JOSH GREEN, M.D.
GOVERNOR

KEITH T. HAYASHI
SUPERINTENDENT

DEPT. COMM. NO. 95

**STATE OF HAWAIʻI**
**DEPARTMENT OF EDUCATION**
**KA ʻOIHANA HOʻONAʻAUAO**
P.O. BOX 2360
HONOLULU, HAWAIʻI 96804

OFFICE OF THE SUPERINTENDENT

December 5, 2023

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

Re: Hawaii State Department of Education Annual Report on Sustainable Schools Initiative

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

For your information and consideration, a copy of the annual report, Sustainable Schools Initiative is being transmitted, pursuant to Section 302A-1510, Hawaii Revised Statutes (HRS). In accordance with Section 93-16, HRS, the report may be viewed electronically at: *https://www.hawaiipublicschools.org/VisionForSuccess/SchoolDataAndReports/StateReports/Pages/Legislative-reports.aspx*

Should you have any questions, please contact Ken Kakesako, Director of the Policy, Innovation, Planning and Evaluation Branch, Office of Strategy, Innovation and Performance, via email at ken.kakesako@k12.hi.us or by phone at (808) 282-3430.

Sincerely,

Keith T. Hayashi
Superintendent

KTH:at
Attachment

c: Legislative Reference Bureau
Hawaii State Public Library System
University of Hawaii
Office of Facilities and Operations

State of Hawaii
Department of Education

# Annual Report on Sustainable Schools Initiative

November 2023

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; 3) Different types of cooling measures implemented; and 4) 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 Hawaii State Department of Education's (Department) Sustainable Schools Initiative 2024**

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

| Hawaii School Facilities Energy Report<br>Comparison of Fiscal Year (FY) 2022 and FY 2023 | | | | |
|---|---|---|---|---|
| | FY 2022 | | FY 2023 | |
| School Facilities Energy | kWh | $M | kWh | $M |
| Utility Energy [(1)] | 107,580 | $39.6 | 112,108 | $50.4 |
| Renewable Energy | 22,479 | $5.4 | 21,924 | $5.3 |
| **Total Energy** | **130,060** | **$45.0** | **134,032** | **$55.7** |

*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 table below:

| | Year-Over-Year Change (%) | | Percent of Total Energy (kWh) | |
|---|---|---|---|---|
| School Facilities Energy | kWh | $ | FY 2022 | FY 2023 |
| Utility Energy [(1)] | 4% | 27% | 83% | 84% |
| Renewable Energy | -2% | -2% | 17% | 16% |
| **Total Energy** | **3%** | **24%** | **100%** | **100%** |

Note: Figures in table are rounded to nearest percent

For the full Fiscal Year (FY) 2023, total electricity consumption across all public campuses statewide increased 3% from FY 2022. The total cost of electricity increased by 24%.

YOY, utility electricity consumption increased 4%. The YOY cost of utility electricity increased 27% due to both increased consumption and higher utility rates. The average cost of utility electricity for FY 2023 was $0.4494 per kilowatt-hour (kWh) compared to $0.3679 in FY 2022, an increase of 22%.

YOY, renewable electricity consumption across all public campuses statewide was down 2% from FY 2022. Although average contractual rates paid to Power Purchase Agreement providers increased by 0.6%, the annual cost of renewable electricity was lower by 2%.

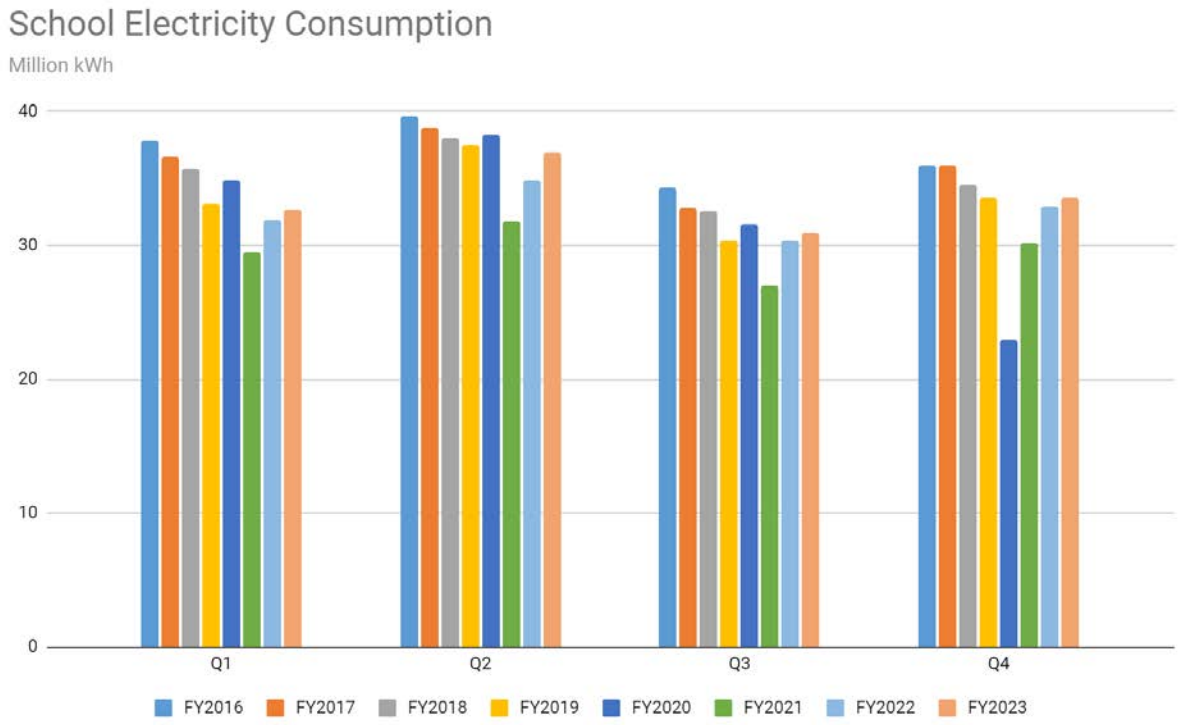



*Figure 1 - Total Electricity Consumption by FQ*

The major factor affecting consumption during FY 2022 was the increased need to provide ventilation and air conditioning for purposes of air quality in school facilities. On a YOY basis, the consumption in all quarters of FY 2023 increased slightly over FY 2022. Consumption has essentially recovered to pre-pandemic levels.

In FY 2023, the solar percent consumption of renewable energy decreased to 16% from 17% in FY 2022. This was due primarily to a 2% reduction in solar energy production. Solar production peaked in FY 2020 at 23,903,943 kWh and has fallen for three straight years. Operational problems with photovoltaic (PV) units at several schools have reduced production from their design.

