



May 26, 2015

Governor Charlie Baker
Massachusetts State House
Office of the Governor
Room 280
Boston, MA 02133

Re: Transitioning to a Renewable Future

Dear Governor Baker:

The energy sector is in a period of transition, and your administration, in conjunction with the legislature, is in charge of planning diverse and dependable delivery systems. In your inaugural address, you stated, "There is no single initiative that can start and sustain a job creating economy." With the anticipated retirement of 8,300 megawatts of coal and oil generating assets in New England, you have in front of you an opportunity to create "a job creating economy" in renewable energy. You have the opportunity create high skill jobs for generations while retaining more of our energy dollars within the Commonwealth. Your executive branch needs to make the transition to thinking about full integration of solar, wind, storage and other distributed generation into the new Commonwealth energy economy. You need to be involved in that transition; and in removing net metering caps that stifles investment, are a vestige of the old utility model protecting their franchise and move the Commonwealth significantly beyond the existing 1,600 megawatt solar program to an integrated solar, wind and storage energy economy developed here in the Commonwealth.

How are we going to pay for this transition to a renewable grid?

The same way the Commonwealth paid for the transition from a regulated utility model to a deregulated energy system - through a "Transition Charge". It is a defined, transparent mechanism and like the current model, it has not bankrupted the system nor the ratepayer.

How much is it going to cost?

Less than half the per kilowatt hour charge we have paid for our current deregulated transition charges. i.e. \$0.00268 per kilowatt hour. See attached calculations and illustrative utility invoice. The monies collected by the transition charge would then be used to cover the cost of building out solar capacity at a rate of 400 megawatts per year.

How to build a Commonwealth renewable energy economy?

The first thing to do is to prioritize investment in new, in-state renewable generating capacity. Solar is the fastest deployable, zero emissions, renewable generating source available. It has the technical potential to provide twice the electricity the Commonwealth consumes. Establish a development capacity of solar at 400 megawatts per year. Establish the developable capacity of on and off-shore wind within the Commonwealth and layer on its 5-6 year deployment schedule and its cost per kilowatt-hour to the ratepayer. Your administration will then be able to evaluate the cost and benefits of exporting our energy dollars for Canadian hydro, wind from Maine and the basis for natural gas pipelines for reliability and its cost per kilowatt-hour for all of the above. Position the Commonwealth, so that when storage becomes widely available, the Commonwealth will have installed renewable capacity to make storage truly transformative.

I would welcome conversations with you and your executive cabinet and commissioners to discuss building an energy economy within the Commonwealth through transitioning to renewables.



Best Regards,

A handwritten signature in black ink, appearing to read "Doug Pope", written over a light blue rectangular background.

