



CITY OF SOMERVILLE, MASSACHUSETTS  
OFFICE OF SUSTAINABILITY AND ENVIRONMENT  
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MAYOR

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As part of its long-term climate change planning, the City of Somerville conducts biannual sector-based greenhouse gas (GHG) inventories for community and government operations emissions. For 2018, the City is releasing this interim GHG inventory report.

Due to ongoing work on the Boston metro-region transportation model, we have not been able to update the transportation sector of the community inventory following our normal modeling and data reporting protocol. As explained in this report, we have used best industry practices in employing placeholder data for the transportation sector. This report will be updated and released as a final report when the data become available.

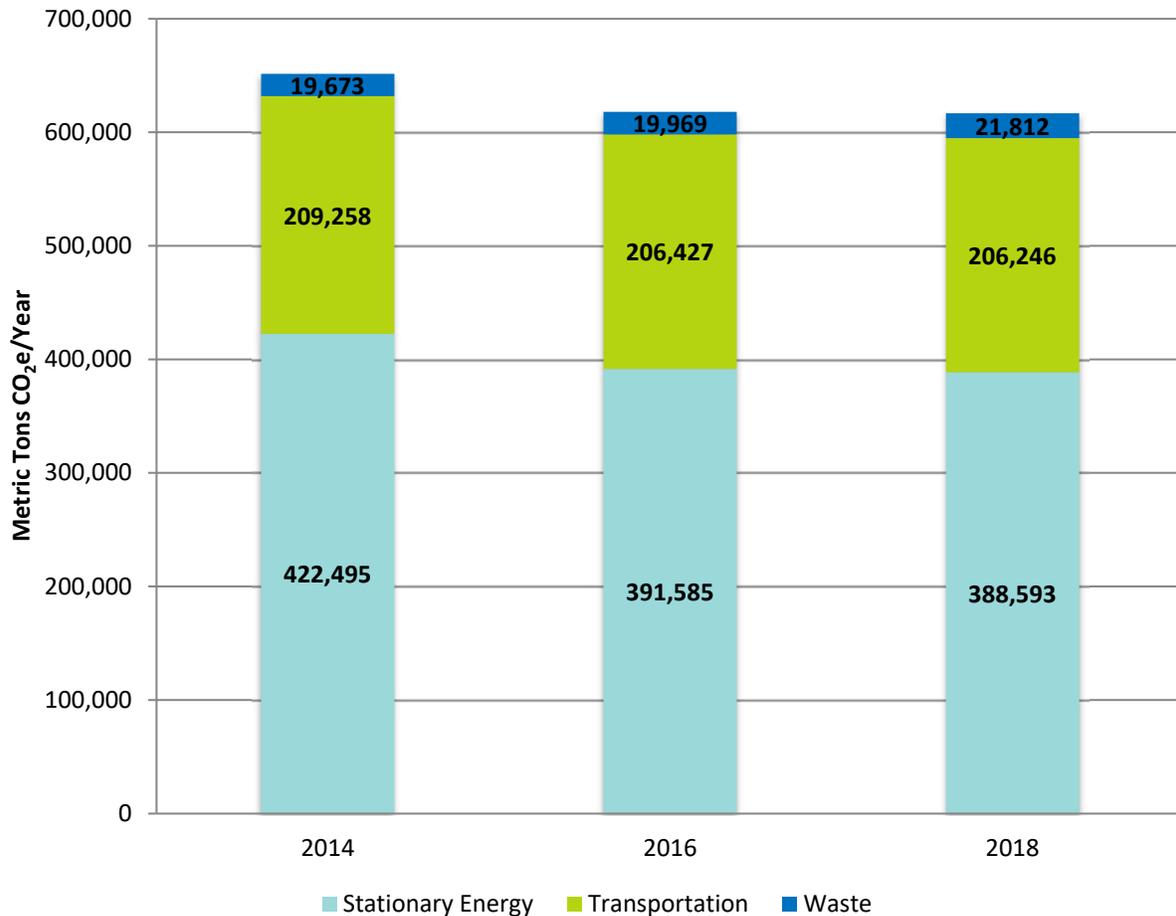
Data and methodology information will be provided upon request to [OSE@somervillema.gov](mailto:OSE@somervillema.gov).



## Community Inventory

Somerville's community greenhouse gas (GHG) emissions totaled approximately 616,650 metric tonnes of carbon dioxide equivalent (MT CO<sub>2</sub>e) in 2018 (see Figure 1). This represents a 0.2% decrease since 2016 and a 5.3% decrease since the 2014 base year. This also represents a 10% reduction in per capita emissions since 2014, demonstrating that the city has grown its population and economy while still decreasing GHG emissions.

