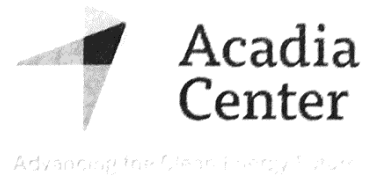


Updated Greenhouse Gas Emissions Inventory for Connecticut

Recent Increases and Underlying Factors

June 13, 2016



Introduction

Connecticut's climate and energy policymaking is at a critical juncture. With both the Governor's Council on Climate Change and the 2016 Comprehensive Energy Strategy aiming for final recommendations by the end of this year, Connecticut will be making crucial decisions in the next six months that will set the state's primary direction on climate and energy issues for years to come – with potentially lasting consequences for the state's economy, public health, and the environment.

This unique policymaking moment also has legal significance; the first mandatory greenhouse gas (GHG) emissions cap established by Connecticut's Global Warming Solutions Act – a 10% reduction from 1990 levels by 2020¹ – is only three and a half years out. With so much at stake, it is imperative that Connecticut's upcoming policy decisions are grounded in the latest data and analysis on GHG emissions and trends.

Analysis

Toward that end, Acadia Center constructed an updated GHG emissions inventory for Connecticut from 1990 through 2015 using the best available data from public sources.² The inventory's methodology matches the approach to be taken by Connecticut in future GHG emissions reporting. The Governor's Council on Climate Change has recently indicated that the state will switch from a traditional inventory approach – one where only GHG emissions produced within the state are counted – to a hybrid approach that estimates the total GHG emissions caused by the electricity consumed in the state.³

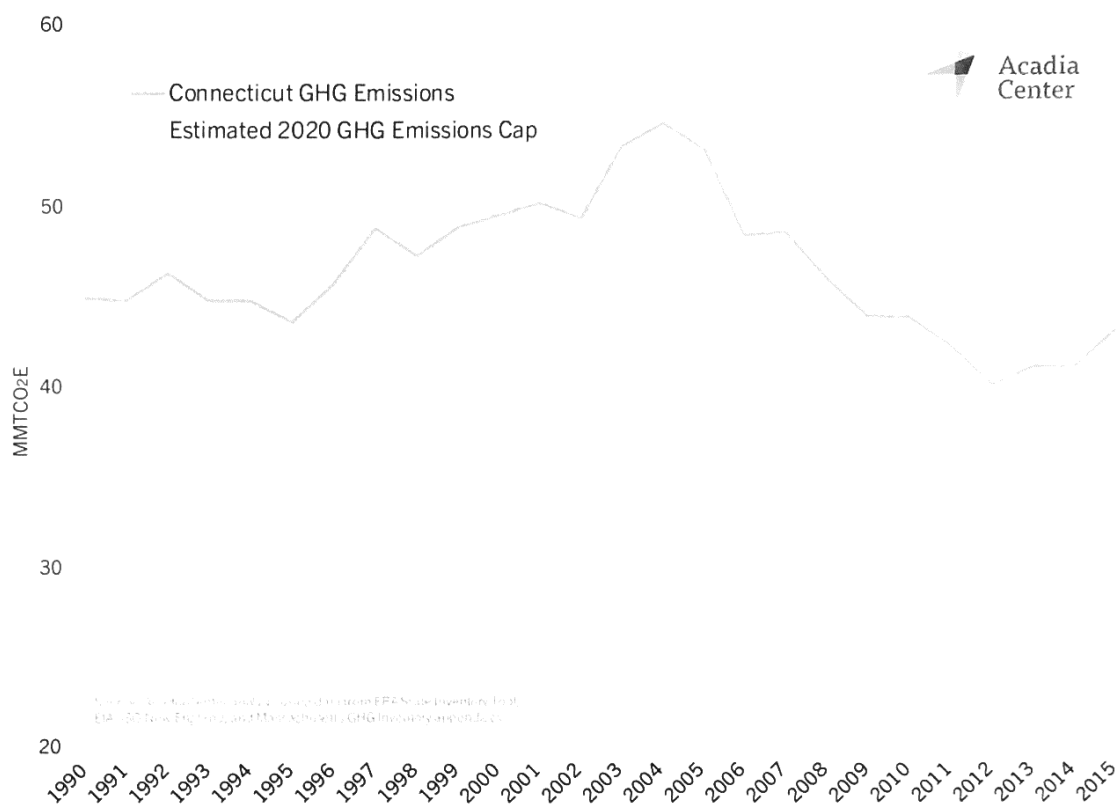
Acadia Center supports this decision. The hybrid approach can provide a more accurate sense of Connecticut's actual GHG emissions footprint and should therefore better inform and shape policy solutions. Figure 1, below, shows the results of Acadia Center's updated inventory for Connecticut.

