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Project No: 22-13354

Victor Briones
County of Ventura | County Executive Office | Sustainability Division
800 South Victoria Avenue, L#1940
Ventura, California 93009
Via email: Victor.Briones@ventura.org

Subject: U.S. Environmental Protection Act Climate Pollution Reduction Grant Application Emissions Quantification- Thousand Oaks-Oxnard-Ventura Metropolitan Statistical Area, Ventura County, California

Dear Mr. Briones:

Rincon Consultants, Inc. (Rincon) is pleased to provide this document summarizing the substantial evidence that supports the greenhouse gas (GHG) emissions reduction potential of specific projects included in the Thousand Oaks-Oxnard-Ventura Metropolitan Statistical Area (MSA/Ventura County) application for funding through the Environmental Protection Agency's (EPA) Climate Pollution Reduction Grant (CPRG). Ventura County is submitting three applications for funding, which seek to fund the expansion of the Tri-County Regional Energy Network (3C-REN) Home Energy Savings Program, the development of a regional electric vehicle charging program, and implementation of an electric bicycle (e-bike) incentive program. Each project is discussed briefly below, with an outline of the methodology used to complete the emissions reduction analysis as well as the inputs used. The full calculation, including all inputs, constants, assumptions, and defaults, can be found in Appendix A.

Methodology and GHG Emission Reductions

The following sections provide a brief project description, a summary of the methodology and data sources utilized for GHG emission reduction quantification, and the results of the emissions reductions and estimated cost per metric tons of carbon dioxide equivalent (MT CO₂e) attributable to each project. As required, cumulative GHG emission reductions were estimated for the years 2025-2030 and 2025-2050. All calculations and assumptions can be found [here](#) – please download the excel document.



Expansion of the 3C-REN Home Energy Savings Program – County of Ventura

Natural gas usage from existing buildings accounted for 20 percent of emissions in Ventura County in 2022. Currently natural gas is a relatively cheap energy source and has traditionally been connected to most homes and businesses. However, this consumption of fossil fuel generates significant GHG emissions and may become much more expensive as communities begin to transition away from natural gas and fixed costs to maintain and operate the gas system will be spread over a smaller number of natural gas consumers. It is also important to recognize that the natural gas market is volatile and experiences impacts from production levels, weather, and environmental policies.¹ In addition to contributing to climate change, natural gas powered appliances contribute to poor indoor air quality by leaking methane into the air, which exposes users to respiratory disease-triggering pollutants.² The additional costs of electrifying natural gas equipment can make this transition particularly difficult for low-income households. Therefore, one of the foundational components towards an equitable transition to decarbonization would be equitable access to modern electric appliances. Expanding existing County programs to provide community members with the essential resources required to make a realistic transition and providing a physical location where the community can learn, share, and utilize resources that will help the electrification and energy efficient transition.

Many low-income residents cannot afford the additional costs of electrifying heating/cooling systems, water heaters, and appliances for cooking and washing/drying. The Tri-County Regional Energy Network (3C-REN) is an existing partnership between the Counties of Ventura, Santa Barbara, and San Luis Obispo that delivers energy-saving programs and industry training that help reduce energy use, fortify job markets, and mitigate GHG emission. The 3C-REN program began in 2019 and was the third of its kind in California. Currently, through the 3C-REN program, households are offered direct energy savings opportunities through the program, with an emphasis on hard-to-reach and underserved communities and for commercial businesses, the program provides capacity-building services such as workforce training and technical support. In 2022, 3C-REN's Building Performance Training program helped upskill over 1,000 local workers across the region and the Home Energy Savings programs are making energy efficiency and electrification upgrades affordable for multifamily property owners and single-family homeowners.³ This program aims to expand 3C-REN electrification programs, as well as grant funding, rebates, incentives, financing, and philanthropy so the cost to access electric appliance and make the energy transition is not passed on to lower-income residents, particularly within affordable housing units. This is an important measure to reduce the funding gap for the decarbonization of existing buildings, especially for those who are low-income.

