



DEPT. COMM. NO. 45

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360

HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

November 15, 2019

The Honorable Ronald D. Kouchi, President
and Members of the Senate
State Capitol, Room 409
Honolulu, Hawaii 96813

The Honorable Scott K. Saiki, Speaker
and Members of the House of Representatives
State Capitol, Room 431
Honolulu, Hawaii 96813

Dear President Kouchi, Speaker Saiki, and Members of the Legislature:

For your information and consideration, I am transmitting a copy of the Sustainable Schools Initiative, pursuant to Section 302A-1510, Hawaii Revised Statutes (HRS). In accordance with Section 93-16, HRS, I am also informing you that the report may be viewed electronically at <http://www.hawaiipublicschools.org/VisionForSuccess/SchoolDataAndReports/StateReports/Pages/Legislative-reports.aspx>.

Sincerely,

A handwritten signature in blue ink, appearing to read "Christina M. Kishimoto".

Dr. Christina M. Kishimoto
Superintendent

CMK:at
Enclosure

c: Legislative Reference Bureau
Office of Facilities and Operations



State of Hawaii
Department of Education

Annual Report of the Department of Education's Sustainable Schools Initiative 2020

November 2019

Act 176, SLH 2016, established Section 302A-1510, Hawaii Revised Statutes (HRS), Sustainable Schools Initiative. The purpose of the Act was to accelerate the goals of the Department of Education (DOE) to cool Hawaii's schools, reduce energy costs, meet Hawaii's clean energy goals, and provide all students with better classrooms in which to learn. Act 176 also requires DOE to report annually on the following: 1) The overall progress toward the net-zero energy goal set forth in Section 302A-1510(a), HRS; 2) Its plans and recommendations to advance the net-zero goal set forth in Section 302A-1510(a), HRS; and 3) Any challenges or barriers encountered or anticipated by the DOE in meeting the net-zero energy goal set forth in Section 302A-1510(a), HRS.

Annual Report on the Department of Education's Sustainable Schools Initiative 2019

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1) OVERALL PROGRESS TOWARD THE NET-ZERO ENERGY GOAL SET FORTH IN SECTION 302A-1510(a), HRS:

Hawaii School Facilities Energy Report Comparison of FY 2018 & FY 2019				
	<u>FY 2018</u>		<u>FY 2019</u>	
School Facilities Energy	kWh	\$	kWh	\$
Utility Energy ⁽¹⁾	118,248,059	\$ 35,135,492	111,200,864	\$ 37,313,756
Renewable Energy	22,137,936	\$ 4,781,844	23,471,265	\$ 5,305,237
Total Energy	140,385,985	\$ 39,917,336	134,672,129	\$ 42,618,993
^{1.} Utility Energy includes Hawaiian Electric Company (HECO), Hawaii Electric Light Company (HELCO), Kauai Island Utility Cooperative (KIUC), and Maui Electric Company (MECO).				

The year-over-year (YOY) percentage changes and the percent of total energy are provided in the tables below:

	YOY Change (%)		Percent of Total Energy (kWh)	
	kWh	\$	FY 2018	FY 2019
School Facilities Energy				
Utility Energy	-6%	6%	84%	83%
Renewable Energy	6%	11%	16%	17%
Total Energy	-4%	7%	100%	100%

For the full FY 2019, total electricity consumption across all public campuses statewide was down 4% from FY 2018. Despite this reduction, the total cost of electricity increased by 7%.

Year-over-year, utility electricity consumption was down 6%. Despite this reduction, the YOY cost of utility electricity increased 6% due to higher utility rates.

Year-over-year, renewable electricity consumption across all public campuses statewide was up 6% from FY 2018. However, due to contractual increases in the rates paid to PPA providers for many campuses, the annual cost of renewable electricity increased by almost 11%.

For the full FY 2019, total electricity consumption across all public campuses statewide was down 4% from FY 2018. Despite this reduction, rate increases resulted in a 7% YOY increase in electricity cost.

