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Presenter: Scott Glenn

Organization: HSEO

Welcome to the 2021 Legislative Energy Briefing

Presented by the Hawai'i State Energy Office (HSEO) and the Hawai'i Energy Policy Forum (HEPF)
With support from The Hawai'i Natural Energy Institute (HNEI) Hosted by ThinkTech Hawaii



2021 Legislative Energy Briefing



001

Presenter: Scott Glenn

Organization: HSEO

Welcome to the 2021 Legislative Energy Briefing

| Time | Topic |
|---------|--------------------------------------------------|
| 2:00 PM | Welcome |
| 2:25 PM | Energy Assurance & Resilience |
| 2:50 PM | Critical Solar Pathways to 100% Renewable Energy |
| 3:15 PM | Energy Efficiency and Affordability |
| 3:40 PM | Clean Transportation |
| 4:05 PM | Utility Regulatory Review |
| 4:20 PM | Closing |



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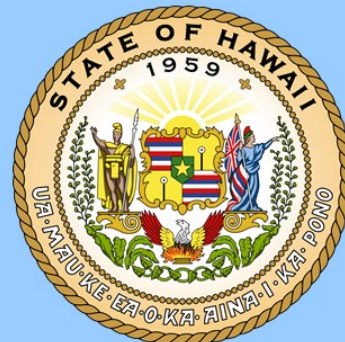


Presenter: Glenn Wakai

Organization: Senate

- Situation – Need to get energy projects approved and people working
- Challenges – Stakeholders picking their favorite renewable/storage and utility not interconnecting fast enough
- 2021 Solutions – Work together or pull back on the RPS.

Representative Nicole E. Lowen



Hawaii House of Representatives
District 6: Kailua-Kona, Holualoa, Kalaoa

Chair of the Energy and Environmental Protection
Committee

Next Topic:

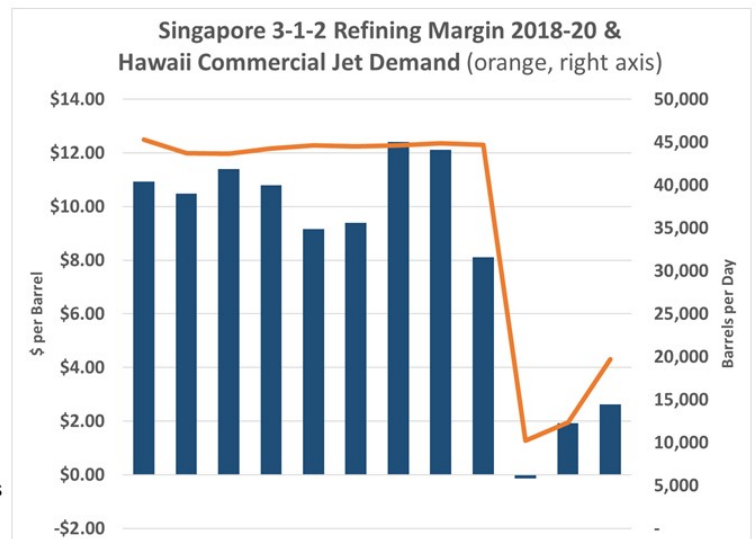
Energy Assurance and Resilience

004

Presenter: Eric Wright

Organization:  Par Hawaii

- Positioning business to be successful as Hawaii transitions into renewable energy future
- Navigating historic shifts in fuel market driven by COVID-19
- With dramatic change in jet fuel demand, shifted away from jet production to bolster utility fuel production
- Reduced costs and adapted to changes in market demand and margins
- Successfully executed \$30+ million major maintenance project; worked closely with SEO & DOH on precautions for out of state contractors (no positive cases!)



Notes:

1. Singapore 3-1-2: computed by taking 1 part gasoline and 2 parts middle distillates (jet & diesel) as created from a barrel of Brent Crude.

