Priority Climate Action Plan for Gila River Indian Community

March 2024

PREPARED FOR:
U.S. Environmental Protection Agency

PREPARED BY:
Gila River Indian Community
Department of Environmental Quality
168 Skill Center Rd, Sacaton, AZ 85147
Tel: (520) 526-2234

Contents

List of Tables

Appendices

Acronyms

CCAP	Comprehensive Climate Action Plan
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
Community	Gila River Indian Community
CPRG	Climate Pollution Reduction Grant
EI	Emission Inventory
GHG	Greenhouse Gas
GRIC	Gila River Indian Community
HAP	Hazardous Air Pollutants
IRA	Inflation Reduction Act
NOx	Oxides of Nitrogen
PCAP	Priority Climate Action Plan
PM2.5	Particulate Matter less than or equal to 2.5 microns
MT	Metric Tons
SO2	Sulfur Dioxide
VOCs	Volatile Organic Compounds
VMT	Vehicle Miles Traveled

1 Introduction

This Priority Climate Action Plan (PCAP) for Gila River Indian Community (GRIC or Community) serves as the GRIC Department of Environmental Quality (DEQ) narrative report to meet Key Deliverable #1 of the Climate Pollution Reduction Grant (CPRG or Grant). This report includes the listing of priority measures to reduce greenhouse gases (GHG) and analyses of emissions reductions under future implementation grant funding.

1.1 Climate Pollution Reduction Grants Program

Through the Inflation Reduction Act of 2022 (IRA), Congress provided many tools to pursue GHG pollution reductions, including the CPRG program. In implementing this and many other programs under the Inflation Reduction Act, EPA seeks to achieve three broad objectives:

- Tackle damaging climate pollution while supporting the creation of good jobs and lowering energy costs for families.
- Accelerate work to address environmental injustice and empower community-driven solutions in overburdened neighborhoods.
- Deliver cleaner air by reducing harmful air pollution in places where people live, work, play, and go to school.

1.2 Climate Action Plans

The CPRG Program includes a planning phase and an implementation phase. Deliverables for the planning phase grant recipients include an initial PCAP followed by a Comprehensive Climate Action Plan (CCAP) at the end of the grant period.

The PCAP includes a focused list of near-term, high-priority, implementation ready measures to reduce GHG pollution and an analysis of GHG emissions reductions that would be achieved through implementation. The PCAP must include:

- A GHG inventory;
- Quantified GHG reduction measures;
- A benefits analysis; and
- A review of authority to implement.

The Community was awarded a planning grant to prepare and submit a PCAP and a CCAP. This PCAP includes the elements listed above.

1.3 Gila River Indian Community

The Gila River Indian Community, a federally-recognized tribe in Region 9, is a rural community located on 374,000 acres in south-central Arizona. The Community has a membership (on and off the reservation) of approximately 23,040 people with an on-reservation population of approximately 13,267 people. The Gila River Indian Reservation's main boundaries are located south of and adjacent to the Phoenix Metropolitan Area (PMA).

The Community has one operating industrial park (Lone Butte Development) that contains approximately 40 commercial and industrial facilities and two sand and gravel plants that contain approximately 10 aggregate-related facilities. There are also several commercial and industrial facilities scattered throughout the Community outside of the industrial parks. Commercial and industrial

facilities within the Community are minor (Non-Title V) sources, and the GRIC Air Quality Program (AQP) is currently in the process of permitting these facilities.

There are approximately 38,400 agricultural acres under production within the Community. Approximately 11,000 agricultural acres are located within Maricopa County. Of the 11,000 acres, most are planted in alfalfa, which is very rarely cultivated and considered a beneficial cover crop for dust mitigation.

The largest source of GHG emissions within the Community is vehicle emissions. Several major highways bisect the Community and handle commuter traffic between the cities of Tucson, Maricopa, and Florence/Coolidge (south of the Community) and the PMA (north of the Community). These highways include Interstate 10 and State Routes SR87, SR347, and SR 587.

1.4 Community Engagement

GRIC engaged its members and employees with a questionnaire that posted online to solicit input on GHG emission reduction strategies for development of the Priority GHG Emission Reduction Measures identified in Section 3.

There were 239 responses to the survey and 80% of the responses were GRIC members. The top 4 answers for each question along are presented below. A copy of the survey and responses are located in Appendix B.

1. How do you currently receive information about climate pollution?
    a. Social media (113)
    b. TV (95)
    c. Other websites (62)
    d. DEQ website (36)
2. How often do you think about climate pollution?
    a. Everyday (42%)
    b. Once a week (21%)
    c. Once a month (17%)
    d. Couple times a year (18%)
3. How concerned are you about these climate-related hazards?
    a. Water accessibility and security (64% very)
    b. Prolonged drought (89% very)
    c. Reduced air quality 76%
    d. Extreme heat (80% very)
4. What are your top priorities for reducing climate pollution impacts?
    a. Improve air, water and soil quality (192)
    b. Develop sustainable food systems (161)
    c. Reduce landfill waste (136)
    d. Transition to renewable energy (128)
5. How realistic is it for you to do the following activities to reduce carbon pollution?
    a. Buying locally sourced food and products
    b. Planting trees
    c. Repairing, reusing and recycling

   d. Using reusable containers rather than single-use plastic containers
6. I would be more likely to participate in carbon pollution reduction activities if?
   a. Has a better understanding of the impact (133)
   b. Took place in my neighborhood (125)
   c. Saved me money (120)
   d. It was something my friends, co-workers and family did (63)
7. Which GRIC Community and Departmental activities do you support to lessen the impact of climate change and build environmental resiliency?
   a. Promoting locally-sourced food
   b. Prioritizing planting of native species
   c. Offering energy-efficient upgrades to building and homes
   d. More shade options to reduce heat exposure
8. What barriers do you face when trying to adopt a more environmentally-friendly lifestyle?
   a. Financial constraints (183)
   b. Limited information on sustainable practices (121)
   c. Lack of access to sustainable products and services (121)
   d. Lack of government policies and programs to adopt sustainable practices (105)

2 Greenhouse Gas (GHG) Inventory

2.1 Purpose and Scope

The 2022 baseline greenhouse gas (GHG) emissions inventory (EI) calculated for the Gila River Indian Community (GRIC or Community) is included in Appendix A. The year 2022 was selected as the baseline year as a compromise between having the most recent year of complete and available records while not being as much impacted by the disruption of the COVID Pandemic that started in 2020. A summary of the GHG EI is presented below.

The Tribal GHG Inventory Tool: Community Module version 2024.1 (GHG Tool) was used to evaluate and calculate GHG emissions within GRIC. The 2022 baseline GHG EI includes emissions from the following source categories:

- Stationary combustion (natural gas and propane usage);
- Electricity usage;
- Mobile combustion;
- Waste generation;
- Wastewater treatment;
- Imported water usage;
- Agricultural fertilizer usage;
- Urban forestry (not applicable on GRIC); and
- Other sources of GHG emissions.

The data collection for this GHG EI was accomplished by requesting data from electricity, natural gas and propane providers; using vehicle miles traveled (VMT) data from the Maricopa Association of Governments (MAG); and using available data for agricultural fertilizer usage, water imports to GRIC, wastewater treatment plants, waste disposal and recycling.

When possible, data for calendar year 2022 was used. Emissions calculations using the GHG Tool are reported as gross emissions by sector for:

- Residential
- Commercial/Institutional
- Industrial (includes Agriculture)
- Energy Generation (not applicable for GRIC in 2022)

The emissions are reported as carbon dioxide equivalent (CO_2e) emissions, and the GHG Tool can calculate the following GHGs:

- Carbon dioxide [CO_2]
- Methane [CH_4]
- Nitrous oxide [N_2O]
- Hydrofluorocarbons [HFCs]
- Perfluorochemicals [PFCs]
- Sulfur hexafluoride [SF_6]

The results of this GHG EI will be used to:

- Evaluate the sources of GHG emissions within the Community, including indirect emissions based on usage;
- Understand trends in emissions (e.g. electricity usage per household) over time; and
- Identify opportunities for GHG emissions reductions and prevention.

2.2 Results

The results of the 2022 baseline year GHG EI show that 724,142 MT CO_2e were emitted as a result of activities occurring within the boundaries of the Community. Of the total GHG emissions, mobile sources are the largest source category (56%) followed by electricity usage (29%). Table 1 below provides a summary of the GHG emission for the nine source categories by sector.

Table 2-1. Total GHG Emissions by Source and Sector (MT CO_2e)

Source	Sector			TOTAL	Percent of Total
	Residential	Commercial/ Institutional	Industrial		
Stationary Combustion	476	3,666	5,099	**9,242**	1%
Electricity Consumption	16,817	87,887	1,213	**105,917**	15%
Mobile Combustion	353,009	205,108	0	**558,116**	77%
Solid Waste (Landfills)	0	0	0	**0**	0%
Waste Generation	1,300	2,395	0	**3,694**	1%
Wastewater Treatment	0	5,368	0	**5,368**	1%
Water	0	0	10,940	**10,940**	2%
Agriculture & Land Management	0	0	30,864	**30,864**	4%
Urban Forestry	0	0	0	**0**	0%
Other	0	0	0	**0**	0%
TOTAL	**371,602**	**304,423**	**48,117**	**724,142**	
Percent of Total	51%	42%	7%		

Direct emission sources include stationary and mobile combustion and wastewater treatment. Indirect emission sources include electricity usage (electricity generated off-Community), waste generation (waste generated on GRIC is disposed off-Community), agricultural land use (fertilizer applicaiton), and imported water (electricity used to move imported water is generated off-Community).

3 Priority GHG Emission Reduction Measures

This section includes a focused list of near-term, high-priority, implementation ready measures to reduce GHG pollution and an analysis of GHG emissions reductions that would be achieved through implementation. The measures included in this section do not represent all available GHG emission reduction and carbon sink enhancement measures.

The selection of priority measures for the Gila River Indian Community was based on the following criteria:

- Review of 2007 and 2022 baseline year GRIC GHG emissions inventories;
- Review of the preliminary 2019 GRIC Climate Change Adaptation and Resiliency Plan
- Review of community priorities and feedback from PCAP outreach (Section 1.4);
- Consideration of GHG emission reductions; and
- Reductions in criteria air pollutants.

Priority measures cover the electric power, mobile combustion (transportation), and stationary combustion sources which account for approximately 93% of 2022 GRIC GHG emissions. Priority measures are organized by sector and include the following information:

- Estimate of the quantifiable GHG emissions reductions
- Implementing agency or agencies
- Implementation schedule and milestones
- Geographic location (if applicable)
- Funding sources (if relevant)
- GRIC authority to implement
- Metrics for tracking progress

3.1 Electric Power

The GHG emission reductions measures in this sector include renewable energy generation systems and renewable energy microgrids. For 2022, electric power consumption generated 105,917 $MTCO_2e$ or 15% of total GHG emissions associated with GRIC.

3.1.1 Renewable Energy Generation for GRIC Government Facilities

This measure includes deployment of renewable energy solar generation systems at GRIC Government facilities. Projects may include installation of photovoltaic panels on buildings (i.e., rooftop solar) or covered parking structures.

Estimate of GHG Reductions	60 – 2,400 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Year 1-Planning; Year 2-Design; Years 3/4-Construction; Year 5-Production
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	kWh of clean electricity produced/consumed kWh of electricity use reduced

3.1.2 Renewable Energy Generation for Residences

This measure includes deployment of renewable energy solar generation systems at residential locations within the Community. Projects may include installation of photovoltaic panels on residential structures (i.e., rooftop solar) or ground-mounted for existing and/or new construction homes.

