

Technical Appendix

See below for explanations of the methodology and assumptions used to develop estimated GHG emission reductions for each measure in the application.

Measure 1

GVMC worked with four potential project partners¹ to develop a proof of concept. Each potential partner submitted addresses and utility data for one or more properties. Each property is a location that the potential partner identify as a location for PV array installation. GVMC used the submitted data to identify the three most cost-effective PV array locations based on building energy consumption, available space, local utility interconnection requirements, and incremental utility rate. The figure below shows the three most cost-effective projects. Measure one will install three sets of projects similar to the ones shown below.

Project	System Size (kW)	Annual Production (kWh)	Incremental Rate (\$/ kWh)	Discount to Rate	PPA Rate	Annual PPA Income	Annual Anticipated PM
1	177	198,000	\$ 0.110	3.0%	\$ 0.107	\$ 21,127	\$ 2,200
2	244	270,000	\$ 0.075	3.0%	\$ 0.073	\$ 19,783	\$ 2,300
3	350	333,000	\$ 0.076	3.0%	\$ 0.074	\$ 24,581	\$ 3,300
Total	771	801,000				\$ 65,490.6	\$ 7,800.00

Annual production for these three projects was calculated using industry standard 3D modeling software, which takes into account shading, local historic weather patterns, equipment inefficiencies, and other factors that may impact PV performance. The annual production was summed (801,000 kWh) then input into the EPA's Greenhouse Gas Equivalencies Calculator as kilowatt-hours avoided. The calculations resulted in 560 metric tons of carbon dioxide equivalent avoided annually. This figure was used for avoided emissions in year 2026, because it is assumed one set of three projects would be active in 2026. 1120 metric tons of carbon dioxide equivalent avoided was assumed for 2027 because it is assumed that one more set of three projects would become active. 1680 metric tons of carbon dioxide equivalent avoided was assumed for years 2027 through 2050 because it is assumed that three sets of projects will be active during that period.

Measure 2

The emissions reductions associated with Measure 2 were calculated using the requested annual budget (\$663,500), which can be found in Section 7.a. The annual budget figure was divided by .1917 \$/kWh to calculate the assumed kWh saved by the investment. The conversion factor of .1917 \$/kWh estimated by multiplying the Total Cost of Saved Electricity (2012\$/kWh)² for the Low-Income sector (\$.142) by 1.35

¹ The potential partners include the City of Grand Rapids, the City of Kentwood, the Kent County Road Commission, and the City of Wyoming.

² Hoffman, I. M., Rybka, G., Leventis, G., Goldman, C. A., Schwartz, L., Billingsley, M., & Schiller, S. (2015). The total cost of saving electricity through utility customer-funded energy efficiency programs: estimates at the national, state, sector and program level. Berkeley Lab Technical Brief.

to adjust for inflation. The Low Income sector was chosen, as opposed to the Residential or Commercial, Industrial, and Agricultural sectors, because the all funding for energy efficiency improvements from Measure 2 will be distributed to LIDACs.

The results of the calculation 3461137.194 kWh was into the EPA's Greenhouse Gas Equivalencies Calculator as kilowatt-hours avoided. The calculation resulted in 2,418 metric tons of carbon dioxide equivalent avoided. This figure was used for years 2025 through 2028 because these are the four years when the \$663,500 of energy efficiency sub-awards will be awarded. The same methodology was used to estimate the metric tons of carbon dioxide equivalent avoided from 2029 through 2050, except a budget of \$43,000 was used instead of \$663,500. The budget was adjusted based on the amount of total revenue expected to be diverted into the LIERF from Measure 1 after the annual anticipated preventative maintenance and Coordinator salary and benefits was subtracted. This resulted in 157 metric tons of carbon dioxide equivalent avoided annually.