2. Source data for commercial jet demand: Hawaii Fueling Facilities Corporation.

Presenter: Alicia Moy

Organization: Hawaii Gas

Energy Assurance and Resilience

Presenter: David Bissell Organization: Kauai Island Utility Cooperative

Energy Assurance and Resilience

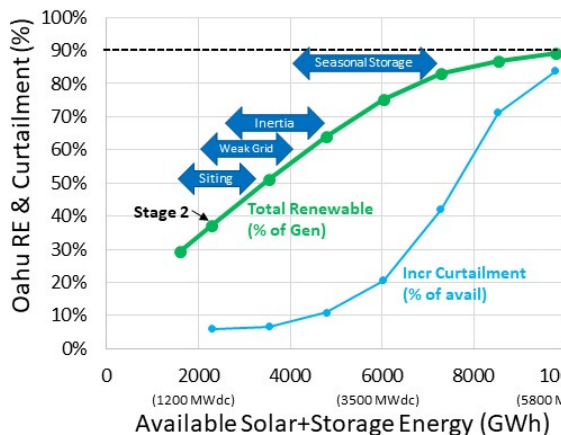
Energy Assurance & Resilience

- Must address energy reliability, security, and resilience up and down supply chain
- Multi-pronged, prioritized approaches rather than silver-bullets
- Solutions must be informed by our communities
- Recognize heightened needs for critical customer loads
- 2021 focus:
 - Reinforce cyber/physical security of all parts of electric system in face of growing threats
 - Improve reliability, both on generation and transmission & distribution system
 - Enhance resilience through proactive asset replacement, hardening, enhanced vegetation management, automation, and use of new technologies and solutions
 - Accelerate Grid Modernization

Next Topic:

Critical Solar Pathways to 100% Renewable Energy

Can Solar Take Us To 100% Renewable Energy?



- HNEI/Telos have developed a novel high-fidelity tool that provides insights into the optimal operation of Hawaii's future grids dominated by solar plus storage. This tool has been used to inform PUC on reliability concerns with upcoming retirement of AES (avail [here](#)) and is currently being used to quantify potential mitigation measures and to assess future thermal unit retirements.
- Solar plus storage is a viable option for continued development but will not take us to 100%. Even under very optimistic assumptions, incremental curtailment increases to above 40% at 80% renewable penetration.
- Land availability and new transmission are major barriers to u-PV
- Rooftop access and reliable edge-of-grid controls are barriers to d-PV

FUTURE NEEDS

RELIABILITY AND RESILIENCE

- Better strategies for use of vast battery resources to provide grid services and minimize unnecessary capital expenditure
- Better understanding of the impact of fossil fleet retirement on reliability and stability (e.g. need for dispatchable generation)
- Greater emphasis on resilience in the selection of technologies and siting of projects.
- Accelerate use of AI, monitoring, and communications technologies for DER technologies including demand response

OTHER

- Rate structures must ensure equity across all rate-payer groups
- Better articulation of goals: resilience, GHG, cost



TELOS ENERGY



HNEI
Hawaii's Natural Energy Institute

School of Ocean and Earth Science and Technology
University of Hawaii at Mānoa

Presenter: Brian Gold Organization: Hawai'i Solar Energy Association

Critical Solar Pathways to 100% Renewable Energy

Presenter: Wren Wescoatt

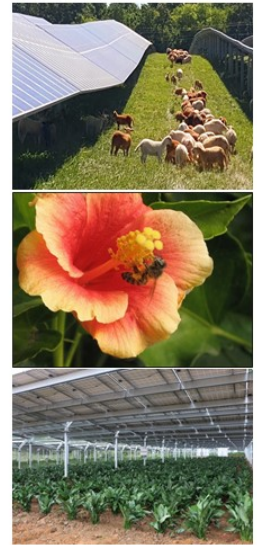
Organization: Longroad Energy

Utility-Scale Solar Projects:

- Low-cost energy; replace oil/coal; > 50% by 2025
- Clean power for all residents + EV charging + rail
- \$ 2B in construction; > 1000 jobs

Sharing land with agriculture, both priorities:

- Find ways to co-use land for solar and farming
- Research compatible crops & livestock
- Design future solar to work with more ag uses
- Incentivize cooperation rather than blocking solar from Class-B/C agricultural land



Presenter: Eric Enos

Community Member; Ka'ala Farm

Critical Solar Pathways to 100% Renewable Energy

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Presenter: Damien T.K. Kim

Organization: IBEW Local 1186



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Next Topic:

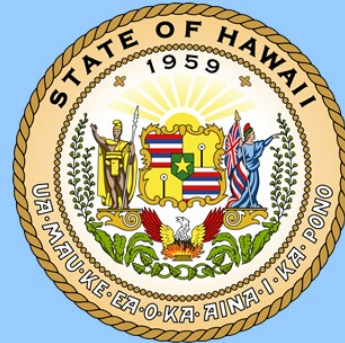
Energy Efficiency and Affordability



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Presenter: Gwen Yamamoto Lau

Organization: Hawaii Green Infrastructure Authority

- Situation: Economic fallout from COVID significantly impacts lower-income, small businesses and government
- Challenges: Limited capital within the State
- 2021 Solutions: (1) Access Federal funding sources; and (2) Create “new” cash flow via innovative financing



