

Energy Crisis, Energy Opportunities

An excerpt from *Wanted: A Holistic Perspective on Vermont Energy*

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Issue no. 33 • Winter 2010

Issue no. 39 • Winter 2011

Our world is in the midst of an endless list of crisis scenarios related to politics, the economy, credit, the environment, healthcare, security, human rights, energy, water, food, and the list goes on and on. Yet there is some reason for optimism, particularly related to our potential to transition to sustainable and clean energy systems. The world needs sustainable, decentralized clean energy as a foundation upon which communities can build sustainable, decentralized, and strong economies.

Unfortunately the only real progress for renewable energy in the United States is coming from a handful of states that have invested in a clean energy future, despite U.S. federal policy that dramatically favors centralized, monopolistic energy from oil, coal, and nuclear power.

This summary of a few of our national budget priorities during the past eight years is a good illustration of how Vermont and other states are being forced to spend their dollars on activities that have prevented the “green economy” from coming to life.

1. Subsidies for coal and oil industry: \$75 Billion
2. Afghanistan oil gas war: \$233 Billion
3. Iraq oil war: \$706 Billion
4. Renewable energy subsidies: \$12 Billion

Our national government’s investment in the “green economy” this decade totals less than 1 percent of its investment in the fossil-fuel subsidies shown above. And so far, Obama has given every indication that his administration is all about continuity in these regards, versus change. Yes, there was \$32 billion in the stimulus package for renewable energy and efficiency. That’s more than ever before, but it is still peanuts compared to the trillions of tax- and inflation-dollars that have been committed for continued global military insanity and corporate welfare. A national clean-energy policy will continue to be “back-burnered” behind healthcare, the economy, and war.

How can we build an independent, sovereign, energy-independent Vermont, when our national government has bankrupted us? Vermont’s economic and political independence will increase in direct correlation to how well we develop the foundation of our economy: sustainable, domestic energy. The good news is that market forces have made solar, wind, and biomass energy economically viable in Vermont, and Vermont has significant existing hydropower resources that could meet more than half of our electricity needs. The bad news is, we’re attached to a sinking Titanic and we’re not moving nearly fast enough to deploy the lifeboats, and our hydropower resources are currently owned by a Canadian company and not even connected to the Vermont grid.

Renewable energy can create strong, decentralized, green economies for Vermont communities. In turn, local economies so well-grounded will provide a foundation for an effective commitment to human rights and economic development that distributes food, water, and wealth more equitably and sustainably.

Our national government leaders, including those supposed champions of environmentalism such as Al Gore and Barack Obama, have given us only token gestures and a lot of empty rhetoric. Vermont's U.S. Congressional delegation is impotent in these regards. Most national politicians claim to support renewable energy, yet their priorities, as expressed by the subsidies they extend with our tax dollars, continue to support coal, oil, and military adventures; by contrast, they characterize renewable energy as "in need of more research to make it cost-effective."

We don't need new energy technologies. We just need the cultural and political will to invest in the transition and take the power back from the vested interests that today control our energy economy. Most people believe that solar, wind, and biomass energy systems are not yet cost-effective compared to fossil fuels. That's only because fossil fuels have been heavily subsidized for more than fifty years. The price you pay for electricity or heating oil would be at least twice as high if not for decades of heavy federal subsidies. In most European countries gasoline has cost more than \$8/gallon for many years, and electricity costs are generally twice the U.S. national average (\$.16/kWh vs. \$.08/kWh in the United States). If today's renewable energy systems were deployed at a scale to cover a majority of our energy needs, the cost per kilowatt-hour from solar, wind or biomass would be less than unsubsidized coal-electricity.

Vermont is already a national leader in energy issues, with tremendous local energy resources within our borders. We have the capacity to become energy independent with aggressive investment in wind, solar, and biomass energy systems. Without the hopeless burdens we carry as part of the U.S. empire, we could create a sustainable, just economy.

We are the only state in the nation with a state-supported efficiency utility, and we have significantly reduced our energy use per person during the past decade. We could attempt to buy back our hydropower sites from the out-of-state corporations that Governor Douglas and the Vermont legislature allowed to purchase them. Nearly 30 percent of Vermont school children attend schools that are heated sustainably by high-efficiency boilers burning locally harvested woodchips and yielding low emissions. Vermont has enough standing biomass in the forest to sustainably heat every house in the state with wood without the forest shrinking, which would keep more than \$700 million in the annual local economy instead of paying for out-of-state oil and propane. Vermont was the first state in the nation whose legislature passed a statewide "feed-in tariff" bill that forces utilities to pay favorable rates to producers of renewable energy (albeit with a conservative cap at less than 5 percent of our power needs, for now).

Vermont's business community has spawned many renewable-energy companies that are national leaders. Vermont probably has more clean-energy expertise per capita than any other state in the country. These companies include NRG Systems, Earth Turbines, and Northern Power Systems (the latter recovering from several rocky years, economically), all of them international leaders in wind turbine/measurement technology; Biomass Energy Resource Center, the nation's leader in biomass feasibility studies for district heating and power generation; groSolar, leader of the pack in solar installation; NativeEnergy, specializing in voluntary renewable energy credits (RECs) and carbon offsets that fund renewable energy projects; Vermont Energy Investment Corp., an international leader in efficiency programs and consulting that also runs Efficiency Vermont. And there are others beside.

