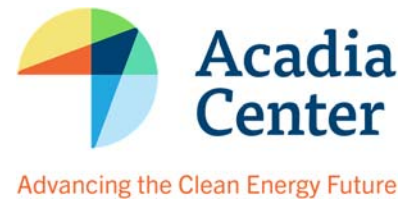


Greenhouse Gas Emissions and Fuel Consumption in New England

Fact Sheet on Key Regional Statistics and Trends

May 8, 2018



Summary

Some entities and stakeholders have raised concerns about the environmental performance of the regional electricity system during a particularly cold multi-week period in December 2017 and January 2018. To better inform recent public discussions around these regional energy and climate issues, as well as potential policy solutions, Acadia Center has compiled and analyzed available data on greenhouse gas (GHG) emissions, electricity generation, and fuel consumption in the New England region. This fact sheet examines four categories of data and includes the following key takeaways:

- **GHG emissions from the electric sector in New England are on a downward trend.**
 - Annual GHG emissions from electricity generation in New England have continued to trend strongly downward since the early 2000s, even when taking the 2017-18 winter into account.
 - January 2018 was the 10th highest month of GHG emissions from the electric sector dating back to January 2014, while February 2018 had the lowest monthly GHG emissions in the 21st century.
- **Electricity generation from coal and oil in New England has declined dramatically.**
 - Annual generation from coal and oil in New England has gone down significantly since 2001, even taking January 2018 into account.
 - Generation from coal and oil in January 2018 was 71% lower than January 2001.
- **Oil consumption in the electric sector is a small fraction of total oil used in New England.**
 - New England uses far less oil for electricity generation now than in the early 2000s.
 - Only a small fraction of New England's total oil use is for electricity generation. This is even true for December 2017 and January 2018, the two highest recent months of generation from oil.
 - Total oil used for electricity generation in December 2017 and January 2018 was 5% of the average oil consumption in two months from other sectors in New England from 2010 to 2016.
- **Natural gas combustion emissions in New England need to decline to meet mandated GHG targets.**
 - Natural gas combustion emissions from all sectors, including those from gas delivered through two recent pipeline expansions, will be an increasingly significant percentage of overall regional GHG emission limits over time.
 - Major expansion of New England's natural gas pipeline capacity will only exacerbate this issue, resulting in GHG emissions from natural gas making up 50% of the 2030 regional target, 72% in 2040, and 135% in 2050.

To evaluate options for advancing a clean energy future in New England, decisionmakers and stakeholders need sound, objective information on historical trends, the current energy system, and the impacts of those options across numerous dimensions. Policy solutions must (1) reliably meet the region's energy needs, (2) efficiently and equitably reduce pollution that harms public health and changes the climate, and (3) produce well-paying local jobs and economic benefits. Investments under development must be taken into account and the full scope of additional options must be considered, including market reforms, reducing gas leaks, energy efficiency, renewables, advanced energy storage, and grid upgrades to improve efficiency and remove system constraints.

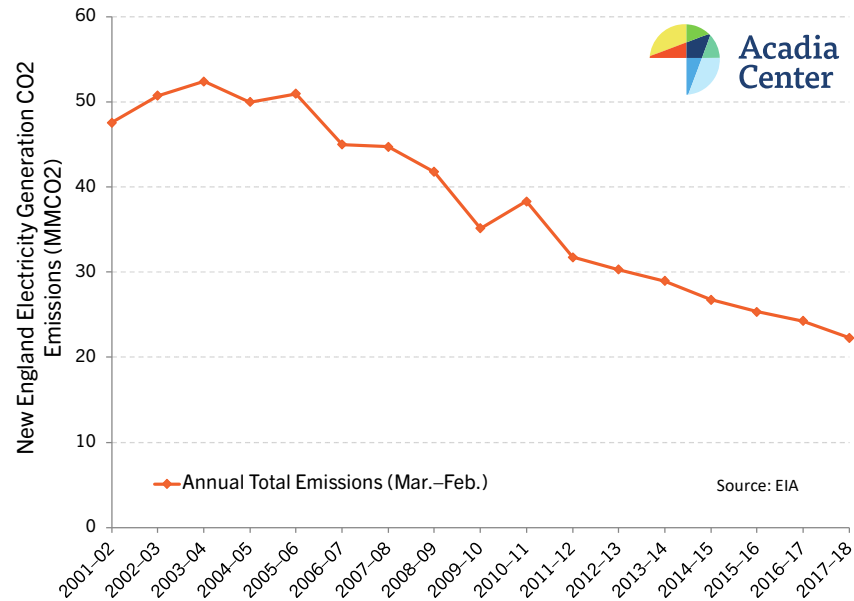
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GHG Emissions from the Electric Sector in New England

