

Promoting renewable energy in Vermont: a view from the ground

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View from the trenches of a town energy committee – the good news

- Waterbury and Duxbury together make an excellent microcosm for understanding solar in Vermont:
 - Waterbury's per capita income is 29th and Duxbury's is 89th
 - There are dense neighborhoods of 1000 /mi² in Waterbury Village to 20/mi² in N. Duxbury; with areas of high commercial electric use (e.g., Green Mountain Coffee Roasters, Ben and Jerry's, Shaw's, Cider Mill)
 - There are three schools (Thatcher Brook, Crossett Brook Middle School and Harwood High School)
 - There is a diverse topography of south-facing open sunny fields on the one hand, and north-facing steep wooded slopes on the other, and the altitude ranges from 300 feet above sea level to over 4000 feet
- The first Waterbury/Duxbury Solar Year:
 - Launched in April 2012 at the Waterbury LEAP Fair, aim was to double community solar in one year
 - We created a photo display, held a summer solar celebration, wrote articles, held a solar for businesses meeting, held open houses, began discussions with select boards and school boards
 - Within 11 months, we had doubled the total installed solar in our two towns
- The second Waterbury/Duxbury Solar Year:
 - Emboldened by our success, we launched the second Waterbury/Duxbury Solar Year in April 2013, and are on track
 - There have been many new residential installations throughout the year, the vast majority of which are modest, middle-income homes; many are low-income
 - Last month we celebrated with a ribbon cutting of the state's largest solar school array in Duxbury
 - We've flipped the switch on a new 32-kilowatt array on our fire house.
 - There are plans for a 500-kilowatt array in Waterbury Center, a 150-kilowatt community array, and several other large projects for early this year
 - We are fully on track to quadruple our 2012 installed solar capacity in mid-2014
- The numbers:
 - In 2012 we had 375 kilowatts of installed community solar capacity; in 2013 we had 750 kilowatts, and in 2014, we will have 1500 kilowatts of local, renewable community solar, equivalent of more than one full solar panel for every single one of the 6700 men, women and children who live in our two towns.
 - To put these numbers in perspective, Duxbury has the highest per capita solar in Vermont, and Waterbury has the third. Our two towns have 3.5 times the state's average, in a state that already ranks 5th in the nation. If our two towns were compared with other states, we would be leading Arizona by more than 50 percent, and we would be leading the nation by a margin of more than 12 to one. In some parts of North Duxbury, that figure is closer to 25 times the national average.
- Secret of our success:
 - The real success story is the enabling policy environment that has allowed our solar advocacy efforts to gain purchase.
 - We have:
 - the country's most progressive governor on renewable energy,
 - an inspiring comprehensive energy plan that creates the political will and appetite for solar adoption at all levels;
 - the state's only tax equity fund, Green Lantern Capital, which is helping to mobilize finance
 - we have the state's largest installer, SunCommon, responsible for 4 out of 5 installations across Vermont last year
 - a utility that headed by Mary "never-say-no-to-solar" Powell
 - forward-thinking select boards, trustees and school boards
 - supportive laws, policies and economic incentives -- the federal tax incentive, the policy for accelerated depreciation for businesses, the state rebate, the solar adder, the net-metering and the group net-metering policies, are the 6-stroke engine that allowed this growth happen.

The other side of the story

- Current renewable energy capacity versus current energy demand:
 - Duxbury uses 1,500 MWh, and produces roughly 5% of its total electricity from local renewable energy. But if you've ever been to Duxbury, you realize that there's not much there – the two schools are the largest users in town, accounting for more than a third of our total electricity consumption.
 - Waterbury uses 60,000 MWh; the solar installations there account for only a fraction of 1% of the total use – heavy electricity users include Ben and Jerry's, Shaw's, Green Mountain Coffee Roasters, the Ice Center and many others
- Current rate of growth versus required rate of growth to meet our target of 20% by 2020 and 90% by 2050
 - If we added one new 500 kw project every year through 2050, we'd still be only a third of the way toward our goal; it would take us more than a century to get to the goal of 90%. This assumes that electricity use will remain flat, but we know that electric air heat pumps and electric vehicles are likely to radically increase demand in the coming decades.

