Rincon Band of Luiseño Indians

Priority Climate Action Plan (PCAP)

Prepared for:

US EPA Region 9
75 Hawthorne Street
San Francisco, CA 94105

March 1, 2024

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EXECUTIVE SUMMARY

A climate action plan is a planning effort undertaken by a government to understand how climate pollutants are generated within their jurisdiction and identify projects and policies to reduce these climate pollutants. While a climate action plan typically focuses on reducing greenhouse gas (GHG) emissions that contribute to climate change, there can be numerous co-benefits associated with projects and policies that achieve GHG emissions reductions. For example, the burning of fossil fuels (such as gasoline and diesel fuel) creates GHG emissions but can also create air pollutants that are hazardous to human health. As such, the reduction of fossil fuel burning can result in improved air quality and improved public health. Another example of an action to reduce GHG emissions is energy efficiency improvements, which can also help to reduce long-term energy costs. This climate action plan undertaken by the Rincon Band of Luiseño Indians (Rincon Band) is part of a longer-term effort to develop comprehensive strategies for reducing its contribution to climate change, while also maximal providing public health benefits, cost savings, and environmental protection for Tribal members and the Rincon Reservation as a whole.

The Rincon Band occupies a 5,240-acre reservation in Valley Center, CA and is recognized by the United States Government as a sovereign government. Rincon Tribal Council Members are democratically elected by a majority vote of Tribal members. They serve as the executive, legislative, and judicial branches of the government, and possess the legal authority and responsibility to protect and promote the welfare of Tribal members. This Preliminary Climate Action (PCAP) is intended to highlight the most urgent near-term priorities for the Rincon Band that provide maximal community and environmental benefits, while also reducing greenhouse gas (GHG) emissions. The development of the PCAP is the initial step of a longer-term climate action planning effort as part of the Climate Pollution Reduction Grants (CPRG) program, administered by the United States Environmental Protection Agency (US EPA). The PCAP is primarily focused on infrastructure improvements at the Reservation as priority measure projects. These infrastructure projects are guided by key principles of the Tribe's vision of keeping the ambience of the Reservation as rural as possible while advancing economic development and physical improvements.

The governmental boundary of the Rincon Reservation serves as the geographic boundary for the PCAP. The contribution of climate pollutants from within this boundary has been assessed in the PCAP as a GHG emissions inventory. The PCAP GHG emissions inventory addresses the following primary GHG emissions sectors in accordance with the Global Protocol for Community-Scale Greenhouse Gas Inventories (also known as GHG Protocol for Cities), version 1.1 (World Resources Institute 2021):

- Stationary energy,
- Transportation, and
- Waste.

PRIMARY ELEMENTS OF THE PCAP

The PCAP includes five primary elements that are intended to develop an understanding of the scale of GHG emissions generated within the Rincon Reservation, as well as identify and analyze priority projects to reduce these GHG emissions while providing maximal benefits to the Rincon Band. The core goal is to highlight how these priority projects can be implemented by the Rincon Band and how they would provide GHG reductions, workforce growth, and additional community benefits. The results of these PCAP elements are summarized in the following sections.

GHG Emissions Inventory

GHG emissions inventory was developed following the GHG Protocol for Cities and utilized the US EPA Tribal Greenhouse Inventory Tools (EPA 2024) for the majority of GHG emissions calculations. Table 1 below presents the summary of PCAP GHG inventory results by scope[1] and primary GHG emissions sector. Detailed documentation for the GHG emissions inventory is provided in Appendix A.

Table 1 Summary of PCAP GHG Emissions Inventory for 2022

GHG Protocol for Cities Category	Annual GHG Emissions by Sector ($MTCO_2e$)			
Sector	CO_2	CH_4	N_2O	Total
Scope 1				
Stationary Energy	2,464	4.9	3.4	2,472
Transportation	3,240	3.5	29	3,273
Waste (Wastewater)	-	497	34	531
Total Scope 1 GHG Emissions	**5,704**	**505**	**67**	**6,276**
Scope 2				
Stationary Energy	3,939	6.4	7.9	3,953
Total Scope 2 GHG Emissions	**3,939**	**6.4**	**7.9**	**3,953**
Scope 3				
Waste	0	73	0	73
Total Scope 3 GHG Emissions	**0**	**73**	**0**	**73**

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4= Methane; N_2O = Nitrous oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent.

Results may not add up due to rounding.

GHG Reduction Measures

The GHG reduction measures selected for the PCAP are near-term priority infrastructure projects that both reduce GHG emissions and provide significant community and environmental benefits. Table 2 summarizes the GHG reductions anticipated to be achieved from the PCAP priority measures. Each GHG reduction measure is expected to achieve net-GHG reductions after implementation. Although some measures result in an increase in electricity consumption as a secondary effect, the primary reductions of the measures in scope 1 emissions are larger than the increase in scope 2 emissions from electricity consumption.

Measures 1, 2, and 3 focus on priority upgrades to wastewater systems on the Rincon Reservation, including developing a sewer system to connect residences to centralized wastewater treatment. Only a small portion of the Rincon Reservation is served by centralized wastewater treatment, with most residents on the Reservation utilizing on-site septic and some having no wastewater management options at all. The current conditions present significant risk of groundwater contamination, which is the sole source of water on the reservation, as well as risk of human exposure to pathogens. Measure 4 presents opportunities for the Rincon Band to reduce its government operation emissions by transitioning a portion of its fleet to zero-emission vehicles, while spurring local growth in new sustainable technology deployment. Additional detail on the GHG reduction measures is available in Section 2.2, with quantification of GHG reduction provided in Appendix B and details on the co-pollutant analyses provided in Appendix C.

[1] The scope of emissions sources indicate the physical location of GHG emissions sources and the level of control a government may have over the sources. The GHG Protocol for Cities defines three emissions scopes which are described in detail in Section 2.1.

Table 2 Summary of GHG Reduction Measures

GHG Reduction Measure	GHG Emission scope	Annual estimated GHG emission reductions ($MTCO_2e$)			
		CO_2	CH_4	N_2O	Total
Measure 1: Upgrade the wastewater treatment plant by incorporating SCADA (Supervisory Control and Data Acquisition) software and energy efficiency upgrades	Scope 2	6.94	0.01	0.01	6.97
Net GHG reductions from Measure 1 project implementation	NA	**6.94**	**0.01**	**0.01**	**6.97**
Measure 2: Connect North side residences to Wastewater Treatment Plant through sewer system	Scope 1	0	278	(6.81)	271
	Scope 2[1]	(7.92)	(0.01)	(0.02)	(7.95)
Net GHG reductions from Measure 2 project implementation[1]	NA	**(7.92)**	**278**	**(6.82)**	**263**
Measure 3: Connect South side residences to Wastewater Treatment Plant through sewer system	Scope 1	0	216	(5.30)	211
	Scope 2[1]	(6.17)	(0.01)	(0.01)	(6.19)
Net GHG reductions from Measure 3 project implementation[1]	NA	**(6.17)**	**216**	**(5.31)**	**205**
Measure 4: Develop a Hydrogen Hub and convert the Tribal Law Enforcement (TLE) fleet to hydrogen fuel cell electric vehicles (FCEV)	Scope 1	65	0.03	0.71	66
	Scope 2[1]	(37)	(0.06)	(0.07)	(37)
Net GHG reductions from Measure 4 project implementation[1]	NA	**28**	**(0.03)**	**0.64**	**29**

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4= Methane; N_2O = Nitrous oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent; NA = Not applicable.

Numbers in parentheses represent negative values.

1 Reduction is negative which represents an increase in scope 2 emissions.

Co-Pollutants Benefit Analysis

The co-pollutants reductions for the PCAP GHG reduction measures were quantified using the 2020 National Emissions Inventory (EPA 2020) as a baseline. Table 3 presents co-pollutant and additional community benefits associated with implementation of the GHG reduction measures.

Table 3 Summary of Co-Pollutants Benefit Analysis by GHG Reduction Measure

GHG Reduction Measure	Co-Pollutants Benefit Analysis Results	Community Benefits
Measure 1: Upgrade the wastewater treatment plant by incorporating SCADA (Supervisory Control and Data Acquisition) software and energy efficiency upgrades	▶ 28,783 kWh annual reduction in energy consumption	▶ Efficient resource management
Measure 2: Connect North side residences to Wastewater Treatment Plant through sewer System	▶ 95 tons annual reduction in criteria air pollutants (CAPs); ▶ 5 tons annual reduction in hazardous air pollutants (HAPs); ▶ 0.000021 tons annual reduction in CAP/HAP[1]; ▶ 32,852 kWh annual increase in energy consumption.	▶ Groundwater quality improvement ▶ Surface water quality improvement
Measure 3: Connect South side residences to Wastewater Treatment Plant through sewer System	▶ 74 tons annual reduction in CAPs; ▶ 4 tons annual reduction in HAPs; ▶ 0.000017 tons annual reduction in CAP/HAP[1]; ▶ 25,568 kWh annual increase in energy consumption.	▶ Groundwater quality improvement ▶ Surface water quality improvement

GHG Reduction Measure	Co-Pollutants Benefit Analysis Results	Community Benefits
Measure 4: Develop a Hydrogen Hub and convert the Tribal Law Enforcement (TLE) fleet to hydrogen fuel cell electric vehicles (FCEV)	▸ Reduction of 2,098 gallons of gasoline consumption annually; ▸ Reduction of 4,599 gallons of diesel consumption annually; ▸ 188,602 kWh annual increase in energy consumption.	▸ Clean energy job opportunities; ▸ Access to safe, reliable, and affordable energy

Notes: GHG = Greenhouse Gas; kWh = kilowatt hour; CAP = Criteria air pollutant; HAP = Hazardous air pollutant.

[1] CAP/HAP is the category of pollutants that can be both a CAP and a HAP. Hence these are listed separately from CAPs and HAPs.

Rincon Band's Authority to Implement GHG Reduction Measures

The Rincon Band of Luiseño Indians, in order to protect the health, safety, and general welfare of its members, residents, and guests, exercises regulatory authority over all lands within the boundaries of the Rincon Indian Reservation. The GHG reduction measures included in the PCAP can be directly implemented by the Rincon Band with appropriate permitting from federal agencies.

Workforce Planning Analysis

Rincon Band has a hiring preference policy that prioritizes Tribal Members and Tribal Owned Businesses in its workforce planning strategies. Rincon Band is also a member of the Southern California Tribal Chairmen's Association (SCTCA) which includes the Nativehire division. With SCTCA, Rincon Band members can access the Nativehire services and programs that provide training and career development opportunities for Rincon Band Tribal members as well as other tribal communities. The workforce requirements for the implementation of priority measures at the Rincon Reservation are anticipated to be fulfilled with the projected workforce expansion in San Diego County, which may also provide opportunities for Tribal members to participate in the workforce growth.

1 INTRODUCTION

The Rincon Band of Luiseño Indians occupies a 5,240-acre reservation in Valley Center, CA. The Rincon Reservation was created in 1875 by President Ulysses Grant for the Rincon Band of Luiseño Indians (Rincon Band) which was recognized by the United States Government as a sovereign government. The Tribe entered into the casino gaming industry in 2002 and uses the revenue from the casino and hotel to provide basic services to the community such as health care, law enforcement, fire protection, and infrastructure improvements. Rincon Tribal Council Members are democratically elected by a majority vote of Tribal members. They serve as the executive, legislative, and judicial branches of the government, and possess the legal authority and responsibility to protect and promote the welfare of Tribal members and jurisdiction over the Reservation.

The Rincon Band adopted a Master Plan in 2009 which was updated in 2017 and 2023 (Rincon 2023). The Master Plan seeks to maintain balance between the rural character of the Reservation and improvements necessary for future developments supported through Rincon Band's Energy Plan, Technology Plan, and the Economic Development Plan. To further support the long-range development vision and enhance the quality of life for all Tribal members, the Rincon Band has partnered with Ascent Environmental, Inc. (Ascent) to produce this Priority Climate Acton Plan (PCAP) to enhance investments in climate efficient development.

The PCAP is intended to highlight the most urgent near-term priorities for the Rincon Band that provide maximal community and environmental benefits, while also reducing GHG emissions. The development of the PCAP is the initial step of a longer-term climate action planning effort as part of the CPRG program, administered by the US EPA. The PCAP helps to position the Rincon Band for CPRG Implementation Grant opportunities available in April and May of 2024. The PCAP also helps to inform the development of a Comprehensive Climate Action Plan (CCAP), which will look beyond near-term priority projects and build a framework for future sustainable growth on the Rincon Reservation.

1.1 CPRG OVERVIEW

Authorized under Section 60114 of the Inflation Reduction Act, the CPRG program provides flexible resources in grants to states, local governments, tribes, and territories to develop and implement ambitious plans for reducing GHG emissions and other harmful air pollution. It is a two phased program that provides flexible support to tribes and other entities to design climate action plans and provides funding to implement measures and projects included in an applicable PCAP.

The CPRG program includes two phases, with the first phase being the Planning Phase and the second being the Implementation Phase. The Planning Phase is where eligible tribes and entities are provided non-competitive grants for developing climate action plans. There are three key components of the Planning Phase, including:

- Development of a PCAP to identify near-term priority projects and GHG reduction measures that could be pursued for grants in the Implementation Phase,
- Development of a CCAP to develop a comprehensive roadmap for reducing local GHG emissions, and
- Monitoring implementation of projects and programs in the CCAP over time.

The Implementation Phase is where competitive grants are available to participants in the Planning Phase to obtain funding for priority projects included in the PCAP. Both phases of the CPRG program will occur between 2023 and 2027.

1.1.1 CPRG Overview for Tribes

The US EPA has allocated funding solely for the use of tribes and territories for both the Planning Phase and Implementation Phase of the CPRG program. The Rincon Band has accepted a $185,000 grant from US EPA to conduct the Planning Phase and intends to submit priority projects for the competitive Implementation Phase grants.

US EPA has allocated $250 million for competitive implementation grants for tribes and territories, with awards available for specific projects between $1 million and $25 million. The core requirements for the CPRG implementation grants are that projects are priority near-term projects that provide GHG reductions and additional community benefits. The development of this PCAP is aligned with these core requirements, identifying the highest priority projects for the Rincon Band to protect community health and reduce local GHG emissions.

The Rincon Band's long-range vision is committed to enhancing the quality of life for Tribal members through climate-sensitive infrastructure enhancements on the Rincon Reservation. The Rincon Band has planned high-priority infrastructure improvements for the Reservation that are intended to be implemented in the near-term as funding becomes available as part of their regularly updated Master Plan. The PCAP builds upon these priorities to provide a quantified GHG emissions context and more detailed analysis of the expected community benefits.

1.1.2 PCAP Overview

The PCAP is focused on infrastructure improvements at the Reservation as priority measures which are guided by key principles of the Tribe's vision of keeping the ambience of the Reservation as rural as possible while advancing economic development and physical improvements to enhance the quality of life of Tribal members. The PCAP provides the GHG emissions context of the Rincon Band's priority infrastructure needs and serves as an integral first step in longer-term comprehensive climate planning to improve existing land uses and guide sustainable future development. The primary elements of this PCAP include:

- A streamlined GHG emissions inventory,
- Quantified GHG reduction measures,
- A co-pollutants benefit analysis,
- The Rincon Band's authority to implement GHG reduction measures, and
- Qualitative discussion on workforce planning.

The development of the PCAP was directed by US EPA guidance documents where applicable, including use of the Tribal Government GHG Inventory Tools to calculate the GHG emissions inventory. The Rincon Band's internal capacity and expertise was expanded through contracting with Ascent to complete GHG emissions analyses, focus tribal engagement efforts, and develop appropriate documentation.

The PCAP is intended to serve as an initial step in the climate planning process, and as such is limited in scope. Data availability and time available for an integrated tribal engagement process were key challenges to the PCAP development. A more detailed and comprehensive assessment of GHG emissions and thorough engagement processes are planned for the CCAP development process. However, the PCAP still serves to align with Rincon Band's highest priorities, which have been documented in other planning processes, such as the Master Plan.

1.2 APPROACH TO DEVELOPING THE PCAP

The PCAP was informed by a GHG emissions inventory for the Rincon Reservation and the near-term infrastructure priorities for the Rincon Band. The GHG emissions inventory developed for the PCAP covers the Rincon Reservation's physical boundary and includes the major GHG emissions sectors and sources, following the Global Protocol for Community-Scale Greenhouse Gas Inventories (also known as GHG Protocol for Cities), version 1.1 (World Resources Institute 2021). The GHG Protocol for Cities is used to develop community wide GHG emissions inventories for jurisdictions with distinct geographical boundaries that are smaller than the typical scale of states or nations, and as such is appropriate for use for many tribal governments. The PCAP inventory has been informed by data from tribal government operations and estimates of emissions sources that are not under direct control of the tribal government. The differentiation of emissions sources that can be directly influenced through near-term infrastructure projects that provide tangible and certain reductions and those that would instead be implemented through policy was an important distinction in the PCAP development. The priority GHG reduction measures that are presented in the PCAP result in GHG emissions reductions from infrastructure projects that can be implemented directly by the Rincon Band tribal government.

To deliver on the Tribe's commitment of advancing physical improvements to enhance quality of life, the Rincon Band has planned improvements to its wastewater treatment system and vehicle fleet infrastructure which are selected as the priority measures for this PCAP. The priority measures were selected based on the capability of mitigating GHG emissions and reducing pollution, improving system efficiency, and better utilizing resources. Infrastructure projects such as those proposed in the PCAP provide significant benefit for the Rincon Band community by preserving essential natural resources, such as groundwater, and providing additional opportunities for employment on the Rincon Reservation.

1.2.1 Stakeholder Engagement

Stakeholder engagement with Tribal Council and Rincon Band community helped to inform the PCAP development process through an engagement strategy. The goal was to increase awareness, promote collaboration, and offer opportunities for all members to engage and become familiar with the process. Due to the accelerated timeline for completing the PCAP, initial engagement on identifying priority GHG reduction measures occurred with the Tribal Council and appropriate Rincon Departments. The final priority measures for inclusion in the PCAP were approved by the Tribal Council. Engagement with Tribal members primarily involved sharing information about the development process and allowing opportunity for members to provide their input on the climate action planning process through the local periodical, The Rincon Voice. A more comprehensive stakeholder engagement processes will be conducted during the development of the CCAP, as the longer planning timeline will allow for opportunities to incorporate tribal member goals and feedback into the vision for the plan.

1.3 SCOPE OF THE PCAP

The scope of the PCAP includes the geographic boundary of the Rincon Reservation. However, the priority GHG reduction measures are focused on infrastructure improvements that can be directly implemented by the Rincon tribal government to realize benefits on the Reservation. The scope of the PCAP is further detailed in this section.

1.3.1 Geographic Boundary

The Rincon Band of Luiseño Indians occupies a 5,240 acres reservation in Valley Center, California. The governmental boundary of the Rincon Reservation is the geographic boundary for the PCAP. Figure 1 shows a map of the boundary of the Rincon Reservation.

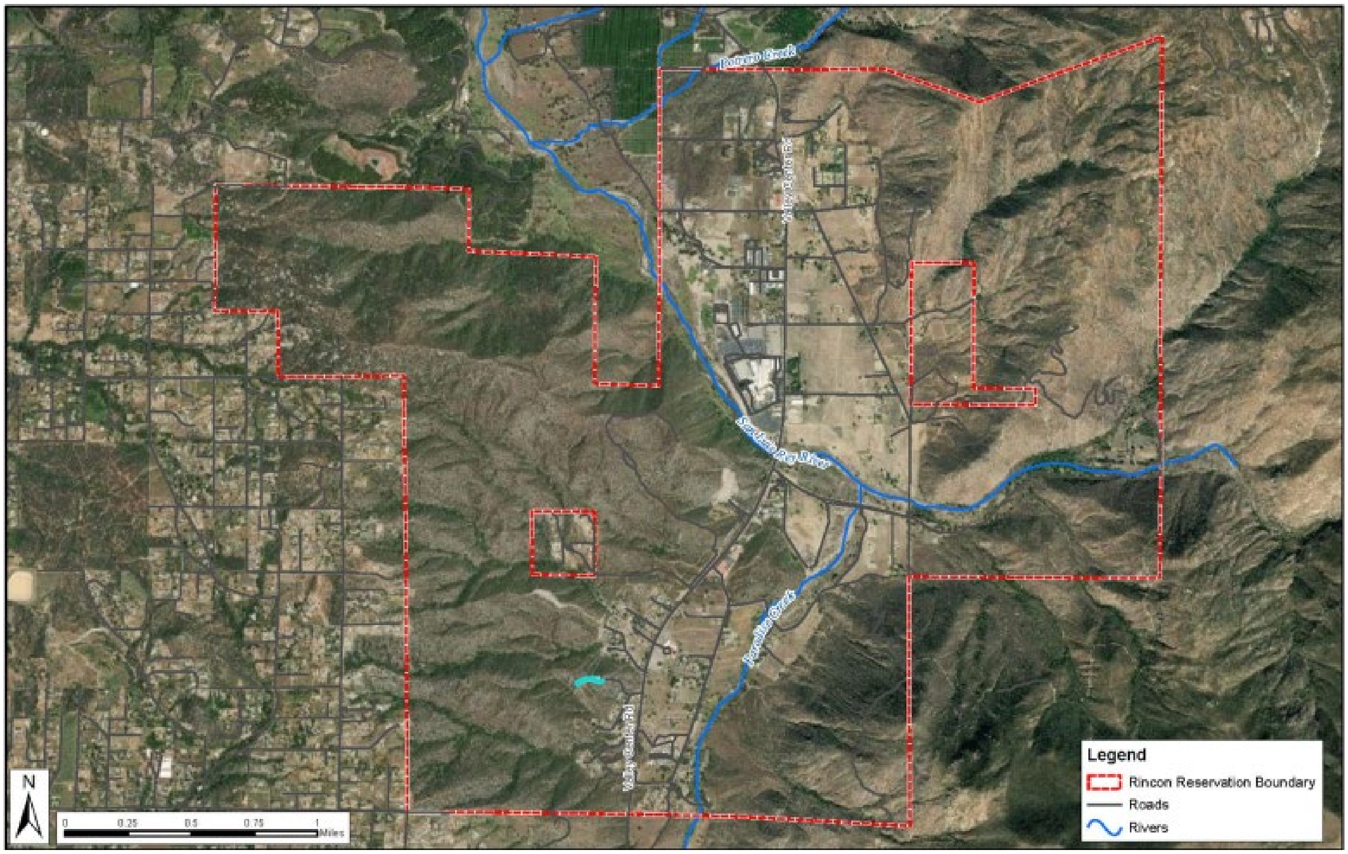

Figure 1 Rincon Band Reservation Map

1.3.2 GHG Emissions Sectors

Primary infrastructure sectors managed by the Rincon Band include water, wastewater, solid waste, government buildings and fleet vehicles. Residences and businesses on the Rincon Reservation consume energy and water, and generate waste, wastewater, and vehicles trips. San Diego Gas & Electric provides electricity and natural gas service to the Rincon Reservation. The Rincon Reservation also contains a gaming facility, hotel, and resort, which are managed separately from Rincon Tribal government operations. The PCAP GHG emissions inventory addresses the following primary GHG emissions sectors in accordance with the GHG Protocol for Cities (World Resources Institute 2021):

- Stationary energy,
- Transportation, and
- Waste.