¹ 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”).

² Acadia Center has published multiple GHG emissions inventories for Connecticut beginning in 2003. The most recent used a traditional inventory approach through 2014. This analysis is an update using a hybrid approach and 2015 data.

³ See GC3 Exploratory Report, pp. 33-34.

Figure 1 - Connecticut GHG Emissions Inventory, 1990-2015



Non-electric sector data for 2013 and earlier is based on the U.S. Environmental Protection Agency's State Inventory Tool.⁴ 2014 was estimated using available preliminary, but largely complete, data. 2015 was estimated using partial and some preliminary data. Electric sector emissions are based on Connecticut's consumption share of electricity produced in the region and imported into the region.⁵ An estimate of the 2020 emissions cap set by the Global Warming Solutions Act – 10% less than 1990 emissions – was calculated using the hybrid inventory approach. Connecticut has not yet officially calculated and set the 2020 cap using this new approach, nor has a public proceeding been initiated to do so at this time.

Discussion

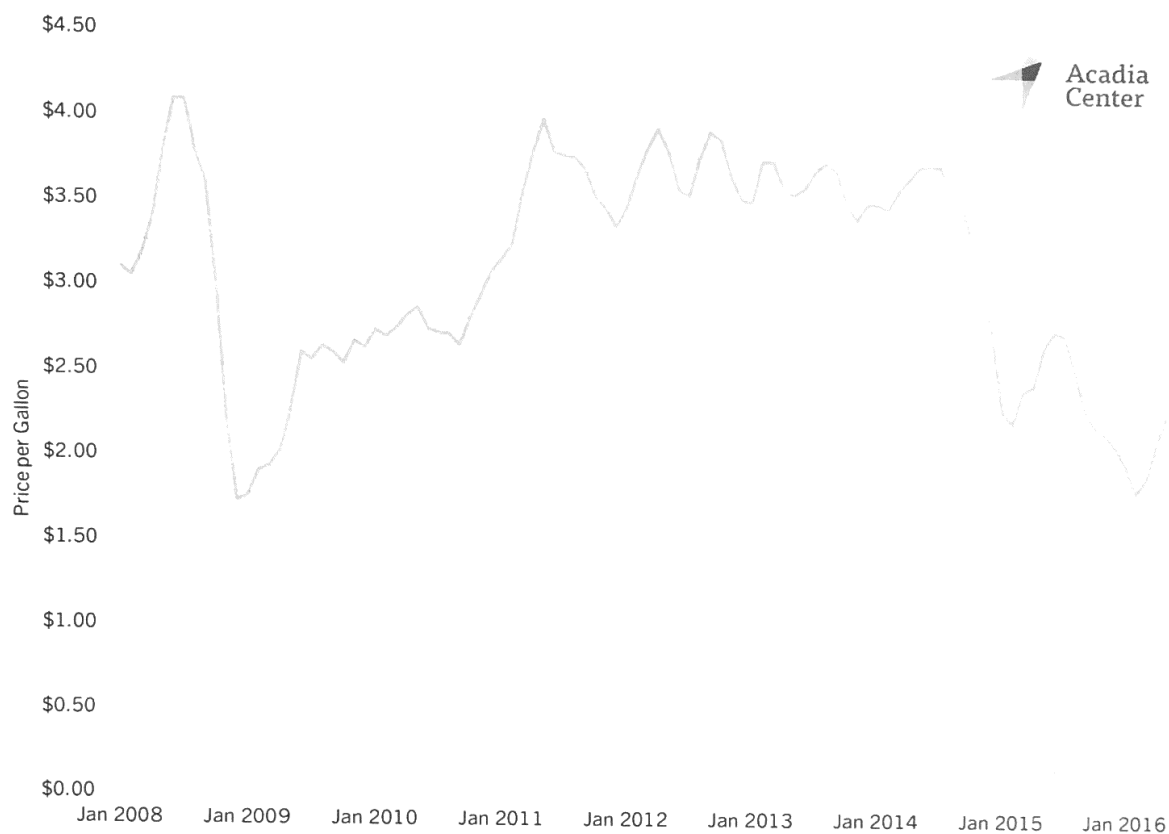
The analysis results show a clear trend of GHG emissions increasing since the 2012 low. This trend is probably not unique to Connecticut or unexpected. Connecticut's most recent GHG emissions forecast for 2013 and beyond predicts a similar near-term trajectory.⁶ Year over year changes in emissions can be attributed to many factors – fuel prices, the economy, and weather, to name a few. Prices for oil and natural gas have dropped significantly in recent years, as demonstrated in Figure 2 below, and are likely large contributors to this trend.