Estimate of GHG Reductions	50 – 500 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Year 1-Planning; Year 2-Design; Years 3/4-Construction; Year 5-Production
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	kWh of clean electricity produced/consumed kWh of electricity use reduced

3.1.3 Renewable Energy Microgrids for GRIC Government Facilities

This measure includes the deployment of renewable energy microgrids at GRIC Government facilities. Projects may include the installation of solar and battery systems at GRIC facilities that could also double as resilience hubs.

Estimate of GHG Reductions	50 – 100 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Year 1-Planning; Year 2-Design; Years 3/4-Construction; Year 5-Production
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	kWh of clean electricity produced/consumed kWh of electricity use reduced

3.2 Transportation

The GHG emission reductions measures in this sector include fleet electrification and promoting locally-sourced food. For 2022, mobile source combustion (transportation) generated 558,116 MT CO_2e or 77% of total GHG emissions associated with GRIC; however, a majority of these mobile source emissions are associated with non-GRIC commuter and interstate traffic traveling through the Community on the Interstate and State highways that bisect the GRIC reservation.

3.2.1 Fleet Electrification for GRIC Government Vehicles and Charging Infrastructure

This measure includes the replacement of GRIC Government-owned gas and diesel fleet vehicles with electric vehicles. This measure also includes the installation of electric vehicle (EV) charging infrastructure for the GRIC fleet and publicly available charging infrastructure. The GRIC fleet consists of approximately 1,000 light duty vehicles.

Estimate of GHG Reductions	15 - 300 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Years 1/2-Planning; Years 3/4-Procurement/Construction; Year 5-Delivery / In-Use
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	Number of vehicles replaced

3.2.2 Electric Vehicles for Rideshare

This measure includes providing electric vehicles for ridesharing for GRIC employees.

Estimate of GHG Reductions	6 - 18 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Years 1/2-Planning; Years 3/4-Procurement/Construction; Year 5-Delivery / In-Use
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	Number of vehicles replaced

3.2.3 Locally-Sourced Food

This measure includes promoting and incentivizing the development of local traditional food markets and the growing of Native, traditional foods to reduce the greenhouse gas emissions associated with food transportation.

Estimate of GHG Reductions	2 – 20 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Years 1/2-Planning / Community Engagement; Year 3-Procurement; Year 4-Construction; Year 5-Delivery / In-Use
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	Number of residential or community gardens established

3.3 Residential Buildings

The GHG emission reductions measures in this sector may include the following residential building energy efficiency improvements:

- Building weatherization
- LED lighting
- Heater/air conditioning (HVAC) upgrades

For 2022, the electric power consumption and stationary fuel combustion for the residential sector generated 16,817 MT CO_2e and 476 MT CO_2e, respectively, or 2.4% of total regional GHG emissions.

Estimate of GHG Reductions	2 - 60 MT CO_2e
Implementing Agency	Gila River Indian Community
Implementation & Milestones	Years 1/2-Planning; Years 3/4-Procurement/Construction; Year 5-Delivery / In-Use
Geographic Location	Gila River Indian Community
Funding Sources	CPRG Implementation Grant
Authority to Implement	Yes
Metrics for Tracking Progress	Number of homes retrofitted Energy savings

4 Benefits Analysis

4.1 Co-Pollutant Emission Reductions

All of the Priority GHG Emission Reduction Measures in Section 3 are focused on reducing combustion of fossil fuels for electricity generation and transportation. The combustion of fossil fuels also generates additional pollutant emissions. These co-pollutant emissions may include fine particulate matter (PM2.5), carbon monoxide (CO), sulfur dioxide (SO2), volatile organic compounds (VOCs), hazardous air pollutants (HAPs), and nitrogen oxides (NOx). Ozone formation is also expected to be reduced by reducing the pre-cursors for ozone (VOCs and NOx); however, ozone is not discussed further in this section. Consequently, reducing GHG emissions is also expected to reduce co-pollutant emissions.

Combusting a unit of fossil fuel will result in a fixed ratio of GHG to other co-pollutant emissions. Therefore, for the purposes of this analysis we will assume that the percent reductions in fossil fuel combustions will also result in an equivalent percent reduction in the GHG and co-pollutant emissions. For example, reducing power consumption by 10% will also result in a 10% reduction in GHG emissions and a 10% reduction in co-pollutant emissions.

Based on the GHG EI, the combustion processes associated with power generation and stationary and mobile sources resulted in approximately 673,275 MT CO2e. It is estimated that the GHG emission reduction measures in Section 3 could result in the reduction of between 185 and 3,398 MT CO2e, or 0.03% to 0.5% of CO2e emissions associated with combustion. Therefore, co-pollutant emissions could also be reduced by 0.03% to 0.5% if the GHG emission reduction measures are implemented. Note the percentages will be much higher if the commuter and interstate vehicles traveling through the Community are removed from the total GHG emissions.

4.2 Benefits

In accordance with the *Addendum to the Interim Implementation Guidance for the Justice40 Initiative, M-21-28, on using the Climate and Economic Justice Screening Tool (CEJST)* memo, dated January 23, 2023, all Federally Recognized Tribal entities are considered disadvantaged communities for the purposes of the Justice40 Initiative. As a disadvantaged community, GRIC is expected to benefit from the GHG emission reduction measures identified in Section 3 in the following ways:

- Decreased purchased energy costs from on-GRIC renewable energy power generation; and
- Decreased energy costs from energy efficiency improvements

5 Review of Authority to Implement

The Gila River Indian Community has the authority to implement the GHG emission reduction measures identified in Section 3 that occur within the boundaries of the reservation.

Appendix A. Gila River Indian Community Preliminary Greenhouse Gas Emissions Inventory 2022 Baseline Year

Gila River Indian Community
Preliminary Greenhouse Gas Emissions Inventory
2022 Baseline Year

PREPARED BY:
Gila River Indian Community
Department of Environmental Quality
168 Skill Center Rd, Sacaton, AZ 85147
Tel: (520) 526-2234

March 2024

Contents

List of Figures

List of Tables

List of Appendices

ACRONYMS

APS	Arizona Public Service
CAP	Central Arizona Project
CCAP	Comprehensive Climate Action Plan
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
Community	Gila River Indian Community
CPRG	Climate Pollution Reduction Grant
DEQ	GRIC Department of Environmental Quality
DPW	GRIC Department of Public Works
eGRID	Emissions & Generation Resource Integrated Database
EF	Emission Factor
EI	Emission Inventory
GHG	Greenhouse Gas
GRIC	Gila River Indian Community
GRICUA	GRIC Utility Authority
HAP	Hazardous Air Pollutants
IRA	Inflation Reduction Act
kWh	Kilowatt Hour
MWh	Megawatt Hour
NOx	Oxides of Nitrogen
PCAP	Priority Climate Action Plan
PMA	Phoenix Metropolitan Area
PM2.5	Particulate Matter less than or equal to 2.5 microns
MT	Metric Tons
SO2	Sulfur Dioxide
SRP	Salt River Project
VOCs	Volatile Organic Compounds
VMT	Vehicle Miles Traveled

1 Executive Summary

This report documents the preliminary 2022 baseline greenhouse gas (GHG) emissions inventory (EI) for the Gila River Indian Community (GRIC or Community) for inclusion into the Priority Climate Action Plan (PCAP) for GRIC. A more comprehensive GHG EI for 2022 will be included in the Comprehensive Climate Action Plan (CCAP) due at a future date (in 2026 at the time of this report). The boundaries for this EI are the GRIC reservation boundaries. The GRIC Department of Environmental Quality (DEQ) received funding for this project through the Climate Pollution Reduction Grant (CPRG) from the United States Environmental Protection Agency (EPA).

The EPA Tribal GHG Inventory Tool: Community Module version 2024.1 (GHG Tool) was used to evaluate and calculate GHG emissions within GRIC. The 2022 baseline GHG EI includes emissions from mobile sources, electricity usage, natural gas usage, propane usage, wastewater treatment, agricultural fertilizer usage, imported water usage, and other sources of GHG emissions as identified in the GHG Tool.

When possible, data for calendar year 2022 was used. Emissions calculations using the GHG Tool are reported as gross emissions by sector for:

- Residential
- Commercial/Institutional
- Industrial (includes Agriculture)
- Energy Generation (not applicable for GRIC in 2022)

Based on the results of the GHG Tool, the total GHG emissions within GRIC were 724,142 metric tons (MT) CO_2e in 2022. Mobile sources represent the largest category of emissions sources for the Community (77%) followed by electricity usage (15%). Table 1-2 below provides a summary of the GHG emission for the source categories by sector.

Table 1-1. Total GHG Emissions by Source and Sector (MT CO_2e)

Source	Sector			TOTAL	Percent of Total
	Residential	Commercial/ Institutional	Industrial		
Stationary Combustion	476	3,666	5,099	**9,242**	1%
Electricity Consumption	16,817	87,887	1,213	**105,917**	15%
Mobile Combustion	353,009	205,108	0	**558,116**	77%
Solid Waste (Landfills)	0	0	0	**0**	0%
Waste Generation	1,300	2,395	0	**3,694**	1%
Wastewater Treatment	0	5,368	0	**5,368**	1%
Water	0	0	10,940	**10,940**	2%
Agriculture & Land Management	0	0	30,864	**30,864**	4%
Urban Forestry	0	0	0	**0**	0%
Other	0	0	0	**0**	0%
TOTAL	**371,602**	**304,423**	**48,117**	**724,142**	
Percent of Total	51%	42%	7%		

The results of this GHG EI will be used to evaluate the major sources of GHG emissions within the Community, including indirect emissions based on usage, understand trends in emissions (e.g. electricity usage per household) over time, and identify opportunities for GHG emissions reductions and prevention. Since the Community experiences relatively slow growth when compared with the growth of areas like the Phoenix Metropolitan Area (PMA), some baseline emissions values are expected to remain relatively constant over time.

2 Introduction

2.1 Scope of the Emission Inventory

This report documents the preliminary 2022 baseline greenhouse gas (GHG) emissions inventory (EI) for the Gila River Indian Community (GRIC or Community) for inclusion into the Priority Climate Action Plan (PCAP) for GRIC. A more comprehensive GHG EI for 2022 will be included in the Comprehensive Climate Action Plan (CCAP) due at a future date (in 2026 at the time of this report). The boundaries for this EI are the GRIC reservation boundaries. The GRIC Department of Environmental Quality (DEQ) received funding for this project through the Climate Pollution Reduction Grant (CPRG) from the United States Environmental Protection Agency (EPA).

2.2 Background

The Gila River Indian Community (GRIC or Community), a federally-recognized tribe, is a rural community located on approximately 374,000 acres in south-central Arizona, adjacent to the southern border of the Phoenix Metropolitan Area (PMA) (Figure 1), with a 2022 on-reservation population of approximately 13,267 people. The reservation was established in 1859. Members of the Community are Akimel O'odham (Pima) and Pii Paash (Maricopa) tribes and are the fourth most populous Indian Reservation in the United States. A portion of the Community (92,000 acres) lies within Maricopa County. This portion of GRIC is located within the Phoenix Non-Attainment Area for particulate matter less than 10 microns (PM10), which has been classified as "serious" by the Environmental Protection Agency (EPA) (Figure 2-1).

The Community has one operating industrial park (Lone Butte Development) that contains approximately 40 commercial and industrial facilities and two sand and gravel plants that contain approximately 10 aggregate-related facilities. There are also several commercial and industrial facilities throughout the Community outside of the industrial parks. Commercial and industrial facilities within the Community are minor (Non-Title V) sources. These industrial facilities are not required to submit GHG emissions reports to GRIC DEQ or to the EPA.