The GHG Protocol for Cities includes three additional sectors which are not addressed in the PCAP due to either a lack of data available to quantify emissions sources for the sector or the activities not existing on the Rincon Reservation. These excluded sectors include:

- Agriculture, forestry, and other land uses;
- Industrial processes and product use; and
- Other scope 3 emissions sources.

1.3.3 Timeline for Planning and Execution of Measures

The PCAP is focused on infrastructure improvements in the Rincon Reservation that are currently planned priority projects for the Rincon Band. These priority measures have been planned to various degrees at the time of completion of this PCAP. Priority measures related to wastewater treatment plant (WWTP) expansion and transitioning residents from septic to centralized treatment (Measure 2 and Measure 3) has been an ongoing initiative since 1990, with additional design work occurring concurrently with the PCAP development. Additional design work and permitting will be required before project construction can be initiated. The implementation and planning for WWTP efficiency upgrades (Measure 1) is also occurring concurrently with the PCAP as part of the design of the WWTP expansion and sewer system. The installation of hydrogen fueling infrastructure for fleet vehicles (Measure 4) has had preliminary designs developed at the time of PCAP development and is intended to be construction ready in 2025. This project primarily benefits the Tribal Government by supporting reduced fossil fuel consumption in government operations and demonstrating resilient backup power. Section 2.2 provides more detail on the timeline of measure implementation.

2 PCAP ELEMENTS

2.1 GREENHOUSE GAS (GHG) EMISSIONS INVENTORY

The GHG emissions inventory identifies the scale of different GHG emissions sources and assists in development of reduction measures to reduce future GHG emissions. The GHG emissions inventory developed for the PCAP is a community inventory, which assesses all GHG emissions sources within the Rincon Reservation’s boundary, including tribal government operations. The GHG emissions inventory was developed following the GHG Protocol for Cities and utilized the US EPA Tribal Government Inventory Tools for the majority of GHG emissions calculations. The GHG inventory was informed by data obtained from the Rincon Environmental Department and publicly available data sources. The short timeframe for PCAP developed meant that activity data was not able to be obtained for emissions sources that were not directly related to government operations, and as such reasonable estimates were developed for community activities based on available data.

The GHG emissions inventory was conducted for the 2022 activity year. Data collected for government operations was all for the year 2022. Comprehensive community wide data was not directly available for 2022, so the most recent available data sources were used to gain a reasonable estimate of community GHG emissions. Due to data limitations, estimates of emissions generating activities were developed from published data sets from various years, such as the 2018 United States Energy Information Administration (EIA) Commercial Building Energy Consumption Survey. Although these estimates are not tied directly to the year 2022, they provide a reasonable basis for understanding the comparative scale of different communitywide GHG emissions sources.

The GHG emissions sectors included in the GHG inventory are discussed in Section 1.3.2. The individual GHG emissions sources considered under these sectors are expected to reasonably cover the majority of GHG emissions sources considered under the GHG Protocol for Cities framework. These sources have been selected for inclusion due to either their representative scale compared to other emissions sources and/or their ability to be affected through GHG reduction measures directly implemented by the Rincon Band government.

Following the guidance of the GHG Protocol for Cities, the GHG inventory is presented by emissions scope, in addition to emissions sector. The scope of emissions sources indicate the physical location of GHG emissions sources and the level of control a government may have over the sources. The three emissions scopes are described in the following list.

- Scope 1: Emissions that occur within the geographical inventory boundary or are under direct control of the reporting government.

- Scope 2: Emissions that are generated by purchased energy, where the actual energy generation source is outside of the inventory boundary, but the use of that energy is within the inventory boundary (e.g., grid-purchased electricity).
- Scope 3: All other emissions sources that are not included in either scope 1 or scope 2.

The following section summarizes the GHG inventory results with additional detail on methodology and data sources available in the PCAP GHG Emissions Inventory Documentation provided as Appendix A.

2.1.1 Inventory Results

Table 4 below presents the summary of PCAP GHG inventory results and Figure 2 and Figure 3 show source and share of GHG emissions by scope respectively. GHG emissions are reported consistent with the reporting framework recommended by the GHG Protocol for Cities. Results have been converted to carbon dioxide equivalent (CO_2e) using the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potential (GWP) factors (see Appendix A for more detail on GWP).

Table 4 PCAP GHG Inventory by Scope, Sector, and GHG for 2022

GHG Protocol for Cities Category			Annual GHG Emissions by Sector ($MTCO_2e$)			
Sector	Sub-sector	Sub-category	CO_2	CH_4	N_2O	Total
Scope 1						
Stationary Energy	Residential	Propane	1,008	1.3	2.5	1,012
	Commercial	Natural Gas	1,371	3.4	0.7	1,375
	Governmental	Propane	84	0.1	0.2	85
Transportation	On-Road	Residential	664	0.8	6.3	671
		Commercial	2,039	2.5	19	2,061
		Governmental (Employee Commute)	42	0.1	0.4	43
		Governmental (Fleet Vehicles)	188	0.1	2.2	190
	Off-Road	Governmental (Fleet Vehicles)	308	0.1	0.8	309
Waste	Wastewater treatment and discharge (Septic)	Residential	0	497	0	497
	Wastewater treatment and discharge (Centralized treatment)[1]	Commercial	0	0	34	34
Total scope 1 GHG Emissions			**5,704**	**505**	**67**	**6,276**
Scope 2						
Stationary Energy	Residential	Electricity	1,168	1.9	2.3	1,172
	Commercial	Electricity	2,300	3.8	4.6	2,309
	Residential and Non-Residential (Water)	Electricity	126	0.2	0.3	126
	Governmental	Electricity	345	0.6	0.7	346
Total scope 2 GHG Emissions			**3,939**	**6.4**	**7.9**	**3,953**
Scope 3						
Waste	Solid Waste Disposal	Residential and Governmental	0	73	0	73
Total scope 3 GHG Emissions			**0**	**73**	**0**	**73**

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4 = Methane; N_2O = Nitrogen oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent

[1] Wastewater treatment generates biogenic CO_2 emissions which are generated due to biological processes and are not the result of fossil fuel combustion. Hence these GHG emissions are not considered anthropogenic and are not included in GHG emissions inventory.

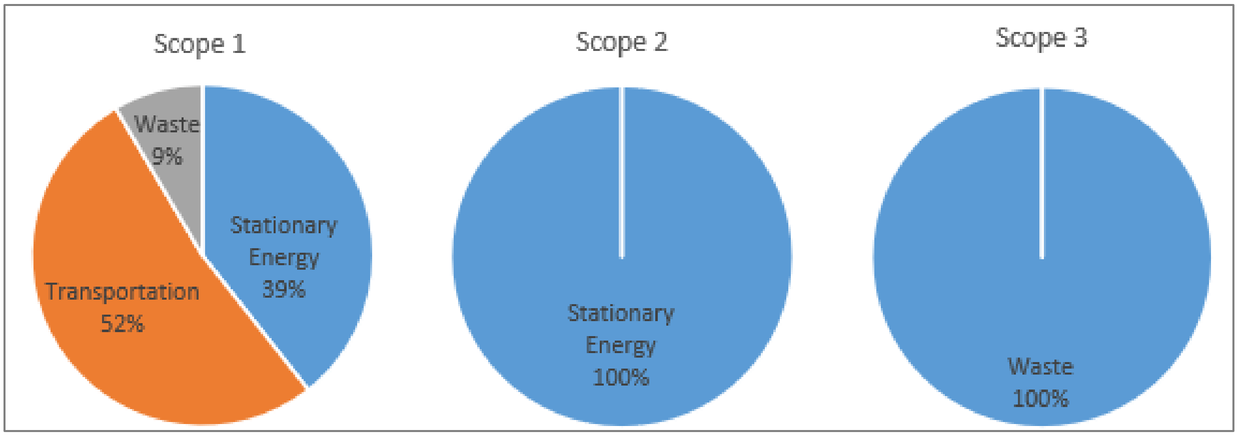

Figure 2 Source of GHG Emissions in Scope 1, Scope 2, and Scope 3

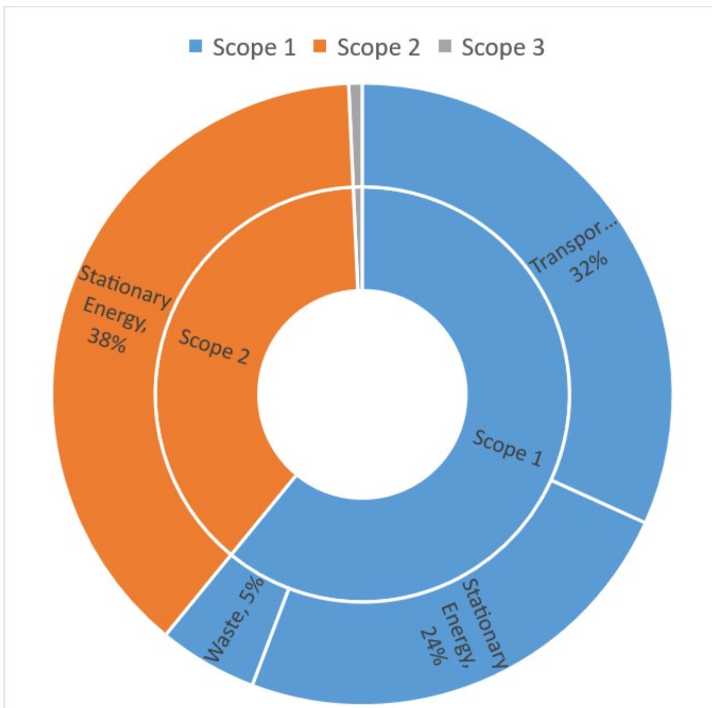

Figure 3 Share of GHG Emissions by Scope

2.2 GHG REDUCTION MEASURES

GHG emissions reduction measures are actions that can be taken by the Rincon Band to reduce GHG emissions generated within the Rincon Reservation's GHG inventory boundary. The GHG reduction measures selected for the PCAP are near-term priority infrastructure projects that both reduce GHG emissions and provide significant community and environmental benefits. These projects are current ongoing initiatives by Rincon's Tribal Council that are in various stages of planning at the time of development of this PCAP and can be implemented directly by the Rincon Tribe to achieve GHG reductions. The Rincon Band's vision is to provide a safe and resilient environment for its members and residents, while also becoming a regional leader in renewable fuel technologies. Efforts to achieve this vision include installation of a solar array and efficiency measures at the Harrah's Resort, and development of an Energy Plan to provide energy infrastructure resilience improvements to residents. The GHG reduction measures presented in this PCAP strive to meet these goals. Details on the emission reduction quantification of GHG measures are provided in Appendix B, and details on the co-pollutant analyses are provided in Appendix C.

MEASURE 1: UPGRADE THE WASTEWATER TREATMENT PLANT BY INCORPORATING SCADA (SUPERVISORY CONTROL AND DATA ACQUISITION) SOFTWARE AND ENERGY EFFICIENCY UPGRADES

Measure 1 includes upgrades to the WWTP located on the Reservation by incorporating SCADA (Supervisory Control and Data Acquisition) software and appropriate efficiency upgrades. SCADA is a type of industrial automation and control system that can optimize facility operations through real-time monitoring, process optimization, energy management, remote monitoring and control. SCADA may need to be coupled with physical upgrades to the WWTP, such as installation of variable frequency drive (VFD) motors that allow for variable power inputs that can be adjusted based on demand by SCADA. SCADA software will help the WWTP operate more efficiently, reducing energy consumption, optimizing resource usage, and minimizing emissions in the following ways:

- By continuously analyzing real-time data, SCADA will help optimize the usage of resources, such as energy and chemicals, to minimize waste and reduce emissions. By monitoring equipment health and performance, SCADA will help identify potential issues before they lead to equipment failures or inefficiencies contributing to overall emissions reduction and reducing the risk of wastewater spills.
- SCADA software will reduce the need for on-site personnel, minimizing travel-related emissions. Remote monitoring also enables faster response times to operational issues, preventing prolonged periods of inefficient operation that could result in increased emissions or wastewater spills.
- Additionally, SCADA systems may include features for monitoring and reporting data that can be converted to GHG emissions estimates.

The WWTP upgrades are being planned concurrently with other wastewater related PCAP measures; however, even without the expansion of the WWTP to support the connection of residential uses (see Measure 2 and Measures 3), the upgrades will still provide significant energy efficiency improvements. The Electric Power Research Institute (EPRI) estimates that in wastewater facilities, 10-20% energy savings are possible through process optimization such as SCADA systems. The GHG emission calculation assumed that the installation of SCADA software at the WWTP will result in 15% energy savings and result in a 15% reduction in scope 2 GHG emissions. Details about the GHG emissions reduction, co-pollutant reductions, and implementation are provided in Table 5. The GHG emissions calculation details are available in Appendix B and the co-pollutant analysis available in Appendix C.

Table 5 Measure 1 Detail

<table>
<tr><th colspan="7">Rincon Tribe Measure 1
Impacted Sectors: Scope 2 Commercial Stationary Energy</th></tr>
<tr><td rowspan="9">Measure 1: Upgrade the wastewater treatment plant by incorporating SCADA (Supervisory Control and Data Acquisition) software and energy efficiency upgrades.</td><td colspan="2">Implementing agency</td><td colspan="4">Rincon Band of Luiseño Indians</td></tr>
<tr><td colspan="2">Implementation milestones</td><td colspan="4">▶ System design and specification (2024)
▶ Tribal Council approval of plans (2024)
▶ Obtain appropriate Clean Water Act permit (2025 – 2026)
▶ Develop and release Request for Proposals and select contractor (2026)
▶ Tribal administrator contract approval (2026)
▶ Installation of SCADA and efficiency improvements (2026)
▶ WWTP staff training (2026)</td></tr>
<tr><td colspan="2">Geographic location</td><td colspan="4">Rincon Reservation</td></tr>
<tr><td colspan="2">Funding sources</td><td colspan="4">US EPA CPRG Program</td></tr>
<tr><td colspan="2">Metrics tracking</td><td colspan="4">Facility annual energy reduction of 15% after project implementation</td></tr>
<tr><td colspan="2">Cost</td><td colspan="4">Cost estimate in progress at time of PCAP development</td></tr>
<tr><td rowspan="2">Annual estimated GHG emission reductions ($MTCO_2e$)</td><td>GHG</td><td>CO_2</td><td>CH_4</td><td>N_2O</td><td>Total</td></tr>
<tr><td>Scope 1</td><td>6.94</td><td>0.01</td><td>0.01</td><td>6.97</td></tr>
<tr><td colspan="2">Co-pollutants benefit analysis results</td><td colspan="4">28,783 kWh annual reduction in energy consumption</td></tr>
</table>

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4= Methane; N_2O = Nitrous oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent; kWh = kilowatt hour.

MEASURE 2: CONNECT NORTH SIDE RESIDENCES TO WASTEWATER TREATMENT PLANT THROUGH SEWER SYSTEM

The WWTP located at the Reservation currently only treats wastewater generated from the casino and hotel. The project under Measure 2 aims to connect all North side residences that currently use on-site septic systems to this WWTP through a sewer system. This will include expansion of the WWTP services to facilitate the associated increases in wastewater flows. Based on a preliminary sewer study conducted by the Rincon Band, the connection of residents to centralized treatment through a sewer system should be divided into two geographical areas, with the San Luis Rey River being the divide between the "North side" and "South side". Measure 2 addresses the connection of residents living on the North side to a sewer system.

The connection of residents to centralized wastewater treatment would provide significant GHG reductions and environmental benefits to the Rincon Band. The treatment of wastewater at centralized plants allows for better control of emissions generating sources than septic systems. The current WWTP on the Rincon Reservation utilizes aerobic processes, which reduce the amount of methane emissions generated compared to anaerobic processes in septic systems. The most significant benefit of Measure 2 is to the health of residences and environmental protection. Currently, old and unmanaged septic tanks on the Reservation leach contaminants into groundwater and the Luis Rey River during the rainy season, when groundwater levels reach the depth of septic tanks. Additionally, some residences utilize above ground wastewater storage that is trucked away, while others have no wastewater management and dump wastewater on the ground, increasing exposure to health hazards and allowing leaching into ground and surface water. Providing sewer and centralized treatment to residences is key to the health and safety of those on the Rincon Reservation, as well as populations downstream the San Luis Rey River. Additionally, transition to sewer and centralized treatment would reduce the costs of septic tank maintenance for Tribal members.

The project under Measure 2 will result in reduced GHG emissions from on-site septic systems; however increased wastewater flow to the WWTP will increase emissions at the WWTP. Overall, a net reduction in scope 1 Waste sector emissions is expected from implementation of Measure 2. The secondary effect of this expansion will be the increase in electricity consumption at the WWTP for processing increased influent. As such, there is an expected increase in

GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. These electricity emissions are expected to decline in the future due to the GHG-free electricity targets set by Senate Bill 1020 and Senate Bill 100 in California. Overall, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project. Details about the GHG emissions reduction, co-pollutant reductions, and implementation are provided in Table 6. The GHG emissions calculation details are available in Appendix B and the co-pollutant analysis available in Appendix C.

Table 6 Measure 2 Detail

Rincon Tribe Measure 2 Impacted Sectors: Scope 1 Residential Wastewater treatment and discharge, Scope 2 Commercial Stationary Energy						
Measure 2: Connect North side residences to Wastewater Treatment Plant through sewer.	Implementing agency		Rincon Band of Luiseño Indians			
	Implementation milestones		▶ System design and specification (2024-2025) ▶ Tribal Council plan approval of plans (2025) ▶ Complete appropriate Environmental Impact Statement documents under National Environmental Policy Act (2025-2026) ▶ Obtain appropriate Clean Water Act permit (2026-2027) ▶ Develop and release Request for Proposals and select contractor (2027) ▶ Construction start (2027-2028) ▶ Construction end (2030-2032)			
	Geographic location		Rincon Reservation			
	Funding sources		US EPA CPRG program			
	Metrics tracking		Connection of 221 residences to sewer system			
	Cost		Cost estimate in progress at time of PCAP development			
	Annual estimated GHG emission reductions ($MTCO_2e$)	GHG	CO_2	CH_4	N_2O	Total
		Scope 1	0	278	(6.81)	271
		Scope 2[1]	(7.92)	(0.01)	(0.02)	(7.95)
		Net Reduction	**(7.92)**	**278**	**(6.82)**	**263**
	Co-pollutants benefit analysis results		▶ 95 tons annual reduction in criteria air pollutants (CAP); ▶ 5 tons annual reduction in hazardous air pollutants (HAP); ▶ 0.000021 tons annual reduction in CAP/HAP[2]; ▶ 32,852 kWh annual increase in energy consumption.			

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4= Methane; N_2O = Nitrous oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent, kWh = kilowatt hour; CAP = Criteria air pollutants; HAP = Hazardous air pollutants.

[1] Reduction is negative which represents an increase in scope 2 emissions.

[2] CAP/HAP is the category of pollutants that can be both a CAP and a HAP. Hence these are listed separately from CAPs and HAPs.

MEASURE 3: CONNECT SOUTH SIDE RESIDENCES TO WASTEWATER TREATMENT PLANT THROUGH SEWER SYSTEM.

Similar to Measure 2, the project under Measure 3 aims to connect all South side residences to this WWTP through a sewer system, with the San Luis Rey River being the dividing line between North side and South side. The same GHG emissions reductions and community benefits for Measure 2 also apply to Measure 3. However, the GHG reductions are slightly lower for Measure 2 as there are 172 residences on the South side, whereas there are 221 on the North side.

The project under Measure 3 will result in reduced GHG emissions from on-site septic; however increased wastewater flow to the WWTP will increase emissions at the WWTP. Overall, a net reduction in scope 1 Waste sector emissions is expected from implementation of Measure 3. The secondary effect of this expansion will be the increase in electricity consumption at the WWTP for processing increased influent. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. These electricity emissions are expected to decline in the future due to the GHG-free electricity targets set by Senate Bill 1020 and Senate Bill 100 in California. Overall, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project. Details about the GHG emissions reduction, co-pollutant reductions, and implementation are provided in Table 7. The GHG emissions calculation details are available in Appendix B and the co-pollutant analysis available in Appendix C.

Table 7 Measure 3 Detail

<table>
<tr><th colspan="7">Rincon Tribe Measure 3
Impacted Sectors: Scope 1 Residential Wastewater treatment and discharge, Scope 2 Commercial Stationary Energy</th></tr>
<tr><td rowspan="11">Measure 3: Connect South side residences to Wastewater Treatment Plant through sewer.</td><td colspan="2">Implementing agency</td><td colspan="4">Rincon Band of Luiseño Indians</td></tr>
<tr><td colspan="2">Implementation milestones</td><td colspan="4">▶ System design and specification (2024-2025)
▶ Tribal Council plan approval of plans (2025)
▶ Complete appropriate Environmental Impact Statement documents under National Environmental Policy Act (2025-2026)
▶ Obtain appropriate Clean Water Act permit (2026-2027)
▶ Develop and release Request for Proposals and select contractor (2027)
▶ Construction start (2027-2028)
▶ Construction end (2030-2032)</td></tr>
<tr><td colspan="2">Geographic location</td><td colspan="4">Rincon Reservation</td></tr>
<tr><td colspan="2">Funding sources</td><td colspan="4">US EPA CPRG program</td></tr>
<tr><td colspan="2">Metrics tracking</td><td colspan="4">Connection of 172 residences to sewer</td></tr>
<tr><td colspan="2">Cost</td><td colspan="4">Cost estimate in progress at time of PCAP development</td></tr>
<tr><td rowspan="4">Annual estimated GHG emission reductions ($MTCO_2e$)</td><td>GHG</td><td>CO_2</td><td>CH_4</td><td>N_2O</td><td>Total</td></tr>
<tr><td>Scope 1</td><td>0</td><td>216</td><td>(5.30)</td><td>211</td></tr>
<tr><td>Scope 2[1]</td><td>(6.17)</td><td>(0.01)</td><td>(0.01)</td><td>(6.19)</td></tr>
<tr><td>Net Reduction</td><td>(6.17)</td><td>216</td><td>(5.31)</td><td>205</td></tr>
<tr><td colspan="2">Co-pollutants benefit analysis results</td><td colspan="4">▶ 74 tons annual reduction in criteria air pollutants (CAP);
▶ 4 tons annual reduction in hazardous air pollutants (HAP);
▶ 0.000017 tons annual reduction in CAP/HAP[2];
▶ 25,568 kWh annual increase in energy consumption.</td></tr>
</table>

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4= Methane; N_2O = Nitrous oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent; kWh = kilowatt hour; CAP = Criteria air pollutant; HAP = Hazardous air pollutant.