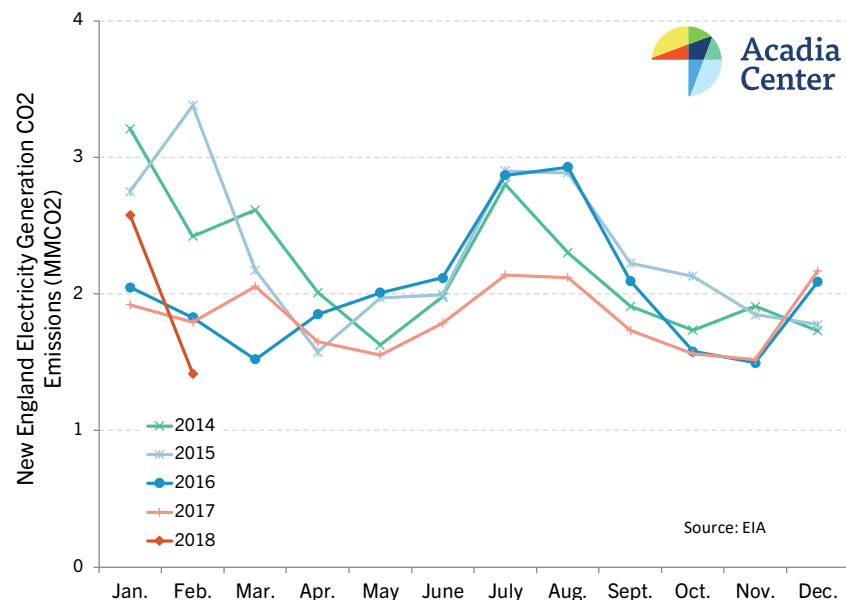
Annual greenhouse gas (GHG) emissions from electricity generation in New England are trending strongly downward since the early 2000s, even when taking the 2017-18 winter into account.

Figure 1 - Annual GHG Emissions (Mar. to Feb.) from Electricity Generation



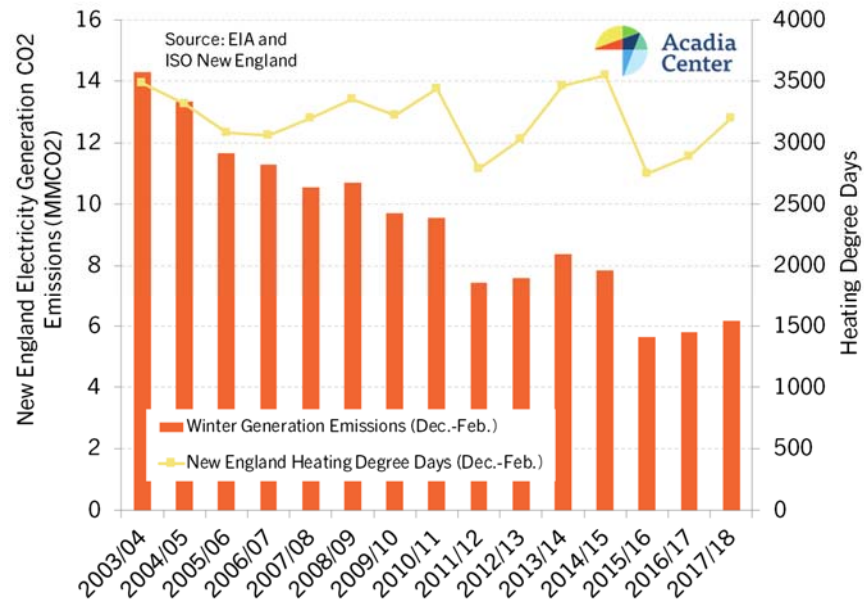
- GHG emissions from March 2017 through February 2018, which is the latest data available, were 53% lower than in 2001-02, 26% lower than just five years ago in 2012-13, and 8% lower than 2016-17.

