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DEPT. COMM. 18-039
DR. CHRISTINA M. KISHIMOTO
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

December 29, 2020

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 annual report "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>

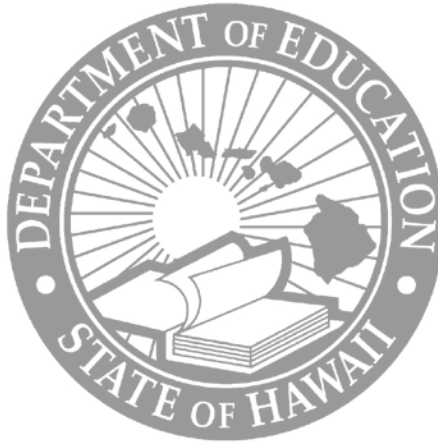
Sincerely,

A handwritten signature in blue ink, appearing to read "CK", representing Dr. 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 on Sustainable Schools Initiative

December 2020

Section 302A-1510, Hawaii Revised Statutes (HRS), requires the Hawaii State Department of Education (Department) to annually report 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 Department 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 2020**

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

Hawaii School Facilities Energy Report Comparison of Fiscal Year 2019 and Fiscal Year 2020				
	<u>FY 2019</u>		<u>FY 2020</u>	
School Facilities Energy	kWh	\$	kWh	\$
Utility Energy ⁽¹⁾	111,200,864	\$ 37,313,756	103,446,645	\$ 34,100,088
Renewable Energy	23,471,265	\$ 5,305,237	23,669,203	\$ 5,449,049
Total Energy	134,672,129	\$ 42,618,993	127,115,848	\$ 39,549,137
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 percentage changes and the percent of total energy are provided in the table below:

	Year-Over-Year Change (%)		Percent of Total Energy (kWh)	
School Facilities Energy	kWh	\$	FY 2019	FY 2020
Utility Energy ⁽¹⁾	-7%	-9%	83%	81%
Renewable Energy	1%	3%	17%	19%
Total Energy	-6%	-7%	100%	100%

For the full Fiscal Year (FY) 2020, total electricity consumption across all public campuses statewide decreased 6% from FY 2019. The total cost of electricity decreased by 7%.

Year-over-year, utility electricity consumption decreased 7%. The year-over-year cost of utility electricity decreased 9% due to lower utility rates. The average cost of utility electricity for FY 2020 was \$0.3296 per kWh compared to \$0.3356 in FY 2019, a decrease of 1.8%.

Year-over-year, renewable electricity consumption across all public campuses statewide was up 1% from FY 2019. However, due to contractual increases in the rates paid to Power Purchase Agreement providers for many campuses, the annual cost of renewable electricity increased by 3%.

