

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

-----In the Matter of-----)
)
 PUBLIC UTILITIES COMMISSION)
)
 Instituting a Proceeding to Review)
 Hawaiian Electric Company, Inc.,)
 Hawaii Electric Light Company, Inc.)
 and Maui Electric Company, Ltd.'s)
 Demand-Side Management Reports and)
 Requests for Program Modifications)
 _____)

DOCKET NO. 2007-0341

ORDER REGARDING HECO'S COMMERCIAL AND INDUSTRIAL
CUSTOMIZED REBATE PROGRAM'S SEAWATER DISTRICT COOLING PROJECT

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ORDER REGARDING HECO'S COMMERCIAL AND INDUSTRIAL
CUSTOMIZED REBATE PROGRAM'S SEAWATER DISTRICT COOLING PROJECT

By this Order, the commission grants HAWAIIAN ELECTRIC COMPANY, INC.'s ("HECO")¹ letter request, filed on November 21, 2007, to establish a \$300 per ton avoided customer incentive level for the sea water district cooling ("SDC") technology, also known as seawater air conditioning ("SWAC") in its Commercial and Industrial Customized Rebate ("CICR") Program.

I.

Background

In Docket No. 05-0069 ("Energy Efficiency Docket"), Hawaii Renewable Energy Alliance ("HREA") requested that the commission grant a prescriptive rebate of \$500 per ton displaced

¹HECO is a Hawaii corporation and a public utility as defined by Hawaii Revised Statutes § 269-1. HECO was initially organized under the laws of the Kingdom of Hawaii on or about October 13, 1891. HECO is engaged in the production, purchase, transmission, distribution, and sale of electricity on the island of Oahu in the State of Hawaii ("Hawaii").

and a maximum per customer rebate of \$500,000 per customer for the SWAC technology.² HREA asserted that it needed rebate authorization, not rebate payment so that prospective customers would have an incentive to sign contracts for service in 2006-2007, despite the fact that actual payment would not be made until the year 2009.³ The commission determined that SWAC should be considered under the CICR Program.⁴ The commission stated:

The commission agrees with HECO that SWAC should be considered under HECO's CICR Program because the SWAC technology has never been specifically identified in any of HECO's prescriptive [demand-side management ("DSM")] programs and HECO has not had the opportunity to document the measure's savings. In addition, the CICR Program, unlike the [Commercial and Industrial Energy Efficiency ("CIEE")] Program, has provisions that require an independent third party to review the proposed project if the rebate is projected to be greater than \$25,000, which will help to confirm that the calculated impact results for the SWAC project are valid.

Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 130-31.

In the Energy Efficiency Docket, the commission noted:

The appropriate rebate levels that SWAC should be eligible for are \$0.05 per kWh and \$125 per kW offered under the CICR Program. Under these rebate levels, HECO states that preliminary analysis indicates that the rebate through the CICR Program would be between approximately \$150 per ton and \$230 per ton. HECO states that if HREA provides additional information indicating that the level of rebate is inadequate to move the

²See Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 126.

³See Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 127-28.

⁴See Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 129-31.

market, HECO would conduct additional analysis to determine if a higher rebate may be warranted, and if so, would then seek commission approval for a higher rebate.

Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 132-33. HECO represented:

[r]atepayer funded DSM programs need to strike a balance between offering customer rebates to motivate customers to install energy efficient measures and/or adopt new technologies versus overpaying rebates and/or providing rebates to customers who would have installed the energy efficiency measure even without a utility DSM program.

Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 134.

The commission found:

there is insufficient evidence to: (1) establish that the existing CICR rebate level is inadequate to move the market, and (2) adequately justify raising the CICR rebate level. Therefore, HREA's request to require HECO to provide a rebate of \$500 per ton is denied.

See Decision and Order No. 23258, filed on February 13, 2007, in the Energy Efficiency Docket, at 135.

On November 21, 2007, HECO informed the commission that "HECO will be requesting [c]ommission approval to establish a \$300/ton customer incentive level for [SDC] in its [CICR] Program. HECO maintains that the establishment of a prescriptive SDC customer incentive will help to encourage commercial and industrial customers to conserve energy by installing this customized energy efficiency technology."⁵

⁵Letter filed November 21, 2007, from HECO to the commission, at 1.