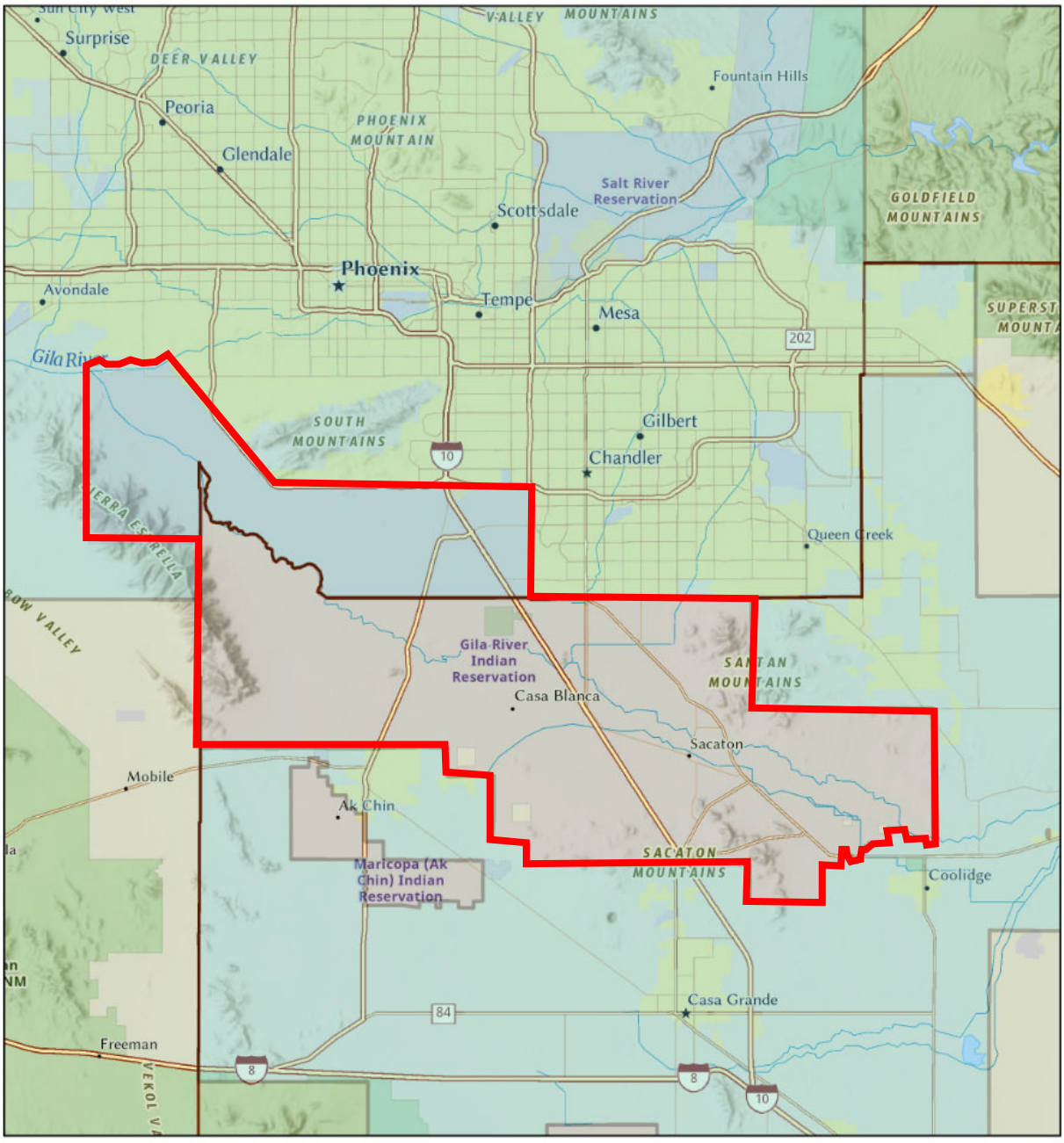
There are approximately 38,400 acres of agricultural land under production within the Community that includes cotton, alfalfa, wheat/barley, citrus and vegetables. Approximately 11,000 agricultural acres are located within Maricopa County. Of the 11,000 acres, most are planted in alfalfa, which is very rarely cultivated and considered a beneficial cover crop for dust mitigation.

There is one previous GHG EI report for the Community that was completed in 2011 for a 2007 baseline year.

2.3 Study Area

The Community extends from the PMA on the north, south to near Casa Grande, and from the Estrella Mountains on the west to Coolidge on the east (Figure 2-1). The Community lies in Sonoran Desert terrain that is primarily light scrub and cactus with an elevation of approximately 1,200 to 1,400 feet above sea level. The temperature varies from approximately 30°F in the winter to >115°F in the summer. Annual precipitation is light with approximately 36 days per year with >0.01 inches or about seven (7) inches of rainfall per year. Wind speed and direction can vary, but generally the wind blows from the east to west in the morning and reverses direction in the afternoon. Wind speed can vary from a slight breeze to 70 miles per hour winds during the summer monsoon season.

Figure 2-1. Map of Gila River Indian Community



4/1/2024, 9:31:38 AM

1:577,791

0 4 8 16 mi

0 5 10 20 km

PM10 - Nonattainment

Counties

Gila River Indian Community Reservation Boundary

Map copied from Arizona Department of Environmental Quality eMaps

Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USFWS, Esri, USGS

3 Emission Inventory Methodology

3.1 General

The EPA Tribal GHG Inventory Tool: Community Module version 2024.1 (GHG Tool) was used to evaluate and calculate GHG emissions within GRIC. The 2022 baseline GHG EI includes emissions from mobile sources, electricity usage, natural gas usage, propane usage, wastewater treatment, agricultural fertilizer usage, imported water usage, and other sources of GHG emissions. The data collection for this GHG EI was accomplished by requesting data from electricity, natural gas and propane providers; using vehicle miles traveled (VMT) provided by the Maricopa Association of Governments (MAG); and using available data for agricultural fertilizer usage, water imports to GRIC wastewater treatment plants, waste disposal and recycling.

The term 'Scope' is used to categorize direct and indirect GHG emissions to facilitate identification of emissions reductions that can be accomplished on GRIC:

- Scope 1 – all direct GHG emissions sources from activities taking place within the GRIC.
- Scope 2 –indirect GHG emissions from the consumption of purchased electricity using only grid-average emission factors.
- Scope 3 – all other indirect emissions that occur as a result of activities within the GRIC. For this GHG Tool, this includes imported water consumption, waste generation, agricultural and land management, and urban forestry (not applicable for GRIC).

The emissions are reported as carbon dioxide equivalent (CO_2e) emissions, and the GHG Tool can calculate the following GHGs:

- Carbon dioxide [CO_2]
- Methane [CH_4]
- Nitrous oxide [N_2O]
- Hydrofluorocarbons [HFCs]
- Perfluorochemicals [PFCs]
- Sulfur hexafluoride [SF_6]

Each GHG has a different global warming potential (GWP) effect on the atmosphere, with CO_2 serving as the reference gas (see Table 1-1). The GWP was developed to allow comparisons of the various GHGs, relative to the emissions of 1 ton of CO_2.

Table 3-1. Global Warming Potentials for GHG Emissions

Gas	GWP*
CO_2	1
CH_4	27-30
N_2O	273

* EPA values based on the most recent Intergovernmental Panel on Climate Change (IPCC)

3.2 Mobile Combustion (Scope 1)

The calculation of GHG emissions from mobile sources was based on the GHG Tool and applied to 2020 or 2022 GRIC data. The 2022 total vehicle miles traveled (VMT) within the GRIC boundaries was provided by MAG as 1,142,399,613, with 389,726,998 miles in Maricopa County (34%) and 752,672,615 miles in

Pinal County (66%). It should be noted that a vast majority of the VMT is associated with commuter and interstate vehicles that travel on the Interstate and State highways that bisect the Community. The commuter and interstate vehicles travel between the PMA north of GRIC and cities and towns south of GRIC (e.g., cities of Maricopa, Casa Grande, Tucson, etc) and not owned or controlled by GRIC and should be considered Scope 3 transport-related emissions.

The GHG Tool inputs for distribution of VMT by vehicle types was based on the percentage of miles/year from the 2020 MAG GHG EI (Table 3-1).

Table 3-2. Vehicle Miles Traveled in 2020 from MAG EI

Vehicle Type	Maricopa County		Pinal County	
	Local avg miles/yr	% by miles/yr	Local avg miles/yr	% by miles/yr
Passenger car (gas)	27,125,246,190	70%	2,545,949,927	66%
Passenger truck (gas)	7,477,721,056	19%	674,361,718	17%
heavy-duty (gas)	532,680,054	1%	58,642,883	2%
motorcycle (gas)	212,390,965	1%	20,965,610	1%
passenger car (diesel)	199,446,192	1%	18,199,823	0%
passenger truck (diesel)	303,950,170	1%	25,075,985	1%
heavy-duty (diesel)	2,768,132,695	7%	514,937,116	13%
TOTAL	**38,619,567,322**	**100%**	**3,858,133,062**	**100%**

The Pinal County vehicle type and mileage distribution (% by miles/yr) was determined to be more representative of GRIC than the Maricopa County distribution due to the Community's more rural nature. The Pinal County 2022 VMT by vehicle type was calculated based on total VMT times the percent of miles per year by vehicle type, and local average miles per gallon (mile/gal) were used to calculate the 2022 gallons of fuel used by vehicle type for inputs into the GHG tool (Table 3-2). Each vehicle type was assigned to either the residential or commercial/institutional sector and the vehicle model year was set to 2020 since no detailed fleet mix by year was available.

Table 3-3. GRIC Vehicle Miles Traveled and Gallons of Fuel Use for 2022

Vehicle Type	Pinal County		GRIC		
	Local avg miles/yr	% by miles/yr	2022 miles	Local Avg mile/gal*	2022 gallons
Passenger car (gas)	2,545,949,927	66%	753,860,005	25.9	29,106,564
Passenger truck (gas)	674,361,718	17%	199,679,626	19.9	10,034,152
heavy-duty (gas)	58,642,883	2%	17,364,255	8.5	2,042,854
motorcycle (gas)	20,965,610	1%	6,207,952	25.2	246,347
passenger car (diesel)	18,199,823	0%	5,388,998	28.9	186,471
passenger truck (diesel)	25,075,985	1%	7,425,041	17.7	419,494
heavy-duty (diesel)	514,937,116	13%	152,473,736	8.4	18,151,635
TOTAL	**3,858,133,062**	**100%**	**1,142,399,613**		**60,187,516**

* From 2020 MAG EI for Pinal County

The GHG Tool calculated the net GHG emissions from mobile sources based on the energy (fuel) use data. Table 3-3 shows the calculated mobile source emissions by sector.

Table 3-4. Mobile Source GHG Emissions by Sector for 2022 (MT CO_2e)

Sector	CO_2	CH_4	N_2O	TOTAL
Residential	352,005.32	222.73	780.89	353,009
Commercial/Institutional	203,264.45	56.51	1,786.57	205,108
Industrial	-	-	-	-
Energy Generation	-	-	-	-
TOTAL	**555,269.77**	**279.23**	**2,567.47**	**558,116**

3.3 Electric Power Consumption (Scope 2)

The GHG Tool calculated indirect GHG emissions based on electricity usage (not actual emissions at the source of generation) using the regional Emissions & Generation Resource Integrated Database (eGRID) default emissions factor for the Arizona – New Mexico (AZNM) eGRID subregion. Electricity usage in kilowatt hours (kWh) for individual accounts for 2022 was obtained from the Gila River Indian Community Utility Authority (GRICUA) and Salt River Project (SRP) electrical providers. Arizona Public Service (APS) provides electricity to approximately 10 customers in District 7, but was not able to provide 2022 data. Electricity usage was assigned to residential, commercial / institutional, and industrial sectors. There is no electricity generation with GRIC. Table 3-4 provides the electricity consumption data by utility and sector and Table 3-5 summarizes the GHG emissions by sector.