Figure 2 - Monthly GHG Emissions from Electricity Generation



- While the overall trend is downward, there is significant seasonal and monthly variability, driven by weather and other factors. January 2018 was only the 10th highest month of GHG emissions dating back to January 2014, while February 2018 had the lowest monthly GHG emissions in the 21st century.

Figure 3 – Winter Weather and GHG Emissions Comparison

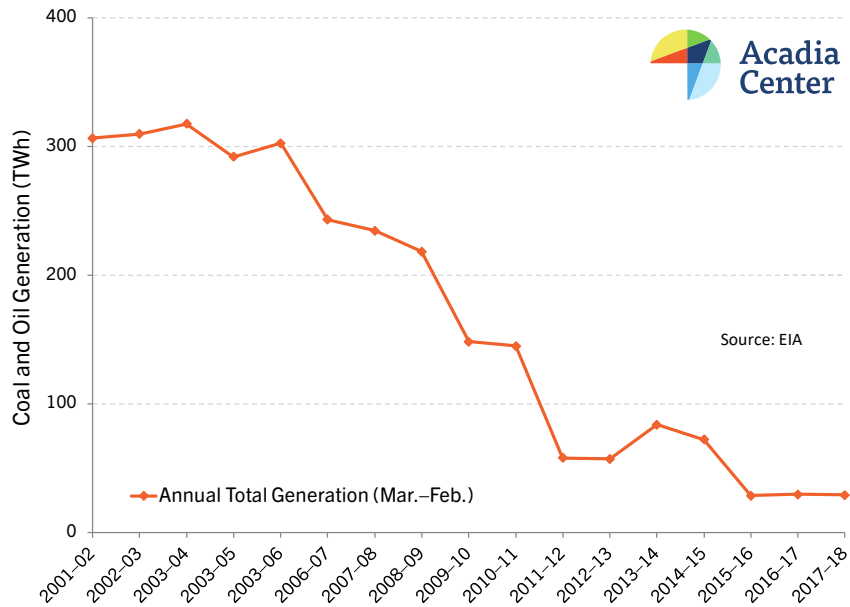


- Some of the monthly variability is due to weather. Cold winters typically drive additional electricity consumption and, in some years, change the emissions profile of electricity generation. While warm or cold winters can lead to year to year variations, the overall downward trend of emissions from electricity generation in the winter is still clear.

Electricity Generation from Coal and Oil in New England

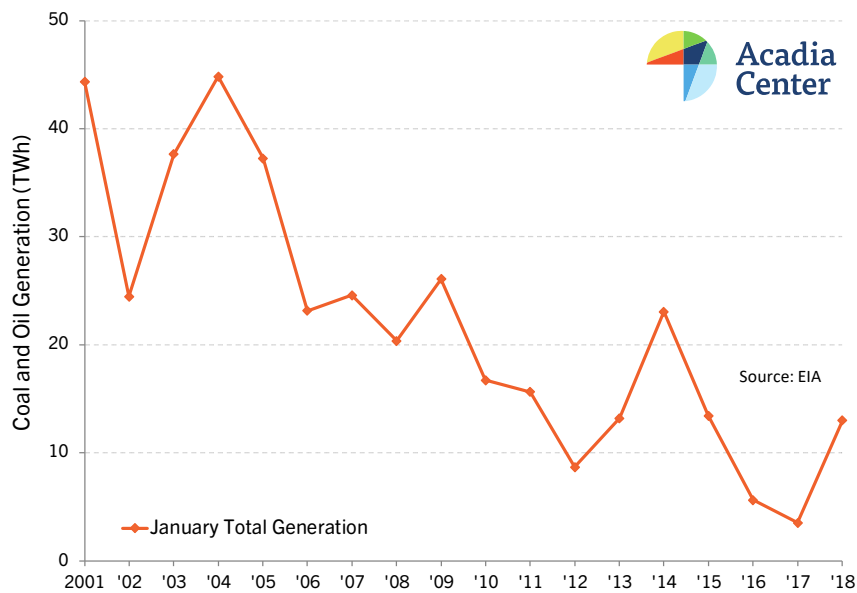
Annual electricity generation from coal and oil in New England has gone down significantly since 2001, even taking the 2017-18 winter into account.