This project will include an expansion of the existing 3C-REN program, which would go beyond traditional energy efficiency and include full electrification of an additional six multi-family properties and 110 single family properties in the first year, with a 30 percent increase year over year between 2026 and 2030. Uptake of this program has recently increased, with multifamily incentives for 2024 already fully subscribed and single-family incentive likely to run out priority the end of the 2024 calendar

¹Nasdaq. December 31, 2023. Natural Gas Prices Forecast for 2024: Could Turn Bullish on Sustained Move Over 3.00. Available at: <https://www.nasdaq.com/articles/natural-gas-prices-forecast-for-2024:-could-turn-bullish-on-sustained-move-over-3.00>

² Rob Jordan, Stanford Woods Institute for the Environment. 2022. Climate and health impacts of natural gas stoves. Available at: <https://sustainability.stanford.edu/news/climate-and-health-impacts-natural-gas-stoves>

³ Santa Barbara Independent. 2023. 3C-REN Investing \$155 Million in Tri-County Over Next Eight Years. Available at: <https://www.independent.com/2023/07/11/3c-ren-investing-155-million-in-tri-county-over-next-eight-years/>



year. The program would add incentive and administrative funding to the program, while leveraging existing funding to cover the programmatic expenses like program, design, marketing, etc. The estimated project cost is \$9,753,486 through 2030. Funds secured through this opportunity would be reserved for Ventura County. The Home Energy Savings program works with established partners. For single-family homes, Recurve is an established partner that works on programs with actual metered energy savings (Normalized Metered Energy Consumption program model). For multifamily properties, the Association for Energy Affordability is the lead implementation partner, with deep experience serving affordable housing entities. County staff oversee these implementation partners, who also engage with local non-profits for program recruitment. This type of electrification program has proven to be successful through the turnkey electrification program (which includes project management, incentive coordination, contractor and equipment procurement, and financing) implemented by BlocPower and partners in New York City and California.⁴

Methodology and References

GHG emissions were quantified based on the number of homes that the project would serve. It is assumed that the number of homes electrified in 2025 (200) includes 6 multi-family properties with 90 units total, plus the additional 110 single family properties. The 200 homes would be electrified in the first year (2025), and there would be a 30 percent increase in homes electrified through 2030, at which time the number of homes electrified annually through the 3C-REN project is anticipated to plateau at 743 annually, through 2050. Quantification assumes full electrification of each of the homes and utilizes the annual average total GHG reductions per household to estimate the annual total reductions for the project. The annual average total reductions were quantified as part of the Priority Climate Action Plan (PCAP) development based on the reduction of total natural gas emissions avoided plus the GHG emissions anticipated from new electricity usage. The calculations accounts for the decreased carbon intensity of electricity moving forward due to California's Senate Bill 100 which requires all energy to be 100 percent zero-carbon and renewable by 2045. Then, the total reduction per year was divided by the total number of households electrified to get an average reduction per household. The average reductions per household per year was then multiplied by the number of households that would be electrified annually to quantify the total emissions reductions per year. Emissions reductions will increase due to the reduction in electricity emission factors through 2045, when Senate Bill 100 requires that all energy be 100 percent zero-carbon and renewable. The full calculation, including all inputs, constants, assumptions, and defaults, can be found [here](#). Table 1 shows the data inputs and assumptions associated with the proposed project.

Table 1 3C-REN Home Energy Savings Program Data Inputs and Assumptions

Data Inputs and Assumptions	2025	2030	2050
Average Total Reductions per Household (MT CO ₂ e)	1.957	2.187	2.335
Estimated Number of Homes Electrified Through 3C-REN Program	200	743	743
Estimated Project Reductions (MT CO ₂ e)	391	1,624	1,734
Source: Ventura County Project Quantification, Appendix A			
Note: Data is not cumulative.			

