

October 18, 2016

Via E-mail

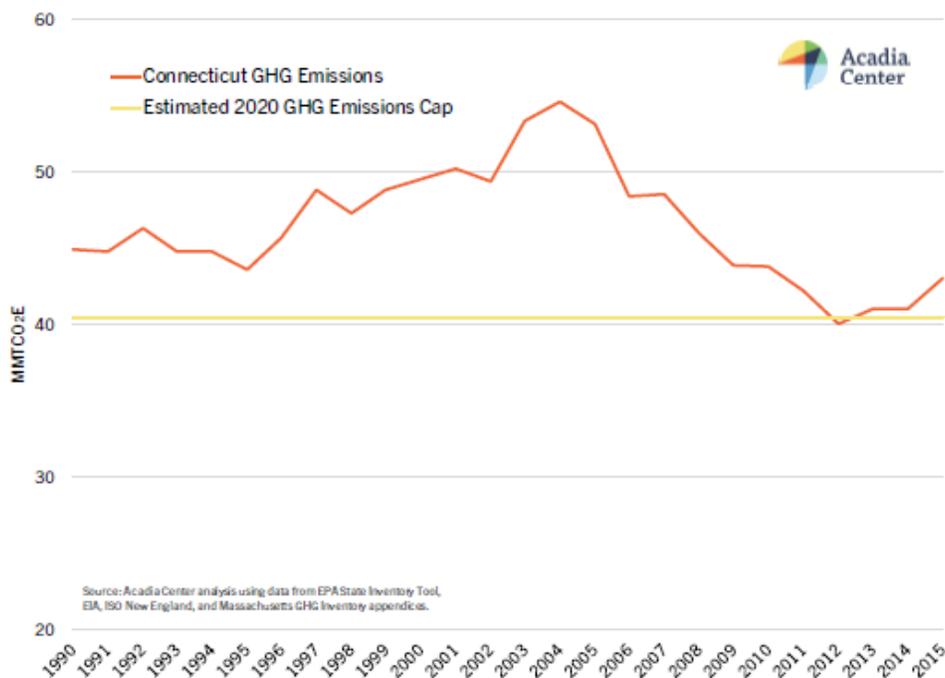
Governor’s Council on Climate Change

Dear Council Members:

As the dire reality of climate change becomes more apparent with each new worrisome development – worsening extreme weather, accelerating sea level rise, and increasing ocean warming and acidification – the work of the Governor’s Council on Climate Change (“GC3”) has only grown more important. While Connecticut may be a small U.S. state, and the problem of climate change may seem too large, it remains true that all states – and nations – must do whatever they can as fast as they can to avoid the worst harms. Any and all greenhouse gas mitigation matters right now, and with an economy roughly the size of Ireland’s, or Chile’s, Connecticut is no small player in the effort to fend off catastrophic climate change.

Against this backdrop, Acadia Center welcomes the opportunity presented by the GC3’s analytical work to re-evaluate Connecticut’s short-term climate mitigation strategies. Any assessment of mitigation opportunities must start with the most up-to-date information on GHG emissions and trends. To that end, Acadia Center recently developed an updated greenhouse gas (“GHG”) emissions inventory for Connecticut that revealed an upward trend from 2012 to 2015.

Figure 1. CT greenhouse gas inventory, including Acadia Center projections for 2014-2015.



Our report provides more detail on that increase and the major underlying factors.<sup>1</sup> The corrected 2013 GHG inventory recently released by the Connecticut Department of Energy and Environmental Protection (“DEEP”) also confirmed an increase in emissions from 2012 to 2013. Both inventories found GHG emissions to be higher than the mandatory 2020 GHG emissions cap set by the state’s Global Warming Solutions Act. We find this situation concerning, and we were encouraged that DEEP Commissioner Klee also expressed concern about the recent emissions increase at the GC3’s September meeting.

Given that the Global Warming Solutions Act requires GHG emissions to be 10% below 1990 levels not later than January 1, 2020,<sup>2</sup> Connecticut must act immediately to reverse increasing emissions if it is to meet the legislative mandate for 2019’s emissions – the window is effectively two years for implementation. Fortunately, there are proven short-term mitigation solutions that the state can implement now, often based on existing energy policies and deployment mechanisms.