Numbers in parentheses represent negative values

1 Reduction is negative which represents an increase in scope 2 emissions.

2 CAP/HAP is the category of pollutants that can be both a CAP and a HAP. Hence these are listed separately from CAPs and HAPs.

MEASURE 4: DEVELOP A HYDROGEN HUB AND CONVERT THE TRIBAL LAW ENFORCEMENT (TLE) FLEET TO HYDROGEN FUEL CELL ELECTRIC VEHICLES (FCEV)

Measure 4 aims to develop, construct, commission, and operate a grid-connected Hydrogen Hub system comprising an electrolyzer, storage, and dispensing system to serve five Tribal Law Enforcement (TLE) vehicles and a fuel cell backup generator. This will include replacement of gasoline and diesel TLE vehicles with Hydrogen Fuel Cell Electric Vehicles (FCEV). Deployment of this system will reduce Tribal reliance on fossil fuel consumption and associated emissions as well as demonstrate resilient backup power.

The Hydrogen Hub project has been partially funded through the United States Department of Energy Regional Clean Hydrogen Hubs program and is currently in planning stages with San Diego Gas & Electric as partner. The project reaches towards the Rincon Band's goal of becoming a regional hydrogen fuel leader, to reduce local GHG emissions and diversify economic opportunities for Rincon Band members and the tribe as a whole.

For estimating GHG emission reduction from this project, it was assumed that the installation of the hydrogen hub system will replace the entire TLE vehicle fleet. This will result in a reduction of gasoline and diesel consumption resulting in a reduction of associated GHG emissions. Since these GHG emissions will be generated inside the Reservation's boundaries, these will be scope 1 Transportation GHG emissions. The implementation of this measure will reduce all scope 1 GHG emissions from TLE vehicle fleet. The secondary effect of this project will be the increase in electricity consumption to power the hydrogen electrolyzer. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. However, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project as summarized in Table 8. The GHG emissions calculation details are available in Appendix B and the co-pollutant analysis available in Appendix C.

Table 8 Measure 4 Detail

<table>
<tr><th colspan="7">Rincon Tribe Measure 4
Impacted Sectors: Scope 1 Governmental (Fleet Vehicles) On-Road Transportation, Scope 2 Commercial Stationary Energy</th></tr>
<tr><td rowspan="11">Measure 4: Develop a Hydrogen Hub and convert the Tribal Law Enforcement (TLE) fleet to hydrogen fuel cell electric vehicles (FCEV)</td><td colspan="2">Implementing agency</td><td colspan="4">Rincon Band of Luiseño Indians and San Diego Gas & Electric (SDG&E) Company</td></tr>
<tr><td colspan="2">Implementation milestones</td><td colspan="4">▶ Detailed project planning (2024)
▶ Tribal Council plan approval of plans (2025)
▶ Project development (2025)
▶ Construction starts (2025)
▶ Construction ends (2027)
▶ Purchase of hydrogen fueled fleet vehicles (2028)
▶ Project sustained operation (2028)</td></tr>
<tr><td colspan="2">Geographic location</td><td colspan="4">Rincon Reservation</td></tr>
<tr><td colspan="2">Funding sources</td><td colspan="4">US Department of Energy Regional Clean Hydrogen Hubs (partial)</td></tr>
<tr><td colspan="2">Metrics tracking</td><td colspan="4">Purchase and fueling of TLE fleet vehicles with hydrogen generated on site.</td></tr>
<tr><td colspan="2">Cost</td><td colspan="4">$16,300,000</td></tr>
<tr><td rowspan="4">Annual estimated GHG emission reductions ($MTCO_2e$)</td><td>GHG</td><td>CO_2</td><td>CH_4</td><td>N_2O</td><td>Total</td></tr>
<tr><td>Scope 1</td><td>65</td><td>0.03</td><td>0.71</td><td>66</td></tr>
<tr><td>Scope 2[1]</td><td>(37)</td><td>(0.06)</td><td>(0.07)</td><td>(37)</td></tr>
<tr><td>Net Reduction</td><td>28</td><td>(0.03)</td><td>0.64</td><td>29</td></tr>
<tr><td colspan="2">Co-pollutants benefit analysis results</td><td colspan="4">▶ Reduction of 2,098 gallons of gasoline consumption annually;
▶ Reduction of 4,599 gallons of diesel consumption annually;
▶ 188,602 kWh annual increase in energy consumption.</td></tr>
</table>

Notes: GHG = Greenhouse Gas; CO_2 = carbon dioxide; CH_4= Methane; N_2O = Nitrous oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent; kWh = kilowatt hour.

Numbers in parentheses represent negative values.

[1] Reduction is negative which represents an increase in scope 2 emissions.

2.3 BENEFITS ANALYSIS

While the measures included in this PCAP provide GHG reductions, they also serve to significantly improve the public health of Rincon Reservation residents through reduction of both air pollutants and environmental contaminants. This section outlines the methods used to develop a co-pollutant benefits analysis for implementation of the GHG reduction measures, including how the baseline was determined, and additional community benefits that would be achieved with implementation.

2.3.1 Co-Pollutant Inventory

This section presents the co-pollutants inventory of sources affected by this PCAP in relation to the 2020 National Emissions Inventory (US EPA 2020) and provides San Diego County total co-pollutant emissions data from these sources. The GHG reduction measures proposed in the PCAP impact co-pollutants from the following sources: wastewater treatment facility, passenger trucks, and electricity. Base-year co-pollutant emissions from electricity related sources are not quantified in this PCAP co-pollutants inventory because electricity at the Reservation is sourced from outside the Reservation and county boundaries. In such a case, US EPA does not require quantifying base year emissions occurring outside of the jurisdiction (US EPA 2023). Table 9 provides description of the sources and source types along with the associated GHG reduction measures. Table 10 presents base year co-pollutant emissions inventory at San Diego County scale from sources impacted by the GHG reduction measures.

Table 9 Relation of GHG Reduction Measures to Co-pollutant Baseline Sources

GHG Reduction Measures	Impacted Source	Impacted Source Type
Measure 1	Point source	Wastewater Treatment Facility
Measure 2	Point source	Wastewater Treatment Facility
Measure 3	Point source	Wastewater Treatment Facility
Measure 4	Mobile Source	Passenger Truck

Table 10 Co-pollutant Baseline Inventory from Sources Impacted by GHG Reduction Measures in Tons

Source Type	CAP	HAP	CAP/HAP[1]
Wastewater Treatment Facility	470	25	0.000106
Passenger Truck	24,417	586	-
Total	**24,887**	**611**	**0.000106**

Notes: CAP = Criteria air pollutant; HAP = Hazardous air pollutant

[1] CAP/HAP is the category of pollutants that can be both a CAP and a HAP. Hence these are listed separately from CAPs and HAPs.

2.3.2 Co-Pollutants Benefits Analysis from the Measures

The priority GHG reduction measures identified by the Rincon Band for this PCAP provide multiple environmental protection benefits like reduction of criteria air pollutants (CAP) and hazardous air pollutants (HAP), provide resource conservation and public health benefits, as well as reduce Tribal reliance on fossil fuel consumption. Table 11 presents the results of co-pollutants benefit analysis and list associated community benefits from each GHG reduction measure.

Table 11 Co-Pollutants Benefit Analysis by GHG Reduction Measure

GHG Reduction Measures	Co-Pollutants Benefit Analysis Results	Community Benefits
Measure 1	▶ 28,783 kWh annual reduction in energy consumption	▶ Efficient resource management
Measure 2	▶ 95 tons annual reduction in criteria air pollutants (CAP); ▶ 5 tons annual reduction in hazardous air pollutants (HAP); ▶ 0.000021 tons annual reduction in CAP/HAP[1]; ▶ 32,852 kWh annual increase in energy consumption.	▶ Groundwater quality improvement ▶ Surface water quality improvement ▶ Cost-effectiveness
Measure 3	▶ 74 tons annual reduction in criteria air pollutants (CAP); ▶ 4 tons annual reduction in hazardous air pollutants (HAP); ▶ 0.000017 tons annual reduction in CAP/HAP[1]; ▶ 25,568 kWh annual increase in energy consumption.	▶ Groundwater quality improvement ▶ Surface water quality improvement ▶ Cost-effectiveness
Measure 4	▶ Reduction of 2,098 gallons of gasoline consumption annually; ▶ Reduction of 4,599 gallons of diesel consumption annually; ▶ 188,602 kWh annual increase in energy consumption.	▶ Clean energy job opportunities; ▶ Access to safe, reliable, and affordable energy

Notes: CAP = Criteria air pollutant; HAP = Hazardous air pollutant; kWh = Kilowatt hour

[1] CAP/HAP is the category of pollutants that can be both a CAP and a HAP. Hence these are listed separately from CAPs and HAPs.

The connection of residences to the existing WWTP resulting and discontinued use of septic tanks will reduce septic seepage into groundwater and surface water. This treatment of wastewater from residences in the WWTP will protect the environment by removal of pollutants and contaminants before discharging the treated water back into the environment. The Rincon Reservation is in the northeastern corner of San Diego County, at the headwaters of San Luis Rey River. The San Luis Rey River watershed is home to a variety of plant and animal life, including several endangered species. The river is also a popular destination for recreation, including hiking, biking, and fishing. Connecting residences to the WWTP will help maintain a higher level of water quality at the river, preserving aquatic ecosystems and reducing the risk of waterborne diseases to the Tribal community. Additionally, the upgrade of the WWTP by installing SCADA will ensure benefits ranging from environmental protection and public health to efficient resource management and regulatory compliance.

Deployment of a hydrogen hub to fuel the Tribal Law Enforcement vehicles will reduce Tribal reliance on fossil fuel consumption and associated emissions as well as demonstrate resilient backup power. The project would provide demonstrable benefits to community resiliency and decarbonization. Through skill building and training tasks, the project would enable Rincon Band to provide new clean energy job opportunities to members of the Tribal community. This project would serve as a model reference for deployment of hydrogen in remote Tribal areas. Facilitating tribal communities to equitably transition to renewable energy resources and ensuring access to safe, reliable, and affordable energy are projected outcomes of the proposed project.

2.4 REVIEW OF AUTHORITY TO IMPLEMENT

The Rincon Band of Luiseño Indians is a sovereign government with jurisdiction over the Rincon Indian Reservation. The Rincon Band of Luiseño Indians meets the definitions in 40 CFR §131.3 (k) and (l), pursuant to 78 Fed. Reg. 26384, 26387 (May 6, 2013). The Reservation includes all lands identified in an Executive Order of the President issued on March 2, 1881; the Mission Indian Relief Act, 26 Stat. 712 (1891); the trust patent issued by the President on September 13, 1892; the Act of Congress of August 16, 1941, 55 Stat. 622; the February 12, 1968 Order setting aside land for the Tribe; and, the trust patent issued on January 20, 1971 adding to the Rincon Reservation. The Rincon Band of Luiseño

Indians, in order to protect the health, safety, and general welfare of its members, residents, and guests, exercises regulatory authority over all lands within the exterior boundaries of the Rincon Indian Reservation.

The GHG reduction measures included in the PCAP can be directly implemented by the Rincon Band with appropriate permitting from federal agencies. Table 12 lists the priority measures with the respective implementing authority.

Table 12 Review of Authority to Implement for GHG Reduction Measures

GHG Reduction Measures	Implementing Authority	Has Existing Authority?	Authority to Implement Milestones
Measure 1: Upgrade the wastewater treatment plant by incorporating SCADA software and energy efficiency measures.	Rincon Band of Luiseño Indians Tribal Council	Yes – with appropriate Clean Water Act permitting	▶ Tribal Council plan approval of plans (2024) ▶ Obtain appropriate Clean Water Act permit (2025-2026)
Measure 2: Connect North side residences to Wastewater Treatment Plant through sewer.	Rincon Band of Luiseño Indians Tribal Council	Yes – with appropriate Clean Water Act permitting	▶ Tribal Council plan approval of plans (2025) ▶ Obtain appropriate Clean Water Act permit (2026-2027)
Measure 3: Connect South side residences to Wastewater Treatment Plant through sewer.	Rincon Band of Luiseño Indians Tribal Council	Yes – with appropriate Clean Water Act permitting	▶ Tribal Council plan approval of plans (2025) ▶ Obtain appropriate Clean Water Act permit (2026-2027)
Measure 4: Develop a Hydrogen Hub and convert the Tribal Law Enforcement (TLE) fleet to hydrogen fuel cell electric vehicles (FCEV)	Rincon Band of Luiseño Indians in partnership with San Diego Gas and Electric	Yes	▶ Tribal Council approval of plans (2025)

2.5 WORKFORCE PLANNING ANALYSIS

Implementation of the GHG reduction measures in the PCAP would require workers in various trades to successfully complete the projects. Rincon Band has a hiring preference policy that prioritizes Tribal Members and Tribal Owned Businesses in its workforce planning strategies. The policy benefits the community by ensuring cultural sensitivity and attracts Tribal members who may want to work within their community. Rincon Band is also a member of the Southern California Tribal Chairmen's Association (SCTCA), which includes the Nativehire division. With SCTCA, Rincon Band members can access the Nativehire services and programs that provide training and career development opportunities for Rincon Band Tribal members as well as other tribal communities.

With the Rincon Reservation being located in Southern California, there are currently established workforces that can complete the work needed to implement projects included in the GHG reduction measures of the PCAP. Table 13 summarize select industry employment projections data in San Diego County (EDD 2023) and shows growth in the listed industrial employment categories in 10 years. The growth in these workforce sectors demonstrates that there will likely be sufficient workforce in Southern California to complete the work needed for the GHG reduction measures, and that there may be opportunities for tribal members to join these growing workforces.

Table 13 Total Jobs by in the Unincorporated San Diego County

Industrial Employment Category	Base Year Employment Estimate 2020	Projected Year Employment Estimate 2030	Numeric Change 2020-2030	Percentage Change 2020-2030
Construction	**81,300**	**96,900**	**15,600**	**19.2%**
Construction of Buildings	18,600	22,500	3,900	21.0%
Heavy and Civil Engineering Construction	8,000	9,000	1,000	12.5%
Specialty Trade Contractors	54,700	65,400	10,700	19.6%
Foundation, Structure, and Building Exterior Contractors	10,400	12,500	2,100	20.2%
Building Equipment Contractors	23,000	27,100	4,100	17.8%
Building Finishing Contractors	14,900	18,100	3,200	21.5%
Other Specialty Trade Contractors	6,400	7,700	1,300	20.3%
Architectural, Engineering, and Related Services	**24,300**	**29,200**	**4,900**	**20.2%**

Source: Employment Development Department (EDD 2023).

3 NEXT STEPS

The development of this PCAP marks the initiation of climate planning for the Rincon Band and a first step towards development of a CCAP. The CCAP is intended to be completed in 2024 with a comprehensive GHG emissions inventory, an emissions forecast, adoption of emission reduction targets and additional GHG reduction measures to cover all major GHG emissions sources. It will also include more details on implementation actions, cost analysis, and community benefits. The CCAP development will undergo a stronger community engagement process which was not possible with the PCAP due to the limited PCAP development time period.

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Appendix A

GHG Emissions Inventory Documentation

Rincon Band of Luiseño Indians
Priority Climate Action Plan (PCAP)
Draft Greenhouse Gas Emissions Inventory Documentation

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March 1, 2024

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1 INTRODUCTION

The Rincon Band of Luiseño Indians (Rincon Band) is developing a Priority Climate Action Plan (PCAP) under a Climate Pollution Reduction Grant (CPRG). This strategic initiative aims to facilitate investment in policies, practices, and technologies geared towards mitigating greenhouse gas (GHG) and air pollutant emissions, generate high-quality job opportunities, stimulate economic growth, and improve the overall quality of life for all community members. This technical memorandum (memo) describes the major GHG emission sources and activities for developing a community wide GHG emissions inventory (hereafter referred to as PCAP GHG inventory or GHG inventory), which also includes GHG emissions from government operations, and is the first step in the PCAP development process.

2 SUMMARY OF RESULTS

Table 1 below presents a summary of PCAP GHG inventory results and Figure 1 and Figure 2 show sectors and share of GHG emissions by scope respectively. GHG emissions are reported consistent with the reporting framework recommended by the Global Protocol for Community-Scale Greenhouse Gas Inventories Version 1.1 (see Section 3.1 for details on the protocol as well as a definition of scopes). Results have been converted to carbon dioxide equivalent (CO_2e) using the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potential (GWP) factors.

Table 1 PCAP GHG Inventory by Sector and Greenhouse Gas

GHG Protocol for Cities Category[1]			GHG Emissions by Sector ($MTCO_2e$)			
Sector	Sub-sector	Sub-category	CO_2	CH_4	N_2O	Total
Scope 1						
Stationary Energy	Residential	Propane	1,008	1.3	2.5	1,012
	Commercial	Natural Gas	1,371	3.4	0.7	1,375
	Governmental	Propane	84	0.1	0.2	85
Transportation	On-Road	Residential	664	0.8	6.3	671
		Commercial	2,039	2.5	19	2,061
		Governmental (Employee Commute)	42	0.1	0.4	43
		Governmental (Fleet Vehicles)	188	0.1	2.2	190
	Off-Road	Governmental (Fleet Vehicles)	308	0.1	0.8	309
Waste	Wastewater treatment and discharge (septic)	Residential	0	497	0	497
	Wastewater treatment and discharge (centralized treatment)[2]	Commercial	0	0	34	34
Total scope 1 GHG Emissions			**5,704**	**505**	**67**	**6,276**
Scope 2						
Stationary Energy	Residential	Electricity	1,168	1.9	2.3	1,172
	Commercial	Electricity	2,300	3.8	4.6	2,309
	Residential and Non-Residential (Water)	Electricity	126	0.2	0.3	126
	Governmental	Electricity	345	0.6	0.7	346
Total scope 2 GHG Emissions			**3,939**	**6.4**	**7.9**	**3,953**
Scope 3						
Waste	Solid Waste Disposal	Residential and Governmental	0	73	0	73
Total scope 3 GHG Emissions			**0**	**73**	**0**	**73**

Notes: CO_2 = carbon dioxide; CH_4 = Methane; N_2O = Nitrogen oxide; $MTCO_2e$ = Metric tons of carbon dioxide equivalent

[1] The GHG Protocol for Cities is used to develop community wide GHG emissions inventories for jurisdictions with distinct geographical boundaries, and is recommended for use by EPA for tribal GHG emissions inventories.

[2] Wastewater treatment generates biogenic CO_2 emissions which are generated due to biological processes and are not the result of fossil fuel combustion. Hence these GHG emissions are not considered anthropogenic and are not included in GHG emissions inventory.

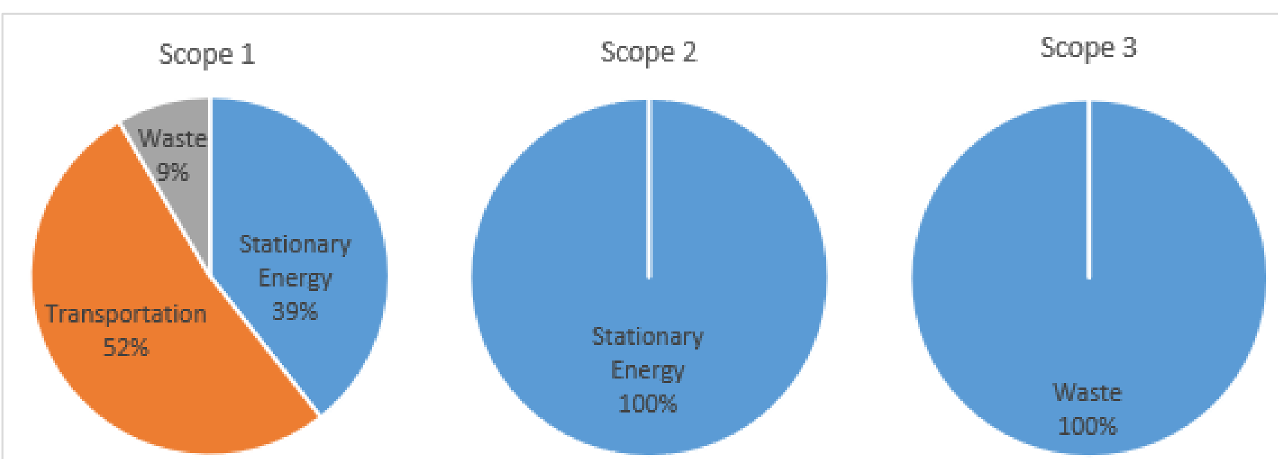

Figure 1 Source of GHG Emissions in Scope 1, Scope 2, and Scope 3

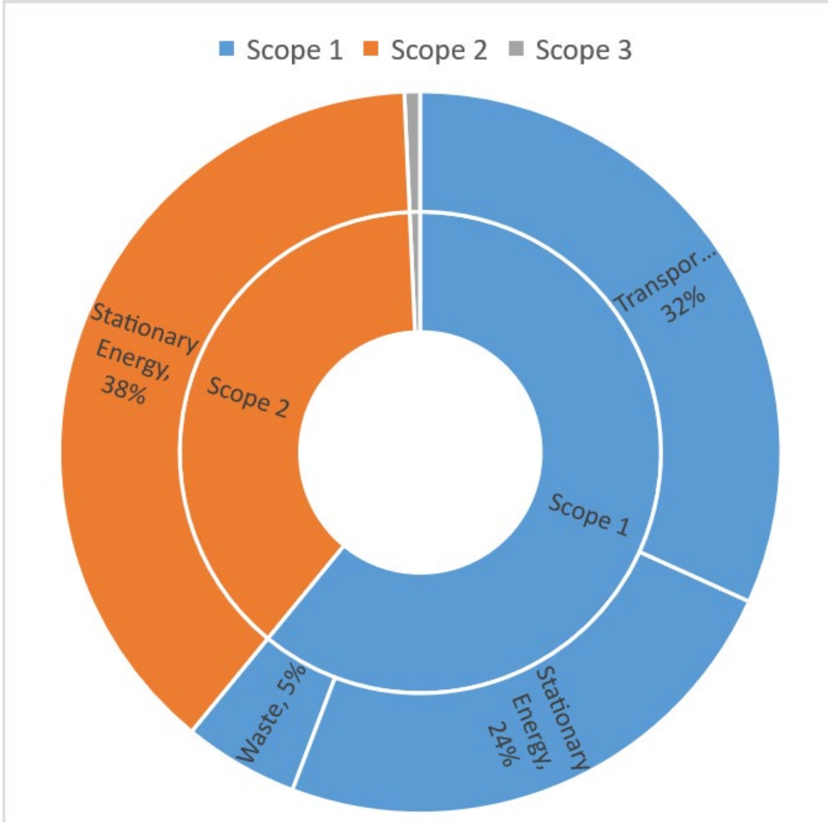

Figure 2 Share of GHG Emissions by Scope

3 GHG INVENTORY METHODOLOGY

This section outlines GHG emissions inventory protocols and methods used for developing the PCAP GHG inventory, discusses GHG inventory boundaries, and describes the GHG emissions sectors and sources that are included in the GHG inventory. It also describes the main data inputs used for GHG emissions estimates (known as activity data), methods for estimating activity data, and assumptions used in the GHG inventory.