⁴ BlocPower. 2023. California Heat Pump Incentives: The Window of Time to Benefit is Now. Available at: <https://www.blocpower.io/posts/california-heat-pump-incentives>



Results

Based on the calculations discussed above, the anticipated cumulative GHG emission reductions attributable to the project are shown in Table 2. The annual emissions reduction is expected to significantly increase year over year from 2025 – 2030 due to project implementation and then plateau in 2031 as all units in this project will be electrified by 2031. Specifically, in 2025, the emission reductions attributable to the project are estimated to be 391 MT CO₂e at the start of project implementation, and by 2030, they are estimated to be 1,624 MT CO₂e annually at full project build out. After full project implementation annual emission reductions will continue to slightly increase as the electricity grid continues to approach a zero emission factor by 2045 due to Senate Bill 100.

Table 2 3C-REN Home Energy Savings Program GHG Emission Reductions

Results	2025-2030	2025-2050
Cumulative GHG Emission Reductions (MT CO ₂ e)	5,388	39,527
Project Cost per MT CO ₂ e (\$)	-	\$246.76

Source: Ventura County Project Quantification, Appendix A



Electric Vehicle Program

Transportation generates the greatest amount of GHG emissions in the region, which is in alignment with the broader State emissions due to limited electric vehicle charging infrastructure, the expansive roadway network, and limited safe and reliable public and active transportation options. The combustion of fossil fuels in vehicles is also a significant source of health impacts to the communities living around the transportation infrastructure as it is responsible for nearly 80 percent of NO_x pollution, and 90 percent of diesel particulate matter pollution.⁵ Exposure to high levels of poor air quality can result in increased cases of asthma and respiratory illnesses, worsen existing heart and lung conditions, thereby increasing emergency room visits and absences from work and school, as well as premature death.⁶ These air pollutants also threaten crops, trees, and vegetation, which is especially impactful in the region that depends so much on agriculture for economic prosperity. To reduce the GHG emissions and the health impacts from other associated air pollutants related to existing transportation, there is a need for increased EV use, increased transit accessibility and operations, and increased active transportation, including biking, walking, skating, and rolling.

As we decarbonized the electric energy system, it will be essential to electrify the remaining vehicles on the road so Ventura County can benefit from increasingly clean electricity. Additionally, reducing tailpipe air pollution through EV adoption provides public health benefits as it reduces a major source of outdoor air pollution, which often disproportionately impacts low-income and disadvantaged communities. This project will include design and installation of 362 electric vehicle (EV) charging ports, including projects identified in the Ventura County EV Ready Blueprint, which is intended to spur rapid adoption of EVs in the region and to make EVs and other clean mobility options fully accessible to everyone in the community. Various projects proposed have California Energy Commission funding for the electric vehicle supply equipment (EVSE), but not for infrastructure or installation costs. Southern California Edison is assumed to cover the cost for the Southern California Edison-related infrastructure costs including upgrades to their grid and meters. Charging sites will be distributed across the county and all chargers will be available for public access and maintained through at least 2050. An EV Coach is also proposed to provide technical assistance to County Departments, cities, businesses, and multifamily housing providers. In addition, the program would include the purchase of eight battery electric vehicle (BEV) sedans, 14 BEV SUVs, and one EV truck for Gold Coast Transit District, as well as five EV cutaway vans for the City of Thousand Oaks. The total estimated project cost is \$16,209,201.

Methodology and References

GHG emissions reductions were quantified by multiplying an estimated value of total passenger and commercial GHG emissions reduced (MT CO₂e) per year per public charging port, consistent with the measure quantification completed for the PCAP. As indicated in the Ventura County EV Ready Blueprint, the calculations assume that EVs would account for 12.5 percent of vehicles in 2030 and 100 percent in 2050. It was then assumed that an equivalent reduction in vehicle miles traveled (VMT) powered by fossil fuels, and emissions associated with these miles traveled would instead be accounted for in additional electricity use. Electric VMT (EVMT) was then utilized to estimate the number of electric

⁵ California Energy Commission. 2024. Transforming Transportation. Available at: <https://www.energy.ca.gov/about/core-responsibility-fact-sheets/transforming-transportation>

