Spring 2014

THE CLIMATE CONNECTION

THE VERMONT AGENCY OF NATURAL RESOURCES • CLIMATE CHANGE TEAM NEWSLETTER

In This Issue...

Emerald Ash Borer

There is a silver lining in this winter's cold weather; emerald ash borer larvae cannot thrive in extreme temperatures.

http://digital.vpr.net/post/extreme-cold-could-reduce-invasive-insects

UVM Project Aims to Increase Farm Resilience in a Changing Climate

By Kate Westdijk, Ann Hoogenboom, Carol E. Adair, Linda Berlin, Martha Caswell, David Conner, Heather Darby, Rebecca Fox, Stephanie Hurley, Ernesto Méndez, Rachel Schattman, & Asim Zia

In addition to impacting our forests and waterways, climate change poses significant threats to food security and farmer livelihoods. In 2011, Tropical Storm Irene impacted 225 out of Vermont's 251 municipalities, and 20,000 acres of farmland were flooded. It is estimated that damages caused by Irene will cost between $700 million and $1 billion to repair. Crucial short-term support for affected farmers must be coupled with long-term planning for a resilient food and agricultural system within Vermont which can withstand future climate uncertainty. A 2011 University of Vermont survey of agricultural support staff and technical assistance providers identified Tropical Storm Irene as a catalyst for increased farmer interest in education on climate change mitigation and adaptation. While promising, the same survey reported that farmers may not be well supported to innovate and make changes on their farms.

Photo: Vern Grubinger, UVM Extension

Many Vermont farmers have felt the effects of severe weather events, and are already experimenting with ways to adapt to the changing climate. For example, some farmers are testing or adopting innovative practices such as grass-based livestock operations, riparian buffers, and planting non-traditional crops that are more suitable for a wetter climate, such as rice. What is lacking, however, is an efficient system for evaluating and sharing these lessons learned, and the support and encouragement for implementing these practices on a broader scale.

To address this shortcoming, the Agroecology and Rural Livelihoods Group (ARLG) at the University of Vermont (UVM), in partnership with a trans-disciplinary team of UVM researchers and Extension professionals, was awarded a UVM Food Systems Spire grant in 2012 to conduct research and limited outreach to farmers on climate change best management practices and related agricultural policies in the Vermont Lake Champlain Basin. Led by Professor V. Ernesto Méndez, the ARLG has been conducting exploratory research on Vermont farms and landscapes over the past four years. The group has assessed the different social, production and ecological practices that farmers assign to their land and how the levels of forested land in the landscape affect bird and tree biodiversity and natural stream functioning. This team brings expertise in agronomy, agroecology, policy analysis, economic analysis, landscape visualization, and greenhouse gas analysis. They are committed to the Vermont Agricultural Resilience in a Changing Climate initiative as a long-term, trans-disciplinary endeavor that integrates research, outreach and education.

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The UVM team is engaged in:

- Surveying farms in the Champlain Valley to gain a better understanding of the types of best management practices farmers are already using to respond to climate change;
- Interviewing farmers, technical service providers, policy makers and others to determine which best management practices are best suited to help farmers to become more resilient;
- Using individual farms as cases to determine the financial costs and benefits of specific best-management practices and the climate change mitigation potential of each practice;
- Facilitating focus groups in order to develop a map of land use change and an understanding of the governing decisions that address land use policy, planning and practices in relation to climate change and water quality;
- Providing landscape visualization to help farmers and landowners picture how their fields, farms and the Vermont landscape would change under different management scenarios; and
- Facilitating on-farm, farmer led workshops that practically evaluate the implementation of particular best management practices for on-farm climate change adaption and mitigation

The work is strengthened by participating Vermont farmers, alongside integrated efforts by Vermont organizations such as the Farm 2 Plate Network, Stone Environmental, the National Resources Conservation Service, the Institute for Sustainable Communities, and the Northeast Organic Farming Association of Vermont, to name a few. The project has also received support from the Vermont Community Foundation, the High Meadows Fund, the USDA-Hatch program, and several departments/centers at the University of Vermont

For more information on the Vermont Farm Resilience in a Changing Climate project and upcoming events, please visit www.uvm.edu/~agroecol.