In HECO's Annual Program Modification and Evaluation Report ("M&E Report"), filed on November 30, 2007, HECO stated:

HECO proposes to modify the CICR Program by establishing a \$300 per ton prescriptive customer incentive for [SDC]. . .

SDC is a renewable DSM resource that can provide major benefits in terms of energy and demand savings, the longevity of these savings[] contribute to the lowering of greenhouse gas emissions, and [can] be a major contributor to the State's Renewable Portfolio Standards energy goals. Using cold deep sea water sourced at the temperatures of traditional chilled water air conditioning systems, SDC systems have the potential to reduce the majority of the energy usage and power demand associated with these air conditioning systems. An example of a SDC system is the 25,000 ton system proposed by Honolulu Sea Water Air Conditioning ("HSWAC") for downtown Honolulu. This project has the potential to reduce the energy and demand associated with commercial air conditioning in the downtown Honolulu area to a much greater degree than any other air conditioning technology that HECO currently promotes with its existing energy efficiency DSM program customer incentives. HECO is supportive of the HSWAC project, and has offered its Richards Street headquarters as a potential site for the SDC system.

M&E Report, at 17. Moreover:

SDC is expected to provide a very long period of demand and energy savings. Since the SDC infrastructure may have an economic life in excess of 50 years, HECO and its commercial customers can be expected to benefit from the SDC system energy and demand savings over a corresponding timeframe. Also, a SDC system can contribute to the reduction of dependence on foreign oil with positive economic and environmental benefits, including contributing to the lowering of greenhouse gas emissions and contributing to the State's Renewable Portfolio Standards energy goals.

However, [the] HSWAC SDC project faces large challenges because of the high initial capital cost of infrastructure, including seawater lines and the district cooling distribution system. This type of technology also requires a large economy of scale in order to [be] economically

implement[ed]. . . . This economy of scale presents a major hurdle for a SDC system to overcome in order for customers to benefit from this technology. In addition, due to the lack of experience with the SDC technology, commercial customers may be reluctant to participate in the implementation of a SDC system.

M&E Report, at 18.

SDC, while a proven DSM technology, has not previously been implemented in Hawaii. A prescriptive customer incentive of \$300 per ton is warranted to help commercial customers offset the estimated interconnection costs associated with a SDC system. In HREA's Brief, at page 19 [HREA's Post-Hearing Brief, filed in [the Energy Efficiency Docket], it stated that its estimate for interconnection is approximately \$300 per ton for its proposed 25,000 ton system that will serve downtown Honolulu.

HECO maintains that an increase in the customer incentive from its preliminary analysis of approximately \$150 - \$230 per ton, to a level of \$300 per ton, is warranted to help overcome the market barriers associated with commercial customers['] lack of knowledge and experience with this technology, and to help motivate customers to adopt this proven cost-effective energy efficiency measure. The HSWAC SDC system has the potential to provide significant levels of renewable energy on Oahu to help meet the State's Renewable Portfolio Standards energy goals. In Hawaii, the greatest potential - and often, the only potential - for developing renewable energy resources such as geothermal, wind and biomass, lies on the neighbor islands []. Unfortunately, there are far fewer suitable sites (and probably less community support as well) for substantial renewable energy resources on Oahu, even though Oahu contributes most to the total kWh sales against which the State's Renewable Portfolio Standards energy goals must be measured.

M&E Report, at 19.

By Order No. 23967, filed on January 14, 2008 ("Order No. 23967"), in this docket, the commission: 1) suspended HECO's request to offer a prescriptive \$300 per ton incentive for the SDC project, 2) ordered HECO to provide additional information

within thirty days of the order's filing regarding the future budgets for the CICR Program, and the related benefit-cost ratios for the Utility Cost Test, the Total Resource Cost Test, the Participant Test, and the Rate Impact Measure Test, and 3) ordered the DIVISION OF CONSUMER ADVOCACY, DEPARTMENT OF COMMERCE and CONSUMER AFFAIRS ("Consumer Advocate")⁶ to file a statement of position within twenty days of HECO's filing. Subsequently, the commission granted a request by HECO for an extension of time to February 27, 2008, to comply with Order No. 23967.⁷