Table 3-5. Electric Power Consumption by Utility Provider and Sector for 2022

Utility	Sector	Electricity Consumed (kWh)
GRICUA	Residential	44,797,459
GRICUA	Commercial/Institutional	212,129,667
GRICUA	Industrial	1,476,809
SRP	Residential	253,342
SRP	Commercial/Institutional	23,307,431
SRP	Industrial	1,773,391
	TOTAL	**283,738,099**

Table 3-6. Electric Power Consumption GHG Emissions by Sector for 2022 (MT CO_2e)

Sector	CO_2	CH_4	N_2O	TOTAL
Residential	16,749.42	29.75	37.91	16,817.08
Commercial/Institutional	87,533.09	155.49	198.10	87,886.68
Industrial	1,208.39	2.15	2.73	1,213.27
Energy Generation	-	-	-	-
TOTAL	**105,490.90**	**187.39**	**238.74**	**105,917.04**

3.4 Stationary Fuel Combustion (Scope 1)

Stationary fuel combustion data entered into the GHG Tool include Southwest (SW) Gas natural gas use by sector, hot mix asphalt burner fuel (diesel and on-spec used oil) used in the industrial sector, and Gila River Farms propane used in the commercial / institutional sector. Table 3-6 shows the calculated emissions by fuel type and Table 3-7 shows the calculated emission by sector.

Table 3-7. Stationary Fuel Combustion GHG Emissions by Fuel Type for 2022 (MT CO_2e)

Fuel Type	CO_2	CH_4	N_2O	TOTAL
Natural Gas	3,180	8	2	3,189
Diesel	626	1	1	628
Propane	1,102	1	3	1,106
On-Spec Used Oil (Residual Fuel Oil No. 5)	4,304	5	9	4,318
TOTAL	**9,212**	**15**	**15**	**9,242**

Table 3-8. Stationary Fuel Combustion GHG Emissions by Sector for 2022 (MT CO_2e)

Sector	CO_2	CH_4	N_2O	TOTAL
Residential	475	1	0	476
Commercial/Institutional	3,654	8	4	3,666
Industrial	5,083	6	11	5,099
Energy Generation	-	-	-	-
TOTAL	**9,212**	**15**	**15**	**9,242**

3.5 Solid Waste (Scope 1)

There are no landfill facilities on GRIC, so there are no direct emissions from solid waste generation. All of the waste generated within the Community is transported off-site for disposal. The GHG emissions for the off-site disposal of waste is covered in Section 3.7 (Waste Generation).

3.6 Agriculture and Land Management (Scope 3)

Using aerial images, MAG GIS data, and DEQ pesticide application registrations, it is estimated that there are approximately 38,400 acres of agricultural fields in production. The 2022 fertilizer use data was not available for GRIC at the time this EI was prepared. Therefore, the GRIC fertilizer use data was estimated from the calculated application rate in the 2020 Maricopa County GHG EI. According to the 2020 Maricopa County GHG EI Public Data file, there were 16,365,824 kilograms (kg) of farm fertilizer used and 143,066 acres of crop land, which equates to annual fertilizer application rate of approximately 250 pounds per acre (lb/ac). According to the Gila River Indian Irrigation and Drainage Department (GRIIDD), some of the smaller operations do not use fertilizer due to cost and it is estimated that those smaller operations are responsible for approximately 4,000 acres (this value is also supported by the DEQ pesticide application registrations). Based on an annual fertilizer application rate of 250 lb/ac and the remaining approximately 34,400 acres of fields that are assumed to use fertilizer, the estimated synthetic fertilizer used in 2022 was 4,300 tons. The GHG Tool calculated 30,864 MT CO_2e resulting from agricultural fertilizer use, which was allocated to the industrial sector.

3.7 Wastewater (Scope 1)

All of the wastewater generated on GRIC is sent to septic tanks or wastewater lagoon systems. According to DEQ records, there are 200 septic systems (households) on GRIC. It was assumed that there are 2.5 people per household or 500 people served by septic systems. Therefore, the wastewater from the remaining 13,268 people is treated in the wastewater lagoon systems. There are 5 partially aerated lagoon systems and one non-aerated lagoon system on GRIC. Each lagoon system contains multiple cells, and for the aerated systems only the first one or two cells are aerated. It was assumed that wastewater from 5/6 of the 13,268 people (11,057) was treated in the aerated lagoon systems and the wastewater from the remaining 1/6 of the 13,268 people (2,211) was treated in the non-aerated lagoon system.

Based on information received from EPA's contractor, since the aerated lagoon systems have aerated and non-aerated cells, those systems will have both aerobic and anaerobic conditions. The non-aerated lagoons will only have anaerobic conditions. Additionally, nitrification/denitrification will only occur as a result of aeration, so that process is only associated with aerated lagoon systems.

The following inputs for non-septic wastewater treatment facilities were used in the GHG Tool:

- Population served by facilities with nitrification/denitrification (aerated systems) = 11,057
- Population served by facilities without nitrification/denitrification (non-aerated systems) = 2,211
- Population served by anaerobic treatment facilities (all systems) = 13,268
- Population served by aerobic treatment facilities (aerated systems) = 11,057

Table 3-8 shows the calculated emissions for wastewater treatment by sector for 2022.

Table 3-9. Wastewater GHG Emissions by Sector for 2022 (MT CO_2e)

Sector	CO_2	CH_4	N_2O	TOTAL
Residential	-	-	-	-
Commercial/Institutional	0	5,092.75	275.24	**5367.99**
Industrial	-	-	-	-
Energy Generation	-	-	-	-
TOTAL	0	5,092.75	275.24	**5367.99**

3.8 Waste Generation (Scope 3)

The EPA Waste Reduction Model (WARM) model was used to estimate solid waste GHG emissions generated from GRIC solid waste, as well as GHG emissions avoided through recycling. According to the GRIC Department of Public Works (DPW), the mixed municipal solid waste from GRIC landfilled in 2022 was estimated to be 13,788 tons (approximately 35% residential and 65% commercial) and the mixed recyclables from GRIC was estimated to be 154.11 tons. In the WARM model, the landfilled waste resulted in 4,125.57 MT CO_2e of GHG emissions and the recycled material resulted in a reduction of 431.15 MT CO_2e of GHG emissions. Therefore, solid waste emissions of 3,694.42 MT CO_2e was entered into the GHG Tool. Table 3-9 shows the calculated emissions for waste generation by sector for 2022.

Table 3-10. Waste Generation GHG Emissions by Sector for 2022 (MT CO_2e)

Sector	TOTAL
Residential	1,299.92
Commercial/Institutional	2,394.50
Industrial	-
Energy Generation	-
TOTAL	**3,694.42**

3.9 Water Imports (Scope 3)

Water imported into GRIC was assigned to the industrial sector for agricultural use. According to the 2022 Year to Date Deliveries by Contract Type report from the Central Arizona Project (CAP), GRIC imported 16,048 AF (5,229,256,848 gallons) of water in 2022, which includes both on- and off-reservation contracts. The GHG Tool also has an entry for percent of total water used that comes from imported sources. For the GHG Tool, 100% was entered for the imported water so that GHG emissions would be calculated using the total amount of imported water. It is assumed that GHG emissions due to locally-sourced water are covered under the electric consumption section of the Tool. Table 3-10 shows the calculated emissions for imported water by sector for 2022.

Table 3-11. Imported Water GHG Emissions by Sector for 2022 (MT CO_2e)

Sector	CO_2	CH_4	N_2O	TOTAL
Residential	-	-	-	-
Commercial/Institutional	-	-	-	-
Industrial	10,895.98	19.36	24.66	10,939.99
Energy Generation	-	-	-	-
TOTAL	**10,895.98**	**19.36**	**24.66**	**10,939.99**

3.10 Urban Forestry (Scope 3)

There are no urban forests on GRIC, so this value was entered into the GHG Tool as 0 percent urban area with tree cover.

4 Summary

Based on the results of the GHG Tool, the total GHG emissions within GRIC were 724,142 MT CO_2e in 2022. Mobile sources represented the largest category of emissions sources for the Community (77%) followed by electricity usage (15%) and agriculture management (4%). Recycling on GRIC in 2022 resulted in approximately 432 MT CO_2e emissions avoided. Table 4-1 below provides a summary of the GHG emission for the GHG emission source categories by sector.

Table 4-1. Total GHG Emissions by Source and Sector (MT CO_2e)

Source	Sector			TOTAL	Percent of Total
	Residential	Commercial/ Institutional	Industrial		
Stationary Combustion	476	3,666	5,099	**9,242**	1%
Electricity Consumption	16,817	87,887	1,213	**105,917**	15%
Mobile Combustion	353,009	205,108	0	**558,116**	77%
Solid Waste (Landfills)	0	0	0	**0**	0%
Waste Generation	1,300	2,395	0	**3,694**	1%
Wastewater Treatment	0	5,368	0	**5,368**	1%
Water	0	0	10,940	**10,940**	2%
Agriculture & Land Management	0	0	30,864	**30,864**	4%
Urban Forestry	0	0	0	**0**	0%
Other	0	0	0	**0**	0%
TOTAL	**371,602**	**304,423**	**48,117**	**724,142**	
Percent of Total	51%	42%	7%		

5 Quality Assurance Review

5.1 Overview

In order to conform to the GRIC CPRG QAPP, GRIC has conducted a quality assurance (QA) review of the data sources and estimation techniques used in the development of this emissions inventory. More information on the procedures and required quality control (QC) checks can be found in the GRIC CPRG QAPP. The following sections detail the approved QC procedures, and any necessary explanations of why local factors may differ from state or national averages.

In addition to the QC procedures, The GRIC CPRG QAPP requires a listing of quantified emissions reductions options for each sector, which is included in Attachment A. The example quantified GHG reduction measures in Attachment A were copied from the Maricopa-Pinal County Region Priority Climate Action Plan; Appendix A: Maricopa-Pinal County Region 2020 Greenhouse Gas Emissions Inventory; Attachment B, Table 37: GHG Emission Reduction Measure Quantification for the Maricopa-Pinal County Region; prepared by the Maricopa Association of Governments, dated February 2024.

5.2 Comparison to 2007 Baseline Year GHG EI

DEQ compared the GRIC 2022 GHG EI to the 2007 GHG EI to assess whether the results were similar and to look for any outlying values that required further attention. The comparison of the 2022 and 2007 GHG EI results are included in Table 5-1 below.

Table 5-1. Comparison of GRIC 2022 and 2007 GHG EIs (MT CO_2e)

Source	2022		2007	
	Total	Percent of Total	Total	Percent of Total
Stationary Combustion	**9,242**	1%	10,304	1%
Electricity Consumption	**105,917**	15%	151,032	21%
Mobile Combustion	**558,116**	77%	526,573	74%
Solid Waste (Landfills)	**0**	0%	- - -*	- - -*
Waste Generation	**3,694**	1%	- - -*	- - -*
Wastewater Treatment	**5,368**	1%	8,991	1%
Water	**10,940**	2%	- - -*	- - -*
Agriculture & Land Management	**30,864**	4%	14,634	2%
Urban Forestry	**0**	0%	- - -*	- - -*
Other	**0**	0%	2,556**	0%
TOTAL	**724,142**		**714,089**	

* Items were not addressed/calculated in the 2007 GHG EI

** GHG emissions from overhead electrical transmission within GRIC

5.3 Mobile Combustion Review

For mobile combustion GHG emission estimates, DEQ relied on relied upon data provided by MAG and data contained in MAG's PCAP, including the 2020 Maricopa and Pinal County GHG EI. DEQ did not review the data source for the VMT provided by MAG, but did compare the 2022 VMT against the VMT in the 2007 GHG EI. MAG performed a review of the mobile source data contained in the 2020 Maricopa and Pinal County GHG EI, which is included within the 2020 GHG EI.