3.1 GHG EMISSIONS GLOBAL PROTOCOL FOR COMMUNITY-SCALE GREENHOUSE GAS INVENTORIES

Several GHG inventory protocols have been developed to provide guidance for governments to account for GHG emissions accurately and consistently. As recommended by the U.S. Environmental Protection Agency (EPA), the Global Protocol for Community-Scale Greenhouse Gas Inventories (also known as GHG Protocol for Cities), version 1.1 (World Resources Institute 2021) is used for estimating and reporting GHG emissions for the PCAP GHG inventory. The GHG Protocol for Cities is used to develop community wide GHG emissions inventories for jurisdictions with distinct geographical boundaries that are smaller than the typical scale of states or nations, and as such is appropriate for use for many tribal governments. The GHG Protocol for Cities recommends reporting GHG emission sources by both emissions "scope" and emissions "sector". The scope of emissions sources indicate the physical location of GHG emissions sources and the level of control a government may have over the sources. The three emissions scopes are described in the following list.

- Scope 1: Emissions that occur within the geographical inventory boundary or are under direct control of the reporting government.
- Scope 2: Emissions that are generated by purchased energy, where the actual energy generation source is outside of the inventory boundary, but the use of that energy is within the inventory boundary (e.g., grid-purchased electricity).
- Scope 3: All other emissions sources that are not included in either scope 1 or scope 2.

The GHG emissions sector further organizes emissions reporting based on the activity that generates emissions. There are six primary sectors included in the GHG Protocol for Cities; however, all these sectors do not exist or do not contribute significant emissions in the Rincon Reservation. The six GHG emissions sectors include:

- Stationary energy,
- Transportation,
- Waste,
- Industrial processes and product use,
- Agriculture, forestry, and other land use, and
- Other scope 3 emissions sources.

The three primary sectors relevant to the Rincon Reservation are the Stationary energy, Transportation, and Waste sectors. The GHG emissions sectors can be further organized into sub-sectors and sub-categories to provide better detail to GHG emissions reporting.

3.1.1 Tribal Greenhouse Gas Inventory Tool

EPA has provided the Tribal Greenhouse Gas Inventory Tool (TGIT) (community module and government module) to support tribal communities in evaluating their GHG emissions following the GHG Protocol for Cities. For developing Rincon Band's GHG inventory, this tool was used for estimating GHG emissions for most sectors and sources. For sectors and sources where the TGIT was not compatible, the GHG emissions were estimated externally from the TGIT following the GHG Protocol for Cities.

3.2 GEOGRAPHIC BOUNDARY

The Rincon Band of Luiseño Indians occupies an approximately 5,240 acres reservation in Valley Center, California. The governmental boundary of the Rincon Reservation is the geographic boundary for the PCAP. Figure 3 shows a map of the Rincon Band's boundaries and Table 2 shows the Reservation's demographic data used for developing the GHG inventory.

Table 2 Demographics Data for the Rincon Band

Demographics	Total Count
Population	1,800
Number of residences	395
Number of Rincon Band Government Employees	152

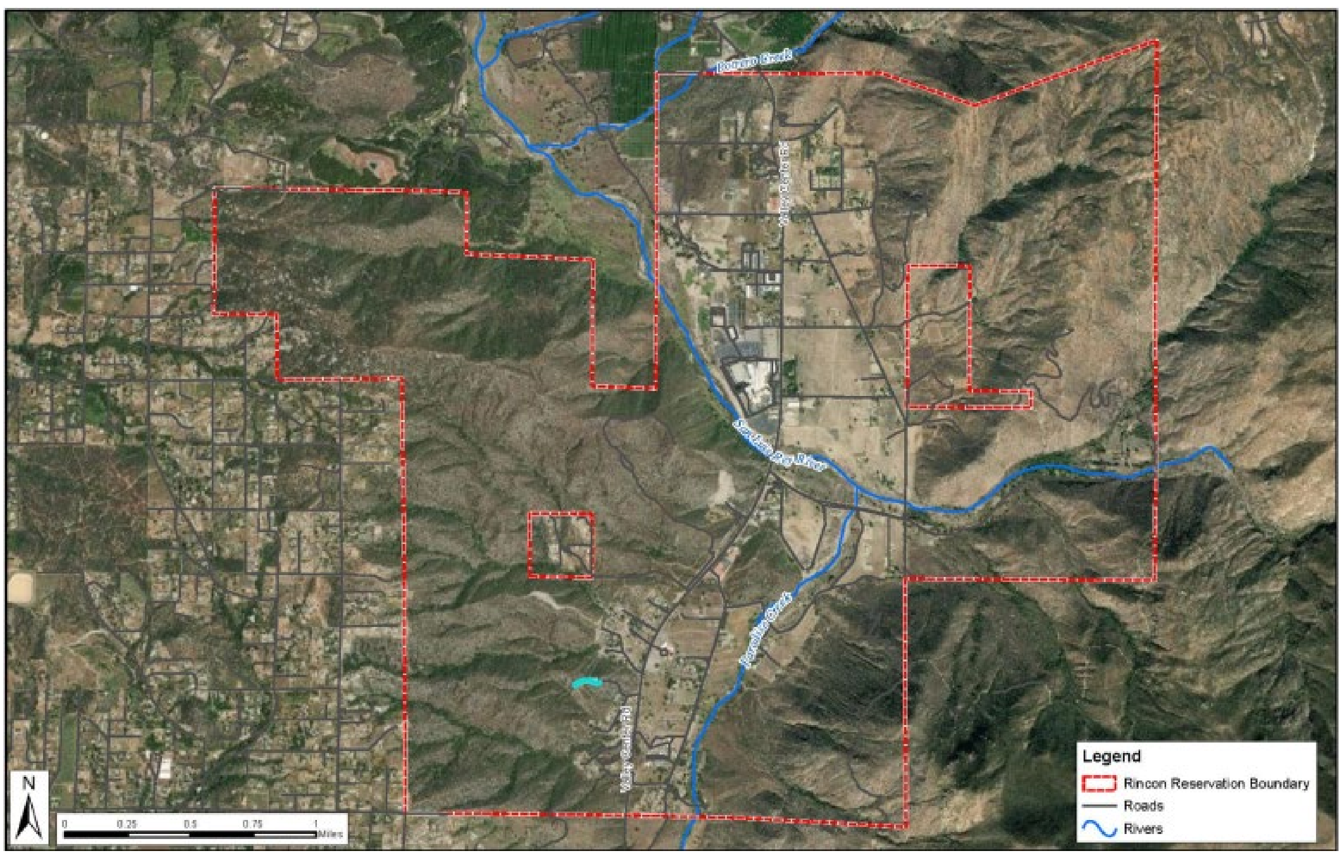

Figure 3 Rincon Band Reservation Map

3.3 TIME PERIOD

The GHG emissions inventory was conducted for the 2022 activity year. Data collected for government operations was all for the year 2022. Comprehensive community wide data was not directly available for 2022, so the most recent available data sources were used to gain a reasonable estimate of community GHG emissions. Due to data limitations, estimates of emissions generating activities were developed from published data sets from various years, such as the 2018 United States Energy Information Administration (EIA) Commercial Building Energy Consumption Survey. Although these estimates are not tied directly to the year 2022, they provide a reasonable basis for understanding the comparative scale of different communitywide GHG emissions sources. 2022 is used as the baseline year for this GHG inventory as this is the most recent year for which activity data for estimating GHG emissions were available.

3.4 GREENHOUSE GASES

The GHG Protocol for Cities recommends reporting the following seven gases for a GHG inventory: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), and nitrogen trifluoride (NF_3). The GHG inventory for Rincon Band accounts for the three most common and dominant gases reported in most local inventories of similar scale: CO_2, CH_4, and N_2O. GHG emissions from other gases were not estimated because these are either not generated within the Reservation boundary or activity data and/or emissions factors for estimating GHG emissions from these gases was not available.

This PCAP GHG inventory utilizes AR5 100-year GWP factors[1] to assess the relative warming potential of these gases compared to CO_2e. Converting all GHG emissions to CO_2e allows for reporting all GHGs using the same metric. Table 3 shows the AR5 GWP factors used in the PCAP GHG Inventory.

Table 3 AR5 GWP Factors used in the PCAP GHG Inventory

Gas	Carbon dioxide (CO_2)	Methane (CH_4)	Nitrous oxide (N_2O)
100-year GWP	1	28	265

3.5 APPROACHES FOR ESTIMATING GHG EMISSIONS FOR A PCAP INVENTORY

This section outlines the options available for developing PCAP GHG inventory as recommended by EPA and describes the approach used for developing the PCAP GHG emission inventory for Rincon Band. It also presents the data and sources used for developing this PCAP GHG emission inventory and the rationale for utilizing the selected data sources.

3.5.1 Methodology Options

For a PCAP GHG inventory, EPA recommends utilizing an existing GHG inventory (national, state, regional, or local) that can be scaled[2] down for developing a representative GHG emissions inventory for a given tribe, to allow for a streamlined inventorying process (EPA 2023a). This scaling approach differs from the typical GHG inventory development process, where instead of collecting or estimating activity data specific to the Rincon Reservation, a larger set of emissions data would be used to scale down the emissions generating activity based on a reasonable scaling factor such as population or economic activity. An example of scaling would be taking statewide energy

[1] GWP is a measure used to compare the potency of different GHGs in terms of their ability to trap heat in the atmosphere over a specific time period. The 100-year GWP factor is a measure used to quantify the relative contribution of a GHG to global warming over a 100-year period compared to carbon dioxide which is assigned a GWP of 1 and is referred to as carbon dioxide equivalent (CO_2e).

[2] EPA suggests that emissions for a locality can be scaled up from local GHG inventories that are similar in scope to the desired inventory, or they can be scaled down from state, regional, or national level data using the appropriate scaling factors related to geography or reporting year (EPA 2023a).

consumption and dividing it by the total statewide population to get energy consumption per capita, and then applying this energy consumption per capita to the Rincon Reservation population. Several existing inventories were reviewed to identify data that could be used to scale GHG emissions from a larger geographical boundary down to represent the Rincon Reservation boundary, including national, statewide, and regional GHG emissions inventories. However, these inventories were determined to have inconsistent base data compared to that available for the Rincon Band or to not cover the Rincon Reservation within the inventory boundary. Therefore, it was concluded that estimating GHG emissions from estimates of Rincon Reservation specific activity data would constitute the most optimal approach to developing the PCAP GHG inventory. Table 4 provides an overview of the data sets reviewed and the rationale for them not being utilized to scale GHG emissions to the Rincon Reservation.

Table 4 GHG Emissions Datasets Reviewed for Emissions Scaling Opportunities

GHG Emissions Data Set	Dataset Boundary	Reasoning for Inapplicability to Rincon GHG Inventory
US Environmental Protection Agency Inventory of U.S. Greenhouse Gas Emissions and Sinks by State(EPA 2023b), 2020 National Emissions Inventory (EPA 2020)	United States of America	The GHG emissions reporting for this data set did not allow for estimating per capita emissions estimates that represent activity on the Rincon Reservation. The primary activities for Rincon Reservation are residential and commercial energy use, transportation, and waste generation. Scaling from this data set would not allow differentiation between residential, commercial, and industrial GHG emissions generating activities and has the potential to represent a significant overestimation of Rincon's emissions.
California's 2000-2021 GHG Inventory (CARB 2023)	State of California	The GHG emissions reporting for this data set did not allow for estimating per capita emissions estimates that represent activity on the Rincon Reservation. The primary activities for Rincon Reservation are residential and commercial energy use, transportation, and waste generation. Scaling from this data set would not allow differentiation between residential, commercial, and industrial GHG emissions generating activities and has the potential to represent a significant overestimation of Rincon's emissions.
San Diego County Climate Action Plan Update GHG Emissions Inventory (San Diego County 2023)	County of San Diego	The GHG emissions inventory for San Diego County does not include tribal government lands and as such does not include the Rincon Reservation within its inventory boundary. Therefore, this data set was considered inappropriate for scaling GHG emissions to the Rincon Reservation.

The activity data for developing Rincon Band's PCAP GHG emissions inventory was either estimated based on available data for the Reservation or collected directly from government operations activity data. Table 5 below provides an overview of the activity data that was used to develop the GHG emissions inventory and methods for estimating activity data where data was not available. The data is organized by sector, sub-sector, and sub-categories as per GHG Protocol for Cities, and includes the process for data collection, the approach and input data used to estimate activity data where data was not available, the sources for all data, and the approach used for developing the GHG emissions estimates associated with each source.

Table 5 Data Review Matrix for the PCAP GHG inventory

GHG Protocol for Cities Categorization			Activity Data	Process for collecting Activity Data (External/Site-specific)	Approach for Estimating Activity Data (if applicable)	Input data for Activity Data Estimation (if applicable)	Data Source	GHG inventory Development Approach (TGIT/ external calculations)
Sector	Sub-sector	Sub-category						
Scope 1								
Stationary Energy	Residential	Propane	176,170 gallons of annual propane consumption	Estimated based on external data source	Annual propane consumption estimated based on number of residences on Reservation and average propane consumption per household.	1. 395 residences 2. 446 gallons of propane per household per year	1. Provided by Rincon Band 2. Table CE2.5: Annual household site fuel consumption in the West—totals and averages, from U.S. Energy Information Administration Residential Energy Consumption Survey (EIA 2020)	TGIT community module
	Commercial	Natural Gas	3,268 mcf of annual natural gas consumption in casino	Estimated based on external data source	Average natural gas consumption estimated based on square footage of casino and average natural gas consumption per square footage	1. Casino building area 86,000 sf 2. 38 cf average natural gas consumption per sf of casino building (entertainment or culture subcategory under public assembly buildings)	1. Harrah's Resort SoCal Media Kit (Harrah's 2023) 2. Table C32. Natural gas consumption totals and conditional intensities by building activity subcategories from U.S. Energy Information Administration Commercial Building Energy Consumption Survey (EIA 2018)	
		Natural Gas	21,729 mcf of annual natural gas consumption in hotel	Estimated based on external data source	Average natural gas consumption estimated based on square footage of hotel and average natural gas consumption per square footage	1. Hotel building area 631,648 sf [estimated based on number of standard rooms (935) and suits (152), and area of standard room (440 sf) and average area of suites (1,449 sf)] 2. 34.4 cf average natural gas consumption per sf of hotel buildings (lodging subcategory)	1. Harrah's Resort Southern California (Harrah's ND) and Caesars Rewards (Caesars ND). 2. Table C32. Natural gas consumption totals and conditional intensities by building activity subcategories from U.S. Energy Information Administration Commercial Building Energy Consumption Survey (EIA 2018)	
	Governmental	Propane	14,769 gallons of annual propane consumption in government operations	Site-specific data provided by Rincon Band	NA	NA	Fallbrook Propane Gas billing statements	TGIT government module
Transportation	On-Road	Residential	1,795,874 Vehicle miles traveled (VMT)	Estimated based on external data source	VMT estimated based on number of residences, number of trips per household, percentage of trips by vehicle or motorcycle per household, average trip length, and days to year conversion factor	1. 395 residences 2. 1.5 miles trip length 3. 11.3 trips per household 4. 77.3% trips by vehicle or motorcycle per household 5. 347 days to year conversion factor	1. Provided by Rincon Band 2 Distance from center of Reservation to boundary (measured using Google Maps) 3 San Diego Regional Transportation Study (SANDAG 2016). 4. San Diego Regional Transportation Study (SANDAG 2016). 5. Number of travel days in a year[2]	External calculations using CARB's EMFAC tool
		Commercial	4,342,722 casino and hotel visitor VMT	Estimated based on external data source	Visitor VMT estimated based on number of visitors annually, number of trips per visitor, and average trip length.	1. 1,447,574 casino and hotel visitors 2. 1.5 miles trip length 3. 2 trips per visitor	1. Market Summary Report Southern California (Caesars 2018) 2. Distance from center of Reservation to boundary (measured using Google Maps) 3. Assumption	
			1,172,250 casino and hotel employee VMT	Estimated based on external data source	Employee VMT estimated based on number of employees, number of trips per employee, average trip length, and number of working days in a year.	1. 1,563 casino and hotel employees 2. 1.5 miles trip length 3. 2 trips by employees per day 4. 250 working days in a year	1. Market Summary Report Southern California (Caesars 2018) 2. Distance from center of Reservation to boundary (measured using Google Maps) 3. Assumption 4. Number of working days in a year	
		Governmental (Employee Commute)	114,000 Rincon Band employee VMT	Estimated based on external data source	Rincon Band employee VMT estimated based on number of Rincon Band employees, average trip length, number of trips per employee, and number of working days	1. 152 Rincon Band employees 2. 1.5 miles trip length 3. 2 trips by employees per day 4. 250 working days in a year	1. Provided by Rincon Band 2. Distance from center of Reservation to boundary (measured using Google Maps) 3. Assumption 4. Number of working days in a year	
		Governmental (Fleet Vehicles)	11,842.9 gallons of diesel and 7,665.89 gallons of gasoline[1]	Site-specific data provided by Rincon Band	NA	NA	Provided by Rincon Band	TGIT government module
	Off-Road	Governmental (Fleet Vehicles)	2,650 gallons of diesel and 422 gallons of gasoline[1]	Site-specific data provided by Rincon Band	NA	NA	Provided by Rincon Band	External calculations using emission factors from EPA GHG Emission Factor Hub

GHG Protocol for Cities Categorization			Activity Data	Process for collecting Activity Data (External/Site-specific)	Approach for Estimating Activity Data (if applicable)	Input data for Activity Data Estimation (if applicable)	Data Source	GHG inventory Development Approach (TGIT/ external calculations)
Sector	Sub-sector	Sub-category						
Waste	Wastewater treatment and discharge	Residential Wastewater (septic)[3]	1,800 residents	Site-specific data provided by Rincon Band	NA	NA	Provided by Rincon Band	TGIT community module
	Wastewater treatment and discharge	Commercial Wastewater (centralized treatment)[4]	5,033 average population at casino and hotel including visitors and employees per day	Estimated based on external data source	Total population of visitors and employees based on annual visitors and full-time equivalent employees per day	1. 1,447,574 Annual visitors to casino and hotel 2. 365.25 Year to days conversion factor 3. 1,563 Number of casino and hotel employees 4. 250 working days in a year	1. Market Summary Report Southern California (Caesars 2018) 2. Average number of days in a year 3. Market Summary Report Southern California (Caesars 2018) 4. Total working days in a year	Modifications (done externally) to equations extracted from TGIT community module
Scope 2								
Stationary Energy	Residential	Electricity	4,841,910 kWh annual electricity consumption in Rincon Band residences	Estimated based on external data source	Average electricity consumption estimated based on number of residences, and average electricity consumption per household	1. 395 residences 2. 12,258 kWh of electricity per rural household in Western U.S.	1. Provided by Rincon Band 2. Table CE2.5: Annual household site fuel consumption in the West—totals and averages from U.S. Energy Information Administration Residential Energy Consumption Survey (EIA 2020)	TGIT community module
	Commercial	Electricity	1,135,200 kWh annual electricity consumption in casino	Estimated based on external data source	Average electricity consumption estimated based on square footage of casino and average electricity consumption per square footage	1. Casino building area 86,000 sf 2. 13.2 kWh electricity consumption per sf of casino building (entertainment or culture subcategory under public assembly buildings)	1. Harrah's Resort SoCal Media Kit (Harrah's 2023) 2. Table C22. Electricity consumption totals and conditional intensities by building activity subcategories U.S. Energy Information Administration Commercial Building Energy Consumption Survey (EIA 2018)	
		Electricity	8,211,424 kWh annual electricity consumption in hotel	Estimated based on external data source	Average electricity consumption estimated based on square footage of hotel and average electricity consumption per square footage	1. Hotel building area 631,648 sf [estimated based on number of standard rooms (935) and suits (152), and area of standard room (440 sf) and average area of suites (1,449 sf)] 2. 13 kWh electricity consumption per sf of Hotel buildings (Lodging subcategory)	1. Harrah's Resort Southern California (Harrah's ND) and Caesars Rewards (Caesars ND). 2. Table C22. Electricity consumption totals and conditional intensities by building activity subcategories from U.S. Energy Information Administration Commercial Building Energy Consumption Survey (EIA 2018)	
		Electricity	191,884 kWh annual electricity consumption for operating the wastewater treatment plant	Estimated based on the combination of site-specific data and external data source	Average electricity consumption estimated based on peak capacity of the wastewater treatment plant per million gallon per year	1. Peak capacity of WWTP 350,000 gallons per day 2. 365.25 Days to Year conversion factor 3. 10E-6 gallons to MG conversion factor 4. 1,501 kWh/MG Default energy intensity of WWTPs in South Coast	1. Master Plan for the Rincon Indian Reservation (Rincon Band 2023) 2. 365.25 days of operation of commercial buildings 3. Conversion.com 4. CalEEMoD Version 2022.1, Appendix G, Default Data Tables, Table G-32 (CAPCOA ND)	
	Residential and Non-Residential	Electricity for Water Pumping	520,706 kWh of electricity consumption for pumping water	Estimated based on external data source	Electricity consumption for pumping water estimated based on volume of water pumped and energy intensity	1. 242.47 MG of water pumped 2. 2,148 kWh/MG groundwater energy intensity	1. Surface and Groundwater Reports for water pumping on Rincon Reservation provided by the Rincon Band 2. Embedded Energy in Water Studies 1, 2 and 3. Study 2 - Appendix B. (CPUC 2010)	
	Governmental	Electricity	1,430,260 kWh annual electricity consumption	Site-specific data provided by Rincon Band	NA	NA	San Diego Gas & Electric utility invoices	TGIT government module
Scope 3								
Waste	Solid Waste Disposal	Residential and Governmental	618.5 tons of waste disposed in landfill	Site-specific data provided by Rincon Band	NA	NA	EDCO Waste and Recycling monthly billing statements	EPA's Waste Reduction Model (WARM)

Notes: NA = Not Applicable; kWh = kilowatt hours; VMT = Vehicle Miles Traveled; sf = square feet; mcf = thousand cubic feet; cf = cubic feet; MG = Million Gallons; TGIT = Tribal Greenhouse Gas Inventory Tool; CalEEMod = California Emissions Estimator Model; CARB = California Air Resources Board; WWTP = wastewater treatment plant; EIA = Energy Information Administration; CPUC = California Public Utilities Commission; CAPCOA = California Air Pollution Control Officers Association; WARM = Waste Reduction Model.

