

**Exhibit F**

Carbon Debt Analysis

## I. Introduction

This exhibit analyzes the total amount of greenhouse gas (“GHG”) emissions, or carbon footprint, of the 1.99MW solar generation project (“Project”) located at 486 Fitch Hill Road in Uncasville, Connecticut, including all aspects of the project over its fifteen (15) year life span.

## II. Electricity Generated from Project

The Project will produce about 4,088.5MWh of electricity during its first year of operation. This amount is determined by using the National Renewable Energy Laboratory’s “PVWatts Calculator,” a well-known tool used throughout the solar industry that incorporates the project’s location and equipment to calculate its output.<sup>1</sup> In total, the Project will produce roughly 81,770MWh of electricity during its lifespan.

## III. GHG Emissions of Project

According to the National Renewable Energy Laboratory (“NREL”), solar PV projects on average produce 43 grams of carbon dioxide equivalent per kilowatt-hour (“g CO<sub>2</sub>e/kWh”) of electricity produced.<sup>2</sup> This is a cradle-to-grave average, accumulating all factors from resource extraction and construction to decommissioning and recycling. Using this average, the Project will produce roughly 3.9 tons of CO<sub>2</sub>e during its 20-year life span.

## IV. Comparing Project GHG Emissions to Natural Gas

This exhibit compares the GHG emissions of the Project to that of natural gas because natural gas is the largest source generating electricity in Connecticut (1.75GWh in Oct. 2021), and therefore, will most likely substitute electricity that is provided by natural gas.<sup>3</sup> The EPA states that the CO<sub>2</sub>e emission rate for natural gas in Connecticut was 822.02lb/MWh in 2020, meaning that for every megawatt hour of electricity produced by natural gas, there were 822.02 pounds of CO<sub>2</sub>e emitted.<sup>4</sup> Seeing that the Project provides 81,770MWh of electricity during its lifespan – while only emitting 3.9 tons of CO<sub>2</sub>e – a natural gas project would emit 33,608.3 tons of CO<sub>2</sub>e to achieve producing the same amount of electricity.

The images below portray the GHG equivalencies of the Project, provided by using the US Environmental Protection Agency’s (EPA) Greenhouse Gas Equivalencies Calculator.<sup>5</sup> Again, the Project replaces almost 35,000 tons of CO<sub>2</sub>e, and in doing so, replaces the equivalent amount of CO<sub>2</sub>e from the following:

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<sup>1</sup> *PVWatts Calculator*, National Renewable Energy Laboratory, <https://pvwatts.nrel.gov/index.php> (last visited Feb. 24, 2022)

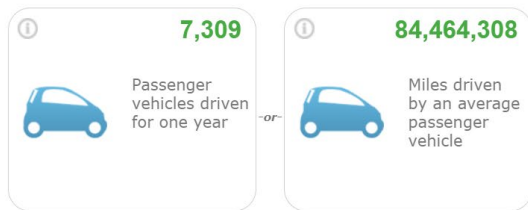
<sup>2</sup> *Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update*, National Renewable Energy Laboratory, p.3 (Sept. 2021).

<sup>3</sup> *Connecticut: State Profile and Energy Estimates Overview*, US EIA, <https://www.eia.gov/state/?sid=CT#tabs-4> (last visited Feb. 24, 2022).

<sup>4</sup> *Emission & Generation Resource Integrated Database (“eGRID”): Data Explorer*, US Environmental Protection Agency (“EPA”), <https://www.epa.gov/egrid/data-explorer> (last visited Feb. 24, 2022).

<sup>5</sup> *Greenhouse Gas Equivalencies Calculator*, US Environmental Protection Agency, <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator> (last updated Mar. 2021).

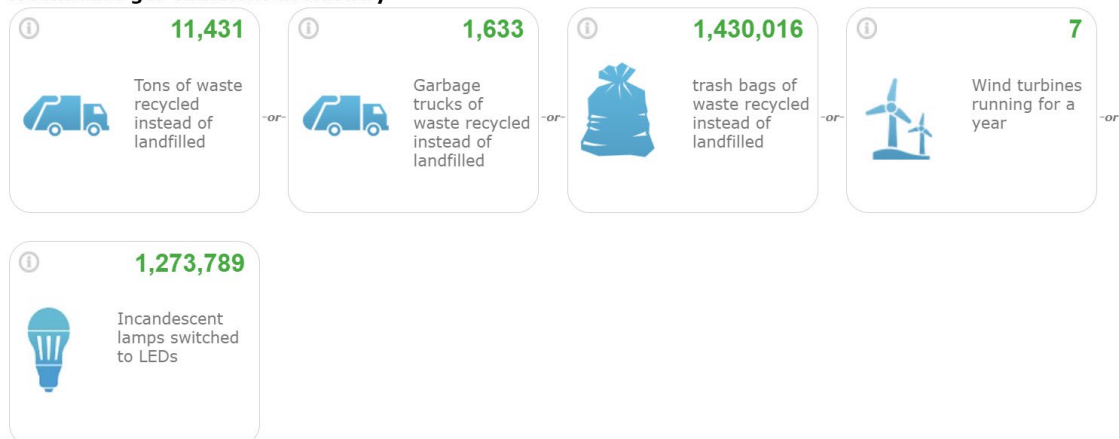
### Greenhouse gas emissions from



### CO<sub>2</sub> emissions from



### Greenhouse gas emissions avoided by



### Carbon sequestered by



## V. Conclusion

Overall, the net amount of GHG emissions avoided through solar production vastly outweigh the GHG emitted during the initial construction or eventual decommission of the Project, especially when compared to natural gas, the current largest source of electricity generation in Connecticut.