

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



Vermont'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 Vermont. Investing in clean energy alternatives—like solar and wind power—can create and protect jobs in Vermont, 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 Vermont generate electricity today?

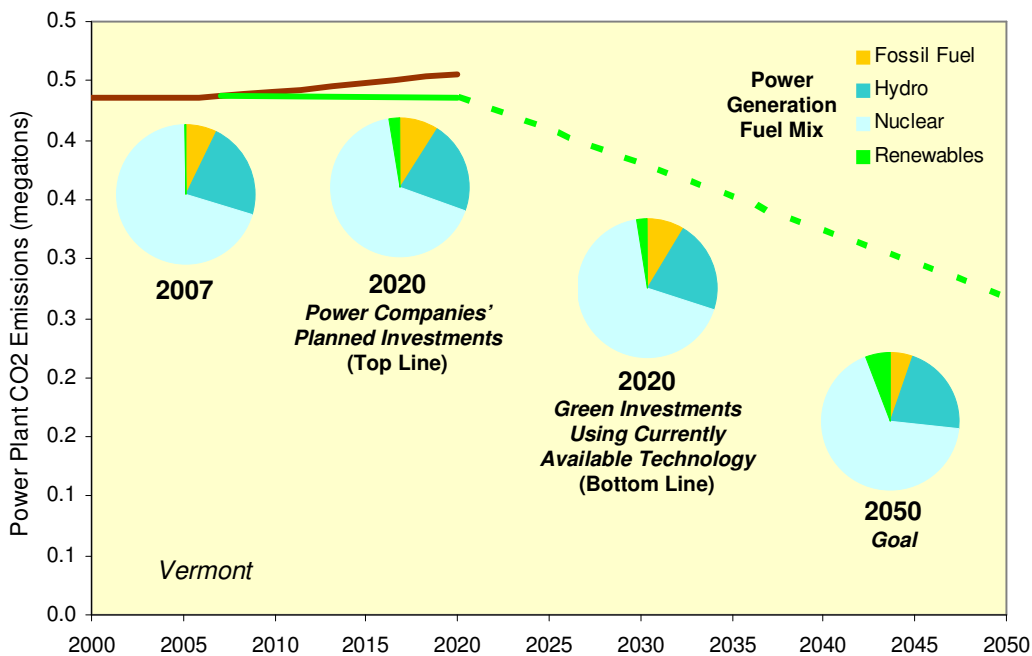
In 2007, electric power generated in Vermont primarily came from hydro (22.3 percent), and nuclear (70.2 percent). Most utilities intend to continue relying heavily on fossil fuels in the coming decade. Only about 0.2 percent of electricity generated in Vermont is expected to come from renewable sources like wind, solar, geothermal, and biomass under current plans.

Vermont has a choice to invest in a cleaner energy future

Vermont 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 Vermont 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.

Vermont 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, Vermont is ranked 1st in the nation for energy efficiency, largely because the state's utilities are already spending \$14 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, Vermont 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 CO₂ emissions from fossil fuels assumes no investment in carbon capture and storage.

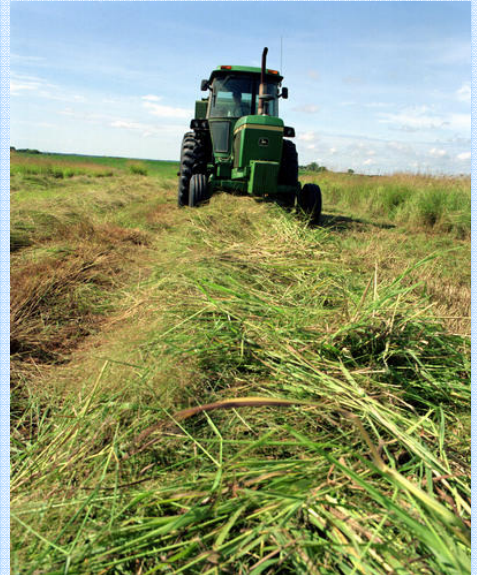
For more information, visit www.nwf.org/globalwarming.

Making a Difference in Vermont

Vermont has set a commitment to renewable energy. The state has joined the national alliance called 25x'25. The goal is to have 25 percent of the energy produced in America come from renewable sources by 2025. Vermont is doing its part by committing to reach that same goal within the state, an effort that benefits farmers and the rural population. A report released by 25x'25 in June 2008 shows that 4.7 percent of Vermont's energy comes from agricultural renewables, but has the potential to make up 20.3 percent by 2025. Crops grown specifically for energy production could produce nearly 12 percent of the state's energy, and wood and wood waste has the potential to make up another 8.5 percent. In another report from the Vermont Council on Rural Development, they found that in the next 10 years investment in renewable energies could create 6,000 new jobs for Vermont.

Sources:

<http://www.vtcommons.org/blog/2007/10/09/relocalizing-vermont-renewable-energy-vermont-conference-explores-energy-jobs-politi>
<http://www.vermontagriculture.com/energy/index.html>



Making a dent in global warming pollution

Simply by shifting to renewable energy sources and improving energy efficiency over the next decade or so, Vermont can reduce its future carbon dioxide (CO₂) emissions from electricity generation by 4 percent compared to the business-as-usual path that utilities are following now.

Given that 0 percent of Vermont's CO₂ emissions come from electricity generation, diversifying and updating our power sources is critical for cutting the state's total global warming pollution.

Increasing Vermont's energy and economic security

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

Expanded solar power. Vermont has enough solar resources to produce 4,000 to 4,500 Whr per square meter

using photovoltaic systems and 3,000 to 3,500 Whr per square meter using concentrating solar power systems. This means that devoting just 1 square mile in Vermont to solar power can provide enough electricity for about 0,900 households each year.

Expanded wind power. Vermont is currently ranked 30th for wind power, with 6 MW of existing electricity generation capacity. The American Wind Energy Association ranks Vermont 34th in terms of its future wind potential, with 537 MW of potential capacity.

Biomass power. Vermont has 1.0 million dry tons of biomass available each year that could be used to generate about 200 MW of electricity.

How does Vermont use electricity?

Vermont's energy is used to power:

- homes (37 percent),
- businesses (35 percent), and
- industry (28 percent).

Per capita residential electricity use is 3,451 kilowatt hours per year, 24 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

CARMA (Carbon Monitoring for Action), www.CARMA.org.

Database of State Incentives for Renewables and Efficiency, www.dsireusa.org.

Department of Energy, Energy Efficiency and Renewable Energy, apps1.eere.energy.gov/states/alternatives/electricity.cfm.

Energy Information Administration, State Energy Data System, www.eia.doe.gov/emeu/states/_seds_updates.html.

Environmental Protection Agency, Energy CO₂ emissions by state, www.epa.gov/climatechange/emissions/state_energyco2inv.html.

Geothermal Energy Association, www.geo-energy.org.

McKinsey Global Institute, 2007: *Wasted Energy: How the U.S. Can Reach its Energy Productivity Potential*.

Political Economy Research Institute, www.peri.umass.edu.

Renewable Energy Policy Project, www.repp.org.

For more information, visit www.nwf.org/globalwarming.