FRESNO
Council of Governments

Priority Climate Action Plan

LSA
SSG

Submitted to:
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Fresno, CA 93721

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March 2024

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Sustainability Solutions Group (SSG)

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March 2024

EXECUTIVE SUMMARY

Fresno Council of Governments (Fresno COG) received a planning grant from the Climate Pollution Reduction Grants (CPRG) program, which was appropriated by the Inflation Reduction Act (IRA) to the US Environmental Protection Agency (EPA). There is a total of $5 billion in CPRG funding, among which $250 million was allocated as planning grants to eligible entities to develop GHG reduction plans; $4.6075 billion was allocated to fund the implementation of the GHG reduction measures identified in the GHG reduction plans developed through the planning grants.

The Priority Climate Action Plan (PCAP) is the first component of the Regional Climate Action Plan that Fresno COG will be developing for the CPRG grant funding. It includes a regional greenhouse gas (GHG) inventory, a public outreach process, identification and quantification of priority GHG emissions reduction measures, a benefit analysis for low-income and disadvantaged communities, and identification of implementation authorities.

Fresno COG staff utilized a three-pronged approach to developing the PCAP. First, a robust public outreach process with multi-media platform was conducted to reach the general public, especially the low-income and disadvantaged communities identified during the process. As a parallel process, a Stakeholder Steering Committee was formed to provide input and guidance on the overall process. The third and final step of the PCAP development process was to present the PCAP to the Fresno COG's three standing committees, including the Transportation Technical Committee, the Policy Advisory Committee and the Policy Board, for final approval.

The GHG inventory in the PCAP follows the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, developed by ICLEI Local Governments for Sustainability,[1] as modified for use in California and was developed utilizing available tools and data from EPA, CARB, and the City of Fresno.

The quantification of GHG reductions associated with each priority GHG reduction measure was conducted using previously conducted studies such as Fresno COG's EV Readiness Plan (EVRP), publicly available datasets such as the National Renewable Energy Laboratory (NREL)'s residential and commercial building stock typologies, and tools such as the EPA's Waste Reduction Model (WARM).

The PCAP was the first region-wide climate action planning effort in Fresno County. It provided a valuable educational experience to the communities in the region as well as to the municipality staff on climate action planning. However, due to the constrained timeline (5 months) for the PCAP development, the process for many components of the PCAP was shortened or simplified.

The next step in the planning process will be the preparation of a Comprehensive Climate Action Plan (CCAP) that will build on the PCAP, address the additional requirements for the CCAP, and expand/enhance the PCAP components in the CCAP.

[1] ICLEI – Local Governments for Sustainability USA. 2019. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Version 1.2. July.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABM	Activity Based Model
Air District	San Joaquin Valley Air Pollution Control District
AMMP	Alternative Manure Management Program
BNSF	Burlington Northern Santa Fe
CARB	California Air Resources Board
CDFA	California Department of Food and Agriculture
CEJST	Climate and Economic Justice Screening Tool
CO_2e	CO_2 equivalent
CPRG	Climate Pollution Reduction Grants
CCAP	Comprehensive Climate Action Plan
CVCF	Central Valley Community Foundation
DDRDP	Dairy Digester Research and Development Program
DOF	Department of Finance
EDD	Employment Development Department
EIA	Energy Information Administration
EJScreen	Environmental Justice Screening Tool
EQIP	Environmental Quality Incentives Program
EPA	Environmental Protection Agency
EVRP	Electric Vehicle Readiness Plan
FAX	Fresno Area Express
FCRTA	Fresno County Rural Transit Agency
FLIGHT	Facility Level Information on GreenHouse Gases Tool
GIS	Geographic Information System
GWh	gigawatt-hours
GWP	Global Warming Potential
GHG	greenhouse gas
IRA	Inflation Reduction Act
LDV	Light Duty Vehicle
LIDAC	Low-Income and Disadvantaged Communities
MDV	Medium Duty Vehicle

MPO	Metropolitan Planning Organization
NIP	Notice of Intent to Participate
NREL	National Renewable Energy Laboratory
NRCS	Natural Resources Conservation Service
PCAP	Priority Climate Action Plan
PLM	Passenger Lane Miles
$PM_{2.5}$	Fine Particulate Matter
PV	Photovoltaics
RTPA	Regional Transportation Planning Agency
RMI	Rocky Mountain Institute
RMP	Risk Management Program
SAM	System Advisory Model
SJVAB	San Joaquin Valley Air Basin
SLOPE	State and Local Planning for Energy
SR	State Route
UP	Union Pacific
USDA	United States Department of Agriculture
VMT	vehicle miles traveled
WARM	Waste Reduction Model

INTRODUCTION

PROJECT BACKGROUND

In August 2022, President Biden signed into law the Inflation Reduction Act (IRA), which provides $370 billion in grants, loans, and other investments to build a new clean energy economy, combat the pollution that has driven the climate crisis and create good paying jobs. The IRA provides many tools to reduce greenhouse gas (GHG) emissions, one of which is the Climate Pollution Reduction Grants (CPRG) program. Section 60114 of the Inflation Reduction Act appropriates $5 billion to the Environmental Protection Agency (EPA) to support state, regional and local efforts to reduce GHGs through the CPRG program. Among the $5 billion, $250 million was allocated as planning grants to eligible entities to develop GHG reduction plans; $4.6075 billion was allocated to fund the implementation of the GHG reduction measures identified in the GHG reduction plans developed through the planning grants.

The CPRG planning grants were made available by the EPA via a formula to the eligible entities including states, municipalities, air pollution control agencies, regional governments, territories and tribes. The funding level for the eligible entities is as follows:

- $3 million for each of the 50 states, District of Columbia (DC), and Puerto Rico, for a total of $156 million
- $1 million for each of the 67 Metropolitan Statistical Areas (MSA) with highest population, for a total of $67 million
- $25 million to tribes and tribal consortia; and
- $2 million to US territories

The Fresno Metropolitan Area, which covers the entire Fresno County, ranks among one of the 67 most populous Metro Areas in the nation, and was eligible for a $1 million planning grant. Through close coordination with partner agencies in the Fresno region, especially with City of Fresno, the largest municipality in Fresno County, and the San Joaquin Valley Air Pollution Control District, the Fresno Council of Governments (Fresno COG) assumed the responsibility to lead the region in the development of a Regional Climate Action Plan. Fresno COG is a federally designated Metropolitan Transportation Organization (MPO), State designated Regional Transportation Planning Agency (RTPA), and a Council of Governments (COG). Its membership includes the 16 jurisdictions in the Fresno Metropolitan Area. It operates under a joint power agreement that was signed by the membership, which consists of all 16 local governments in Fresno County.

Serving as a regional transportation planning agency, Fresno COG plays a pivotal role in coordinating transportation and land-use planning efforts within Fresno County. Fresno COG facilitates collaboration among local governments, State agencies, transit agencies, community organizations and other stakeholders to address the region's infrastructure and mobility challenges. The Fresno COG is instrumental in developing the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), which outlines transportation priorities and investments, and promotes sustainability, safety, equity, and other regional priorities through integrated transportation and land-use planning. By fostering partnerships and providing a forum for regional decision-making, Fresno COG contributes to the

development of comprehensive, forward-thinking strategies that enhance the quality of life for residents while promoting responsible and efficient regional development.

Fresno COG filed a Notice of Intent to Participate (NOIP) to EPA on March 31, 2023, and submitted a grant application in May 2023. The grant application was approved by the EPA in the summer of 2023.

The grant received from EPA will help the Fresno COG conduct a comprehensive climate action planning process and prepare a Regional Climate Action Plan for the Fresno region. The Regional Climate Action Plan will cover the 15 incorporated cities in Fresno County and the unincorporated Fresno County areas. This Priority Climate Action Plan (PCAP) is the first component of the Regional Climate Action Plan and includes a GHG inventory, a public outreach process, identification and quantification of priority GHG emissions reduction measures, a benefit analysis for low-income and disadvantaged communities, and identification of implementation authorities. Outreach to stakeholders and the general public, especially the low-income and disadvantaged communities, is a key component of the PCAP and a priority for the Fresno COG. A Comprehensive Climate Action Plan (CCAP) and Status Report will be developed after the PCAP. The longer timeframe allowed for the CCAP development will support a more robust public engagement process and will include a more detailed technical analysis, a GHG emissions inventory forecast, and establishment of targets for GHG emissions reductions in the Fresno region.

PCAP OVERVIEW

The PCAP for Fresno County includes the following sections:

1. A **Background** section that provides an overview of the County and describes the environmental and regulatory setting for GHGs;

2. A **Public Outreach** section which describes the public outreach and stakeholder process conducted by the Fresno COG during the PCAP development process, including summaries of public events held, comments received, survey results, and how public input and Steering Committee guidance was utilized in the selection of the PCAP Priority Measures.

3. An **Emission Inventory** section that accounts for the sources of emissions in the County, using a base year for the inventory of 2019, including a detailed methodology for how the inventory was developed.

4. A **Priority Measures** section which describes the measures selected for inclusion in the PCAP, as well as estimated emissions reductions to be achieved from the implementation of these measures. This section also summarizing the implementation authority for the proposed GHG reduction measures.

5. A **Benefit Analysis for Low-Income and Disadvantaged Communities**, including a discussion of the methodology for the analysis, the results of the analysis focusing specifically on the priority measure benefits for these communities, and a co-benefits analysis;

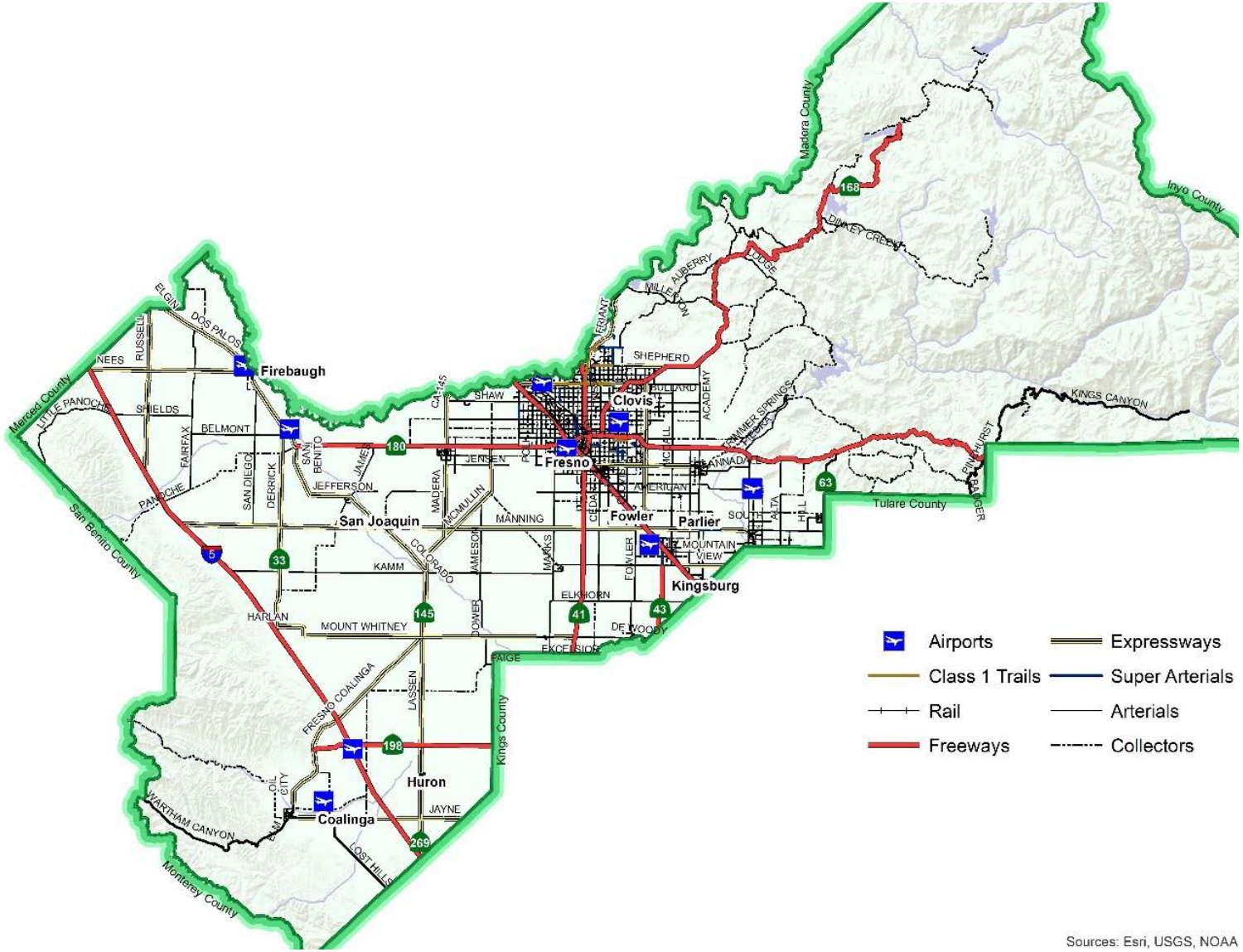
6. **Next Steps.** This section describes the necessary next steps to develop a CCAP and the timeline for the CCAP development, along with future engagement opportunities and plans.

FRESNO COUNTY REGIONAL OVERVIEW

Situated in California's San Joaquin Valley in the center of the State, Fresno County spans approximately 6,000 square miles and is geographically positioned between the Sierra Nevada Mountain range to the east and the Coastal Ranges to the west. The county's topography varies from near sea level in the west to over 14,000 feet in the Sierra Nevada peaks, contributing to a diverse climate and ecological zones.

Fresno County is in a Mediterranean Climate Zone. Mediterranean Climates Zones occur on the west coast of continents at 30 to 40 degrees latitude and are influenced by a subtropical high-pressure cell most of the year. Mediterranean Climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100 degrees Fahrenheit in the Valley. The subtropical high-pressure cell is strongest during spring, summer and fall and produces subsiding air, which can result in temperature inversions in the Valley. Winter-time high pressure events can often last many weeks with surface temperatures often lowering into the range of 30 degrees Fahrenheit. The mild Mediterranean climate of the region makes it ideal for growing a variety of agricultural crops.

The central and western areas of the Fresno County are part of the fertile San Joaquin Valley where agricultural production serves as the region's top industry. Fresno County showcases a dynamic blend of agricultural and urban landscapes, with its globally renowned agricultural sector producing an extensive array of crops. As one of the highest grossing agricultural counties, Fresno County's agricultural product gross value was $8.09 billion in 2022. Fresno's agriculture-based economy is highly dependent on moving agricultural products efficiently from farm to market, which mostly relies on the streets and highway networks in the Fresno region. Key transportation corridors, including State Route (SR) 99 and Interstate 5, enhance regional connectivity and facilitate the movement of goods. State Route 41 is one of the primary corridors to Yosemite National Park, one of the most visited national parks in the nation. Recreational trips are served by several State highways including SR 41, 33, 168, 180, 99 & and the Interstate 5. In addition to the streets and highways, the existing rail lines including the Burlington Northern Santa Fe (BNSF), and the Union Pacific (UP) offer potential for future expansion of goods movement. Furthermore, there is an expanding multi-modal transportation network that provides services to meet various mobility needs for the residents in Fresno County. Fresno Area Express (FAX), Clovis Transit, and Fresno County Rural Transit Agency (FCRTA) provide public transportation services throughout the region. Amtrak serves Fresno and is experiencing increasing ridership, while Fresno-Yosemite International Airport provides a hub airport for its service areas beyond Fresno County. The expanding active transportation network provides mobility options for residents in the region. Figure 1 shows the multi-modal network in Fresno County.



Sources: Esri, USGS, NOAA

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FIGURE 1

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FEET

SOURCES: ESRI, USGS, NOAA

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Fresno COG Priority Climate Action Plan
Multi-Modal Transportation Network in Fresno County

Although the region has made significant investment in transit and active transportation networks, transportation by private automobile remains the dominant mode of transportation. According to the Central California Household Travel Survey conducted in 2022 by the eight MPOs in the San Joaquin Valley, Figure 2 below provides an illustration of the most popular means of transportation in Fresno County:

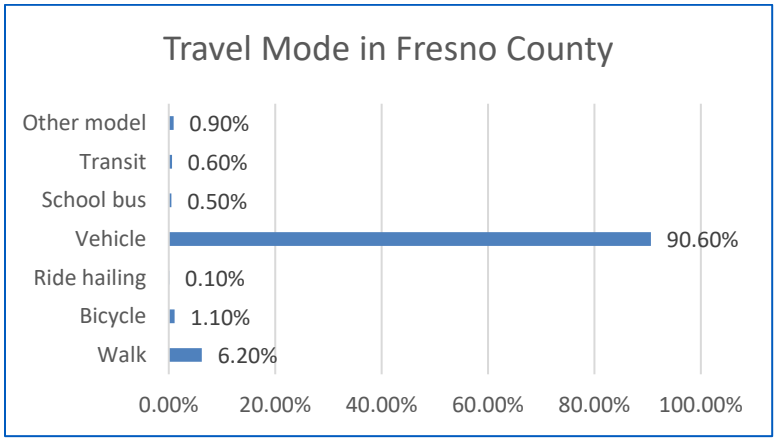


Figure 2: Utilization of Different Travel Modes in Fresno County

Based on California Department of Finance estimates[2], as of January 1, 2023, the population of the Fresno County is 1,011,499. Table A, below, provides a breakdown of the population by jurisdiction in Fresno County.

Table A:
Fresno County Population by Jurisdiction

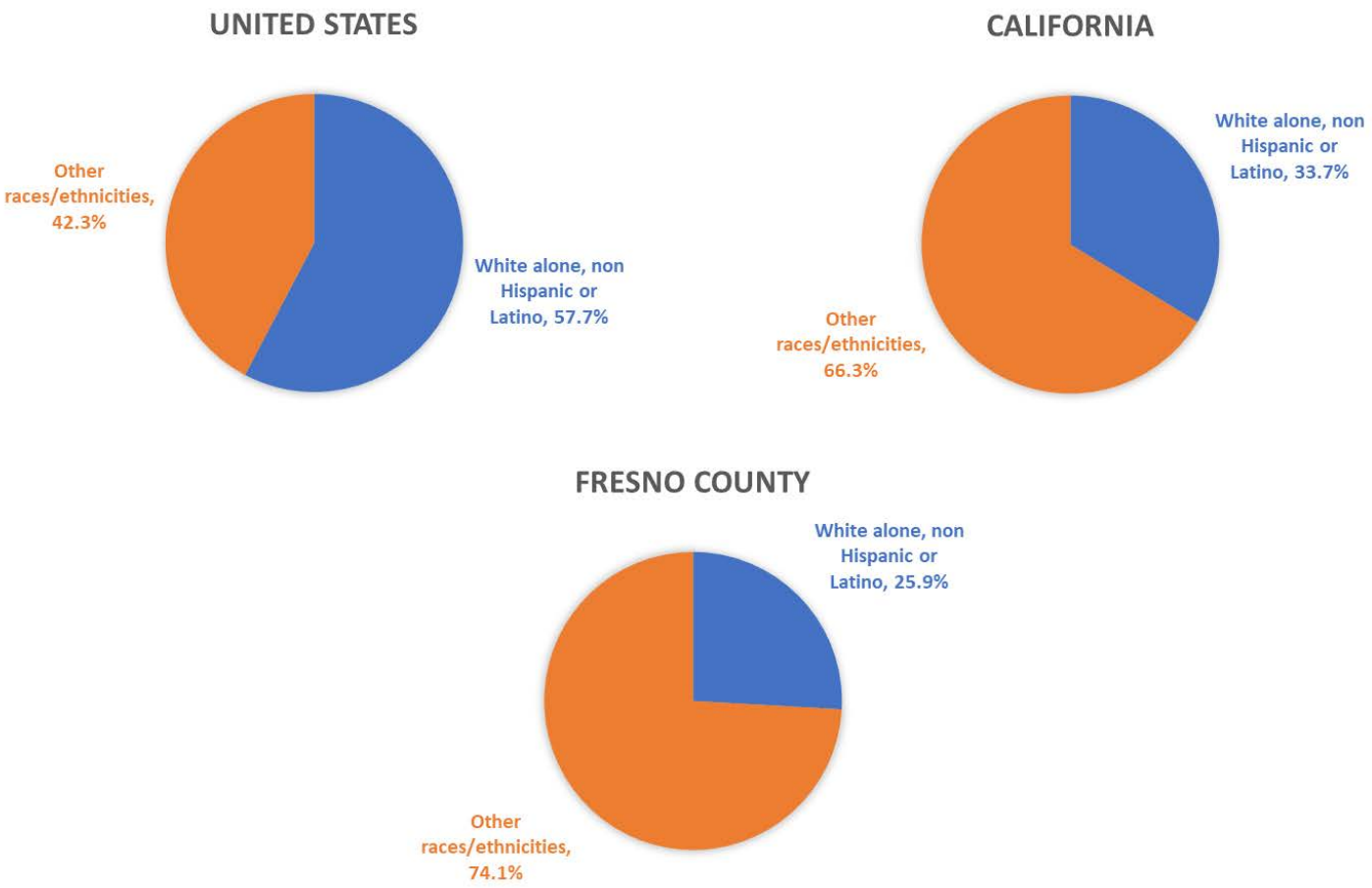
Agency	DOF Population
Clovis	124,523
Coalinga	17,237
Firebaugh	8,495
Fowler	7,168
Fresno	543,428
Huron	6,124
Kerman	16,955
Kingsburg	12,865
Mendota	12,463
Orange Cove	9,463
Parlier	14,402
Reedley	25,381
Sanger	26,241
San Joaquin	3,608
Selma	24,300
(Unincorporated) County	158,846
Total	**1,011,499**

Data Source: State of California, Department of Finance, E-1 Population Estimates for Cities, Counties and the State with Annual Percent Change — January 1, 2022 and 2023. Sacramento, California, May 2023.