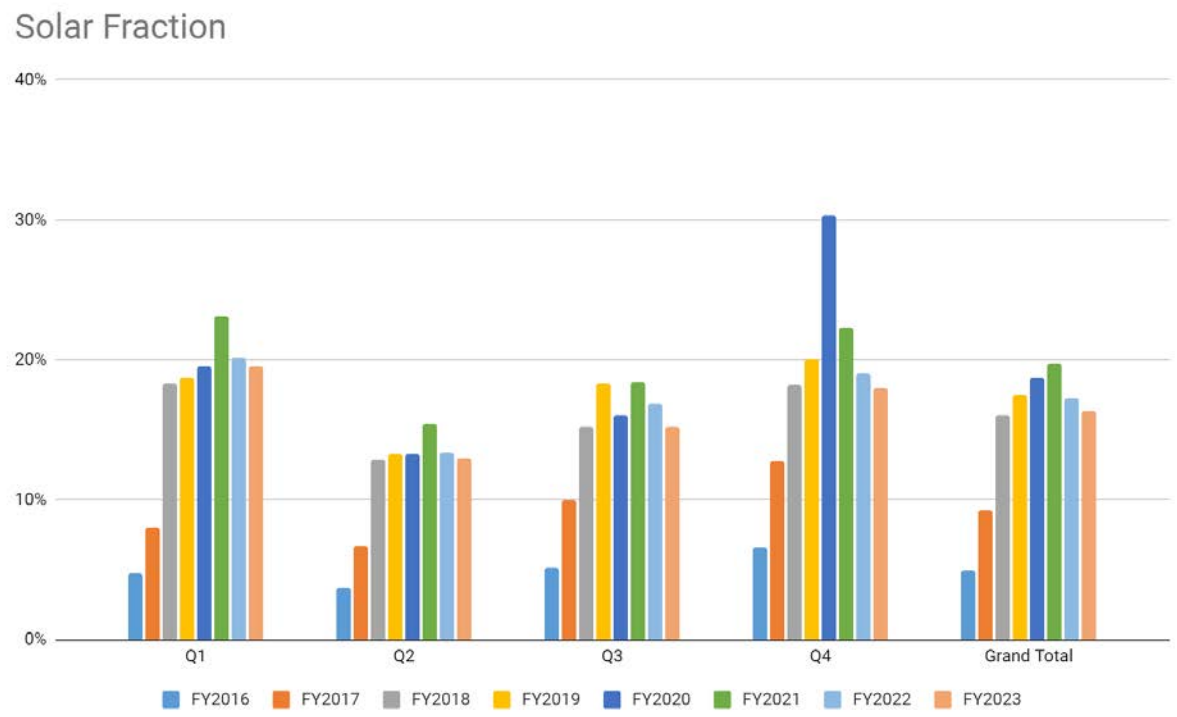



*Figure 2 – Solar Fraction of Electricity Consumption for FY 2016-2022*

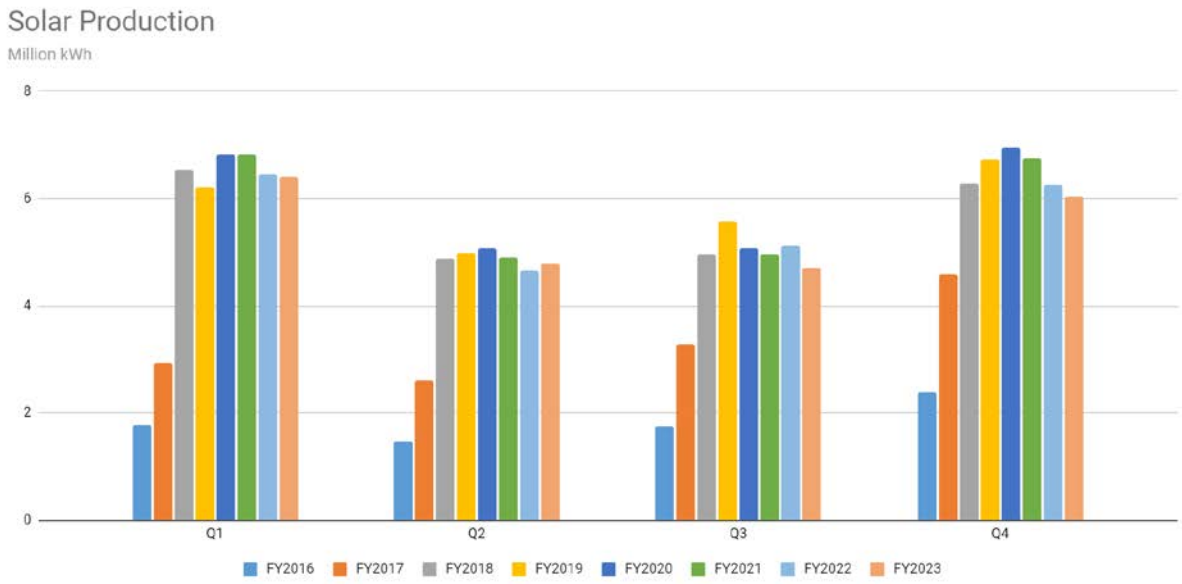



*Figure 3 – Solar Energy Production for FY 2016-2022*

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

Over the past year, it has become apparent that it is the intent of oil producers to maintain the cost of petroleum and other fossil-based fuels at a consistent, high level in order to achieve stable revenues. Unlike the 1980s, oil producers have shown a willingness to reduce production levels and accept lower market shares in order to provide sustainable funding to national budgets. For this reason, the cost of fossil-based utility electricity is expected to remain elevated, averaging on the order of $0.35 - $0.45 per kWh.

On the other hand, recent negotiations for onsite solar PV electricity is averaging $0.2712 per kWH.

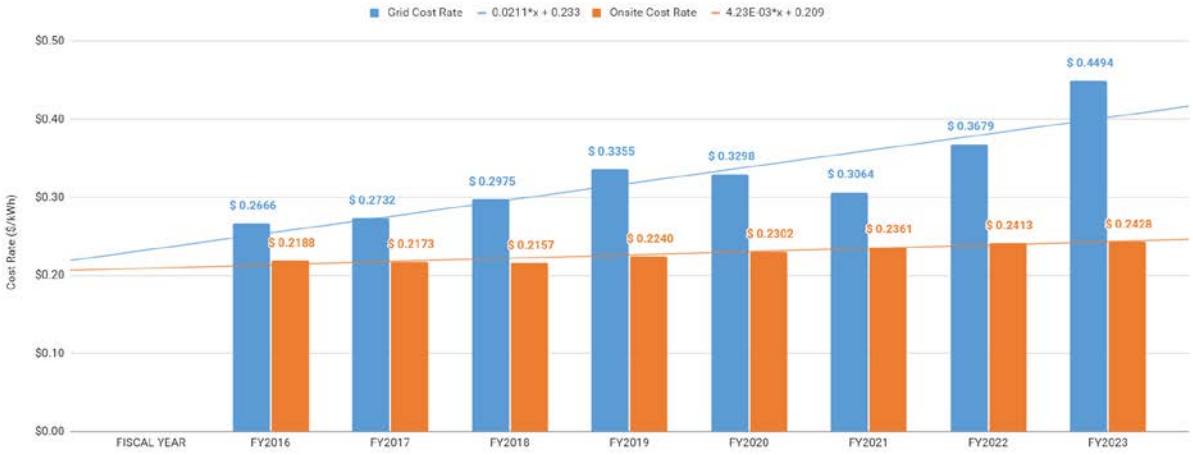
| Proposed FY 2024 PV Solar Addition | | | | |
|---|---|---|---|---|
| School | Annual kWh (Capacity) | Annual kWh (Guaranteed) | Rate | Escalation |
| Campbell HS | 406,250 | 320,770 | $0.2726 | 1% |
| Ewa Makai MS | 410,592 | 349,003 | $0.2726 | 1% |
| Holomua ES | 327,600 | 278,460 | $0.2726 | 1% |
| Kahuku HS&IS | 367,000 | 234,500 | $0.2726 | 1% |
| Kaimuki HS | 597,000 | 488,800 | $0.2726 | 1% |
| Kapolei MS | 645,500 | 473,000 | $0.2726 | 1% |
| Mckinley HS | 181,300 | 163,900 | $0.2410 | 1% |
| Mililani MS | 457,647 | 389,000 | $0.2726 | 1% |
| Moanalua HS | 583,529 | 496,000 | $0.2726 | 1% |
| Radford HS | 280,751 | 238,638 | $0.2726 | 1% |
| Waianae HS | 314,706 | 267,500 | $0.2726 | 1% |
| | 4,571,875 | 3,699,571 | $0.2712 | 1% |

Although this is 12% higher than previous PV solar installed at Hawaii schools, it is still at a discount from even the lowest expected cost of utility electricity.

On a historical basis, although the consumption of utility electricity has declined by 4.6 million kWh per year since FY 2016, the cost for that electricity has actually increased by $1.1 million a year. This is because the rate paid for utility electricity has, on average, gone up faster than reduction in consumption. On average, the utility electricity rate has gone up 2.1% per year. By comparison, the solar PV electricity rate has gone up only 0.4% per year.

The reduction in utility consumption has resulted from both increasing solar PV consumption and overall electricity conservation and energy efficiency measures. Increased solar PV consumption amounted to approximately 1.8 million kWh per year and conservation and energy efficiency amounted to approximately 2.8 million kWh per year.