[1] Fuel data provided by Rincon Band shown in presented in Table 9 and Table 10.

[2] To convert VMT per day to annual VMT, a day to year conversion factor 347 (instead of 365.25) is used in order to account for fewer trips on weekends.

[3] GHG emissions from the treatment of wastewater occurring within the Reservation's boundary in on-site septic tanks at the residences. The activity data inputs to calculate emissions in the TGIT are population for this emissions source.

[4] GHG emissions from the treatment of wastewater occurring within the Reservation's boundary in the wastewater treatment plant. The activity data inputs to calculate emissions in the TGIT are population for this emissions source.

3.6 GHG EMISSIONS CALCULATIONS BY SCOPE AND SECTOR

This section outlines the approach used for estimating GHG emissions from each sector, sub-sector, and sub-category for the PCAP GHG emissions inventory.

3.6.1 Scope 1

STATIONARY ENERGY

Stationary energy scope 1 GHG emissions for the Rincon Reservation include propane consumption in residences and government buildings and facilities, as well as natural gas consumption at commercial uses. Energy billing records were only available for propane consumption for government operations; therefore, natural gas and propane consumption for residential and commercial buildings were estimated using representative datasets and available data. GHG emissions for the Stationary Energy sub-sector were calculated using the TGIT, with activity data entered into the TGIT provided in Table 6.

Table 6 Activity Data for Residential, Commercial, and Governmental Scope 1 Stationary Energy Sector

Sub-Sector	Residential	Commercial	Governmental
Fuel Type	Propane	Natural Gas	Propane
Fuel Use	176,170	27,271	14,769
Unit	Gallon	Thousand cubic feet (mcf)	Gallon

Residential

Propane

GHG emissions from propane consumption in residences were estimated using the TGIT community module, with annual propane consumption estimated from the EIA Residential Energy Consumption Survey. Annual propane consumption was estimated based on number of residences on the Reservation and average propane consumption per household using data from Table CE2.5: Annual household site fuel consumption in the West—totals and averages, 2020 from the U.S. Energy Information Administration (EIA) Residential Energy Consumption Survey (EIA 2020). Data used to calculate annual propane consumption are provided in Table 6.

Commercial

Natural Gas

GHG emissions from natural gas consumption in the casino and hotel were estimated using the TGIT community module with annual natural gas consumption estimated from the EIA Commercial Buildings Energy Consumption Survey. Annual natural gas consumption was estimated based on square footage of the casino and hotel and average natural gas consumption per square foot.

The square footage of casino was available from Harrah's Resort SoCal Media Kit (Harrah's 2023). The square footage of the hotel was based on average area of room by type and number of rooms, available from Harrah's Resort Southern California website (Harrah's ND) and Caesars Rewards website (Caesars ND). It is important to note that the hotel and casino are located in the same building and hence there are multiple uses captured in the same building footprint. The square footage data used is believed to provide a reasonable estimate of the different uses of floor area. While there may be some overlap of uses within the accounted for areas, (for example the hotel lobby and meeting rooms are on the same floor as the casino), the square footage estimates are expected to capture the majority of commercial floor area.

Average natural gas consumption data was extracted from Table C32. Natural gas consumption totals and conditional intensities by building activity subcategories, 2018 from the U.S. EIA Commercial Energy Consumption Survey (EIA 2018). Natural gas consumption data for casino was obtained from public assembly buildings category under entertainment or culture subcategory and natural gas consumption data for hotel was obtained from hotel buildings category under lodging subcategory (EIA 2018). Data used to calculate annual natural gas consumption are provided in Table 6.

Governmental

Propane

GHG emissions from propane consumption in government operations were estimated using the TGIT government module with annual propane consumption from purchase records. Annual propane consumption in government buildings and facilities was provided by the Rincon Band in the form of monthly compiled purchase records.

TRANSPORTATION

The PCAP GHG inventory only accounts for scope 1 GHG emissions generated from vehicle use within the Reservation's boundary. The GHG Protocol for Cities recommends including both scope 1 and scope 3 GHG emissions for vehicle travel using the origin-destination method. This method requires understanding where vehicle trips begin and end and being able to account for the distance of travel for each trip that occurs within the Rincon Reservation and distance of travel that occurs outside of the Reservation boundary. SANDAG's San Diego Regional Transportation Study and VMT Interactive Map and Parcel Lookup Tool were reviewed as a potential data source for estimating scope 3 GHG emissions, but appropriate data for understanding vehicle trip origins and destinations to estimate vehicle trips outside the Reservation's boundaries that aligned with GHG Protocol for Cities methodologies for scope 3 was not available. Hence, scope 3 GHG emissions were not accounted for developing the PCAP inventory and only scope 1 was accounted for the transportation sector. This section describes methodology for estimating GHG emissions associated with fuel combustion for in-boundary transportation, i.e., fuel combustion for transportation activities occurring within the Reservation's boundary.

TGIT uses fuel consumption as the base data for estimating GHG emissions, which was used to estimate GHG emissions from Government fleet vehicles (on-road and off-road), since fuel purchase records were available. The remainder of sub-categories did not have fuel consumption data available with GHG emissions generating activities based on vehicle miles traveled (VMT). GHG emissions were estimated externally from the TGIT following the GHG Protocol for Cities for these sub-categories.

On-Road

The On-road sub-sector includes GHG emissions generated from on-road fuel-powered passenger and light duty vehicles. Depending on availability, this sub-sector uses fuel consumption or Vehicle miles traveled (VMT) as the activity data. Where fuel consumption data was not available, VMT was estimated based on average trip length and number of trips. The average trip length of a one-way trip was assumed to be the distance from the center of Reservation to the boundary of Reservation (Figure 4) along Valley Center Road, which is approximately 1.5 miles based on distance measured through Google Maps. This distance was used to represent average travel conditions.

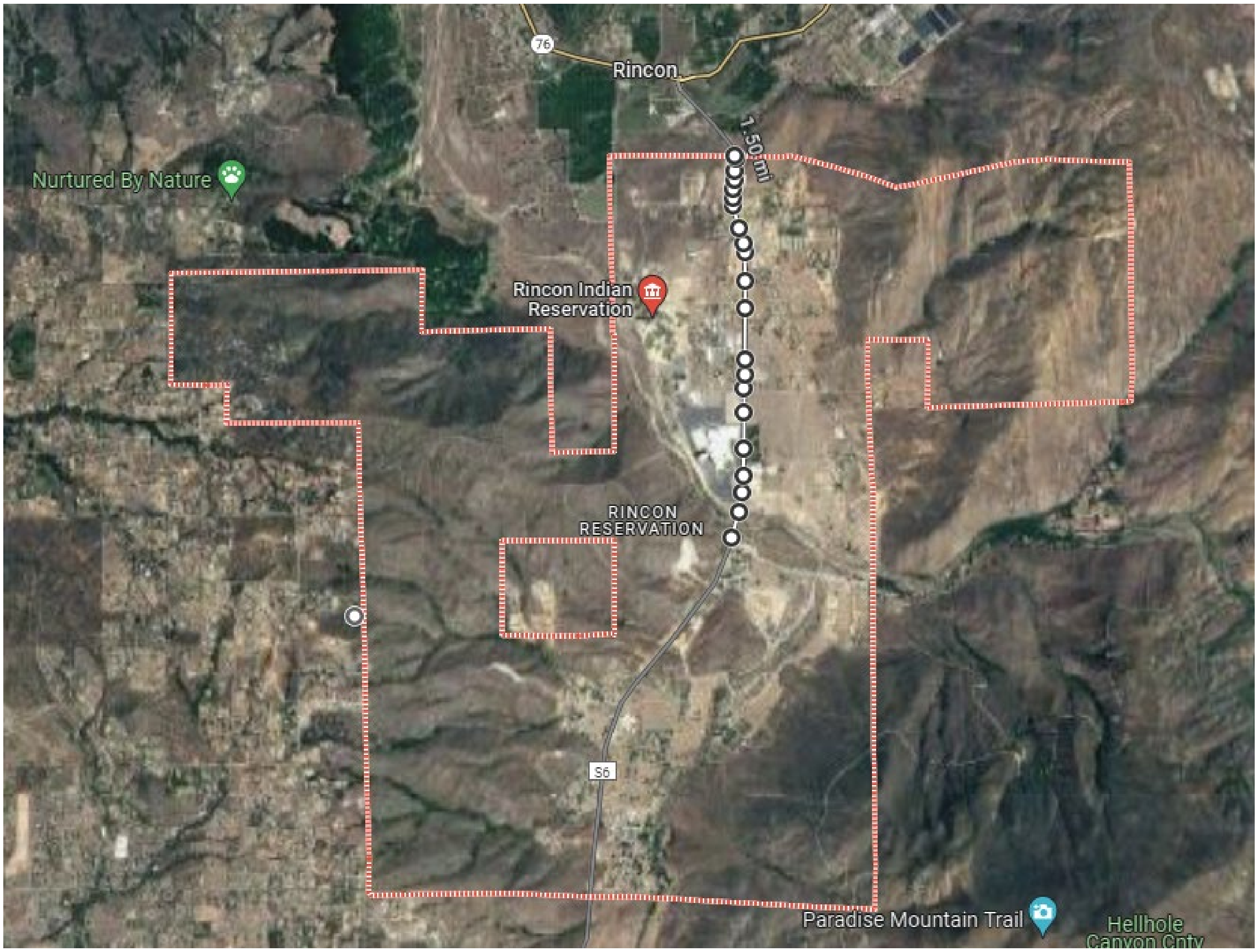

Figure 4 Average Trip Length of a One-Way Trip Measures from the Center of the Reservation to the Boundary of the Reservation (Screenshot from Google Maps)

Residential

The GHG emissions associated with residential on-road transportation were calculated by multiplying the estimated annual VMT and the average vehicle emission factor. Residential VMT was based on number of trips per household and percentage of trips by vehicle or motorcycle per household obtained from San Diego Regional Transportation Study (SANDAG 2016, average trip length, and number of residences. Average trip length was assumed to be the distance from center of Reservation to the boundary (Figure 4). Given the data availability limitations and time constraints for the PCAP submittal timeline, this approach was determined to be a reasonable method to estimate residential VMT at the Reservation.

It was assumed that the vehicle mix and fuel use mix for passenger and light duty vehicles at the Reservation is the same as that of San Diego County. Hence, the Reservation's vehicle emission factor was assumed to be the same as San Diego County's vehicle emission factor estimated using CARB's on-road EMFAC model (CARB 2021).

Commercial

The GHG emissions associated with casino and hotel on-road transportation were calculated by multiplying the estimated annual VMT by casino and hotel visitors and employees and the average vehicle emission factor. VMT was based on number of trips per visitor and employee, average trip length, and number of visitors and employees. Average trip length was assumed to be the distance from center of Reservation to the boundary (Figure 4).

The data for total number of visitors to casino and hotel was available from the Market Summary Report Southern California (Caesars 2018). This estimate only includes the number of guests and not the number of people visiting the casino and hotel for delivery of goods. For estimating annual visitor VMT, it was conservatively assumed that all visitor trips are single occupancy vehicle trips and every visitor makes two trips (one incoming and one outgoing trip) in total. This assumption is understood to possibly overestimate vehicle trips, given many visitors will not be traveling alone to the destination; however, a reasonable estimate for the split between single occupancy vehicle and shared vehicle trips was not available. While this method may overestimate the visitor travel conditions at the casino and hotel, this approach was determined to be the best representation of the visitor travel scenario with available data sources.

The data for total number of casino and hotel employees was available from the Market Summary Report Southern California (Caesars 2018). For estimating annual (casino and hotel) employee VMT, it was assumed that each employee has two trips (one incoming and one outgoing trip) to the hotel in working days[3] each year. While the casino and hotel operate 365 days per year, it is assumed that the total number of employees work an average 5-day work week and are provided personal time off and therefore work an average of 250 days per year.

Similar to residential transportation, the visitors' and employees' vehicle mix and fuel use mix for passenger and light duty vehicles were assumed to be the same as San Diego County's vehicle mix and fuel use mix. Hence, the vehicle emission factors were assumed to be the same as San Diego County's vehicle emission factor estimated using CARB's on-road EMFAC model (CARB 2021).

Governmental (Employee Commute)

The GHG emissions associated with (Rincon Band) employee commute were calculated by multiplying the estimated annual VMT by Rincon Band employees and the average vehicle emission factor. VMT was based on number of trips per employee inside the Reservation's boundaries, average trip length, and number of employees. Appropriate data to estimate employee trips outside the Reservation's boundaries (which is the basis of scope 3 GHG emissions) was not available, hence, scope 3 GHG emissions from employee commute were not accounted for developing the PCAP inventory. Data on the number of Rincon Band employees was provided by the Rincon Band. For estimating annual employee VMT, it was assumed that each employee makes two trips on working days each year and average trip length was assumed to be the distance from center of Reservation to the boundary (Figure 4). The employee vehicle mix and fuel use mix for passenger and light duty vehicles were assumed to be the same as San Diego County's vehicle mix and fuel use mix. Hence, the vehicle emission factors were assumed to be the same as San Diego County's vehicle emission factor estimated using CARB's on-road EMFAC model (CARB 2021).

Table 7 provides average vehicle travel GHG emission factors.

Table 8 provides calculated VMT by sub-category for estimating transportation GHG emissions.

Table 7 Average Vehicle Emission Factor

$MTCO_2$/VMT	$MTCH_4$/ VMT	MTN_2O/ VMT	$MTCO_2e$/ VMT
0.00036971	0.000000016111	0.000000013325	0.00037369

Note: MT = Metric tons; CO_2 = Carbon dioxide, CH_4 = Methane; N_2O = Nitrous oxide; CO_2e = Carbon dioxide equivalent; VMT = Vehicle miles traveled

Table 8 VMT by Sub-Category

Sub-Category	Residential	Commercial (Casino and Hotel)		Governmental (Employee Commute)
		Visitors	Employees	
Vehicle Miles Traveled	1,795,874	4,342,722	1,172,250	114,000

3 The term "working days" refers to the standard workdays in a week (Monday to Friday), excluding weekends. On average, there are around 250 working days in a year (Jain 2023).

<u>Governmental (Fleet Vehicles)</u>

All government operations mobile GHG emissions were considered scope 1 because there is no evidence available to assume that major government operations vehicle travel occurs outside the Rincon boundary. scope 1 GHG emissions from government fleet vehicles were estimated using the TGIT government module, because fuel purchase records were available to accurately estimate fuel consumption. Annual diesel and gasoline consumption in fleet vehicles was provided by the Rincon Band. It was assumed that all gasoline is consumed by light duty trucks and all diesel is consumed by heavy duty vehicles, where a vehicle type was not specific in the provided data. Table 9 summarizes the fuel consumption data used for estimating GHG emissions from the government (vehicle fleet) on-road transportation.

Table 9 Fuel Consumption in Government Vehicle Fleet by Vehicle Type and Fuel Type in Gallons

Vehicle Type	Light Truck		Passenger Car		Heavy Duty Truck	
Fuel Type	Gasoline	Diesel	Gasoline	Diesel	Gasoline	Diesel
Fuel Consumption	6,824	217	841	-	-	11,626

Off-Road

<u>Governmental (Fleet Vehicles)</u>

GHG emissions from off-road government fleet vehicles and equipment were estimated by multiplying the fuel consumption by fuel emission factors available from EPA GHG Emission Hub (EPA 2023c). Annual diesel and gasoline consumption in off-road fleet vehicles and equipment was provided by the Rincon Band. Table 10 presents key details for estimating GHG emissions from the government (vehicle fleet) on-road transportation.

Table 10 Fuel Consumption in Government Off-Road Vehicle Fleet and Equipment by Fuel Type in Gallons

Fuel Type	Gasoline	Diesel
Fuel Consumption	422	2,650

WASTE

Waste scope 1 GHG emissions for the Rincon Reservation include GHG emissions from the treatment of wastewater occurring within the Reservation's boundary in on-site septic tanks and the wastewater treatment plant (WWTP).

Wastewater Treatment and Discharge

This section describes the methodology for estimating GHG emissions associated with wastewater treatment occurring within the Reservation's boundary.

<u>Residential Wastewater</u>

Wastewater generated at all residences on the Reservation is collected and treated through on-site septic tanks. The Reservation at present does not collect granular data from the wastewater treated using septic tanks. Hence, GHG emissions from residential wastewater were estimated using the number of residents data directly. The TGIT community module was used to estimate GHG emissions generated from wastewater collection and treatment for onsite septic tanks. Data on number of residents was provided by the Rincon Band (Table 2).

<u>Commercial Wastewater</u>

Wastewater generated by commercial buildings is collected via a sewer system and treated at a centralized WWTP. The wastewater treatment process is aerobic with nitrification/denitrification processes (Rincon Band, pers. comm., 2024). GHG emissions from commercial wastewater were estimated using the average population of visitors and employees (at the casino and hotel) as the activity data. Total population of visitors and employees was based on annual visitors available from Market Summary Report Southern California (Caesars 2018) and full-time equivalent employees per day (based on number of casino and hotel employees available from Market Summary Report

Southern California and the ratio of total working days and total days in a year). Table 11 provides approximate per day average population of visitors and full-time equivalent employees for estimating commercial wastewater GHG emissions. Equating visitors and employees to population likely leads to an overestimation of the wastewater generated at the casino and hotel, as certain home activities do not occur for all visitors and workers; however, this method for estimation provided the most streamlined and reasonable approach for estimating GHG emissions based on available data. GHG emissions from commercial wastewater treatment process were estimated externally by modifying the equations extracted from the TGIT community module (wastewater sector) to better represent the conditions at the Reservation.

Table 11 Approximate Per Day Average Population for Estimating Commercial Wastewater GHG Emissions

Population Type	Visitors	Full-time equivalent employees
Per day average population	3,963	1,070

3.6.2 Scope 2

STATIONARY ENERGY

This section describes methodology for estimating GHG emissions associated with consumption of grid-supplied energy consumed within the Reservation's boundary. Energy billing records were only available for electricity consumption for government operations; therefore, electricity for residential and commercial buildings, and electricity for water and wastewater pumping and treatment were estimated using representative datasets and available data. GHG emissions for the Stationary Energy sub-sector were calculated using the TGIT, with activity data entered into the TGIT provided in Table 12.

Table 12 Activity Data for Residential, Commercial, and Governmental Scope 2 Stationary Energy Sector

Sub-Sector	Residential	Residential and Non-Residential Water Pumping	Commercial	Governmental
Fuel Type	Electricity	Electricity	Electricity	Electricity
Fuel Use	4,841,910	520,706	9,538,508	1,430,260
Unit	kWh	kWh	kWh	kWh

Note: kWh= kilowatt hours

Residential

<u>Electricity</u>
GHG emissions from electricity use in residences were estimated using the TGIT community module, with annual electricity consumption estimated from the EIA Residential Energy Consumption Survey. Annual electricity use was estimated based on number of residences on the Reservation and average electricity use per household data obtained from Table CE2.5: Annual household site fuel consumption in the West—totals and averages, 2020 from U.S. EIA Residential Energy Consumption Survey (EIA 2020). Data used to calculate annual electricity consumption are provided in Table 5.

Residential and Non-Residential

<u>Water</u>
The Reservation's water supply comes from a mix of surface and groundwater sources which is pumped using grid supplied electricity. Data on the volume of water pumped was provided by the Rincon Band. It was assumed that the energy intensity factor for the Reservation is the same as groundwater energy intensity factor observed for Rancho California Water District (RCWD). This is because RCWD is a Southern California water supplier that pumps and treats

groundwater in a region that has a similar geography to the Rincon Reservation. The average of lower and upper range of RCWD's groundwater energy intensity factors was used as the energy intensity factor for the Rincon Reservation. GHG emissions associated with electricity used to pump water were estimated using the TGIT community module. Data used to calculate annual electricity consumption are provided in Table 5.

Commercial

Electricity

GHG emissions from electricity use in the casino and hotel were estimated using the TGIT community module with annual electricity consumption estimated from the EIA Commercial Buildings Energy Consumption Survey. Annual electricity use was estimated based on square footage of the casino and hotel and average electricity use per square footage.

The square footage of casino was available from Harrah's Resort SoCal Media Kit (Harrah's 2023). The square footage of the hotel was based on average area of room by type and number of rooms, available from Harrah's Resort Southern California website (Harrah's ND) and Caesars Rewards website (Caesars ND). It is important to note that the hotel and casino are located in the same building and hence there are multiple uses captured in the same building footprint. The square footage data used is believed to provide a reasonable estimate of the different uses of floor area. While there may be some overlap of uses within the accounted for areas, (for example the hotel lobby and meeting rooms are on the same floor as the casino), the square footage estimates are expected to capture the majority of commercial floor area.

Average electricity use data was extracted from Table C22. Electricity consumption totals and conditional intensities by building activity subcategories, 2018 from U.S. EIA Commercial Energy Consumption Survey (EIA 2018). Electricity use data for casino was obtained from public assembly buildings category under entertainment or culture subcategory and electricity use data for hotel was obtained from hotel buildings category under lodging subcategory (EIA 2018). Data used to calculate annual electricity consumption are provided in Table 5.

Electricity for Operating Wastewater Treatment Plant

GHG emissions from energy consumption for operating the WWTP were estimated using the TGIT community module. Annual electricity use was estimated based on annual peak capacity of the WWTP (estimated using daily peak capacity of the WWTP available from the Master Plan for the Rincon Indian Reservation (Rincon Band 2023)) and default energy intensity of WWTPs in South Coast available from CalEEMoD Version 2022.1, Appendix G, Default Data Tables-Table G-32 (CAPCOA ND).

Governmental

Electricity

GHG emissions from electricity use in government operations were estimated using the TGIT government module with annual electricity consumption from utility bills. Annual electricity use in government buildings and facilities was provided by the Rincon Band.