The population demographics in Fresno County reflects a diverse mix of ethnicities and socio-economic backgrounds. The County is more ethnically diverse than the State of California and the United States. Figure 3 compares the demographics of the population of Fresno County to the racial diversity in the State of California and the United States. The County has a slightly younger population than the State (a median age of 33.4 compared to 37.9). With three people per household on average, households are slightly larger than that of California (2.8) or the country (2.5).

Figure 4 shows the concentration of minority population in Fresno County. Figure 5 illustrates the jobs by industry in Fresno County. Note that employment in the agricultural sector in Fresno County (7.5 percent) is much higher than Statewide (2.0 percent) and national (1.6 percent) statistics.

[2] https://dof.ca.gov/forecasting/demographics/estimates/



Data source: U.S. Census Bureau. "ACS Demographic and Housing Estimates." *American Community Survey, ACS 1-Year Estimates Data Profiles, Table DP05*, 2022

Figure 3: Fresno County Demographic Make-up by Percentage

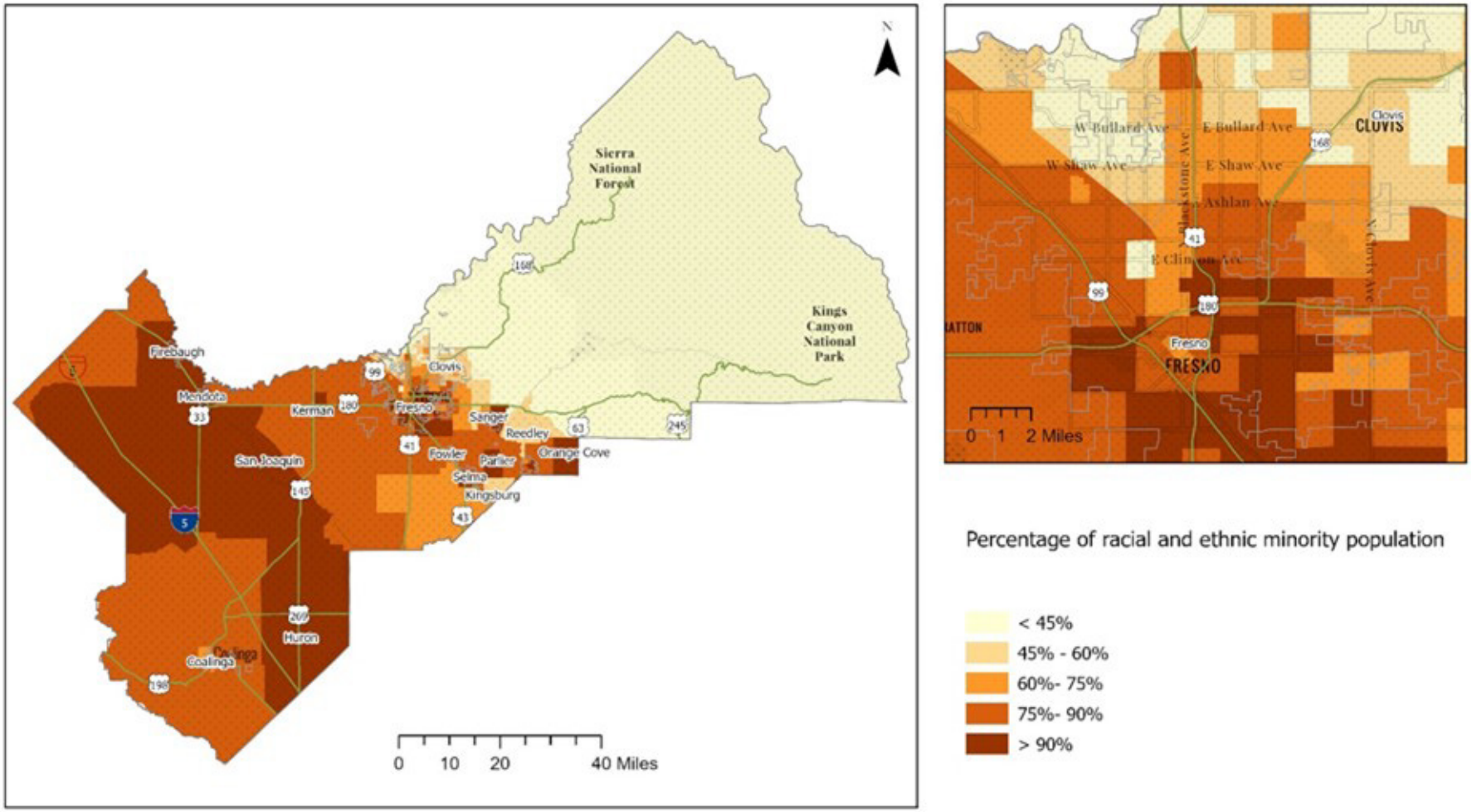


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FIGURE 4

Fresno COG Priority Climate Action Plan

Fresno County Minority Population by Percentage

SOURCES: 2018-2022 American Community Survey, Table B03002

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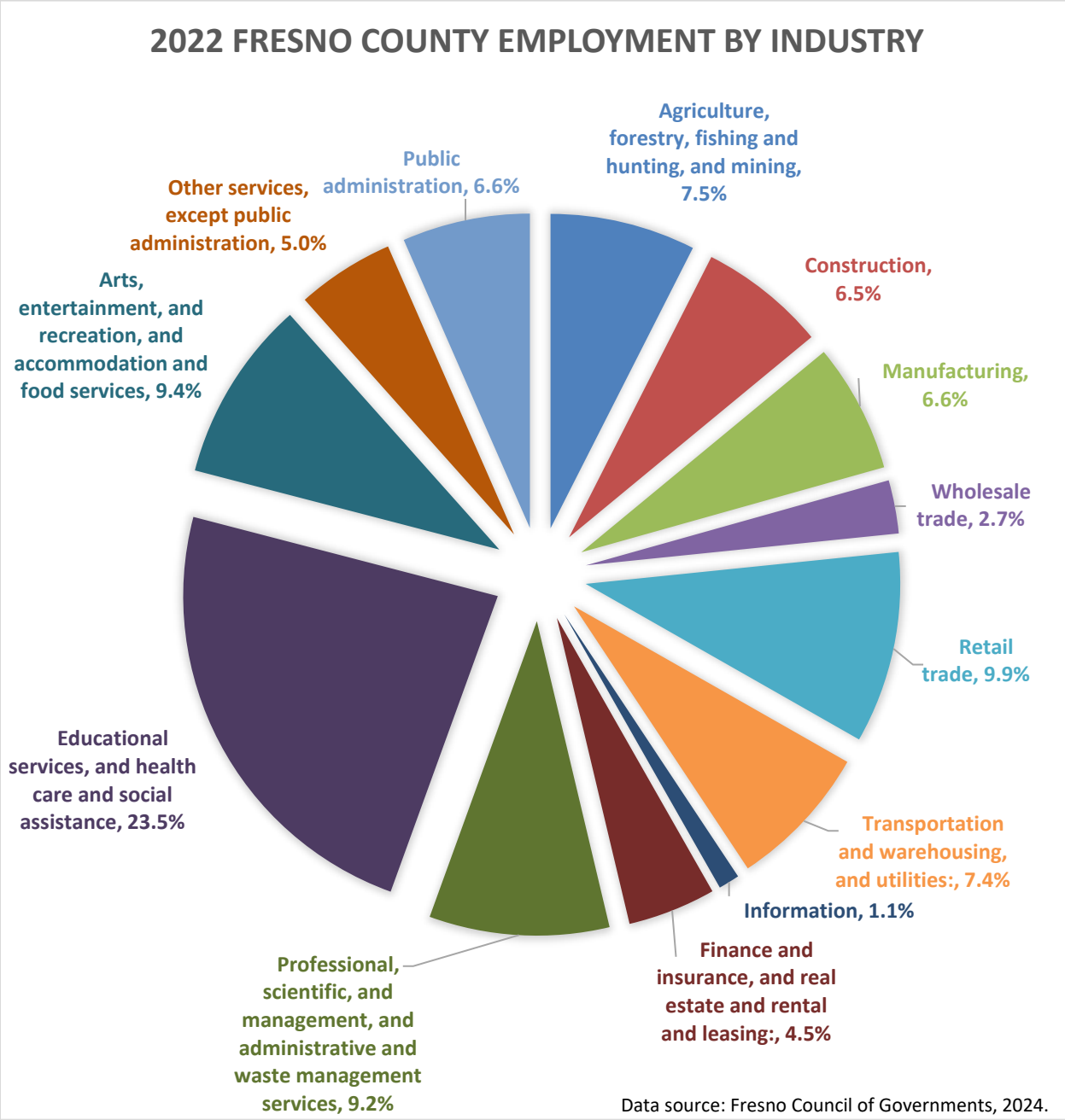
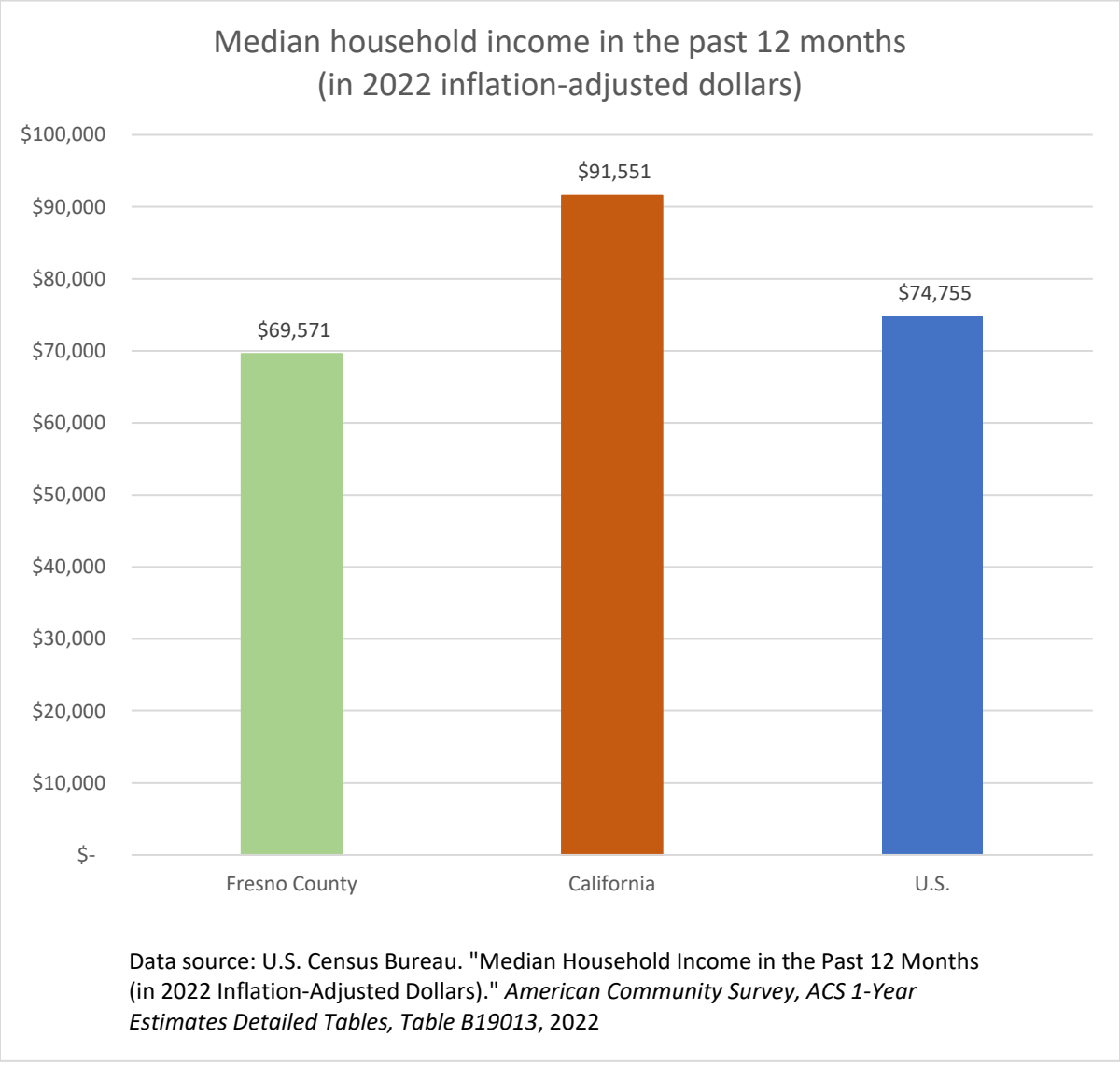


Figure 5: 2022 Fresno County Employment by Industry

As shown in Figure 6, the median household income in Fresno County is lower than the State of California and the rest of the nation.

Figure 7 demonstrates the concentration of low-income household in Fresno County.



Data source: U.S. Census Bureau. "Median Household Income in the Past 12 Months (in 2022 Inflation-Adjusted Dollars)." *American Community Survey, ACS 1-Year Estimates Detailed Tables, Table B19013*, 2022

Figure 6: Fresno County Median Household Income

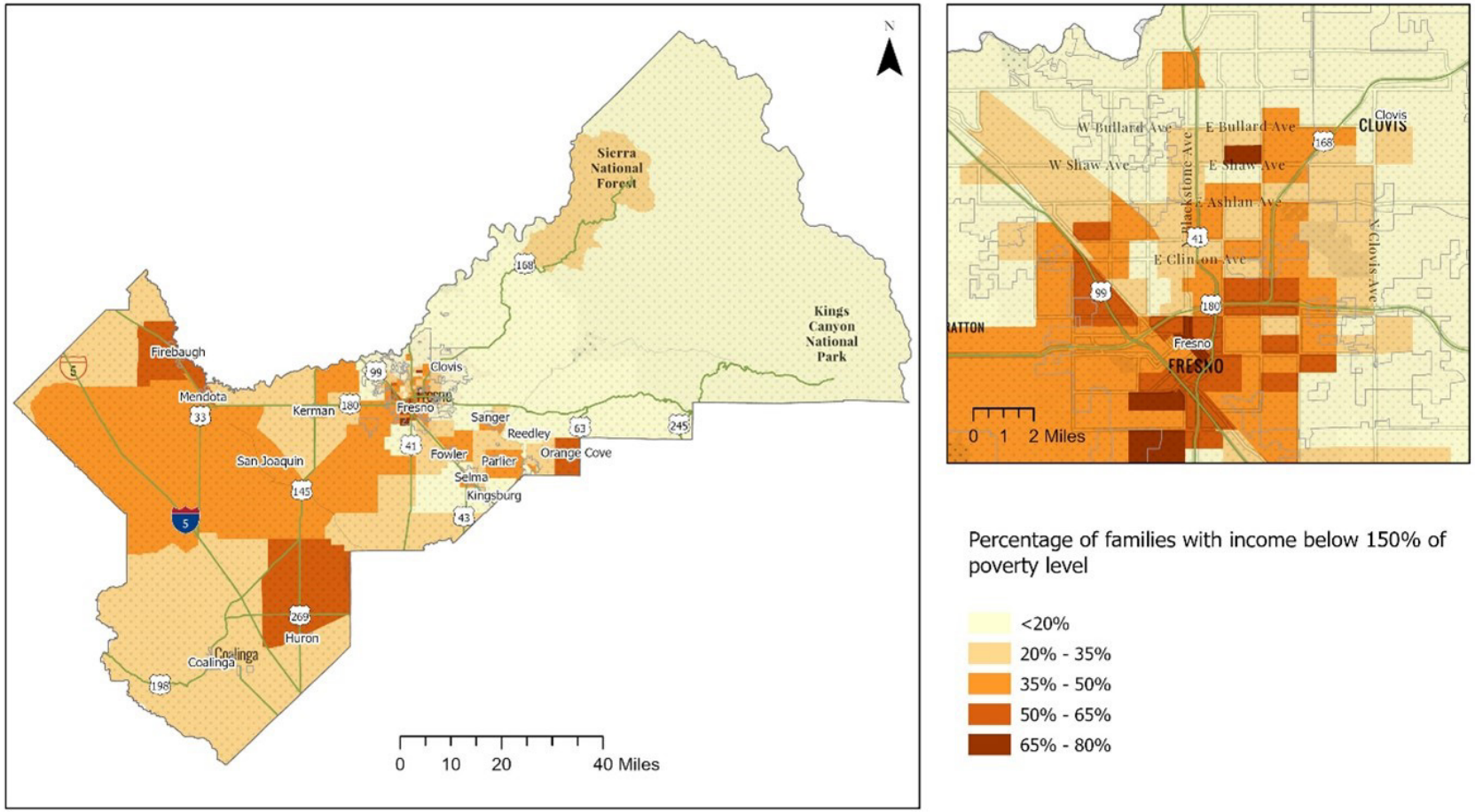


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FIGURE 7

Fresno COG Priority Climate Action Plan

Fresno County Low Income Percentage Map

SOURCES: 2018-2022 American Community Survey, Table S1701

I:\20231104\G\Fig7 - Fresno County Low Income Percentage Map.ai (1/25/2024)

APPROACH TO DEVELOPING THE PCAP

Overview to PCAP Development Approach

As proposed in the workplan submitted to US EPA as part of the Planning Grant application, Fresno COG staff utilized a three-pronged approach to developing the PCAP.

First, a robust public outreach process with multi-media platform was conducted to reach the public, especially the low-income and disadvantaged communities identified during the process. The public was informed of the project and the potential opportunities that the project could provide for the region. Public feedback was also gathered to inform the development of the plan.

As a parellel process, a Stakeholder Steering Committee was formed to provide input and guidance on the overall process. The Committee consisted of representatives from the 16 local governments, the San Joaquin Valley Air District, the Building Industry Association, FCRTA and the Central Valley Foundation which is a community organization that provided representation for the disadvantaged communities and other community interests. The Stakeholder Steering Committee met twice and made recommendations on the selection of the priority measures that are included in the PCAP. Both the public and the Stakeholder Steering Committee were surveyed about the priority measures.

The third and last step of the PCAP development process was to present the PCAP to the Fresno COG's three standing committees, including the Transportation Technical Committee, the Policy Advisory Committee and the Policy Board, for final approval.

During the PCAP development process, Fresno COG staff met with sector representatives, community organizations and interested project sponsors. COG staff also participated in workshops and meetings organized by the EPA and the California Air Resources Board (CARB), as further detailed in the Public Outreach section below.

Timeline for Plan Development

The PCAP was completed with an extremely aggressive timeline. Figure 8 (on the following page) illustrates the timeline and the process for the PCAP development.

Methodology for Development of the PCAP Components

The methodology for preparation of the PCAP included the preparation of a greenhouse gas emission inventory, identification and quantification of priority measure emission reductions, and PCAP approval is described in this section.

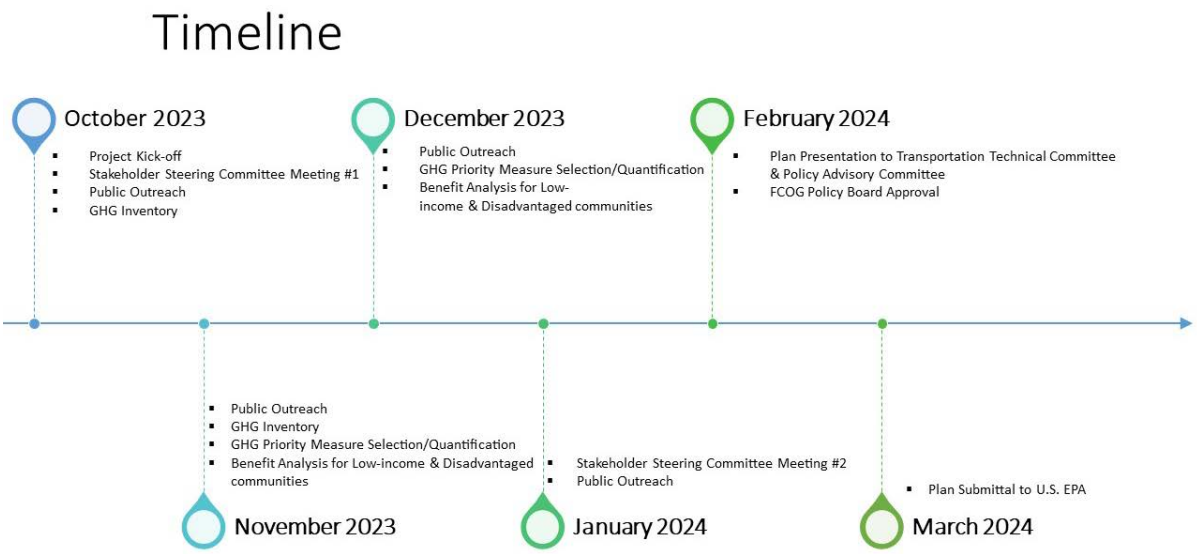


Figure 8: Fresno County PCAP Development Process and Timeline

Greenhouse Gas Emissions Inventory Development

The GHG inventory in the PCAP follows the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, developed by ICLEI Local Governments for Sustainability,[3] as modified for use in California and was developed utilizing available tools and data from EPA and CARB, consistent with State and National GHG emissions inventories, including the California Greenhouse Gas Emission Inventory Program developed by CARB. The City of Fresno GHG Reduction Plan Update[4] was referenced for the GHG inventory in the waste and wastewater sector. 2019 was selected for the GHG inventory based on the availability of data.