Figure 4 – Annual Electricity Generation from Coal and Oil (Mar.-Feb.) in New England



- Annual electricity generated by coal and oil from March 2017 through February 2018 was 91% lower than the levels in 2001-02 and 49% lower than just five years ago in 2012-13.

Figure 5 – Monthly Electricity Generation in January from Coal and Oil in New England

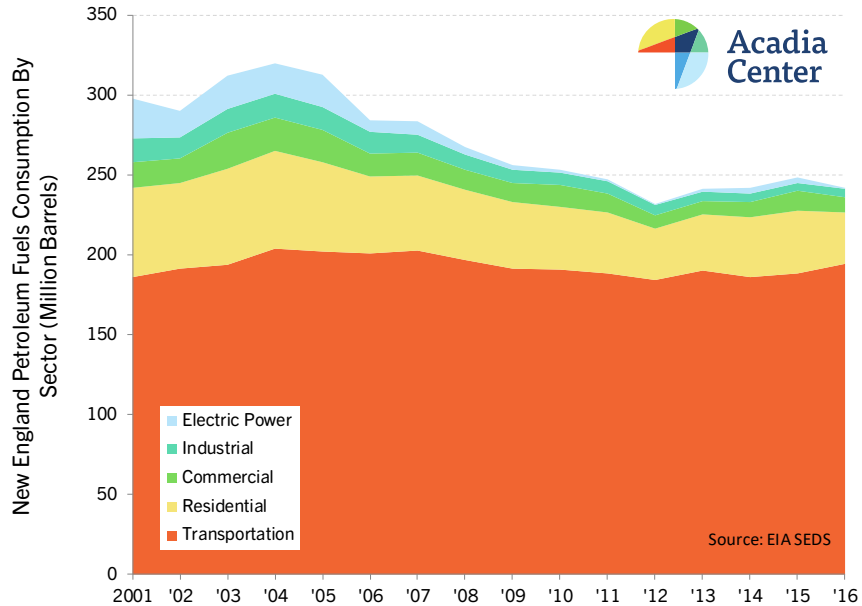


- Electricity generation from coal and oil in January 2018 was 71% lower than January 2001 and 44% lower than January 2014. Levels similar to January 2018 were seen in January 2013 and January 2015.

Oil Consumption Across All Sectors in New England

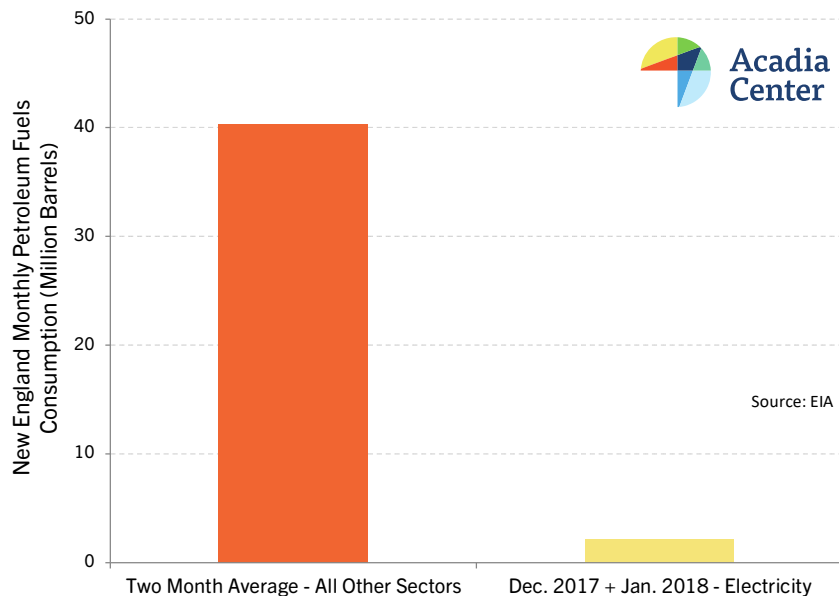
New England uses far less oil for electricity generation now than in the early 2000s, and a small fraction of overall oil consumption comes from electricity generation, even taking the 2017-18 winter into account.