Net Metering: What It Is, Why It Matters

By: Ann Hoogenboom, UVM

Photo: Vermont Energy and Climate Action Network

In early April, Governor Shumlin signed into law H.702, the net metering bill. This bill increases the existing cap on the amount of renewable energy that utilities can accept from net-metered projects from 4% to 15% of peak demand. This comes as a relief to many Vermonters who are interested in finding sustainable, renewable energy sources to replace fossil fuels.

Net metering is a billing mechanism that credits small-scale renewable energy system owners for the electricity that they add to the grid. These systems are designed to first provide electricity to the owner. If the electricity being generated by the system is more than the owner is using, the balance is delivered to the electric grid as renewable electricity. For those who would like to know more, the Public Service Department has developed a good overview of the existing net metering program.

Many Vermonters are interested in transitioning to renewable energy; however, there are certain conditions that prevent some people from installing successful renewable energy systems. For example, homes that are located in shaded areas limit the effectiveness of solar panels.

Communities throughout the state are coming together to share the renewable energy wealth. From farms that share land space with neighbors, to homeowners that share roof space, creating renewable energy is also creating greater community cohesion. When we talk about resilience to climate change, this type of community model is a fundamental cornerstone. The town of Starksboro is one such example. A rural community of 2,000 people, Starksboro joined together in 2010 to support powering the town's municipal buildings, including the Robinson Elementary School, by solar power.

Through an innovative approach called a Solar Power Purchase Agreement, Starksboro was able to provide renewable power for the school and surrounding municipal buildings without incurring any initial installation or maintenance costs. The purchase agreement allows the town of Starksboro to host the solar site while receiving the immediate benefits of solar power. However, the town did not have to purchase the actual equipment. The solar system manufacturer AllEarth Renewables installed, owns and operates the system. During the first five years of the agreement, the town receives solar energy at a locked in rate of $0.19 per kWh. After five years, the town of Starksboro can either purchase the energy system from AllEarth Renewables or they can renew their agreement.

Vermont Greenhouse Gas Emissions

The latest Vermont Greenhouse Gas Emissions Inventory Report shows our progress toward our reduction goals.

http://www.anr.state.vt.us/anr/climatechange/Vermont_Emissions.html

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The result - Starksboro gets their buildings up and running on renewable energy with no cost for installation and AllEarth can take advantage of the Vermont Business Solar Tax Credit. On top of these benefits, Starksboro makes one cent off of each kWh the system produces, and will get a check at the end of each year for the power produced.

Meanwhile, group net metering programs are providing promising models of success where individuals can share initial upfront costs while transitioning to renewable energy alternatives.

In Richmond, for example, Jeff Forward worked with three neighbors to create a group net metering partnership. Forward put up a 13 kW system on his property. While the initial cost of the system was $85,000, federal and state tax credits for solar energy reduced Forward's net cost to $30,000. In return for this investment, Forward's three neighbors each pay him the solar credit that is attributed to their electric bill each month.

Vermont's net metering program has no doubt contributed to the growth of renewable generation capacity from 11 MW in 2011 to 38 MW today. This increase aligns with the state's goal of 90% of energy from renewable sources by 2050.

For more information on Power Purchase Agreements and Group Net Metering go to http://www.vecan.net/power-purchase-agreements-group-net-metering/

Governor Shumlin Joins White House Climate Task Force

By Sarah McKearnan

Last November, President Obama issued a new Executive Order on "Preparing the United States for Climate Change." The breadth of its actions highlighted the President's strong commitment to having federal agencies take actions that will help communities nationwide prepare for a wide range of climate impacts, from more intense storms and flooding as we will likely see here in Vermont, to extreme heat, wildfires and many others.

Recognizing that integrating climate adaptation goals across myriad federal programs would take sustained interagency cooperation, the President used the executive order to create a new Council on Climate Preparedness and Resilience.

He also recognized that the best way to assist states and municipalities at improving their climate resilience was to ask them what they need. The executive order established a task force made up of governors, mayors, county commissioners, and tribal leaders to develop recommendations in response to the question: What can the federal government do to help? In December, Governor Peter Shumlin of Vermont and seven other governors were appointed to serve on this task force, along with fourteen mayors and numerous tribal and county officials.

The Governor's participation gives Vermont an opportunity to share our many ideas about potential improvements in federal programs gleaned from our experience recovering from Tropical Storm Irene, as well as other flooding disasters before and since that record-setting storm.