⁶ U.S. EPA. Learn About Impacts of Diesel Exhaust and the Diesel Emissions Reduction Act (DERA). 2023. Available at: <https://www.epa.gov/dera/learn-about-impacts-diesel-exhaust-and-diesel-emissions-reduction-act-dera>



vehicles based on the average mileage traveled per vehicle (9,871 miles/vehicle/year) in Ventura County.⁷ The Department of Energy (DOE) Electric Vehicle Infrastructure (EVI) toolbox was used to estimate the charging infrastructure, in terms of charging ports, needed to support the estimated number of EVs. In 2030, the estimated number of EVs and charging ports are 87,625 and 73,999 respectively. In 2050, the estimated number of EVs and charging ports is 752,910 and 495,325 respectively. The 362 public charging ports installed as part of this program would contribute to the total number of charging ports needed to support the estimated number of EVs. This allowed for annual EVMT per charging port to be determined. Multiplication of this metric by emission reductions per EVMT gave a value for the emission reductions achieved per charging port. The emissions factor used for EVMT replacement of combustion VMT was obtained from the California Air Resources Board's (CARB) 2021 Emission FAcTtor (EMFAC) model version 1.0.1. Emission reductions by EVMT were further adjusted to account for the emissions associated with electricity use. The chargers would be installed between 2025 and 2030, as summarized in Table 3.

GHG emissions reduced from replacing existing fossil fuel powered vehicles with the new electric vehicles for Gold Coast Transit District (22 passenger EVs, including 8 BEV sedans and 14 BEV SUVs, and 1 commercial EV truck) and City of Thousand Oaks (five passenger cutaway EVs) were estimated by calculating estimated GHG emissions reductions from mileage of fossil fuel vehicles replaced by these new EVs and subtracting the emissions associated with electricity use. New passenger miles traveled per EV was calculated using the passenger vehicle miles traveled from the 2022 GHG emissions inventory divided by the number of passenger vehicles in the county based on EMFAC Fleet Database. The same calculations were completed using commercial vehicle values. Emission reductions by EVMT were further adjusted to account for the emissions associated with electricity use. The calculations assume an EV lifespan of about 20 years. See Table 4 summarizes the data inputs and assumptions associated with the proposed project. The full calculation, including all inputs, constants, assumptions, and defaults can be found [here](#).

⁷ This is based on the county-wide VMT data provided for 2022 and the California Energy Commission (CEC) vehicle count for the County.



Table 3 New EV Charging Ports Operating Each Year

Site Owner	Charger Ports Operating Each Year				
	2026	2027	2028	2029	2030
City of Fillmore	0	4	4	4	4
City of Moorpark	0	11	11	11	11
City of Oxnard	0	0	14	14	14
City of Port Hueneme	0	6	12	12	18
City of Santa Paula	0	0	8	8	8
City of Simi Valley	11	37	37	37	37
City of Ventura	0	4	16	16	24
County of Ventura	17	61	63	63	63
Gold Coast Transit District	0	38	38	38	38
Housing Authority of the City of San Buenaventura	7	15	15	15	15
Private Entity/Non-Profit	0	0	26	62	92
Quail Springs	4	4	4	4	4
The Pacific Companies	6	6	6	6	6
Towbes Group	6	18	18	18	18
Ventura County Transportation Commission	0	10	10	10	10
Total	51	214	282	318	362

Note: Ports are considered operational the year after they are installed given that installation dates are estimated to be at the end of each calendar year (e.g., installation of a charging port in December 2025 would mean the port is operational in 2026). Data is cumulative.

Table 4 New Electric Vehicle Inputs

Inputs	Value
Passenger VMT	6,103,105,747
Passenger Vehicles	532,073
Average Passenger VMT/vehicle	11,470
Commercial VMT	633,887,108
Commercial Vehicles	153,154
Average Commercial VMT/vehicle	4,139
Average lifespan of an EV (miles)	200,000
Average lifespan of an EV (years)	20
New GCTD Passenger EVs	22
New GCTD Commercial EVs	1
New City of Thousand Oaks Passenger EVs	5

Source: Ventura County Project Quantification, Appendix A



Results

Based on the calculations discussed above, the anticipated emissions reductions attributable to the project are shown in Table 5, by jurisdiction, with a total provided as well.