School Electricity Consumption

FY 2016-2021, By Quarter

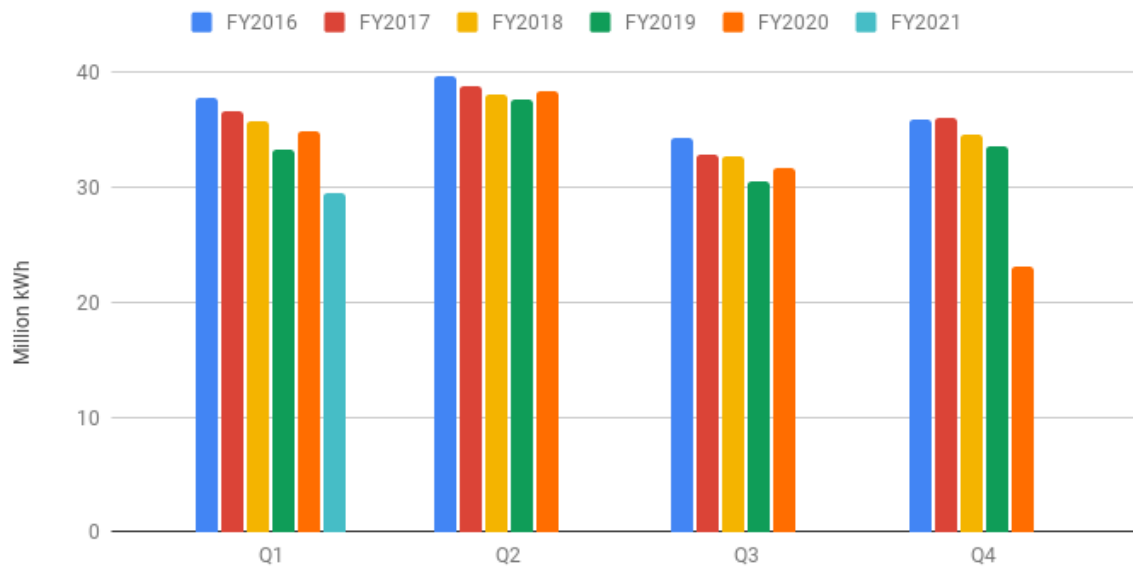


Figure 1 - Total Electricity Consumption by FQ

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 2020 results, those impacts are less due to the lower consumption of those campuses.

Another factor affecting overall consumption in FY 2020 was the continuation of the Department's heat abatement program through increased installation of air conditioning at campuses statewide. Although the heat abatement program promotes the implementation of EnergyStar and other energy efficient space cooling technology, the overall impact of the heat abatement program will naturally lead to increased energy consumption. This result is already noticeable in the electricity consumption data for first quarter to third quarter of FY 2020.

In FY 2020, the percent consumption of renewable energy increased to 18.7% from 17.4% in FY 2019. This was due primarily to the addition of fewer new contracted Power Purchase Agreement-financed solar energy installations than in FY 2019. The end of the Hawaiian Electric Company (HECO) New-Energy Metering program has made the financial viability of future additions more difficult. Moreover, the reduction and eventual end of the federal solar energy tax credit are also making financial viability less certain.

Solar Fraction

FY 2016-2021, By Quarter

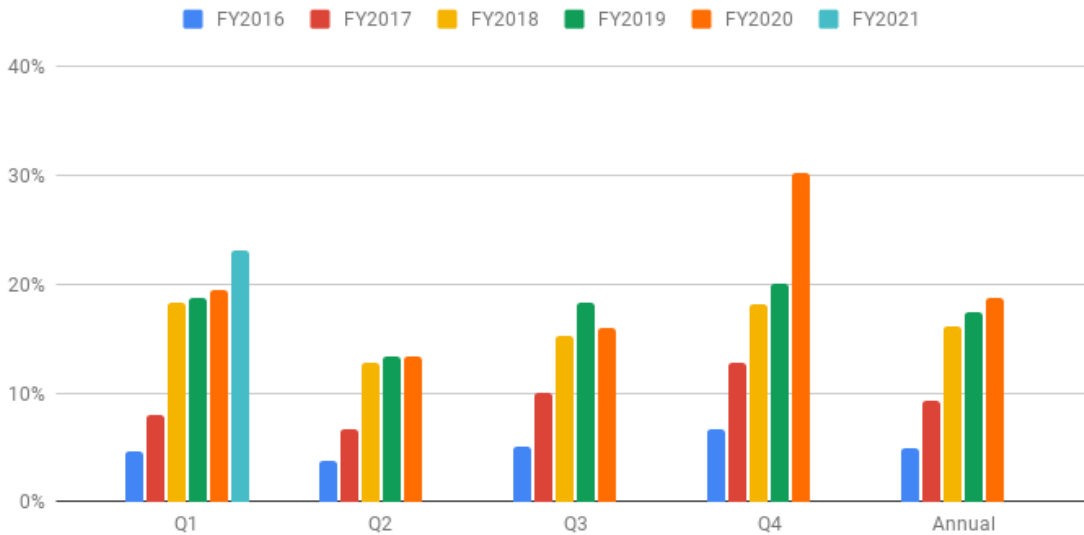


Figure 2 – Solar Fraction of Electricity Consumption for FY 2016-2021

In the fourth quarter of FY 2020, during the closure of school facilities due to the Coronavirus Disease 2019 pandemic, the solar fraction (energy provided by solar technology divided by the total energy required) spiked to 30% compared to 20% in the fourth quarter of FY 2019 (see Figure 2). This was an extraordinary situation caused by the drop in overall consumption combined with unchanged solar production. In the first quarter of FY 2021, the solar fraction averaged 23%, compared to 19.5% in the first quarter of FY 2020.