Sadly for those who had hoped for “change,” it appears that Barack Obama and the U.S. Congress will pay lip service but not much more to the development of a green economy, while continuing to push our resources into war and debt. Vermont’s fastest path to a clean-energy economy is to build it ourselves by removing our federal burdens—for example, by seceding. Vermont’s per household share of the cost of the U.S. war machine is \$10,000 per year. This amount of money would cover the cost of installing enough solar power to meet 100 percent of our annual residential needs in less than three years. Without the cost of empire, we could then invest our hard-earned money in Vermont’s priorities, including local, decentralized renewable-energy systems, instead of endlessly subsidizing the oil, coal, and military industries.

Here is the energy scenario that I see in Vermont, and the priorities that we should focus on developing:

1. Becoming more energy independent with renewable energy will create jobs, save us money, and give our economy a rock-solid, long-term foundation, regardless of the polarizing climate-change debates.
2. Vermont forests grow more biomass each year than it would take to heat every residential and commercial building in the state with modern high-efficiency woodstoves and wood-boilers that pay for themselves in less than five years while cutting annual fuel bills by up to 50 percent.
3. If we replace all propane and heating oil with sustainably harvested wood by 2020, Vermont will keep more than \$1 billion in the local economies, and the average home will save at least \$2,000 per year, while we create thousands of jobs.
4. We could reduce the energy demand from buildings by 20 percent through efficiency/weatherization, with investments that would pay for themselves in three years.
5. The critical missing elements in renewable energy are financing and access to the grid. A well-designed “feed-in tariff” that forces power companies to pay cash values to any electricity customer who feeds clean energy into the grid would create the investment-climate that would cause capital to pour into Vermont for renewable-energy installations, while actually reducing our medium- and long-term power rates. Vermont’s first feed-in tariff was limited to utility-scale installations. It must be expanded to allow any home, farm, or business to be paid a fair price for the power it generates, which is known as a “micro feed-in tariff.”
6. Every Vermont property owner—residential and commercial—today has the option to produce all of their annual electricity with an investment in a net-metered solar electric system installed at their home/business, or as part of an off-site, group-net-metered project. Today’s solar system prices translate to a retail price per kWh of less than 15 cents for the next thirty years without any Vermont tax subsidies. Most Vermonters are paying the power company more than that today. In Vermont, solar electric and solar hot water has a ten-year break-even point with twenty-plus years of free power after that, for any home or business.
7. A new nuclear power plant the size of Vermont Yankee would cost between \$7 billion and \$9 billion and would provide enough power to cover most of Vermont’s total power use. But we’d be reliant on a dwindling global supply of increasingly expensive uranium, when Vermont Yankee already can’t compete with Canadian hydropower. If Vermont invested \$7 billion in distributed solar electricity that would generate 100 percent of Vermont’s annual residential power requirement (about 50 percent of our total power demand) without any fuel costs for the next thirty years. Is there any question which investment makes more sense?
8. It would take less than 1 percent of our current open land being devoted to solar power to provide 100 percent of Vermont’s net-annual electricity, including residential and commercial use (which translates to about 500 square feet of roof/ground space per home). Solar power does not provide a constant base load of energy, because it only works during sunlight hours, so Vermont still needs other sources of power like the New England grid or hydropower to

provide the steady base load and cover solar's gaps. But on an annual basis, with net metering we could produce all of our annual electricity needs (meaning everyone would have an annual net-power bill of \$0), with just 1 percent of our land being devoted to solar power.

9. It would also take less than 1 percent of our land to produce all of Vermont's electricity with wind power. But a wind-dominant energy portfolio in Vermont would require industrialization of the majority of our ridgelines. Because of our terrain, wind power has limited potential in Vermont unless we want to build industrial parks on our ridgelines. However, wind power makes a lot of sense for certain communities to explore what is known as community wind. Community wind means the turbines are locally owned and sized to produce power for local use. We could learn to love the view of wind turbines on a ridge, just as we love the view of the scarred mountainsides otherwise known as ski resorts.
10. Burning wood to generate electricity is horribly inefficient, except for district-heating systems that produce some electricity as a by-product. The only efficient use of wood to produce electricity is known as a "heat-led combined-heat-and-power system," where the plant operates primarily when heat is needed, with electricity as a by-product. Our biomass resources should be prioritized for heating needs and forest products, not electricity generation.

I suggest that policymakers and activist groups focus on these key questions:

1. What sustainable energy resources does Vermont really have, and what policies will encourage investment in developing these resources? (Hint, Vermont has no natural gas, uranium, oil, or coal, but we have lots of water, wood, wind, and sunlight.)
2. How can we finance our way toward energy independence, while saving money?
3. How do we reclaim our hydropower resources and put them to work for the benefit of Vermont, instead of for the benefit of transnational companies that sell our hydropower to non-Vermont markets?