Table 5 Electric Vehicle Program GHG Emission Reductions

Site Owner	2025-2030	2025-2050
City of Fillmore	62	354
City of Moorpark	171	972
City of Oxnard	161	1,182
City of Port Hueneme	185	1,497
City of Santa Paula	92	675
City of Simi Valley	616	3,313
City of Thousand Oaks New EVs	61	294
City of Ventura	230	1,979
County of Ventura	1,034	5,626
Gold Coast Transit District	590	3,359
Gola Coast Transit District New EVs	284	1,353
Housing Authority of the City of San Buenaventura	259	1,353
Private Entity/Non-Profit	685	7,390
Quail Springs	77	369
The Pacific Companies	116	553
Towbes Group	302	1,614
Ventura County Transportation Commission	155	884
Cumulative GHG Emission Reductions (MT CO₂e)	5,081	32,766
Project Cost per MT CO₂e (\$)	-	\$494.70

Source: Ventura County Project Quantification, Appendix A



Electric Bike Incentive Program

Transportation generates the greatest amount of GHG emissions in the region. In addition, the combustion of fossil fuels in vehicles is also a significant source of health impacts to the communities living around the transportation infrastructure as it is responsible for nearly 80 percent of NO_x pollution, and 90 percent of diesel particulate matter pollution.⁸ Ventura County is in the process of finalizing the Ventura County Active Transportation Plan which is a strategic plan and policy document aiming to increase active transportation use, improve community health and safety, reduce vehicle miles traveled, and reduce greenhouse gas emissions in the County.⁹ This plan illustrates the County's continued investment in active transportation infrastructure. Electric bicycles (e-bikes) provide new opportunities for getting more people out of fossil fuel-powered vehicles as they are more efficient and affordable than EVs and can help overcome barriers to cycling. In addition to GHG emissions reductions, e-bikes reduce congestion and parking problems and improve street safety. E-bikes have much lower purchase and operating costs than EVs, which makes them an important tool to expand affordable, equitable transportation access.¹⁰

This project would include providing incentives to purchase e-bikes for all qualifying Ventura County residents, with a specific emphasis on reaching the approximately 36,000 farmworkers with an annual household income at or below 120 percent of the area median income and for those residing in a disadvantaged or low-income community, based on CalEnviroScreen.¹¹ The project would be implemented by Frontier Energy, a consulting firm that encourages the intelligent use of energy including working on transportation electrification. The incentives will be distributed to residents as vouchers and once approved, the voucher recipients will be able to redeem the vouchers at authorized e-bike retailers. Authorized retailers will apply the voucher discount to an approved e-bike at the point of sale. Incentive amounts will range from \$1,500 (commuting e-bikes) to \$2,000 (cargo e-bikes). The program will distribute a total of 9,720 e-bikes. A similar on-going program has been implemented in Denver, Colorado, and the measured impacts of this program are used to estimate potential GHG emissions reductions for a similar program in Ventura.¹² The estimated project cost is \$18,450,277.

Methodology and References

GHG emissions reductions were quantified by calculating the amount of passenger VMT replaced by miles traveled using commuting and cargo e-bike miles distributed through this program. Rocky Mountain Institute (RMI), Energy Transformed tool for estimating the impact of an e-bike program estimates miles biked per week (per e-bike) to be approximately 32 for income-qualified incentive recipients, based on a City of Denver e-bike incentive program usage survey.¹³ This value was multiplied

⁸ California Energy Commission. 2024. Transforming Transportation. Available at: <https://www.energy.ca.gov/about/core-responsibility-fact-sheets/transforming-transportation>