Regional Project Development Partnership

During the PCAP development process, the San Joaquin Valley Air Pollution Control District (the Air District) provided considerable assistance as a project partner. A representative from the Air District served on the Stakeholder Steering Committee and provided input throughout the process. A meeting was coordinated by the Air District with representatives from the agricultural sector, who provided comments about the priority measures for the agricultural sector and opined about the potential interests in the CPRG implementation grant. The Air District staff also provided technical assistance with the methodology and data for the quantification of the priority measures identified for the agricultural sector.

Selection of Priority GHG Reduction Measures

The priority sectors were first identified based on the GHG emission inventory. Transportation, agriculture, and building/energy are the top three GHG emitting sectors in Fresno County. The waste

[3] ICLEI – Local Governments for Sustainability USA. 2019. U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Version 1.2. July.

[4] City of Fresno. 2021. City of Fresno GHG Reduction Plan Update. March.

sector was subsequently added to the group of priority sectors based on the project interests from the communities.

Based on the guidance from the EPA, a list of draft priority measures that are "near term, implementation ready, cost feasible and of considerable magnitude of GHG reduction" were drafted for the four identified priority sectors.

The draft priority measures were then presented for input from the general public, including the low-income and disadvantaged communities. The public provided ratings for the draft measures within each of the priority sectors. The Stakeholder Steering Committee was also asked to rank the draft measures across the four sectors.

Based on the rankings from the stakeholders and the public; as well as potential funding interest in the EPA CPRG implementation grant, Fresno COG staff recommended 13 GHG reduction measures be included in the PCAP as the priority measures. The recommended priority measures were approved by the Stakeholder Steering Committee in January 2024.

Priority Measure Quantification

The quantification of GHG reductions associated with each priority GHG reduction measure was conducted using previously conducted studies such as Fresno COG's Electric Vehicle Readiness Plan (EVRP), publicly available datasets such as the National Renewable Energy Laboratory (NREL)'s residential and commercial building stock typologies, and tools such as the EPA's Waste Reduction Model (WARM). Detailed information about the studies, datasets, and tools used for each measure, as well as the specific parameters used for modeling GHG reductions, accompany each measure in the GHG Reduction Measures section.

Final Project Approval Process

After the priority measures were approved by the Stakeholder Steering Committee, the PCAP was drafted and will be published for public review and comment.

The draft document will then be presented to the Fresno COG Transportation Technical Committee and the Policy Advisory Committee for approval on February 16, 2024. The PCAP is anticipated to be approved by the Fresno COG Policy Board on February 29, 2024.

PUBLIC OUTREACH

Fresno COG's approach for developing the PCAP was to conduct a robust public process, as time allowed, supported by available quality data. The region is known for its poor air quality and extreme heat conditions during the summer months. The extreme climate events exacerbate air quality issues, causing severe impacts on people living in the region. People living in the low-income and disadvantaged communities bear the brunt of the extreme climate conditions as they lack resources to mitigate the impacts.

Fresno COG, along with its partnering agencies, is committed to a comprehensive and engaging public process with a three-pronged approach:

- A far-reaching public outreach with multi-media platform to reach the general public, especially the low-income/ disadvantaged communities, and inform them of the project and solicit feedback;
- A Stakeholder Steering Committee with representation from the local governments, sector representatives, transit agencies, community groups and other interested general public, which will provide guidance and input on the overall process;
- Fresno COG's three standing committees (Transportation Technical Committee, Policy Advisory Committee, and the Policy Board) review and recommend approval of all deliverables.

Due to the condensed schedule for PCAP development, Fresno COG contracted with an experienced consulting firm to assist with technical analysis, but conducted PCAP outreach in-house.

ENGAGEMENT WEBSITE

Fresno COG Staff began with development of a Community Engagement Hub website for CPRG planning grant activities and products. Fresno COG used the PublicInput.com online platform to create the hub, as linked below, and illustrated in Figure 9:

- English version: https://publicinput.com/fresnocprg
- Spanish version: https://publicinput.com/2023_pcap_enespanol

The website contains tabbed information including the following:

- Fresno COG's PCAP timeline which identifies milestones within the process and identifies what work is complete and what is yet to be done.
- Get Involved summarizes all opportunities to "get involved" in the PCAP planning process. This section listed upcoming outreach, links to a priority measure survey and the results and all the ways one may submit public comments or ask questions about the plan.
- Meetings held all past and upcoming committee and public meeting information, including dates, times, agenda links, webinar registration links, PowerPoint presentations and recordings of the Stakeholder meetings.

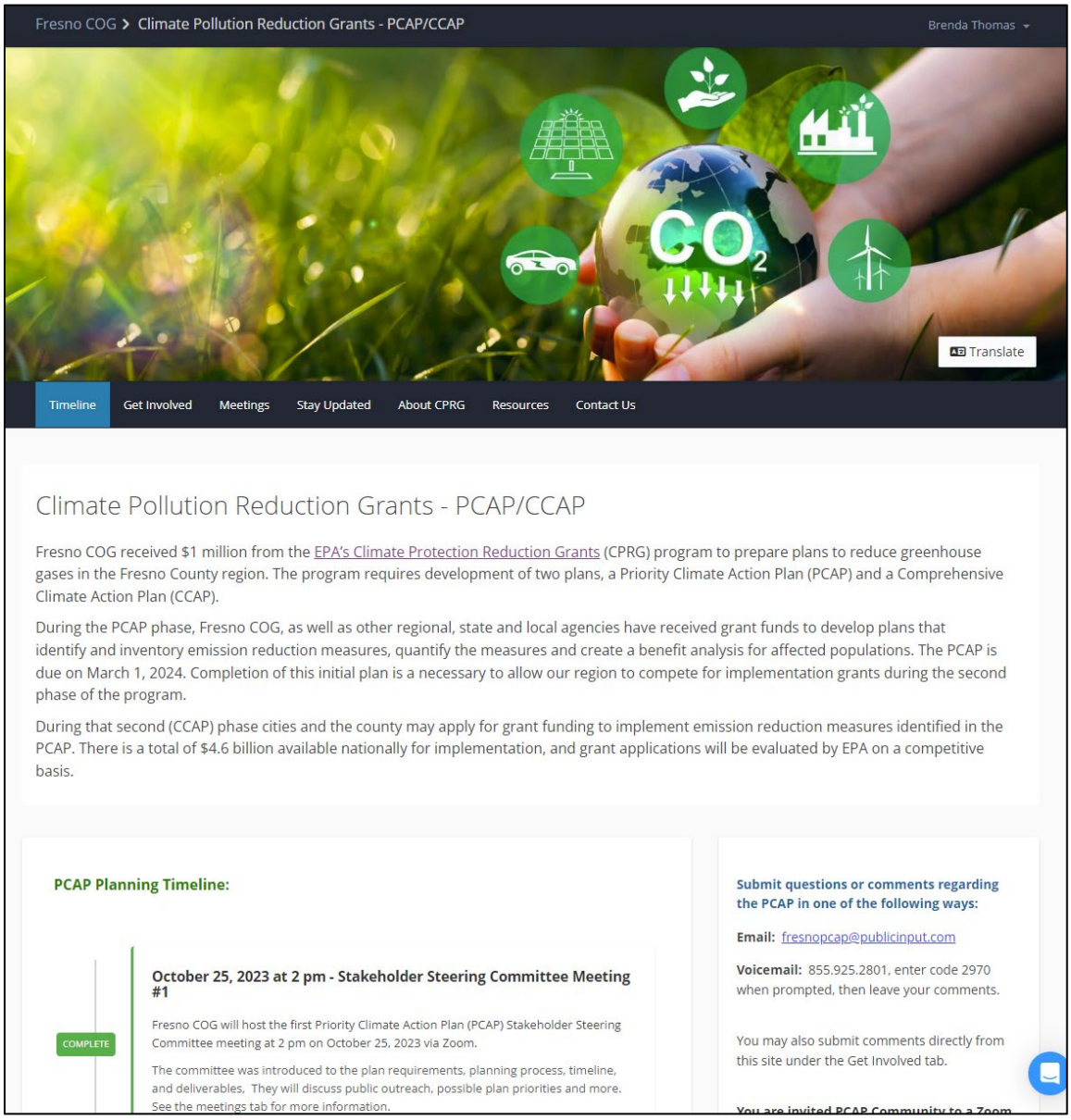


Figure 9: Fresno County PCAP/CCAP Public Website

- Stay Updated offered an opportunity to sign up to receive notifications about PCAP.
- About CPRG hosted CPRG background information and links to maps and the EPA's CPRG website.
- Resources addressed the Disadvantaged Community Comparison Maps and mapping tool.
- Contact Us provided direct contact information for Fresno COG's office and PCAP staff.

STAKEHOLDER COMMITTEE

Fresno COG convened a Stakeholder Steering Committee that comprised of representatives of all 16 local governments in Fresno County and other key stakeholders in developing the PCAP. The role of the

Stakeholder Steering Committee was to provide input and guidance to the PCAP process and approve recommendations by considering comments from external stakeholders and connecting staff with tribes, community groups, additional industry stakeholders, and the public. The Stakeholder Steering Committee meetings were scheduled to coincide with project milestones. With careful consideration, the project manager sent a request for representation from each of the 16 jurisdictions for designation on the Stakeholder Steering Committee.

In addition to the local government representation, the project manager conducted outreach for a representative from the San Joaquin Valley Air Pollution Control District, a Low-Income Disadvantaged Communities representative, and a Building industry expert. Fresno COG made various attempts to add an agricultural sector representative on the committee but was not successful. However, the Fresno COG project team did conduct separate key stakeholder meetings with several agricultural industry representatives and other interested parties such as the Fresno Chaffee Zoo, the Downtown Fresno Partnership, and Leadership Council for Justice and Accountability. In addition, many other agencies/entities such as Tranquility Resource Conservation District, Chinatown Foundation, and the Central Valley Asthma Collaborative expressed interests in the PCAP process and the CPRG implementation grants via in person/virtual meetings and other communication channels.

Table B: Fresno County PCAP Stakeholder Steering Committee

Name	Agency/Industry
Ryan Burnett	City of Clovis
Larry Miller	City of Coalinga
Ben Gallegos	City of Firebaugh
Dawn Marple	City of Fowler
Sophia Pagoulatos	City of Fresno
John Kunkel	City of Huron
Jesus Orozco	City of Kerman
Christina Windover	City of Kingsburg
Jeffrey O'Neal	City of Mendota
Chris Howard	City of Orange Cove
Javier Andrade	City of Parlier
Rodney Horton	City of Reedley
Eric VonBerg	City of San Joaquin
Derek Sylvester	City of Sanger
Lupe Macias	City of Selma
Mohammad Khorsand	County of Fresno
Kevin Wing	San Joaquin Valley Air Pollution Control District
Angela Castellanos	Central Valley Community Foundation
Moses Stites	Fresno County Rural Transit Agency
Mike Prandini	Building Industry

The membership of the Stakeholder Steering Committee is shown in Table B.

The Fresno COG PCAP project team held two Stakeholder Steering Committee meetings virtually via Zoom Webinar. The first meeting was held on October 25, 2023, and the second meeting was on January 10th, 2024. Members of the public also attended the two meetings.

All materials from the Stakeholder Steering Committee meetings were published and noticed to members of the public who subscribed to the Community Engagement Hub. Materials included the agenda, presentation, and recording.

The October meeting included a project overview and background of EPA's CPRG planning grant. The presentation outlined the timeline and deliverables to be expected in the next four months. The project team also briefed the Stakeholder Steering Committee and the public on what tools will be used for outreach, notably the Community Engagement Hub for public input. Lastly, the presentation covered the nexus between the PCAP and the Notice of Funding Opportunity for EPA's Implementation Grants under the Inflation Reduction Act. The Stakeholder Steering Committee meeting conducted a robust conversation about the outreach for the plan and the technical inputs for quantification of GHG reduction measures. The agenda, presentation slide deck, and question/answer session from the first Stakeholder Steering Committee meeting are included in the Appendix A.

At the January 10th, 2024 meeting, the project team reported on the project progress, provided an overview of GHG emissions inventory results, summarized public outreach, detailed the process to select the priority measures, and provided additional details on the EPA Implementation grants. The Stakeholder Steering Committee unanimously voted to approve the recommended five measures for the transportation sector, three measures for the agricultural sector, three measures for the building/energy sector, and two measures in the waste/sustainable materials sector to be included in the PCAP as the priority measures. The agenda, presentation slide deck, and question/answer session from the second Stakeholder Steering Committee are also included in Appendix A.

Committee meetings were publicized through the online hub, by email, and social media posts. Examples of public notices are provided in Figure 10 and Figure 11 below.

Figure 10: Example Social Media Post Advertising Stakeholder Meetings

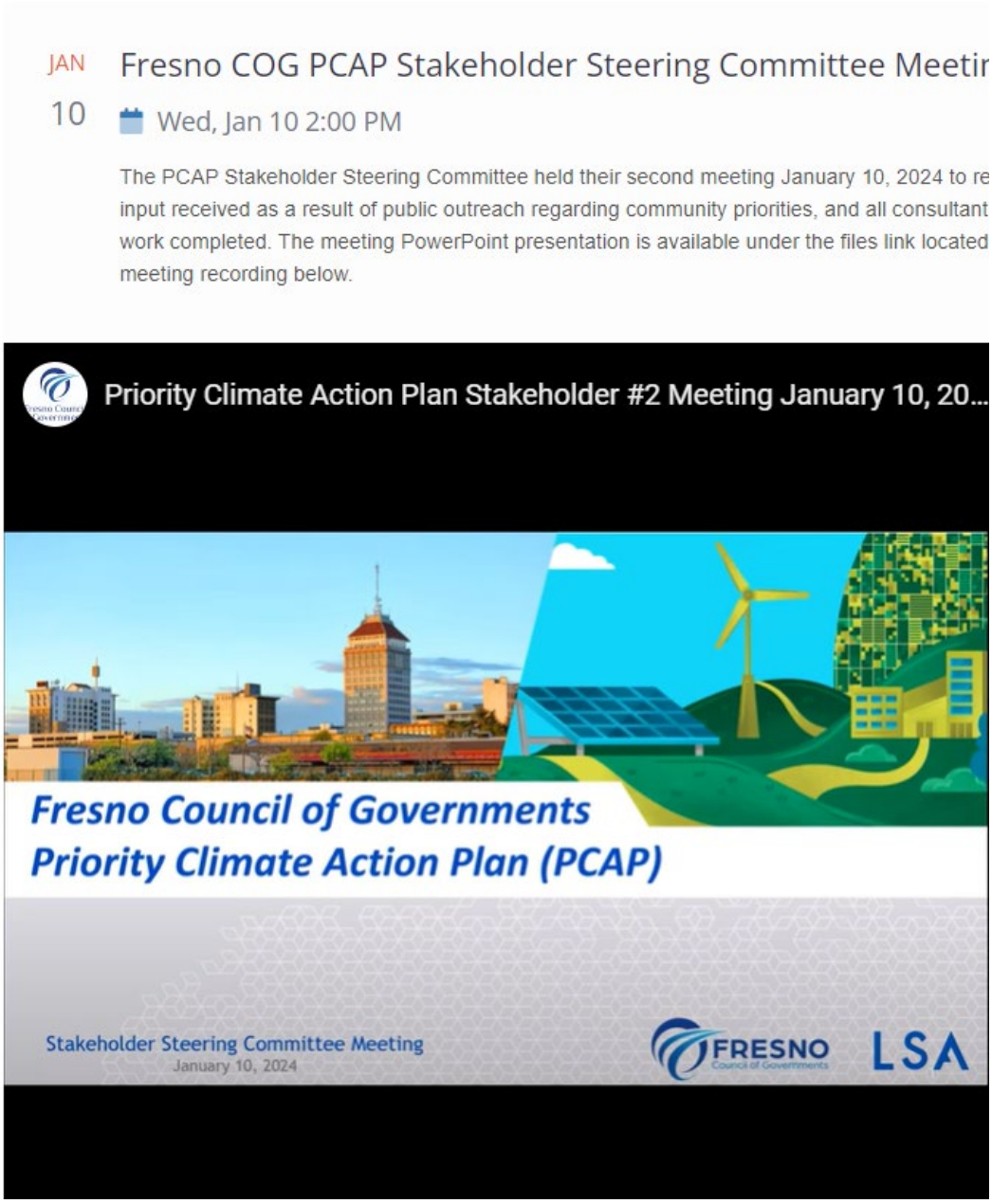


Figure 11: Example of Stakeholder Meeting Documentation on the Hub – January 10, 2024 Meeting

OUTREACH TO LOW-INCOME AND DISADVANTAGED COMMUNITIES

Fresno COG enlisted a representative on the Stakeholder Steering Committee to aid in representing the low-income and disadvantaged communities (LIDAC)and share insight on how the PCAP can uplift and improve the quality of life for residents in disadvantaged communities. The representation came from the Central Valley Community Foundation (CVCF) which has sponsored initiatives and projects aimed at transforming entire systems, not just fixing symptoms. The distinction between CVCF and other community-based organizations is their inclination, experience, and success in working with climate initiatives not only in Fresno, but the San Joquin Valley and the State. The role of the Stakeholder Steering Committee is to provide input and recommend the final priority measures in the PCAP.

To supplement and guide the efforts of the project team and the Stakeholder Steering Committee, the outreach to the public was a significant factor in selecting the GHG reduction priority measures. Public surveys were launched for all Fresno County residents to respond and share their comments. The project team partnered with Leadership Counsel for Justice and Accountability (the Leadership Counsel) in the outreach to the LIDAC in Fresno County. The Leadership Counsel works alongside the most impacted communities to advocate for sound policy and secure equal access to opportunities regardless of wealth, race, income, and place. They aim to influence land use and transportation planning and public investment priorities, guide environmental policy, and promote the provision of basic infrastructure and services through community organizing. The project team conducted presentations in Spanish in three unincorporated rural communities: Cantua Creek, Lanare, and Tombstone. The attendees at these community workshops were all residents of the LIDACs who were interested in the development of the PCAP and did not want their demographic and region to go unnoticed or without representation. At each workshop there were opportunities for residents to ask questions and fill out the survey to rank priority measures for GHG reduction under the four sectors.

Ultimately, 63 percent of the respondents to the public survey about the priority measure ranking were from the LIDAC communities.

Other Stakeholder Meetings

In addition to the Stakeholder Steering Committee meetings, the project team met with agricultural industry experts and administration officials at the Fresno Chaffee Zoo to encapsulate their vision for their potential grant application to the CPRG implementation grant. The Air District arranged a meeting to identify the priorities from agricultural sector representatives. The meeting included Roger Isom, President/CEO and Chris McGlothlin, Director of Technical Services of California Cotton, Ginners, and Growers Association, and Western Agricultural Processors Association. The meeting also included Manuel Cunha, President of Nisei Farmers League and California African American Farmers. The candidate priority measures were well received by both Roger Isom and Manuel Cunha. As representatives of farming organizations in the San Joaquin Valley region, they urged implementation funding from EPA to cover all counties served by the Air District. In discussion with the Fresno Chaffee Zoo, the project team understood that the Zoo is interested in implementing sustainable infrastructure improvement in transportation into the Zoo as well as parking in the Zoo. The Zoo also has vision to foster development that incorporates green/clean energy which will improve the quality of life in the surrounding disadvantaged communities. Furthermore, the zoo is interested in staying engaged in implementation opportunities that may arise at the end of the PCAP. Notes from both meetings are included in Appendix A.

Online Survey

Fresno COG's primary tool for collecting community input was a GHG Reduction Survey, also built on the PublicInput.com platform, available online and in hard copy in English and Spanish. Due to the compressed timeline, Fresno COG's online survey was launched on December 1, 2023, and ran for just over two weeks. Survey respondents were asked to provide their home address so the consultant could assess how many responses were being received from disadvantaged communities. Finally, survey respondents were asked to rank four sectors of high priority greenhouse gas reduction measures identified by Fresno COG's consultant. The sectors included:

- Transportation
- Waste, Water and Sustainable Materials
- Agricultural
- Energy and Building Materials

An example of the Spanish Survey[5] is shown in Figure 12 and the English Survey[6] is shown in Figure 13.