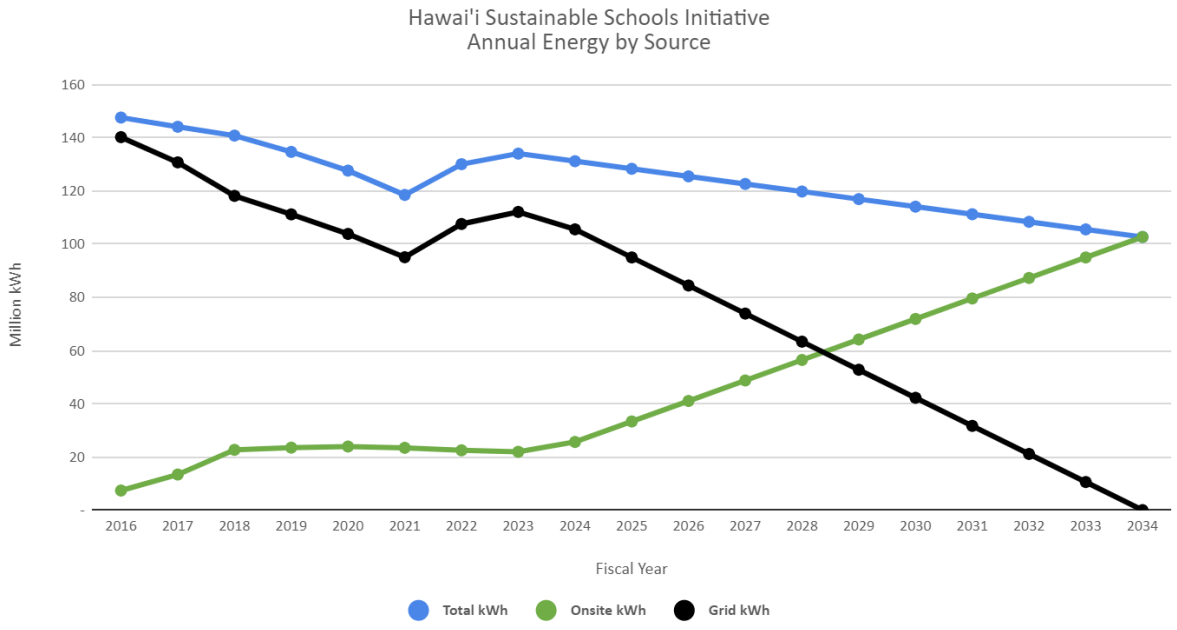
| School Facilities Historical Data | | | | | | |
|---|---|---|---|---|---|---|
| | Grid Data | | Onsite Data | | Total Consumption Data | |
| *FISCAL YEAR* | Grid Cost | Grid kWh | Onsite Cost | Onsite kWh | Total Cost | Total kWh |
| FY2016 | 37,391,894 | 140,234,958 | $1,611,222 | 7,364,016 | $39,003,116 | 147,598,974 |
| FY2017 | 35,715,757 | 130,744,891 | $2,907,605 | 13,383,389 | $38,623,362 | 144,128,280 |
| FY2018 | 35,146,479 | 118,154,761 | $4,887,709 | 22,658,876 | $40,034,187 | 140,813,637 |
| FY2019 | 37,303,479 | 111,196,400 | $5,260,160 | 23,487,709 | $42,602,146 | 134,684,109 |
| FY2020 | 34,243,442 | 103,845,177 | $5,502,586 | 23,903,943 | $39,723,760 | 127,647,855 |
| FY2021 | 29,131,848 | 95,080,156 | $5,529,904 | 23,424,982 | $34,661,751 | 118,505,138 |
| FY2022 | 39,581,971 | 107,580,693 | $5,423,424 | 22,479,425 | $45,005,388 | 130,060,118 |
| FY2023 | 50,378,123 | 112,107,710 | $5,323,051 | 21,923,915 | $55,701,170 | 134,031,625 |
| Annual Change | 1,061,080 | -4,634,366 | $484,892 | 1,787,072 | $1,545,248 | -2,848,500 |

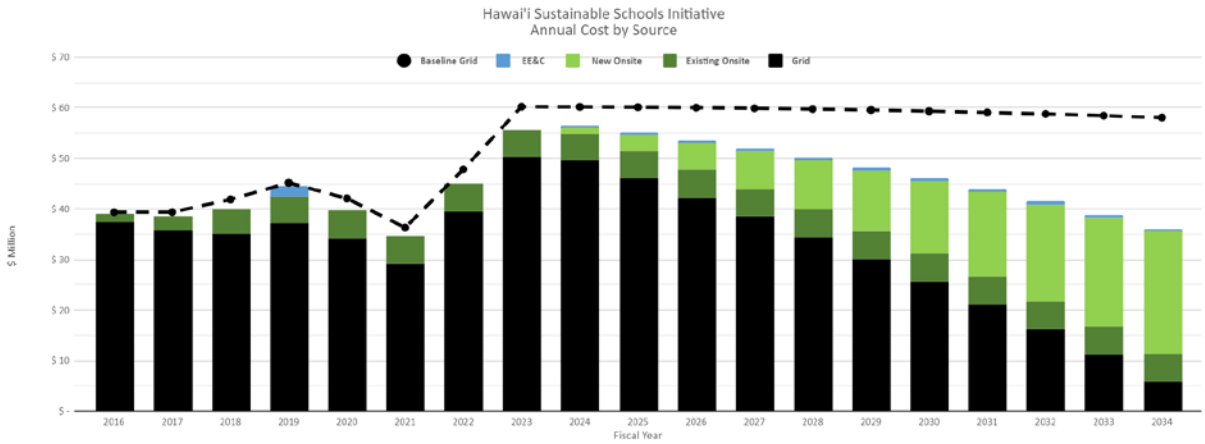



Based on this historical performance, the Department has a plan to accomplish the remaining 11 years of the Sustainable Schools Initiative. The current annual utility consumption level is 112.1 million kWh and the expectation is that over the next 10 years, conservation and energy efficiency will reduce that utility consumption to 80.8 million kWh. In FY 2024, 3.7 million kWh of solar PV will be added to Hawaii schools, reducing utility consumption to 77.1 million kWh. As such, in order to achieve net zero consumption, 7.71 million kWh of solar PV need to be added annually to Hawaii schools during FY 2025-2034.

| Sustainable Schools Initiative Facilities Plan (FY 2024 - 2034) | | | | |
|---|---|---|---|---|
| | Energy Efficiency & Conservation | | Renewable Energy | |
| **Plan FY** | **EE&C kWh** | **EE&C $** | **RE kWh** | **RE $** |
| 2023 | | | | |
| 2024 | 2,848,500 | $ 569,700 | 3,699,571 | $ 1,003,324 |
| **2025** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2026** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2027** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2028** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2029** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2030** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2031** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2032** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2033** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| **2034** | **2,848,500** | **$ 569,700** | **7,707,464** | **$ 2,090,265** |
| 2035 | | | | |
| 2025-2034 Target | | | 77,074,639 | |
| 2024-2034 Total | 31,333,500 | $ 6,266,700 | 80,774,210 | $ 21,905,969 |
| | | | | |
| Notes | 1. FY2023 Utility Consumption = 112,107,710 kWh | | | |
| | 2. FY2024 Contracted RE = 3,699,571 | | | |

The result of this plan is shown in the following two charts:






Note: It has been assumed that continued utility grid connection will incur a minimum bill charge of 10%.

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

Many variables were used in developing the plan in Part 2. The estimates for these variables were mostly derived from historical data. However, historical data cannot predict the future, and so variability can be expected.

Although the cost of alternative energy technology has increased dramatically in the recent past, electric utility rates have also risen. Volatility in both of these factors make it difficult to evaluate the specific economics of net-zero energy.

Past experience with solar energy has demonstrated that higher solar fractions can help to lower the average electric rates in high utility rate regions, such as the neighbor islands, and provide a less volatile rate environment.

There are several challenges in executing a solar PV capital addition program over the duration of a decade.