We have identified the following three mitigation solutions as the most promising ones for addressing this short-term need: electrification of buildings and vehicles, increased in-state solar PV deployment, and expanded investment in cost-effective energy efficiency. None involve radical policy change; they rely on approaches and deploy technologies that are already well established in the New England region and beyond. As discussed in more detail below, Acadia Center analysis shows that there is significant potential to use each of these tools at a much greater rate, as Connecticut has taken a less ambitious approach to their use than other states.

The 2016 Comprehensive Energy Strategy (“CES”) could be the perfect vehicle for placing these mitigation solutions at the forefront of state energy policy; however, we believe the charge of the GC3 requires it to identify the best short-term mitigation strategies for meeting the 2020 GHG emissions cap and then to communicate those findings to the Governor and the public for inclusion in the CES (and to be made effective through regulatory decisions or legislation, as needed).

## Electrification

Two of the most effective means for reducing Connecticut’s GHG emissions, on both the short and long-term, are electrifying building heating and the vehicle fleet. While Connecticut has made commitments to promote the adoption of electric vehicles, the state has not similarly committed to promoting and deploying the electrification of building heating systems. Heat pumps are efficient, market-ready technologies that can cut the total energy needed to heat a home by 60% at competitive costs while emitting far less CO<sub>2</sub> than natural gas.<sup>3</sup>

It is important to dispel some common myths about heat pumps. Two concerning comments based on outdated information were made about air-source heat pump viability at the September GC3 meeting and at the July Analysis, Data, & Metrics Working Group meeting. The first was the mistaken claim that heat pumps cannot operate in cold

---

<sup>1</sup> See Acadia Center, “Updated Greenhouse Gas Emissions Inventory for Connecticut: Recent Increases and Underlying Factors” (June 13, 2016) (available online: <http://acadiacenter.org/document/updated-greenhouse-gas-emissions-inventory-for-connecticut/>).

<sup>2</sup> See Public Act 08-98, An Act Concerning Connecticut Global Warming Solutions, §2(a)(1) (“The state shall reduce the level of emissions of greenhouse gas...[n]ot later than January 1, 2020, to a level at least ten percent below the level emitted in 1990”).

<sup>3</sup> See Acadia Center, *EnergyVision*, 2014, available online: <http://acadiacenter.org/document/energyvision/>.

weather – an obsolete concern, as modern cold climate heat pumps can operate efficiently to -13°F.<sup>4</sup> The second was the inaccurate assertion that only 3,000 heat pump units total had been installed in Connecticut to date. This claim greatly understates the current deployment level. Based on annual reporting from the Connecticut Energy Efficiency Board, we know, for instance, that over 3,500 heat pump units were installed across the state in 2011 alone. Yet, even though heat pump installations are occurring at a higher rate than commonly understood, Connecticut is still far behind other states in its deployment of this hyper-efficient, cost-saving technology. For example, Maine, the coldest state in New England, has already converted over 3% of household heating systems to heat pumps in only three years. Connecticut could take full advantage of the significant GHG emissions savings that heat pump technologies offer by enacting a comprehensive program to promote heat pump conversions through coordinated incentives and financing, public education, and better marketing to consumers.

Further, Connecticut should prioritize heat pump conversions over natural gas conversions to reach both short- and long-term climate goals. Since most customers will not update a heating unit until it reaches the end of its life, locking customers in to natural gas equipment will lead to unnecessary investments in outdated infrastructure and will also ensure that their emissions will be higher not just on the 2020 timeframe, but potentially into the coming decades. In a recent report to DEEP, Connecticut’s electric distribution utilities found that only 9% of total natural gas conversions utilized high efficiency units, meaning that the 33,000+ Connecticut homes that participated in the state’s natural gas expansion program will now be using inefficient gas units for at least the next decade, if not well beyond. Continuing natural gas conversions in this way could be detrimental to both short and long-term goals, especially when heat pumps provide a cost-effective, low-emission alternative.