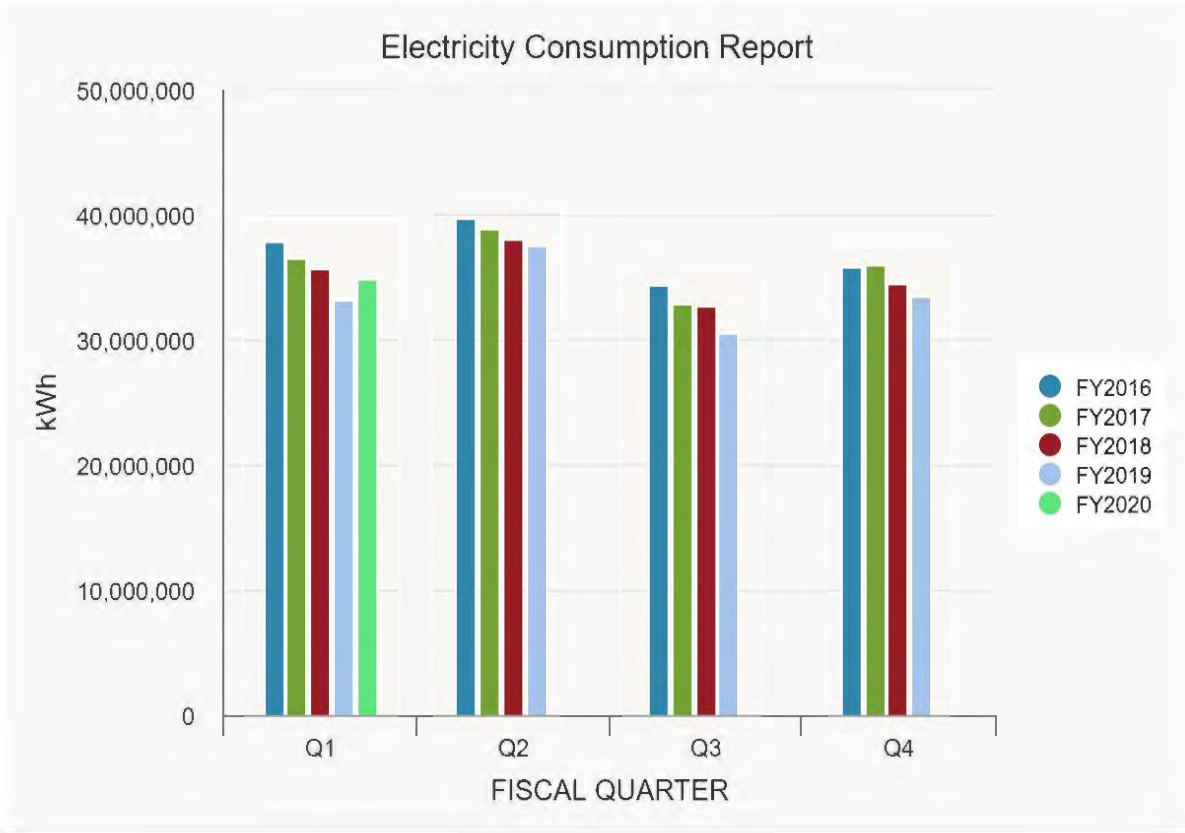


Figure 1 - Total Electricity Consumption by FQ

The conservation impact from the Light-Emitting Diode (LED) Lighting Replacement Program on Oahu was mostly realized in the FY 2018 period. Although the LED replacements on other islands have impacted FY 2019 results, those impacts are less due to the lower consumption of those campuses.

Another factor affecting overall consumption in FY 2019 was the continuation of the DOE’s Heat Abatement (HA) program through increased installation of air conditioning at campuses statewide. Although the HA program promotes the implementation of EnergyStar and other energy efficient space cooling technology, the overall impact of the HA program will naturally lead to increased energy consumption. This result is already noticeable in the electricity consumption data for Q1 of FY 2020.

In FY 2019, there was only a slight increase in the percent consumption of renewable energy. This was due primarily to the completion of already contracted PPA-financed solar energy installations. The end of HECO’s Net-Energy Metering (NEM) program has made the financial viability of future additions more difficult. Moreover, the reduction and eventual ending of the federal solar energy tax credit is also making financial viability less certain. For these reasons, the overall percent of renewable energy has remained at 16%-17% for FY 2019.