5 https://publicinput.com/pcap_survey_enespanol
6 https://publicinput.com/2023_priorities

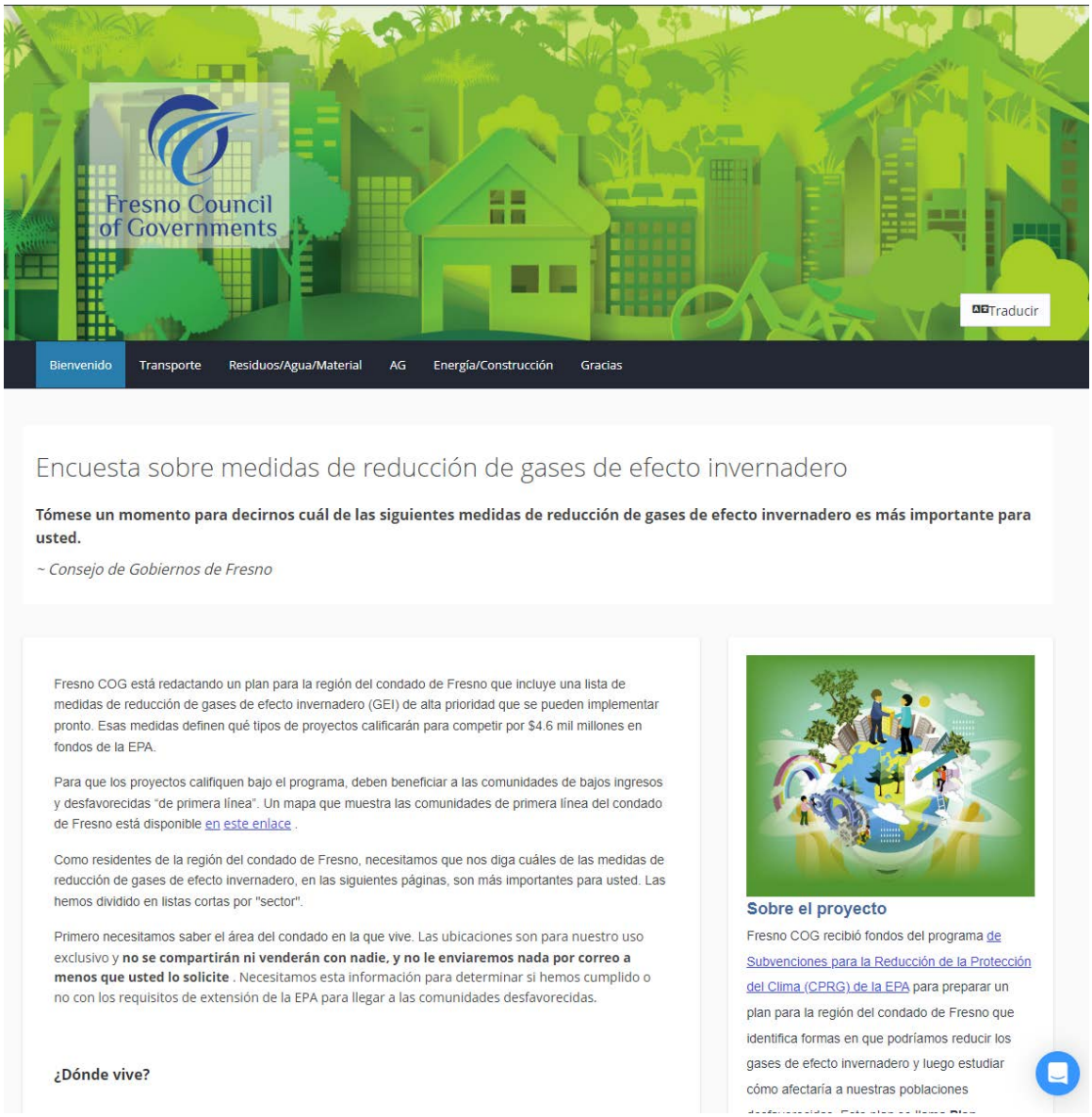


Figure 12: Public Survey Interface (Spanish Version)

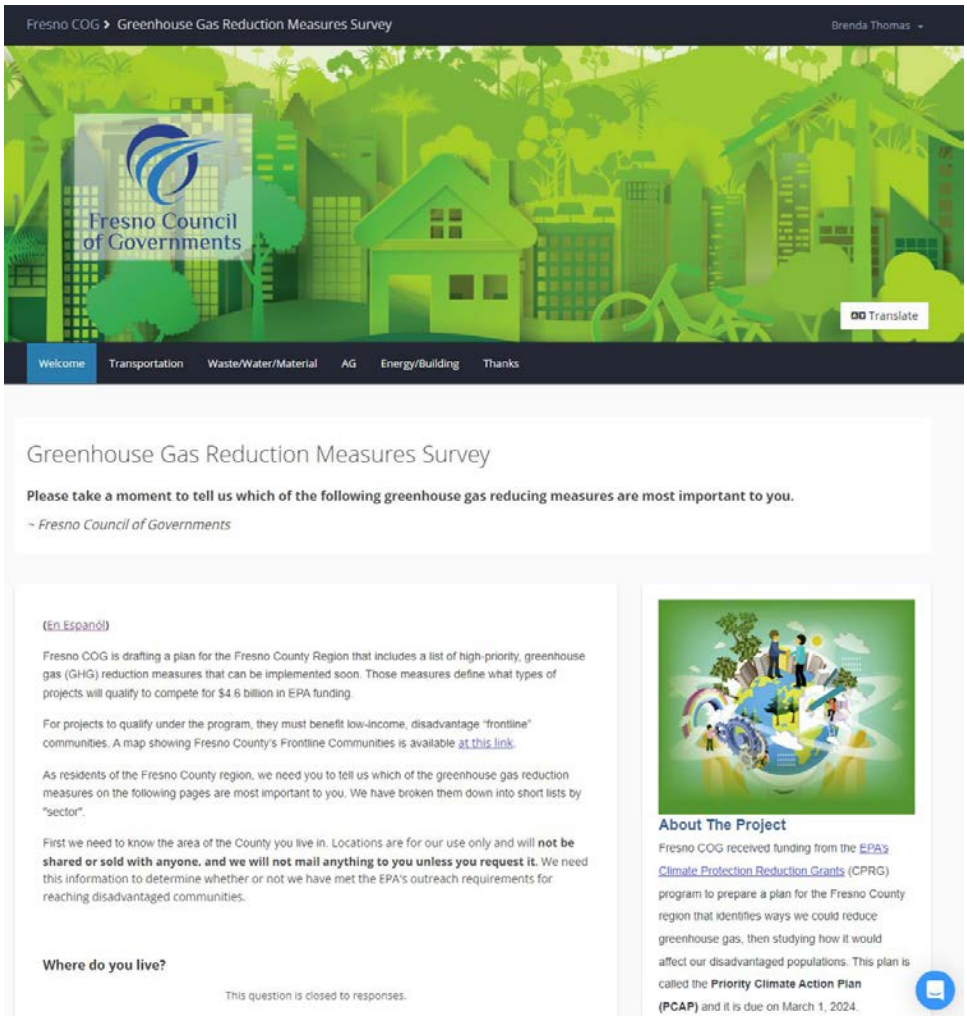


Figure 13: Public Survey Interface (English Version)

Reaching the Community

Fresno COG publicized the survey through community partners and stakeholders who shared survey links and invitations with their contacts. Fresno COG also used social media posts on Facebook, Instagram, LinkedIn and X accounts (see Figure 14 below) and distributed focused emails and newsletters to Fresno COG's contact database of up to 5,204 contacts. The database includes representatives from all of Fresno COG's member agencies, area school districts, community organizations, tribal governments, industry consultants, public agencies, and seniors, among many others.

Fresno COG's GHG Reduction Measures Survey hub also publicized a dedicated email account and voicemail to allow residents to submit comments in other forms, a snapshot of which is included in Figure 15. A snapshot of the newsletter is shown in Figure 16.

Figure 14: Example Social Media Posts, in English and Spanish

Also submit questions or comments regarding the Priority Measures in one of the following ways:

Email:
fresnocogprioritymeasures@publicinput.com

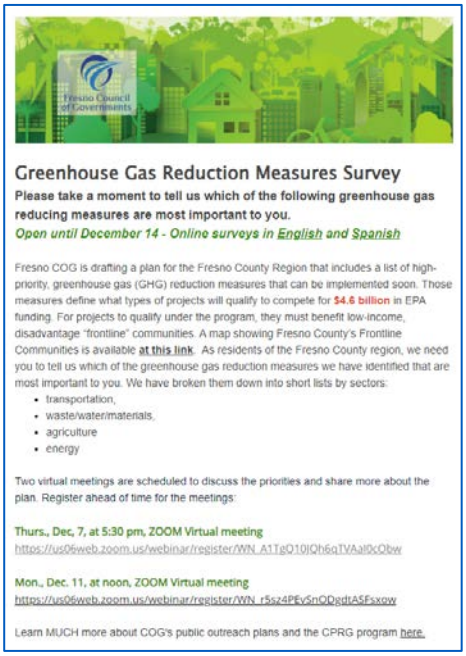
Voicemail: 855.925.2801, enter code 1048 when prompted, then leave your comments.

Figure 15: Publicized Methods of Commenting

Community Meetings

Fresno COG hosted two virtual meetings held on December 7, 2023 at 5:30 p.m. and December 11, 2023 at noon. The PowerPoint presentation is included in Appendix A. Participants were given this opportunity to ask questions of project staff and the consultant. They were then provided a direct link to the online survey.

Staff attended three in-person community meetings that were held within the rural, unincorporated disadvantaged communities of Lanare, Sanger/Tombstone and Cantua Creek using the same PowerPoint handed out in hard copy. During those meetings staff gave a brief presentation on the PCAP efforts, then listened to residents' concerns and answered questions before walking them through hard copy versions of the GHG Reduction Measures Survey.



Greenhouse Gas Reduction Measures Survey

Please take a moment to tell us which of the following greenhouse gas reducing measures are most important to you.

Open until December 14 - Online surveys in English and Spanish

Fresno COG is drafting a plan for the Fresno County Region that includes a list of high-priority, greenhouse gas (GHG) reduction measures that can be implemented soon. Those measures define what types of projects will qualify to compete for **$4.6 billion** in EPA funding. For projects to qualify under the program, they must benefit low-income, disadvantage "frontline" communities. A map showing Fresno County's Frontline Communities is available **at this link**. As residents of the Fresno County region, we need you to tell us which of the greenhouse gas reduction measures we have identified that are most important to you. We have broken them down into short lists by sectors:

- transportation,
- waste/water/materials,
- agriculture
- energy

Two virtual meetings are scheduled to discuss the priorities and share more about the plan. Register ahead of time for the meetings:

Thurs., Dec, 7, at 5:30 pm, ZOOM Virtual meeting
https://us06web.zoom.us/webinar/register/WN_A1TgO10lQh6qTVAaI0cQbw

Mon., Dec. 11, at noon, ZOOM Virtual meeting
https://us06web.zoom.us/webinar/register/WN_r5sz4PEvSnODgdtASFsxow

Learn MUCH more about COG's public outreach plans and the CPRG program here.

Figure 16: Newsletter Article Sent to Fresno COG Contacts

Meetings were held on the following dates within these communities:

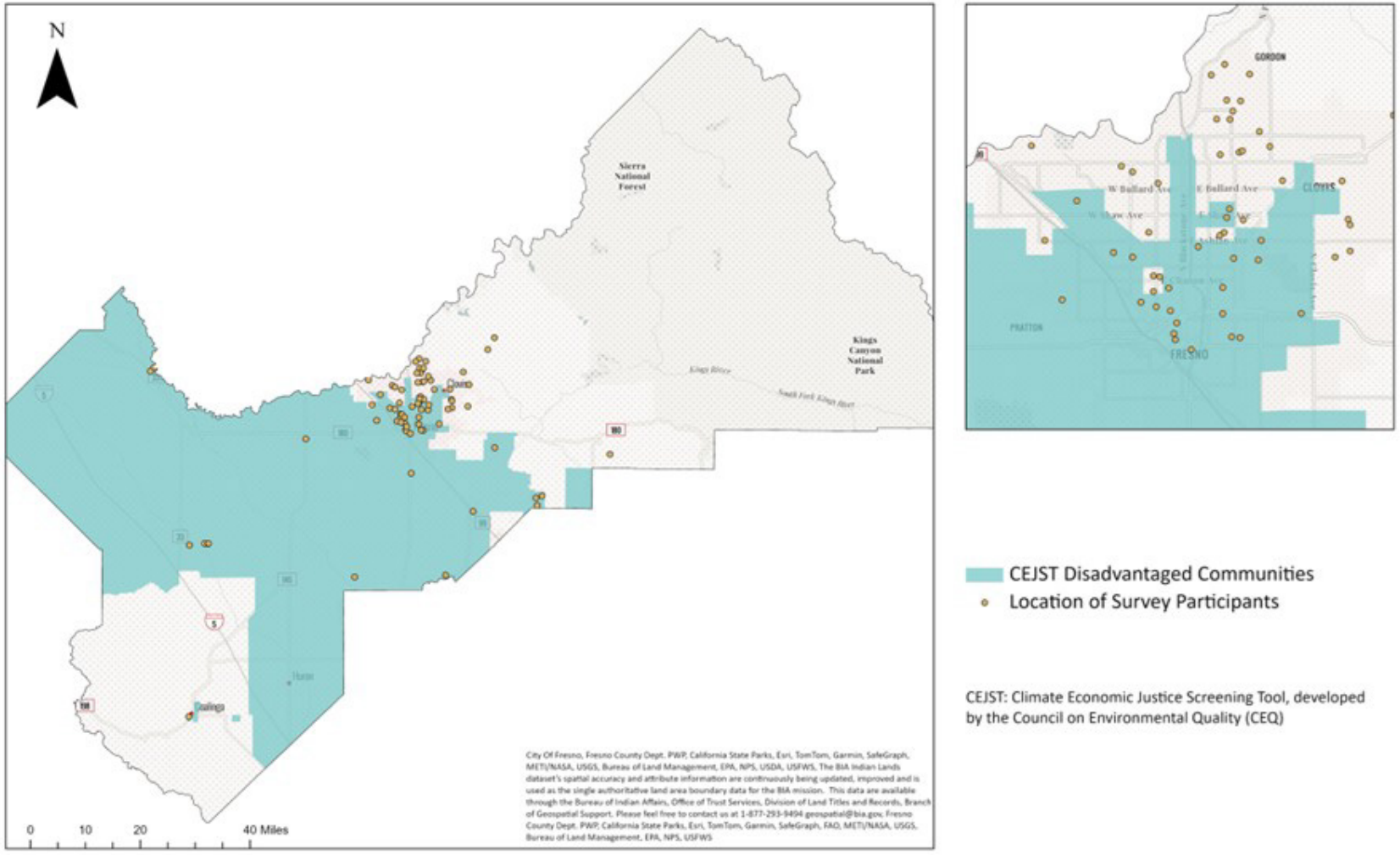
- Cantua Creek – December 6, 2023 at 4:30 p.m.
- Sanger/Tombstone – December 14, 2023 at 5:00 p.m.
- Lanare – December 19, 2023 at 5:00 p.m.

All comments received from the online and hard copy surveys, the dedicated project email account, dedicated voicemail line and linked social media accounts regarding priority measures were automatically transcribed and incorporated into the online survey results by the PublicInput.com system. This includes all Spanish comments which were also translated to English. Fresno COG also received comments via their staff email accounts and through phone calls which were documented and forwarded to the consultant for consideration.

Survey Results

The survey comments and ranking results were forwarded to the consultant for analysis on December 20th, and they are available to view on the CPRG Community Engagement Hub website. In total, over two weeks' time the survey was viewed 605 times with 117 participants completing the survey (includes hard copy survey results input by staff following meetings). Using the survey tool, 1,261 responses were received with 22 additional comments logged. Twenty-four respondents signed up to continue receiving information about the PCAP process.

When comparing the resulting survey maps of respondents' home locations (see Figure 17) with the Climate and Economic Justice Screening Tool, Fresno COG staff confirms that 63 percent of survey respondents were from disadvantaged communities within the Fresno County region.



Data Source: Climate and Economic Justice Screening Tool(CEJST) Version 1.0, November 2022, White House Council on Environmental Quality; Greenhouse Gas Reduction Measures Survey, Fresno Council of Governments

LSA

FIGURE 17

Fresno COG Priority Climate Action Plan

Greenhouse Gas Reduction Plan Map of Survey Participants

Survey Rankings Sample

The survey was available as on the Survey Hub for ranking on-line. Examples of the survey are included in Figure 18 and are shown in Appendix B. Results of the survey included ranking scores for each potential priority measure.

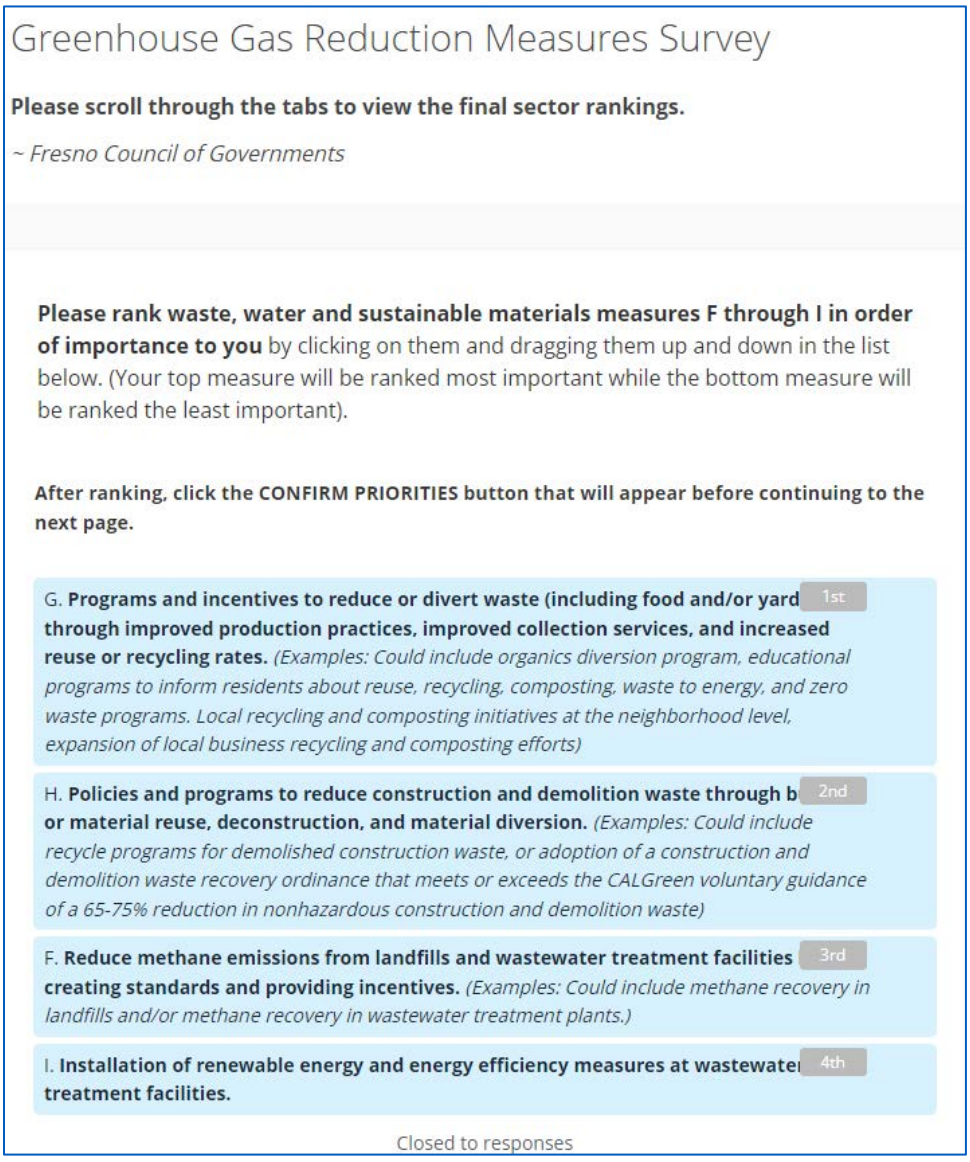


Figure 18: Greenhouse Gas Reduction Survey

GREENHOUSE GAS EMISSIONS INVENTORY

GREENHOUSE GAS EMISSIONS BACKGROUND

The following discussion describes existing GHG emissions in Fresno County and the San Joaquin Valley Air Basin (SJVAB), beginning with a discussion of typical GHG types and sources, impacts of global climate changes, the regulatory framework surrounding these issues, and current emission levels.

Global Climate Change

Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ± 0.2° Celsius (°C) or 1.1 ± 0.4° Fahrenheit (°F) in the 20th century. The increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[7]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are the following:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, methane, and N_2O, some gases, like HFCs, PFCs, and SF_6 are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this analysis, the term "GHGs" will refer collectively only to the six gases listed above.

[7] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the naturally occurring greenhouse effect is necessary to keep our planet at a comfortable temperature.

These gases vary considerably in terms of Global Warming Potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The global warming potential is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to carbon dioxide, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e). Table C shows the GWP for each type of GHG. For example, sulfur hexafluoride is 23,900 times more potent at contributing to global warming than carbon dioxide.

The following summarizes the characteristics of the six GHGs and black carbon. Black carbon also contributes to climate change and is discussed below.

Table C: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (Years)	Global Warming Potential (100-year Time Horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	310
HFC-23	270	11,700
HFC-134a	14	140
HFC-152a	1.4	140
PFC: Tetrafluoromethane (CF_4)	50,000	6,500
PFC: Hexafluoromethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900

Source: *Second Update to the Climate Change Scoping Plan: Building on the Framework* (CARB 2017). Website: www.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2017-scoping-plan-documents (accessed October 2023)

Carbon Dioxide

In the atmosphere, carbon generally exists in its oxidized form, as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals, and plants, volcanic out gassing, decomposition of organic matter and evaporation from the oceans. Human caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of man-made emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of human-generated CO_2, and consequently, the gas is building up in the atmosphere.

In 2020, total annual CO_2 accounted for approximately 80.2 percent of California's overall GHG emissions.[8] Transportation is the single largest source of CO_2 in California, which is primarily comprised of on-road travel. Electricity production, industrial and residential sources also make important contributions to CO_2 emissions in California.

Methane

Methane (CH_4) is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation in dairy cows, manure management, and rice cultivation are

[8] CARB. 2022a. GHGs Descriptions & Sources in California. Website: ww2.arb.ca.gov/ghg-descriptions-sources.

also significant sources of CH_4 in California. Total annual emissions of CH_4 accounted for approximately 10.5 percent of GHG emissions in California in 2020.[9]

Nitrous Oxide

Nitrous oxide (N_2O) is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. Nitrous oxide emissions accounted for approximately 3.5 percent of GHG emissions in California in 2020.[10]

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride

HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[11] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semiconductor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry has resulted in greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 5.5 percent of GHG emissions in California in 2020.[12]

Black Carbon

Black carbon is the most strongly light-absorbing component of particulate matter (PM) formed by burning fossil fuels such as coal, diesel, and biomass. Black carbon is emitted directly into the atmosphere in the form of particulate matter less than 2.5 microns in size ($PM_{2.5}$) and is the most effective form of PM, by mass, at absorbing solar energy. Per unit of mass in the atmosphere, black carbon can absorb one million times more energy than CO_2.[13] Black carbon contributes to climate change both directly, such as absorbing sunlight, and indirectly, such as affecting cloud formation. However, because black carbon is short-lived in the atmosphere, it can be difficult to quantify its effect on global-warming.