3.6.3 Scope 3

WASTE

Solid waste Disposal

This section describes methodology for estimating GHG emissions associated with solid waste disposal at landfill(s) located outside the Reservation's boundary.

Residential Solid waste Disposal

GHG emissions from solid waste disposal were estimated using the EPA's Waste Reduction Model (WARM) version 15.1 (EPA 2023d). Annual landfilled waste tonnage was available from monthly billing statements from EDCO which collects waste from the Reservation.

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CARB. *See* California Air Resources Board.

CPUC. *See* California Public Utilities Commission.

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Appendix B

GHG Reduction Measures Quantification Documentation

Measure 1: Upgrade the wastewater treatment plant by incorporating SCADA software and energy efficiency upgrades.

Description

Measure 1 includes upgrades to the WWTP located on the Reservation by incorporating SCADA (Supervisory Control and Data Acquisition) software and appropriate efficiency upgrades. SCADA is a type of industrial automation and control system that can optimize facility operations through real-time monitoring, process optimization, energy management, remote monitoring and control. SCADA may need to be coupled with physical upgrades to the WWTP, such as installation of variable frequency drive (VFD) motors that allow for variable power inputs that can be adjusted based on demand by SCADA. SCADA software will help the WWTP operate more efficiently, reducing energy consumption, optimizing resource usage, and minimizing emissions in the following ways:

- By continuously analyzing real-time data, SCADA will help optimize the usage of resources, such as energy and chemicals, to minimize waste and reduce emissions. By monitoring equipment health and performance, SCADA will help identify potential issues before they lead to equipment failures or inefficiencies contributing to overall emissions reduction and reducing the risk of wastewater spills.
- SCADA software will reduce the need for on-site personnel, minimizing travel-related emissions. Remote monitoring also enables faster response times to operational issues, preventing prolonged periods of inefficient operation that could result in increased emissions or wastewater spills.
- Additionally, SCADA systems may include features for monitoring and reporting data that can be converted to GHG emissions estimates.

The WWTP upgrades are being planned concurrently with other wastewater related PCAP measures; however, even without the expansion of the WWTP to support the connection of residential uses (see Measure 2 and Measures 3), the upgrades will still provide significant energy efficiency improvements. The Electric Power Research Institute (EPRI) estimates that in wastewater facilities, 10-20% energy savings are possible through process optimization such as SCADA systems. The GHG emission calculation assumed that the installation of SCADA software at the WWTP will result in 15% energy savings and result in a 15% reduction in scope 2 GHG emissions.

GHG Reduction Summary

Measure Number	Data Description	GHG Emissions Reduction (MTCO2e)			
		CO2	CH4	N2O	Total
1	**GHG reductions from Measure 1 project implementation**	**6.94**	**0.01**	**0.01**	**6.97**

GHG Reduction Calculations

Data Description	GHG Emission (MTCO2e)			
	CO2	CH4	N2O	Total
Pre-project:Scope 2 grid electricity GHG Emissions from WWTP without SCADA	46.28	0.08	0.09	46.44
Project Implementation: Scope 2 grid electricity GHG Emissions from WWTP with SCADA	39.33	0.06	0.08	39.48
GHG Emission reduction after project implementation	6.94	0.01	0.01	6.97

Activity Data Calculations

Data Description	Value	Source	Note
Pre-project condition: Annual energy consumption for running WWTP (kWh)	191,884		
Project Implementation: Energy savings from SCADA software use	15%	[1]	In wastewater facilities, EPRI estimates that 10-20% energy savings are possible through process optimization (such as SCADA systems).
Reduced annual energy consumption for running WWTP after project implementation (kWh)	163,101		

[1] Copeland, C. 2014. Energy-Water Nexus: The Water Sector's Energy Use. Page 6. Available at: https://www.everycrsreport.com/files/20140324_R43200_708bce0bc492d24fc5ee90e7e4902f90e2fde12d.pdf. Accessed February 16, 2024

Notes
SCADA: Supervisory Control and Data Acquisition
WWTP: Wastewater Treatment Plant
GHG: Greenhouse Gas
kWh: kilo watts hour
Numbers in parentheses represent negative values

Measure 2: Connect North side residences to Wastewater Treatment Plant through sewer system.

Description

The WWTP located at the Reservation currently only treats wastewater generated from the casino and hotel. The project under Measure 2 aims to connect all North side residences that currently use on-site septic systems to this WWTP through a sewer system. This will include expansion of the WWTP services to facilitate the associated increases in wastewater flows. Based on a preliminary sewer study conducted by the Rincon Band, the connection of residents to centralized treatment through a sewer system should be divided into two geographical areas, with the San Luis Rey River being the divide between the "North side" and "South side". Measure 2 addresses the connection of residents living on the North side to a sewer system.

The connection of residents to centralized wastewater treatment would provide significant GHG reductions and environmental benefits to the Rincon Band. The treatment of wastewater at centralized plants allows for better control of emissions generating sources than septic systems. The current WWTP on the Rincon Reservation utilizes aerobic processes, which reduce the amount of methane emissions generated compared to anaerobic processes in septic systems. The most significant benefit of Measure 2 is to the health of residences and environmental protection. Currently, old and unmanaged septic tanks on the Reservation leach contaminants into groundwater and the Luis Rey River during the rainy season, when groundwater levels reach the depth of septic tanks. Additionally, some residences utilize above ground wastewater storage that is trucked away, while others have no wastewater management and dump wastewater on the ground, increasing exposure to health hazards and allowing leaching into ground and surface water. Providing sewer and centralized treatment to residences is key to the health and safety of those on the Rincon Reservation, as well as populations downstream the San Luis Rey River. Additionally, the WWTP will require less individual land space at the Reservation compared to numerous septic tanks and would be more cost-effective for the community members than multiple septic systems.

The project under Measure 2 will result in reduced GHG emissions from on-site septic systems; however increased wastewater flow to the WWTP will increase emissions at the WWTP. Overall, a net reduction in scope 1 Waste sector emissions is expected from implementation of Measure 2. The secondary effect of this expansion will be the increase in electricity consumption at the WWTP for processing increased influent. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. These electricity emissions are expected to decline in the future due to the GHG free electricity targets set by Senate Bill 1020 and Senate Bill 100 in California. Overall, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project.

GHG Reduction Summary

Measure Number	Data Description	GHG Emissions Reduction (MTCO2e)			
		CO2	CH4	N2O	Total
2	GHG reductions from Measure 2 project impelementation				
	Scope 1 GHG Emissions due to increased population served by WWTP due to connection of North side residences to sewer	-	278	(6.81)	271
	Scope 2 GHG Emission from additional energy consumption at the WWTP due to connection of North side residences to sewer Note: reduction is negative because there were no associated GHG Emissions in baseline conditions	(7.92)	(0.01)	(0.02)	(7.95)
	Net GHG reductions from Measure 2 project implementation	**(7.92)**	**278**	**(6.82)**	**263**

Activity Data Calculations

Data Description	Value
Total population at the Reservation	1,800
Total number of residences at the reservation	395
Population per residence	4.56
Number of residences on North side	221.00
Estimated North side population	1,007.09

	GHG Emission (MTCO2e)			
	CO2	CH4	N2O	Total
Pre-project Conditions				
Scope 1 GHG Emissions from all North side residences wastewater treatment in septic tanks before project implementation	-	278	-	278
GHG Emissions after Project Implementation				
Scope 1 GHG Emissions from increased population served by WWTP due to connection of North side residences to sewer	-	-	6.81	6.81
Scope 2 GHG Emissions from additional energy consumption at the WWTP due to connection of North side residences to sewer	7.92	0.01	0.02	7.95
GHG Emission Reductions from Project Implementation				
Scope 1 GHG Emission reduction from increased population served by WWTP due to connection of North side residences to sewer	-	278	(6.81)	271
Scope 2 GHG Emission reduction from additional energy consumption at the WWTP due to connection of North side residences to sewer	(7.92)	(0.01)	(0.02)	(7.95)

Measure 2 continued

Scope 1 GHG Emissions from Measure 2 project impelementation (increased population served by WWTP due to connection of North side residences to sewer)

Per-project conditions - residents on septic

LGOP Equation 10.6 - Fugitive CH4 GHG Emissions from Septic Systems (default BOD5 load)

Population in the North side Served by Septic Systems	× Default BOD_5 Load (kg BOD_5/day)	× Maximum CH_4 Production Capacity (kg CH_4/kg BOD_5)	× Septic CH_4 Correction Factor	× day/yr	× MT/kg =	MT CH_4	× GWP =	MT CO_2e
1,007	0.09	0.6	0.5	365.25	0.001	9.931656076	28	278.09

Project conditions - residents transitioned to WWTP

LGOP Equation 10.7 - Process N2O GHG Emissions from WWTP with Nitrification/Denitrification

Effective Population in the North side Served by aerobic treatment with Nit/Denit	× Factor for Industrial Discharge into System	× Nit/Denit GHG Emissions Factor (g N2O/person/yr)	× MT/g =	MT N_2O	× GWP =	MT CO_2e
1,007	1	7	0.000001	0.00704962	265	1.868149367

Source: Equations from TGIT community module

LGOP Equation 10.10 - Process N2O GHG Emissions from Effluent Discharge (default N load data)

Effective Population in the North side Served by aerobic treatment with Nit/Denit	Factor for Industrial Discharge into System	× [Total N Load (kg N/person/day)	- N uptake* (kg N/kg BOD5)	× BOD5 Load]	× Effluent GHG Emissions Factor (kg N2O-N/kg sewage)	× N_2O/N_2 Molecular Weight Ratio	× 1 - Fraction of Nitrogen Removed**	× day/yr	× MT/kg =	MT N_2O	× GWP =	MT CO_2e
Aerobic Treatment with Nitrification/Denitrification												
1,007	1	0.026	0.05	0.09	0.005	1.571	0.3	365.25	0.001	0.019	265	4.94

*Depends if anaerobic/aerobic; **Depends if with/without Nitrification/Denitrification

Source: Equations from TGIT community module

Scope 2 GHG Emissions from Measure 2 project impelementation (additional energy consumption at the WWTP due to connection of North side residences to sewer)

Activity Data Calculations

Data Description	Value	
Per capita influent volume (gal per day)	70.00	[1]
Estimated North side population	1,007.09	
Additional wastewater generated at the Reservation due to connection of North side residences to sewer (gal per day)	70,496	
Increase in capacity of WWTP per day due to connection of North side residences to sewer (gal per day)	70,496	
Days to Year conversion factor	365.25	
Minimum increase in capacity of WWTP due to connection of North side residences to sewer (gal per year)	25,748,738	
Minimum increase in capacity of WWTP due to connection of North side residences to sewer (MG per year)	26	
Default energy intensity of WWTPs in South Coast (kWh/MG)	1,501	[2]
Increase in annual energy consumption at the WWTP due to connection of North side residences to sewer (kWh per year)	38,649	
Energy savings from SCADA software use (Measure 1)	15%	[3]
Effective annual energy consumption at the WWTP due to connection of North side residences to sewer (kWh per year)	32,852	

Note: The per capita influent volume of "New Homes" is taken into account here to be conservative in approach and estimate the highest per capita influent volume reported by residence type.

Note: In wastewater facilities, EPRI (the Electric Power Research Institute) estimates that 10-20% energy savings are possible through process optimization (such as SCADA systems).

	GHG Emission (MTCO2e)			
	CO2	CH4	N2O	Total
Project Implementation: Annual GHG Emissions from additional energy consumption at the WWTP due to connection of North side residences to sewer	8	0.013	0.016	8

Notes:

SCADA: Supervisory Control and Data Acquisition
WWTP: Wastewater Treatment Plant
GHG: Greenhouse Gas
kWh: kilo watts hour
gal: gallons
N: Nitrogen
BOD: Biochemical Oxygen Demand
Nit/Denit: Nitrification/Denitrification
Numbers in parentheses represent negative values

[1] Penn State's College of Agricultural Sciences. Water Conservation Opportunities for Individual Residences Serviced by On-Lot Wastewater Disposal Systems. Table 3: Typical rates of wastewater generated reported for selected types of residences. Available: https://www.montgomerycountypa.gov/DocumentCenter/View/956/Water-Conservation-Opportunities-for-Individual-Residences?bidId=. Accessed February 8, 2024

[2] CAPCOA. ND. CalEEMoD Version 2022.1, Appendix G, Default Data Tables. Available: https://caleemod.com/documents/user-guide/08_Appendix%20G_v2022.1.1.3.xlsx . Accessed January 29, 2024

[3] Copeland, C. 2014. Energy-Water Nexus: The Water Sector's Energy Use. Page 6. Available at: https://www.everycrsreport.com/files/20140324_R43200_708bce0bc492d24fc5ee90e7e4902f90e2fde12d.pdf. Accessed February 16, 2024

Measure 3: Connect South side residences to Wastewater Treatment Plant through sewer system.

Description

Similar to Measure 2, the project under Measure 3 aims to connect all South side residences to this WWTP through a sewer system, with the San Luis Rey River being the dividing line between North side and South side. The same GHG emissions reductions and community benefits for Measure 2 also apply to Measure 3. However, the GHG reductions are slightly lower for Measure 2 as there are 172 residences on the South side, whereas there are 221 on the North side.

The project under Measure 3 will result in reduced GHG emissions from on-site septic; however increased wastewater flow to the WWTP will increase emissions at the WWTP. Overall, a net reduction in scope 1 Waste sector emissions is expected from implementation of Measure 3. The secondary effect of this expansion will be the increase in electricity consumption at the WWTP for processing increased influent. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. These electricity emissions are expected to decline in the future due to the GHG-free electricity targets set by Senate Bill 1020 and Senate Bill 100 in California. Overall, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project.

GHG Reduction Summary

Measure Number	Data Description	GHG Emissions Reduction (MTCO2e)			
		CO2	CH4	N2O	Total
3	GHG reductions from Measure 3 project impelementation				
	Scope 1 GHG Emissions from increased population served by WWTP due to connection of South side residences to sewer	-	216	(5.30)	211
	Scope 2 GHG Emission from additional energy consumption at the WWTP due to connection of South side residences to sewer. Note: reduction is negative because there were no associated GHG Emissions in baseline conditions.	(6.17)	(0.01)	(0.01)	(6.19)
	Net GHG reductions from Measure 3 project implementation	**(6.17)**	**216**	**(5.31)**	**205**

Activity Data Calculations

Data Description	Value
Total population at the Reservation	1,800
Total number of residences at the reservation	395
Population per residence	4.56
Number of residences on South side	172.00
Estimated South side population	783.80

	GHG Emission (MTCO2e)			
	CO2	CH4	N2O	Total
Pre-project Conditions				
Scope 1 GHG Emissions from all South side residences wastewater treatment in septic tanks before project implementation	-	216	-	216
GHG Emissions after Project Implementation				
Scope 1 GHG Emissions from increased population served by WWTP due to connection of South side residences to sewer	-	-	5.30	5.30
Scope 2 GHG Emissions from additional energy consumption at the WWTP due to connection of South side residences to sewer (Measure 3)	6.17	0.01	0.01	6.19
GHG Emission Reductions from Project Implementation				
Scope 1 GHG Emission reduction from increased population served by WWTP due to connection of South side residences to sewer	-	216	(5.30)	211
Scope 2 GHG Emission reduction from additional energy consumption at the WWTP due to connection of South side residences to sewer	(6.17)	(0.01)	(0.01)	(6.19)

Measure 3 continued

Scope 1 GHG Emissions from Measure 3 project impelementation (increased population served by WWTP due to connection of South side residences to sewer)

Per-project conditions - residents on septic

LGOP Equation 10.6 - Fugitive CH4 GHG Emissions from Septic Systems (default BOD5 load)

Population in the South side Served by Septic Systems	× Default BOD_5 Load (kg BOD_5/day)	× Maximum CH_4 Production Capacity (kg CH_4/kg BOD_5)	× Septic CH_4 Correction Factor	× day/yr	× MT/kg =	MT CH_4	× GWP =	MT CO_2e
784	0.09	0.6	0.5	365.25	0.001	7.729614684	28	216.43

Project conditions - residents transitioned to WWTP

LGOP Equation 10.7 - Process N2O GHG Emissions from WWTP with Nitrification/Denitrification (see original equations in the notes below)

Effective Populatio in the South side Served by aerobic treatment with Nit/Denit	× Factor for Industrial Discharge into System	× Nit/Denit GHG Emissions Factor (g N2O/person/yr)	× MT/g =	MT N_2O	× GWP =	MT CO_2e
784	1	7	0.000001	0.005486582	265	1.453944304

Source: Modified equations from TGIT community module

LGOP Equation 10.10 - Process N2O GHG Emissions from Effluent Discharge (default N load data) (see original equations in the notes below)

Effective Populatio in the South side Served by aerobic treatment with Nit/Denit	Factor for Industrial Discharge into System	× [Total N Load (kg N/person/day)	- N uptake* (kg N/kg BOD5)	× BOD5 Load]	× Effluent GHG Emissions Factor (kg N2O-N/kg sewage)	× N_2O/N_2 Molecular Weight Ratio	× 1 - Fraction of Nitrogen Removed**	× day/yr	× MT/kg =	MT N_2O	× GWP =	MT CO_2e
Aerobic Treatment with Nitrification/Denitrification												
784	1	0.026	0.05	0.09	0.005	1.571	0.3	365.25	0.001	0.015	265	3.84

*Depends if anaerobic/aerobic; **Depends if with/without Nitrification/Denitrification

Source: Modified equations from TGIT community module

Scope 2 GHG Emissions from Measure 3 project impelementation (additional energy consumption at the WWTP due to connection of South side residences to sewer)

Activity Data Calculations		
Data Description	**Value**	
Per capita influent volume (gal per day)	70.00	[1]
Estimated South side population	783.80	
Additional wastewater generated at the Reservation due to connection of resid	54,866	
Increase in capacity of WWTP per day due to connection of South side residences to sewer (gal per day)	54,866	
Days to Year conversion factor	365.25	
Minimum Increase in capacity of WWTP due to connection of South side residences to sewer (gal per year)	20,039,742	
Minimum Increase in capacity of WWTP due to connection of South side residences to sewer (MG per year)	20	
Default energy intensity of WWTPs in South Coast (kWh/MG)	1,501	[2]
Increase in annual energy consumption at the WWTP due to connection of South side residences to sewer (kWh per year)	30,080	
Energy savings from SCADA software use (Measure 1)	15%	[3]
Effective annual energy consumption at the WWTP due to connection of South side residences to sewer (kWh per year)	25,568	

Note: The per capita influent volume of "New Homes" is taken into account here to be conservative in approach and estimate the highest per capita influent volume reported by residence type.

In wastewater facilities, EPRI (the Electric Power Research Institute) estimates that 10-20% energy savings are possible through process optimization (such as SCADA systems).

	GHG Emission (MTCO2e)			
	CO2	**CH4**	**N2O**	**Total**
Project Implementation: Annual GHG Emissions from energy consumption at WWTP due to additional energy consumption at the WWTP due to connection of South side residences to sewer	6.17	0.010	0.012	6.19

Notes

SCADA: Supervisory Control and Data Acquisition
WWTP: Wastewater Treatment Plant
GHG: Greenhouse Gas
kWh: kilo watts hour
gal: gallons
N: Nitrogen
BOD: Biochemical Oxygen Demand
Nit/Denit: Nitrification/Denitrification
Numbers in parentheses represent negative values

[1] Penn State's College of Agricultural Sciences. Water Conservation Opportunities for Individual Residences Serviced by On-Lot Wastewater Disposal Systems. Table 3: Typical rates of wastewater generated reported for selected types of residences. Available: https://www.montgomerycountypa.gov/DocumentCenter/View/956/Water-Conservation-Opportunities-for-Individual-Residences?bidId=. Accessed February 8, 2024

[2] CAPCOA. ND. CalEEMoD Version 2022.1, Appendix G, Default Data Tables. Available: https://caleemod.com/documents/user-guide/08_Appendix%20G_v2022.1.1.3.xlsx . Accessed January 29, 2024

[3] Copeland, C. 2014. Energy-Water Nexus: The Water Sector's Energy Use. Page 6. Available at: https://www.everycrsreport.com/files/20140324_R43200_708bce0bc492d24fc5ee90e7e4902f90e2fde12d.pdf. Accessed February 16, 2024

Measure 4: Develop a Hydrogen Hub and convert the Tribal Law Enforcement (TLE) fleet to Hydrogen Fuel Cell Electric Vehicles (FCEV).

Description

Measure 4 aims to develop, construct, commission, and operate a grid-connected Hydrogen Hub system comprising an electrolyzer, storage, and dispensing system to serve five Tribal Law Enforcement (TLE) vehicles and a fuel cell backup generator. This will include replacement of gasoline and diesel TLE vehicles with Hydrogen Fuel Cell Electric Vehicles (FCEV). Deployment of this system will reduce Tribal reliance on fossil fuel consumption and associated emissions as well as demonstrate resilient backup power.

The Hydrogen Hub project has been partially funded through the United States Department of Energy Regional Clean Hydrogen Hubs program and is currently in planning stages with San Diego Gas & Electric as partner. The project reaches towards the Rincon Band's goal of becoming a regional hydrogen fuel leader, to reduce local GHG emissions and diversify economic opportunities for Rincon Band members and the tribe as a whole.

For estimating GHG emission reduction from this project, it was assumed that the installation of the hydrogen hub system will replace the entire TLE vehicle fleet. This will result in a reduction of gasoline and diesel consumption resulting in a reduction of associated GHG emissions. Since these GHG emissions will be generated inside the Reservation's boundaries, these will be scope 1 Transportation GHG emissions. The implementation of this measure will reduce all scope 1 GHG emissions from TLE vehicle fleet. The secondary effect of this project will be the increase in electricity consumption to power the hydrogen electrolyzer. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. However, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project.

GHG Reduction Summary

Measure Number	Data Description	GHG Emissions Reduction (MTCO2e)			
		CO2	CH4	N2O	Total
4	GHG reductions from Measure 4 project impelementation				
	Scope 1 GHG emissions reduction due to replacement of TLE gasoline and diesel vehicle fleet	65	0.03	0.71	66
	Scope 2 GHG emissions reduction due to electricity consumption for the operation of hydrogen hub. Note: reduction is negative because there were no associated GHG Emissions in baseline conditions.	(37)	(0.06)	(0.07)	(37)
	Net GHG reductions from Measure 4 project implementation	**28.21**	**(0.03)**	**0.64**	**29**

Activity Data Calculations

Calculations for estimating fuel consumption requirements to replace TLE gasoline and diesel vehicle fleet

Data Description	Value	Source	Note
Gallons of Gasoline Equivalent per 1 kg of H2	1	[1]	
Gallons of Diesel Equivalent per 1 kg of H2	0.9	[1]	
Energy efficiency of gasoline cars	30%	[4]	*Gasoline vehicles efficiency is 12%–30%*
Efficiency of diesel compared to gasoline engines	15%	[2]	
Energy efficiency of diesel cars	35%		
Energy efficiency of hydrogen fuel cell cars	60%	[6]	
Gasoline consumption of Tribal Law Enforcement vehicles	2,098	Provided by Rincon Band	
Diesel consumption of Tribal Law Enforcement vehicles	4,599		
H2 required for TLE vehicles to replace gasoline use (kg per year)	1,049		
H2 required for TLE vehicles to replace diesel use (kg per year)	2,380		
Total H2 required to replace gasoline and diesel use (kg per year)	3,429		

Note: The primary aim for installing a fuel cell backup generator is ensuring resilient backup power. GHG reductions are expected to occur from transitioning from diesel back-up power to hydrogen fuel cell. However, usage of back-up power is expected to be occasional and infrequent; therefore future GHG emissions reductions are difficult to quantify accurately with currently available data.