On February 27, 2008, HECO filed a letter providing the following information:

The installation of 25,000 tons of SDC in 2010 in downtown Honolulu area, as represented by [HSWAC], and the approval of HECO's request to establish a prescriptive customer incentive of \$300/ton for SDC, is estimated to add \$7,500,000 to the Customer Incentive budget item of the 2010 CICR Program budget. In [the Energy Efficiency Docket], HECO's preliminary analysis of information provided by HSWAC indicated that the equivalent customer incentive using the CICR Program approved \$125/kW and \$0.05/kWh customized incentive levels would result in an aggregate customer incentive of between approximately \$150/ton and \$230/ton. HECO's subsequent analysis, included herein, determined the customer incentive to be approximately \$211/ton. Therefore, HECO's request for [c]ommission approval to establish a \$300/ton prescriptive incentive for SDC would result in an incremental increase in the customer incentive of about \$89/ton.

⁶The Consumer Advocate is an ex officio party to this docket pursuant to HRS § 269-51.

⁷See Letter dated February 13, 2008, from HECO to the commission, seeking an extension of time and letter dated February 20, 2008, from the commission to HECO, granting the requested extension of time.

The 25,000 ton SDC system is expected to add 87,087,696 kWh of annual energy savings (at the gross system level) and 12,732 kW of annual demand savings (at the gross system level and coincident with HECO['s] 5:00 pm to 9:00 pm peak usage period). These savings are expected to last for 50 years, according to the life expectancy of SDC as provided by HSWAC.

Letter dated February 27, 2008, from HECO to the commission (internal citations omitted), at 1-2.

HECO expects the installation of the 25,000 tons of SDC in 2010 from the HSWAC system to have the following results:

Impacts and Budgets for 2010 and Benefit/Cost Ratios for the CICR Program with 25,000 tons of SDC in 2010*		
2010	[Energy Efficiency Docket]**	With SDC***
Budget	\$1,816,094	\$9,316,094
Energy Saved [megawatt-hours ("MWh") of energy savings]	9,583	96,671
Demand Reduced [megawatts ("MW") of gross demand reduction]	1.25	13.98
Benefit/Cost Tests	[Energy Efficiency Docket]	With SDC
Participant Test	2.45	2.07
Ratepayer Impact Measure Test	0.52	0.37
Utility Cost Test	2.97	5.39
Total Resource Cost Test	0.75	0.77

*HECO includes the budget and impacts for future years in HECO's Review of Demand-Side Management Reports and Requests for Program Modifications, filed February 27, 2008, at Exhibit A.

**Net participation at the gross system level. See HECO's revised Response to CA/HECO-IR-9, filed on August 24, 2006, in the Energy Efficiency Docket, at 6 and 36.

***Net participation at the gross system level. See Letter dated February 27, 2008, from HECO to the commission, at Exhibits A and B.

With regard to the cost-effectiveness analysis, HECO states:

If this request is approved and a 25,000 ton SDC system is installed in 2010, the CICR program is expected to be cost-effective from the Participant Cost and Utility Cost perspectives. The Total Resource Cost benefit/cost ratio remains relatively unchanged, and the program would not pass the Ratepayer Impact Measure Test.

Letter dated February 27, 2008, from HECO to the commission, at 3.

On June 12, 2008, the commission issued PUC-IR-101 regarding the SDC technology. On June 26, 2008, HECO responded, stating:

. . . while [customers amounting to 71% of system capacity] have signed letters of intent, they still face significant market barriers to participation when the SWAC system is built. One of the biggest areas of concern expressed by prospective customers is their cost of interconnection to the SWAC system. According to HSWAC, average customer interconnection costs are more than \$300 per ton. HSWAC maintains that the current rebate of \$150 to \$230/ton, as estimated by HECO, is not sufficient to overcome this market barrier, and a host of other market barriers. Other market barriers include unfamiliarity with the technology, uncertainty regarding the associated energy savings, and uncertainty with respect to back-up requirements. For example, a potential customer will not know to what extent an on-site back-up chiller is needed to make up for any unavailability of the SWAC system until after some additional experience with the system.