1. Over 80% of the total solar PV equipment installed will occur over the next decade.
2. In this plan, the engineering estimates of the scale of future energy efficiency and conservation measure impacts and costs are uncertain because the decision to implement these measures will depend on the cost of electricity at that future time.
    a. The cost of electricity depends not only on oil prices but dramatically changing electricity generation mixes at Hawaiian Electric Company (HECO) and Kauai Island Utility Cooperative (KIUC) as they act to achieve their own net zero mandates.
    b. On top of these considerations are plans at HECO to implement a time-of-use tariff structure that will also complicate these decisions by promoting energy storage as a complementary technology with uncertain future costs and capabilities.
3. The potential savings and cost of conservation and energy efficiency measures has not

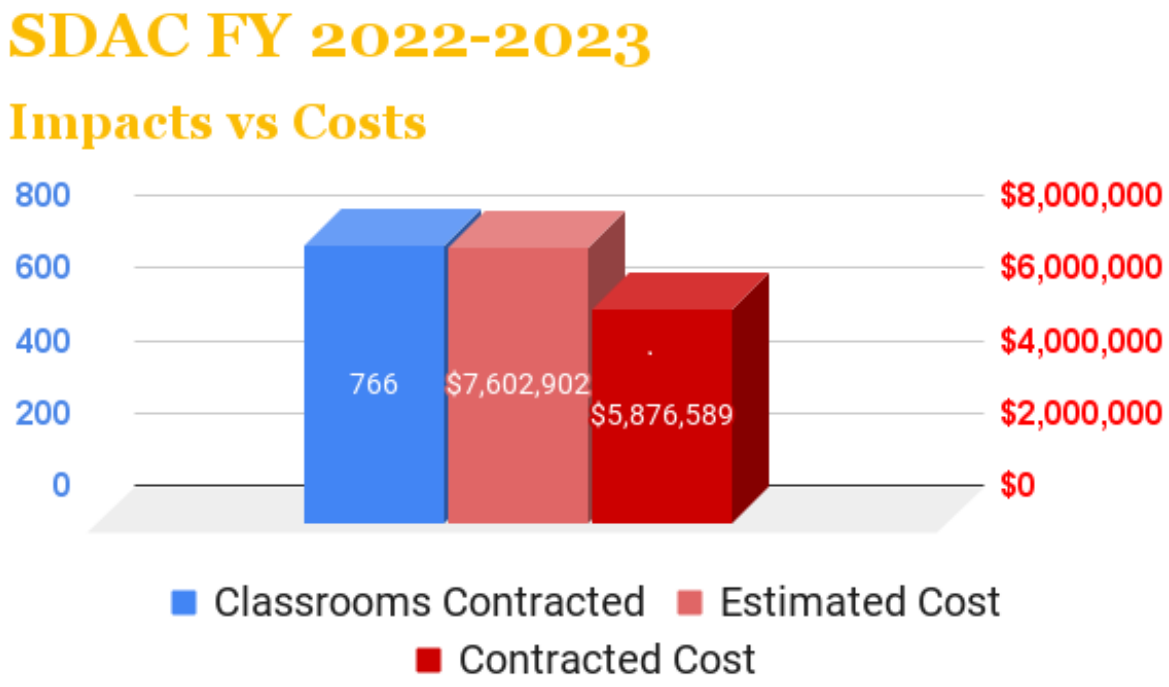
been evaluated. But, history has proven them to be more cost-effective than alternative energy measures.

4. Energy consumption growth may be significant due to:
    a. Increasing air conditioning and electric vehicle charging;
    b. Student population growth; and
    c. Climate change.
5. The cost of future solar PV equipment may increase significantly because of supply chain issues.
6. The productivity of solar PV equipment will decline due to aging.
7. The total cost of solar energy will be higher when disposal costs are factored in.

## 4) IMPLEMENTATION OF MEASURES TO COOL PUBLIC SCHOOL CLASSROOMS SET FORTH IN SECTION 302A-1510(e), HRS:

### School Directed Air Conditioning Program (SDAC) Update

The first phase of the SDAC installed approximately 4,000 window air conditioning units in approximately 2,000 classrooms. In the most recent phase, for fiscal year 2022-2023, 766 classrooms were renovated at an overall cost of $5,876,589. This represents an estimated average cost of $7,672 per classroom.



The final breakdown of the installation data is:

| School | Schools | Classrooms Contracted | Estimated Cost | Contracted Cost | Contracted Cost Per Classroom |
|---|---|---|---|---|---|
| Aiea Elementary | 1 | 2 | $30,000 | $25,600 | $12,800 |
| Ala Wai Elementary | 1 | 1 | $200,000 | $262,745 | $262,745 |
| Dole Middle | 1 | 16 | $422,709 | $422,709 | $26,419 |
| Enchanted Lake Elementary | 1 | 24 | $200,000 | $49,160 | $2,048 |
| Haaheo Elementary | 1 | 13 | $200,000 | $189,974 | $14,613 |
| Hilo High | 1 | 9 | $75,000 | $73,999 | $8,222 |
| Hilo Intermediate | 1 | 17 | $250,000 | $33,939 | $1,996 |
| Hokulani Elementary | 1 | 19 | $200,000 | $96,791 | $5,094 |
| Honaunau Elementary | 1 | 1 | $5,000 | $11,067 | $11,067 |
| Inouye Elementary | 1 | 10 | $220,000 | $133,022 | $13,302 |
| Kahakai Elementary | 1 | 1 | $5,000 | $4,496 | $4,496 |
| Kahuku Elementary | 1 | 10 | $100,000 | $48,320 | $4,832 |
| Kahuku High and Intermediate | 1 | 19 | $205,000 | $127,613 | $6,716 |
| Kailua Elementary | 1 | 30 | $200,000 | $107,370 | $3,579 |
| Kailua High | 1 | 36 | $192,000 | $282,743 | $7,854 |
| Kalaheo High | 1 | 90 | $500,000 | $258,388 | $2,871 |
| Kalanianaole Elementary and Intermediate | 1 | 1 | $50,000 | $13,896 | $13,896 |
| Kaleiopuu Elementary | 1 | 29 | $320,000 | $52,275 | $1,803 |
| Kaneohe Elementary | 1 | 35 | $280,000 | $148,692 | $4,248 |
| Kapiolani Elementary | 1 | 27 | $250,000 | $85,315 | $3,160 |
| King Intermediate | 1 | 3 | $19,950 | $19,950 | $6,650 |
| Konawaena High | 1 | 23 | $200,000 | $183,592 | $7,982 |
| Konawaena Middle | 1 | 5 | $50,000 | $43,860 | $8,772 |
| Leilehua High | 1 | 41 | $225,000 | $246,560 | $6,014 |
| Likelike Elementary | 1 | 9 | $224,999 | $211,591 | $23,510 |
| Lincoln Elementary | 1 | 10 | $220,000 | $57,143 | $5,714 |
| Maemae Elementary | 1 | 31 | $346,800 | $177,289 | $5,719 |
| McKinley High | 1 | 5 | $150,544 | $150,544 | $30,109 |
| Mililani Mauka Elementary | 1 | 6 | $48,000 | $17,465 | $2,911 |
| Naalehu Elementary | 1 | 35 | $525,000 | $843,290 | $24,094 |

| School | Schools | Classrooms Contracted | Estimated Cost | Contracted Cost | Contracted Cost Per Classroom |
|---|---|---|---|---|---|
| Niu Valley Middle | 1 | 16 | $108,000 | $181,960 | $11,373 |
| Pauoa Elementary | 1 | 15 | $147,900 | $80,693 | $5,380 |
| Pearl Ridge Elementary | 1 | 8 | $60,000 | $41,000 | $5,125 |
| Puohala Elementary | 1 | 20 | $160,000 | $120,194 | $6,010 |
| Roosevelt High | 1 | 13 | $143,000 | $323,161 | $24,859 |
| Scott Elementary | 1 | 30 | $80,000 | $100,627 | $3,354 |
| Sunset Beach Elementary | 1 | 7 | $105,000 | $60,080 | $8,583 |
| Wahiawa Elementary | 1 | 16 | $128,000 | $127,478 | $7,967 |
| Wahiawa Middle | 1 | 20 | $160,000 | $149,012 | $7,451 |
| Waialua Elementary | 1 | 29 | $232,000 | $92,345 | $3,184 |
| Waialua High and Intermediate | 1 | 6 | $65,000 | $54,000 | $9,000 |
| Waianae High | 1 | 2 | $25,000 | $16,440 | $8,220 |
| Waikele Elementary | 1 | 2 | $24,000 | $10,341 | $5,171 |
| Waipahu Intermediate | 1 | 24 | $250,000 | $139,860 | $5,828 |
| **Grand Total** | **44** | **766** | **$7,602,902** | **$5,876,589** | **$7,672** |

