



Etna Borough

GHG INVENTORY AND CLIMATE ACTION PLAN

Abstract

Etna Borough in Allegheny County, PA is putting efforts toward greenhouse gas (GHG) mitigation. The borough has conducted a GHG inventory and is using the information to create a climate action plan (CAP). The CAP will set measurable and time-bound goals to reduce GHG emissions and the borough's contribution to climate change. This is a scalable example of what cities can do to be more sustainable.

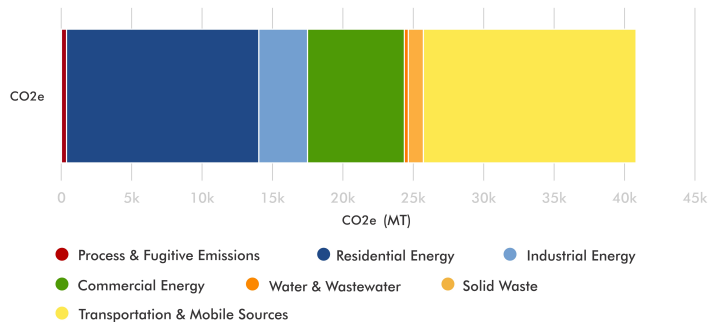
Background

The Greenhouse gas (GHG) inventory and climate action plan (CAP) programs discussed here are directed and funded by the Pennsylvania Department of Environmental Protection (DEP) and the International Council for Local Environmental Initiatives (ICLEI). A majority of the technical assistance has come from ICLEI, an international organization that advocates sustainability, has created helpful tools, and has been instrumental in GHG inventories across the world. ICLEI has made it possible to learn about proper inventory procedures from online webinars, which allows students to conduct GHG inventories and CAPs from remote locations. The remaining information is about the process, results, and application for Etna Borough's 2016 GHG inventory. The information presented here was conducted from Southern California via email, phone calls, and webinars.

The GHG inventory project began with instruction from ICLEI and the help of select representatives from Etna Borough. The representatives and I evaluated the borough and discovered potential factor sets, which are variables that derive the final carbon dioxide emissions, and activity data; please refer to the right column for more detail. With the help of the DEP and ICLEI, we collected all the factor sets and activity data from the year 2016, which is the most recent year with thorough data. The information was then converted, organized, and input to ClearPath, a tool that allows municipalities to view their emissions through a series of scopes and presents the GHG data in a useful manner, such as the tables and charts displayed here. It also allows a municipality to monitor and check progress in proceeding years. ClearPath also has calculators that take population growth into account when creating projections and forecasts for future emissions.

The ClearPath results, which can be found in the right column, will soon be used to create a CAP for Etna. The CAP will help the borough reduce its carbon dioxide emissions and contributions to climate change. Etna Borough established an EcoDistrict plan that was published at the end of 2019. The plan is thorough and is greater in scope than the CAP; however, it is providing a general path for the CAP to follow. Areas of interest right now are reducing transportation emissions and increasing solar energy production. The development of the EcoDistrict plan included numerous community engagement meetings and events, which increase the likelihood of community acceptance and participation. Between the predetermined goals from the EcoDistrict plan and the previously held community engagement events, the CAP is starting with a solid foundation.

At this point, the city has identified the potential hazards it may face due to climate change and increasingly severe weather and has gathered a task force that includes local residents and nearby organizations that can contribute to mitigation plans. We are entering the planning phase in March and will finalize the CAP and submit it for review in April. The planning phase will consist of the previously mentioned forecasting and a cost-benefit analysis for potential GHG emission solutions. This process will allow Etna to use the EcoDistrict plan more efficiently and effectively. As shown in the right column, the major contributors to carbon dioxide emissions are transportation and residential energy. Residential energy reduction is the issue most discussed at this time and will likely be the focus of Etna's CAP.



References

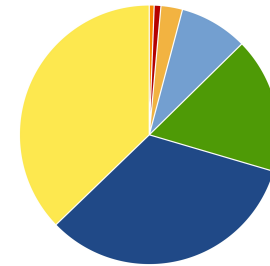
Etna. (2019, Dec.). EcoDistrict Plan. Retrieved Dec. 2019, from Issuu: https://issuu.com/evolveea/docs/etna_ecodistrict_plan_-_issuu

Google. (2020). Etna. Retrieved from Google Maps: <https://www.google.com/maps/place/Etna,+PA/data=!4m2!3m1!1s0x8834f2e989dfc387-0xa79258ddb897f744?sa=X&ved=2ahUKEwjz3JKXmPnAhY5HjQIHbHYAOQ8gEvD3oECBQQBA>

MIT. (2008, Apr. 29). Carbon Footprint Of Best Conserving Americans Is Still Double Global Average. Retrieved Feb. 21, 2020, from Science Daily: <https://www.sciencedaily.com/releases/2008/04/080428120658.htm>

Taylor, M. (2019, Dec.). Inventories. Retrieved Dec. 2019, from ClearPath: https://clearpath.iclei.usa.org/community_scale/inventory_years

- Transportation & Mobile Sources
- Commercial Energy
- Process & Fugitive Emissions
- Residential Energy
- Industrial Energy
- Solid Waste
- Water & Wastewater



Above, you can see the breakdown of emissions per sector from greatest to least. These figures were derived from the table below, which shows the activity data for each sector. The activity data is straightforward, and it displays how often each activity occurred. The activity data is then multiplied by factor sets. The factor sets are not displayed because the information is difficult to condense and display. The factor sets act as variables of how much carbon dioxide is created per unit of activity, which leads to the totals in the table at the bottom of the column.

Sector	Fuel Or Source	Usage	Usage Units	Emissions
Residential Energy	Electricity	11,610,514	kWh	6,549
Residential Energy	Natural Gas	1,352,275	Therms	7,191
Residential Energy Total				13,740
Commercial Energy	Electricity	8,202,938	kWh	4,627
Commercial Energy	Natural Gas	425,433	Therms	2,262
Commercial Energy Total				6,889
Industrial Energy	Electricity	4,378,745	kWh	2,470
Industrial Energy	Natural Gas	185,524	Therms	1,026
Industrial Energy Total				3,476
Transportation & Mobile Sources	Gasoline	30,404,810	VMT	10,724
Transportation & Mobile Sources	Diesel	30,404,810	VMT	4,412
Transportation & Mobile Sources	Other			1
Transportation & Mobile Sources Total				15,137
Solid Waste	Waste Sent to Landfill	211	Tons	5
Solid Waste	Other			1,096
Solid Waste Total				1,101
Water & Wastewater	Wastewater Energy			216
Water & Wastewater	Fugitive Emissions			35
Water & Wastewater Total				251
Process & Fugitive Emissions	Other			305
Process & Fugitive Emissions Total				305

The table below shows that Etna as a whole produced 40,896 metric tons (MT) of carbon dioxide emissions (Taylor, 2019). The population for 2016 is 3,415; this makes the per capita emission 11.98 MT. This is lower than the nation's average of 20 MT per capita (MIT, 2008). There is still some room for improvement, and since residential energy is one of the largest contributors, it is the highest priority in the CAP. Etna is in a great position to maintain lower emission numbers as the borough grows. With the implementation of the EcoDistrict plan and the CAP, Etna will likely construct a sustainable infrastructure that benefits future generations.

Sector	CO2e
Transportation & Mobile Sources	15,138
Solid Waste	1,101
Water & Wastewater	251
Commercial Energy	6,888
Industrial Energy	3,475
Residential Energy	13,739
Process & Fugitive Emissions	304