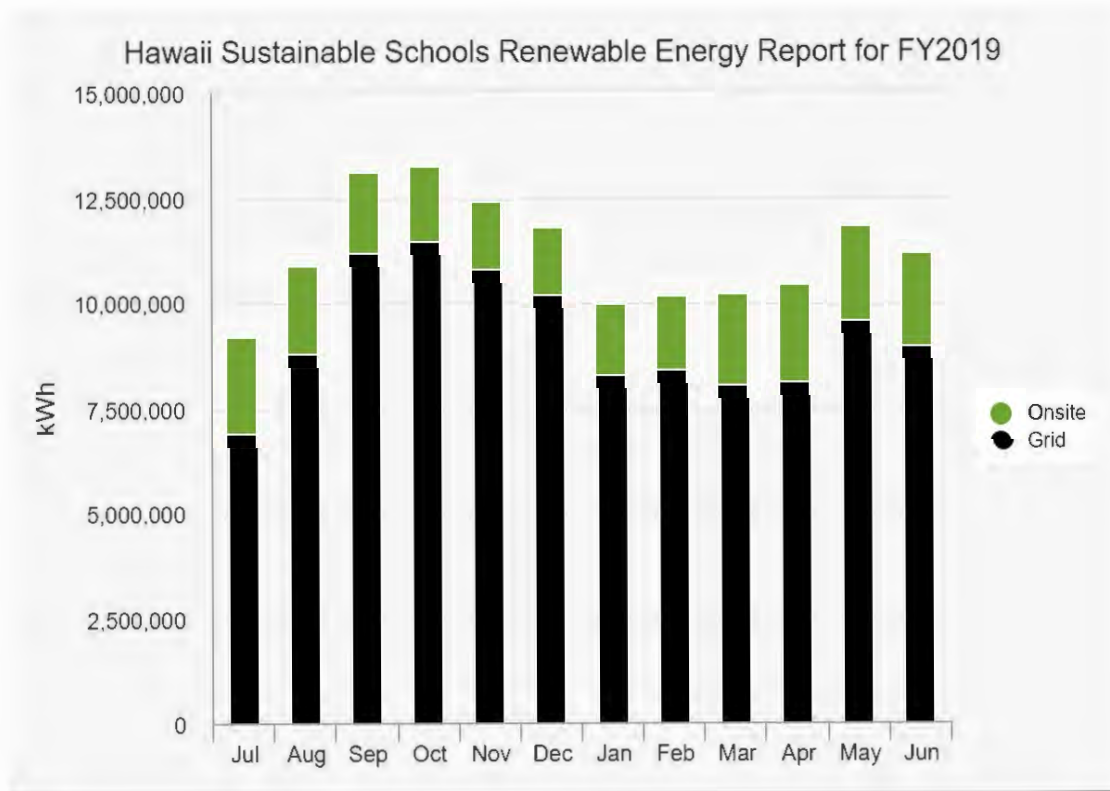


Figure 2 - Electricity Consumption by Resource for FY 2019

2) PLANS AND RECOMMENDATIONS TO ADVANCE THE NET-ZERO ENERGY GOAL SET FORTH IN SECTION 302A-1510(a), HRS:

The DOE is implementing plans to increase solar energy installation at existing sites based on the HECO NEM Plus program. This will lead to increases in the solar energy capacity at existing NEM sites by up to 100 kW.

3) CHALLENGES OR BARRIERS ENCOUNTERED OR ANTICIPATED IN MEETING THE NET-ZERO ENERGY GOAL SET FORTH IN SECTION 302A-1510(a), HRS:

In FY 2019, the average cost of utility electricity was \$0.3356 per kWh. However, as a planning tool, average cost is misleading. Approximately $\frac{3}{4}$ of the average cost is avoidable. In other words, reducing utility energy consumption by 1 kWh will reduce utility electricity cost by only \$0.2517. The fixed component of the utility electricity bill was \$0.0839 per kWh. The fixed component is paid through fixed charges so long as the campus is connected to the utility.

Moreover, if the reduction in utility energy consumption is accomplished by purchasing PPA-contracted renewable electricity at a cost of \$0.2260 per kWh, actual savings is only \$0.0257 per kWh in overall energy cost. The low saving does not begin to cover the amount spent to upgrade the roofs to securely support the solar panels.

<u>Avoidable Cost Analysis</u>		
August Ahrens Elementary	May 2019	
Account Number	201010092066	
Electric Service J General Service-Demand Signed NEM Contract		
NET KWH	42,960	
DEL KWH	43,680	
REC KWH	720	
BILLING KWH	42,960	
KVAR	36,000	
BILLED KW	262.20	
MEASURED KW	230.16	
<u>Bill Breakdown</u>	<u>Actual Bill</u>	<u>1 More kWh</u>
Customer Charge	\$98.20	\$98.20
Demand Charge	\$3,408.60	\$3,408.60
Energy Charge	\$2,284.48	\$2,284.54
Power Factor Charge	\$80.70	\$80.70
RBA Rate Adjustment	\$444.64	\$444.65
PBF Surcharge	\$96.36	\$96.36
Energy Cost Adjustment	\$5,791.32	\$5,791.45
Purchased Power Adjustment	\$1,175.66	\$1,175.69
<u>Green Infrastructure Fee</u>	<u>\$25.85</u>	<u>\$25.85</u>
	\$13,405.81	\$13,406.04
Actual Average Rate	\$0.3121	
Next kWh	\$0.2308	
Avoidable %	74%	

Figure 3 - HECO Schedule J Avoidable Cost Analysis

It is anticipated that this problem will get worse in future years as the underlying infrastructure of the electric companies shift to include more renewable energy sources. Renewable energy sources, by their nature have large fixed costs and small marginal cost. As HECO shifts its generating infrastructure to more renewable sources, its rate structure will shift toward a larger fixed component and a smaller incremental component, more similar to unlimited cell phone plans. It is expected that electricity kWh may someday be too cheap to meter. At such a juncture, reducing utility energy consumption will result in no reduction in the utility electric bill. Instead, the cost of onsite energy will likely become an additional surcharge on the utility bill.

Although the DOE continues to explore ways to make schools more sustainable, the DOE recommends that the Sustainable Schools Initiative be transformed to focus on lower cost energy conservation measures rather than net-zero consumption.