⁹ Ventura County. 2023. Active Transportation Plan (Draft). Available at: https://atplan.vcpublishworks.org/wp-content/uploads/2024/01/VenturaCo_ATP_Report_Draft_01.02.2024.pdf

¹⁰ Walk Bike Berkeley. 2019. E-bikes: Key to Berkeley's Climate & Public Safety Goals. Available at: https://drive.google.com/file/d/1sISMSq0h2HF2KaXVj0GC30o3P_oosf5t/view

¹¹ CalEnviroScreen 4.0. 2023. Available at: <https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40>

¹² City of Denver. 2024. E-Bike Rebates. Available at: <https://www.denvergov.org/Government/Agencies-Departments-Offices/Agencies-Departments-Offices-Directory/Climate-Action-Sustainability-Resiliency/Cutting-Denvers-Carbon-Pollution/Sustainable-Transportation/Electric-Bike-Rebates#section-4>

¹³ RMI Energy Transformed Tool, Appendix B, includes a blank version of this tool for reference.



by the number of weeks per year (52.1429) to determine e-bike miles biked per year of 1,669 miles for each e-bike. It was assumed that the e-bike miles biked per year replaced an equivalent number of passenger vehicle miles traveled (VMT), and emissions associated with these miles traveled would instead be accounted for in additional electricity use to charge the e-bikes. GHG emissions associated with e-bike electricity usage decrease over time because of Senate Bill 100 which requires that all energy be 100 percent zero-carbon and renewable. E-bikes usually last for about 10 years.¹⁴ The calculations assume an e-bike lifespan of eight years.

The full calculation, including all inputs, constants, assumptions, and defaults, can be found [here](#). Table 6 shows the data inputs and assumptions associated with the proposed project.

Table 6 E-Bike Data Inputs and Assumptions

Data Inputs, Assumptions, and Results	Value	Unit	Source
E-bikes distributed 2026	2,430	Bikes	Project assumptions
E-bikes distributed 2027	4,374	Bikes	Project assumptions
E-bikes distributed 2028	1,944	Bikes	Project assumptions
E-bikes distributed 2029	972	Bikes	Project assumptions
Total target e-bikes distributed	9,720	Bikes	Project assumptions
% income-qualified cargo e-bike (\$2,000)	20%	Percent	Project assumptions
% income-qualified commuting e-bikes (\$1,500)	80%	Percent	Project assumptions
Miles biked per week (income qualified)	32	Miles	RMI e-bike environmental and economic impact assessment calculator (City of Denver's e-bike incentive program usage survey)
Miles biked per year (income qualified)	1,669	Miles	Calculated
Commuting e-bike efficiency	0.01245	kwh/mile	RMI e-bike environmental and economic impact assessment calculator
Cargo e-bike efficiency	0.0099	kwh/mile	RMI e-bike environmental and economic impact assessment calculator

Source: Ventura County Project Quantification, Appendix A

Results

Based on the calculations discussed above, the anticipated emissions reductions attributable to the project and cost per MT CO₂e reduced are shown in Table 7, with a total provided as well.

¹⁴ Hiboy. 2023. How Long Do Electric Bikes Last? Check the Basics! Available at: <https://www.hiboy.com/blogs/news/how-long-do-electric-bikes-last-check-the-basics#:~:text=Usually%2C%20ebikes%20last%20for%20roughly,motor%20for%20extended%20optimal%20performance.>



Table 7 E-Bike GHG Emissions Reductions and Co-Benefit Results

Parameter	2025-2030	2025-2050
Cumulative new e-bikes	9,720	9,720
Cumulative passenger VMT reduced by e-bikes	16,218,528	16,218,528
Cumulative emissions reduced from VMT replacement with e-bike miles (MT CO ₂ e)	18,142	36,341
Emissions from electricity usage from new e-bikes	45.65	68.97
Cumulative GHG Emission Reductions (MT CO₂e)	18,096.40	36,271.79
Project Cost per MT CO₂e (\$)	-	\$508.67

Source: Ventura County Project Quantification, Appendix A
All values rounded to nearest hundredth.