35,000, described by the CEO as an effort to bring electric cars to the masses.

The car will travel 215 miles on a single charge.

While the "Model 3" will not be delivered until next year, Felder said he had already ordered two: "This one vehicle is a game changer," he said, hoping Musk would not boost the price in the face of furious demand. "A Tesla that you can purchase for under \$40k is clearly going



A Tesla electric vehicle at the newest charging station in Bodden Town.

to make an impact on the market."

Since 2012, Felder has opened 10 charging stations around Grand Cayman, stretching from East End's Wyndam Hotel to West Bay's Cayman Motor Museum. Grand Harbour – next door to the Cayman Automotive showroom – boasts another as does Hurley's, Governors Square and Camana Bay. Next on the schedule is Kai-bo, to be followed by Kirk Supermarket, HealthCity and unserved Foster's locations in George Town, Savannah and East End.

On March 17, Felder joined owners of Bodden Town's Lorna's Rubis – MLA and Minister of Community Affairs, Youth and Sports Osbourne Bodden and his son Alexis – and Umar Michla, managing director of Tesla's overseas distributor Royal Imperial U.K., to open the first combination petrol and charging station in the Caribbean.

"They called me and asked," said

Felder. "These guys are sharp; they don't miss a trick. They have the Fish Shack there, a liquor store and a convenience store, so while you're spending 20 minutes topping-up your charge, you're going to have a drink and maybe something to eat."

At the opening, Minister Bodden said he hoped to boost a "greener Cayman," while son Alexis said "we thought it a good idea to jump on board. We spoke to parent company Rubis, they did not have a problem with it."

Consolidating the appeal of the new service, Lorna's top-ups are free, raising the specter that, with a little planning, electric vehicle owners may never again have to pay for fuel.

If they do, however, CUC's TOU scheme could further reduce the at-home costs of between \$3.50 and \$4 for an overnight charge.