

EXHIBIT G

Carbon Debt Analysis

I. Introduction

This exhibit analyzes the total amount of greenhouse gas (“GHG”) emissions, or carbon footprint, of the 4.97MW solar generation project (“Project”) located at 0 Riggs Street (Map ID: 27/ 15/ 7/ /), Oxford, Connecticut including all aspects of the project over its twenty (20) year life span.

II. Electricity Generated from Project

The Project will produce about 11,195 MWh of electricity during its first year of operation. In total, using the industry standard degradation value of 0.5%, the Project will produce roughly 123,577 MWh 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 CO₂e/kWh”) of electricity produced. See *Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update*, National Renewable Energy Laboratory, p.3 (Sept. 2021). This is a cradle-to-grave average, accumulating all factors from resource extraction and construction to decommission and recycling. Using this average, the Project will produce roughly 9,184 metric tons of CO₂e during its 20-year life span.

IV. Comparing Project GHG Emissions to Natural Gas

The Project will most likely replace natural gas because natural gas is the largest energy resource in the State, making up 57% of Connecticut’s energy resource mix. (Solar power is 1% of the State’s energy resource mix.) See *Emission & Generation Resource Integrated Database (“eGRID”): Data Explorer*, US Environmental Protection Agency (“EPA”), <https://www.epa.gov/egrid/data-explorer> (last updated on Jan. 30, 2024). The U.S. Environmental Protection Agency states that the CO₂e emission rate for natural gas in Connecticut was about 822lb/MWh in 2022, meaning that for every megawatt hour of electricity produced by natural gas, there were 822 pounds of CO₂e emitted. Id. At this rate, the average natural gas generator needs to emit 79,606 metric tons of CO₂e to produce the same amount of electricity as the Project (123,577 MWh). In other words, constructing the Project will create an 88.5% reduction in CO₂e emissions because the Project would only produce 9,184 metric tons of CO₂e versus the 79,606 metric tons from natural gas.

This reduction increases to over 91% under a cradle-to-grave analysis. When including resource extraction, construction, decommissioning, and the entire project life cycle, an equally sized natural gas generator emits an additional 24,193 metric tons of CO₂e for a total of 103,799 metric tons of CO₂e. See *Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update*, NREL, p.3 (Sept. 2021). The images below portray the GHG equivalencies of the Project, provided by using the US Environmental Protection Agency’s (EPA) Greenhouse Gas Equivalencies Calculator. See *Greenhouse Gas Equivalencies Calculator*, US Environmental Protection Agency, <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator> (last

updated January 2024). Again, the Project replaces about 79,606 metric tons of CO₂e, and in doing so, replaces the equivalent amount of CO₂e from the following:

79,606 Metric Tons of Carbon Dioxide (CO₂) equivalent

This is equivalent to greenhouse gas emissions from:



This is equivalent to CO₂ emissions from:



This is equivalent to 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. This Project would emit roughly 1/10th of the CO₂e produced by an equivalent natural gas plant. In other words, a natural gas plant would emit over 11 times the CO₂e levels as the proposed Project to generate the same amount of electricity. As the EPA GHG Equivalencies Calculator illustrates, this reduction of CO₂e is equal to almost 90 million pounds of coal, over 17,700 gas-powered vehicles, and preserving about 95,000 acres of US forests. This Project would replace natural gas production in Connecticut and prevent 79,606 metric tons of CO₂e in the process.