

JAN 21 2022

A BILL FOR AN ACT

RELATING TO RENEWABLE ENERGY.

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

1 SECTION 1. The legislature finds that climate change is
2 occurring more rapidly and with more fury than previously
3 predicted. The prior consensus was that humanity had twenty
4 years to reduce carbon emissions substantially to avoid a global
5 disaster. Recent data, however, shrink that time horizon to ten
6 years.

7 Climate change is caused by too high a concentration of
8 greenhouse gases in the atmosphere. Carbon dioxide is the most
9 prevalent greenhouse gas, and, when emitted into the atmosphere,
10 carbon dioxide remains in the atmosphere for three hundred to
11 one thousand years, according to the National Aeronautics and
12 Space Administration. Other gases, prominently methane, are
13 even more dangerous and have an outsized effect climate change.

14 Global warming also produces feedback loops that accelerate
15 climate change: the emission of previously stored gases, such
16 as trapped methane, escapes from melting permafrost in the arctic
17 tundra; warming oceans cannot sufficiently absorb greenhouse



1 gases; and a warmer climate decreases the ability of leaves to
2 absorb greenhouse gases.

3 Two simultaneous approaches are needed to make the earth
4 more habitable for future generations: greenhouse gas emissions
5 must be drastically cut; and mature forests must be preserved,
6 and new forests must be created to draw greenhouse gases out of
7 the atmosphere. In addition, oceans must be cleaned of
8 siltation, contamination, and plastics to reduce their warming.

9 What humans do -- or fail to do -- in the next decade will
10 affect the habitability of the earth for decades, and even
11 centuries. Insufficient action will be disastrous for the human
12 species.

13 The legislature established the renewable portfolio
14 standards model twenty years ago to ensure that Hawaii's
15 electric utility companies transition from using fossil fuels to
16 renewable energy sources. At that time, all biomass was
17 considered to be renewable in the short-term. The carbon
18 emitted during the burning phase is absorbed and stored during
19 the growing phase, and at that time it was believed that this
20 cycle was relatively brief. It is now known, however, that the
21 cycle is brief only for certain types of biomass, such as



1 herbaceous crops, but the cycle is lengthy for other types of
2 biomass, such as trees.

3 When trees in a forest are cut and replanted with
4 seedlings, a primitive and immature new ecosystem is created.
5 The primitive structure of monocrop plantation forests limits
6 the drawdown of carbon dioxide. Recent research has determined
7 that this type of forest, counterintuitively, is a net emitter
8 of carbon dioxide. The roots of the new trees emit carbon
9 dioxide, as do microorganisms in the soil that decompose organic
10 matter. The leaves of the trees take in carbon dioxide, but
11 less than the total that is emitted by the monocrop plantation
12 forest. This deficit persists until the trees reach a certain
13 point of maturity, at which point the forest becomes a net
14 aggregator of carbon dioxide. This maturation process takes a
15 minimum of twenty years. But that is too late, since humans
16 have only ten years to sufficiently reduce carbon emissions.
17 Forests should, therefore, be preserved as a vital component of
18 the strategy to control climate change. Mature forests
19 aggregate carbon dioxide and should not be cut to generate
20 energy because the carbon dioxide that is thereby emitted stays
21 in the atmosphere for too long.



1 The importance of forests has been underscored by
2 scientists and economists across the globe, who wrote to world
3 leaders:

4 The undersigned scientists and economists commend each
5 of you for the ambitious goals you have announced for the
6 United States, the European Union, Japan and South Korea to
7 achieve carbon neutrality by 2050. Forest preservation and
8 restoration should be key tools for achieving this goal and
9 simultaneously helping to address our global biodiversity
10 crisis. We urge you not to undermine both climate goals
11 and the world's biodiversity by shifting from burning
12 fossil fuels to burning trees to generate energy.

13 For decades, producers of paper and timber products
14 have generated electricity and heat as by-products from
15 their process wastes. This use does not lead to the
16 additional harvest of wood. In recent years, however,
17 there has been a misguided move to cut down whole trees or
18 to divert large portions of stem wood for bioenergy,
19 releasing carbon that would otherwise stay locked up in
20 forests.



1 The result of this additional wood harvest is a large
2 initial increase in carbon emissions, creating a "carbon
3 debt," which increases over time as more trees are
4 harvested for continuing bioenergy use. Regrowing trees
5 and displacement of fossil fuels may eventually pay off
6 this carbon debt, but regrowth takes time the world does
7 not have to solve climate change. As numerous studies have
8 shown, this burning of wood will increase warming for
9 decades to centuries. That is true even when the wood
10 replaces coal, oil or natural gas.

11 The reasons are fundamental. Forests store carbon –
12 approximately half the weight of dry wood is carbon. When
13 wood is harvested and burned, much and often more than half
14 of the live wood in trees harvested is typically lost in
15 harvesting and processing before it can supply energy,
16 adding carbon to the atmosphere without replacing fossil
17 fuels. Burning wood is also carbon-inefficient, so the
18 wood burned for energy emits more carbon up smokestacks
19 than using fossil fuels. Overall, for each kilowatt hour
20 of heat or electricity produced, using wood initially is



1 likely to add two to three times as much carbon to the air
2 as using fossil fuels.

3 Accordingly, the purpose of this Act is to exclude trees,
4 wood pellets, and other tree products made for burning, from the
5 types of biomass considered as renewable energy in the
6 determination of the renewable portfolio standard.

7 SECTION 2. Section 269-91, Hawaii Revised Statutes, is
8 amended by amending the definition of "renewable energy" to read
9 as follows:

10 ""Renewable energy" means energy generated or produced
11 using the following sources:

- 12 (1) Wind;
- 13 (2) The sun;
- 14 (3) Falling water;
- 15 (4) Biogas, including landfill and sewage-based digester
16 gas;
- 17 (5) Geothermal;
- 18 (6) Ocean water, currents, and waves, including ocean
19 thermal energy conversion;
- 20 (7) ~~[Biomass, including]~~ Certain types of biomass,
21 including herbaceous biomass crops, agricultural and



S.B. NO. 2300

1 animal residues and wastes, and municipal solid waste
2 and other solid waste[+] but excluding trees, wood
3 pellets, and other wood products made for burning;
4 (8) Biofuels; and
5 (9) Hydrogen produced from renewable energy sources."

6 SECTION 3. Statutory material to be repealed is bracketed
7 and stricken. New statutory material is underscored.

8 SECTION 4. This Act shall take effect upon its approval.

9

INTRODUCED BY: Clarence K. Mishler



S.B. NO. 2308

Report Title:

Renewable Energy; Biomass; Trees; Wood Products

Description:

Amends definition of "renewable energy" to exclude trees, wood pellets, and other wood products made for burning.

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