**Figure 1 – Community GHG Emissions Trends 2014 to 2018**

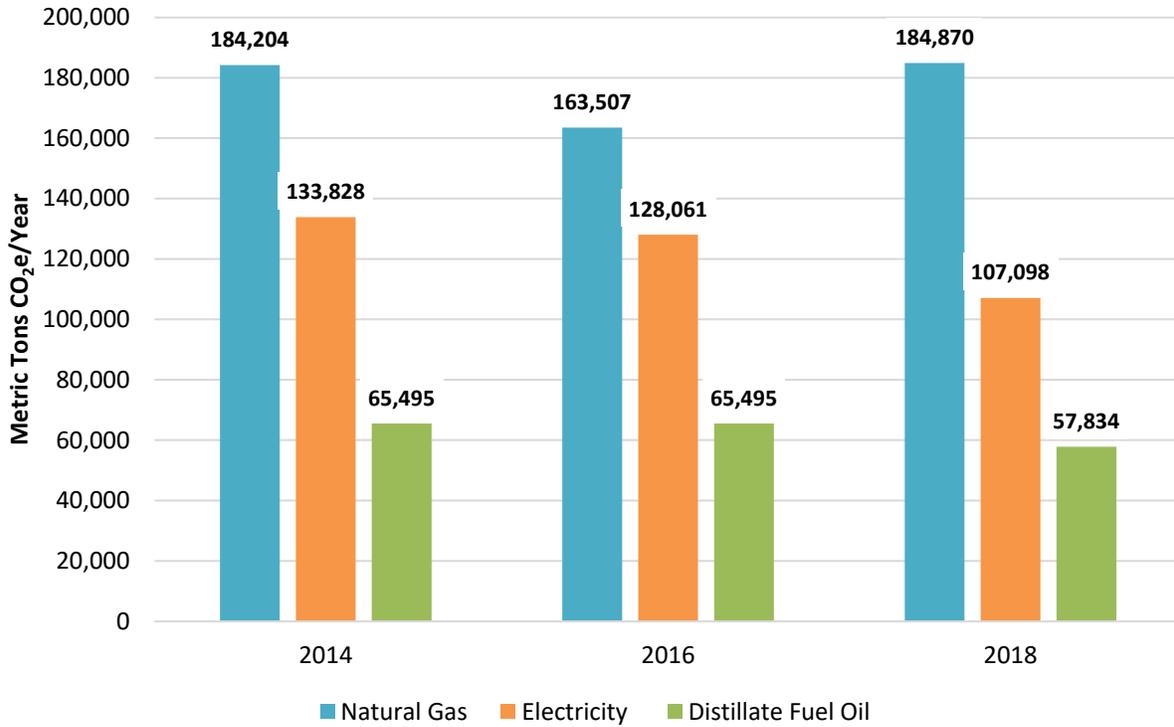


## Energy Sector

Energy sector emissions decreased 9% since 2014 led by a 20% decrease in electricity emissions. Natural gas emissions remained nearly flat since 2014, increasing slightly by 0.4%. And, fuel oil emissions decreased nearly 12% due to changes in heating system fuel sources in residential and commercial buildings (see Figure 2). The electricity emission reductions were caused by a slight decrease in absolute electricity use (0.6%) and a significant decrease in the electricity emissions factor (17.9%). From 2014 to 2018, a greater share of renewable energy was provided in the regional electricity grid (41.5% and 48.7%, respectively), which contributes to emissions reductions in the city. Somerville's residents and

businesses also began participating in the City’s CCE program to purchase additional emissions-free electricity. In 2018, participation in the CCE program helped to avoid approximately 2,200 MT CO<sub>2</sub>e.

