



THE CLIMATE CONNECTION

THE VERMONT AGENCY OF NATURAL RESOURCES - CLIMATE CHANGE TEAM NEWSLETTER

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ANR & Climate Change

A look into what the Agency has been doing - by Carey Hengstenberg VTANR



Welcome to Climate Connection, the official newsletter of the Agency of Natural Resources Climate Change Team. We hope to use this newsletter to introduce ourselves, share information about ANR programs and be an ongoing resource to collaborate and connect with individuals and organizations interested in building a sustainable future for Vermont. The **Climate Change Team** is made up of members from various ANR divisions and departments with the following mission:

“To facilitate enhancements to existing programs to promote sustainability, reduce greenhouse gas emissions, improve waste reduction, implement adaption and mitigation methods and advance related economic opportunities”

Working duties of this team include:

Program Planning & Development.

Collect and analyze data to determine problems and concerns associated with climate change and develop short and long term plans and policy recommendations to the Agency to mitigate these concerns.

Liaison with other Agencies.

Coordinate the activities of other agencies and organizations in their efforts to accomplish reductions in greenhouse gas emissions.

Performance Metrics, Benchmarks and Reporting.

Develop performance metrics and benchmarks which will allow accurate and consistent reporting of activities toward achieving Vermont’s greenhouse gas goals.

Communication and Coordination.

Facilitate communication and coordination with EPA, other states, the regulated community, and other stakeholders to foster partnerships to achieve environmental results.

Promoting Renewable Energy and Efficiency.

The team will work to identify and to take advantage of opportunities for the public and private sector to increase their energy efficiency or use of clean forms of renewable energy.

Marketing and Branding.

An important element of efforts to reduce greenhouse gas emissions will be marketing and branding desired practices.

Outreach and Education.

Continue public outreach to explain climate changes, impact on our future environment, and actions that can be taken to reduce an individual and business’s carbon footprint.

Adaptation and Mitigation Planning.

While goals for greenhouse gas emission reductions have been adopted, a need exists to understand what changes in climate are expected to occur, to identify their potential impact, and make recommendations on policies and planning to adapt to these expected changes.

Eco-driving: Become a lean, mean, green-driving machine!



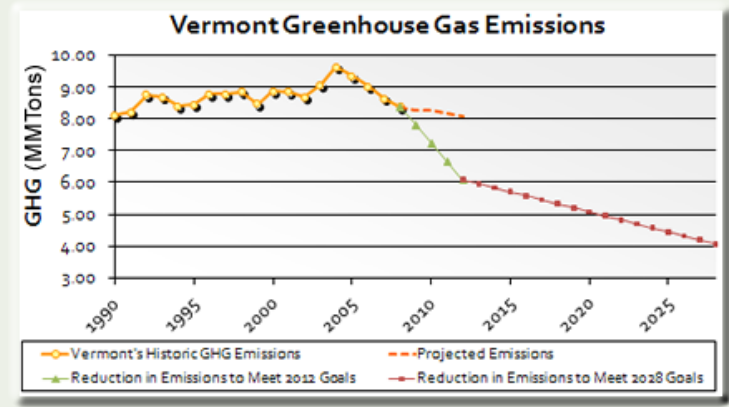
Keep a steady speed and avoid rapid starts and stops to increase your fuel efficiency. According to the U.S. EPA, gradual braking and acceleration can save up to \$1 per gallon by increasing fuel efficiency by 33%!

(Visit <http://www.fueleconomy.gov> for more eco-driving tips)

Vermont Emissions Inventory

A look at historical and recent greenhouse gas emissions in Vermont - by Carey Hengstenberg VTANR

<p>Highlights:</p> <ul style="list-style-type: none"> Vermont's 2008 greenhouse gas (GHG) emissions have declined approximately 10% from 2005 levels, which equates to gross annual GHG emissions that are roughly 3% higher than 1990 levels. Vermont's GHG emissions are largely attributable to the combustion of fossil fuels for energy (e.g., transportation 47%, residential & commercial 26%, agricultural 11%, industrial 6%). 	<p>Reductions can be attributed to:</p> <ul style="list-style-type: none"> Reduced consumption of transportation fuels brought about by a reduction in vehicle use (i.e., vehicle miles traveled), slight improvements to overall vehicle fleet efficiency, and increased utilization of available mass transit options. Continued gains in efficiency from demand side management from utilities such as Efficiency Vermont An increased reliance on low or non-GHG emitting electrical generation sources
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ANR continues to work on collecting and analyzing Vermont's greenhouse gas emission data. Did you know that Vermont's greenhouse gas emissions are on a decreasing trend? Find out more in the recently compiled [Vermont Greenhouse Gas Inventory Update \(1990-2008\)](#).

