

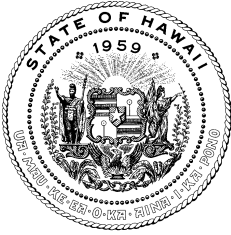
**STATE OF HAWAII  
DEPARTMENT OF HEALTH**

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**Testimony in SUPPORT of HB2413  
RELATING TO ENERGY**

REPRESENTATIVE NICOLE E. LOWEN, CHAIR  
HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION  
Hearing Date: 2/4/2020 Room Number: 325

- 1 **Fiscal Implications:** This measure may impact the priorities identified in the Governor's
- 2 Executive Budget Request for the Department of Health's (Department) appropriations and
- 3 personnel priorities. Undetermined appropriation of general funds to conduct the study.
- 4 **Department Testimony:** The Department of Health supports this measure. We agree with the
- 5 legislature's finding that proper management of solar panel waste will be a rapidly growing
- 6 problem in the State as panels installed in the 1990s reach their end-of-life within the next
- 7 decade. The Department has already begun evaluating disposal options and looks forward to our
- 8 continued collaboration with the State Energy Office.
- 9 **Offered Amendments:** None.
- 10 Thank you for the opportunity to testify on this measure.



# HAWAII STATE ENERGY OFFICE STATE OF HAWAII

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# LATE

DAVID Y. IGE  
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SCOTT J. GLENN  
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## Testimony of **SCOTT J. GLENN, Chief Energy Officer**

### before the **HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION**

Tuesday, February 4, 2020

8:30 AM

State Capitol, Conference Room 325

### In SUPPORT of **HB 2413** **RELATING TO ENERGY.**

Chair Lowen, Vice Chair Wildberger, and members of the Committee. The Hawaii State Energy Office (HSEO) supports, with amendments HB 2413, which requires HSEO, in consultation with the Department of Health (DOH), to conduct a comprehensive study of the disposal and recycling of solar panels, and requires an interim report and a final report to the legislature.

HSEO's comments are guided by its mission to promote energy efficiency, renewable energy, energy resiliency, and clean transportation to help achieve a decarbonized economy. HB 2413 is consistent with the Department of Business, Economic Development and Tourism's (DBEDT) Fiscal Year 2021 Supplemental Operating Budget submitted to the Hawaii State Legislature this year that asks for \$175,000 appropriated from the Energy Security Special Fund to HSEO to "conduct an initial analysis or assessment of recycling of clean energy waste." HSEO recognizes the need to conduct this analysis at this time as earlier generation technologies are now passing their useful commercial lifetime and need to be disposed, including photovoltaic (PV) modules (commonly known as "PV panels"),<sup>1</sup> solar thermal collectors (solar water heater panels) and water heaters,<sup>2</sup> and batteries from electric vehicles. In addition, many new technologies are now being deployed and will be deployed that must be accounted for in the future when they are no longer useful, including batteries for PV systems.

HSEO respectfully requests that this measure be revised to avoid inconsistencies between this measure and HSEO's budget request. HSEO's budget request reads as follows:

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<sup>1</sup> <https://www.eia.gov/energyexplained/solar/photovoltaics-and-electricity.php>

<sup>2</sup> <https://www.energy.gov/energysaver/water-heating/solar-water-heaters>

**Title of Request:** Funding request for analysis/assessment of recycling of clean energy waste.

**Description of Request:** Funding from the Energy Security Special Fund to conduct an initial analysis or assessment to work with stakeholders to identify concerns, opportunities and measures to address discarded clean energy products in Hawaii.

HSEO asks the Legislature to amend HB 2413 to enable HSEO to expand its scope to include other “clean energy” materials or wastes, specifically energy storage (battery) technologies and other prevalent components. More discussion is needed to determine if the water tanks should be included in this study or if they are currently sufficiently handled as “white goods.”

These recommended revisions may be accomplished by revising the language in Section 2 of the bill, starting on page 3, line 3, to read as follows:

SECTION 2. (a) The state energy office, in consultation with the department of health, shall conduct a comprehensive study to determine the best practices for disposal and recycling of discarded clean energy products in Hawaii.