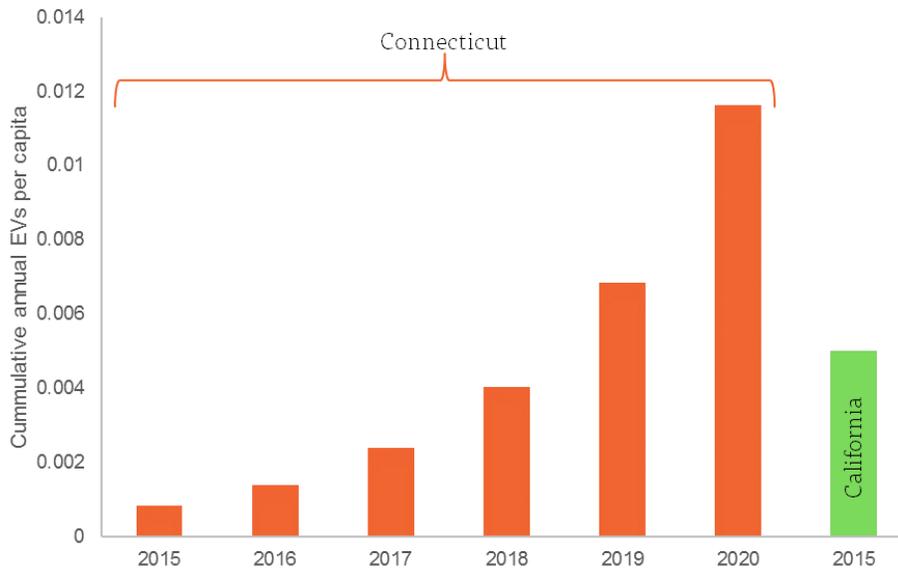
When it comes to electrifying vehicles, Connecticut has commendably pledged with other states that it will work to make 13% of the vehicle fleet emission-free by 2025. This translates to roughly 41,835 cars, most of which will be electric vehicles, by 2020.<sup>5</sup> Successfully meeting this achievable goal could decrease emissions from the light-duty fleet by about 2%; however, with under 3,000 electric vehicles (“EV” or “EVs”) registered in the state as of October 2015, the number of EVs on the road must increase by 70% annually to reach this target. California, which made the same pledge to increase emission-free vehicles, has already dramatically increased the number of EVs in the state, showing that a rapid EV ramp-up is possible (see Figure 2 below). There are a number of ways that Connecticut could speed EV deployment over the next year, including through enhanced consumer rebates, special rebates targeting low-income consumers, and progressive rate design that gives EV owners a special incentive to charge at night, among other options. The existing CHEAPR program provides an excellent short-term mechanism for accelerating EV adoption and could be dialed up almost immediately through dedicated, permanent funding from a number of different non-taxpayer revenue sources.

---

<sup>4</sup> See Mitsubishi Electric, <http://www.mitsubishielectric.com/believe/heatpump/>.

<sup>5</sup> See Conservation Law Foundation, Sierra Club, Acadia Center, *Charing Up: The Role of States, Utilities, and the Auto Industry in Dramatically Accelerating Electric Vehicle Adoption in the Northeast and Mid-Atlantic States*, 2015.

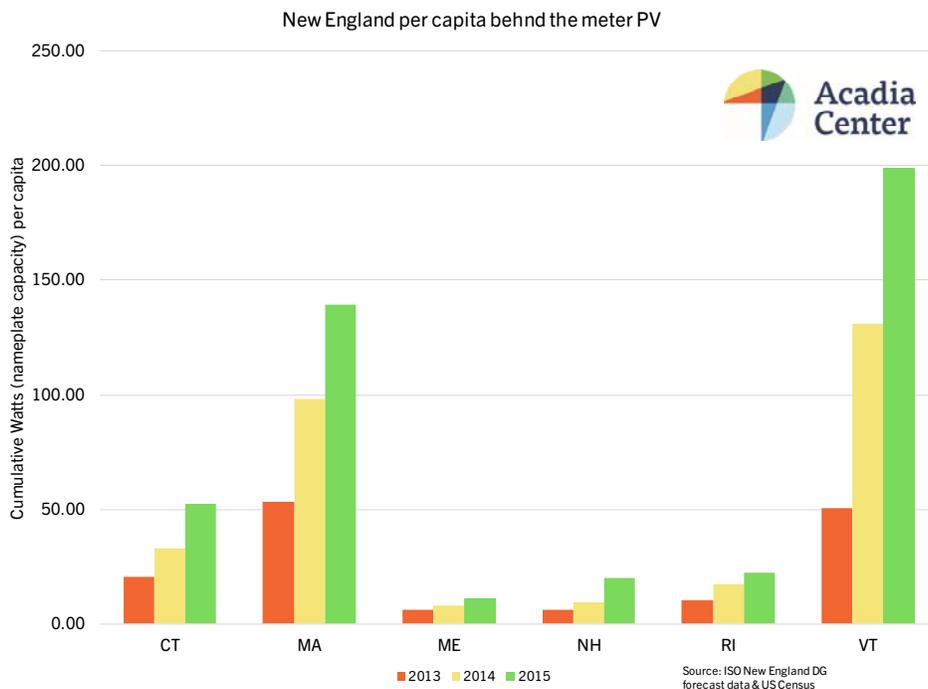
Figure 2. Electric vehicles per capita in Connecticut and California