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Situation

- Highest energy costs in the nation exacerbated by pandemic

Challenges

- Identifying those in greatest need
- How to engage with targeted communities
- Building energy literacy; including everyone in the clean energy transition

2021 Solutions

- Increased focus and funding
- Increased virtual engagements
- Grow existing and establish new partnerships
- Create community capacity
- Achieve deeper positive impacts



Situation

- external changes – unexpected; expected
- public and private sector opportunities

Challenges

- development timeline
- capital – competing; lacking; otherwise



2021 Solutions

- new financing models
- actionable process roundtables
- carbon and/or other pricing mechanisms
- broad community engagement
- more microgrids + efficiency
- pilot projects with speed
- Positioning Hawai'i to move with Biden Administration

Solar Capacity: kW DC

Annual Solar PV Generation: kwh

Energy Storage Capacity: MWh

Status: Operating / Contracted



UNIVERSITY of HAWAII*

COMMUNITY COLLEGES

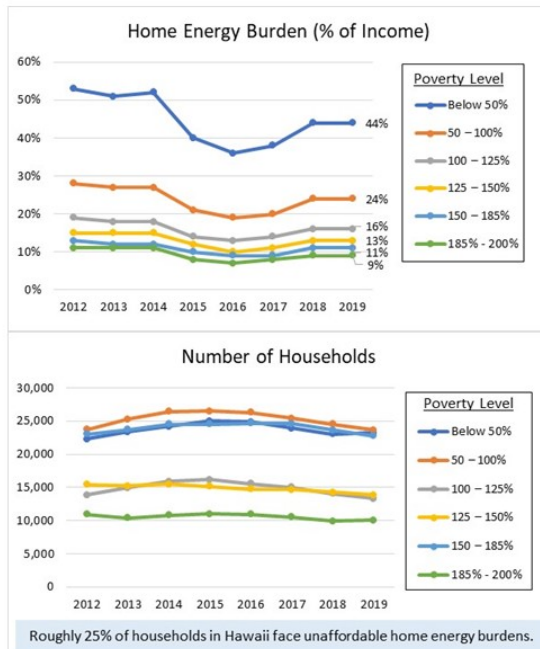


| 369 kW DC | 1,900 kW DC | 1,760 kW DC | 575 kW DC | 1,680 kW DC | 2,920 kW DC | 1,320 kW DC |
|-----------------------|-------------------------|-------------------------|-----------------------|-------------------------|-------------------------|-------------------------|
| 234,518 annual kwh | 3,088,056 annual kwh | 3,055,056 annual kwh | 829,725 annual kwh | 3,835,651 annual kwh | 4,213,560 annual kwh | 1,045,048 annual kwh |
| 0 | 6.331 MWh | 6.331 MWh | 0.174 MWh | 9.623 MWh | 13.262 MWh | 6.331 MWh |
| Operating | Contracted | Contracted | Contracted | Operating | Operating | Operating |

Presenter: Dean Nishina



Organization: Division of Consumer Advocacy

Source: Fisher, Sheehan & Colton. (2012-2019). Home Energy Affordability Gap: Hawaii. http://www.homeenergyaffordabilitygap.com/03a_affordabilityData.html

COVID-19 Consumer and Utility Impacts from Utility Arrearages and Utility Costs (Cumulative Through November 30, 2020)

| | | # Accounts Delinquent A/R | % of A/R Delinquent |
|----------------------------------|---------------|------------------------------|------------------------|
| Hawaii Gas* | \$ 595,144 | 1,520 | - |
| Hawaiian Electric Companies | \$ 28,862,795 | 66,620 | 17.40% |
| Kauai Island Utility Cooperative | \$ 782,569 | 4,876 | 53.45% |

*Hawaii Gas data is through October 2020. Total A/R not provided.

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Next Topic:

Clean Transportation



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020

Presenter: Ed Sniffen

Organization: Department of Transportation

Clean Transportation



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Presenter: Ben Sullivan

Organization: County of Kauaʻi

Clean Transportation

Presenter: Aki Marceau

Organization: Hawaiian Electric

Situation



Reduces CO2
from vehicles
by 56% by
2045



Creates jobs for
maintenance, electrical
contracting, and service
technicians



Led by
community
driven
initiatives



Improves
renewable
energy
integration

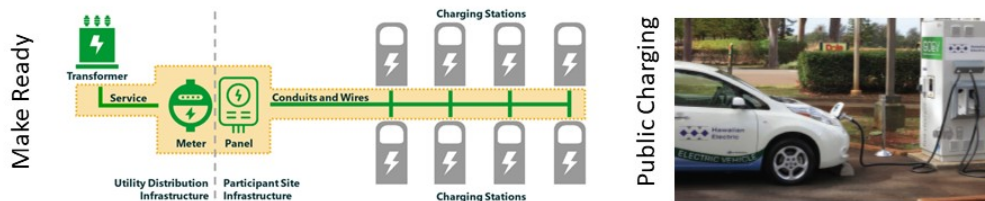


Downward pressure
on rates &
accessible to
frontline
communities

Challenges

MYTH

2021
Solutions

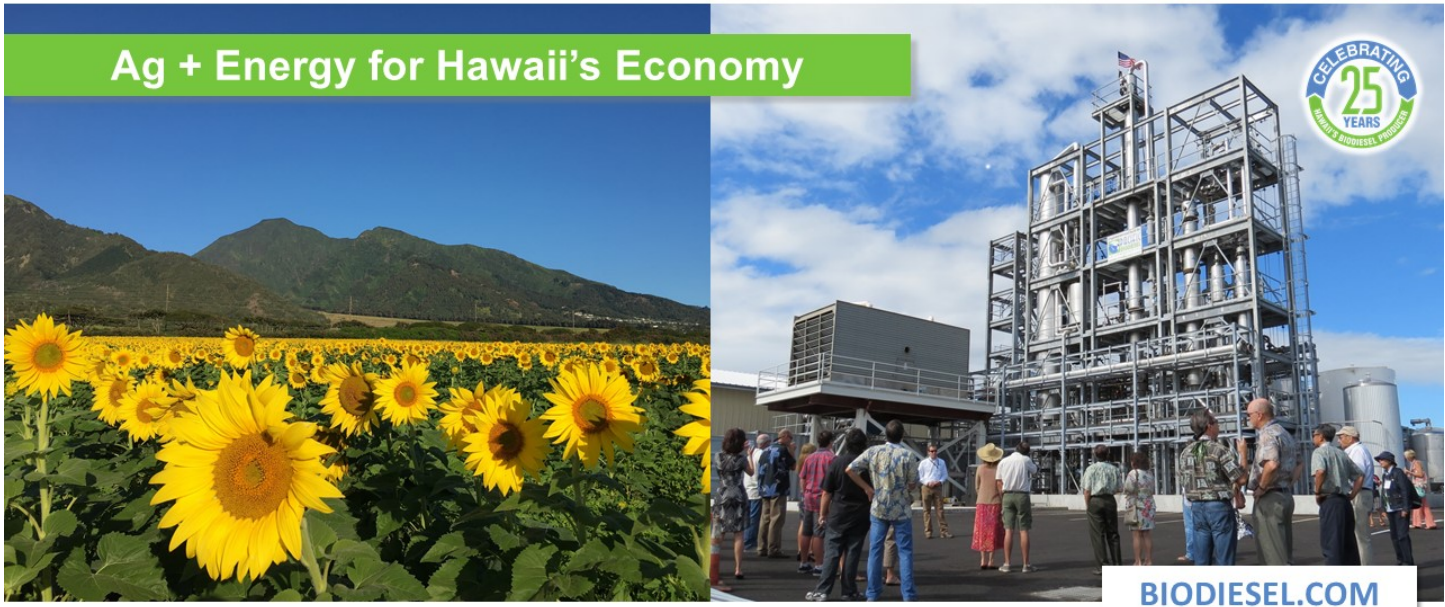


Rates



Presenter: Robert King, Founder & President

Organization:



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A Hawaii-based non-profit advancing hydrogen production from local renewable energy resources. Our members assist with education, policy, and projects that help move green hydrogen forward in Hawaii.

SITUATION

- Lack of awareness
- Difficult project economics

CHALLENGES

- Education/Outreach
- Batteries, Hydrogen, Both?

2021 SOLUTIONS

- Increased awareness, economics getting better!

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Presenter: Thor Toma

Organization: Servco Pacific Inc.

- Servco Hydrogen
- Hydrogen Fueling Infrastructure
- All-New 2nd Generation Toyota Mirai Fuel Cell Vehicle



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Next Topic:

Utility Regulatory Review



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Presenter: Jay Griffin

Public Utilities Commission

Utility Regulatory Review



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Thank You

Mahalo Nui Loa

*...to the speakers, organizers, attendees,
and all who have made this event possible, including:*



energy.hawaii.gov



www.hnei.hawaii.edu



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