It also enables Vermont to bring ideas to the federal government about what kinds of tools, incentives and guidance they could provide to assist our many small towns and villages in assessing their risks from climate change and identifying what can be done at the local level to prevent and soften the impacts.

The Obama Administration has asked for the task force's recommendations by July, with the final version being submitted to the President in September. Four work groups have been convened to develop recommendations in different topic areas – disaster recovery and resilience; built systems (infrastructure); natural resources and agriculture; and public health and community development.

Governor Shumlin is represented in all four groups by experienced agency and program managers. Sue Minter, Deputy Secretary of the Vermont Agency of Transportation, is co-chairing the group on disaster recovery and resilience with a mayor from Colorado. ANR Secretary Deb Markowitz is leading a subcommittee of the Built Systems group. Chuck Ross, Secretary of the Agency of Agriculture, Food and Markets, is a member of the Natural Resources and Agriculture group and David Grass, Environmental Health Surveillance Chief at the Vermont Department of Health, Is participating in the Communities group. The Governor has also asked many organizations in Vermont to send their ideas to the Vermont team.

Vermont's team is now in the process of compiling their ideas for recommendations. The focus is on actions that federal agencies can take using existing authorities and programs, rather than on actions that would require

Learn more about the President's Task Force

Want to know more about this group's mission and members? See

http://www.whitehouse.gov/administration/eop/ceq/initiatives/resilience/taskforce

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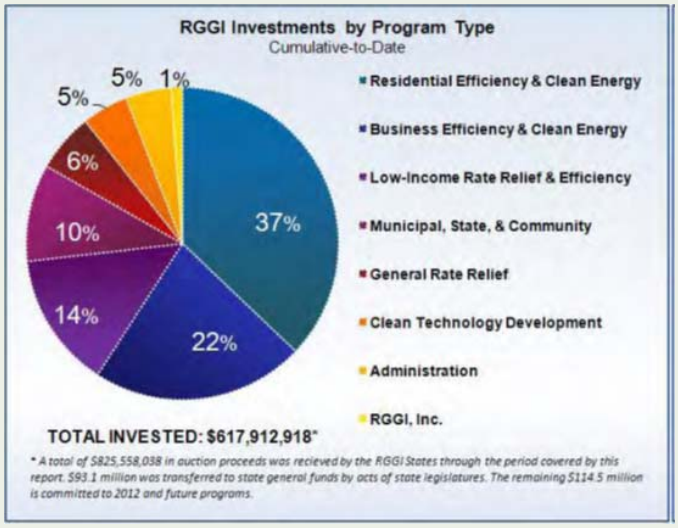
federal legislation to implement. There are many good ideas on the table, and the challenge will be to winnow them down to the highest priority ones. Examples include recommendations for reducing the administrative hurdles to distributing local hazard mitigation grants to municipalities, strengthening financial incentives for farmers to implement land management practices near rivers that help prevent flooding and water pollution, and improving the federal floodplain mapping program in ways that would allow Vermont to expedite mapping of many flood hazard areas adjacent to flood-prone rivers.

The Obama Administration has provided Vermont with an unprecedented opportunity to let federal agencies know how they can help communities prepare for a changing climate. Governor Shumlin and all the state agency staff involved are committed to bringing our best thinking, informed by our growing awareness that our own climate patterns are shifting, and that we need to do everything we can to improve our resilience for these changes.

Regional Greenhouse Gas Initiative (RGGI) – an Initiative of the Northeast and Mid Atlantic states

Ann Hoogenboom and Brian Woods

For the past five years Vermont, has been a member of a regional partnership that is working to reduce greenhouse gas emissions from electrical generation facilities across ten states in the northeast from Maine to Maryland. It's impressive what states involved with RGGI have cooperatively accomplished since the program's 2009 inauguration. RGGI proceeds of just over $700 million region-wide have been invested in projects to increase energy efficiency, provide renewable energy and reduce greenhouse gas emissions. These investments are projected to:



Source: RGGI Inc.

- Result in more than $2 billion in lifetime energy bill savings to more than 3 million participating households and more than 12,000 businesses in the region;
- Offset the need for approximately 8.5 million megawatt hours of electricity generation;
- Save more than 37 million BTUs of fossil fuels; and
- Avoid the release of approximately 8 million tons of carbon dioxide (CO_2) pollution into the atmosphere over their lifetime.