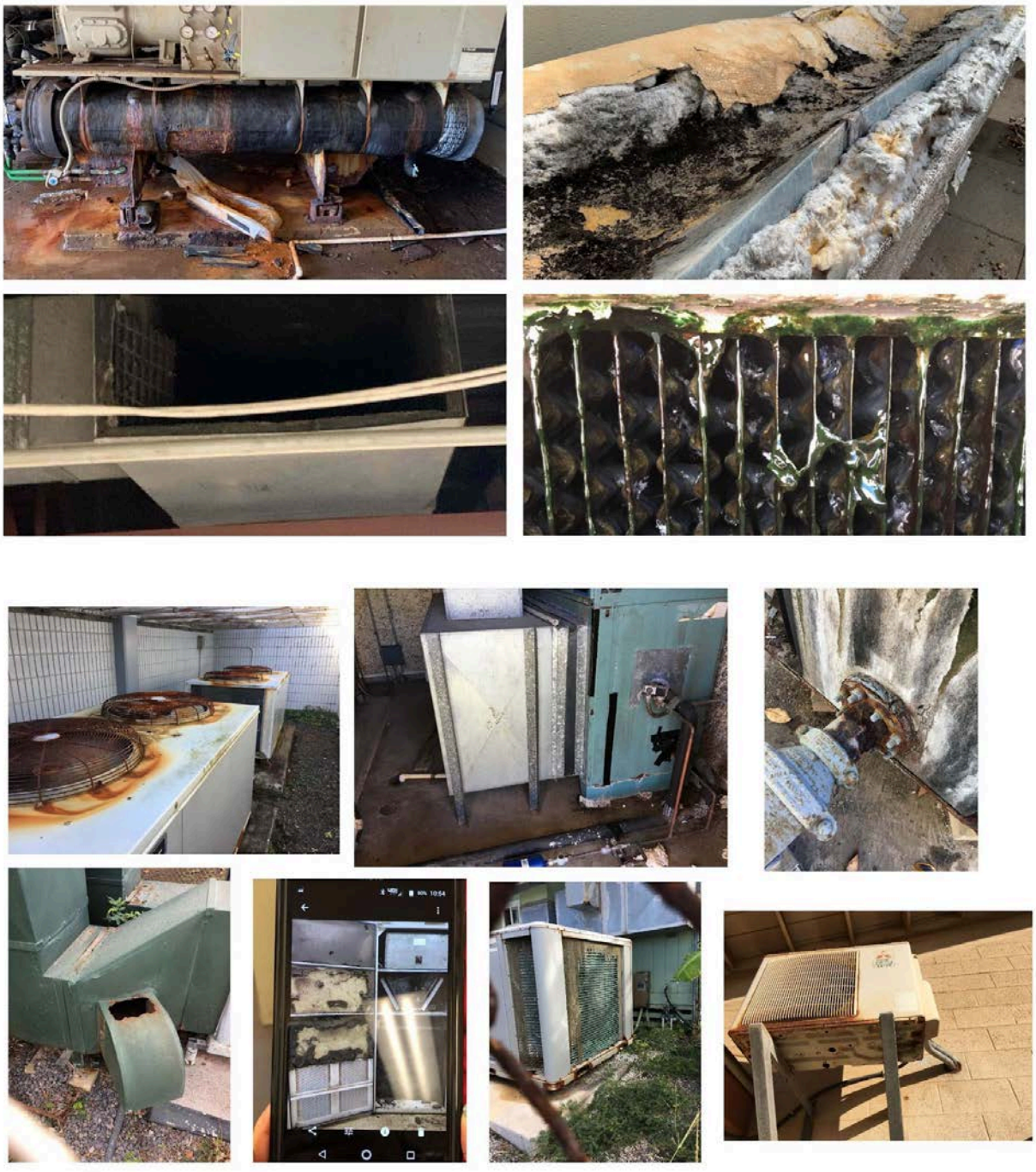
It is estimated that, based on the results of this latest phase of the SDAC, there are a remaining 2,400+ classrooms that still require air conditioning. The current estimated cost for this work is $20,000,000.

However, it should be noted that many of these classrooms may require electrical upgrades in order to support the addition of air conditioning. The costs for these upgrades will probably be considerable and are not included in the cost estimate for the air conditioning itself.

**Types of Air Conditioning Systems**

The Department has service contracts on its multi-unit air conditioning systems. For single-unit systems, there is no service contract as it is more cost-effective to replace the single unit at the end of its life.


The following are pictures of some aging, but currently functioning air conditioning systems in use at our public schools.



**New Air Conditioning Design Standards**

Air Conditioning systems with superior part-load efficiency are specified to replace obsolete systems that are primarily optimized for summer peak loads. The outdated small chillers are being upgraded to a Variable Refrigerant Flow (VRF) system, and the old packaged and window ACs with single-speed compressors are being replaced with units featuring inverters. This transition is expected to result in significant energy savings, with an estimated improvement in efficiency ranging from 20% to 35%.


Air/water-cooled chillers
- Complex design and installation
- Difficult to operate at low loads
- Higher utility and maintenance cost

Variable Refrigerant Flow
- Better efficiency
- Lower overall lifetime cost
- Easier to maintain and operate

The Department is set to introduce the central Building Management System (BMS) in 2024 to enhance energy and operational efficiency. Presently, a basic Monday-to-Friday weekly timer on the local thermostat panel is used in the majority of classrooms, resulting in over 30% of the air conditioning being wasted on unoccupied rooms. The central BMS, complemented by occupancy sensors, holiday and school break schedules, will enable the automatic adjustment or shutdown of AC in unoccupied areas.

**New Cooling Measure**

Kulanihakoi High School boasts an innovative free-cooling system designed to maximize the use of naturally cool air in the mornings and evenings. At night, classrooms are cooled with outside air to establish an ideal condition for the following day. In the early morning, when external conditions are cool and dry, air conditioning units are deactivated, and the building

control activates automatic windows, exhaust fans, and chimney vents to introduce cool outdoor air into the classrooms.

**List of Completed HVAC Efficiency Improvement Projects**

| School Name | Project # | Description |
|---|---|---|
| Ahrens Elem | R61010-18 | Replace existing window units with new split system units at P-1, P-1A, P-2, P-3, P-4, P-5 and P-6. |
| Aliiolani Elem | R61009-18 | Replace existing split system units at Building A. |
| Baldwin High | R51202-19 | Replace existing packaged units at Buildings H, R and P15. |
| Campbell High | R61016-18 | Replace existing packaged unit at P14. |
| Castle High | R61000-18 | Replace existing split system units at Buildings K, P16 and P17. |
| De Silva Elem | P11255-22 | Replace PTAC unit and remove broken water heater at TB2. |
| Farrington High | R61013-18 | Replace existing split system units and window units with new split system units at Buildings A, J, K and N. |
| Fern Elem | R61013-18 | Replace existing split system units at Buildings B and G. |
| Hawaii School for the Deaf and Blind | P25254-21 | Replace kitchen exhaust fan at Building H. |
| Heeia Elem | R61000-18 | Replace existing window units at Building A with split system units. |
| Highlands Inter | R61017-18 | Replace existing split system unit at Building K. |
| Hookena Elem | R17222-20 | Replace existing window units with new split system units at Building A. |
| Iao Inter | P51206-20 | Replace the existing heat pump at Building G. |
| Ilima Inter | R61016-18 | Replace existing window units with new split system units at TB5 and TB6. |
| Jefferson Elem | R61009-18 | Replace existing window units with new split system unit at Building Q. |
| Kaahumanu Elem | R61008-18 | Replace existing window units with new split system units at P-1, P-2 and P-3. |