⁴ The State Inventory Tool is available online: <https://www.epa.gov/state-local-climate/state-inventory-and-projections-tool>.

⁵ Differences in New England state Regional Portfolio Standards were not included in this analysis.

⁶ See *GC3 Exploratory Report*, p. 35, Figure 7.

Figure 2 - New England Retail Price for Regular Gasoline



The dramatic drop in gasoline prices has likely resulted in increasing consumption both from more driving, Figure 3 below, and a shift away from more efficient vehicles by consumers, Figure 4 below. Increased consumption of gasoline and diesel fuel leads to corresponding increases in GHG emissions from the transportation sector.

Figure 3 - Vehicle Miles Traveled in Connecticut

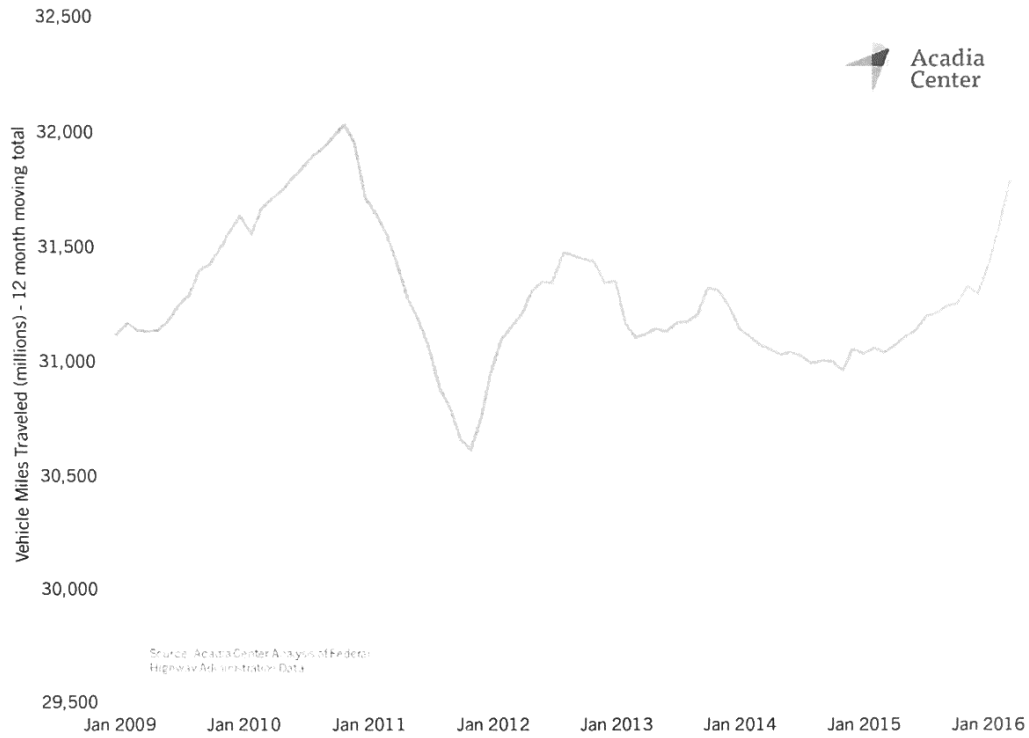
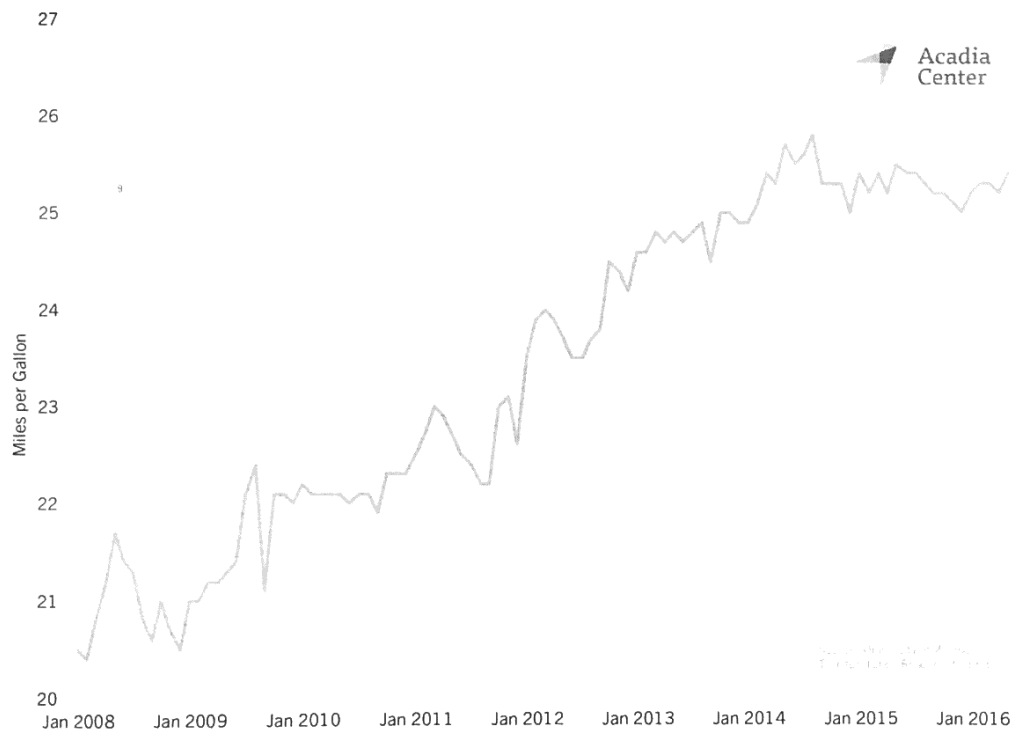
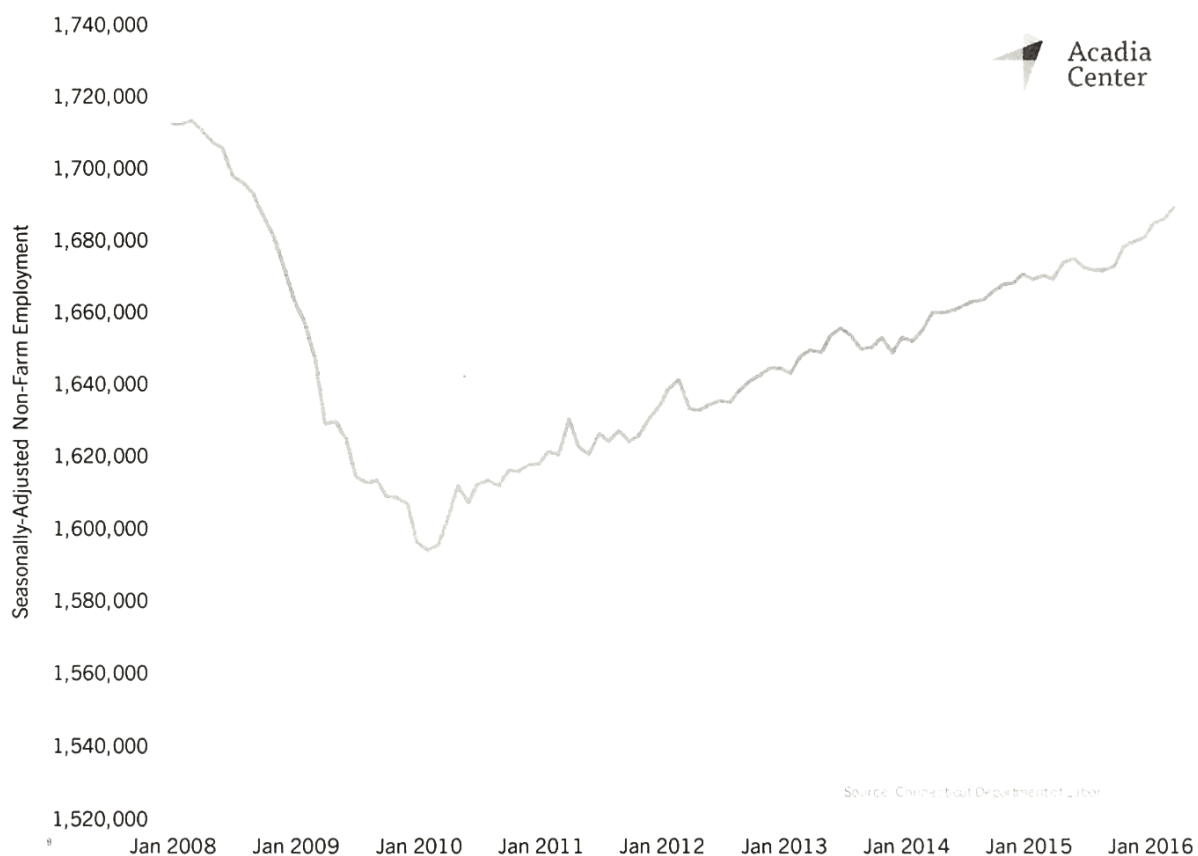