Figure 6 – Annual Oil Consumption Across All Sectors



- Oil used for electric power from 2012 to 2016 was on average 90% less than during 2001 to 2005.

Figure 7 – Two Month Average Oil Consumption Compared to Electric Sector Oil Consumption in Dec. 2017 and Jan. 2018

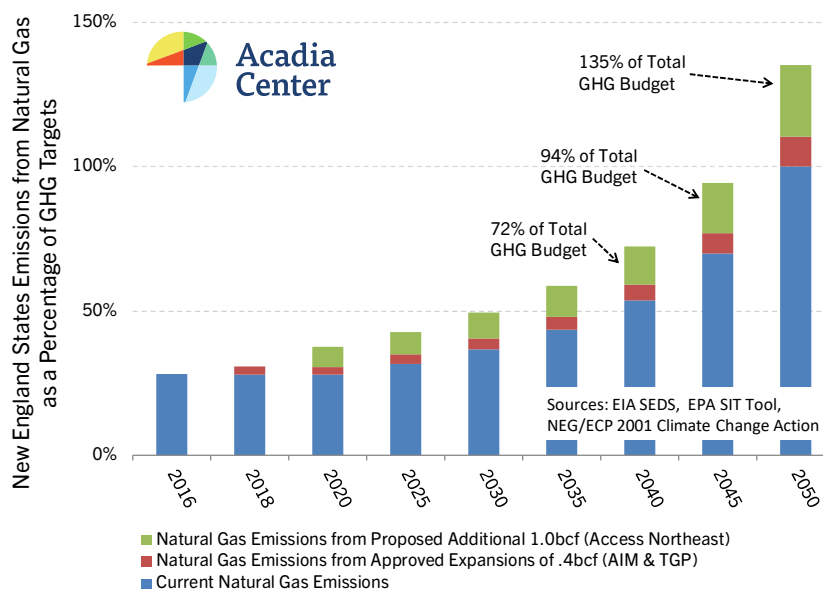


- The amount of oil combusted for electricity generation in December 2017 and January 2018 is 5% of the recent (2010-2016) average oil combustion in two months from all other sectors.

Natural Gas Emissions and Long-Term Climate Requirements

Natural gas combustion emissions from all sectors, including those from gas delivered through two recent pipeline expansions, will be an increasingly significant percentage of overall regional GHG emission limits over time. A major pipeline expansion would only exacerbate this issue.

Figure 8 – Natural Gas Combustion Emissions in New England from All Sectors Versus Overall Regional GHG Emissions Requirements



- Typical estimates of GHG emissions from natural gas only look at combustion and ignore emissions during extraction and delivery, which can both be significant. Combustion-only emissions are therefore likely to underestimate the full climate impacts of natural gas.
- By 2020, annual emissions from combustion of natural gas from all sectors will likely be approximately 20% of the overall regional GHG emissions target. This projection includes historical usage from 2016, the most recent full year of data available, plus incremental expected usage from two recent regional pipeline expansions.
- With the addition of a major new regional pipeline, combustion emissions from natural gas could be 49% of the overall regional GHG emissions target in 2030, rising to 72% in 2040, and 135% in 2050.

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About Acadia Center:

Acadia Center (www.acadiacenter.org) is a research and advocacy organization committed to advancing the clean energy future. Acadia Center is at the forefront of efforts to build clean, low carbon economies that benefit all consumers. Its approach is characterized by reliable information, comprehensive advocacy, and problem solving through innovation and collaboration. Acadia Center designs solutions that overcome gridlock and get traction.