Doug Pope
President

Transitioning To A Renewable Economy

- 1. Remove Net Metering Caps Entirely:** Your Executive Order No. 562 orders the reduction of unnecessary regulations. Caps on net and virtual metering stifles innovation and is a vestige of the status quo, old utility model that protects their monopoly granted by the state. In our deregulated system, the utilities recover all cost through decoupled rate recovery. With all forms of solar, large and small wind, anaerobic digestion, combined heat and power (CHP), net metering caps are a prime example of superfluous legislation that inhibits innovation. Democratization of the renewable grid for all classes of ratepayers = virtual net metering = community solar.
- 2. Change The Status Quo:** Change how we think about exporting our energy dollars outside the Commonwealth. While we are meeting our Global Warming Solutions Act goals, create a permanent energy economy within the Commonwealth. Change how we think about compensating our utility companies. Under current DPU tariffs, the utilities are unable to recover investments made in advance of the immediate need. If net and virtual metering is to be a ubiquitous driver of innovation, utilities need to be cooperative enablers of distributed generation systems. Utility revenue needs to be aligned with enabling the year over year expansion of in-state installed renewable generation capacity. The tariff for utilities needs to be changed to allow rate recovery for system wide improvements anticipating consistently increasing levels of solar and other forms of distributed generation. If National Grid and Eversource spent \$300 million additional each per year in “renewable transition upgrades” to upgrade the distribution system those cost would total \$0.00134 per kilowatt-hour.
- 3. Transition To Renewables:** In 1997, the Commonwealth transitioned from a regulated utility structure to a deregulated system separating generation and distribution. The ratepayer has been paying that charge per month from 1997 to present. While those charges are currently tapering to zero, charges have been as high as \$0.00951 per kilowatt-hour. Attached is an illustrative utility invoice from NSTAR in March of 2011. Using the same regulatory structure, transition to a renewable future using this method. A development rate of 400 MW per year of solar at a Performance Based Incentive of \$285 per megawatt would cost \$0.00268 per kilowatt-hour or \$16.08 per year for the average Eversource customer. (Calculations attached) A development rate of solar at 400 megawatts (\$0.00268) plus utility renewable transition upgrades (\$0.00134) would cost \$0.00402 per kilowatt hour.
- 4. Establish A Constant 400 Megawatt Development Rate Per Year:** Why a development rate of 400 megawatts per year? The 400 megawatts development rate is slightly larger than the current level of development and relative to what we have paid for deregulation, at \$0.00268 per kilowatt-hour, it is affordable. Year over year development, particularly in conjunction with storage, will accommodate a good portion of daytime load demands. Think of replacing the generation capacity of a Vermont Nuclear at 604 megawatts every four-years with solar. The 400 megawatt development rate could be expanded each year if ratepayers are backlogged to sign up for Community Solar. Solar and wind combined with storage will be transformative as to how we think about the renewables.
- 5. Raise The RPS from 1% to 2% and Carve-out a 400 MW Annual Development Rate:** Following the lead of Senator Ben Downing S554 that raises the RPS level from 1% to 2%, we have requested that he amend his bill to carve-out 400 megawatt development rate for solar per year.
- 6. Lower The Cost Of Capital:** Lower the cost of capital in developing solar developments and assist the in-state financing of projects by developers using local banks by instituting a Performance Based Incentive at a rate of \$285 per megawatt. The current SREC program does not provide year over year

assurance of dependable income, so banks require from small and medium size developers, a ten-year financial commitment by a Wall Street level credit. Large capital sources pay developers \$120-\$150 out of a \$300 SREC. Half of the Massachusetts SREC incentive leaves the state; it also complicates the financing and feasibility of projects.

- 7. Investing In Massachusetts – An Economic Multiplier Of 1.2:** First, build a renewable energy economy within the Commonwealth before exporting our energy dollars out of state. A build rate of 400 MW would create a \$1.2 billion per year industry employing skilled, electrical workers, engineers, administrative and professional jobs. Should the Commonwealth invest its energy dollars on the seabottom of the Cape of Maine or in Canada? The annual economic multiplier of a \$1.2 billion dollar energy economy according to economist Dr. Barry Bluestone for the Commonwealth is 1.2 providing \$1.44 billion in economic benefits per year to the Commonwealth. Between 2010 and 2014, \$2.37 billion was invested in solar in Massachusetts and created over 9,000 jobs at the height of the recession.
- 8. Utility Compensation:** Align the business model of the utilities to encourage continually increasing levels of installed capacity on the distributed generation system. Spend money for infrastructure investment here in Massachusetts not Canada, Maine or New Hampshire. Addressing the “Minimum bill” issue directly, where a ratepayer zero’s out their bill using renewables, the solar industry recognizes that there is a certain intrinsic value to remaining connected to the grid even when the consumption is zero. Paying “rent” to remain connected to the grid is not an unreasonable charge. However, throughout this discussion, the utilities have not mentioned the amount of the minimum once. Will it be an abusive amount like Minnesota at \$40 per month? Will it be \$10 per month? Will it discourage energy efficiency? Will it discourage solar or small wind? How will the minimum bill address the small farm in western with multiple meters, serving remote barns with lighting only? Or the Dorchester triple-decker with three meters and solar on the roof? By changing the paradigm of how we look to integrate increasing amounts of solar and distributed generation, we should be thinking towards thirty, forty and fifty percent of installed capacity of in-state renewables. The utilities need to be aligned and incentivized to participate in the transition to renewables. Given less than two-percent of total load is solar and the subset of net zero invoices, and given the income to the utilities is de minimis, in light of larger goals, should we not allow the utilities to recover this charge through decoupling and pay for this cost in the “transition to renewables charge”?
- 9. Provide Significant Savings To Ratepayers:** The concept is that all ratepayers, including businesses, participate in the benefits of solar either directly or through a Community Solar program, or revenue off-sets from lowered municipal or school district expenses. Allow full retail credit on all system sizes up to six megawatts.
- 10. Expand The Concept of Community Solar:** Community Solar should be an aggregation of credit worthy homeowners, businesses, non-profits of any configuration that the market can assemble in a financeable transaction. There should be no restriction size, rate or class of ratepayer.
- 11. Provide for all regions of the state to benefit from the new energy economy:** To a large extent, the eastern, more densely populated parts of the state receive most of the investments from the private and public sectors. In the new renewable energy economy, let the least populated western and central areas of the state, choose to encourage solar development and ship the electricity to the easterly, most populated areas of the state. Create a tariff that will allow for electricity to be created in one load zone and sold in another load zone within the same utility holding company.