(b) The study shall address:

- (1) The amount of aging photovoltaic and solar water heater panels in the State that will need to be disposed or recycled;
- (2) Other types of clean energy materials expected to be discarded in Hawaii in significant quantities, including glass, frames, wiring, inverters, batteries, etc.;
- (2) The type and chemical composition of those materials;
- (3) Best practices for collection, disposal, and recycling of these materials;
- (4) Whether a fee should be charged for disposal or recycling of these materials; and
- (5) Any other issues that the state office of energy and the department of health consider appropriate for management, recycling, and disposal of these materials.

Thank you for the opportunity to testify.



## HOUSE COMMITTEE ON ENERGY & ENVIRONMENTAL PROTECTION

February 4, 2020, 8:30 a.m.  
(*Testimony is 2 pages long*)

### TESTIMONY IN SUPPORT OF HB 2413 WITH ***PROPOSED AMENDMENTS***

Aloha Chair Lowen and Members of the Committee:

Hawaii PV Coalition respectfully supports HB 2413, which requires the Hawaii State Energy Office to study the disposal and recycling of solar panels.

Solar panels are a durable electronic item, and will likely be used for 20-30 years. This distinguishes them from most other electronic items, like cellphones or computers, which may have a product life of just a few years. Decades from now, solar panels have the continuing potential to be reused or refurbished with a “second life” of generating power.

While it is important for Hawaii to take a proactive approach to the eventual disposal of solar panels, it is also prudent to acknowledge that we may not anticipate all of the reuse and recycling options available to us three decades from now. Today, most broken solar panels can and are recycled. PV panels consist of glass, aluminum, copper, silver, and semiconductor materials that can be successfully recovered and reused. By weight, more than 80 percent of a typical PV panel is glass and aluminum, both common and easy-to-recycle materials. We anticipate the capacity to recycle and reuse solar panels will only grow in the future.

Finally, we note the importance of following national best practices. Hawaii, despite its relative importance in adopting renewable energy, is still considered a small market. Complex standards or unique programs may discourage manufacturers from bringing their products to Hawaii. An analogous situation is happening in Washington, where some manufacturers are opting out of that state because of recently adopted recycling standards. A lack of supply will adversely impact Hawaii residents, and unnecessarily drive up the overall price of clean energy. Ideally there would be a national recycling

program but, in lieu of that, ideally Hawaii would follow the same process or programs adopted regionally.

***Proposed Amendments:***

As with any bill, improvements can be made. Here, HPVC recommends specifically building in a stakeholder process to ensure the study takes into account the particular aspects of purchasing, installing, and recycling solar panels in Hawaii.

SECTION 2. (a) The state energy office, in consultation with the department of health and relevant stakeholders such as the Hawaii Solar Energy Association and the Hawaii PV Coalition, shall conduct a comprehensive study to determine the best practices for disposal and recycling of solar panels and appliances dependent on solar energy, such as solar water heaters.

Secondly, HPVC recommends a deeper look at national/international best practices, and consideration of following similar programs. In Section 2 (b), we recommend the following amendment:

(3) Best practices for collection, disposal, and recycling of photovoltaic waste for adoption across local, national, and international communities and consideration of how Hawaii can emulate or adopt these practices with the least impact on product availability and cost to Hawaii residents;

Similarly in Section 2 (b)

(#) The impact on Hawaii's clean energy adoption and economic growth if Hawaii adopts a particular recycling practice;

Mahalo for the opportunity to submit these comments.

*The Hawaii PV Coalition was formed in 2005 to support the greater use and more rapid diffusion of solar electric applications across the state. Working with business owners, homeowners and local and national stakeholders in the PV industry, the Coalition has been active during the state legislative sessions supporting pro-PV and renewable energy bills and helping inform elected representatives about the benefits of Hawaii-based solar electric applications.*