For the review of the mobile combustion source, the following items were noted:

- These emissions are categorized as Scope 1; however, most of the VMT is from commuter and interstate vehicles that travel on the Interstate and State highways that bisect the Community that are not owned or controlled by GRIC and should be considered Scope 3 transport-related emissions.
- GHG emissions from nonroad sources (emergency generators and construction equipment) were not included in this preliminary EI, but will analyzed for the comprehensive EI. The Community does not have active airports or main railway lines.
- The 2020 fleet mix and fuel economy averages was applied to the 2022 VMT due to lack of readily available fleet mix information for 2022 for this preliminary EI. Since average fuel economies generally improve year-over-year, this is expected to result in an over-estimation of GHG emissions. The 2022 fleet mix will be re-assessed for the comprehensive EI.

5.4 Electric Power Consumption Review

For electric power GHG emission estimates, GRIC relied on data supplied by local electric utility companies GRICUA and SRP. GRICUA's jurisdiction is within the GRIC reservation boundaries. DEQ compared the total sales report from GRICUA provided to DEQ with the 2022 disposition/sales data for GRICUA on the Energy Information Administration (EIA) Form EIA-861 to assess the consistency of the different data streams. It is unknown if the GRICUA sale report data includes the losses; however, the total values reported appear to be within 0.1% of each other (see Table 5-2).

Table 5-2. Difference in Electricity Consumed between GRICUA Sales Report and EIA Form 861

Sector	Electricity Sold (kWh)		Percent Difference
	GRICUA Report	Form 861	
Residential	44,797,459	39,422,000	-12%
Commercial	212,129,667	183,540,000	-13%
Industrial (Pumping)	1,476,809	0	-100%
Energy Losses		35,206,000	
Total	**258,403,935**	**258,168,000**	**-0.1%**

Form 861 only provides electric data at the utility level and not for portions of the SRP service area within the GRIC boundaries, so a comparison with the SRP meter reports could not be performed. The SRP meter reports did not detail whether the account was residential, commercial, or industrial. Based on a review of the addresses and usage data contained in the SRP report, approximately 92% of the power consumption was estimated to be commercial and 7% was estimated to be water pumping (agricultural/industrial). The remaining 1% was assigned to be residential.

Additionally, DEQ confirmed that Arizona Public Service (APS) serves about 10 customers in District 7 of GRIC, but GRIC was not able to obtain the usage data from APS for this EI and the Form 861 data could not be used for reasons mentioned above.

For the electricity use quality check, DEQ attempted to compare the local energy consumption data to Tribal-level projections using the Department of Energy (DOE) State and Local Planning for Energy (SLOPE) tool; however, the SLOPE tool does not provide data at the Tribal reservation level. Therefore, a

deviation check could not be performed. As federal datasets, tools, and emission factors were used for electrical consumption GHG emissions estimates, no further QC procedures are required for this category.

5.5 Stationary Combustion Review

For stationary GHG emission estimates, DEQ relied upon a natural gas therm report from Southwest Gas for 2022. Comparing the 2022 therm usage with the 2007 GHG EI data, it appears that there were roughly twice as many therms used in 2007 compared to 2022. Southwest Gas is looking into the discrepancy to see if any accounts were missed or if accounts in 2007 may have been erroneously included. The results of the Southwest Gas review were not available for this preliminary EI, but will be addressed in the future comprehensive EI. As federal datasets, tools, and emission factors were used for stationary combustion GHG emissions estimates, no further QC procedures are required for this category.

5.6 Solid Waste Review

For solid waste GHG emission estimates, DEQ relied upon waste stream weights from GRIC DPW. Waste generated within GRIC is transported to the City of Phoenix Transfer Station. The EPA WARMS calculator was used to generate GHG emission estimates. The specific landfill where the waste is ultimately disposed was not available for this preliminary EI. "National average" options were selected, except for the following assumptions:

- Methane flare
- Dry moisture conditions
- Dry digestions
- Not cured digestate
- 40 mile distance to the landfill
- 40 mile distance to the material recovery facility (MRF)

As federal datasets, tools, and emission factors were used for GHG emissions estimates, no further QC procedures are required for this category.

5.7 Agriculture and Land Management Review

For agriculture and land management GHG emission estimates, DEQ relied on data contained in the 2020 Maricopa and Pinal County GHG EI because fertilizer application rates for fields on the Community were not readily available for this preliminary EI. GRIC crop types were assumed to be similar to those planted in Maricopa County and require similar fertilizer application rates. DEQ will attempt to obtain fertilizer application rates for representative fields within the Community for the future comprehensive GHG EI. Since local estimates rely upon a federal data source and emission factors, no further QC procedures were undertaken for this source category.

5.8 Imported Water Electricity Use Review

For imported water GHG emission estimates, DEQ relied upon water quantities provided CAP. According to a letter from Don Crandall, CAP Water Control Manager, to Elias Toon, MAG Air Quality Program Manager, dated 2/27/14, GRIC received 115,001 acre-feet (AF) of imported water and the cumulative energy used to pump that water was 178,075 megawatt-hours (MWh). Therefore, the calculated energy intensity of the water was 4,752 kilowatt-hours per mega-gallon (kWh/Mgal). The default energy

intensity of the water in the GHG Tool is 5,604 kWh/Mgal (based on Southern California data), which is approximately 18% higher than the calculated number based on the CAP data. Additionally, in the CAP letter, CAP provided an emission factor (EF) of 766.1 pounds (lbs) CO_2e/MWh. The default EF in the GHG Tool is 820 kWh/Mgal (based on AZNM eGRID), which is approximately 7% higher than the EF provided by CAP. Therefore, the GHG Tool is expected to result in GHG emissions that are approximately 27% higher than if the GHG emissions were calculated using the CAP data.

GRIC also receives reclaimed water from municipalities in the PMA. It is assumed that the reclaimed water is gravity fed from the wastewater treatment plant to the Community. Any pumping of the reclaimed water on the Community would be captured in the electricity usage for one or more of the accounts on the Community.

As federal datasets, tools, and emission factors were used for GHG emissions estimates, no further QC procedures are required for this category.

5.9 Wastewater Treatment Review

For wastewater treatment GHG emission estimates, DEQ relied on internal data for the number of septic systems and 2022 population data provided by the GRIC Census Department. As noted during the QC review, GHG emissions from wastewater treatment are based on population served. There is a significant transient population on the Community associated with hotel and casino visitors and employees from off-community. The transient population was not estimated or used in the wastewater emission calculations for this preliminary EI, but could be as high as 10 -15% of the population. The wastewater generated from the transient population will be addressed in the future comprehensive GHG EI. As federal datasets, tools, and emission factors were used for GHG emissions estimates, no further QC procedures are required for this category.

ATTACHMENT A. Example Quantified GHG Reduction Measures

The example quantified GHG reduction measures in this attachment were copied from the Maricopa-Pinal County Region Priority Climate Action Plan; Appendix A: Maricopa-Pinal County Region 2020 Greenhouse Gas Emissions Inventory; Attachment B, Table 37: GHG Emission Reduction Measure Quantification for the Maricopa-Pinal County Region; prepared by the Maricopa Association of Governments, dated February 2024.

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
Weatherization Assistance Program	Buildings	Annual CO_2 emission reduction per weatherized home.	1.0	N/A	U.S. DOE, Weatherization Assistance Program factsheet. https://www1.eere.energy.gov/wip/pdfs/wap_factsheet.pdf
Switching incandescent bulbs to LED bulbs	Buildings	Energy reductions in $MTCO_2e$/bulb replaced. Assume 43 watt incandescent to 9w LED, 3 hours per day use, 365 days per year. 47.1 kWh per year per incandescent, 9,9 kWh per LED per year.	2.64E-02	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Number of incandescent bulbs switched to light-emitting diode bulbs. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references.
Distributed Rooftop Solar (PV) Deployment	Buildings; Electric Power	Annual emissions change from 1 MW of distributed rooftop solar (Photovoltaic). Arizona.	1062.5	0.72	U.S. EPA, Avoided Emissions and Generation Tool (AVERT) Web Edition, Accessed January 2024. https://www.epa.gov/avert/avert-web-edition
Onshore Wind Deployment	Buildings; Electric Power	Annual emissions change from 1 MW of onshore wind deployment. Arizona.	1296.4	0.81	U.S. EPA, Avoided Emissions and Generation Tool (AVERT) Web Edition, Accessed January 2024. https://www.epa.gov/avert/avert-web-edition
Energy efficiency upgrade	Buildings; Electric Power	Emission reduction from electricity reduction per MWh. Assumption is U.S. National weighted CO_2 marginal emission rate, 2019 data.	0.7	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Electricity reductions (kilowatt-hours) https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references
Utility Solar (PV) Deployment	Electric Power	Annual emissions change from 1 MW of utility solar (Photovoltaic). Arizona.	1257.4	0.85	U.S. EPA, Avoided Emissions and Generation Tool (AVERT) Web Edition, Accessed January 2024. https://www.epa.gov/avert/avert- web-edition

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
Wind Turbine	Electric Power	Per wind turbine installed. National averages. $MTCO_2$/year/wind turbine installed. 1.82 MW wind turbine size.	3596.0	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Number of wind turbines running for a year. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references.
Industrial Energy Efficiency	Industrial; Electric Power	Annual emissions change from 1 GWh of industrial energy efficiency (evenly spread throughout year). Arizona.	5.2	0.00	U.S. EPA, Avoided Emissions and Generation Tool (AVERT) Web Edition, Accessed January 2024. https://www.epa.gov/avert/avert-web-edition
Light Duty Vehicle (LDV) (Gasoline) to LDV Electric Vehicle (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	58.7	0.65	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by- Vehicle Type Using Gasoline and Diesel, Table 4-43.
Light Duty Truck (LDT) (Gasoline) to LDT (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	74.6	0.63	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by- Vehicle Type Using Gasoline and Diesel, Table 4-43.
Buses (Gasoline) to Buses (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	281.1	5.06	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by- Vehicle Type Using Gasoline and Diesel, Table 4-43.
Heavy Duty Vehicle (HDV) (Gasoline) to HDV (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	179.4	1.22	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by-Vehicle Type Using Gasoline and Diesel, Table 4-43.