According to HSWAC, their entire marketing effort and preliminary acceptance by customers is predicated on customers avoiding unwanted additional building conversion investment. The \$300 per ton rebate is a very important element to secure long-term contracts from customers and ensure the downtown Honolulu SWAC project will proceed as planned.

HECO's Response to PUC-IR-101, at 1-2. The Consumer Advocate has not submitted any statement of position in this docket with regard to HECO's proposal.

II.

Discussion

The commission has reviewed and considered multiple filings with extensive analysis regarding the SDC technology.⁸ The commission agrees with HECO's assessment that SDC is a renewable DSM resource that can provide great benefits in terms of energy and demand savings and be a major contributor to achieving Hawaii's Renewable Portfolio Standards energy goals. Also, by providing substantial energy and demand savings, the SDC projects will indirectly contribute to the lowering of greenhouse gas emissions and reducing Hawaii's dependence on foreign oil. A single 25,000 ton system proposed by HSWAC for downtown Honolulu has the potential to reduce the energy and demand associated with commercial air conditioning in the downtown Honolulu area to a much greater degree than any other air conditioning technology that HECO currently promotes with its existing energy efficiency DSM program customer incentives.⁹

The proposal for a 25,000 ton SDC system is expected to add 87,087,696 kWh of annual energy savings (at the gross system

⁸See Decision and Order No. 23258, filed on February 13, 2007 in Docket No. 05-0069 ("Decision and Order No. 23258"), at 127-28.

⁹Letter dated November 21, 2007, from HECO to the commission, at 1.

level) and 12,732 kW of annual demand savings (at the gross system level and coincident with HECO's peak usage period).¹⁰

The commission also notes that the effects of SDC are long-term. The SDC infrastructure may have an economic life in excess of fifty (50) years and the savings are expected to continue through the entire life expectancy of SDC.¹¹

While the commission acknowledges that the increased rebate may not pass the Ratepayer Impact Measure ("RIM") Test, it is cost-effective from the Participant Cost and Utility Cost perspectives, as well as relatively unchanged in the Total Resource Cost ratio.¹² The RIM perspective considers "the impact on ratepayers in terms of the utility rates that ratepayers must pay."¹³ The commission has previously approved DSM programs with slightly lower measurements if there were other significant considerations or "non-quantifiable benefits".¹⁴ The SDC technology is new to Hawaii. Unprecedented programs require and deserve greater support from the ratepayer, the public at large, and the commission, in order to become known, accepted, adopted and successful. HECO states that the HSWAC SDC project will have

¹⁰Letter dated February 27, 2008, from HECO to the commission, at 2.

¹¹Letter dated February 27, 2008, from HECO to the commission, at 2.

¹²Letter dated February 27, 2008, from HECO to the commission, at 3.

¹³Decision and Order No. 23258, at 88.

¹⁴Decision and Order No. 23258, at 90-96.

high initial capital costs in infrastructure and requires a large economy of scale in order to be economically feasible.¹⁵

The commission acknowledges that HECO's proposal of \$300 per ton will defray part of the interconnection cost; which is a reasonable measure to help overcome the market barriers associated with the SDC project which has large initial capital costs for customers.

The commission finds that there is sufficient evidence to: (1) establish that the existing CICR rebate level is inadequate to move the market, and (2) adequately justify raising the CICR rebate level. Therefore, HECO's request to provide a rebate of \$300 per ton, is granted.

III.

Order

THE COMMISSION ORDERS:

HECO's letter request, filed on November 21, 2007, to establish a \$300 per ton avoided customer incentive level for the SDC technology in its CICR Program, is granted.

¹⁵M&E Report, at 18.

DONE at Honolulu, Hawaii SEP 24 2008.

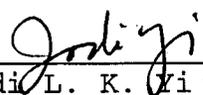
PUBLIC UTILITIES COMMISSION
OF THE STATE OF HAWAII

By 
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By 
John E. Cole, Commissioner

By 
Leslie H. Kondo, Commissioner

APPROVED AS TO FORM:


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2007-0341.cp

CERTIFICATE OF SERVICE

The foregoing order was served on the date of filing by mail, postage prepaid, and properly addressed to the following parties:

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