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## A BILL FOR AN ACT

RELATING TO GRID-CONNECTED ENERGY STORAGE SYSTEMS.

**BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:**

1           SECTION 1. The legislature finds that grid-connected  
2 energy storage systems improve and maintain the reliability of  
3 the electrical grid. The use of grid-connected energy storage  
4 systems enables an increase in the interconnection rate of  
5 residential solar systems because peak daytime generation can  
6 shift to meet evening peak demand. Further, grid-connected  
7 energy storage systems lower ratepayer costs by deferring  
8 network distribution and transmission upgrades and by mitigating  
9 the need for new fossil fuel generation. Finally, expanding  
10 grid-connected energy storage systems provides for an increase  
11 in the utilization of intermittent wind and solar resources.

12           However, the legislature also finds that there are barriers  
13 to the deployment of grid-connected energy storage systems. For  
14 example, it is difficult to adequately quantify the benefits  
15 associated with integrating storage with renewable distributed  
16 generation resources. The legislature further finds that there



1 is also inadequate regulatory impetus to require the adoption of  
2 grid-connected energy storage technologies.

3 The purpose of this Act is to create a storage compliance  
4 mandate and implement the use of independent distribution system  
5 operators to maintain the reliability of the electrical grid,  
6 assist in achieving the State's renewable portfolio standards,  
7 ensure consumers have the ability to generate on-site solar  
8 energy, and interconnect to the distribution system.

9 SECTION 2. No later than December 31, 2015, the public  
10 utilities commission shall commence a proceeding to determine  
11 appropriate targets for grid-connected energy storage systems,  
12 resulting in:

- 13 (1) No less than megawatts of energy storage capacity  
14 to be procured by electric utilities;
- 15 (2) A four-year schedule for procurement of grid-connected  
16 energy storage devices by utilities beginning no later  
17 than December 31, 2016; and
- 18 (3) Solicitation parameters to be used by electric  
19 utilities in short-listing and procuring energy  
20 storage devices that includes a least-cost and best-



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1 fit valuation framework that takes into consideration  
2 the following factors:

- 3 (A) The value of energy and capacity;
- 4 (B) Network upgrade costs;
- 5 (C) Deferral of distribution and transmission upgrade  
6 costs;
- 7 (D) The value of ancillary services such as voltage  
8 and frequency regulation;
- 9 (E) The value of demand response and aggregated  
10 demand response; and
- 11 (F) Power purchase agreement prices.

12 SECTION 3. No later than December 31, 2015, the public  
13 utilities commission shall commence a proceeding to implement  
14 the use of independent distribution system operators for each  
15 populated island of the State, except for the island of Niihau,  
16 in order to aggregate, monitor, and control grid-connected  
17 energy storage devices. Implementation shall include but not be  
18 limited to:

- 19 (1) Interconnection of all procured energy storage devices  
20 to the independent distribution system operators no  
21 later than December 31, 2018;



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- 1           (2) A requirement that no energy storage device shall  
2                   export to the electrical grid before December 31,  
3                   2018;
- 4           (3) The adoption of standards by independent distribution  
5                   system operators for interconnection and control of  
6                   energy storage devices that are substantially similar  
7                   to California Public Utilities Commission Rule 21;
- 8           (4) Interoperability framework and parameters to enable  
9                   coordination between electric utilities and the  
10                  independent distribution system operators for  
11                  maintaining grid reliability; and
- 12          (5) Markets that provide economic price signals for the  
13                  sale of ancillary services by the grid-connected  
14                  energy storage system owners to the independent  
15                  distribution system operators to maintain distribution  
16                  level reliability and defer network upgrade costs.

17           SECTION 4. Beginning on June 30, 2015, the public  
18           utilities commission shall submit a biannual progress report of  
19           its activities under sections 2 and 3 of this Act to the  
20           governor and the legislature.



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1           SECTION 5. (a) No later than June 30, 2015, the public  
2 utilities commission shall convene a working group to assist the  
3 public utilities commission in the development of an energy  
4 storage compliance mandate and standards for independent  
5 distribution system operators for each populated island of  
6 Hawaii, except for the island of Niihau.

7           (b) The chairperson of the public utilities commission  
8 shall serve as chairperson of the working group. The  
9 chairperson shall appoint experts in the fields of energy  
10 storage, solicitation design, and market design to serve on the  
11 working group.

12           (c) The working group shall submit a biannual report of  
13 its findings and recommendations to the governor and the  
14 legislature. The submission of the working group's report shall  
15 coincide with the submission of the public utilities  
16 commission's biannual report required by section 4 of this Act.

17           (d) Members of the working group shall not be compensated  
18 but shall be reimbursed for expenses, including travel expenses,  
19 necessary for the performance of their duties.

20           (e) The working group shall cease to exist on December 31,  
21 2018.



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1 SECTION 6. As used in this Act:

2 "Commercially available" includes any controllable energy  
3 storage device that meets all certification requirements in  
4 Hawaii, and is capable of the following:

5 (1) The ability to have remotely upgraded control settings  
6 to accommodate changes in utilities' dispatch  
7 requirements, voltage and frequency parameters, and  
8 ramping requirements;

9 (2) The ability to be aggregated within a local control  
10 area, whether on one or multiple distribution feeders,  
11 to provide utilities or third party aggregators  
12 control over ramping requirements to meet distribution  
13 level and system level reliability needs;

14 (3) The ability to be autonomously disconnected from a co-  
15 located solar installation and electricity grid if  
16 frequency and voltage tolerance levels or other trip  
17 settings are compromised, and to autonomously  
18 reconnect after any grid disturbance has passed; and

19 (4) The ability to be remotely monitored and to collect  
20 generation, voltage and frequency data to be used by  
21 third party aggregators or utilities in order to



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1 maintain grid reliability, accelerate the speed of  
 2 interconnection studies, forecast the need for  
 3 distribution upgrades, and account for the saving  
 4 associated with upgrade deferrals over time.

5 "Grid-connected energy storage system" means any  
 6 commercially available technology that has the ability to absorb  
 7 and store energy and be controlled to dispatch energy into the  
 8 electrical grid.

9 "Independent distribution system operator" means an  
 10 independent, state-regulated entity established to coordinate  
 11 state-wide distribution of electric power in a non-  
 12 discriminatory manner and ensure the safety and reliability of  
 13 the electric system.

14 SECTION 7. This Act shall take effect upon its approval.

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INTRODUCED BY:

*Guthrie Thelen*  
*[Signature]*  
*Allen A. Belfi*

JAN 21 2015



# H.B. NO. 1

**Report Title:**

PUC; Grid-Connected Energy Storage System; Independent  
Distribution System Operators

**Description:**

Requires the PUC to open proceedings for grid-connected energy storage systems and independent distribution system operators, submit reports, and convene a working group.

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