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
LDV (Diesel) to LDV (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	65.9	0.87	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by- Vehicle Type Using Gasoline and Diesel, Table 4-43.
LDT (Diesel) to LDT (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	102.0	0.57	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by-Vehicle Type Using Gasoline and Diesel, Table 4-43.
Buses (Diesel) to Buses (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	260.1	1.10	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by- Vehicle Type Using Gasoline and Diesel, Table 4-43.
HDV (Diesel) to HDV (EV)	Transportation	Benefits of purchasing EV versus gasoline vehicle. Assume 2024 fuel economy, 11,500 MPY, and 15-year usage.	243.4	0.76	U.S. Department of Transportation, Bureau of Transportation Statistics, National Transportation Statistics, Estimated U.S. Average Vehicle Emissions Rates per Vehicle-by-Vehicle Type Using Gasoline and Diesel, Table 4-43.
Level 2 Electric Vehicle Supply Equipment (EVSE) (Low Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	2.5	0.01	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
DC Fast Charge (DCFC) EVSE (Low Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	10.8	0.06	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Hydrogen Fueling Infrastructure (Low Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	118.4	1.18	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
Propane Fueling Infrastructure (Low Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	-1.3	-0.23	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Compressed Natural Gas (CNG) Fueling Infrastructure (Low Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	91.9	-10.74	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
LNG Fueling Infrastructure (Low Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	25.7	-4.76	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Level 2 EVSE (Moderate Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	5.0	0.03	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
DCFC EVSE (Moderate Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	23.2	0.13	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Hydrogen Fueling Infrastructure (Moderate Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	236.9	2.35	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Propane Fueling Infrastructure (Moderate Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	-2.6	-0.46	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
CNG Fueling Infrastructure (Moderate Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	183.8	-21.48	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
LNG Fueling Infrastructure (Moderate Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	51.4	-9.51	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Level 2 EVSE (High Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	8.3	0.05	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
DCFC EVSE (High Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	43.1	0.24	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Hydrogen Fueling Infrastructure (High Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	473.7	4.71	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Propane Fueling Infrastructure (High Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	-5.1	-0.93	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
CNG Fueling Infrastructure (High Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	367.6	-42.95	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
LNG Fueling Infrastructure (High Utilization)	Transportation	Annual emission reductions from installation of charging and fueling infrastructure (1 unit). Arizona parameters.	102.9	-19.03	U.S Department of Energy, Argonne National Laboratory, AFLEET Charging and Fueling Infrastructure Emissions Tool. Version 1.1 released 4/3/2023.
Electric School Bus Deployment	Transportation	Annual emission reductions from deployment of one EV school bus. EV year is "2023", ICE replace is "New". Location of EV Deployment is "Arizona".	30.7	0.03	U.S. EPA, Avoided Emissions and Generation Tool (AVERT) Web Edition, Accessed January 2024. https://www.epa.gov/avert/avert- web-edition
Electric Transit Bus Deployment	Transportation	Annual emission reductions from deployment of one EV transit bus. EV year is "2023", ICE replace is "New". Location of EV Deployment is "Arizona".	163.7	0.20	U.S. EPA, Avoided Emissions and Generation Tool (AVERT) Web Edition, Accessed January 2024. https://www.epa.gov/avert/avert- web-edition
Replace Gasoline Vehicle with EV Vehicle	Transportation	Annual CO_2e emission difference between vehicle type. Assumptions are Arizona, 11,579 VMT, 2022 electricity fuel mix.	10445.0	N/A	U.S. Department of Energy, Alternative Fuels Data Center, Electricity Sources and Fuel-Cycle Emissions Tool, 2024.
Replace Gasoline Vehicle with Plug-in-Hybrid Vehicle	Transportation	Annual CO_2e emission difference between vehicle type. Assumptions are Arizona, 11,579 VMT, 2022 electricity fuel mix.	8217.0	N/A	U.S. Department of Energy, Alternative Fuels Data Center, Electricity Sources and Fuel-Cycle Emissions Tool, 2024.
Replace Gasoline Vehicle with Hybrid Vehicle	Transportation	Annual CO_2e emission difference between vehicle type. Assumptions are Arizona, 11,579 VMT, 2022 electricity fuel mix.	5696.0	N/A	U.S. Department of Energy, Alternative Fuels Data Center, Electricity Sources and Fuel-Cycle Emissions Tool, 2024.

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
Gasoline Use Reduction	Transportation	Emission reduction from reductions in gasoline use. Units in $MTCO_2$/gallon.	8.89E-03	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Gallons of gasoline consumed. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references
Diesel Use Reduction	Transportation	Emission reduction from reductions in diesel use. Units in $MTCO_2$/gallon.	1.02E-02	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Gallons of diesel consumed. https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and- references
Gasoline-powered passenger vehicles per year	Transportation	Annual $MTCO_2e$ reduced from replacement of gasoline powered passenger car. 2020 Fuel economy, 11520 VMT.	4.5	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Gasoline-powered passenger vehicles per year. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references
Passenger Vehicle VMT Reduction	Transportation	Emission reduction in $MTCO_2e$/mile. 2020 combined fuel economy of 22.9 mpg for LDV and LDT.	3.90E-04	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Miles driven by the average gasoline- powered passenger vehicle. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references
Landfill Diversion	Waste and Water	Emission reduction from waste recycled instead of landfilled. Per 25-gallon trash bag diverted.	2.31E-02	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Trash bags of waste recycled instead of landfilled. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references.
Composting Organic Waste	Waste and Water	Avoided methane emissions from not landfilling the waste plus the avoided GHG emissions associated with fertilizer production minus the compost fugitive emissions. $MTCO_2e$/short ton of mixed organic waste.	0.3	N/A	California Air Resource Board. Calculation of the Lifecycle Greenhouse Gas Emissions Reduction Benchmark for the Organic Waste Reductions Regulation. January 2022. https://ww2.arb.ca.gov/sites/default/files/2022-01/Benchmark- Calculation.pdf

Emission Reduction Option[1]	Source Sector	Description	GHG Emission Reduction ($MTCO_2$)[2]	Criteria Emission Reduction (Metric Tons)	Source
Landfill Natural Gas Electricity Generation Project	Waste and Water; Electric Power	Annual emissions reductions from an LNG electricity generation project. 3 MW size. (Methane and CO_2)	34700.0	N/A	U.S. EPA, Local Government Climate and Energy Strategy Series, Landfill Gas Energy, 2012.
Direct Use Landfill Natural Gas Energy Project	Waste and Water; Electric Power	Annual emissions reductions from a direct use LNG energy project. 1,000 scfm. (Methane and CO_2)	32300.0	N/A	U.S. EPA, Local Government Climate and Energy Strategy Series, Landfill Gas Energy, 2012.
Landfill Diversion	Waste and Water	Emission reduction from waste recycled instead of landfilled. Per short ton diverted.	2.9	N/A	U.S. EPA. Greenhouse Gases Equivalencies Calculator - Calculations and References. Tons of waste recycled instead of landfilled. https://www.epa.gov/energy/greenhouse-gases-equivalencies- calculator-calculations-and-references.

1 - MAG was unable to obtain quantitative data related to the amount of air toxics reduced by potential emission reduction measures. MAG will continue to work with EPA and the local community to identify sources of air toxic emission reduction estimates for the CPRG CCAP

2 - Provided emission reduction values are subject to uncertainty based on the particular model or set of parameters used to generate the estimate. These estimates primarily rely upon federal tools and resources. Where possible, model and tool assumptions have been provided and are focused on Arizona specific parameters. In addition, multiple values for the same type of measures have been provided based on different tools or datasets. These represent the range of uncertainty and exact values will depend on project specific parameters. Eligible entities wishing to use these values should review the parameters described and compare estimates from different models where appropriate.

Appendix B. Climate Pollution Reduction Questionnaire

Climate Pollution Reduction Questionnaire

For your completed questionnaire, you can enter your contact information below to participate in our incentive drawing.

Participation in this survey is limited to enrolled GRIC members and those who live and/or work within the Gila River Indian Community.

The Gila River Indian Community (GRIC) Department of Environmental Quality (DEQ) is leading a community effort to identify areas where climate pollution reduction efforts can be accomplished in the 7 districts. The sole purpose is to engage the Community to identify its values and priorities surrounding climate pollution and resiliency.

What is Climate Pollution?
It is the emissions of pollutants in the air such as carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and particulate matter such as sulphate and ammonia.

What is Climate Resilience?
It is adjusting how we live, work and play to keep us safe from the impacts of climate change.

Results of this survey will be used for the Gila River Indian Community to make long-term plans in environmental protection and restoration.

GRIC DEQ | gricdeq.org | 520-562-2234

If you would like to participate in our **incentive drawing for your completed survey**, please provide your contact info (phone number and/or email):

Your answer

How do you currently receive information about climate pollution and environmental challenges? Check all that apply

- [ ] DEQ website
- [ ] Other websites
- [ ] Community meetings
- [ ] Newspapers
- [ ] Radio
- [ ] Social media (such as Facebook or YouTube)
- [ ] TV
- [ ] None
- [ ] Other:

How often do you think about climate pollution and environmental challenges? Mark only one

- ( ) Every day
- ( ) Once a week
- ( ) Once a month
- ( ) A couple times a year
- ( ) Never

How concerned are you about these climate-related hazards:

	I'm very concerned	I'm not concerned	Need more information
Extreme heat	○	○	○
Impacts on agriculture and food production	○	○	○
Increased wildfires	○	○	○
Loss of biodiversity (plant and animal species)	○	○	○
Prolonged drought	○	○	○
Reduced air quality	○	○	○
Severe weather events	○	○	○
Hardship on future generations	○	○	○
Water accessibility and security	○	○	○
Higher energy costs and availability	○	○	○
Economic costs to GRIC from climate change	○	○	○

What are your top priorities for reducing climate pollution impacts?

Check all that apply

- [ ] Improve air, water and soil quality
- [ ] Improve disaster preparedness and resiliency
- [ ] Mitigate/reduce rising temperatures
- [ ] Develop more sustainable food systems (accessible, traditional, etc.)
- [ ] Reduce landfill waste
- [ ] Transition to renewable energy
- [ ] None
- [ ] Other: _____

How realistic is it for you to do the following activities to reduce carbon pollution to the air?

	Realistic	Not realistic	Neutral	Already doing this
Buying an electric or hybrid vehicle	○	○	○	○
Opting for public transit, walking, biking, e-scooters	○	○	○	○
Buying locally-sourced foods and products	○	○	○	○
Composting	○	○	○	○
Planting trees	○	○	○	○
Repairing, reusing, and recycling	○	○	○	○
Investing in solar panels for my household	○	○	○	○
Using energy efficient light bulbs and energy-certified appliances in my home	○	○	○	○

Installing low-flow water fixtures	○	○	○	○
Weatherizing my home (upgrading windows, doors and insulation)	○	○	○	○
Using reusable containers rather than single-use plastic containers	○	○	○	○

I would be more likely to participate in carbon pollution reduction activities if:

Check all that apply

- [ ] I had a better understanding of the impact
- [ ] It took place in my neighborhood
- [ ] It was something my friends, co-workers, and family did
- [ ] There was monetary incentives involved
- [ ] There was non-monetary incentives involved
- [ ] They saved me money
- [ ] I already participate
- [ ] Other: _____

Which GRIC Community and Departmental activities do you support to lessen the impact of climate change and build environmental resiliency:

	Support	Do not support	Neutral	Need more information
Building streets I can safely bike and walk on	○	○	○	○
More shade options to reduce heat exposure	○	○	○	○
Making public transit more available	○	○	○	○
Offering energy-efficient upgrades to buildings and homes	○	○	○	○
Offering electric vehicle charging stations	○	○	○	○
Investing in renewable/solar energy	○	○	○	○
Promoting microgrids (small-scale power grids) for critical infrastructure	○	○	○	○
Replacing/Retrofitting equipment and fleet to those that use clean fuels	○	○	○	○
Promoting stormwater harvesting/infrastructure	○	○	○	○
Promoting “reduce and reuse then recycle” for waste	○	○	○	○

Prioritizing planting of native species	○	○	○	○
Making composting services and/or materials available	○	○	○	○
Promoting locally-sourced food	○	○	○	○
Reducing vehicle miles traveled	○	○	○	○
Updating and maintaining building standards and codes to more efficient standards	○	○	○	○
Reducing upfront costs for climate mitigation and resiliency solutions, such as solar panels, to make them more accessible for all residents	○	○	○	○

What barriers do you face when trying to adopt a more environmentally-friendly lifestyle: Check all that apply

- [ ] Financial constraints
- [ ] Time constraints
- [ ] Limited information on sustainable practices
- [ ] Limited options for reuse, repair, and recycling
- [ ] Lack of access to sustainable products and services
- [ ] Lack of government policies and programs to adopt sustainable practices
- [ ] Infrastructure and service limitations such as public transportation
- [ ] Social norms or pressures that discourage environmentally-friendly living
- [ ] Other: _____

What is the distance of your one-way commute to work, in miles?

