

Avoided Emissions Method Description

The avoided emissions projections are based on the Model Plant Outputs from EPA's latest available Power Sector Modeling Platform v.5.15. The model projects fuel consumption, emissions, capacity, cost, and generation for 2018 through 2050. For the purpose of this analysis, 2020 annual New York State data was used since New York operates as its own ISO.

For this analysis, the model data was categorized by a calculated capacity factor into base load (greater than 75% capacity factor), peak load (less than 5% capacity factor), and intermediate load (less than 75% capacity factor and greater than 5% capacity factor). The analysis assumes that this Project will displace generation load from natural gas or oil generation in the intermediate load range. Emission factors for carbon dioxide (CO₂), nitrogen oxides, and sulfur dioxide (SO₂) are calculated by dividing the modeled annual emission totals (pounds) by the modeled annual generation (MWh). Emission factors are then averaged for all of the intermediate generation for the 2020 model year.

The Project's estimated carbon dioxide, nitrogen oxides, and sulfur dioxide emission savings are estimated by multiplying the calculated emission factors and the Project's size.

Projected 2020 Emission Factors based on NY Annual Intermediate Load

CO ₂ (lb/MWh)	NO _x (lb/MWh)	SO ₂ (lb/MWh)
1129.6794	1.9143	0.0006

The projected annual number of residences powered by this Project is estimated by using the Project's size and New York's 2015 average annual energy consumption by customer. EIA estimates New York's 2015 average annual energy consumption to be 0.5998 MWh per customer.

The carbon dioxide vehicle equivalent emission rate was estimated by using the 2015 EIA coefficient for kilograms of CO₂ per gallon of gasoline and the DOT's 2015 average number of vehicles. The nitrogen oxides vehicle equivalent emission rate was estimated by using DOT's 2014 highway vehicles and EPA's 2014 National Emissions Inventory Highway Vehicles Nitrogen Oxides total.

CO ₂ Vehicle Equivalency (ton/vehicle)	NO _x Vehicle Equivalence (ton/vehicle)
5.11	0.0187

Data Sources:

EPA (2015). *Power Sector Modeling Platform v.5.15* [Base case RPE File]

Available from <https://www.epa.gov/airmarkets/power-sector-modeling-platform-v515>

EIA (2016). *Carbon Dioxide Emissions Coefficients by Fuel*

Available from https://www.eia.gov/environment/emissions/co2_vol_mass.php

EIA (2015). 2015 EIA Customer and Sales Totals

Available from <https://www.eia.gov/electricity/data/eia861m/index.html>

DOT (2017). Annual Vehicle Distance Traveled in Miles and Related Data – 2015

Available from <https://www.fhwa.dot.gov/policyinformation/statistics/2015/vm1.cfm>

DOT (2015): State Motor-Vehicle Registrations -2014

Available from <https://www.fhwa.dot.gov/policyinformation/statistics/2014/mv1.cfm>

EPA (2017): 2014 National Emissions Inventory (NEI) Data

Available from <https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data>