## Solar PV

Another important tool for decreasing emissions in the short term is ramping up solar PV installations. Connecticut currently trails other New England states in its deployment of solar PV. For example, on a per capita basis, Connecticut had less behind-the-meter solar PV capacity installed than either Massachusetts or Vermont from 2013 through 2015 (see Figure 3 below). To elevate Connecticut to a leading position on renewable energy, and also meet mandatory climate commitments, the state should pursue updates to its Renewable Portfolio Standard (“RPS”), just as other states in the region have done. Rhode Island recently increased its RPS to 40% by 2035, and New York recently adopted a Clean Energy Standard that requires 50% of electricity to come from clean sources by 2030.

Figure 3. Installed Solar PV per Capita in New England States<sup>6</sup>



While Rhode Island and New York updated their RPS and CES laws to ensure their long-term GHG emissions reduction mandates were met, these changes also have short-term GHG emission reduction benefits. Similar to the rapid ramp-up needed for EVs, setting an ambitious RPS to meet 2050 targets requires dramatically increasing the amount of solar PV in the next few years, thus lowering emissions on the 2020 timeframe. A revision of the RPS in Connecticut with specific carve-outs and financing options for distributed and community solar will help with the near-term issue of rising emissions, if the change is implemented now. Ramping up procurement of in-state utility-scale solar PV would also provide significant mitigation help and the currently pending small-scale clean energy resource RFP, if successful, could be an approach that needs to be expanded and repeated.

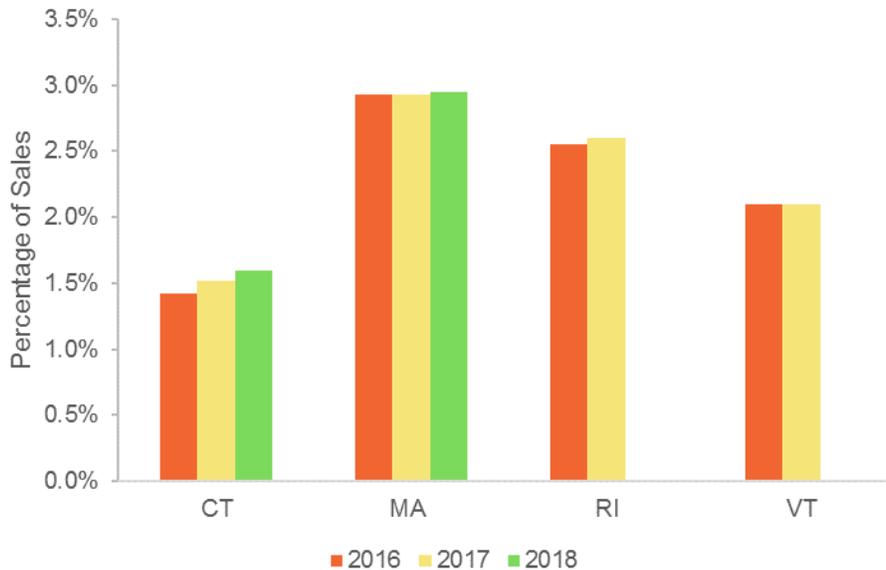
## Efficiency

Connecticut, with its annual efficiency commitment of around 1.5% electricity savings, has fallen behind most New England states, which have each committed to greater than 2% efficiency savings annually (see Figure 4 below). Since cost-effective energy efficiency is, by definition, always the lowest-cost energy resource available, these states have also adopted and enforced an “all cost-effective efficiency” policy,<sup>7</sup> requiring their electric and natural gas distribution utilities to implement all efficiency measures that cost less than energy supply.