Your answer

Would you be interested in participating in community workshops/events focused on climate pollution awareness and action? Fill only one

- ( ) Yes
- ( ) No
- ( ) Not sure
- ( ) Prefer not to answer this question

From which of the following are you providing input: Fill only one

- ○ I live in a home I own within GRIC
- ○ I live in a home or apartment I rent within GRIC
- ○ I do not have shelter
- ○ I am a GRIC Employee
- ○ Prefer not to answer this question

Which GRIC District do you live and/or work in: Fill only one

- ○ District 1
- ○ District 2
- ○ District 3
- ○ District 4
- ○ District 5
- ○ District 6
- ○ District 7
- ○ Off-Community
- ○ Prefer not to answer this question

What is your age range: Fill only one

- ◯ Under 18
- ◯ 18-24 years old
- ◯ 25-34 years old
- ◯ 35-44 years old
- ◯ 45-54 years old
- ◯ 55-64 years old
- ◯ 65 and above
- ◯ Prefer not to answer this question

What is your work status: Fill only one

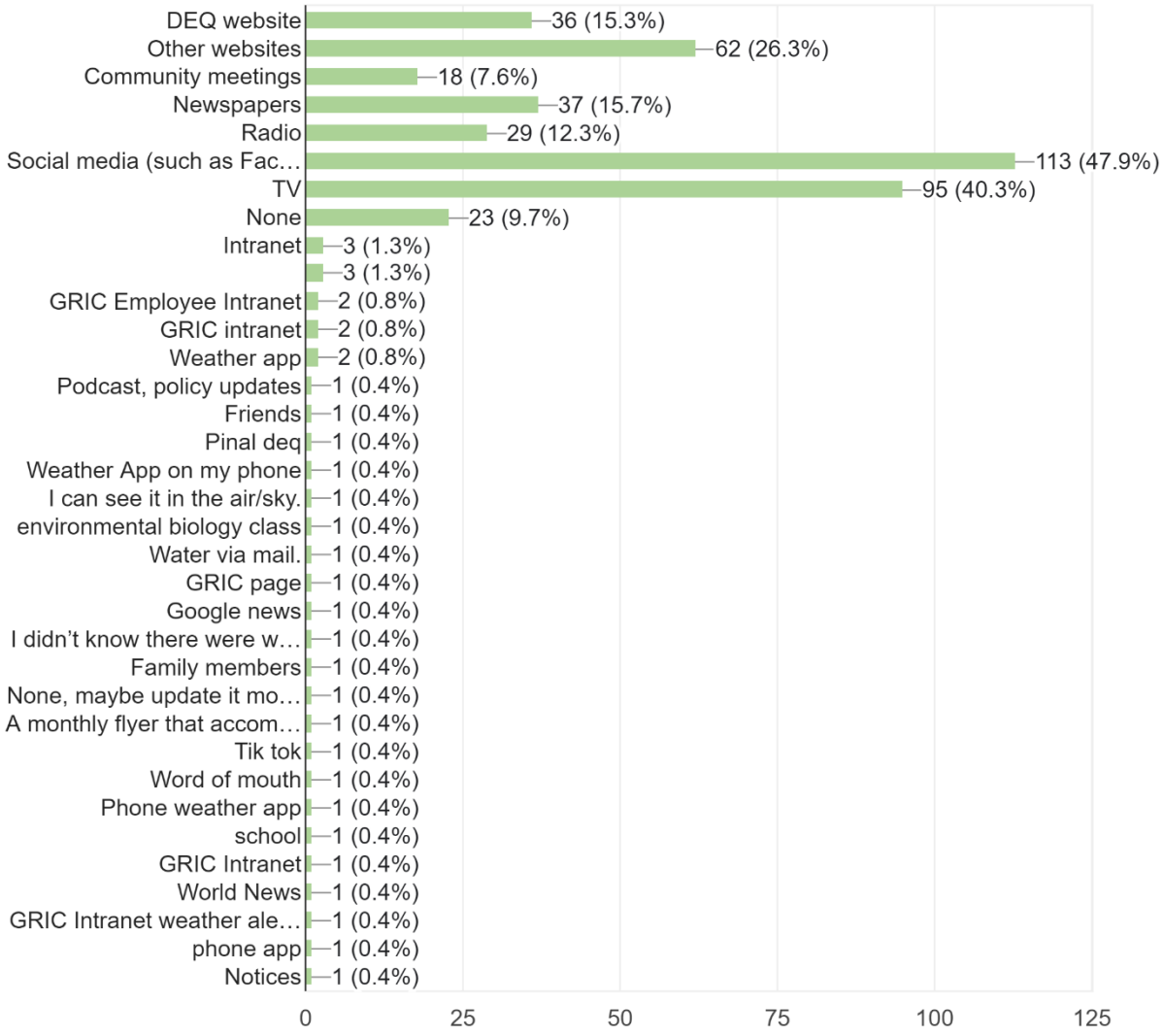
- ◯ Employed full-time
- ◯ Employed part-time
- ◯ Homemaker
- ◯ Student full-time
- ◯ Student part-time
- ◯ Retired
- ◯ Currently unemployed
- ◯ Prefer not to answer this question
- ◯ Other: _____

Are you an enrolled member of the Gila River Indian Community: Fill only one

- ○ Yes
- ○ No
- ○ Prefer not to answer this question

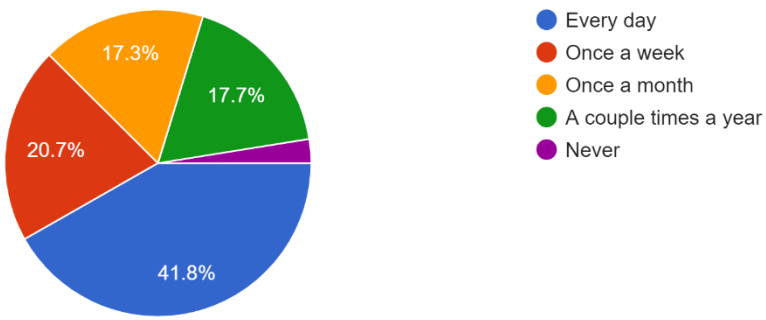
How do you currently receive information about climate pollution and environmental challenges?

236 responses

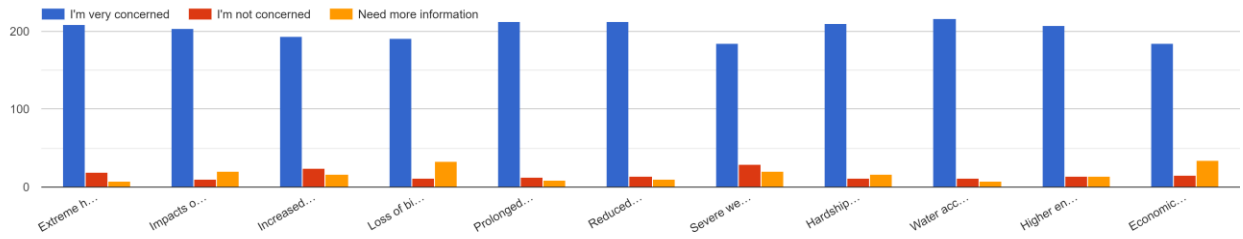


How often do you think about climate pollution and environmental challenges?

237 responses

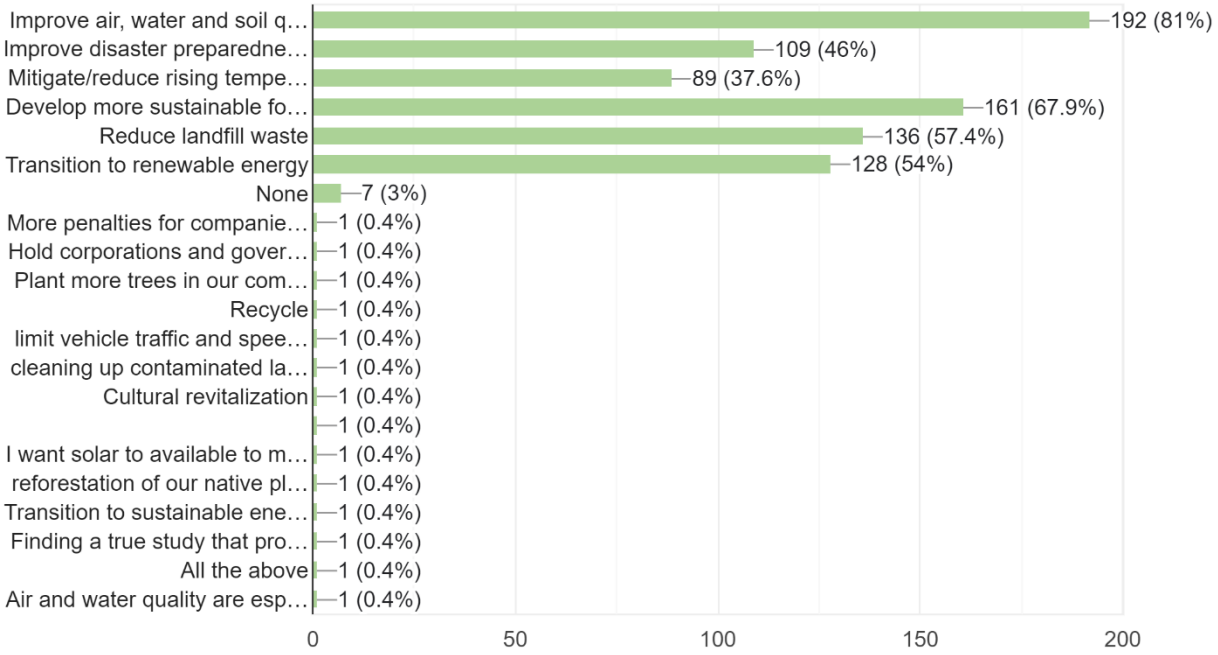


How concerned are you about these climate-related hazards:

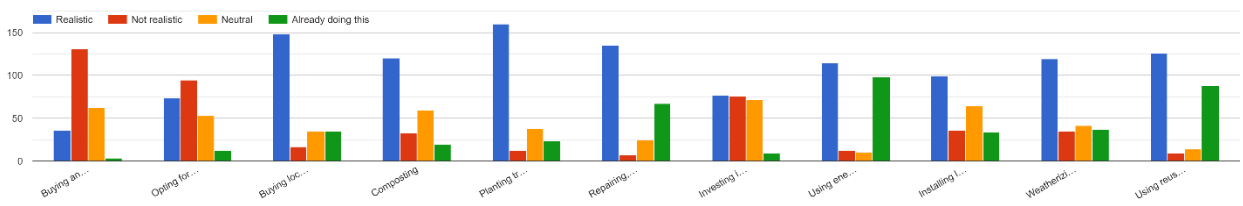


What are your top priorities for reducing climate pollution impacts?

237 responses

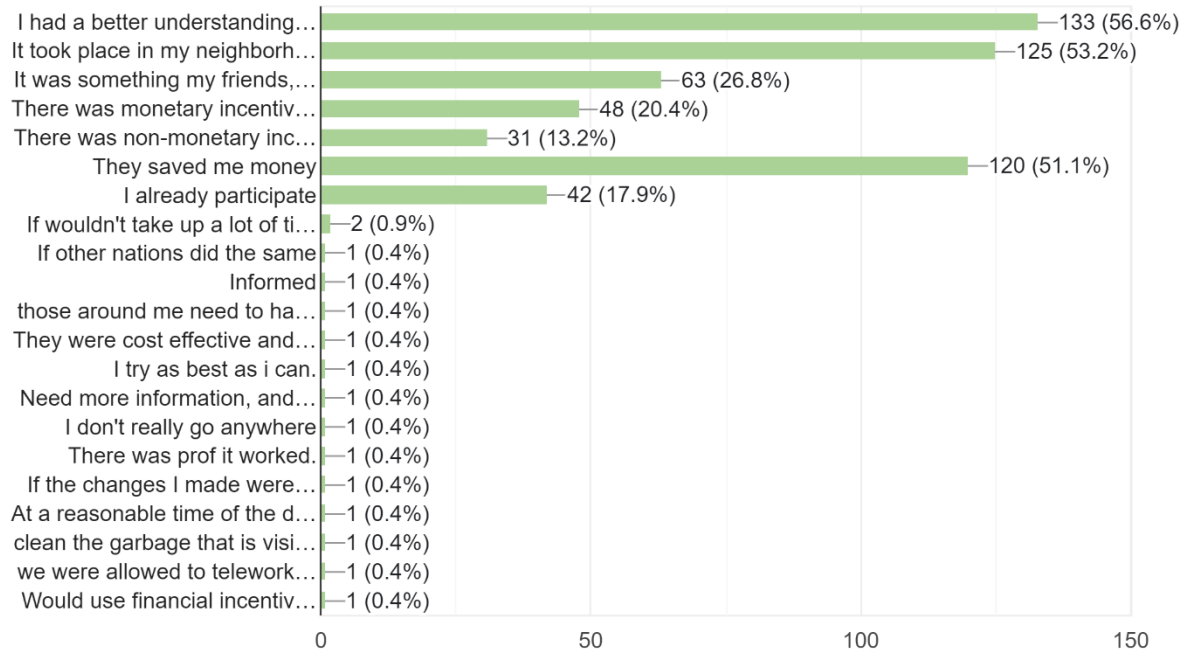


How realistic is it for you to do the following activities to reduce carbon pollution to the air?