| School Name | Project # | Description |
|---|---|---|
| Kailua High | R61000-18 | Replace existing window units in rooms D10 and D24B with split system units. |
| Kailua High | Q93237-20 | Install new split system units and appurtenances at Building T. |
| Kaimuki High | R61015-18 | Replace existing packaged unit with new split system unit at Building F. |
| Kaimuki Middle | R61015-18 | Replace existing split system units and window units with new split system units at Building R and V. |
| Kaiulani Elem | R61008-18 | Replace existing split system units at Buildings A, B and C. |
| Kalani High | R61015-18 | Replace existing split system units and window units with new split system units at Buildings H and J. |
| Kalihi Elem | R61014-18 | Replace existing split system units at Building B. |
| Kalihi Kai Elem | R61014-18 | Replace existing split system units and window units with new split system units at Buildings B, F, G and J. |
| Kalihi Uka Elem | R61014-18 | Replace existing split system units at Building B. |
| Kapalama Elem | R61013-18 | Replace existing split system units at Buildings C and F. |
| Kapolei Elem | R82216-20 | Replace existing window units at TB-1, TB-2, TB-3, TB-4, TB-5, TB-6, TB-7, TB-8, TB-9, TB-10, TB-11, TB-12 and TB-15. |
| Kau High & Pahala Elem | Q13245-20 | Replace existing chill box, freezer, blowers and compressors at Building C. |
| Kauluwela Elem | R61011-18 | Replace existing split system units at Building D. |
| Kawananakoa Middle | R61001-18 | Replace existing split system units at Building A. |
| Keaau High | P14208-22 | Replace existing water heaters and appurtenances at Building C. |
| Keaau Middle | P14209-22 | Replace existing water heater in Cafeteria. |
| Keaukaha Elem | R11208-19 | Replace existing packaged unit, split system units, window unit and appurtenances at Buildings A, B, C, D, E, G, P1, P2, P5 and TB1. |
| Keoneula Elem | R61016-18 | Replace existing split system unit and window unit with new split system units at Buildings B and C. |
| Kihei Elem | R55201-20 | Replace existing split system units and window unit at Buildings A, B, D, L and P-23. |
| Kohala Elem | - | Replace existing split system units. |
| Konawaena High | R17207-19 | Replace existing packaged unit at Building U. |
| Konawaena Middle | R17224-20 | Replace existing split system units, outside air fan and appurtenances at Building F. |
| Lanakila Elem | R61011-18 | Replace existing split system unit at Building L. |
| Lehua Elem | R61017-18 | Replace existing split system units at Buildings C and D. |
| Likelike Elem | R61011-18 | Replace existing split system units at Building L. |
| Maemae Elem | R61001-18 | Replace existing split system unit at Building A. |
| Makakilo Elem | R82217-20 | Replace existing split system units at Building H. |

| School Name | Project # | Description |
|---|---|---|
| McKinley High | R61008-18 | Replace existing split system units and window units at Building M and P10. |
| Nanakuli Elem | R61010-18 | Replace existing split system units at Building E. |
| Niu Valley Middle | R61015-18 | Replace existing window units at Building L. |
| Noelani Elem | R61001-18 | Replace existing window units at Buildings D and E with split system units. |
| Pearl City High | P84254-21 | Replace existing packaged unit and appurtenances at Building J. |
| Pearl Harbor Kai Elem | R61012-18 | Replace existing split system unit at Building D. |
| Pohakea Elem | R61016-18 | Replace existing split system units at Building F. |
| Pomaikai Elem | P55278-21 | Replace existing fire sprinkler risers at Buildings B, D and E. |
| Roosevelt High | R61001-18 | Replace existing window unit at Building A with split system units. |
| Royal Elem | R61011-18 | Replace existing split system units at Building A. |
| Salt Lake Elem | R61012-18 | Replace existing split system units and outdoor air units at Building E. |
| Shafter Elem | R61012-18 | Replace existing split system units at Building D. |
| Waiahole Elem | R61000-18 | Replace existing split system unit at Building D. |
| Waiakea High | R19202-19 | Replace existing packaged unit and split system units at Buildings A and M. |
| Waialae Elem PCS | P25216-22 | Replace existing sewer and vent piping at Building D Kitchen. |
| Waialua Elem | R76221-20 | Replace existing window units at Building B with split system units. |
| Waianae High | R61010-18 | Replace existing window unit with new split system unit at Building H. Replace existing rooftop packaged units at Building Q. |
| Waianae Inter | R61010-18 | Replace existing window units with new split system units at Building C and P8. |
| Waihee Elem | R51200-20 | Replace existing split system units at Building B. |
| Waimalu Elem | R61012-18 | Replace existing split system unit at Building E. |
| Waipahu Elem | R61010-18 | Replace existing window unit with new split system unit at Pre-Plus portable. |
| Waipahu Inter | R61010-18 | Replace existing window units with new split system units at Building L and P-6. |
| Royal Elem | R61011-18 | Replace existing split system units at Building A. |
| Salt Lake Elem | R61012-18 | Replace existing split system units and outdoor air units at Building E. |
| Shafter Elem | R61012-18 | Replace existing split system units at Building D. |
| Waiahole Elem | R61000-18 | Replace existing split system unit at Building D. |
| Waiakea High | R19202-19 | Replace existing packaged unit and split system units at Buildings A and M. |

| School Name | Project # | Description |
|---|---|---|
| Waialae Elem PCS | P25216-22 | Replace existing sewer and vent piping at Building D Kitchen. |
| Waialua Elem | R76221-20 | Replace existing window units at Building B with split system units. |
| Waianae High | R61010-18 | Replace existing window unit with new split system unit at Building H. Replace existing rooftop packaged units at Building Q. |
| Waianae Inter | R61010-18 | Replace existing window units with new split system units at Building C and P8. |
| Waihee Elem | R51200-20 | Replace existing split system units at Building B. |
| Waimalu Elem | R61012-18 | Replace existing split system unit at Building E. |
| Waipahu Elem | R61010-18 | Replace existing window unit with new split system unit at Pre-Plus portable. |
| Waipahu Inter | R61010-18 | Replace existing window units with new split system units at Building L and P-6. |

**Air Conditioning Data Collection**

The Department is facing some difficulties in acquiring up-to-date data on the existing equipment installed in classrooms. There are over 10,300 classrooms in Hawaii's 258 public schools. An average of 40 classrooms per school would take over 10 person-hours to conduct just a 15-minute inspection of each room. To conduct such inspections regularly would require additional personnel.

The table below provides a list of the scope of facilities at each Department school:

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Ahuimanu El Total | 18 | 368 | 15,586 |
| Aiea El Total | 21 | 420 | 18,762 |
| Aiea High Total | 67 | 1,802 | 75,676 |
| Aiea Intermediate Total | 43 | 1,111 | 42,187 |
| Aikahi El Total | 24 | 498 | 23,380 |
| Aina Haina El Total | 31 | 735 | 26,489 |
| Ala Wai El Total | 30 | 631 | 25,149 |
| Aliamanu El Total | 42 | 877 | 35,640 |
| Aliamanu Middle Total | 49 | 1,222 | 47,942 |
| Aliiolani El Total | 22 | 417 | 20,785 |
| Alvah Scott El Total | 28 | 620 | 23,541 |
| Anuenue El Total | 27 | 601 | 23,286 |
| August Ahrens El Total | 70 | 1,521 | 61,169 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Baldwin High Total | 91 | 2,213 | 87,783 |
| Barbers Point El Total | 33 | 693 | 36,816 |
| Campbell High Total | 143 | 3,654 | 156,828 |
| Castle High Total | 103 | 2,653 | 118,132 |
| Chiefess Kamakahelei Middle Total | 64 | 1,674 | 67,103 |
| de Silva El Total | 21 | 449 | 17,712 |
| Dole Middle Total | 51 | 1,317 | 54,469 |
| Eleele El Total | 22 | 472 | 18,621 |
| Enchanted Lake El Total | 24 | 524 | 23,326 |
| Ewa Beach El Total | 38 | 797 | 36,141 |
| Ewa El Total | 46 | 987 | 43,609 |
| Ewa Makai Middle Total | 48 | 1,223 | 55,385 |
| Farrington High Total | 129 | 3,348 | 139,941 |
| Fern El Total | 25 | 562 | 23,196 |
| Haaheo El Total | 8 | 172 | 5,609 |
| Hahaione El Total | 28 | 587 | 24,430 |
| Haiku El Total | 20 | 384 | 14,978 |
| Hale Kula El Total | 42 | 857 | 29,252 |
| Haleiwa El Total | 26 | 472 | 22,467 |
| Hana High & El Total | 31 | 730 | 37,064 |
| Hanalei El Total | 14 | 315 | 12,229 |
| Hauula El Total | 15 | 325 | 12,900 |
| Hawaii School for the Deaf and Blind Total | 18 | 428 | 10,545 |
| Heeia El Total | 37 | 755 | 34,116 |
| Helemano El Total | 31 | 622 | 26,234 |
| Hickam El Total | 29 | 601 | 25,093 |
| Highlands Int Total | 57 | 1,446 | 64,940 |
| Hilo High Total | 82 | 2,013 | 80,440 |
| Hilo Int Total | 36 | 989 | 45,046 |
| Hilo Union El Total | 26 | 564 | 20,338 |
| Ho'okele El Total | 45 | 900 | 46,031 |

| | | | |
|---|---|---|---|
| Hokulani El Total | 19 | 419 | 17,466 |
| Holomua El Total | 51 | 1,054 | 42,618 |
| Holualoa El Total | 28 | 575 | 19,448 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Honaunau El Total | 14 | 276 | 11,788 |
| Honokaa El Total | 17 | 364 | 15,968 |
| Honokaa High & Int Total | 54 | 1,509 | 52,164 |
| Honowai El Total | 35 | 771 | 31,463 |
| Hookena El Total | 17 | 308 | 14,568 |
| Iao Int Total | 50 | 1,292 | 40,615 |
| Iliahi El Total | 23 | 465 | 21,439 |
| Ilima Int Total | 56 | 1,397 | 60,802 |
| Iroquois Point El Total | 36 | 805 | 31,366 |
| Jarrett Middle Total | 31 | 746 | 32,222 |
| Jefferson El Total | 20 | 382 | 21,531 |
| Ka'a'awa El Total | 8 | 172 | 7,137 |
| Kaahumanu El Total | 29 | 629 | 25,318 |
| Kaala El Total | 25 | 539 | 21,590 |
| Kaelepulu El Total | 7 | 160 | 11,782 |
| Kaewai El Total | 21 | 433 | 18,232 |
| Kahakai El Total | 35 | 759 | 30,870 |
| Kahala El Total | 27 | 550 | 23,480 |
| Kahalu'u El Total | 17 | 349 | 15,148 |
| Kahuku El Total | 22 | 492 | 18,495 |
| Kahuku High & Int Total | 97 | 2,473 | 104,955 |
| Kahului El Total | 45 | 955 | 36,523 |
| Kailua El Total | 27 | 524 | 24,760 |
| Kailua High Total | 70 | 1,847 | 90,513 |
| Kailua Int Total | 56 | 1,436 | 62,416 |
| Kaimiloa El Total | 32 | 689 | 27,716 |
| Kaimuki High Total | 78 | 2,029 | 78,921 |
| Kaimuki Middle Total | 56 | 1,512 | 60,921 |

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|---|---|---|---|
| Kainalu El Total | 29 | 626 | 24,714 |
| Kaiser High Total | 64 | 1,668 | 84,900 |
| Kaiulani El Total | 24 | 511 | 22,084 |
| Kalaheo El Total | 32 | 646 | 22,005 |
| Kalaheo High Total | 63 | 1,663 | 85,235 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Kalakaua Middle Total | 53 | 1,354 | 55,785 |
| Kalama Int Total | 57 | 1,396 | 52,980 |
| Kalani High Total | 63 | 1,691 | 76,072 |
| Kalanianaole El & Int Total | 25 | 579 | 21,125 |
| Kaleiopuu El Total | 49 | 1,059 | 44,511 |
| Kalihi El Total | 30 | 711 | 27,737 |
| Kalihi Kai El Total | 35 | 784 | 33,887 |
| Kalihi Uka El Total | 17 | 362 | 16,240 |
| Kalihi Waena El Total | 29 | 580 | 26,428 |
| Kamali'i El Total | 37 | 812 | 32,815 |
| Kamehameha III El Total | 39 | 820 | 30,675 |
| Kamiloiki El Total | 23 | 473 | 25,308 |
| Kaneohe El Total | 29 | 619 | 26,552 |
| Kanoelani El Total | 37 | 743 | 33,512 |
| Kapa'a El Total | 52 | 1,143 | 44,954 |
| Kapa'a High Total | 66 | 1,791 | 75,689 |
| Kapa'a Middle Total | 47 | 1,169 | 46,350 |
| Kapalama El Total | 31 | 666 | 25,801 |
| Kapiolani El Total | 23 | 507 | 22,157 |
| Kapolei El Total | 46 | 964 | 38,828 |
| Kapolei High Total | 174 | 4,495 | 151,759 |
| Kapolei Middle Total | 73 | 1,744 | 73,616 |
| Kapunahala El Total | 30 | 628 | 27,228 |
| Kau High & Pahala El Total | 39 | 998 | 43,927 |
| Kauai High Total | 87 | 2,254 | 71,405 |
| Kauluwela El Total | 17 | 354 | 14,079 |

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|---|---|---|---|
| Kaumana El Total | 15 | 324 | 12,017 |
| Kaumualii El Total | 33 | 690 | 30,027 |
| Kaunakakai El Total | 17 | 364 | 13,852 |
| Kawananakoa Middle Total | 50 | 1,315 | 49,194 |
| Ke Kula o Ehunuikaimalino Total | 14 | 300 | 9,777 |
| Kea'au El Total | 41 | 891 | 34,283 |
| Kea'au High Total | 81 | 2,157 | 75,549 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Keaau Middle Total | 46 | 1,204 | 55,376 |
| Kealakehe El Total | 55 | 988 | 47,121 |
| Kealakehe High Total | 80 | 2,104 | 101,756 |
| Kealakehe Int Total | 58 | 1,519 | 59,300 |
| Keaukaha El Total | 23 | 452 | 17,987 |
| Ke'elikolani Middle Total | 35 | 920 | 30,381 |
| Kekaha El Total | 18 | 382 | 15,417 |
| Kekaulike High Total | 81 | 1,999 | 92,354 |
| Keolu El Total | 10 | 217 | 8,484 |
| Keone'ula El Total | 48 | 1,061 | 41,724 |
| Keonepoko El Total | 36 | 696 | 32,170 |
| Kihei El Total | 65 | 1,371 | 57,081 |
| Kilauea El Total | 19 | 414 | 15,007 |
| Kilohana El Total | 8 | 185 | 7,082 |
| King Int Total | 55 | 1,384 | 78,149 |
| Kipapa El Total | 41 | 869 | 36,222 |
| Kohala El Total | 21 | 443 | 20,250 |
| Kohala High Total | 32 | 810 | 36,176 |
| Kohala Middle Total | 15 | 362 | 9,770 |
| Koko Head El Total | 22 | 448 | 21,046 |
| Koloa El Total | 20 | 432 | 17,130 |
| Konawaena El Total | 30 | 620 | 26,698 |
| Konawaena High Total | 62 | 1,615 | 74,931 |
| Konawaena Middle Total | 34 | 785 | 29,059 |