Most U.S. emissions of black carbon come from mobile sources (52 percent), particularly from diesel fueled vehicles.[14] The other major source of black carbon is open biomass burning, including wildfires, although residential heating and industry also contribute.

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9 EPA. 2023. Inventory of U.S. Greenhouse Gas Emissions and Sinks. Website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks#:~:text=Inpercent202021percent2Cpercent20U.S.percent20greenhousepercent20gas,sequestrationpercent20frompercent20thepercent20landpercent20sector (accessed January 2024)

10 Ibid.

11 The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

12 CARB. 2022. op cit.

13 United States Environmental Protection Agency (USEPA). 2017. Black Carbon, Basic Information. February 14, 2017. Website: https://19january2017snapshot.epa.gov/air-research/black-carbon-research_.html (accessed January 2024).

14 Ibid.

Emissions Inventories

An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, and California GHG emission inventories.

Global Emissions

Worldwide emissions of GHGs in 2021, the latest inventory year available, totaled 19.2 billion metric tons of CO2e. Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change.[15]

United States Emissions

In 2021, the year for which the most recent data are available, the United States emitted about 6,340.2 million metric tons of CO_2e (MMT CO_2e). Overall, emissions in 2021 increased by 6 percent relative to the2020 total GHG emissions. This increase in total GHG emissions was driven by fossil fuel combustion due primarily to econimic acticity rebunding after the height of the COVID-19 pandemic. However, GHG emissions in 2021 are 17 percent below those of 2005 levels. Of the five major sectors – residential and commercial, agricultural, industry, transportation, and electricity generation – transportation accounted for the highest amount of GHG emissions in 2021 (approximately 28 percent), with electricity generation second at 25 percent and emissions from industry third at 23 percent.[16]

State of California Emissions

The State emitted approximately 369.2 MMT CO_2e emissions in 2020, 35.3 MMT CO_2e lower than 2019 levels and 61.8 MMT CO_2e below the 2020 GHG limit of 431 MMT CO_2e.[17] The California Air Resources Board (CARB) estimates that transportation was the source of approximately 37 percent of the State's GHG emissions in 2020, which is a smaller share than recent years, as the transportation sector saw a significant decrease of 26.6 MMT CO_2e in 2020, likely due in large part to the impact of the COVID-19 pandemic. The next largest sources included industrial sources at approximately 20 percent and electricity generation at 16 percent. The remaining sources of GHG emissions were commercial and residential activities at 10 percent, agriculture at 9 percent, high GWP at 6 percent, and waste at 2 percent.[18] It is expected that emissions have increased again since 2020, primarily due to economic activity rebounding after the height of the COVID-19 pandemic.

FRESNO COUNTY GHG EMISSION INVENTORY

Emission inventories are compilations of emissions generated by sources in a geographic area at a given time. GHG emission inventories are reported in units of MT CO_2e emissions per year. Emission inventories identify the contribution of each type or category of emissions to the total inventory of pollutants of

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15 United Nations Framework Convention on Climate Change (UNFCCC). 2023. GHG Data from UNFCCC. Website: unfccc.int/process-and-meetings/transparency-and-reporting/greenhouse-gas-data/ghg-data-unfccc/ghg-data-from-unfccc (accessed October 2023).

16 USEPA. 2021. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019. Website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2019 (accessed October 2023).

17 CARB. 2022a. *California Greenhouse Gas Emissions for 2000 to 2020, Trends of Emissions and Other Indicators Report*. Website: https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/2000-2020_ghg_inventory_trends.pdf (accessed October 2023).

18 Ibid.

interest. Emission inventories help rank sources by size to determine those that are most important to control.

Inventories are required to determine existing conditions and to forecast emissions in future years to account for the effects of growth. The GHG emissions inventory developed for the County of Fresno PCAP was utilized in determining the potential emission reductions that could be achieved through the implementation of priority measures.

Inventory Methodology and Assumptions

Inventory Protocols

Emission inventory protocols have been developed for many emission sources by governmental and independent agencies, and professional associations. The U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, developed by ICLEI Local Governments for Sustainability, provides guidance for developing community inventories prepared in the United States. The U.S. Community Protocol is not entirely applicable to inventories in California communities. California specific emission factors and data are available for many sources that when used produce a more accurate inventory. The inventory prepared for the County of Fresno PCAP follows the U.S. Community Protocol as modified for use in California and was developed utilizing available tools and data from EPA and CARB, consistent with State and National GHG emissions inventories, including the California Greenhouse Gas Emission Inventory Program developed by CARB.

Baseline Inventory Source Categories

The following source sectors are included in the GHG emissions inventory developed for the PCAP:

- Transportation (including On-Road, Offroad, and Aircraft Sources)
- Industrial Emissions
- Energy Use (Residential and Commercial)
- Waste and Wastewater
- Agriculture
- Fugitive Emissions

The developed inventory provides estimates of anthropogenic GHG emissions within the County; natural sources are not included in the inventory. It should be noted that the inventory does not include sources that comprise less than 3 percent of the inventory and sources with data that is not readily available for the County. For example, emissions from urban forestry were not included in the emissions inventory due to lack of readily available County-specific data. Additionally, GHG emissions “sinks” were not accounted for in the emissions inventory. The inventory also does not include impacts of upstream emissions (e.g., emissions associated with an extraction process for purchased fuels—extraction, production, and transportation of fuels).

Baseline Inventory Selection Criteria

The baseline inventory year is important because it forms the starting point for setting emission reduction targets in future years. Several criteria were considered in selecting the best year for the baseline inventory, including:

- Data availability;
- Relationship with State inventories and targets; and
- Recommended practices from other agencies and organizations.

A base year of 2019 was selected for the PCAP GHG Emissions Inventory as the most recent year with complete data available for the majority of source sectors which was representative of "typical" activity, prior to the occurrence of the COVID-19 pandemic and associated short-term changes in activity rates for major sources such as transportation. The methodology utilized to develop the emissions inventory by source sector for this base year is further described in the following section.

Sector Analysis Methodology

Transportation Sector

Transportation sector emissions included on-road emission sources and aircraft emissions.

On-Road Emissions Sources. For the transportation sector, the on-road emissions inventory was developed utilizing the CARB EMFAC2021 model (Version 1.0.2) utilizing the following inputs for the modeling run: Region Type: County; Region: Fresno; Year: 2019; Season: Annual; Vehicle Classification: EMFAC2007 Categories. Aggregate model years and speed bins were utilized. Calculated emissions for CO_2, N_20, and CH4 were converted to CO_2e utilizing the GWP values as recommended by CARB and the IPCC.[19]

To further inform the on-road transportation emissions inventory, fleet information was obtained from transit agencies and Fresno COG member municipalities. Based on the type of vehicle included in the transit and municipal fleets, an emission rate, as obtained from the EMFAC model, was applied to the vehicle and multiplied by the annual usage, or an average annual usage for the type of vehicle, as provided by the municipality. These emissions were added to the transportation emissions inventory.

Aircraft Emissions. Aircraft emissions are not currently included in the available State inventory tools. Therefore, aircraft emissions were estimated for the County based on an EPA data indicating that approximately 10 percent of transportation sector GHG emissions in a region occur from aviation sources.[20] Therefore, 10 percent of the combined estimated transportation sector emissions were added to the Transportation Sector emissions inventory to represent an approximate estimate of the potential aviation-related GHG emissions in the region.

Industrial Emissions. For the stationary data module, which represents emissions from industrial sources, the EPA Local Greenhouse Gas Inventory Tool[21] was utilized to estimate GHG emissions from natural gas and electricity consumption from stationary sources. The study used data from the U.S. Energy

[19] Intergovernmental Panel on Climate Change (IPCC). 2007. IPCC Fourth Assessment Report: Climate Change 2007 - Direct Global Warming Potentials. Website: https://archive.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html (accessed November 2023).

[20] Environmental and Energy Study Institute (EESI). 2022. Issue Brief: The Growth in Greenhouse Gas Emissions from Commercial Aviation. June. Website: https://www.eesi.org/papers/view/fact-sheet-the-growth-in-greenhouse-gas-emissions-from-commercial-aviation#:~:text=EPApercent20reportspercent20thatpercent20commercialpercent20airplanes, greenhousepercent20gaspercent20(GHG)percent20production (accessed November 2023).

[21] United States Environmental Protection Agency (EPA). 2023. Local Greenhouse Gas Inventory Tool. Website: https://www.epa.gov/statelocalenergy/local-greenhouse-gas-inventory-tool (accessed November 2023).

Information Administration (EIA) on natural gas consumption by sector within the state of California for the year 2019.[22] To delineate Fresno County's specific contribution, the State and Local Planning for Energy (SLOPE) platform was utilized.[23] SLOPE provided a breakdown of the state data by county, enabling the isolation of Fresno County's data. Accordingly, Fresno County's share of natural gas consumption was determined for each sector.

In the context of electricity consumption, a similar approach was adopted. The study relied on EIA's data detailing sector-specific electricity consumption in California for 2019. SLOPE's detailed county-level breakdown was again used to extract Fresno's specific data. This allowed for the calculation of Fresno's proportion of electricity use in each sector. Furthermore, emission factors from the CAMX eGrid subregion were included in the analysis to provide a comprehensive understanding of the carbon emissions.

To enhance the comprehensiveness of the stationary data module, additional data sources were integrated to broaden the scope beyond natural gas. Specifically, the EPA Facility Level Information on GreenHouse gases Tool (FLIGHT) was employed as a pivotal resource.[24] FLIGHT offered detailed insights into a variety of stationary sources of greenhouse gas emissions, distinct from natural gas. Utilizing 2019 as the base year, this inclusion allowed for a more nuanced analysis of the emission landscape in Fresno County.

Energy Use (Residential and Commercial Buildings)

Similar to the calculations of emissions from stationary sources, the EPA Local Greenhouse Gas Inventory Tool[25] was utilized to estimate GHG emissions from natural gas and electricity consumption from natural gas and electricity usage from residential and commercial buildings. Data from the EIA on natural gas and electricity consumption was obtained by sector within California for the year 2019.[26,27] To delineate Fresno County's specific contribution, the SLOPE platform was utilized[28] to isolate Fresno County's data. Emission factors from the CAMX eGrid subregion were included in the analysis to provide a comprehensive understanding of the regional carbon emissions.

Waste and Wastewater

To calculate the estimated emissions from solid waste in Fresno County, the emissions that were developed as part of the City of Fresno GHG Reduction Plan Update[29] were adjusted to scale based on population from an emissions rate per capita to represent the population of the County. Through the next

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22 U.S. Energy Information Administration (EIA). 2022. "Natural Gas Consumption by End Use," Annual Report of Natural and Supplemental Gas Supply and Disposition Form EIA-176 (accessed November 2023).

23 National Renewable Energy Laboratory. 2023. "Net Electricity and Natural Gas Consumption," State and Local Planning for Energy. Website: https://maps.nrel.gov/slope (accessed October 2023).

24 United States Environmental Protection Agency (EPA). 2023. Facility Level Information on GreenHouse gases Tool (FLIGHT). Website: https://ghgdata.epa.gov/ghgp/main.do (accessed December 2023).

25 United States Environmental Protection Agency (EPA). 2023. Local Greenhouse Gas Inventory Tool. Website: https://www.epa.gov/statelocalenergy/local-greenhouse-gas-inventory-tool (accessed November 2023).

26 U.S. Energy Information Administration. "Electricity Sales to Ultimate Customers," Annual Electric Power Industry Report Form EIA-861, accessed 8 Nov 2023

27 U.S. Energy Information Administration (EIA). 2022. "Natural Gas Consumption by End Use," Annual Report of Natural and Supplemental Gas Supply and Disposition Form EIA-176 (accessed November 2023).

28 National Renewable Energy Laboratory. 2023. "Net Electricity and Natural Gas Consumption," State and Local Planning for Energy. Website: https://maps.nrel.gov/slope (accessed October 2023).

29 City of Fresno. 2021. City of Fresno GHG Reduction Plan Update. March.

phase of CAP development, the emissions estimates from this sector continue to be refined utilizing available County-wide data on solid waste production and recycling rates.

For the estimation of GHG emissions occurring from wastewater, the EPA Local Greenhouse Gas Inventory Tool was applied. The amount of septic systems in the County was estimated based on a division of the County population into "Urban" and "Rural" residents, and it was assumed that residents that lived in a "Rural" setting, rather than in a city with a major wastewater treatment facility, would utilize a septic system for wastewater treatment. There is an anaerobic wastewater treatment facility in the City of Fresno,[30] as such, the population of the City was assumed to be treated by this facility, while the remainder of the County's "Urban" population was assumed to be treated by aerobic treatment facilities. No populations in the County were identified as being served with nitrification/denitrification treatment. Based on the above-described inputs, the default emissions rates from the Inventory Tool were utilized to obtain the estimated emissions.

Agriculture

For the Agricultural Sector, emissions were estimated based on the CARB California GHG Emissions Inventory Data.[31] The Full Inventory – IPCC Categorization[32] was utilized for the emissions calculations (as included in the attached Appendix C). The emissions included in the CARB GHG inventory were filtered by IPCC Level to include IPCC Level 3: Agriculture, Forestry, and Other Land Use.

Consistent with the data utilized in the State inventory, the latest available agricultural census data available from USDA[33] was utilized to develop the percentage of farmed acreage and agricultural commodities in Fresno County, as compared to California. These percentages were applied to the GHG agricultural emissions inventory for the State as a scaling factor to represent the proportion of Statewide GHG emissions that would originate in the County. It should be noted that this methodology results in an estimated emissions inventory that is a "scaled down" version of the emissions inventory prepared for the State, and as such only includes agricultural commodities that are included in the State inventory. In future inventory updates, a more refined emissions inventory estimate for this sector should be prepared utilizing specific agricultural activity rates for the County and applying emission factors to these activity rates.

For off-road emissions estimates, the CARB OFFROAD model was utilized with the following inputs: Region Type: County; Region: Fresno; Year: 2019; Season: Annual; Vehicle Classification: OFFROAD2021 Equipment Types. Aggregate model years and horsepower bins were selected, and all fuel types were included in the model run. The model results were filtered to obtain the GHG emissions that occurred from the "agricultural equipment" category. Calculated emissions for CO_2, N_20, and CH_4 were converted

[30] City of Fresno. 2023. Wastewater Facilities & Infrastructure. Website: https://www.fresno.gov/publicutilities/sewer-wastewater/wastewater-facilities-infrastructure/ (accessed November 2023).

[31] California Air Resources Board (CARB). 2023. Current California GHG Emissions Inventory Data. Website: https://ww2.arb.ca.gov/ghg-inventory-data (accessed November 2023).

[32] California Air Resources Board (CARB). 2022. Full Inventory: IPCC Categorization. Website: https://ww2.arb.ca.gov/sites/default/files/2023-12/ghg_inventory_by_ipcc_all_00-21.xlsx (accessed November 2023).

[33] United States Department of Agriculture (USDA). 2017. USDA NASS 2017 Census of Agriculture. Website: https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/California/ (accessed November 2023).

to CO_2 equivalent emissions (CO_2e) utilizing the Global Warming Potential (GWP) values as recommended by the IPCC.[34]

Fugitive Emissions

Fugitive emissions for the County were included in the emissions inventory to represent other GHG sources such as consumer products, and were scaled based on previous calculations completed for the City of Fresno. The estimated emissions from fugitive sources, as included in the City's GHG Reduction Plan Update, were scaled based on population from a per-capita emissions factor to represent the estimated emissions on a County-wide basis. Additionally, emissions from off-road equipment, such as landscaping equipment, were included in this emissions inventory category. The estimated emissions from this category will continue to be refined in future emissions inventory updates through the development of the CAP.

Electricity Generation

As a part of the emissions inventory preparation, the emissions that occur from electricity generation in Fresno County were quantified. However, as the region is a net importer of electricity and does not export electricity to other areas, the emissions that were generated as a result of electricity generation are included in the emissions assumed to occur due to energy use from residential and commercial buildings, and as part of the industrial emissions category (under industrial energy use). Therefore, this sector is not shown as a separate source in the GHG emissions inventory quantification.

BASELINE GHG EMISSIONS INVENTORY

Utilizing the methodology described above, the estimated Fresno County GHG emissions inventory for the source sectors analyzed is shown in Table D.

Table D: GHG Emissions by Sector for 2019

Sector	MT CO_2e	% of Total
Transportation	5,769,119.50	44
Agriculture	2,555,749.14	19
Energy Use for Residential and Commercial Buildings	2,307,702.56	17
Industrial	1,732,518.24	13
Waste and Wastewater	468,556.29	4
Fugitive Emissions	375,459.91	3
Total	**13,209,105.64**	**100**

Source: LSA, 2023 (Appendix C)
GHG = greenhouse gas
MT CO_2e = metric tons of carbon dioxide equivalent

The County's total emissions for the source sectors analyzed were approximately 13,209,106 MT CO_2e in 2019. As shown in Table D and Figure 19, out of the sectors analyzed, the Transportation sector was the largest contributor to emissions in the 2019 inventory, with 44 percent of the County's total GHG emissions. Agriculture and residential and commercial building energy use sources were the second and third largest contributor of GHG emissions with 19 percent and 17 percent of total emissions, respectively. Emissions from industrial sources represent 13 percent of the inventory. Approximately 4 percent of the emissions result from waste management, including solid waste and wastewater treatment. Other emissions sources, such as fugitive emissions from consumer products, represent approximately 3 percent of the emissions inventory.

[34] Intergovernmental Panel on Climate Change (IPCC). 2007. IPCC Fourth Assessment Report: Climate Change 2007 - Direct Global Warming Potentials. Website: https://archive.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html (accessed November 2023).

Further analysis of the GHG emissions included in the transportation sector shows that approximately 40 percent of the County emissions inventory results from on-road sources, including sources such as passenger cars and trucks, municipal fleets, buses, delivery vans, and heavy-duty trucks. 10 percent of the transportation sector emissions were assumed to result from aircraft emissions. Municipal fleet operators in the County reported vehicle information and annual milage for transit and municipal fleets in the region, as further detailed in Appendix C, and total emissions for all municipalities that provided information for the reporting year (9 out of 15 agencies) were approximately 14,000 MT CO_2e, with the average municipal emissions at approximately 450 MT CO_2e per year.

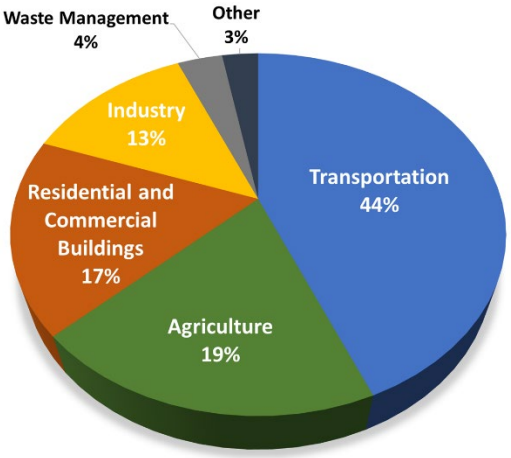

Figure 19: 2019 Fresno County GHG Emissions Inventory

For the agricultural sector, as illustrated in Figure 20, the majority of emissions were shown to result from enteric emissions (29 percent) and manure management (32 percent) of cattle operations. Other agricultural emission sources in the County originate from N_2O emissions from managed soils, with direct and indirect emissions totaling 21 percent, as well as manure management from poultry operations, and emissions from biomass burning. Approximately 392,691 MT CO_2e resulted from emissions from offroad agricultural equipment (16 percent of the agricultural emissions inventory, or approximately 3 percent of the total emissions inventory for the County).

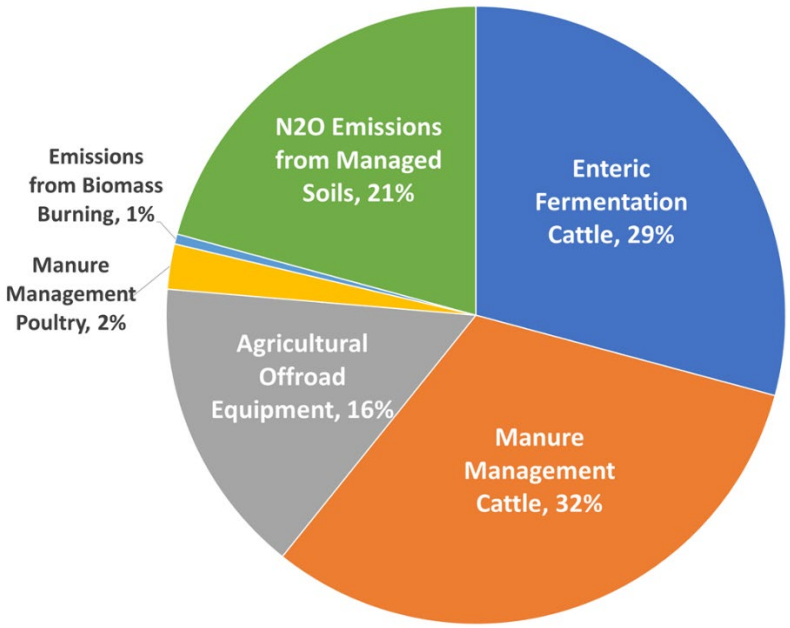

Figure 20: Fresno County Agricultural Emissions Inventory Breakdown

GREENHOUSE GAS REDUCTION MEASURES

Fresno COG took a multi-pronged approach to identifying and selecting the priority GHG reduction measures for the PCAP. The priority sectors were first selected based on the GHG emission inventory and project interests communicated from the communities. Transportation, agriculture and building energy are the top three GHG emitting sectors in Fresno County. During the PCAP process, Fresno COG received communications from multiple organizations expressing interest in waste management and wastewater treatment. The waste sector was subsequently added to the group of priority sectors.