<sup>6</sup> Acadia Center presentation by Jamie Howland to the Connecticut Power and Energy Society, June 2016 (additional detail available upon request).

<sup>7</sup> While Connecticut has an “all cost-effective” statutory requirement for energy efficiency procurement, it does not enforce it.

Figure 4. Annual Efficiency Targets as a Percentage of Sales<sup>8</sup>

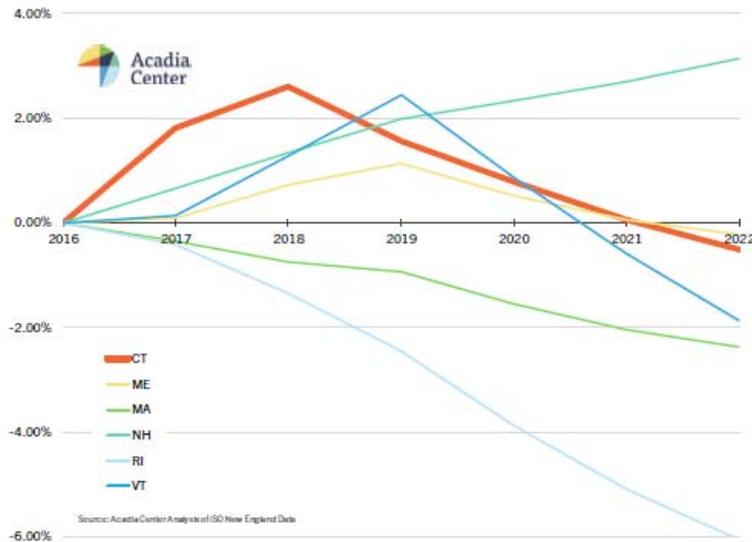


The result of other states' ambitious efficiency commitments is that their electricity consumption is expected to drop, particularly in Massachusetts and Rhode Island (see Figure 5 below). In the same time period, when reducing emissions is most critical to reaching the 2020 GHG emissions cap, Connecticut is projected to have the largest increase in electricity consumption in the ISO-NE region. These two opposing trends will result in Connecticut taking on an increasing share of the region's GHG emissions from electricity consumption in the short term, which will negatively impact its carbon profile. The best way to address this is to increase Connecticut's energy efficiency savings targets as quickly as possible to match those in leading states.

Connecticut already has effective energy efficiency programs in place, and these could fairly easily be ramped up with increased funding levels comparable to those in Massachusetts and Rhode Island. The economic and climate benefits of such a move would be significant, likely more so than any other short-term mitigation solution Connecticut could adopt. For instance, an aggressive target of 2.5% savings could also help save the state's residents and businesses an additional \$480 million through 2020, while reducing CO<sub>2</sub> emissions by hundreds of thousands of tons per year – a much needed boost towards meeting the 2020 GHG emissions cap. Increasing energy efficiency savings will also help Connecticut lower the compliance costs of more aggressive RPS goals, since lower overall electricity demand means that less renewable energy needs to be supplied to satisfy those goals.

<sup>8</sup> Acadia Center analysis of state three-year efficiency plans and ACEEE data.

Figure 5. ISO New England Forecast - Change in Electric Consumption from 2016<sup>9,10</sup>



In the end, we hope this brief analysis makes clear that there are short-term mitigation opportunities available to Connecticut that other states have already identified as feasible and achievable and are, in fact, pursuing. In light of the recent multi-year increase in GHG emissions in Connecticut and the rapidly approaching mandatory 2020 emissions cap, we urge the GC3 to develop public recommendations for strong and immediate action on electrification in vehicles and buildings, increased in-state solar PV deployment, and expanded investment in cost-effective energy efficiency.

Thank you again for your crucial efforts on behalf of the citizens of Connecticut. Please do not hesitate to contact us if you have any questions.

Sincerely,



William E. Dornbos  
 Connecticut Director & Senior Attorney  
 Acadia Center  
[wdornbos@acadiacenter.org](mailto:wdornbos@acadiacenter.org)  
 (860) 246-7121 ext.202

<sup>9</sup> See Acadia Center, "Updated Greenhouse Gas Emissions Inventory for Connecticut: Recent Increases and Underlying Factors" (June 13, 2016).

<sup>10</sup> New Hampshire recently implemented an energy efficiency resource standard, which will likely result in a much lower expected consumption for the state in the next forecast.