Figure 1: This is a simplified graph of Vermont Greenhouse Gas emissions from the Vermont GHG Inventory Report. Included are historical emissions and future projections. Source: Vermont ANR

Citizen Science

Using citizens of the state to collect important ice-out data - by Gwen Dunnington VTANR

Join volunteers from across the state who are playing an instrumental role in charting climate change in Vermont! This summer, Vermonters sent in their records of ice-out dates at their local pond or lake, helping the ANR chart the annual changes in temperature across the state. Identifying climate indicators like this will improve our ability to make predictions about the future climate conditions we might expect to see in Vermont.

The ice-out data collected from volunteers this summer show an overwhelming "early-ing" trend, with the ice out date arriving an average of 5.15 days earlier in 2010 than it did in 1990 (Figure 1). What's more, in 90% of the lakes included in this study, the earliest ice-out dates on record have occurred in 2010.

The word is out – Vermonters keep great records, and we want to put them to use! If you have any records of long-term weather or climate-related data, please contact Jeff Merrell (jeff.merrell@state.vt.us) or Gwen Dunnington (gwen.dunnington@state.vt.us).

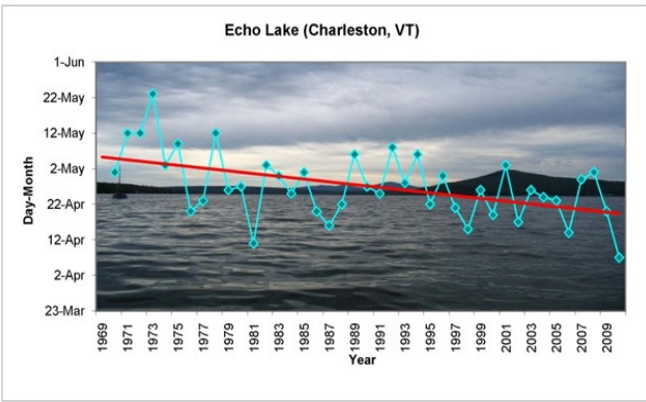


Figure 1: Graph depicting the trend in annual average Vermont ice-out dates. Source: VT ANR

Vermont Climate Collaborative

How the various climate stakeholders in Vermont are coming together - by Carey Hengstenberg VTANR



The Agency has been actively supporting the work of the Vermont Climate Collaborative, a partnership of environmentally-focused organizations across the state. Over 40 attendees from universities, state agencies, non-profits, and legislative offices participated in the last meeting of the collaborative, held on September 29, 2010 in Waterbury. The four working groups (Energy Supply and Demand, Transportation and Land Use, Agriculture Forestry and Waste, and Cross-cutting Issues: Adaptation Education, and Outreach) reported on their activities. The Nature Conservancy followed with a presentation on the recently completed "[Climate Change in the Lake Champlain Basin](#)" report, and then local climate activist Kathryn Blume gave a powerful and thought-provoking [presentation](#). The next meeting will be scheduled soon. See the meeting notes or [website](#) for more information or contact Brian.woods@state.vt.us to be added to the email distribution list.

Vermonters are Shining

The important role that you can play - by Alex Geller VTANR

The Vermont Sustainable Jobs Fund (VSJF) recently launched the [Renewable Energy Atlas of Vermont](#). This website allows property owners and residents of Vermont to calculate basic renewable energy potential for parcels of land in Vermont for a wide range of options, including solar, wind, geothermal, and biomass. The Atlas shows nearly all renewable energy sites in Vermont connected to the electric utility grid (i.e., "grid connected") and highlights basic information, including utility capacity and size, about each site.

In order to amass such a dataset, the VSJF painstakingly collected data from several sources, including the Vermont Public Service Board, the Vermont Small Scale Wind Energy Program and various organizations across the state.