Calculations for estimating energy required for the electrolyzer

Energy Efficiency target of proton exchange membrane (PEM) electrolyzer (kWh/ kg H2)	55	[3]	
Annual energy consumption of electrolyzer (kWh)	188,602		
Annual energy consumption of electrolyzer (MWh)	189		

Emission Reduction Calculations

Lifespan of the project

Lifespan of a Hydrogen production assets (years)	40	[5]	Note: Information on lifetime GHG emissions and lifetime GHG emission reduction is additional detail provided for this measure considering the nature of this project.
Lifespan of the Hydrogen Hub (years)	40		

Emission Factors

	GHG Emission Factors (lb/MWh)			*Source*
Camx eGRID subregion electricity GHG Emission factors obtained from TGIT for the year 2021	CO_2	CH_4	N_2O	*TGIT community module*
	532	0.031	0.004	

Meaure 4 continued

Estimated Emission Factors and GHG Emissions by Year

Year	Forecasted Camx eGRID subregion electricity GHG Emission factors (MT/MWh) [7]			Annual GHG Emission (MT)			Annual GHG Emission (MTCO2e)			
	CO_2	CH_4	N_2O	CO2	CH4	N2O	CO2	CH4	N2O	Total
2021	0.241165084	1.40614E-05	1.81437E-06	45.48	0.0027	0.0003	45.48	0.07	0.09	45.65
2028 (1st operational year of hydrogen hub)	1.97E-01	1.15E-05	1.48E-06	37.16	0.0022	0.0003	37.16	0.06	0.07	37.30
2029	1.91E-01	1.11E-05	1.44E-06	35.98	0.0021	0.0003	35.98	0.06	0.07	36.11
2030	1.84E-01	1.08E-05	1.39E-06	34.79	0.0020	0.0003	34.79	0.06	0.07	34.91
2031	1.57E-01	9.14E-06	1.18E-06	29.57	0.0017	0.0002	29.57	0.05	0.06	29.68
2032	1.29E-01	7.53E-06	9.71E-07	24.35	0.0014	0.0002	24.35	0.04	0.05	24.44
2033	2.67E-01	1.56E-05	2.01E-06	50.44	0.0029	0.0004	50.44	0.08	0.10	50.62
2034	2.95E-01	1.72E-05	2.22E-06	55.66	0.0032	0.0004	55.66	0.09	0.11	55.86
2035	4.61E-02	2.69E-06	3.47E-07	8.70	0.0005	0.0001	8.70	0.01	0.02	8.73
2036	4.15E-02	2.42E-06	3.12E-07	7.83	0.0005	0.0001	7.83	0.01	0.02	7.86
2037	3.69E-02	2.15E-06	2.78E-07	6.96	0.0004	0.0001	6.96	0.01	0.01	6.98
2038	3.23E-02	1.88E-06	2.43E-07	6.09	0.0004	0.0000	6.09	0.01	0.01	6.11
2039	2.77E-02	1.61E-06	2.08E-07	5.22	0.0003	0.0000	5.22	0.01	0.01	5.24
2040	2.31E-02	1.34E-06	1.73E-07	4.35	0.0003	0.0000	4.35	0.01	0.01	4.36
2041	1.84E-02	1.08E-06	1.39E-07	3.48	0.0002	0.0000	3.48	0.01	0.01	3.49
2042	1.38E-02	8.07E-07	1.04E-07	2.61	0.0002	0.0000	2.61	0.00	0.01	2.62
2043	9.22E-03	5.38E-07	6.94E-08	1.74	0.0001	0.0000	1.74	0.00	0.00	1.75
2044	4.61E-03	2.69E-07	3.47E-08	0.87	0.0001	0.0000	0.87	0.00	0.00	0.87
2045	0.00E+00	0.00E+00	0.00E+00	-	-	-	-	-	-	-
2068 (40 years of operation of hydrogen hub)	0.00E+00	0.00E+00	0.00E+00	-	-	-	-	-	-	-
Total lifespan GHG Emissions from hydrogen hub				**315.78**	**0.02**	**0.00**	**315.78**	**0.52**	**0.63**	**316.93**

	GHG Emission (MTCO2e)			
	CO2	CH4	N2O	Total
Emission in Year 1 of operation of the Hydrogen Hub				
Pre-project conditions: Scope 1 Annual GHG Emissions from TLE Fleet Vehicles using gasoline and diesel	65	0.03	0.71	66
Project Implementation: Scope 2 Annual GHG Emissions from electricity consumption for the operation of the hydrogen hub.	37	0.06	0.07	37
Emission in the lifespan of hydrogen hub (40 years)				
Pre-project conditions: Scope 1 GHG Emissions from TLE Fleet Vehicles in Lifespan of the Hydrogen Hub	2,615	1.03	28.42	2,645
Project Implementation: Scope 2 Total lifespan GHG Emissions from electricity consumption for the operation of the hydrogen hub	316	0.52	0.63	317

Note: Information on lifetime GHG emissions and lifetime GHG emission reduction is additional detail provided for this measure considering the nature of this project.

[1] Alternative Fuels Data Center. Fuel Properties Comparison. Available : https://afdc.energy.gov/fuels/properties.
[2] Energy.GOV. Energy Saver Transportation Alternative Fuel Vehicles Diesel Engine Vehicles. Available: https://www.energy.gov/energysaver/diesel-engine-vehicles
[3] DOE. ND. Technical Targets for Proton Exchange Membrane Electrolysis. Available: https://www.energy.gov/eere/fuelcells/technical-targets-proton-exchange-membrane-electrolysis. Accessed January 31, 2024.
[4] DOE. ND. Where the Energy Goes: Gasoline Vehicles. Available: https://www.fueleconomy.gov/feg/atv.shtml. Accessed: February 13, 2024.
[5] Source: NRDC. 2023. Hydrogen Hubs Are the Face of America's Hydrogen Rollout. Available: https://www.nrdc.org/bio/rachel-fakhry/hydrogen-hubs-are-face-americas-hydrogen-rollout . Accessed February 1, 2024.
[6] DOE. 2015. Fuel Cell Technology Office. The Fuel Cell Electric Vehicle (FCEV). Available: https://www.energy.gov/sites/prod/files/2015/07/f24/fcto_fcev_infographic_0.pdf. Accessed February 17, 2024.

[7] Approach for forecasting Emission Factors: The 2021 emission factors obtained from TGIT were scaled proportionally based on GHG free electricity targets required by Senate Bill 1020 and Senate Bill 100.

Appendix C

Co-pollutant Benefits Analysis Documentation

Co-Pollutant Benefit Analysis

Purpose of conducting the co-pollutant benefits analysis	This document is the response to EPA's CPRG program requirements to account for co-pollutant benefits by providing emissions information.

Requirements of the EPA CPRG program from the Co-Pollutant Benefit Analysis	Definition	Reference to CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts.
Base year inventory for co-pollutants	A base year inventory for co-pollutants establishes an analytical baseline from which the co-pollutant impacts of specific GHG control measures can be tracked and/or evaluated. Because air quality and public health impacts from co-pollutants manifest at the local scale, base year emission inventories for the purposes of co-pollutant impact assessments should be quantified at the county level or, where relevant and available, the facility level.	Source: EPA, 2023. CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts. Available at https://www.epa.gov/system/files/documents/2023-05/Technical_Reference_Doc_Copollutant_Assessment_FINAL_TO_POST.pdf. Accessed February 15, 2024)
Co-pollutant emission changes from GHG reduction measures	EPA assumes that applicants will use tools to estimate GHG changes from reduction measures under consideration as some tools include CAP impacts in addition to GHG impacts. When a GHG reduction measure tool does not include co-pollutant impacts, applicants may use the following approaches to estimate co-pollutant impacts: • If the GHG reduction measure(s) impact the underlying activity of an emissions source, a grantee can report the changes in the underlying activity. • If the GHG reduction measure(s) involves energy efficiency, expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. In this case, changes to electricity demand for the area is preferred over CAP and HAP emissions changes when that is easier to provide. • If the GHG reduction measure(s) captures GHGs and other pollutants, the applicant may proportionally apply the changes estimated for GHGs to co-pollutants.	

Specifications of Rincon Band's PCAP Co-Pollutant Benefit Analysis as a Response to the Requirements		
Specifications	**Specification Details**	**Notes**
Dataset used for estimating Base year inventory	EPA 2020 National Emissions Inventory.	Source: Source: EPA. 2020. National Emissions Inventory (NEI). Retrieved using 2020 NEI Data Retrieval Tool. Available at https://awsedap.epa.gov/public/single/?appid=20230c40-026d-494e-903f-3f112761a208&sheet=5d3fdda7-14bc-4284-a9bb-cfd856b9348d&opt=ctxmenu,currsel . Accessed on February 15, 2024
GHG reduction measure estimation methodology	The available GHG reduction measure tools were reviewed but it was found that none of the tools were applicable to the Rincon Band's priority measures. Hence emission reductions were estimated manually or using the EPA's Tribal Greenhouse Gas Inventory Tool. This process did not include co-pollutant impacts.	
Pollutant types included	Criteria Air pollutants (CAP), Hazardous Air Pollutants (HAP), CAP/HAP.	Pollutants that could be both a CAP or a HAP are categorized as CAP/HAP.
Impacted sources/sectors	Impacted sectors/sources/processes are those where activity and/or emissions are expected to change in response to proposed GHG reduction measures.	For this PCAP co-pollutants benefit analysis, the impacted sources are Wastewater Treatment Facility, Passenger trucks, and electricity. *Note: Base year co-pollutant emissions from electricity related sources are not quantified because electricity at the Reservation is sourced from outside the Reservation. In such case, EPA does not require quantifying base year emissions occurring outside of the jurisdiction*

Information included in this document		
Information Description	**Title of the Worksheet containing the information**	**Note**
San Diego County co-pollutants inventory extracted from EPA's 2020 NEI database	Point source co-pollutants, Non-point source co-pollutants	This data has been directly downloaded from the website and has not been changed/updated.
Base year emissions inventory of CAP (e.g., NOx, VOC, SO2, and direct PM2.5) and HAP emissions for sources impacted due to Rincon Band's priority measures.	Co-pollutants Inventory	This worksheet uses San Diego County co-pollutants inventory (of CAP and HAP emissions) as the base data to estimate base year (CAP and HAP) emissions for sources impacted due to Rincon Band's priority measures.
Co-pollutant emission changes from priority GHG reduction measures listed in the PCAP.	Measure 1, Measure 2, Measure 3, and Measure 4	This worksheet uses base year inventory of CAP and HAP emissions to estimate co-pollutant (CAP and HAP) emission changes from priority GHG reduction measures listed in the PCAP.

Base year inventory for co-pollutants (1/4)

Description of the base year inventory

Scale	San Diego County	
GHG Reduction Measures	**Impacted Source**	**Impacted Source Type**
Measure 1	Point source	Wastewater Treatment Facility
Measure 2	Point source	Wastewater Treatment Facility
Measure 3	Point source	Wastewater Treatment Facility
Measure 4	Mobile Source	Passenger Truck

Note: base year co-pollutant emissions from electricity related sources are not quantified because electricity at the Reservation is sourced from outside the Reservation. In such case, EPA does not require quantifying base year emissions occurring outside of the jurisdiction (see "Approach for developing the base year inventory for co-pollutants" for details).

Base year inventory for co-pollutants

Source Type	Co-pollutant emissions (t)		
	CAP	HAP	CAP/HAP
Wastewater Treatment Facility	470	25	0.000106
Passenger Truck	24,417	586	-
Total	**24,887**	**611**	**0.000106**

Approach for developing the base year inventory for co-pollutants [1]:

As per EPA, emissions datasets used for the co-pollutant impact analyses should be source-specific and spatially resolved to the county scale or use facility total emissions, where available. For the base year inventory of co-pollutants, any grantee can meet the minimum requirements by identifying the sources affected by the plan within the NEI and providing county total co-pollutant emissions data from these sources.

In other cases, such as end-use energy efficiency measures, the reductions in activity occurring in the region under the applicant's jurisdiction could impact emissions of sources outside of that jurisdiction. In this case, the EPA does not expect grantees to quantify base year emissions outside of the grantee's jurisdiction.

Base year inventory for co-pollutants continued (2/4)

Summary of co-pollutants emissions by pollutant type

San Diego County co-pollutants inventory (of CAP and HAP emissions) was used as the base data to estimate co-pollutant (CAP and HAP) emissions impacted due to Rincon Band's priority measures.

Co-Pollutants Emissions by Pollutant Type from Wastewater Treatment Facility (t)	
Facility Type	Wastewater Treatment Facility
NAICS	(Multiple Items)
Row Labels	**Sum of Emissions (Tons)**
CAP	470
CAP/HAP	0.00011
HAP	25

Co-Pollutants Emissions by Pollutants from Passenger trucks (t)	
SCC LEVEL 3	Passenger Truck
Row Labels	**Sum of Emissions (Tons)**
CAP	24,417
HAP	586

Base year inventory for co-pollutants continued (3/4)

Summary of co-pollutants emissions by pollutants

San Diego County co-pollutants inventory (of CAP and HAP emissions) was used as the base data to estimate co-pollutant (CAP and HAP) emissions impacted due to Rincon Band's priority measures.

Co-Pollutants Emissions by Pollutants from Wastewater Treatment Facility (t)	
Facility Type	Wastewater Treatment Facility
NAICS	(Multiple Items)
Pollutant Type	(Multiple Items)
Row Labels	**Sum of Emissions (Tons)**
1,3-Butadiene	0.01088
1,4-Dichlorobenzene	0.04776
Acetaldehyde	0.16087
Acrolein	0.00199
Acrylonitrile	0.00011
Ammonia	10.47675
Arsenic Compounds	0.00065
Benzene	0.11447
Benzyl Chloride	0.00420
Bromoform	0.00085
Cadmium Compounds	0.00004
Carbon Disulfide	0.09262
Carbon Monoxide	268.14077
Carbon Tetrachloride	0.03133
Carbonyl Sulfide	0.00011
Chlorine	0.08888
Chlorobenzene	0.00060
Chloroform	0.22056
Chromium Compounds	0.00006
Cobalt Compounds	0.00000
Ethylbenzene	0.00538
Ethylene Dichloride	0.43186
Formaldehyde	21.37847
Hexane	0.09520
Hydrochloric Acid	0.92243
Lead Compounds	0.00011
Manganese Compounds	0.00002
Mercury Compounds	0.00001
Methanol	0.05173
Methyl Chloroform	0.04027
Methyl Isobutyl Ketone	0.00072
Methyl Tert-Butyl Ether	0.00000
Methylene Chloride	0.38585
Naphthalene	0.00201
Nickel Compounds	0.00013
Nitrogen Oxides	79.33074
p-Dioxane	0.36551
Phenol	0.00056
PM10 Primary (Filt + Cond)	19.24417
PM2.5 Primary (Filt + Cond)	18.66134
Polycyclic Organic Matter	0.00152
Selenium Compounds	0.00000
Styrene	0.00030
Sulfur Dioxide	2.52475
Tetrachloroethylene	0.16330
Toluene	0.12685
Trichloroethylene	0.23044
Vinyl Chloride	0.00245
Volatile Organic Compounds	72.07716
Xylenes (Mixed Isomers)	0.02940
Grand Total	**495.47**

Co-Pollutants Emissions by Pollutants from Passenger trucks (t)	
SCC LEVEL 3	Passenger Truck
POLLUTANT_TYPE	(Multiple Items)
Row Labels	**Sum of Emissions (Tons)**
1,3-Butadiene	6.470
2,2,4-Trimethylpentane	60.418
Acetaldehyde	11.683
Acrolein	0.100
Ammonia	352.075
Antimony Compounds	0.006
Arsenic Compounds	0.005
Benzene	58.355
Cadmium Compounds	0.001
Carbon Monoxide	18,886.245
Chromium Compounds	0.001
Cobalt Compounds	0.001
Cumene	0.740
Ethylbenzene	26.780
Formaldehyde	22.725
Hexane	26.242
Manganese Compounds	0.214
Mercury Compounds	0.001
Methanol	66.207
Methyl Tert-Butyl Ether	2.629
Naphthalene	2.281
Nickel Compounds	0.306
Nitrogen Oxides	1,973.764
Phosphorus	0.201
PM10 Primary (Filt + Cond)	564.898
PM2.5 Primary (Filt + Cond)	239.454
Polycyclic Organic Matter	1.668
Propionaldehyde	1.777
Selenium Compounds	0.011
Styrene	3.147
Sulfur Dioxide	48.390
Toluene	160.493
Volatile Organic Compounds	2,352.053
Xylenes (Mixed Isomers)	133.155
Grand Total	**25,002.496**

Base year inventory for co-pollutants continued (3/4)

Notes:

San Diego County co-pollutants inventory from Wastewater Treatment Facility sources reports emissions from "Other Electric Power Sources". But Rincon Band's co-pollutants inventory of Wastewater Treatment Facility does not include emissions from "Other Electric Power Generation" sources because the WWTP at the Reservation does not generate power.

NAICS stands for "North American Industry Classification System". This is a level of classification in the "facility-level" 2020 NEI database. This filter is used in the calculations to exclude "Other Electric Power Generation" sources from Wastewater Treatment Facility co-pollutant emission sources.

Rincon Band's co-pollutant inventory from mobile sources only summarizes emissions from Passenger Trucks because this is the only vehicle type used by the Tribal Law Enforcement (TLE) department (which is the focus of developing a hydrogen hub in Measure 4).

SCC stands for "Source classification code". SCC Level 3 is a level of classification in the non-point 2020 NEI database. This filter is used in the calculations to include only "Passenget trucks" and exclude all other sources from the non-point base inventory.

[1] EPA, 2023. CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts. Page 7. Available at https://www.epa.gov/system/files/documents/2023-05/Technical_Reference_Doc_Copollutant_Assessment_FINAL_TO_POST.pdf. Accessed February 15, 2024)

Measure 1: Upgrade the wastewater treatment plant by incorporating SCADA software and energy efficiency upgrades.

Description

Measure 1 includes upgrades to the WWTP located on the Reservation by incorporating SCADA (Supervisory Control and Data Acquisition) software and appropriate efficiency upgrades. SCADA is a type of industrial automation and control system that can optimize facility operations through real-time monitoring, process optimization, energy management, remote monitoring and control. SCADA may need to be coupled with physical upgrades to the WWTP, such as installation of variable frequency drive (VFD) motors that allow for variable power inputs that can be adjusted based on demand by SCADA. SCADA software will help the WWTP operate more efficiently, reducing energy consumption, optimizing resource usage, and minimizing emissions in the following ways:

- By continuously analyzing real-time data, SCADA will help optimize the usage of resources, such as energy and chemicals, to minimize waste and reduce emissions. By monitoring equipment health and performance, SCADA will help identify potential issues before they lead to equipment failures or inefficiencies contributing to overall emissions reduction and reducing the risk of wastewater spills.
- SCADA software will reduce the need for on-site personnel, minimizing travel-related emissions. Remote monitoring also enables faster response times to operational issues, preventing prolonged periods of inefficient operation that could result in increased emissions or wastewater spills.
- Additionally, SCADA systems may include features for monitoring and reporting data that can be converted to GHG emissions estimates.

The WWTP upgrades are being planned concurrently with other wastewater related PCAP measures; however, even without the expansion of the WWTP to support the connection of residential uses (see Measure 2 and Measures 3), the upgrades will still provide significant energy efficiency improvements. The Electric Power Research Institute (EPRI) estimates that in wastewater facilities, 10-20% energy savings are possible through process optimization such as SCADA systems. The GHG emission calculation assumed that the installation of SCADA software at the WWTP will result in 15% energy savings and result in a 15% reduction in scope 2 GHG emissions.

Approach for estimating co-pollutant emission changes from GHG reduction measures: reporting changes to electricity demand because expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area.

Background: As per EPA co-benefits Technical Reference Document (Page 7), "*if the GHG reduction measure(s) involves energy efficiency, expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. In this case, changes to electricity demand for the area is preferred over CAP and HAP emissions changes when that is easier to provide*" .[1]

Co-pollutant benefits analysis summary

Pre-project conditions: Annual energy consumption for running WWTP (kWh)	191,884
Reduced annual energy consumption for running WWTP after project implementation (kWh)	163,101
Change in energy consumption due to Measure 1 Project Implementation (kWh)	-28,783

Conclusion:

Measure 1 would reduce grid-electricity consumption and, therefore, any reduction in CAP and HAP-related emissions from the production of electricity would occur outside of the reservation. This analysis is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because 1) the original GHG modeling performed for Measure 1 was completed in TGIT, which does not include co-pollution impacts (see Appendix B for details) and 2) Measure 1 involved energy efficiency and CAP and HAP impacts would not occur in the area implementing this measure.

[1] EPA, 2023. CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts. Page 7. Available at https://www.epa.gov/system/files/documents/2023-05/Technical_Reference_Doc_Copollutant_Assessment_FINAL_TO_POST.pdf. Accessed February 15, 2024)

Measure 2: Connect North side residences to Wastewater Treatment Plant through sewer system.

Description

North side residences that currently use on-site septic systems to this WWTP through a sewer system. This will include expansion of the WWTP services to facilitate the associated increases in wastewater flows. Based on a preliminary sewer study conducted by the Rincon Band, the connection of residents to centralized treatment through a sewer system should be divided into two geographical areas, with the San Luis Rey River being the divide between the "North side" and "South side". Measure 2 addresses the connection of residents living on the North side to a sewer system.