The Seven Walls that prevent the expansion of solar in Waterbury and Duxbury

- The Seven Walls: Why we will not and *cannot* launch the 3rd Waterbury/Duxbury Solar Year without policy change:
- **The limited geography wall:** In order to host a 500 kw array, a parcel must be at least 4-5 acres, cleared, south-facing, relatively level, a non-wetland, and a non-floodplain, and within 500 feet of a 3-phase power line, and ideally has limited agricultural, recreational, scenic and development value. In other words, prime solar real estate – extremely rare to find.
- **The 3-phase power line wall:** Waterbury is relatively blessed with a decent infrastructure of 3-phase electric lines, size. Of the more than 31 miles of road in Duxbury, however, less than 2%, or roughly half a mile, of these roads have 3-phase power lines along them. Of the 28,000+ acres and the hundreds of land parcels in Duxbury, there is precisely *one* 15-acre parcel that could currently host an array of 500 kw or larger because of these 3-phase power line limitations.
- **The 150-kw permitting threshold:** The 150-kw threshold means that companies such as the Cold Hollow Cider Mill in Waterbury, which requires a 250 kw array to meet its needs and even has the prime solar real estate to accommodate this in its own backyard, has an array of only 149 kw because the permitting required for a larger system creates a financial burden that is almost impossible for mid-sized arrays to meet. The same was true with Crossett Brook's array.
- **The "1- installation-per-premise" wall:** The Public Service Board has interpreted the VSA language about 'premise' in ways that limit the installation of solar on larger parcels - in 2010, the PSB ruling for CPG 991 (Blittersdorf) stated that "while it is a difficult call...proposed and existing projects should be counted as one project." This ruling has in effect created a "1 installation per premise" rule, which means that any prime solar parcel, whether 2 acres or 30, is limited to a maximum of a single 500-kw array, squandering the solar potential for the scarcest resource that we have, prime solar real estate. To put this in perspective - if all 15 acres of the single suitable parcel (a retired gravel pit) in Duxbury were utilized for solar, this would provide enough electricity for all of Duxbury's electricity needs, with a surplus.
- **The 4% cap wall:** There are two schools in Duxbury, but only one of them can currently switch to solar. Green Mountain Power serves the half of the town with Crossett Brook Middle School, while WEC, which is has met its 4% cap, will not allow Harwood High School to switch to solar. In addition, roughly 40% of the households and small businesses in Duxbury can no longer install systems larger than 5 kw, creating inequity, confusion and resentment.
- **The "1-year accumulated credit" wall:** The current statute states that "any accumulated credits shall be used within 12 months, or shall revert to the electric company, without any compensation to the customer." This means that instead of optimizing solar real estate by building over-sized systems where they can fit, and compensating homeowners and businesses for the extra electrons, all solar installations are scaled to fit just under the electricity needs of the residence, and not a watt above, a phenomenon I call the 'half-roof and half-dooryard syndrome.' In the calculus of solar geography, every single square foot is needed to help us achieve our goals.
- **The small-scale finance wall:** The national and state financial incentives for solar work - Waterbury and Duxbury homeowners and businesses can take advantage of these directly, and see a modest return on investment in small-scale systems, or they can access low-interest loans and lease programs. Municipalities can access finance through tax equity funds such as Green Lantern Capital, which transform investors' monetized tax credits and accelerated business loss and depreciation into solar finance. But the vast majority of these installations are either 150Kw or 500 KW systems; there is little to no finance available for 15-150 kw systems. Because Vermonters are not allowed to sell the excess electricity they produce beyond their 1-year accumulated credit without some complex arrangement with neighbors, we are wasting an enormous amount of potential small-scale investment capital. Nearly a third of Vermont's population - 200,000 people - falls within the pre-retirement bracket of 35 to 55, with an estimated retirement investment portfolio of over \$15 billion. Allowing 10,000 Vermonters to invest \$10,000 of their savings in small-scale renewable energy systems in their backyards would mobilize \$100 million, solving the dual shortage of small-scale solar finance and prime solar real estate overnight.

Conclusion, and the big ask

- I strongly support this bill, and believe it is a decent compromise that will allow Vermont to move forward.
- For our two towns, clean energy means jobs – Waterbury has more than 70 full-time solar-related jobs, more than 50 times the national average. Homeowners will save an average of \$11,500 on their home arrays, our school will save more than \$300,000, and our municipality will save more than \$1.2 million.
- We know that benefits of solar energy far outweigh the costs. The modest subsidy that Vermont offers through the solar adder is more than repaid through the value of a decentralized grid, and the deferral of new sub-stations, which has already saved Vermonters hundreds of millions of dollars (compared to fossil fuel subsidies, which outweigh solar by more than 50:1).
- In this bill, I'd love to see the cap raised to 18 or 20% to ensure we can safely get to end of 2016 when federal tax credits expire. I'd love to see the permitting thresholds eased for 150-kw systems and the level raised to 250 kw. I'd love to see the expedited permitting lifted from 10 kw to 35 kw or 50 kw, to promote small business and neighborhood arrays. And I'd love some clarity on the property tax issue in order to promote investor confidence. All of these will help accelerate the rate of adoption of solar across Vermont, and help break down these walls.
- But if I am allowed a single big ask, it is this:
 - **Page 4, line 3 – eliminate Section D: “is located on the customer’s premises or, in the case of a group net metering system, on the premises of a customer who is a member of the group” – this will allow landowners and investors to maximize solar real estate on a single parcel, while still ensuring adequate permitting processes for each new large array;** This one step is the difference between us being able to line up new 150-kw and 500-kw projects or coming to a near standstill in larger arrays.
- If the most active energy committee in the state of Vermont, in a town with the *highest* rate of solar adoption, in a state with 5th highest rate of solar adoption is at almost a total impasse, and if the current trajectory of solar adoption has almost no chance of achieving the goals in the Comprehensive Energy Plan, then the energy policies *must* change. We have a clear choice before us: either we commit to the changes that are required that allow us to demonstrate to Vermont and to the nation how a transition to clean renewable energy can work, or we commit to tepid half-measures that maintain only incremental advances over the status quo, and which leave us almost no room for achieving our energy goals by 2050.