Based on the guidance from the EPA, a list of draft priority measures that are "near term, implementation ready, cost feasible and of considerable magnitude of GHG reduction" were drafted for the four identified priority sectors, which included five draft measures for the transportation sector, four for the agricultural sector, 10 for the building energy sector, and four for the waste sector.

The draft priority measures were then published for input from the stakeholders and the general public, including the low-income and disadvantaged communities. The Stakeholder Steering Committee was asked to rank the 23 draft measures across the four sectors. The public, through the robust public outreach process conducted by the Fresno COG as described in the Public Outreach chapter, provided rating for the draft measures within each of the priority sectors.

Based on the rankings from the stakeholders and the general public as well as potential funding interest in the EPA CPRG implementation grant, Fresno COG staff recommended five measures for transportation, three measures for agriculture, three measures for building energy, and two measures for waste and wastewater for inclusion in the PCAP as priority measures. The recommended priority measures were approved by the Stakeholder Steering Committee in January 2024. Figure 21 illustrates the approach to selecting the priority measures in the PCAP.

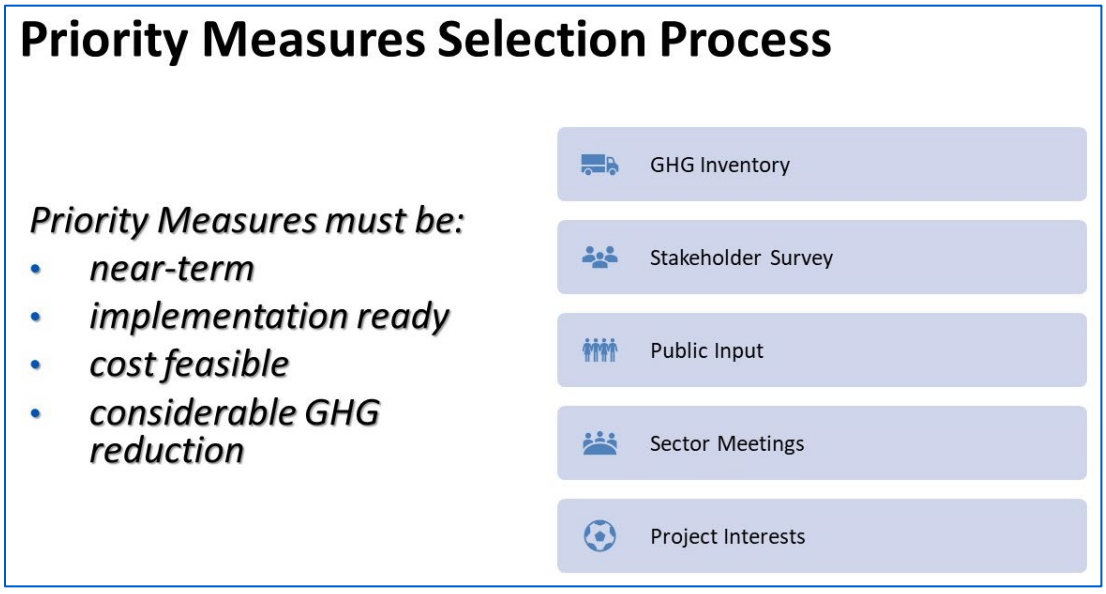

Figure 21: Key Criteria for Priority Measure Selection

PRIORITY GHG REDUCTION MEASURES

This section describes the priority GHG reduction measures identified through the engagement process are summarized in this section.

Transportation Sector

MEASURE TRANSPORTATION 1 – EV Strategy	
Description	Develop a robust public electric vehicle charging network in Fresno County, including in the disadvantaged communities, to increase electric vehicle adoption in Fresno County. (Implementing measures could include a neighborhood electric vehicle (NEV) network)
Estimate of the quantifiable GHG emissions reductions	680,388 MT CO_2e by 2030
Implementing agency or agencies	Cities; counties; San Joaquin Valley Air Pollution Control District
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 2. Procurement strategy: investigation of product availability, bulk procurement strategies, liaising with manufacturers- 6 months 3. Implementation:
Geographic location	Fresno County
Funding sources	Local, State and federal
Metrics for tracking progress	1. Annual GHG emissions from vehicles 2. Annual criteria air pollutants released 3. Percentage of vehicles electrified 4. Percentage of VMT electrified 5. Total number of new charging stations created
Applicable sector	Transportation
Quantitative cost estimates	DCFC chargers: > $ 2.0 million by 2030 Level 2 Chargers: $12 million by 2030 Total cost: $14 million by 2030

MEASURE TRANSPORTATION 2 – Municipal Fleet Conversion	
Description	Continue to convert the municipal fleet (including transit) into zero emission vehicles and provide a sustainable and reliable support system for such zero-emission fleet which could include, but not limited to maintenance, charging facilities, training of personnel, etc. (Implementing measures could include fleet electrification, installation of electric vehicle charging infrastructure, etc.)
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	17,676.92 MT CO_2e per year by 2030
Implementing agency or agencies	Cities; counties; San Joaquin Valley Air Pollution Control District
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 2. Procurement strategy: investigation of product availability, bulk procurement strategies, liaising with manufacturers - 6 months 3. Implementation:
Geographic location	Fresno County

MEASURE TRANSPORTATION 2 – Municipal Fleet Conversion	
Funding sources	Local, State and federal
Metrics for tracking progress	1. Annual GHG emissions from vehicles 2. Annual criteria air pollutants released 3. Percent of vehicles electrified 4. Percent of VMT electrified 5. Total number of new charging stations created
Applicable sector	Transportation
Quantitative cost estimates	Undetermined

MEASURE TRANSPORTATION 3 – Bike and Pedestrian Network	
Description	Build a well-connected bike and pedestrian system that provides alternative transportation options including micro-mobility such as shared e-bike and e-scooter. (Implementing measures could include pedestrian network improvements, bike parking, expanded bikeway networks, electric bikeshare program, scooter share program, dedicate land for bike trails)
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	3,642 MT CO_2e by 2030
Implementing agency or agencies	Local governments
Milestones for obtaining implementing authority	Already in place
Implementation schedule and milestones	As specified in the Regional Active Transportation Plan (RATP) or local ATP
Geographic location	Fresno County
Funding sources	Local, State and federal
Metrics for tracking progress	Miles of bike lanes, sidewalk or trails constructed
Applicable sector	Transportation
Quantitative cost estimates	$761 million by 2030

MEASURE TRANSPORTATION 4 – Public Transportation	
Description	Enhance the public transportation system by maintaining/expanding the existing transit system and implementing other transit strategies such as micro transit.
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	663 MT CO_2e by 2030
Implementing agency or agencies	FAX, Clovis Transit, Fresno County Rural Transit Authority
Milestones for obtaining implementing authority	Already in place
Implementation schedule and milestones	As specified in the 2022 Fresno COG RTP/SCS
Geographic location	Fresno County
Funding sources	Local, state, federal
Metrics for tracking progress	New service miles; ridership
Applicable sector	Transportation
Quantitative cost estimates	$711 million by 2030

MEASURE TRANSPORTATION 5 – Carpool/Vanpool and Other Shared Mobility Options	
Description	Provide incentives for carpool and vanpool, and other shared mobility options. *(Implementation measures could include commute trip reduction programs, end-of trip facilities, car-sharing program, employer-sponsored vanpool/shuttle, priced workplace parking, and/or employee parking "cash-out" programs.)*
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	65,925 MT CO_2e by 2030
Implementing agency or agencies	FAX, Clovis Transit, FCRTA, San Joaquin Valley Air Pollution Control District
Milestones for obtaining implementing authority	Already in place
Implementation schedule and milestones	As specified in the 2022 Fresno COG RTP/SCS
Geographic location	Fresno County
Funding sources	Local, state, federal
Metrics for tracking progress	Passenger miles traveled; reduced vehicle miles traveled
Applicable sector	Transportation
Quantitative cost estimates	Partially determined to be $17.9 million for carpool/vanpool programs; undetermined for other programs

Building Energy Sector

MEASURE BUILDING ENERGY 1 – Incentive Programs for the Purchase of Certified Energy-Efficient Appliances	
Description	Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products. *(Implementation could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting.)*
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Residential: 711,770 MT CO2e ● Commercial: 1,573,264 MT CO2e ● Total: 2,285,033 MT CO2e MT CO2e 2024-2050: ● Residential: 5,199,915 MT CO2e ● Commercial: 10,783,220 MT CO2e ● Total: 15,983,135 MT CO23
Implementing agency or agencies	Cities; counties; San Joaquin Valley Air Pollution Control District; and/or coalition of these entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 1 year 2. Procurement strategy: investigation of product availability, bulk procurement strategies, liaising with manufacturers - 6 months 3. Workforce training: implementation of the high efficiency electric appliance installment and repair and building retrofit training including procurement, training, financing strategies: 4 years

MEASURE BUILDING ENERGY 1 – Incentive Programs for the Purchase of Certified Energy-Efficient Appliances	
	4. Education and outreach and direct installation phase: 4 years a. Use a combination of education, outreach, and direct incentives and/or installations to improve energy efficiency and replace heating systems and other equipment using gas in 169,973 residences by 2030. This number approximates the number of residences that are likely to need equipment replacements over the time period and aligns with California's targets of 80 percent of new appliance sales being electric by 2030. b. Use a combination of education, outreach, and direct incentives and/or installations to improve energy efficiency and replace heating systems and other equipment using gas in 155,354,190 square feet of commercial space (primarily small retail and warehouses) by 2030. This number approximates the total square footage of commercial spaces that are likely to need equipment replacement over the time period and aligns with California's targets of 80 percent of new appliance sales being electric by 2030. Residential ● 2025-2026: 16,997 units per year ● 2027-2030: 33,995 units per year Commercial ● 2025-2026: 15,535,419 sq ft per year ● 2027-2030: 31,070,838 sq ft per year
Geographic location	Low income, disadvantaged communities in Fresno County, particularly those with high levels of energy and housing cost burden. This includes census tracts in south Fresno, Selma, Sanger, Firebaugh, Huron, Orange Cove, and some areas of unincorporated Fresno County.
Funding sources	Additional funding can be leveraged from: ● Inflation Reduction Act programs via the State of California: ○ HOMES rebates ○ HEEHRA ○ Contractor Training Grants ○ Greenhouse Gas Reduction Fund loans ● IRA Tax Credits including: ○ Energy efficient commercial building deduction ○ Energy Efficient Home Improvement Credit ○ Residential Clean Energy Credit (solar water heaters, battery storage) ● State funding including: ○ Equitable Building Decarbonization Program ○ TECH Clean California (single family and multifamily incentives program and contractor engagement, outreach, and training, marketing and customer engagement, and regional pilot programs)
Metrics for tracking progress	1. Number of homes retrofitted 2. Number of new energy efficient electric appliances purchased or installed 3. Average energy savings per household 4. Average energy cost savings per household

MEASURE BUILDING ENERGY 1 – Incentive Programs for the Purchase of Certified Energy-Efficient Appliances	
	5. Direct jobs created 6. Indirect jobs created
Applicable sector	Buildings and Energy
Quantitative cost estimates	● Planning Phase and Administrative Cost x 5 years: $1 million ● Education and outreach: $5 million ● Workforce Development/Training: $2 million ● Electric appliance and residential retrofit incentives (25% of total cost by 2030, cost per unit estimated at $10,100): $429,181,825 (remaining retrofit costs paid for with tax credits, direct rebates, and other financing mechanisms) ● Commercial retrofits (10% of cost of all commercial retrofits per square ft $4): $62,141,676 **Estimated Total Cost:** $499,823,501

MEASURE BUILDING ENERGY 2 – Incorporate Water Efficiency Measures	
Description	Incorporate water efficiency measures that reduce water heating energy consumption by installing alternative types of water heaters in place of gas storage tank heaters in residences.
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: 316,944 MT CO2e MT CO2e 2024-2050: ● Total: 2,473,578 MT CO23
Implementing agency or agencies	Cities; counties; San Joaquin Valley Air Pollution Control District; and/or coalition of these entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 1 year 2. Procurement strategy: investigation of product availability, bulk procurement strategies, liaising with manufacturers - 6 months 3. Workforce training: implementation of the high efficiency electric appliance installment and repair training including procurement, training, financing strategies: 4 years 4. Education and outreach and direct installation phase: 4 years a. Use a combination of education, outreach, and direct incentives and/or installations to improve energy efficiency and replace gas hot water heating equipment in 169,973 residences by 2030. This number approximates the number of residences that are likely to need equipment replacements over the time period and aligns with California's targets of 80% of new appliance sales being electric by 2030. 2025-2026: 16,997 units per year 2027-2030: 33,995 units per year
Geographic location	Low income, disadvantaged communities in Fresno County, particularly those with high levels of energy and housing cost burden. This includes census tracts in south Fresno, Selma, Sanger, Firebaugh, Huron, Orange Cove, and some areas of unincorporated Fresno County.

MEASURE BUILDING ENERGY 2 – Incorporate Water Efficiency Measures	
Funding sources	Additional funding can be leveraged from: ● Inflation Reduction Act programs via the State of California: ○ HOMES rebates ○ HEEHRA ○ Contractor Training Grants ○ Greenhouse Gas Reduction Fund loans ● IRA Tax Credits including: ○ Energy efficient commercial building deduction ○ Energy Efficient Home Improvement Credit ○ Residential Clean Energy Credit (solar water heaters, battery storage) ● State funding including: ○ Equitable Building Decarbonization Program ○ TECH Clean California (single family and multifamily incentives program and contractor engagement, outreach, and training, marketing and customer engagement, and regional pilot programs) ○ Self-Generation Incentive Program (SGIP) which is dedicated to equity-focused heat pump water heater residential and commercial HPWH installations ○ Cap and trade programs and revenues (California Climate Investments), i.e., Multi-Family Energy Efficiency, Single-Family Energy Efficiency programs, and Transformative Climate Communities Program
Metrics for tracking progress	1. Number of new energy efficient water heating appliances purchased or installed 2. Average energy savings per household 3. Average energy cost savings per household 4. Direct jobs created 5. Indirect jobs created
Applicable sector	Buildings and Energy
Quantitative cost estimates	1. Planning Phase and Administrative Cost x 5 years: $1 million 2. Education and outreach: $1 million 3. Workforce Development/Training: $1 million 4. High efficiency electric hot water heater incentives (25% of total cost by 2030, cost per unit estimated at $2,200): $93,485,180 (remaining costs paid for with tax credits, direct rebates, and other financing mechanisms) **Estimated Total Cost:** $96,485,180

MEASURE BUILDING ENERGY 3 – Bundle On-Site Renewable Energy Generation	
Description	Bundle on-site renewable energy generation with energy efficiency improvements in residences and commercial buildings. (Implementation could include establishment of on-site renewable energy systems such as solar power with fuel cells and battery storage, biomass combustion, and/or wind power, limitations on non-renewable energy sources.)
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: 1,288,896 MT CO2e MT CO2e 2024-2050: ● Total: 5,980,109 MT CO23

MEASURE BUILDING ENERGY 3 – Bundle On-Site Renewable Energy Generation	
Implementing agency or agencies	Cities; county; San Joaquin Valley Air Pollution Control District; and/or coalition of these entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 1 year 2. Workforce training: implementation of the renewable energy systems installment and repair and building retrofit training including procurement, training, financing strategies: 5 years 3. Education and outreach and direct installation phase: 5 years a. Use a combination of education, outreach, and direct incentives and/or installations to reach a total of 1,814 MW of installed capacity on residences by 2030, based on an existing capacity of 575 MW and the following targets per year: ● 2025: 128 MW ● 2026: 152 MW ● 2027: 181 MW ● 2028: 216 MW ● 2029: 257 MW ● 2030: 306 MW b. Use a combination of education, outreach, and direct incentives and/or installations to reach a total of 1,373 MW of installed capacity on commercial buildings by 2030, based on an existing capacity of 379 MW and the following targets per year: ● 2025: 103 MW ● 2026: 122 MW ● 2027: 145 MW ● 2028: 173 MW ● 2029: 206 MW ● 2030: 245 MW
Geographic location	Low income, disadvantaged communities in Fresno County, particularly those with high levels of energy and housing cost burden. This includes census tracts in south Fresno, Selma, Sanger, Firebaugh, Huron, Orange Cove, and some areas of unincorporated Fresno County.
Funding sources	Additional funding can be leveraged from: ● Inflation Reduction Act programs via the State of California: ○ Contractor Training Grants ○ Greenhouse Gas Reduction Fund loans ● IRA Tax Credits including: ○ Energy efficient commercial building deduction ○ Residential Clean Energy Credit (solar, wind, and geothermal power generation, battery storage) ○ Clean Electricity Investment Credit ○ Clean Electricity Production Credit ● State funding including: ○ Single-family Affordable Solar Homes (SASH) ○ Disadvantaged Communities - Single-family Affordable Solar Homes (DAC-SASH) program. ○ Multi-family Affordable Solar Housing (MASH) ○ Solar on Multifamily Affordable Housing (SOMAH)

MEASURE BUILDING ENERGY 3 – Bundle On-Site Renewable Energy Generation	
	○ Farmworker Housing Single-Family Energy Efficiency and Solar Photovoltaics ○ Community Solar Program ○ Renewable Energy for Agriculture Program ○ Cap and trade programs and revenues (California Climate Investments), i.e. Transformative Climate Communities Program
Metrics for tracking progress	1. Number of new on-site renewable energy installations 2. Average energy savings per household 3. Average energy cost savings per household 4. Direct jobs created 5. Indirect jobs created
Applicable sector	Buildings and Energy
Quantitative cost estimates	● Planning Phase and Administrative Cost x 5 years: $1 million ● Education and outreach: $1 million ● Workforce Development/Training: $1 million ● Education and outreach and direct installation phase: 5 years ○ Use a combination of education, outreach, and direct incentives and/or installations to reach target capacity per sector (10 percent of installation and fixed operating and maintenance costs by 2030) $452,308,760 (remaining costs paid for with tax credits, direct rebates, and other state/federal financing mechanisms) **Estimated Total Cost:** $455,308,760

Solid Waste and Wastewater Sector

MEASURE SOLID WASTE AND WASTEWATER 1 – Programs and Incentives to Reduce or Divert Waste	
Description	Programs and incentives to reduce or divert waste (including food and/or yard waste) through improved production practices, improved collection services, and increased reuse or recycling rates. (Implementation measures could include organics diversion program, educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs. Local recycling and composting initiatives at the neighborhood level, expansion of local business recycling and composting efforts.)
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: 120,076 MT CO2e 2024-2050: ● Total: 717,607 MT CO2e
Implementing agency or agencies	Cities; county; San Joaquin Valley Air Pollution Control District; and/or coalition of these entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 1 year 2. Education and outreach: 5 years 3. Implementation: 5 years 4. Program evaluation: 4 years 92026-2030)
Geographic location	Fresno County, with at least 40 percent of education, outreach, and financial incentives focused on low income,

MEASURE SOLID WASTE AND WASTEWATER 1 – Programs and Incentives to Reduce or Divert Waste	
	disadvantaged communities within communities in Fresno County, particularly those with barriers to healthy food access.
Funding sources	CalRecycle programs such as Recycling Market Development Zone Loan Programs, Local Conservation Corps SB 1013 Grant Program, Greenhouse Gas Reduction Loan Program, Beverage Container Recycling Grant and Redemption Pilot Project Program, Community Composting Grant Program, Edible Food Recovery Grant Program, Food Waste Prevention and Rescue Grant Program, Organics Grant Program, Reuse Grant Program, SB 1383 Local Assistance and federal programs such as USDA's Special Evaluation Assistance for Rural Communities and Households in California
Metrics for tracking progress	1. Compliance with SB1383 requirements 2. Percent organic waste diverted from landfills 3. Total organic waste diverted from landfills (in tons) 4. Total tons of food recovered per year 5. Number jobs created 6. Number businesses created or supported in circular economy sector
Applicable sector	Solid Waste and Wastewater
Quantitative cost estimates	Estimated total cost: $ 26,003,432 per year based on estimate of total implementation cost for entire State to comply with SB1383 of $3.7 billion, downscaled to Fresno County population

MEASURE SOLID WASTE AND WASTEWATER 2 – Wastewater Treatment Facility Efficiency	
Description	Installation of renewable energy and energy efficiency measures at wastewater treatment facilities.
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: 28,018 MT CO2e 2024-2050: ● Total: 76,042 MT CO2e
Implementing agency or agencies	Cities; county; special utility districts; and/or coalition of these entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning phase: 1 year 2. Workforce training: renewable energy systems installment and repair: 6 months 3. Direct installation phase: 1-2 years 2025: 23 MW PV and 4.3 MW battery storage
Geographic location	Fresno County communities with a wastewater treatment facility, particularly low income, disadvantaged communities with high energy burden like Fresno, Firebaugh, Orange Cove, Huron and Selma.
Funding sources	State funding including: ● Renewable Energy Aggregated Procurement (REAP) Program ● Clean Water State Revolving Fund (CWSRF) ● Urban Waters Small Grants

MEASURE SOLID WASTE AND WASTEWATER 2 – Wastewater Treatment Facility Efficiency	
	● 319 Grant Program for States and Territories (for decentralized wastewater systems) ● Safe and Affordable Drinking Water Fund ● Water-Energy Grant Program (California Department of Water Resources)
Metrics for tracking progress	1. Quantity of kWh of electricity produced by new renewable energy systems 2. Total energy savings 3. Total energy cost savings 4. Direct jobs created 5. Indirect jobs created
Applicable sector	Solid Waste and Wastewater
Quantitative cost estimates	Estimated total cost: (include CAPEX and Fixed O&M) ● 2025-2030: $38,069,900 ● 2025-2050: $47,254,550

Agriculture Sector

MEASURE AGRICULTURE 1 –Manure Management	
Description	Programs and incentives to reduce GHG emissions associated with manure management from livestock and poultry operations.
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: Up to 204,384.69 MT CO2e 2030-2050: ● Total: 340,640 MT CO2e (assuming minimum 5-year project life)
Implementing agency or agencies	Cities; County; San Joaquin Valley Air Pollution Control District; California Department of Food and Agriculture; United States Department of Agriculture – Natural Resources Conservation Service; and/or a coalition of such entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning/application phase: 1 year 2. Project Construction/Implementation: 1 year
Geographic location	Fresno County dairies, large cattle operations, and poultry operations.
Funding sources	State funding including: ● California Climate Investments (CCI) funding
Metrics for tracking progress	1. Metric Tons (MT) CO_2e reduced per project 2. Quantity of kWh of electricity produced by new renewable energy systems
Applicable sector	Agriculture
Quantitative cost estimates	**Estimated Total Cost:** $47,250,000

MEASURE AGRICULTURE 2 – Agricultural Burning	
Description	Programs and incentives to reduce GHG emissions associated with agricultural burning, including orchards and vineyards, through chipping and use for soil incorporation, on-site land application on agricultural land, off-site beneficial re-use, or other approved methods.