The connection of residents to centralized wastewater treatment would provide significant GHG reductions and environmental benefits to the Rincon Band. The treatment of wastewater at centralized plants allows for better control of emissions generating sources than septic systems. The current WWTP on the Rincon Reservation utilizes aerobic processes, which reduce the amount of methane emissions generated compared to anaerobic processes in septic systems. The most significant benefit of Measure 2 is to the health of residences and environmental protection. Currently, old and unmanaged septic tanks on the Reservation leach contaminants into groundwater and the Luis Rey River during the rainy season, when groundwater levels reach the depth of septic tanks. Additionally, some residences utilize above ground wastewater storage that is trucked away, while others have no wastewater management and dump wastewater on the ground, increasing exposure to health hazards and allowing leaching into ground and surface water. Providing sewer and centralized treatment to residences is key to the health and safety of those on the Rincon Reservation, as well as populations downstream the San Luis Rey River. Additionally, the WWTP will require less individual land space at the Reservation compared to numerous septic tanks and would be more cost-effective for the community members than multiple septic systems.

The project under Measure 2 will result in reduced GHG emissions from on-site septic systems; however increased wastewater flow to the WWTP will increase emissions at the WWTP. Overall, a net reduction in scope 1 Waste sector emissions is expected from implementation of Measure 2. The secondary effect of this expansion will be the increase in electricity consumption at the WWTP for processing increased influent. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. These electricity emissions are expected to decline in the future due to the GHG free electricity targets set by Senate Bill 1020 and Senate Bill 100 in California. Overall, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project.

Co-pollutant benefits analysis summary

Scope 1

Approach for estimating co-pollutant emission changes from GHG reduction measures (Scope 1): scaling all co-pollutants in the baseline year inventory using proportional changes estimated for methane to co-pollutants generated from wastewater treatment facility in San Diego County. [1]

Background: As per EPA co-benefits Technical Reference Document (Page 7), *"if the GHG reduction measure(s) captures GHGs and other pollutants, the applicant may proportionally apply the changes estimated for GHGs to co-pollutants* ." [1]
Example provided in the EPA guidance document: A program to capture methane from abandoned drilling wells may also capture associated VOC (a CAP) and VOC-associated HAPs. In this case, the percent capture of the GHG pollutant could be assumed to also capture the VOC and VOC-associated HAPs. In addition, the applicant may also report reductions for all VOC HAP in bulk (i.e., rather than listing out each affected VOC HAP). [1]

Scope 1	Change in co-pollutants (t)		
	CAP	HAP	CAP/HAP
Change in co-pollutants due to Measure 2 Project Implementation	-95	-5.08	-0.000021

Scope 2

Approach for estimating co-pollutant emission changes from GHG reduction measure (Scope 2): reporting changes to electricity demand because expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. [1]

Background: As per EPA co-benefits Technical Reference Document (Page 7)," *if the GHG reduction measure(s) involves energy efficiency, expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. In this case, changes to electricity demand for the area is preferred over CAP and HAP emissions changes when that is easier to provide* ."[1]

Scope 2	Change in electricity demand (kWh)
Annual energy consumption due to Measure 2 Project Implementation (kWh)	32,852
Change in energy consumption due to Measure 2 Project Implementation (kWh)	**32,852**

Conclusion:

Scope1: Change in co-pollutants from implementation of Measure 2 is assumed to be proportional to the change in methane gas. As a result Measure 2 would reduce co-pollutants by banning the treatment of wastewater in residential septic tanks and connecting all residences to the WWTP through sewer lines proportional to the reduction in methane gas (see Appendix B for details).
This assumption is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because the original GHG modeling performed for Scope 1 GHG emissions for Measure 2 was completed using equations extracted from TGIT, which does not include co-pollution impacts.

Scope 2: Measure 2 would increase grid-electricity consumption and, therefore, any increase in CAP and HAP-related emissions from the production of electricity would occur outside of the reservation.
This analysis is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because 1) the original GHG modeling performed for Scope 2 GHG emissions for Measure 2 was completed in TGIT, which does not include co-pollution impacts (see Appendix B for details) and 2) Measure 2 involved energy efficiency and CAP and HAP impacts would not occur in the area implementing this measure.

Measure 2 continued

Calculations for estimating change in co-pollutant emissions

Scope 1 Calculations

Scope 1 GHG Emissions from Measure 1 Project Implementation

	GHG Emission (MTCO2e)			GHG Emission (MT)	GHG Emissions (Tons)
	CO2	**CH4**	**N2O**	**CH4**	**CH4**
Per-project conditions -GHG Emissions from residents on septic	-	278	-		
GHG Emissions after Project Implementation	-	-	6.81		
Change in Scope 1 GHG emissions after project implementation	-	-278	6.81	-9.93	-10.95

Note: As per EPA co-benefits Technical Reference Document (Page 7), "*if the GHG reduction measure(s) captures GHGs and other pollutants, the applicant may proportionally apply the changes estimated for GHGs to co-pollutants* ". Accordingly, change in Scope 1 co-pollutant emissions from implementation of Measure 2 is assumed to be proportional to the change in methane gas. This is because methane is the only GHG reported from wastewater treatment facilities in the San Diego County co-pollutants inventory. Hence change in methane gas estimated from GHG reduction measures is being used to estimate proportional change in co-pollutant emissions.

Scope 1 co-pollutant emissions from wastewater treatment plants in San Diego County (tons)

Facility Type	Wastewater Treatment Facility
NAICS	(Multiple Items)

Change in Scope 1 co-pollutant emissions from wastewater treatment plants due to Measure 2 Project Implementation

Note: Accounting for Wastewater Treatment Facility only, and deselecting "Other Electric Power Generation" because the WWTP at the Reservation does not generate power.

Row Labels	**Sum of Emissions (Tons)**	Ratio (Pollutants to Methane)	Co-pollutant emission changes from GHG reduction measures (t)
CAP	**470.4556767**	8.721448374	**-95.48**
Ammonia	10.47674662	0.19422107	-2.13
Carbon Monoxide	268.1407663	4.970873913	-54.42
Nitrogen Oxides	79.33074424	1.47065712	-16.10
PM10 Primary (Filt + Cond)	19.24417006	0.356754194	-3.91
PM2.5 Primary (Filt + Cond)	18.66133582	0.345949438	-3.79
Sulfur Dioxide	2.524750105	0.046804574	-0.51
Volatile Organic Compounds	72.07716352	1.336188066	-14.63
CAP/HAP	**0.000105935**	1.96386E-06	**0.00**
Lead Compounds	0.000105935	1.96386E-06	0.00
GHG	**53.94237935**	1	-10.95
Methane	53.94237935	1	-10.95
HAP	**25.01039802**	0.463650256	**-5.08**
1,3-Butadiene	0.01088185	0.000201731	0.00
1,4-Dichlorobenzene	0.047759593	0.000885382	-0.01
Acetaldehyde	0.160865877	0.00298218	-0.03
Acrolein	0.001991897	3.69264E-05	0.00
Acrylonitrile	0.000110625	2.0508E-06	0.00
Arsenic Compounds	0.000653023	1.21059E-05	0.00
Benzene	0.114471937	0.002122115	-0.02
Benzyl Chloride	0.00420371	7.79296E-05	0.00
Bromoform	0.000854567	1.58422E-05	0.00
Cadmium Compounds	4.45083E-05	8.25108E-07	0.00
Carbon Disulfide	0.092623173	0.001717076	-0.02
Carbon Tetrachloride	0.031326919	0.000580748	-0.01
Carbonyl Sulfide	0.000110625	2.0508E-06	0.00
Chlorine	0.08887829	0.001647652	-0.02
Chlorobenzene	0.000597985	1.10856E-05	0.00
Chloroform	0.22055793	0.004088769	-0.04
Chromium Compounds	6.29426E-05	1.16685E-06	0.00
Cobalt Compounds	3.88418E-06	7.20061E-08	0.00
Ethylbenzene	0.005377253	9.96851E-05	0.00
Ethylene Dichloride	0.431859591	0.008005943	-0.09
Formaldehyde	21.37846965	0.396320479	-4.34
Hexane	0.095203125	0.001764904	-0.02
Hydrochloric Acid	0.922434504	0.017100367	-0.19
Manganese Compounds	1.75754E-05	3.25819E-07	0.00
Mercury Compounds	6.06171E-06	1.12374E-07	0.00
Methanol	0.051726146	0.000958915	-0.01
Methyl Chloroform	0.040274215	0.000746615	-0.01
Methyl Isobutyl Ketone	0.000715375	1.32618E-05	0.00
Methyl Tert-Butyl Ether	2.97804E-07	5.52077E-09	0.00
Methylene Chloride	0.385854279	0.007153082	-0.08
Naphthalene	0.002013882	3.73339E-05	0.00
Nickel Compounds	0.000134239	2.48856E-06	0.00
p-Dioxane	0.36550654	0.00677587	-0.07
Phenol	0.00055523	1.0293E-05	0.00
Polycyclic Organic Matter	0.001520855	2.81941E-05	0.00
Selenium Compounds	2.04613E-07	3.79318E-09	0.00
Styrene	0.000295128	5.47116E-06	0.00
Tetrachloroethylene	0.163302384	0.003027349	-0.03
Toluene	0.126847303	0.002351533	-0.03
Trichloroethylene	0.230438222	0.004271933	-0.05
Vinyl Chloride	0.002448763	4.53959E-05	0.00
Xylenes (Mixed Isomers)	0.029397863	0.000544986	-0.01

[1] EPA, 2023. CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts. Page 7. Available at https://www.epa.gov/system/files/documents/2023-05/Technical_Reference_Doc_Copollutant_Assessment_FINAL_TO_POST.pdf. Accessed February 15, 2024)

Measure 3: Connect South side residences to Wastewater Treatment Plant through sewer system.

Description

Similar to Measure 2, the project under Measure 3 aims to connect all South side residences to this WWTP through a sewer system, with the San Luis Rey River being the dividing line between North side and South side. The same GHG emissions reductions and community benefits for Measure 2 also apply to Measure 3. However, the GHG reductions are slightly lower for Measure 2 as there are 172 residences on the South side, whereas there are 221 on the North side.
The project under Measure 3 will result in reduced GHG emissions from on-site septic; however increased wastewater flow to the WWTP will increase emissions at the WWTP. Overall, a net reduction in scope 1 Waste sector emissions is expected from implementation of Measure 3. The secondary effect of this expansion will be the increase in electricity consumption at the WWTP for processing increased influent. As such, there is an expected increase in GHG emissions from electricity consumption in scope 2 Stationary Energy GHG emissions. These electricity emissions are expected to decline in the future due to the GHG-free electricity targets set by Senate Bill 1020 and Senate Bill 100 in California. Overall, the reduction in scope 1 emissions is expected to be more than the increase in scope 2 emissions resulting in a net emissions reduction from the project.

Co-pollutant benefits analysis summary

Scope 1

Approach for estimating co-pollutant emission changes from GHG reduction measures (Scope 1): scaling all co-pollutants in the baseline year inventory using proportional changes estimated for methane to co-pollutants generated from wastewater treatment facility in San Diego County. [1]

Background: As per EPA co-benefits Technical Reference Document (Page 7), "*if the GHG reduction measure(s) captures GHGs and other pollutants, the applicant may proportionally apply the changes estimated for GHGs to co-pollutants*". [1]
Example provided in the EPA guidance document: A program to capture methane from abandoned drilling wells may also capture associated VOC (a CAP) and VOC-associated HAPs. In this case, the percent capture of the GHG pollutant could be assumed to also capture the VOC and VOC-associated HAPs. In addition, the applicant may also report reductions for all VOC HAP in bulk (i.e., rather than listing out each affected VOC HAP) . [1]

Scope 1	Change in co-pollutants (t)		
	CAP	HAP	CAP/HAP
Change in co-pollutants due to Measure 3 (increased population served by WWTP due to connection of South side residences to sewer)	-74	-3.95	0.00

Scope 2

Approach for estimating co-pollutant emission changes from GHG reduction measure (Scope 2): reporting changes to electricity demand because expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. [1]

Background: As per EPA co-benefits Technical Reference Document (Page 7), "*if the GHG reduction measure(s) involves energy efficiency, expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. In this case, changes to electricity demand for the area is preferred over CAP and HAP emissions changes when that is easier to provide*" .[1]

Scope 2	Change in electricity demand (kWh)
Annual energy consumption at the WWTP due to connection of North side residences to sewer (kWh)	25,568
Change in energy consumption due to Measure 3 (additional energy consumption at the WWTP due to connection of South side residences to sewer) (kWh)	**25,568**

Conclusion:

Scope1: Change in co-pollutants from implementation of Measure 3 is assumed to be proportional to the change in methane gas. As a result Measure 3 would reduce co-pollutants by banning the treatment of wastewater in residential septic tanks and connecting all residences to the WWTP through sewer lines proportional to the reduction in methane gas (see Appendix B for details).
This assumption is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because the original GHG modeling performed for Scope 1 GHG emissions for Measure 3 was completed using equations extracted from TGIT, which does not include co-pollution impacts.

Scope 2: Measure 3 would increase grid-electricity consumption and, therefore, any increase in CAP and HAP-related emissions from the production of electricity would occur outside of the reservation.
This analysis is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because 1) the original GHG modeling performed for Scope 2 GHG emissions for Measure 3 was completed in TGIT, which does not include co-pollution impacts (see Appendix B for details) and 2) Measure 3 involved energy efficiency and CAP and HAP impacts would not occur in the area implementing this measure.

Measure 2 continued

Calculations for estimating change in co-pollutant emissions

Scope 1 Calculations

Scope 1 GHG Emissions from increased population served by WWTP due to connection of North side residences to sewer

	GHG Emission (MTCO2e)			GHG Emissions (MT)	GHG Emissions (Tons)
	CO2	**CH4**	**N2O**	**CH4**	**CH4**
Per-project conditions -GHG Emissions from residents on septic	-	216	-		
GHG Emissions after Project Implementation	-	-	5.30		
Change in Scope 1 GHG emissions after project implementation	-	-216	5.30	-7.73	-8.52

Note: As per EPA co-benefits Technical Reference Document (Page 7), "if the GHG reduction measure(s) captures GHGs and other pollutants, the applicant may proportionally apply the changes estimated for GHGs to co-pollutants". Accordingly, change in Scope 1 co-pollutant emissions from implementation of Measure 3 is assumed to be proportional to the change in methane gas. This is because methane is the only GHG reported from wastewater treatment facilities in the San Diego County co-pollutants inventory. Hence change in methane gas estimated from GHG reduction measures is being used to estimate proportional change in co-pollutant emissions.

Scope 1 emissions from wastewater treatment plants in San Diego County (tons)		Change in Scope 1 co-pollutant emissions from wastewater treatment plants due to Measure 3 Project Implementation	
Facility Type	Wastewater Treatment Facility		
NAICS	(Multiple Items)		
Row Labels	**Sum of Emissions (Tons)**	Ratio (Pollutants to Methane)	Co-pollutant emission changes from GHG reduction measures (t)
CAP	**470.4556767**	8.721448374	**-74.31**
Ammonia	10.47674662	0.19422107	-1.65
Carbon Monoxide	268.1407663	4.970873913	-42.35
Nitrogen Oxides	79.33074424	1.47065712	-12.53
PM10 Primary (Filt + Cond)	19.24417006	0.356754194	-3.04
PM2.5 Primary (Filt + Cond)	18.66133582	0.345949438	-2.95
Sulfur Dioxide	2.524750105	0.046804574	-0.40
Volatile Organic Compounds	72.07716352	1.336188066	-11.38
CAP/HAP	**0.000105935**	1.96386E-06	**0.00**
Lead Compounds	0.000105935	1.96386E-06	0.00
GHG	**53.94237935**	1	-8.52
Methane	53.94237935	1	-8.52
HAP	**25.01039802**	0.463650256	**-3.95**
1,3-Butadiene	0.01088185	0.000201731	0.00
1,4-Dichlorobenzene	0.047759593	0.000885382	-0.01
Acetaldehyde	0.160865877	0.00298218	-0.03
Acrolein	0.001991897	3.69264E-05	0.00
Acrylonitrile	0.000110625	2.0508E-06	0.00
Arsenic Compounds	0.000653023	1.21059E-05	0.00
Benzene	0.114471937	0.002122115	-0.02
Benzyl Chloride	0.00420371	7.79296E-05	0.00
Bromoform	0.000854567	1.58422E-05	0.00
Cadmium Compounds	4.45083E-05	8.25108E-07	0.00
Carbon Disulfide	0.092623173	0.001717076	-0.01
Carbon Tetrachloride	0.031326919	0.000580748	0.00
Carbonyl Sulfide	0.000110625	2.0508E-06	0.00
Chlorine	0.08887829	0.001647652	-0.01
Chlorobenzene	0.000597985	1.10856E-05	0.00
Chloroform	0.22055793	0.004088769	-0.03
Chromium Compounds	6.29426E-05	1.16685E-06	0.00
Cobalt Compounds	3.88418E-06	7.20061E-08	0.00
Ethylbenzene	0.005377253	9.96851E-05	0.00
Ethylene Dichloride	0.431859591	0.008005943	-0.07
Formaldehyde	21.37846965	0.396320479	-3.38
Hexane	0.095203125	0.001764904	-0.02
Hydrochloric Acid	0.922434504	0.017100367	-0.15
Manganese Compounds	1.75754E-05	3.25819E-07	0.00
Mercury Compounds	6.06171E-06	1.12374E-07	0.00
Methanol	0.051726146	0.000958915	-0.01
Methyl Chloroform	0.040274215	0.000746615	-0.01
Methyl Isobutyl Ketone	0.000715375	1.32618E-05	0.00
Methyl Tert-Butyl Ether	2.97804E-07	5.52077E-09	0.00
Methylene Chloride	0.385854279	0.007153082	-0.06
Naphthalene	0.002013882	3.73339E-05	0.00
Nickel Compounds	0.000134239	2.48856E-06	0.00
p-Dioxane	0.36550654	0.00677587	-0.06
Phenol	0.00055523	1.0293E-05	0.00
Polycyclic Organic Matter	0.001520855	2.81941E-05	0.00
Selenium Compounds	2.04613E-07	3.79318E-09	0.00
Styrene	0.000295128	5.47116E-06	0.00
Tetrachloroethylene	0.163302384	0.003027349	-0.03
Toluene	0.126847303	0.002351533	-0.02
Trichloroethylene	0.230438222	0.004271933	-0.04
Vinyl Chloride	0.002448763	4.53959E-05	0.00
Xylenes (Mixed Isomers)	0.029397863	0.000544986	0.00

Note: Accounting for Wastewater Treatment Facility only, and deselecting "Other Electric Power Generation" because the WWTP at the Reservation does not generate power.

[1] EPA, 2023. CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts. Page 7. Available at https://www.epa.gov/system/files/documents/2023-05/Technical_Reference_Doc_Copollutant_Assessment_FINAL_TO_POST.pdf. Accessed February 15, 2024)

Measure 4: Develop a Hydrogen Hub and convert the Tribal Law Enforcement (TLE) fleet to Hydrogen Fuel Cell Electric Vehicles (FCEV).

Description

The project aims to develop, construct, commission, and operate a grid-connected Hydrogen Hub system comprising an electrolyzer, storage, and dispensing system to serve five tribal law enforcement (TLE) vehicles and a fuel cell backup generator. This will include replacement of gasoline and diesel TLE vehicles with Hydrogen Fuel Cell Electric Vehicles (FCEV). Deployment of this system will reduce Tribal reliance on fossil fuel consumption and associated emissions as well as demonstrate resilient backup power.

Co-pollutant benefits analysis summary

Scope 1

Approach for estimating co-pollutant emission changes from GHG reduction measures: reporting the changes in the underlying activity (i.e., gasoline and diesel consumption) because GHG reduction measure 4 impacts the underlying activity of the emissions source. [1]

Background: As per EPA co-benefits Technical Reference Document (Page 7), "*If the GHG reduction measure(s) impact the underlying activity of an emissions source, a grantee can report the changes in the underlying activity*" . [1]
Example provided in the EPA guidance document: A grantee plans to implement a program that impacts the vehicle fleet (e.g., reduction in gasoline passenger vehicles). Without additional information, grantees may assume that the impacts on co-pollutants in these cases would be the same as the change in the emissions activity. As such, an applicant may alternatively provide the expected changes to the amount of vehicle miles traveled (by county or state) for those vehicle types .[1]

Gasoline consumption of Tribal Law Enforcement vehicles	2,098
Diesel consumption of Tribal Law Enforcement vehicles	4,599

Gasoline consumption of Tribal Law Enforcement vehicles after implementation of Measure 4	0.00
Diesel consumption of Tribal Law Enforcement vehicles after implementation of Measure 4	0.00

Change in gasoline consumption in TLE vehicles due to Measure 4 (gallons)	-2,098.20
Change in gasoline consumption in TLE vehicles due to Measure 4 (gallons)	-4,599.10

Scope 2

Approach for estimating co-pollutant emission changes from GHG reduction measure (Scope 2): reporting changes to electricity demand because expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. [1]

Background: As per EPA co-benefits Technical Reference Document (Page 7), *"if the GHG reduction measure(s) involves energy efficiency, expected CAP and HAP impacts may not occur in the area implementing energy efficiency because power plants emit outside that area. In this case, changes to electricity demand for the area is preferred over CAP and HAP emissions changes when that is easier to provide"* .[1]

Annual energy consumption of H2 Hub's electrolyzer (kWh)	188,602
Change in energy consumption due to Measure 4 (kWh)	188,602

Conclusion:

Scope1: Measure 4 would reduce the consumption of gasoline and diesel at the Reservation. As a result Measure 4 would reduce co-pollutants at the Reservation. However, the original GHG modeling performed for Scope 1 GHG emissions for Measure 4 was completed in TGIT, which does not include co-pollution impacts (see Appendix B for details). Hence, this co-pollutant benefits analysis is reporting the changes in the underlying activity (i.e., reduction in gasoline and diesel consumption).
This assumption is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because the original GHG modeling performed for Scope 1 GHG emissions for Measure 4 was completed using equations extracted from TGIT, which does not include co-pollution impacts.

Scope 2: Measure 4 would increase grid-electricity consumption and, therefore, any increase in CAP and HAP-related emissions from the production of electricity would occur outside of the reservation.
This analysis is consistent with requirements under page 7 of EPA Co-Benefits Technical Reference Document because 1) the original GHG modeling performed for Scope 2 GHG emissions for Measure 4 was completed in TGIT, which does not include co-pollution impacts (see Appendix B for details) and 2) Measure 4 involved energy efficiency and CAP and HAP impacts would not occur in the area implementing this measure.

[1] EPA, 2023. CPRG Technical Reference Document - Benefits Analyses: Co-Pollutant Impacts. Page 7. Available at https://www.epa.gov/system/files/documents/2023-05/Technical_Reference_Doc_Copollutant_Assessment_FINAL_TO_POST.pdf. Accessed February 15, 2024)