Patriot Place Solar Installation (Photo by Chris Bills)

## Does Solar Energy Actually Make Massachusetts Safer?

By Steve Goreham

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Earlier this month, Massachusetts governor Deval Patrick announced that his state reached the goal of 250 megawatts of installed solar energy capacity. “When we set ambitious goals and invest in achieving them, Massachusetts wins,” said the governor. “The many businesses and homeowners who have taken advantage of cost effective renewable energy installations are helping to create both a safer and more prosperous Commonwealth for the next generation.” But if we look a little closer, it’s not clear that the Massachusetts push for solar is cost effective or makes citizens safer.

Governor Patrick and solar advocates typically quote capacity, but nothing runs on capacity. What’s important is actual delivered electricity. Photovoltaic solar systems only deliver significant energy for about six hours each day. Output is further reduced on cloudy days and days when snow covers the solar panels. Renewable Energy Massachusetts estimates electricity generated in Massachusetts to be 15 percent of nameplate capacity at best.

But actual solar-generated electricity may be much less than 15 percent. According to the U.S. Department of Energy, in 2011 Massachusetts solar generated only 4.8 megawatt-hours of electricity from 193 megawatt-hours of installed capacity at the end of 2010, or less than three percent of nameplate solar capacity. In 2011, solar facilities provided only *one ten-thousandth* of the state’s electricity. A single gas-fired power plant, the Mystic Generating Station in Boston, delivers more electricity in seven days than the annual output of all the solar panels in Massachusetts.

Massachusetts is not exactly the Sun Belt. According to the National Climatic Data Center, Boston enjoys clear skies only 27 percent of days each year on average, with

28 percent of days classified as partly cloudy and 45 percent as cloudy. At 42 degrees north latitude, Boston sunlight is also less intense than that received in southern states.

The Patriot Place solar facility was completed in 2010 with an expansion added earlier this year. The facility consists of photovoltaic solar arrays installed on the rooftops of several buildings of the Patriot Place retail and dining center, adjacent to Gillette Stadium, home of the New England Patriots. The system cost $4.3 million and provides about 1.1 megawatt-hours of electricity each year. The electricity output value is about $180,000 per year at a retail electricity rate of 16 cents per kilowatt-hour. Excluding government subsidies and assuming zero maintenance cost, the project will not break even on invested capital until about 2034.

But massive government subsidies can make solar a good financial deal. Solar purchasers receive a federal tax credit of 30 percent of the installation cost, paid for by U.S. taxpayers. Massachusetts provides an exemption for property taxes, sales taxes, and corporate excise taxes for solar facilities. Residential installations also receive a $1,000 income tax credit on solar panels. To top it off, Massachusetts law requires utilities to buy generated solar electricity at the premium price of 27 cents per kilowatt-hour, well above the 16 cents per kilowatt-hour retail rate and more than five times the wholesale rate for New England electricity. It all adds up to a lucrative wealth transfer from taxpayers to solar system purchasers and installers.

State and the federal governments have poured millions of dollars into Massachusetts-based solar cell companies, much of it lost down a green drain. Evergreen Solar, which provided most of the solar panels for the Patriot Place, declared bankruptcy in August 2011 after receiving $58.6 million in Massachusetts subsidies and $26.3 million from the federal government. Massachusetts-based Konarka Technologies and Satcon Technology both filed bankruptcy last year after receiving state and federal grants.

After providing tax dollars for solar and other renewables, Massachusetts citizens pay a second time in the form of higher electricity rates. The state's Renewable Portfolio Standard law requires utilities to buy an increasing share of electricity from renewable sources or be fined. A 2010 study by the Beacon Hill Institute projected that Massachusetts green energy programs will cost state citizens almost $10 billion from 2010 to 2020, or about $1,600 in additional cost for each household.

Does Governor Patrick actually believe that solar cells make Massachusetts *safer*? Can solar installations stop the seas from rising or make the storms less severe? Contrary to claims by some, there is no empirical evidence that mankind can significantly influence the climate. But misguided government efforts, like solar initiatives and mandates in Massachusetts, provide only a tiny addition to electricity supply at high cost to citizens.

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