12. Alternative Funding for Commonwealth Renewables: Concerns for reliability, perceived lower cost for electricity and thermal cost for businesses, all drive the natural gas debate. Many, justifiably fear the presence of additional natural gas lines will, by default, drive our energy choices to the exclusion of a meaningful deployment of renewables. A tax on natural gas as it consumed within the state, could pay for the “Transition To Renewables”. The dedicated tax on natural gas could reduce or eliminate the charge to ratepayer to transition to renewables – and perhaps accelerate the installation of renewables. If the projected low cost of natural gas lives up to its promise, the ratepayer will not feel the introduction of a natural gas tax because they are currently paying a higher cost for energy.

13. Planning and Coordination: In your inaugural address, you referred to rapid energy “*increase is being driven in part by inadequate delivery systems, the result of poor planning and coordination.*” state-sponsored energy efficiency and renewables, this is not a market driven phenomena. It is the private sector innovating around a full-blown Massachusetts stakeholder process. The combination of retiring generating assets, dynamic evolution of renewable energy and soon-to-be energy storage puts your administration in the position of planning energy systems development for the next fifteen years. Will Massachusetts lead the nation in net metering and transition to renewables? Will we develop our own energy economy within the Commonwealth? Will we continue to export our energy dollars out of state for the next fifteen years? Will the Commonwealth recognize that it “can start and sustain a job creating economy”?

Transition To Solar Cost Per kWh To Ratepayer

A	Solar Installed and Billable to Ratepayers	400	MW	
B	Average PV Solar Capacity Factor	13.21%		
C	Hours per year	<u>8766</u>	hrs/yr	
D	Annual Solar PV Energy Production	463,195	MWh/yr	(D=A*B*C)
E	Cost of SRECs (priced at Floor)	<u>\$285</u>	per MWh	
F	Annual Cost of SREC Program	\$132,010,700	per year	(F=D*E)
G	Annual System Load	<u>49,253,000</u>	MWh/yr	DOER RPS 2013
H	SREC Charge per unit Energy Consumed	\$2.68	per MWh	(H=F/G)
I	kWhs per MWh	<u>1000</u>	kWh/MWh	
J	Unit SREC Charge in Customer Bills	\$0.00268	per kWh	(J=H/I)
K	Average NSTAR Residential Customer Energy Consumption	<u>500</u>	kWh/Mo	
L	Average NSTAR Residential Monthly Cost of SREC Program	\$1.34	per month	(L=J*K)
M	Months per Year	<u>12</u>	mo/yr	
N	Average NSTAR Residential Annual Cost of SREC Program	\$16.08	per year	(N=L*M)

Completed by Phillip C. Smith
 PCS Power Consulting Services, LLC



March 2011, NSTAR customer invoice

Cost of Electricity

Delivery Services

Customer Charge				8.14
Distribution	.05186 X	963 KWH		49.94
Transition *	.00951 X	963 KWH		9.16
Transmission	.01950 X	963 KWH		18.78
Renewable Energy	.00050 X	963 KWH		0.48
Energy Conservation	.00250 X	963 KWH		2.41
Underground Surcharge				1.78

Delivery Services Total 90.69

Supplier Services

Generation Charge				
Basic Svc Fixed	.08040 X	963 KWH		<u>77.43</u>

Total Cost of Electricity 168.12