**Figure 2 – Energy Emission Trends by Fuel Type**

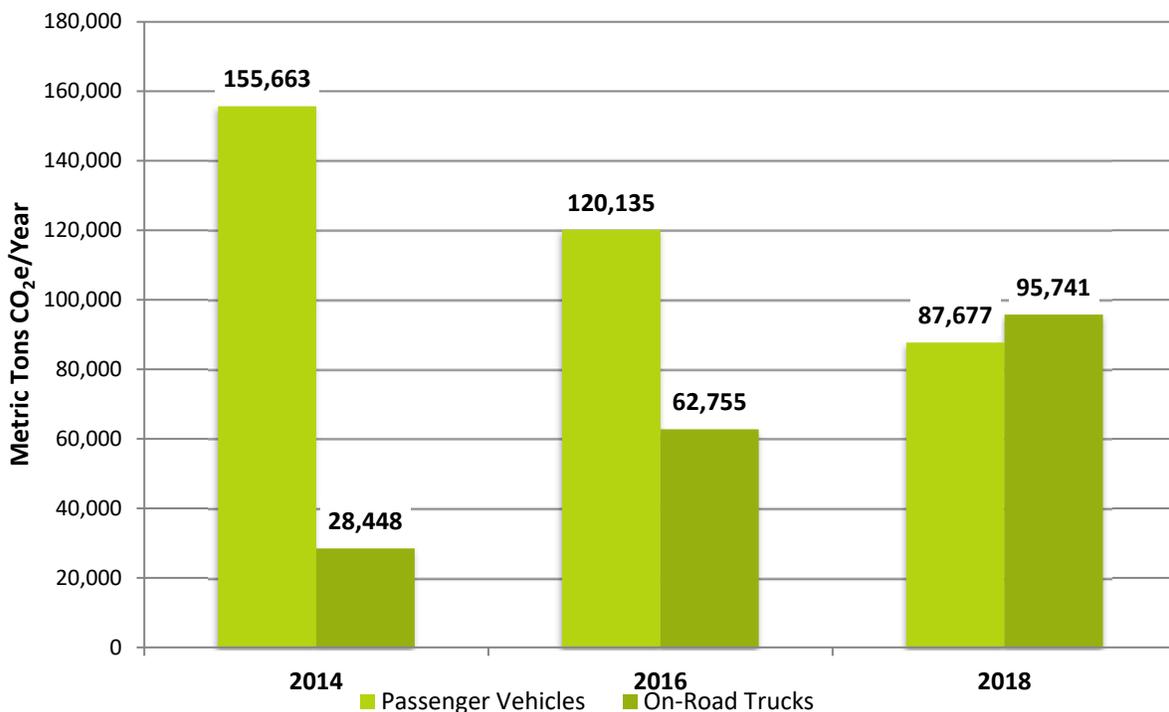


## Transportation Sector

The community's 2018 transportation emissions are currently incomplete as the City awaits final data describing on-road transportation. However, on-road emissions were estimated in the interim based on the travel demand trend from the 2014 and 2016 inventories. Using this approach, transportation sector emissions were estimated to decrease by approximately 1% since 2014, due almost entirely to changes in on-road travel. The trend from 2014 to 2018 estimates that passenger vehicle emissions will decrease due to reduced vehicle miles traveled (VMT), while truck emissions will increase based on greater VMT. The result in these two opposing directions of change is a minor overall decrease in on-road vehicle emissions (see Figure 3).

In lieu of on-road data for the 2018 inventory, the City considered four methods to estimate placeholder information, including assuming no change from 2016 on-road emissions, assuming no change from 2016 VMT data, extrapolating emissions from the 2014-2016 trend line, and extrapolating the VMT data from the 2014-2016 trend line. This latter option resulted in the highest 2018 on-road emissions and was selected in keeping with industry best practices to be conservative when addressing data gaps. In this case, it is conservative to potentially over-estimate the City's on-road emissions. Once actual 2018 data is available, the City will revise this placeholder estimate.