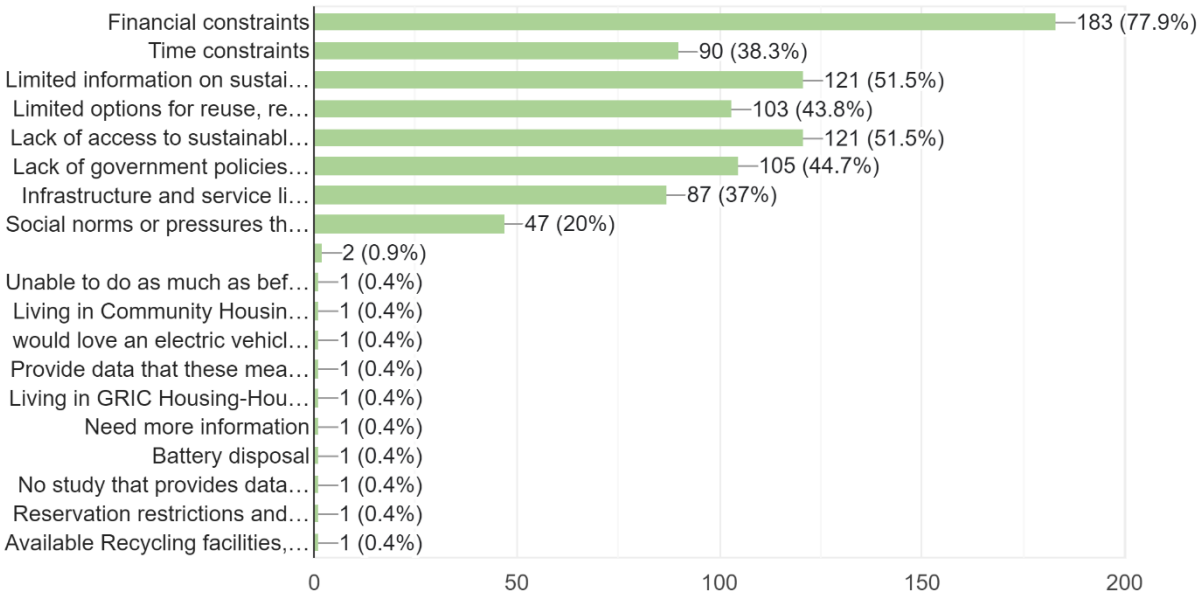
I would be more likely to participate in carbon pollution reduction activities if:

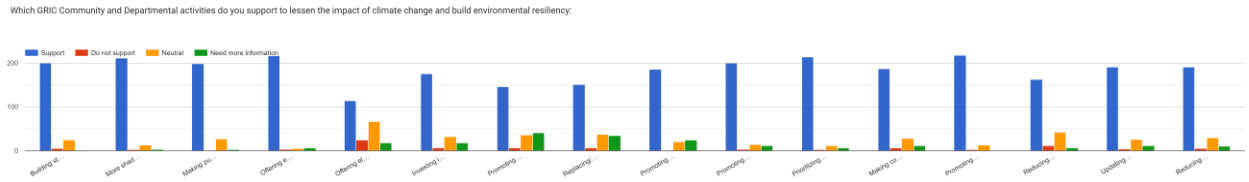
235 responses



What barriers do you face when trying to adopt a more environmentally-friendly lifestyle:

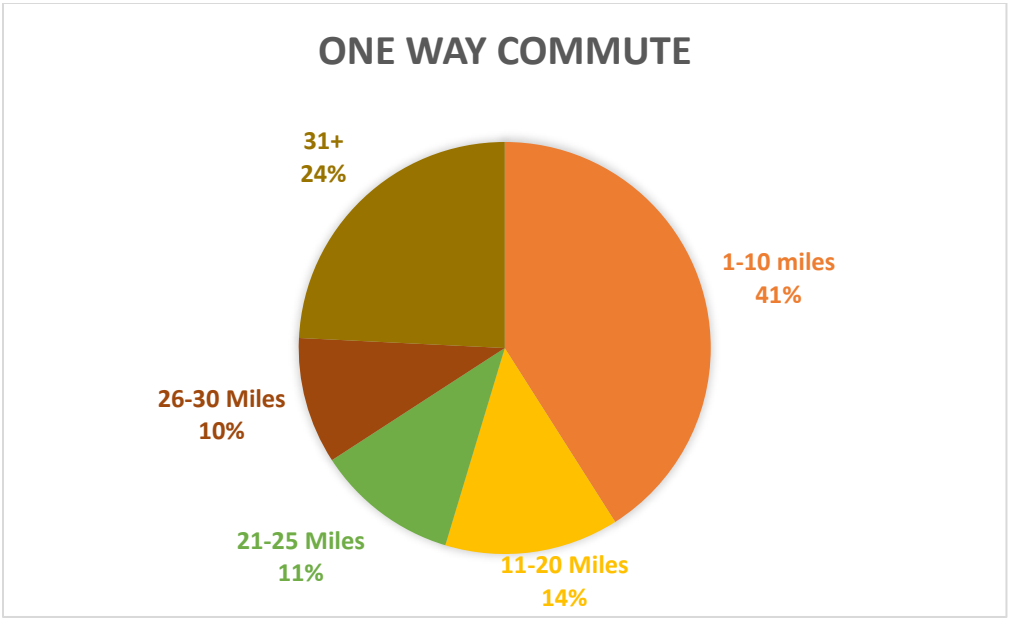
235 responses





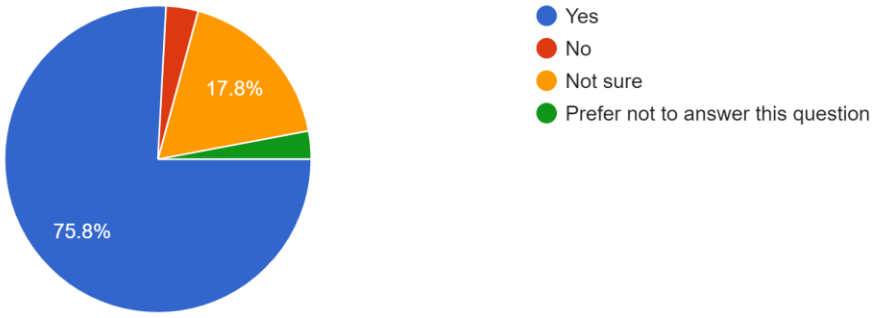
What is the distance of your one-way commute to work, in miles?

225 responses



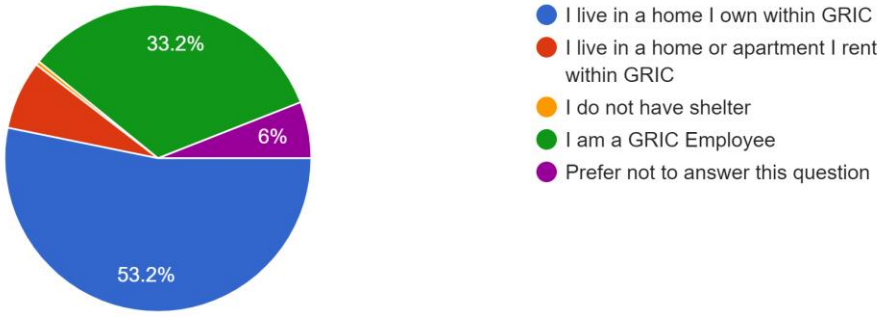
Would you be interested in participating in community workshops/events focused on climate pollution awareness and action?

236 responses



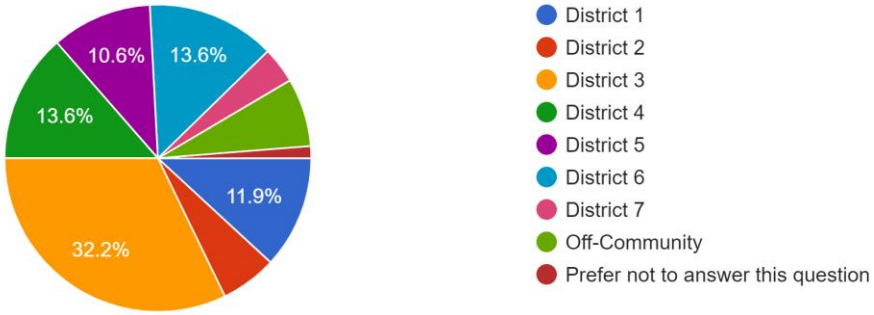
From which of the following are you providing input:

235 responses



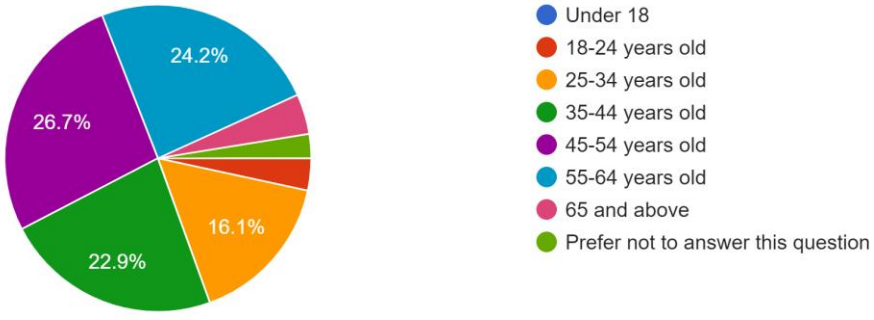
Which GRIC District do you live and/or work in:

236 responses



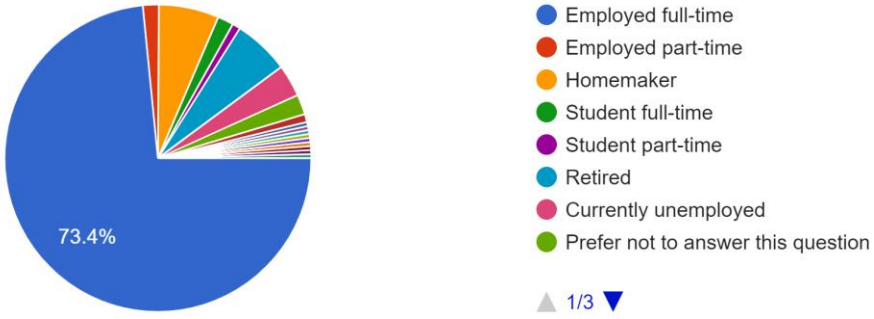
What is your age range:

236 responses



What is your work status:

237 responses



Are you an enrolled member of the Gila River Indian Community:

236 responses