**LATE**

**Hawaii Solar Energy Association**  
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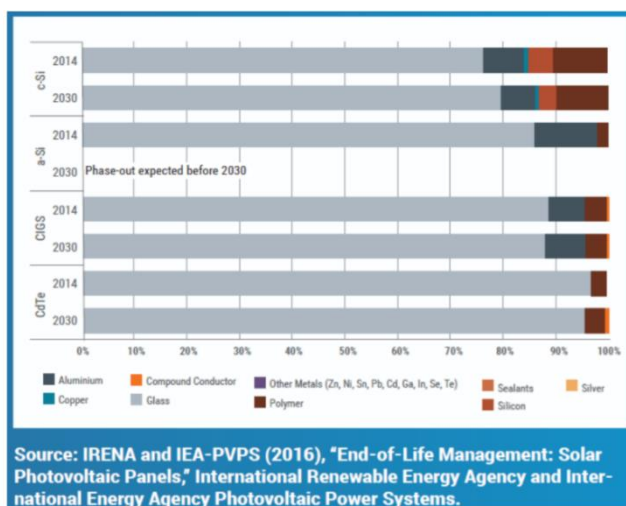
**TESTIMONY OF THE HAWAII SOLAR ENERGY ASSOCIATION  
IN REGARD TO HB 2413, RELATING TO ENERGY  
BEFORE THE  
HOUSE COMMITTEE ON ENERGY AND ENVIRONMENTAL PROTECTION  
ON  
TUESDAY, FEBRUARY 4, 2020**

Chair Lowen, Vice-Chair Wildberger, and members of the committee, my name is Will Giese, and I am the Executive Director of the Hawaii Solar Energy Association, Inc. (HSEA).

The HSEA was founded in 1977 to further solar energy and related arts, sciences and technologies with concern for the ecologic, social and economic fabric of the Hawaiian Islands. Our membership includes the vast majority of locally owned and operated solar installers, contractors, distributors, manufacturers, and inspectors across all islands.

**HSEA OFFERS COMMENTS on HB2413.** This measure requires the Hawaii State Energy Office, in consultation with DOH, to conduct a comprehensive study of the disposal and recycling of solar panels. Requires an interim report and a final report to the legislature. Appropriates funds for study.

The HSEA appreciates the Hawaii State Legislature's attempt in examining the issues of PV recycling, and more broadly e-waste recycling, in Hawaii. Currently, PV waste is approximately 1000X less than other comparable types of e-waste, such as smartphones and laptops. Additionally, PV modules themselves can typically last upwards of 25 years or more, with performance warranties for modules themselves regularly exceeding 20 years.



As far as end-of-life care for PV system components goes, photovoltaics has the benefit of being the energy source that has been given the longest amount of end-of-life consideration by national organizations, such as the National Renewable Energy Laboratory (NREL). Thankfully, PV systems contribute a comparatively small amount of waste over a much longer time period as previously mentioned. By weight, a single PV module is

80% or more glass and aluminum, material that is easily recycled and reused. End of life



## **Hawaii Solar Energy Association**

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PV modules can also be reused, albeit at lower per-foot efficiencies, for a variety of other projects. Old or decommissioned PV modules and equipment has been used in Hawaii to power low voltage water pumps or electronics controllers, for example.

HSEA's national sister organization, the Solar Energy Industries Association (SEIA), maintains a national PV recycling program across 11 states with plans to expand 10 more in the next few years.<sup>1</sup> This program provides access to a network of PV module recycling companies and various other benefits. Many HSEA members not based in Hawaii are already part of this network. We support Hawaii being added to this network, and will continue to work with SEIA on this issue.

In the United States, there are at least 7 states that have examined or considered PV recycling measures in the last few years that the Hawaii State Legislature should carefully consider. They include California<sup>2</sup>, New York<sup>3</sup>, New Jersey<sup>4</sup>, and North Carolina<sup>5</sup>. Outside of the United States, the European Union has enacted an expansive solar waste recycling program across all their member countries.<sup>6</sup> We suggest that Hawaii examine these policies extensively in the course of their research should this report be commissioned.

If Hawaii were to adopt a PV recycling program subject to this study, we should do so collaboratively with other states as well as industry. Many solar module manufacturers sell modules in the EU, for instance, and imposing regulations or processes that are markedly different from those already present in other markets would likely cause negative impacts to the local Hawaii market. Being cognizant of these different initiatives and policies will contribute to a better PV recycling program in the long run.