Figure 4 - Average MPG Rating of New Car Purchases in the United States



Connecticut's economy has also continued to improve in the past few years, Figure 5 below, resulting in more economic activity, job growth, and associated energy use. While the growth of clean energy and reduced energy waste in the region mean that emissions are no longer as directly tied to economic output as in the past, changes in economic activity can still be a contributing factor to changes in emissions.

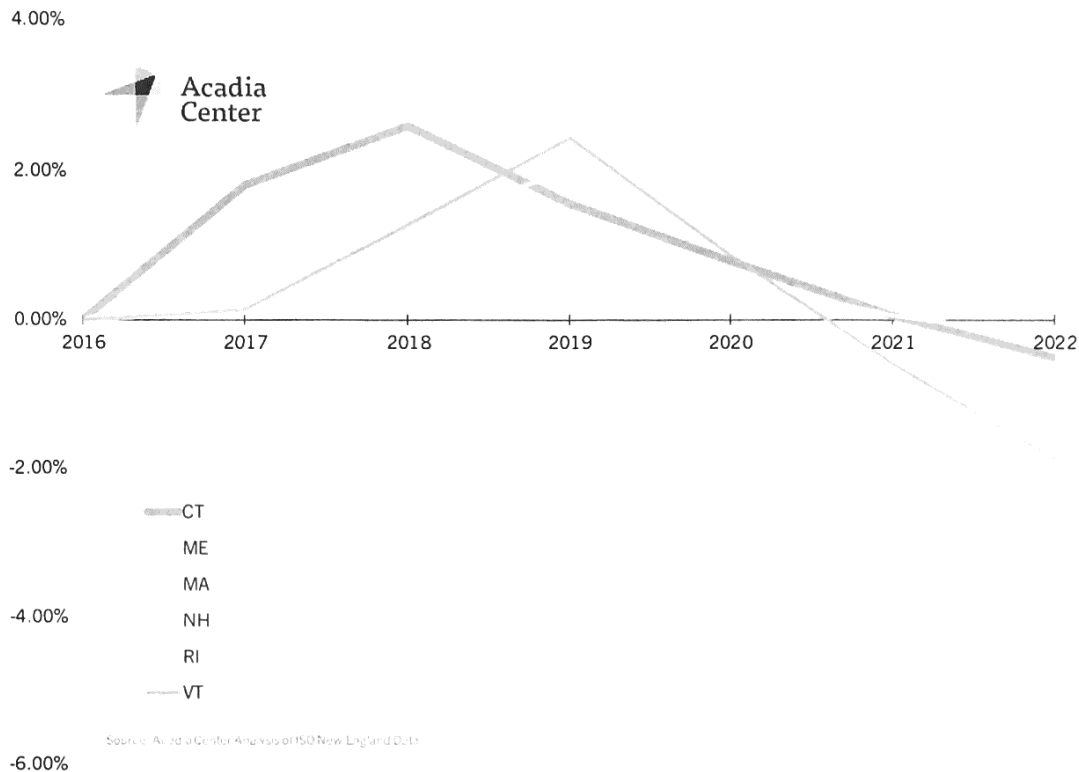
Figure 5 - Seasonally-Adjusted Employment in Connecticut



In addition to factors outside of Connecticut's control, other factors within its control – such as policy development and implementation – also have likely contributed to the recent increase in emissions. Figure 6 below shows how Connecticut's share of the region's electricity consumption is not forecast to decline as quickly as other states in the region, particularly Massachusetts, Rhode Island, and Vermont.

The New England states with bigger reductions in electric load have all implemented more aggressive energy efficiency and/or solar PV deployment policies than Connecticut has in recent years. This means Connecticut will be taking on an increasing share of the region's GHG emissions from electricity consumption over time, which then negatively impacts its carbon profile.

Figure 6 ISO New England Forecast - Change in Electric Consumption from 2016



Conclusion

The market, economic, and policy factors identified here have all likely contributed to the growth of GHG emissions in Connecticut over the past three years. Many of the identified factors in the 2013 to 2015 timeframe are persisting into 2016. While it is too soon to predict with certainty whether Connecticut will meet its mandatory 2020 GHG emissions cap, implementing additional short term mitigation measures will increase the likelihood of doing so.

Short-term emissions reduction options are available to Connecticut. The most promising opportunities are likely in energy efficiency, distributed solar PV, and electric vehicles. Connecticut has made good progress on each of these options and thus has in place existing programs that could be ratcheted up quickly to enable significant reductions in GHG emissions in the three and a half years leading up to the 2020 emissions cap.

We look forward to working with Connecticut and other stakeholders to explore how the next Comprehensive Energy Strategy and the Governor's Council on Climate Change's final findings can address the need for a strong and effective mitigation effort – not only in the near term, but also for the long term and the state's crucial 2050 GHG emissions target.

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