Utilities 5001: Electricity Usage & Utilities 5002: Alternative Energy Usage

FY 2021

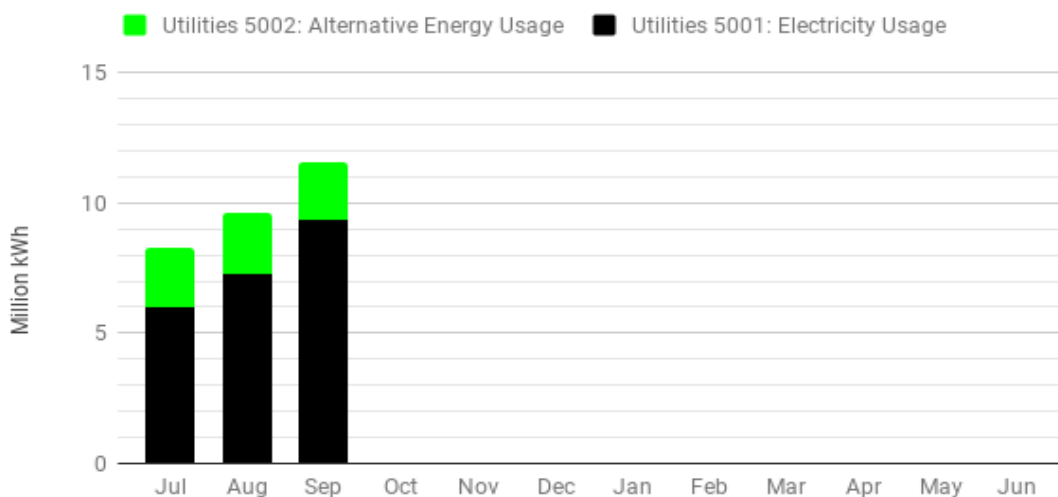


Figure 3 - Electricity Consumption by Resource for FY 2021

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

The Department is implementing plans to increase solar energy installation at several existing New-Energy Metering program sites based on the HECO Plus Program. This will lead to increases in the solar energy capacity at existing New-Energy Metering program sites by up to 100 kW. Department New-Energy Metering program schools include:

<i>School Name</i>
AHRENS ELEM
AHUIMANU ELEM
AIEA ELEM
AIEA HIGH
AIEA INTERMEDIATE
ALA WAI ELEM
ALIAMANU MIDDLE
ALIOLANI ELEM
CAMPBELL HIGH
CENTRAL MIDDLE
COMM SCHL-MCKINLEY
DOLE MIDDLE
ELEELE ELEM
EWA MAKAI MID
FARRINGTON HIGH
FERN ELEM
HALEIWA ELEM
HANALEI ELEM
HAUULA ELEM
HAWAII SCHOOL FOR THE DEAF AND BLIND
HELEMANO ELEM
HOKULANI ELEM
HOLOMUA ELEM
HONOWAI ELEM
ILIAHI ELEM
IROQUOIS POINT ELEM
JARRETT MIDDLE
JEFFERSON ELEM
KAAAWA ELEM
KAAHUMANU ELEM
KAALA ELEM
KAEWAI ELEM
KAHALUU ELEM
KAHUKU ELEM

<i>School Name</i>
KAHUKU HIGH & INTER
KAILUA ELEM
KAILUA HIGH
KAIMILOA ELEM
KAIMUKI HIGH
KAIMUKI MIDDLE
KALAHEO ELEM
KALAKAUA MIDDLE
KALANI HIGH
KALEIOPUU ELEM
KALIHI ELEM
KALIHI KAI ELEM
KALIHI UKA ELEM
KALIHI WAENA ELEM
KAMAKAHELEI MIDDLE
KANOELANI ELEM
KAPAA ELEM
KAPAA HIGH
KAPAA MIDDLE
KAPALAMA ELEM
KAPOLEI ELEM
KAPOLEI HIGH
KAPOLEI MIDDLE
KAUAI HIGH
KAULUWELA ELEM
KAUMUALII ELEM
KEKAHA ELEM
KILAUEA ELEM
KIPAPA ELEM
KOKO HEAD ELEM
KOLOA ELEM
KUHIO ELEM
LAIE ELEM
LANAKILA ELEM
LEHUA ELEM
LEIHOKU ELEM
LEILEHUA HIGH
LIKELIKE ELEM
LINAPUNI ELEM
LINCOLN ELEM
LUNALILO ELEM
MAEMAE ELEM
MAILI ELEM