MEASURE AGRICULTURE 2 – Agricultural Burning	
	(Implementation measures could include additional funding or outreach support for existing programs available through the San Joaquin Valley Air Pollution Control District (SJVAPCD) and USDA-NRCS, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: Up to 52,372 MT CO2e 2030-2050: ● Total: 261,860 MT CO2e
Implementing agency or agencies	Cities; County; San Joaquin Valley Air Pollution Control District; United States Department of Agriculture – Natural Resources Conservation Service; and/or a coalition of such entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning/application phase: 1 year 2. Project Implementation: 1 year
Geographic location	Fresno County agricultural operations
Funding sources	State funding including: ● California Climate Investments (CCI) funding
Metrics for tracking progress	1. Tons of biomass disposed of through alternative methods to open burning 2. Metric Tons (MT) CO_2e reduced per project
Applicable sector	Agriculture
Quantitative cost estimates	**Estimated Total Cost:** $100,000,000

MEASURE AGRICULTURE 3 – Agricultural Equipment Reductions	
Description	Programs and incentives to reduce GHG emissions associated with the operation of various agricultural equipment, such as tractors, harvesting equipment, utility terrain vehicles, dairy feed mixing electrification and agricultural pumps through zero-emission replacement as well as the installation of charging or re-fueling stations to support deployment. (Implementation measures could include additional funding or outreach support for existing programs available through USDA-NRCS and the SJVAPCD, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)
Estimate of the quantifiable GHG emissions reductions (e.g., through 2030 and 2050)	2024-2030: ● Total: Up to 722,424 MT CO_2e 2030-2050: ● Total: 2,408,080 MT CO_2e (assuming full deployment in 2030 and a 10-year project life)
Implementing agency or agencies	Cities; County; San Joaquin Valley Air Pollution Control District; United States Department of Agriculture – Natural Resources Conservation Service; and/or a coalition of such entities
Milestones for obtaining implementing authority	No additional authority is required.
Implementation schedule and milestones	1. Planning/application phase: 1 year 2. Project Implementation: 1 year
Geographic location	Fresno County agricultural operations
Funding sources	State funding including: ● California Climate Investments (CCI) funding

MEASURE AGRICULTURE 3 – Agricultural Equipment Reductions	
Metrics for tracking progress	1. Number of units replaced through incentive programs 2. Gallons of fuel reduced per project 3. Metric Tons (MT) CO_2e reduced per project
Applicable sector	Agriculture
Quantitative cost estimates	**Estimated Total Cost:** $3.5 billion

QUANTIFICATION

Emission reductions for each of the measures be sector were calculated. The results are described in this section.

Transportation Sector

Measure Transportation 1 – EV strategy

Methodology. The GHG quantification of the EV measure is based on the assumptions and modeling methodology identified in the Fresno COG's EVRP prepared in 2021[35]. This analysis assumes that Fresno County would receive sufficient funding to install the recommended number of EV chargers at the optimal locations as recommended by the EVRP. The analysis evaluated the number of public charging stations needed to satisfy the increased EV adopters and the types of charging facilities necessary to meet the needs. A locational analysis using Geographic Information System (GIS) was conducted to identify the optimal location for the public chargers. The optimization modeling approach took into consideration of the disadvantaged communities in Fresno County, which was defined by Fresno COG's 2018 Regional Transportation Plan/Sustainable Community Strategies.[36]

The EV Readiness Plan recommended installing 4,983 Level 2 public charging ports sited within incorporated Fresno County cities by 2030. With the recommended charging ports, EV drivers in Fresno County would be able to drive a larger share of miles in electric mode because of accessibility to public chargers, while limiting the need to shift to gasoline-powered mode due to battery charge constraints.

Quantification. According to the EVRP, with an increase in the availability of public chargers, the EV adoption rate in the Fresno County will go up. Overall, implementation of the recommendations in the EVRP will decrease net CO_2 emissions by 680,388 MT CO_2e by 2030.

Implementation of this measure would provide the co-benefit of a reduction in air emissions.

Measure Transportation 2 – Municipal Fleet Conversion

Methodology. The methodology to determine potential GHG emissions reductions that would result from the conversion of municipal and transit fleets in Fresno County is based on reported fleet data obtained

[35] Fresno COG, 2021. *EV Readiness Plan.* https://fresnocog.wpenginepowered.com/wp-content/uploads/2022/03/FINAL-Fresno-EVRP.pdf.

[36] Fresno COG, 2018. *Fresno COG Regional Transportation Plan/Sustainable Community Strategies.*

from transit agencies and municipalities for calendar year 2022, as well as emission rates obtained from EMFAC 2021.

As a part of the PCAP development process, municipalities and transit operators were surveyed and asked to provide their 2022 fleet vehicle information, along with annual milage for each vehicle or average annual miles traveled per vehicle. Vehicle lists and milage are provided in the attached Appendix D for reference. The vehicles were classified into categories that correspond with emission rates available through CARB's EMFAC 2021 database, including light duty automobiles, medium-heavy duty vehicles, and busses. The corresponding 2030 EMFAC emissions rates for the vehicle type was multiplied by the annual milage to obtain the annual emissions for 2022 by pollutant, and the estimated emissions were converted into CO_2e utilizing the GWP for each pollutant. Nine out of 15 municipal agencies provided data, and therefore an "average" annual emissions number was calculated and used to represent the estimated emissions for the agencies that did not respond to the survey, as noted in the table below. Finally, California Department of Finance (DOF) population projections estimate that there will be a 3.46 percent increase in the Fresno County population from 2022 (the year vehicle usage rates were reported for) to 2030.[37] Therefore, to represent potential vehicle miles traveled (VMT) increases in transit and municipal fleet vehicles due to the expected population growth in the region, a 3.46 percent increase was applied to the estimated emissions calculated from the 2022 survey information to estimate potential emissions in 2030.

Quantification. The sum of the total calculated annual emissions for municipalities and transit fleets, as detailed in Table E, are used to estimate the potential benefit that would be obtained from converting the existing fleets to all-electric vehicles by 2030.

Based on this information, if all municipal and transit fleets were replaced by electric vehicles by 2030, the measure would achieve an estimated GHG emissions reduction of 17,676.92 MT CO_2e per year, or approximately 96,859.81 pounds per day.

Table E: Estimated Municipal and Transit Fleet Emissions in 2030

Fleet	Fleet Type	Source	MT CO_2e
Clovis	Municipality	Reported	362.20
Coalinga	Municipality	Average	473.85
FAX Buses	Transit	Reported	6,907.22
FCRTA	Transit	Reported	712.65
Firebaugh	Municipality	Average	473.85
Fowler	Municipality	Average	473.85
Fresno	Municipality	Reported	410.17
Fresno COG	Agency	Reported	424.56
Handy Ride	Transit	Reported	2,469.96
Huron	Municipality	Reported	321.54
Kerman	Municipality	Reported	506.06
Kingsburg	Municipality	Average	473.85
Mendota	Municipality	Average	473.85
Orange Cove	Municipality	Reported	357.64
Parlier	Municipality	Average	473.85
Reedley	Municipality	Reported	340.22
Sanger	Municipality	Reported	651.90
San Joaquin	Municipality	Average	473.85
Selma	Municipality	Reported	895.88
		Total Annual Emissions	**17,676.92**

Measure Transportation 3 – Bike and Pedestrian Network

Methodology. The methodology for calculating the GHG reduction benefits from the bike and pedestrian network is based on the 2022 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS) that Fresno COG adopted in 2022. The RTP/SCS is a comprehensive transportation plan that provides guidance on the investment of transportation infrastructure in the Fresno region for the next twenty plus years. Through

[37] California Department of Finance (DOF). 2022. Population Projections (Baseline 2019) – P-2A Total Population for California and Counties. Website: https://dof.ca.gov/forecasting/demographics/projections/ (accessed January 2024).

robust public outreach and stakeholder engagement processes, the RTP/SCS included transportation projects that the Fresno region intends to build by 2046. Among the transportation projects, 398.91 (centerline) miles of bike lanes are expected to be built by 2030, 578.46 (lane) miles of sidewalk and 84.8 (centerline) miles of trails will be constructed by 2030 in the Fresno region.

Quantification. The benefits of trails, bike lanes and sidewalks are captured by an off-model methodology described in the CARB Sustainable Communities Strategy Program and Evaluation Guidelines[38] published in November 2019. Fresno COG estimated the GHG reduction from pedestrian infrastructure improvements is based on a VMT per person decrease 0.02 percent for every 1 percent increase in sidewalk length. GHG reduction estimates from bike lanes and trails is based on a bike commuting VMT elasticity of a 0.007 percent reduction in drive commuting per 1 percent of bike lane increase.

The following steps were taken to calculate the GHG emission reductions:

a. Estimate the current sidewalk, bike lane and trail inventory.
b. Estimate the mileage of sidewalk, bike lane and trail planned for buildout by 2030.
c. Subsequently the percentages increase in sidewalk, bike lane and trail lengths were calculated by dividing the sidewalk, bike lane and trail project lane miles by current total sidewalk, bike lane and trail length.
d. The percentage decreases in VMT per person for sidewalks and bike lanes were calculated using the methodology described above.
e. For sidewalk projects, VMT reduced per person were calculated by multiplying 2030 light duty VMT per person and the VMT per person decrease percentage found in the previous step. The total region-wide VMT reduction was calculated by multiplying the per person VMT reductions by the 2030 populations. For bike lane and trail projects, reduced driving commute trips were calculated by multiplying drive commuting workers per capita and 2030 population. The average distance of 1.8 miles for biking was used to multiply with reduced driving commute trips to estimate the VMT reduction.
f. The GHG emission reductions were calculated by multiplying the reduced VMT by the average 2030 light-duty vehicle emission factor that was acquired from EMFAC 2021.

The GHG reduction for the bike/pedestrian measure is estimated to be 3,642 MT CO_2eby 2030.

Measure Transportation 4 – Public Transportation

Methodology. The methodology for calculating the GHG reductions for the Public Transportation measure is also based on the 2022 RTP/SCS that Fresno COG adopted in 2022. The 2022 RTP/SCS included transit projects that were submitted by the three transit agencies in Fresno County, the Fresno Area Express (FAX), the Clovis Transit and the Fresno County Rural Transit Agency (FCRTA). During the RTP/SCS process, the transit agencies worked with the public, community organizations, and stakeholders to develop a list of transit improvement projects for inclusion in the long-range transportation plan. Such transit projects

[38] Final Sustainable Communities Strategy Program and Evaluation Guidelines

included new services, expanded services, amenity improvements, facilities upgrades, and maintenance, capital/operational improvements, and upgrades.

Quantification. Fresno COG's Activity Based Model (ABM) was used to estimate the GHG/VMT benefits for the transit improvement projects. However, only new service and expanded service can be coded and modeled due to the constraints of the modeling tools. In this case, all the proposed transit improvement projects including new services and expanded services were coded in Fresno COG's ABM. Two scenarios were run using the ABM: scenario one was run with 2030 land use and the improved transit network; scenario two with 2030 land use and without the new transit projects. The output of the two scenarios were summarized to compare difference of the regional VMT. The difference in GHG was then calculated by multiplying the VMT difference by the average light-duty vehicle emission factors provided in EMFAC, which is equivalent to the MOVES model developed by the EPA. The difference of the GHG between the two scenarios is the GHG benefit from the proposed transit improvements.

The estimated annual GHG benefit from the public transportation measure is 663 MT CO_2e by 2030.

Measure Transportation 5 – Carpool/Vanpool and Other Shared Mobility Options

Methodology. The methodology used in quantifying the GHG reduction benefits from this measure is consistent with what was developed in Fresno COG's 2022 RTP/SCS for the carpool/vanpool strategy and the Air District Employer-Based Trip Reduction Program (Rule 9410) program.

For the carpool program, it is assumed that the level of participation in the program in the Fresno County will continue at the rate reported in most recent year. The carpool program is currently funded by the ½ cent local transportation sales tax, the Measure C. For the vanpool program, varied growth rates were applied by Fresno COG staff based on the forecast by CalVans and other vanpool services in Fresno County. CalVans is currently the major vanpool service provider in the region and provides vanpooling service to farmworkers and commuters in multiple rural counties in California. In addition to federal, State, and other grant fundings, CalVans also receives funding from Fresno County's Measure C.

Carpool VMT is projected to grow in the future years proportionally to the County employment size. The 2016 Fresno COG Measure C Carpool VMT per day served as the basis for the forecast. The GHG emission reductions were calculated by multiplying the carpool VMT by the average light-duty vehicle emission factors for the respective years.

Quantification. Vanpool GHG benefit quantification starts with calculating emission factors for light-duty vehicles (LDV) and medium duty vehicles (MDV) based on the EMFAC runs. Base year vanpool passenger lane miles (PLM) and VMT were reported by CalVans. Growth assumptions were made for future year. GHG emission reductions were then calculated based on the difference between PLM multiplied by the average light-duty vehicles emission factors and the vanpool VMT multiplied by MDV emission factors for the future year.

The Air District Rule 9410 implements Employer Based Trip Reduction through eTRIP program. The eTRIP Rule (Rule 9410, Employer Based Trip Reduction), was adopted by the Air District in 2009. The rule requires large employers to establish an Employer Trip Reduction Implementation Plan (eTRIP) to encourage employees to reduce single-occupancy vehicle trips, thus reducing pollutant emissions associated with work commutes.

The targeted population of the Rule 9410 strategy is the employees who work in Tiers One and Two worksites in Fresno County. Tier One work sites are employers with 100–249 employees and Tier Two with over 250 employees. The plan is implemented by various public and private entities within Fresno County. The Air District monitors the progress of the plan.

The calculation of emission reductions that are attributed to Carpool/Vanpool are based on the Fresno COG's 2022 SCS Off-model Strategy Quantification documentation and involves the following steps:

1. Estimating employee numbers that are subject to Rule 9410 in Fresno County. Per the final (2009) Air District staff report on Rule 9410, Rule 9410 would apply to an estimated 1,883 worksites throughout the Valley, representing a wide range of sectors and accounting for approximately 500,000 commuting employees. This rule distinguishes those facilities into two tiers. Tier One Worksites are those with 100-249 eligible employees and Tier Two Worksites have 250 or more eligible employees. There are an estimated 1,342 Tier One Worksites and 541 Tier Two Worksites. Fresno has nearly 25 percent of the Valley population, so it is assumed that Fresno has 25 percent of the 8-county shares of worksites. Assuming average employee numbers to be 175 for Tier One sites and 490 for Tier Two sites, Fresno County was estimated to have 125,000 employees subject to Rule 9410 in 2009.

2. Using historical employment data from California Employment Development Department (EDD) and the updated Fresno COG Demographic Forecast, Fresno COG projected the future employee figures that are subject to Rule 9410 in years 2035 and arrived at 2030 figures through interpolation.

3. The average commute trip length was based on two times the home-based-work (HBW) trip length reported by Fresno ABM.

4. The VMT reductions were calculated by multiplying the number of employees who are subject to Rule 9410 by the average commute trip length for the respective years.

5. The GHG emission reductions provided by full implementation of Rule 9410 were calculated by multiplying the VMT reductions by the emission factors calculated at the regional level for the respective years.

Based on this quantification, the GHG benefits from this measure is estimated to be 65,925 MT CO_2e by 2030.

Building Energy Sector

Measure Building Energy 1 – Incentive Programs for the Purchase of Certified Energy-Efficient Appliances

Methodology. The methodology for quantifying GHG emissions reductions from the implementation of incentive programs promoting energy-efficient appliances in residential buildings, particularly in Fresno

County, is a comprehensive process that integrates data from various reliable sources, including the EIA[39] and NREL's ResStock[40], as well as the U.S. Census[41].

To establish a robust baseline for energy consumption, the methodology first utilizes EIA data, which provides detailed insights into electricity and natural gas consumption in the residential sector. This data is instrumental in understanding the overall energy usage patterns and forms a foundational part of the GHG inventory calculations. This baseline is crucial for setting realistic and measurable energy savings targets and reducing GHG emissions.

Supplementing the EIA data, ResStock data from NREL is employed to delve deeper into the specifics of energy usage. ResStock offers a granular view of the different end-uses of energy within residential buildings and their respective energy consumption levels. This detailed breakdown is vital for identifying the most effective areas for energy efficiency improvements and quantifying the potential savings in energy consumption.

In addition to these energy data sources, U.S. Census data is utilized to quantify the number and types of residential buildings in Fresno County. This demographic and structural information is essential for understanding the scope and scale of potential retrofitting activities and energy efficiency upgrades across the county. Table F shows the distribution of the number of units by building type.

Table F: Number of Residential Units by Building Type

Type of Building	Total Units
Single-Family Housing	226,028
Attached Condo Building	7,406
Multi-Family Apartment	84,791
Mobile Home	12,469

Source: SSG analysis based on data from the U.S. Census Bureau, ACS (2022).

With this comprehensive dataset, the methodology involves setting targets for retrofitting activities within the residential sector. This includes identifying the number of units to be retrofitted each year and the types of energy efficiency improvements to be implemented. These improvements may include the installation of energy-efficient appliances, upgrades to heating and cooling systems, and other modifications aimed at reducing energy consumption.

Upon establishing these targets, the methodology then focuses on estimating the percentage reduction in energy consumption achievable through the retrofits. This involves a detailed analysis of the potential energy savings from various efficiency measures and their impact on both electricity and thermal energy consumption.

The new levels of energy consumption post-retrofit are subsequently calculated, reflecting the impact of the implemented energy efficiency measures. This revised energy consumption data is essential for assessing the program's effectiveness and is then converted into metric tons of CO_2 equivalent (MT CO_2e) to quantify the GHG emissions reductions achieved.

[39] U.S. Energy Information Administration. "Electricity Sales to Ultimate Customers." Annual Electric Power Industry Report Form EIA-861. Accessed November 8, 2023

[40] National Renewable Energy Laboratory. 2023. "ResStock Analysis Tool." Accessed December 2023. https://resstock.nrel.gov/

[41] U.S. Census Bureau. 2022. "American Housing Survey." Accessed December 2023. https://www.census.gov/programs-surveys/ahs.html.

To guarantee a holistic evaluation, the methodology includes projections for the long term. It maintains consistent emission factors for natural gas, ensuring stability in calculations over extended periods. Crucially, it incorporates data from the Rocky Mountain Institute (RMI) Energy Policy Simulator[42], specifically for estimating how electricity grid emission factors in California might change from 2025 to 2050. This proactive and anticipatory approach is essential in assessing the enduring environmental effects of the incentive programs and their role in achieving GHG emissions reduction targets.

A similar methodology, as applied in residential buildings, is also used for quantifying the effectiveness of energy efficiency measures in commercial buildings. This approach is tailored to assess the impact of the same types of incentive programs that encourage the adoption of energy-efficient appliances and systems in commercial spaces. Key to this commercial-focused analysis is the use of ComStock[43] data from NREL, which provides detailed insights into energy consumption patterns in commercial buildings, categorized by both energy source and end use. Additionally, instead of using census data, this methodology utilizes data from Replica to estimate the size and area of various types of commercial buildings, ensuring a precise and relevant assessment of energy efficiency opportunities in the commercial sector. This adaptation maintains the core principles of the residential methodology while effectively addressing the unique characteristics of commercial buildings.

Quantification. The methodology for GHG emissions reductions in Fresno County through the implementation of incentive programs for energy-efficient appliances in both residential and commercial buildings involves a detailed and strategic approach. This process is based on the ambitious goal of replacing 80 percent of appliances with high-efficiency electric ones by 2030, in line with California's Statewide objectives. In the residential sector, it is assumed that only 6 percent of homes currently have heat pump systems, leaving a significant portion of the housing stock, precisely 94 percent, eligible for upgrades. Consequently, the PCAP targets the retrofitting of 169,973 single-family houses by the end of the decade. Each retrofit is estimated to cost $10,100, drawing on findings from the study *The Costs of Home Decarbonization in the U.S.*[44], and is expected to result in a 30 percent reduction in energy consumption.