| | | | |
|---|---|---|---|
| Kuhio El Total | 18 | 379 | 15,772 |
| Kula El Total | 27 | 556 | 24,013 |
| Lahaina Int Total | 40 | 1,001 | 37,871 |
| Lahainaluna High Total | 57 | 1,551 | 62,758 |
| Laie El Total | 42 | 915 | 39,524 |
| Lanai High & El Total | 41 | 1,012 | 60,598 |
| Lanakila El Total | 22 | 451 | 19,496 |
| Lehua El Total | 23 | 460 | 21,479 |
| Leihoku El Total | 45 | 1,020 | 39,868 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Leilehua High Total | 109 | 2,820 | 121,610 |
| Lihikai El Total | 52 | 1,081 | 44,647 |
| Liholiho El Total | 22 | 424 | 18,515 |
| Likelike El Total | 23 | 491 | 21,410 |
| Linapuni El Total | 12 | 240 | 11,624 |
| Lincoln El Total | 27 | 484 | 24,500 |
| Lokelani Int Total | 39 | 1,017 | 38,156 |
| Lunalilo El Total | 25 | 521 | 22,771 |
| Ma'ema'e El Total | 28 | 612 | 24,906 |
| Maili El Total | 48 | 944 | 39,613 |
| Makaha El Total | 34 | 655 | 31,296 |
| Makakilo El Total | 24 | 535 | 19,996 |
| Makalapa El Total | 33 | 639 | 29,882 |
| Makawao El Total | 35 | 698 | 24,278 |
| Manana El Total | 22 | 484 | 18,868 |
| Manoa El Total | 28 | 578 | 24,293 |
| Maui High Total | 106 | 2,751 | 103,297 |
| Maui Waena Int Total | 52 | 1,297 | 50,693 |
| Mauka Lani El Total | 33 | 706 | 27,503 |
| Maunaloa El Total | 8 | 172 | 4,534 |
| Maunawili El Total | 19 | 417 | 16,708 |
| McKinley High Total | 115 | 3,026 | 107,221 |

| | | | |
|---|---|---|---|
| McKinley High - MCSA McKinley Community School Total | 28 | 700 | 15,285 |
| Mililani High Total | 125 | 3,157 | 140,859 |
| Mililani Ike El Total | 47 | 990 | 36,638 |
| Mililani Mauka El Total | 48 | 975 | 39,331 |
| Mililani Middle Total | 80 | 2,038 | 79,157 |
| Mililani Uka El Total | 34 | 706 | 29,529 |
| Mililani Waena El Total | 38 | 793 | 34,611 |
| Moanalua El Total | 32 | 714 | 27,744 |
| Moanalua High Total | 100 | 2,673 | 126,387 |
| Moanalua Middle Total | 44 | 1,155 | 39,249 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Mokapu El Total | 37 | 799 | 29,690 |
| Mokulele El Total | 27 | 569 | 23,064 |
| Molokai High Total | 42 | 1,059 | 44,373 |
| Molokai Middle Total | 14 | 350 | 13,862 |
| Momilani El Total | 17 | 365 | 13,891 |
| Mountain View El Total | 27 | 597 | 22,270 |
| Na'alehu El Total | 27 | 563 | 19,164 |
| Nanaikapono El Total | 54 | 1,109 | 39,512 |
| Nanakuli El Total | 26 | 507 | 26,664 |
| Nanakuli High & Int Total | 79 | 2,131 | 94,882 |
| Nimitz El Total | 34 | 705 | 26,777 |
| Niu Valley Middle Total | 38 | 979 | 40,769 |
| Noelani El Total | 21 | 457 | 18,701 |
| Nuuanu El Total | 16 | 355 | 14,063 |
| Olomana Int & High - OYC Only Total | 15 | 382 | 9,226 |
| Pa'auilo El & Int Total | 17 | 411 | 15,486 |
| Pahoa El Total | 25 | 526 | 21,945 |
| Pahoa High & Int Total | 55 | 1,429 | 66,665 |
| Paia El Total | 21 | 404 | 13,783 |
| Palisades El Total | 23 | 478 | 20,804 |

| | | | |
|---|---|---|---|
| Palolo El Total | 16 | 329 | 14,477 |
| Parker El Total | 23 | 420 | 21,833 |
| Pauoa El Total | 17 | 362 | 15,689 |
| Pearl City El Total | 28 | 572 | 23,992 |
| Pearl City High Total | 115 | 2,992 | 146,098 |
| Pearl City Highlands El Total | 25 | 518 | 26,078 |
| Pearl Harbor El Total | 38 | 795 | 29,716 |
| Pearl Harbor Kai El Total | 27 | 605 | 23,549 |
| Pearl Ridge El Total | 27 | 595 | 23,729 |
| Pohakea El Total | 29 | 574 | 26,668 |
| Pomaikai El Total | 39 | 762 | 32,564 |
| Pope El Total | 20 | 429 | 19,016 |
| Princess Nahienaena El Total | 37 | 796 | 32,392 |
| Pu'ohala El Total | 21 | 449 | 19,289 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Pu'u Kukui El Total | 33 | 685 | 30,534 |
| Pu'uhale El Total | 18 | 232 | 16,054 |
| Pukalani El Total | 22 | 453 | 19,775 |
| Radford High Total | 77 | 1,953 | 96,986 |
| Red Hill El Total | 29 | 605 | 23,729 |
| Roosevelt High Total | 80 | 2,105 | 82,448 |
| Royal El Total | 16 | 347 | 13,823 |
| Salt Lake El Total | 40 | 778 | 34,072 |
| Shafter El Total | 18 | 395 | 16,451 |
| Solomon El Total | 50 | 1,045 | 48,686 |
| Stevenson Middle Total | 47 | 1,191 | 40,938 |
| Sunset Beach El Total | 23 | 497 | 19,319 |
| Wahiawa El Total | 28 | 590 | 23,770 |
| Wahiawa Middle Total | 58 | 1,473 | 60,734 |
| Waiahole El Total | 12 | 208 | 12,069 |
| Waiakea El Total | 42 | 906 | 39,644 |
| Waiakea High Total | 96 | 2,492 | 131,901 |

| | | | |
|---|---|---|---|
| Waiakea Int Total | 53 | 1,348 | 55,853 |
| Waiakeawaena El Total | 34 | 809 | 29,463 |
| Waialua El Total | 32 | 665 | 28,142 |
| Waialua High & Int Total | 60 | 1,572 | 67,035 |
| Waianae El Total | 42 | 923 | 34,946 |
| Waianae High Total | 109 | 2,801 | 133,529 |
| Waianae Int Total | 55 | 1,352 | 57,755 |
| Waiau El Total | 26 | 547 | 28,634 |
| Waihee El Total | 39 | 842 | 35,321 |
| Waikele El Total | 32 | 670 | 26,424 |
| Waikiki El Total | 24 | 522 | 21,761 |
| Waikoloa El & Middle Total | 42 | 928 | 35,352 |
| Wailuku El Total | 41 | 823 | 35,296 |
| Waimalu El Total | 30 | 623 | 26,325 |
| Waimanalo El & Int Total | 38 | 844 | 35,042 |
| Waimea Canyon Middle Total | 39 | 959 | 36,744 |

| *School Name* | Classroom Count | HIDOE Design Enrollment | Sq Ft. Area |
|---|---|---|---|
| Waimea El Total | 30 | 584 | 26,598 |
| Waimea High Total | 46 | 1,242 | 55,399 |
| Waipahu El Total | 54 | 1,231 | 47,962 |
| Waipahu High Total | 125 | 3,209 | 145,569 |
| Waipahu Int Total | 70 | 1,750 | 73,815 |
| Washington Middle Total | 58 | 1,505 | 52,376 |
| Webling El Total | 26 | 564 | 23,057 |
| Wheeler El Total | 42 | 832 | 38,665 |
| Wheeler Middle Total | 49 | 1,281 | 46,487 |
| Wilcox El Total | 48 | 999 | 48,259 |
| Wilson El Total | 29 | 595 | 25,583 |
| **Grand Total** | **10,367** | **242,777** | **10,165,825** |

**Proposed Legislation**

The Department does not have any sustainable schools proposed legislation for this upcoming legislative session.