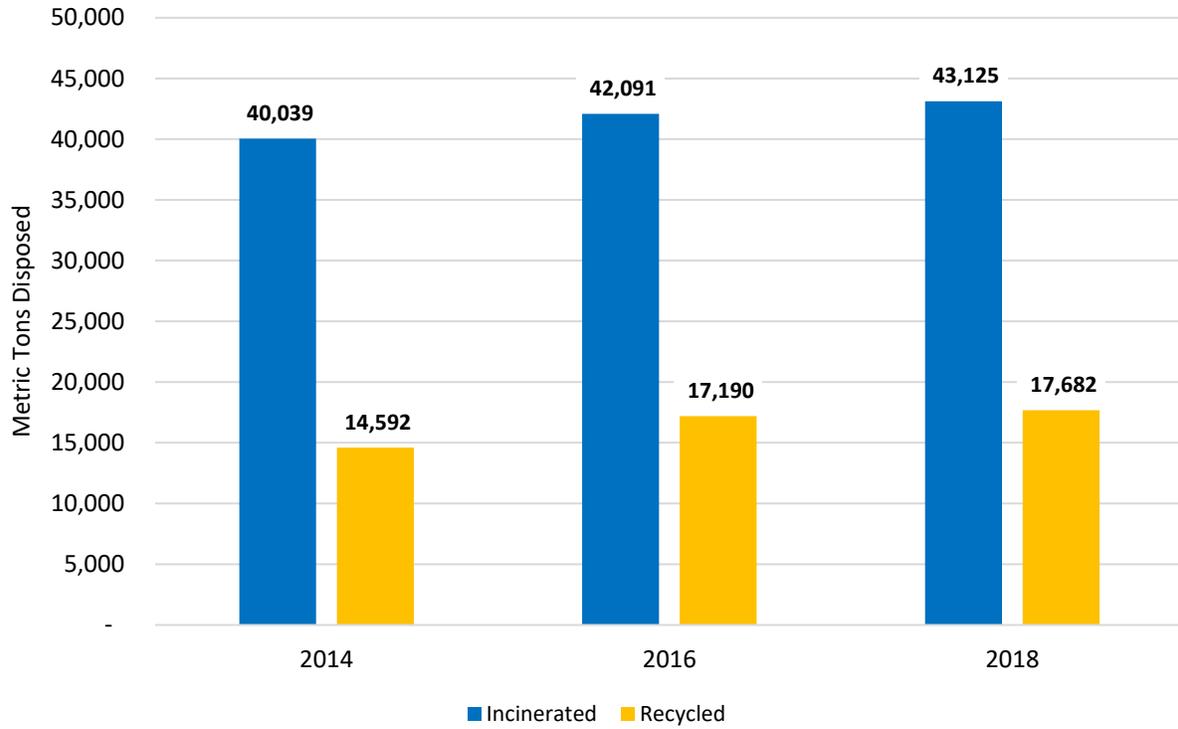
**Figure 3 – On-road Emissions Trends by Vehicle Type**



**Waste Sector**

Waste emissions increased 11% since 2014, largely due to increased solid waste incineration emissions. The volume of incinerated waste generated in the community is estimated to have increased 8% since 2014, while population increased nearly 4%. The volume of recycled waste is estimated to have increased 21% from 2014 to 2018 (see Figure 4).

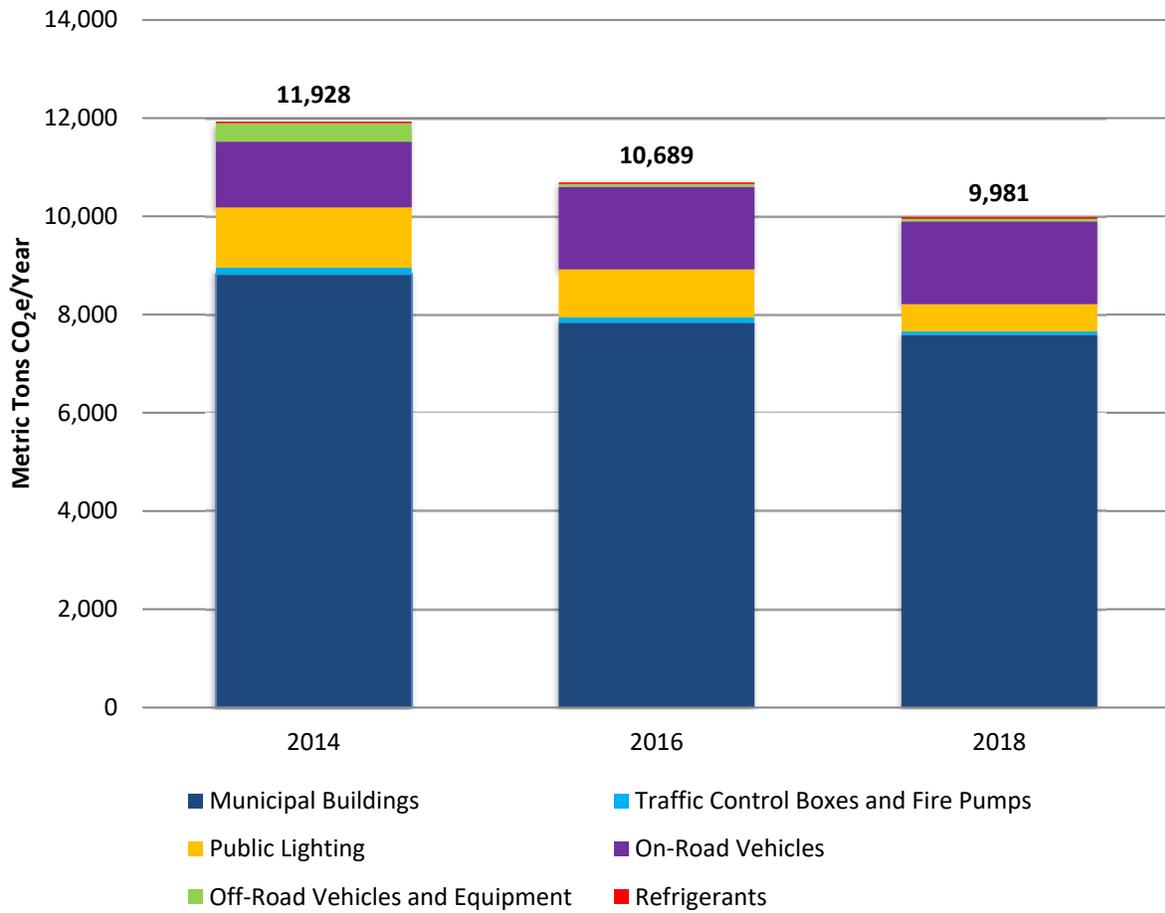
**Figure 4 – Waste Disposed by Treatment Method**