<i>School Name</i>
MAKAHA ELEM
MAKAKILO ELEM
MAUKA LANI ELEM
MAUNAWILI ELEM
MCKINLEY HIGH
MILILANI MAUKA ELEM
MILILANI MIDDLE
MILILANI UKA ELEM
MOANALUA HIGH
NANAIKAPONO ELEM
NUUANU ELEM
PALOLO ELEM
PAUOA ELEM
PEARL CITY ELEM
PEARL RIDGE ELEM
POHAKEA ELEM
POPE ELEM
PUUHALE ELEM
RADFORD HIGH
RED HILL ELEM
ROOSEVELT HIGH
ROYAL ELEM
SCOTT ELEM
SHAFTER ELEM
STEVENSON MIDDLE
SUNSET BEACH ELEM
WAHIAWA ELEM
WAIAHOLE ELEM
WAIALUA ELEM
WAIANAE ELEM
WAIANAE HIGH
WAIANAE INTER
WAIKELE ELEM
WAIKIKI ELEM
WAIMALU ELEM
WAIMANALO ELEM & INTER
WAIMEA CANYON MIDDLE
WAIMEA HIGH & INTER
WAIPAHAU HIGH
WASHINGTON MIDDLE
WEBLING ELEM
WILCOX ELEM
WILSON ELEM

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

In FY 2020, the average cost of utility electricity was \$0.33 per kWh. However, as a planning tool, utilizing the average cost is misleading. Only an approximate 71% of the average cost is avoidable (see Figure 4). Thus, reducing utility energy consumption by 1 kWh will reduce utility electricity cost by \$0.23. The fixed component of the utility electricity bill was \$0.10 per kWh. That fixed component is paid through fixed charges if the campus is connected to the utility, even if consumption drops to zero.

Moreover, if the reduction in utility energy consumption is accomplished by purchasing Power Purchase Agreement-contracted renewable electricity at an average cost of \$0.23 per kWh, there are no actual savings in overall energy costs. This also does not take into account the cost to upgrade roofs to securely support solar panels.

It is anticipated that the problem will worsen 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 costs. 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.

Although the Department continues to explore ways to make schools more sustainable, the Department recommends that the Sustainable Schools Initiative be transferred to focus, in the intermediate term, on lower-cost energy conservation measures rather than net-zero consumption. If the future cost per kWh of onsite renewable energy and energy storage technologies were to decrease sufficiently, the financial cost of these technologies may make net-zero consumption a more fiscally achievable goal.

<u>Avoidable Cost Analysis</u>		
August Ahrens Elementary	May 2020	
Account Number	201010092066	
Electric Services J General Service-Demand Signed New-Energy Metering Contract		
NET kWh	37,680	
DELIVERED kWh	38,400	
RECEIVED kWh	720	
BILLING kWh	37,680	
KILOVOLT AMPERE REACTIVE	43,680	
BILLED kW	226.50	
MEASURED kW	155.76	

Bill Breakdown	Actual Bill	1 More kWh
Customer Charge	\$98.20	\$98.20
Demand Charge	\$2,944.50	\$2,944.50
Non-Fuel Energy Charge	\$2,003.71	\$2,003.76
Power Factor (65)	\$176.04	\$176.04
RBA Rate Adjustment	\$349.18	\$349.19
IRP Cost Recovery	-\$58.86	-\$58.86
PBF Surcharge	\$138.18	\$136.18
Energy Cost Recovery	\$4,427.18	\$4,427.30
Purchased Power Adjustment	\$1,047.47	\$1,047.50
Renewable Infrastructure Program	\$14.47	\$14.47
Green Infrastructure Fee	<u>\$24.31</u>	<u>\$24.31</u>
	\$11,164.38	\$11,162.59
Actual Average Rate		\$0.2962
Next kWh		\$0.2100
Avoidable %		70.89%

Figure 4 – HECO Schedule J Avoidable Cost Analysis