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Town of Yorktown Planning Board  
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## Dell Avenue Solar Farm Carbon Sequestration for Tree Loss Calculation

Preliminary Draft

### GREENHOUSE GAS (GHG) EQUIVALENCIES CALCULATOR

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

Source:

<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

Methodology:

#### Energy Data, Kilowatt-Hours Avoided

*GHG emissions from fossil fuel electricity generation avoided by renewable energy*

Calculations:

Preliminary predictive performance models for the Dell Avenue Solar Farm forecast the project to generate 5,343 MWh per year of renewable, emission-free solar electricity. For the sake of this early-stage calculation, call it 5,000 MWh/yr.

In a business-as-usual (BAU) case, this 5,000 MWh/yr of local electricity demand would be met by the current electricity fuel mix of the regional power grid. The latest data<sup>1</sup> from regulated utility CECONY (Consolidated Edison Company of New York) indicates that their fuel mix allocated by the NYISO (New York Independent System Operator) consists of 57% fossil gas produced electricity. Other fossil-fuel sources to the fuel mix can be considered negligible contributions: 0.1% coal, 0.1% oil, 1.3% other. Note that solar accounts for only 0.4% of the current mix.

Thus, the Dell Avenue Solar Farm will displace 2,850 MWh/yr (57% of 5,000 MWh/yr) of fossil gas electricity generation and its associated greenhouse gas (GHG) emissions. According to the EPA's GHG Equivalencies Calculator, each 2,850 MWh of fossil gas electricity generation equates to 2,020 metric tons of CO<sub>2</sub>-equivalent emissions (MTCO<sub>2</sub>e)<sup>2</sup>.

Every 2,000 MTCO<sub>2</sub>e is equivalent to the carbon sequestered by 33,000 tree seedlings grown for 10 years, or by 2,300 acres of U.S. forests in one year. The Dell Avenue Solar Farm provides an opportunity to avoid these annual carbon emissions every year it is in operation.



To further put this into perspective, the 2,000 MTCO<sub>2e</sub> GHG emissions per year avoided by the project is equivalent to nearly 400 homes' annual electricity consumption. The basis for the above calculation is further corroborated by the EPA Avoided Emissions and Generation Tool (AVERT) which also notes a 57% figure for non-renewable electricity generation for Upstate New York (NYUP)<sup>3</sup>.

Additional to the above data comparison between the proposed project and traditional business-as-usual fossil fuel electricity generation, exists the USDA/USFS CUFR CTCC tool. This detailed approach to quantifying carbon sequestration in vegetation models each individual tree one-by-one. At this stage in the application review process, Sol Systems believes the GHG equivalencies methodology is a sufficient order-of-magnitude representation of the climate benefits of the Dell Avenue Solar Farm.

The U.S. Forest Service's Center for Urban Forest Research (CUFR) Tree Carbon Calculator (CTCC) tool is available via the United States Department of Agriculture website: <https://www.fs.usda.gov/ccrc/tool/cufr-tree-carbon-calculator-ctcc>

#### References:

1. ConEdision, Inc. (2021). *2021 Sustainability Report: Operational Excellence - Fuel Mix and Generating Capacity*. Consolidated Edison Company of New York. <https://lite.conedison.com/ehs/2021-sustainability-report/operational-excellence/fuel-mix-and-generating-capacity/>
2. EPA. (n.d.). *Greenhouse Gas Equivalencies Calculator*. United States Environmental Protection Agency. <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>
3. EPA. (2022). *Avoided Emissions and Generation Tool AVERT*. United States Environmental Protection Agency. <https://www.epa.gov/avert/avert-web-edition>