Considering that this initiative is the first market-based regulatory program created in the United States to reduce greenhouse gas emissions, it seems more than reasonable for these states to pat themselves on the back for a job well done.

The program uses a cap-and-trade market-based approach to reducing greenhouse gas emissions. Essentially, each state is given an allowance of greenhouse gas emissions; states then sell almost all emission allowances through an auction process to electrical generation companies. The companies are required to turn in allowances equal to the amount of greenhouse gas emissions they create. If through efficiency or other measures a company has more allowances than they need, they can sell the extra allowances to other generators who may need them. With the proceeds from these auctions, states can turnaround and invest the proceeds in consumer benefits such as energy efficiency, renewable energy and other clean energy technologies. In Vermont, RGGI helps reduce greenhouse gas emissions while providing vital funding to Efficiency Vermont, the nation's first energy efficiency utility.

After the first three years of operation of the cap-and-trade market, the total emissions from regulated power plants in 2013 was 91 million tons, well below the allowance pool of 165 million. As a result, the cap was adjusted in 2013 bringing the allowance of emissions down to 91 million tons with a plan for a 2.5% annual decreases through 2020.

While these figures point to the success of the overall initiative, there are highlights to be mentioned pertaining to Vermont's success with the program. Funding from RGGI has helped the Vermont Community Energy Mobilization Project, a volunteer-based program that works with private homeowners, successfully install home energy-saving

EV Charging Stations

Thirteen Vermont communities have received grants for Electric Vehicle Charging Stations.

http://www.wcax.com/story/24573450/6-vt-downtowns-get-grants-for-ev-charging-stations

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measures with an estimated total savings of 590,000 kilowatt-hours of electricity and 1,750 MMBTU of heating energy since 2010. Additional funding from RGGI has also allowed for the Efficiency Vermont Home Energy Challenge to provide incentives up to $2,500 for home energy retrofit projects.

The RGGI website (www.rggi.org) provides a much more detailed view of this innovative and successful program.

Building Resilient Communities in the Upper Valley

Sherry Godlewski, NH DES

On September 30th 2013 the Upper Valley Adaptation Workgroup (UVAW) hosted their first public forum at the Dartmouth-Hitchcock Medical Center in Lebanon. UVAW is a collaborative that formed to help communities prepare for the impacts of a changing climate. The forum was a tremendous success – a full capacity audience of over 100 with highly prepared speakers, insightful comments and thought-provoking discussions. UNH's Dr. Cameron Wake presented the Climate Assessment he recently completed for that region which included data on what changes we have already seen in terms of increasing temperatures, extreme weather events and increases in precipitation. A panel presentation and discussion followed including Dr. Robert McClellan – (Dartmouth Hitchcock Medical Center) focusing on the health impacts from a changing climate; Michael Simpson – (Antioch University) addressing the impacts to built infrastructure, including bridges, roads and culverts; and Anne Duncan Cooley Esq. ,Chair of Upper Valley Strong and Executive Director of the Upper Valley Housing Coalition, highlighting the importance of community organizations in disaster response and recovery. Based on feedback and questions from the audience, it was very clear that the topics of climate change adaptation and building resilient communities are highly important to the Upper Valley communities and business.

Photo; Brian Woods

UVAW is a bi-state collaborative (including Vermont) focusing on building resiliency in the Upper Valley by providing educational and technical resources to communities in that region. The group is co-chaired by Sherry Godlewski of the New Hampshire Department of Environmental Services and Alex Jaccaci of Hypertherm, which illustrates the importance of partnerships among communities, government, and businesses in addressing this important issue. Based on the response to this initial event, the group has scheduled a second forum on climate change preparedness for April 2014. See the complete UVAW membership as well as information from the forum at www.uvlsrpc.org/resources/uvaw/.

Vermontivate! an award-winning sustainability game that brings fun, hope, and heaps of creativity to the serious work of building a post-carbon world launched last month, and now has over 600 players from across the state. Want to join? https://vermontivate.com/

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A Special Thanks...

...to Alyson Atondo, Champlain College for her invaluable assistance in producing this newsletter.