As a general matter, we suggest that this study and any future program consider the following aspects and principles:

- Programs should encourage industry to work together with each other, recycling companies and stakeholders
- Incentives should be included to encourage innovation in reuse or recycling streams, equipment and processes to maximize material recovery and potential reuse
- Programs should not unnecessarily or unreasonably increase the cost of solar.
- Due to long, durable life of PV modules, program funds collected in the near term may exceed the actual cost of recycling in the future as products are more reused

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<sup>1</sup> <https://www.seia.org/initiatives/seia-national-pv-recycling-program>

<sup>2</sup> <https://dtsc.ca.gov/photovoltaic-modules-pv-modules-universal-waste-management-regulations/>

<sup>3</sup> <https://www.nysenate.gov/legislation/bills/2019/S942>

<sup>4</sup> <https://www.njleg.state.nj.us/bills/BillView.asp?BillNumber=S601>

<sup>5</sup> <https://www.ncleg.gov/Sessions/2019/Bills/House/PDF/H329v5.pdf>

<sup>6</sup> <http://www.solarwaste.eu/faq/>



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vs. disposed. In addition, as waste volume grows, the value of recoverable material will increase.

Finally, we ask that a representative for the HSEA as well as the solar module manufacturing industry be included as stakeholders in consultation with the HSEA and the DOH. The HSEA is the only organization in Hawaii that represents national and international solar module manufacturers and has the expertise to contribute in a meaningful way to this study.

The HSEA **OFFERS COMMENTS on HB2413**, and suggests that the legislature consider the above points, as well as designating the HSEA and an industry representative in assisting with the completion of this study.

Thank you for the opportunity to testify.



**HB-2413**

Submitted on: 2/3/2020 2:55:07 AM

Testimony for EEP on 2/4/2020 8:30:00 AM

Submitted By	Organization	Testifier Position	Present at Hearing
Jennifer Azuma Chrupalyk	Individual	Support	No

Comments:

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House Committee on Energy & Environmental Protection  
Hearing Date: Tuesday, February 4, 2020, 8:30 AM  
State Capitol, Conference Room #325

Subject: Testimony in Support of **HB 2413 Relating to Energy**

Aloha Chair Lowen, Vice Chair Wildberger and Committee Members

Mahalo for the opportunity to provide testimony in **strong support of HB 2413**. This measure calls for the Hawaii State Energy Office (HSEO), in consultation with the Department of Health (DOH), “to conduct a comprehensive study of the disposal and recycling of solar panels, and requires an interim report and a final report to the legislature.” I have read and would like to echo the supportive testimony submitted by the HSEO, including the amendments that office suggests.

Hawaii’s support for clean energy is, in large part, driven by our growing awareness of the challenges we face with climate change – locally, nationally, and globally. I have lived “off the grid”, relying on photovoltaic panels/batteries for several decades and have been encouraged by the exponential proliferation of PV installations in our island community in the past two decades - from individual residences and throughout subdivisions to businesses and schools. Just in the past two few years we saw Waiahole Elementary School’s roof covered with panels that have the potential to support not just the school itself but the community that surrounds it during weather challenges as an emergency shelter. Our area, Waiahole-Waikane, is in the midst of a community-driven Strategic Planning effort that we hope will become a model for other agrarian/semi-rural communities. Energy self-sufficiency important to our future just as it is for the entire state.

The above said, we must all be cognizant of the challenges that come with use of energy alternatives. In addition to looking at the project end of useful life for PV panels and the opportunity to recycle component elements back into new use, we must also prepare for the unexpected – events that we hope will not impact us but for which there is an increasingly high likelihood: extreme weather, tropical storms, hurricanes etc. To this end, I would like to suggest adding language to encourage this study to address waste recovery for such events. The recent example of both storm and earthquake damage in Puerto Rico is worth noting. Expertise in energy and infrastructure planning, response during emergencies has already been shared

between our similar island communities. We should take advantage of real-time experience to inform this urgently needed study.

Lastly, I would like to thank Windward Representative Lisa Kitagawa for helping to initiate this measure and for taking time to work closely with the Hawaii State Energy Office under DBEDT to move discussion forward. There are many in the solar/PV/alternative energy sector to whom HSEO and DOH can turn to for input. Time is of the essence in this effort.

Mahalo for your time

John L. Reppun