Charting a New Path for Hawaii's Electricity Generation and Use

Hawaii's energy future is at a crossroads

One path leads to increased dependency on fossil fuels—threatening our economy and fueling global warming. The other leads to a new, smarter energy future for Hawaii. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Hawaii, save families and businesses money, and make America more energy independent. Clean energy is also the most effective solution to the threat of global warming. We can start making progress right away using proven technology, and then draw on American innovation to take us the rest of the way with new technologies.

How does Hawaii generate electricity today?

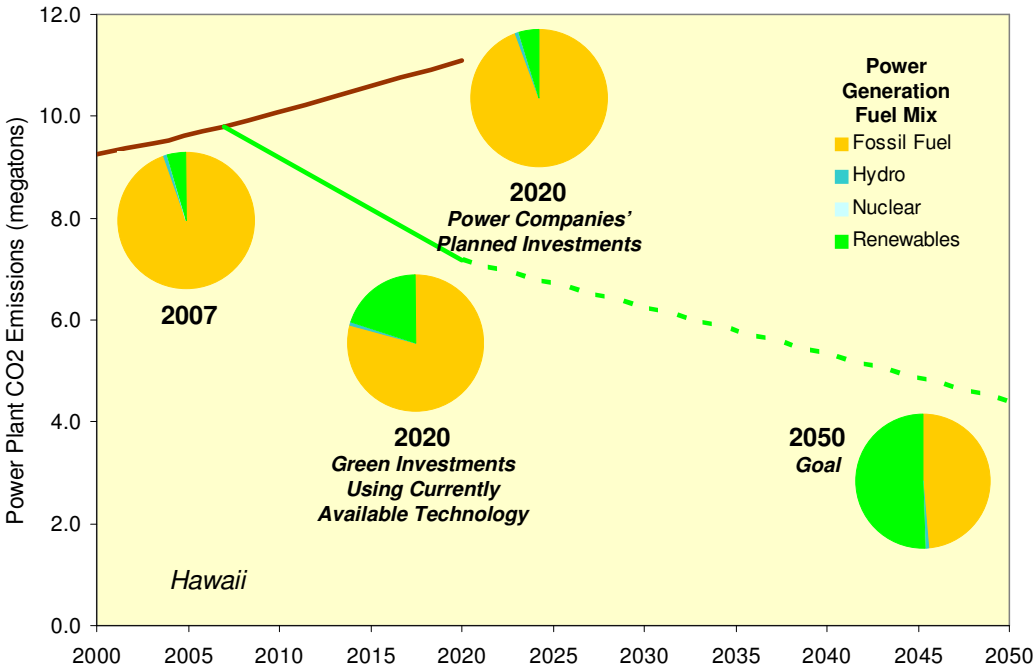
In 2007, electric power generated in Hawaii primarily came from coal (12.5 percent), and oil (68.4 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Hawaii power companies plan to increase the energy generation from oil by 15.1 percent. Only about 4.5 percent of electricity generated in Hawaii is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Hawaii has a choice to invest in a cleaner energy future

Hawaii can achieve a new energy future by making better investments as utilities replace increasingly aged infrastructure and expand capacity. An important first step is for Hawaii to generate at least 20 percent of electricity from renewable sources by 2020, a goal readily achievable with today's technology. Continuing to convert 15 percent of the state's energy portfolio to renewable energy sources each decade could yield an energy profile of at least 65 percent renewables by 2050.

Hawaii can also benefit from improved energy efficiency. Technologies are available that could reduce demand nationally by 20 to 30 percent over the next decade. Innovations in energy efficiency should allow us to keep demand constant after 2020, even as the population grows.

Today, Hawaii is ranked 16th in the nation for energy efficiency, largely because the state's utilities are already spending $9 million annually to improve energy efficiency.



About the chart: 2000, 2007 and 2020 Power Companies' Planned Investments from CARMA 1.0 (www.CARMA.org). The 2020 Green Investments projection assumes that, using currently available technology, Hawaii makes (1) improvements in efficiency to reduce overall demand by 25 percent and (2) shifts away from fossil fuels so that 20 percent of power generation is from renewable energy sources. The 2050 Goal assumes (1) hydro and nuclear are unchanged, (2) continued efficiency improvements keep total demand flat, and (3) renewable energy replaces at least 65 percent of power generation formerly done through fossil fuel burning. Note that the projection of future CO_2 emissions from fossil fuels assumes no investment in carbon capture and storage.

Making a Difference in Hawaii

Hawaii is the most oil dependent state and pays the highest energy prices in the nation. To reduce Hawaii's reliance on imported oil, the state is partnering with the U.S. Department of Energy to transform Hawaii's energy system. The goal is increase production of renewable energy to 70 percent by 2030, which could reduce 72 percent of Hawaii's current crude oil consumption.

Efforts are underway to develop geothermal energy on the islands. Currently, the Puna Geothermal Venture facility on the Big Island produces approximately 30 megawatts of geothermal power. This is enough energy for 30,000 people a year, and amounts to 20 percent of the island's total energy needs. By taking advantage of more geothermal energy, investing in other renewables, and increasing energy efficiency, Hawaii is poised to become one of the nation's top users of green energy.

Sources:
http://hawaii.gov/dbedt/info/energy/hcei/
http://www.punageothermalventure.com/About-Geothermal-Energy/13/geothermal-in-hawaii

Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Hawaii can reduce its future carbon dioxide (CO_2) emissions from electricity generation by 35 percent compared to the business-as-usual path that utilities are following now.

Given that 37 percent of Hawaii's CO_2 emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Hawaii's energy and economic security

Investing in renewable energy sources will reduce Hawaii's dependence on fossil fuels and at the same time create new green collar jobs. A new energy future in Hawaii could include:

Expanded solar power. Hawaii has enough solar resources to produce 4,500 to 6,000 Whr per square meter using photovoltaic systems and 3,500 to 4,500 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Hawaii to solar power can provide enough electricity for about 1,200 households each year.

Expanded wind power. Hawaii is currently ranked 24th for wind power, with 63 MW of existing electricity generation capacity. The American Wind Energy Association ranks Hawaii in terms of its future wind potential.

Geothermal power. Hawaii has 2 geothermal projects under development, with the potential to produce as much as 8 MW of new power capacity.

How does Hawaii use electricity?

Hawaii's energy is used to power:

- homes (30 percent),
- businesses (33 percent), and
- industry (37 percent).

Per capita residential electricity use is 2,489 kilowatt hours per year, 45 percent less than the national average.

References and Additional Reading:

American Council for an Energy-Efficiency Economy, www.aceee.org.
American Wind Energy Association, www.awea.org.
Bioenergy Feedstock Information Network. bioenergy.ornl.gov
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For more information, visit www.nwf.org/globalwarming.