Large scale renewable energy projects are popping up throughout Vermont, but small (less than 10kW) residential installations make up nearly half of photovoltaic (PV) energy produced in the state (figure 1). Furthermore, their numbers account for nearly 95% of the

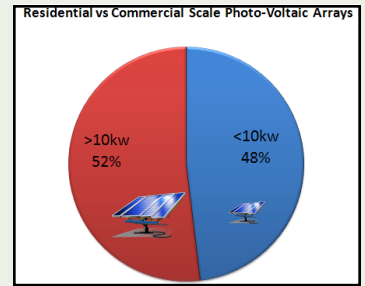


Figure 1: Comparison of energy produced by residential and commercial scale photovoltaic installations. Source: Vermont Sustainable Jobs Fund 11/2010

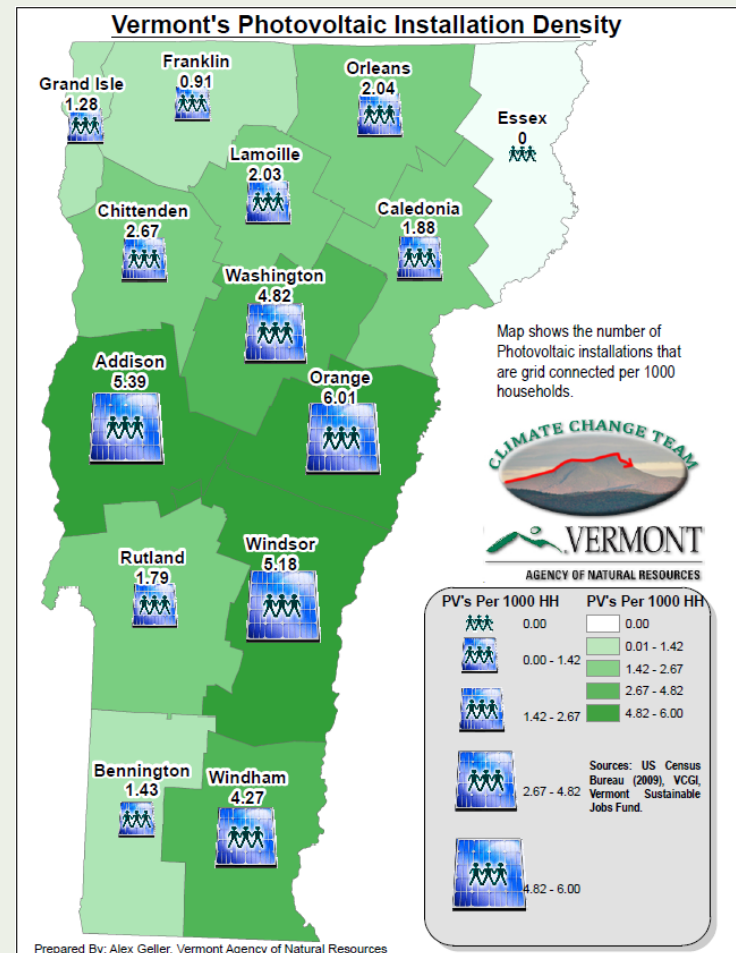


Figure 2: Map depicting the distribution of photovoltaic installations throughout Vermont. Counties are evaluated by the number of photovoltaic installations per 1000 Households. Sources: Vermont Sustainable Jobs Fund 11/2010, US Census Bureau 2010, VCGI, VT ANR.

total-grid tied PV installations, and the Atlas does not take into account the "off-grid", or not connected to the electric utility, production numbers. This map (Figure 2), illustrating the distribution of PV installations across Vermont, indicates that most of the PV installations are located in central Vermont in areas with dense populations, and Chittenden County (figure 2). The map indicates that sparsely populated counties, such as Essex, see extremely low to non-existent adoption of grid tied PV installations, however in these more sparsely-populated areas there are likely more off-grid PV installations, which are better suited for structures or areas where access to utility corridors are less common. Because off-grid solutions do not require Public Service Department approval, there is no record of where they are installed, and therefore do not appear on this map.

Residential PV production is gaining popularity with electrical utilities across the state. Initially, some utilities encouraged backyard renewables by comparing the energy they produced to the electricity consumed by the residence, and only charging the difference (net metering). Going one step further, Green Mountain Power's [SolarGMP](#) program not only allows PV owners to enroll in net metering, but as a bonus, pays an additional six cents per kWh generated (i.e. \$60 of electricity generated by PV = nearly \$85 of credit). Green Mountain Power supports this because PV production is highest in the summer, when the sun is strongest, which is also when the energy demand is the highest, mainly due to air conditioning. In

other words, this program allows the utility to buy clean energy, produced in our back yards, instead of expensive and often dirty, peak electricity from the market. Incentives like this, in addition to falling costs of manufacturing and ownership, is quickly making residential PV systems a more attractive investment, while also helping to reduce Vermont's reliance on green house gas intensive power production.

In the next Issue:

Adaptation
Identifying how nature and human infrastructure will change because of Climate Change

Regional Greenhouse Gas Initiative
Vermont's Participation in the CO₂ auctions

Solid Waste to Power
How Vermont companies are utilizing landfill gasses to produce electricity

And more!