**Local Government Operations Inventory**

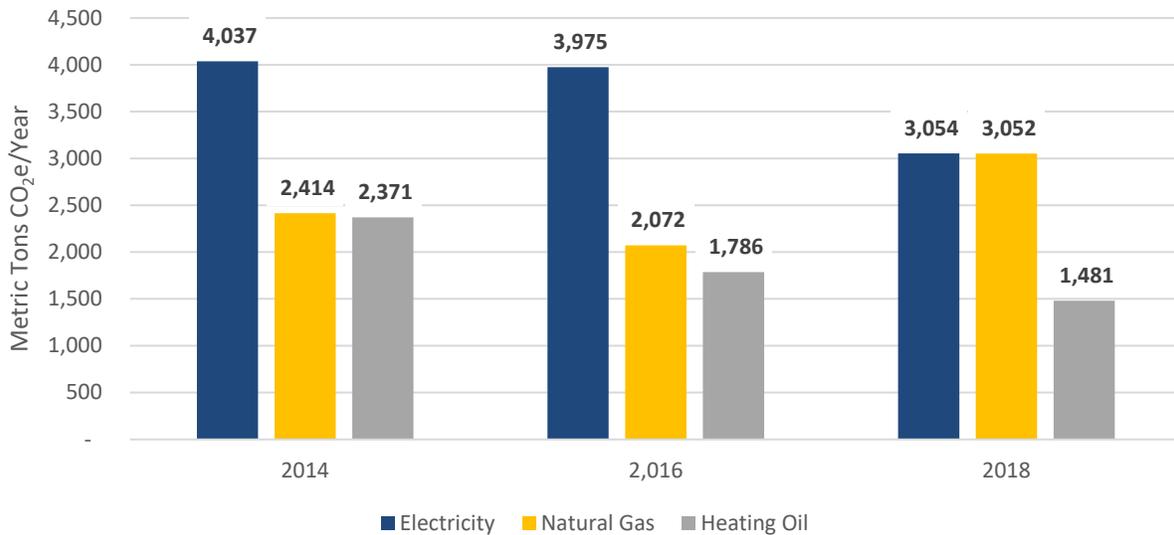
The City of Somerville’s local government operations (LGO) emissions totaled approximately 9,980 MT CO<sub>2</sub>e/yr in 2018, reflecting a 7% decrease from 2016 and a 16% decrease from the 2014 base year (see Figure 5).

**Figure 5 – Local Government Operations GHG Emissions Trends 2014 to 2018**



The greatest amount of reductions came from energy use in municipal buildings, which decreased 14% since 2014. During this time, natural gas use increased 26% and heating oil use decreased 38%. Combined, the City’s stationary energy emissions decreased 5%. Electricity use decreased 17%, while electricity-related emissions decreased 24% due to a greater share of renewable energy in the regional electricity grid (see Figure 6).

**Figure 6 – Municipal Building Emissions by Fuel Type**



Emissions associated with public lighting decreased by more than 50% since 2014 and were the second greatest source of reductions in the LGO inventory, followed by reductions related to fuel use in off-road vehicles and equipment. Emissions from on-road vehicles increased by 26% since 2014 based on reported fuel consumption in municipal vehicles.