Similarly, the commercial sector strategy focuses on small businesses and warehouses within Fresno County, covering an area of 155,354,190 square feet earmarked for energy efficiency improvements. These retrofits, costing $4 per square foot as informed by the *Building Energy Retrofit Potential in B.C.*[45] study, also aim for a 30 percent reduction in energy usage. The emissions reductions and retrofit costs are meticulously calculated, projecting the energy savings into MT CO_2e to assess the environmental impact over time. The calculations extend up to 2030 and include a long-term projection for 2050, outlining the sustained benefits of the program. Table G shows the cumulative emissions reduction by building sector.

[42] Rocky Mountain Institute. 2024. "Energy Policy Simulator for California." Accessed January 2024. https://energypolicy.solutions/simulator/california/en.

[43] National Renewable Energy Laboratory. 2023. "ComStock." Accessed December 2023. https://comstock.nrel.gov/.

[44] Walker, I., B. Less, and N. Casquero-Modrego. 2023. The Costs of Home Decarbonization in the US. Lawrence Berkeley National Laboratory. https://escholarship.org/uc/item/2s4768d2

[45] Pembina Institute. 2016. *Building Energy Retrofit Potential in B.C. Thought Leader Forum — Vancouver, November 28-29*. https://www.pembina.org/docs/event/netzeroforum-backgrounder-2016.pdf.

The cost of implementing this measure is $1.72 billion for residential retrofits and $621 million for commercial retrofits (focusing on small businesses and warehouses). The total investment of $2.34 billion would achieve significant energy savings for both households and businesses while reducing GHG emissions in line with the State's ambitious 2030 goals.

Table G: Cumulative Emissions Reductions (MT CO_2e)

Building Sector	2025-2030	2025-2050
Residential	711,770	5,199,915
Commercial	1,573,264	10,783,220
Total	**2,285,033**	**15,983,135**

Measure Building Energy 2 – Incorporate Water Efficiency Measures

Methodology. This measure adopts a methodology akin to that of Measure Building Energy 1, but with specific alterations to address its distinct focus. This approach is exclusively concentrated on residential buildings, particularly on the aspect of water heating. The primary difference lies in transitioning from traditional gas heaters to more energy-efficient alternatives, such as electric heaters or heat pumps.

The core of this methodology is to quantify the energy reduction achieved by switching to these more efficient water heating systems. It necessitates a detailed analysis of the energy savings associated with the replacement of gas storage tank heaters with alternative water heating solutions in residential settings. This analysis is crucial for accurately estimating the reduction in energy consumption specific to water heating.

Additionally, when quantifying emission reductions for this measure, the focus narrows down to the energy consumption reduction solely in the end use of water heating. This targeted approach ensures that the assessment accurately reflects the environmental benefits of adopting more efficient water heating technologies in residences. By concentrating on this specific end use, the methodology provides a clear and precise evaluation of the GHG emissions reductions attributable to the implementation of water efficiency measures in residential buildings.

Quantification. In the focused initiative to enhance the energy efficiency of water heating systems in residential settings, a similar scope was maintained as with the previous measure, targeting interventions in 169,973 single-family houses. Drawing upon data from the NREL, the average cost for upgrading to a more efficient water heating system was determined to be $2,200 per unit. This investment is geared towards the adoption of electric heaters or heat pumps, which are recognized for their potential to halve energy consumption for water heating purposes. The financial commitment towards this change in water heating technologies is projected to reach $373,940,723 by 2030, underscoring the substantial investment in transitioning to more sustainable energy solutions within residential buildings.

The emphasis on reducing energy consumption through the adoption of efficient water heating systems is not only a measure of economic investment but also a significant environmental initiative. The methodology employed for this measure has successfully quantified the impact of this transition, revealing a cumulative emissions reduction of 316,944 MT CO_2e from 2025 to 2030. The future long-term environmental benefits are even more pronounced, with an anticipated reduction of 2,473,578 MT CO_2e from 2025 to 2050. This marked decrease in GHG emissions reflects the critical role of efficient water heating technologies in achieving broader sustainability goals. Through this focused approach, the initiative demonstrates a compelling case for the environmental and economic benefits of upgrading to

more energy-efficient water heating systems in residential settings, aligning with the overarching objectives of reducing energy consumption and mitigating climate change impacts.

Measure Building Energy 3 – Bundle On-Site Renewable Energy Generation

Methodology. This measure involves a strategic approach to enhance environmental sustainability by integrating on-site renewable energy generation with energy efficiency improvements in both residential and commercial buildings. The methodology for quantifying the impact of this measure is multi-faceted and relies heavily on data from NREL's System Advisory Model (SAM)[46] and emission factors from RMI's Energy Policy Simulator[47].

The first phase of the methodology focuses on assessing the potential of renewable energy sources, specifically wind and solar power, in Fresno County. The capacity factors for these renewable technologies are estimated, providing an insight into the actual energy output relative to their maximum potential over a given period, typically a year. This estimation is crucial for understanding the real-world effectiveness of these renewable energy installations.

The SAM from NREL plays a pivotal role in this analysis. It offers detailed simulations and projections for various renewable energy technologies, enabling accurate forecasting of annual energy generation for each type of renewable source in Fresno. In recognition of the distinct characteristics of different building types, the methodology categorizes solar energy into two segments: rooftop installations for residential buildings and ground-mounted systems for commercial properties. This distinction is critical as it accounts for the variations in energy generation capabilities and installation requirements between residential and commercial structures. Table H compares the capacity factors for both solar and wind energy generation. Data indicates that in Fresno County, solar energy exhibits a higher capacity factor compared to wind energy.

Table H: Capacity Factors of Renewable Energy

Renewable Energy	Capacity Factor
Solar rooftop - residential	0.187
Solar ground-mounted - commercial	0.188
Wind - commercial	0.135

Upon determining the potential energy generation from these renewable sources, the next step involves calculating how much this energy can offset the existing energy consumption in residential and commercial buildings. This offset is a key factor in determining the reduction in reliance on grid-supplied electricity, leading to a decrease in overall energy consumption.

Finally, the methodology incorporates emission reduction calculations. This is achieved by applying emission factors for grid electricity, sourced from RMI's Energy Policy Simulator. The simulator provides forward-looking data, projecting changes in grid electricity emission factors over time. This aspect is vital for assessing the long-term environmental benefits of this measure, particularly in terms of GHG emissions reduction.

Quantification. In assessing the environmental sustainability initiatives within Fresno County, the methodology concentrates on the integration of solar energy generation, given the relatively low-capacity

[46] National Renewable Energy Laboratory. "System Advisory Model (SAM). https://sam.nrel.gov/.
[47] Rocky Mountain Institute. 2024. "Energy Policy Simulator for California." Accessed January 2024. https://energypolicy.solutions/simulator/california/en.

factors for wind energy. This approach is substantiated by data from the California Distributed Generation Statistics[48], which indicates a significant installed capacity of solar photovoltaic (PV) systems, both in residential and commercial sectors, as of the end of 2023.

For residential installations, Fresno County boasted 574.28 megawatts (MW) of rooftop solar capacity, distributed across 80,900 projects since 2002, averaging approximately 7 kW per installation. The growth rate of residential solar installations has been remarkable, with an average annual increase of 19 percent from 2019 to 2023. In 2023 alone, 11,476 installations were added. Projecting this growth rate forward, we estimate 117,116 installations by 2030, culminating in an installed capacity of 1.240 GW.

On the commercial front, the end of 2023 saw 379.78 MW of rooftop solar capacity, spread over 2,163 projects, with an average capacity of around 129 kW per installation. The distribution of these installations varied across sectors, predominantly in commercial spaces, followed by schools, non-profits, industrial entities, government buildings, and a minimal portion by the military. The commercial sector's solar capacity has expanded by an average of 16 percent annually over the past five years. Continuing this trend suggests reaching a total capacity of 0.994 GW by 2030.

The financial commitment towards achieving these solar PV installations is substantial. The total cost for residential PV systems is projected to reach $2,928,501,142 by 2030, while commercial PV installations are anticipated to cost $1,594,586,461 by 2030. These figures are derived from the NREL data on residential and commercial PV capital expenditures and fixed operations and maintenance costs per kW.

Regarding the impact on GHG emissions reductions, the analysis projects significant benefits. Cumulative emissions reductions from 2025 to 2030 are estimated at 1,288,896 MT CO_2e, with a long-term projection from 2025 to 2050 amounting to 5,980,109 MT CO_2e. These figures highlight the substantial contribution of solar PV installations towards Fresno County's environmental sustainability goals, demonstrating the effectiveness of solar energy in reducing GHG emissions and promoting a shift towards renewable energy sources. This strategic focus not only aligns with California's broader sustainability objectives but also showcases Fresno County's proactive approach in harnessing solar energy to mitigate climate change impacts.

Solid Waste and Wastewater Sector

Measure Solid Waste and Wastewater 1 – Programs and Incentives to Reduce or Divert Waste

Methodology. The methodology for quantifying GHG emission reductions for this measure focuses on programs and incentives to reduce or divert waste, including food and yard waste, is derived from the "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity"[49] published by the California Air Pollution Control Officers Association. This

[48] California Distributed Statistics National Renewable Energy Laboratory. "Statistics and Charts" https://www.californiadgstats.ca.gov/.

[49] California Air Pollution Control Officers Association. 2021. "Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity." Published December 2021. https://www.caleemod.com/documents/handbook/full_handbook.pdf

approach utilizes the EPA Waste Reduction Model[50] (WARM) tool, as recommended in the handbook, and is tailored to address the specific waste reduction scenarios in Fresno County.

The initial step in this methodology involves calculating the waste disposal by building type in Fresno County. This is achieved by analyzing the annual residential waste disposal data provided in the handbook, where the tons of waste per resident per year are multiplied by the County's population. To accurately reflect the demographic distribution, additional information from the Census is incorporated, estimating the percentage of people living in single-family homes and multi-family homes.

Subsequently, the total waste per resident per year, broken down by building type, is calculated. This calculation considers the specific types of waste, notably food waste and yard waste. The handbook provides a detailed table with percentages by building type, which is instrumental in determining the waste disposal per material type.

The calculation of emission reductions in Fresno County utilizes the EPA's WARM tool, aligning with the State mandate that requires the County to achieve a 75 percent reduction in solid waste. This analysis is conducted under the assumption that 75 percent of both food waste and yard waste is composted, in accordance with Fresno County's compliance with the State's requirement. The WARM tool allows for a nuanced analysis of carbon emission reductions, factoring in the decomposition lifecycle time in years for each type of waste (4 years for food waste and 7 years for yard waste). This step is crucial in understanding the long-term environmental impact of waste diversion efforts.

Looking ahead, the methodology incorporates future projections to ensure its relevance over an extended period. Data from the Fresno County 2050 Growth Projection[51], is used to project population growth and the consequent increase in waste production each year. The assumption maintained throughout these projections is that the rate of composting, set at 75 percent of the waste, remains constant over the years.

In essence, this comprehensive methodology provides a detailed framework for quantifying the GHG emission reductions achievable through waste diversion programs in Fresno. By integrating specific waste disposal data, population projections, and the use of specialized tools like WARM, the approach ensures a robust and accurate assessment of the environmental benefits of these waste reduction initiatives.

Quantification. In aligning with the Fresno County 2050 Growth Projection, our methodology for quantifying GHG emission reductions from waste diversion incorporates an anticipated increase in population and the distribution of housing types within the county. According to projections, 70.49percent of Fresno County's housing stock comprises single-family homes, while 29.51 percent are multi-family units. This demographic and structural information plays a critical role in calculating the waste generation and subsequent GHG emissions reductions potential.

The analysis begins with an assessment of average waste generation rates in Fresno, which stand at 0.26 tons per resident per year for single-family homes and 0.23 tons for multi-family units. Further refinement of this data reveals that food waste constitutes 20 percent of the waste stream in single-family homes

[50] U.S. Environmental Protection Agency. Waste Reduction Model (WARM), Version 16. https://www.epa.gov/warm/versions-waste-reduction-model.

[51] Applied Development Economics, Inc. and Mintier Harnish Associates. 2017. "Fresno County 2050 Growth Projections." Prepared for Fresno County Council of Governments, May 4, 2017. https://www.fresnocog.org/wp-content/uploads/publications/Demographics/Fresno_COG_2050_Projections_Final_Report_050417.pdf

and 24 percent in multi-family units. Similarly, yard waste accounts for 8 percent of the waste in single-family homes and 5 percent in multi-family units. These specifics are instrumental in understanding the composition of Fresno's waste stream and are crucial for accurately targeting emissions reduction strategies.

Utilizing the Environmental Protection Agency's (EPA) Waste Reduction Model (WARM) tool, our methodology delves into the GHG emissions reductions achievable through the diversion of food and yard waste from traditional disposal methods to more sustainable practices such as composting. By applying the WARM tool's comprehensive analysis capabilities, we can quantify the impact of diverting a significant portion of Fresno's waste from landfills, thus reducing methane emissions—a potent GHG.

The cumulative impact of these waste diversion efforts is substantial. Between 2025 and 2030, it is estimated that GHG emissions reductions totaling 120,076 MT CO_2e. From 2025 to 2050, the projected cumulative emissions reductions amount to 717,607 MT CO_2e. These figures underscore the significant environmental benefits of implementing targeted waste diversion programs in Fresno County, particularly in the context of a growing population and evolving residential landscape.

The estimated cost for the Statewide implementation of this waste program is approximately $3.7 billion, with an additional operational cost of $1 billion annually. To support this initiative, CalRecycle has allocated about $140 million to fund organics recycling projects. Although this funding is a positive step forward, it represents a fraction of the total investment needed to ensure compliance across the various jurisdictions within California.

To put these figures into perspective:

- The implementation cost of $3.7 billion, when divided by the population of California, which stands at approximately 39,040,616 people, translates to about $94.77 per person.

- In Fresno County, with a population of 1,015,190 people, an equivalent estimate of $96,212,698.08 suggests an operational cost of around $26,003,432 per year.

Measure Solid Waste and Wastewater 2 – Wastewater Treatment Facility Efficiency

Methodology. The methodology for quantifying the impact of installing renewable energy and energy efficiency measures at wastewater treatment facilities closely mirrors the approach used in Measure Building Energy – 3 with a few key distinctions to address the unique context of these facilities.

Similar to the methodology for bundling on-site renewable energy generation with energy efficiency improvements in buildings, this approach involves estimating the potential of renewable energy sources, such as solar and wind power, specifically for wastewater treatment facilities. The use of NREL's System Advisory Model (SAM) is again pivotal for forecasting the annual energy generation potential from these renewable sources.

The adoption of a grid-specific emission factor is a critical component of this analysis, allowing for the precise quantification of GHG emissions reductions achieved through diminished reliance on grid electricity. This shift underscores the potential environmental benefits of renewable energy integration and energy efficiency improvements within the operational framework of wastewater treatment facilities.

By exclusively focusing on reducing emissions through the replacement of grid electricity with renewable sources and enhancing operational efficiency, the methodology offers a clear path to quantifying the environmental gains of such interventions. This approach not only reflects a commitment to lowering the carbon footprint of wastewater treatment processes but also aligns with wider initiatives aimed at transitioning towards more sustainable and renewable energy-dependent operations. Through this refined focus, the strategy aims to contribute significantly to climate change mitigation efforts by showcasing the tangible benefits of reducing grid electricity consumption in favor of clean, renewable energy solutions.

Quantification. The quantification of emission reductions for the project focusing on the integration of solar generation and battery storage at three key facilities within Fresno underscores a strategic approach towards enhancing environmental sustainability in wastewater treatment operations. The facilities include the Fresno-Clovis Regional Wastewater Reclamation Facility, equipped with 17.3 MW of solar generation and 2.3 MW of battery storage; the Northeast Surface Water Treatment Facility, with 1.7 MW of solar generation and 1 MW of battery storage; and the Southeast Surface Water Treatment Facility, featuring 3.8 MW of solar generation and 1 MW of battery storage.

Leveraging data from the National Renewable Energy Laboratory's SAM model, this measure anticipates a total annual generation of 37.5 gigawatt-hours (GWh) from the installed solar generation capacity. This figure forms the foundation for estimating the project's potential to offset grid electricity consumption, thereby directly contributing to a reduction in GHG emissions.

Financial considerations for the project are grounded in the 2023 Annual Technology Baseline data from NREL, which provides current cost metrics for capital expenditures and fixed operations and maintenance for both solar generation and battery storage technologies. Based on these metrics, the total projected cost from 2025 to 2030 for the solar generation components amounts to $31,030,800, with an additional $7,039,100 allocated for the implementation of battery storage solutions. These investments are critical for realizing the environmental benefits of the project, encompassing both the upfront costs of installation and the ongoing expenses associated with maintaining the renewable energy infrastructure.

The emission reduction potential of this initiative is quantified as cumulative emissions reductions of 28,018 MT CO_2e between 2025 and 2030, with a longer-term reduction of 76,042 MT CO_2e projected by 2050. These figures highlight the significant impact that the adoption of solar generation and battery storage can have on mitigating the carbon footprint of critical water treatment facilities in Fresno. By displacing a portion of the grid electricity demand with clean, renewable energy, the project not only contributes to local sustainability goals but also aligns with broader efforts to combat climate change through the reduction of greenhouse gas emissions.

Agriculture Sector

Measure Agriculture 1 – Manure Management

Measure Background. As described in the GHG Emissions Inventory of this report, emissions from manure management (including both poultry and cattle) represent approximately 34 percent of the County's agricultural sector GHG emissions inventory in the emissions inventory base year of 2019, totaling 853,345.62 MT CO_2e. These emissions represent 6 percent of the total County GHG emissions inventory.

Manure methane emissions can be reduced through two primary methods—installation of an anaerobic digester and alternative manure management practices. Anaerobic digesters capture methane-rich biogas for beneficial uses, including in electricity generation and fossil natural gas displacement. Alternative manure management practices reduce manure methane emissions in ways that do not involve an anaerobic digester. Examples include solid separation, conversion to dry scrape, and pasture-based management. Both digester and alternative manure management practices reduce GHG emissions and can improve water quality and nutrient management.[52]

Funding has historically available to support the installation of dairy digesters or the implementation of alternative manure management practices though the California Department of Food and Agriculture (DFA) Dairy Digester Research and Development Program (DDRDP) and Alternative Manure Management Program (AMMP), as well as through federal funding such as the United States Department of Agriculture (USDA) Environmental Quality Incentives Program (EQIP). There are not large, commodity-specific programs for poultry operators targeting manure management like there are for cattle operations, but poultry operations in the County are eligible for incentives through the EQIP program for measures that can support alternative manure management and sustainable farming. Data from these programs has been utilized to support the quantification of emissions reductions that could be achieved through this measure.

Quantification.

Estimated Fresno County 2030 Emissions Inventory for Manure Management.
The first step for quantifying the emissions reductions that could be achieved through the implementation of programs and incentives to reduce GHG emissions associated with manure management from livestock and poultry operations is to estimate the projected 2030 GHG emissions that would result from manure management, taking into account expected attrition in animal populations, as well as the projected benefits of incentive projects already implemented or planned to be implemented in the region.

Table I shows the Fresno County estimated cattle population by year, adjusted for attrition. In 2017, based on the most recent USDA Census of Agriculture data,[53] there were approximately 375,990 cattle and calves in the County, as compared to the 5,185,593 cattle and calves estimated in California, representing about 7 percent of the Statewide cattle population. Recent research studies expect an annual herd attrition rate of approximately 1.0 percent (ranging between 0.5 to 1.15 percent).[54] Applying a conservative 1 percent attrition rate to the 2017 Fresno County cattle population, it is expected that there would be an estimated 371,662 head of cattle in the County in 2019, and 355,438 head of cattle in the County in 2030.

Table I: Fresno County Estimated Cattle Populations by Year, Adjusted for Attrition

Year	Cattle Population
2017	375,990
2019	371,662
2030	355,438

[52] UC Davis California Biomass Collaborative. 2020. *Research and Technical Analysis to Support and Improve the Alternative Manure Management Program Quantification Methodology*. Stephen Kaffka, Robert B. Williams, Hamed Elmashad. April.

[53] United States Department of Agriculture. (USDA). 2022. California Cattle County Estimates. May. Available at: https://www.nass.usda.gov/Statistics_by_State/California/Publications/County_Estimates/2022/CATCNTYE2022.pdf (accessed December 2023).

[54] Kebreab, Ermias, et al. 2022. *Meeting the Call: How California is Pioneering a Pathway to Significant Diary Sector Methane Reduction.* December.

The emissions inventory from manure management for cattle is estimated at 793,845 MT CO_2e in 2019 (Appendix C). The cattle population in 2019 is estimated at 371,662 head. Dividing the emissions inventory by the number of cattle in the County results in a per-cow CO_2e emissions rate of 2.14 MT CO_2e resulting from manure management. Applying the per-cow emissions rate to the expected cattle population in 2030, it would be expected that the 2030 emissions from cattle manure management in Fresno County would be approximately 759,191.63 MT CO_2e. Assuming that poultry operations maintain operations as usual into 2030, the total expected emissions inventory in 2030 would be equal to the manure management emissions from cattle operations, plus manure management emissions from poultry operations (759,191.63 MT CO_2e + 59,499.75 MT CO_2e), equaling 818,691.38 MT CO_2e.

According to data available from California Department of Food and Agriculture [55] and Dairy Cares,[56] there is one cluster of dairy digesters operating in Riverdale (five digesters), with six CDFA funded dairy digesters operating in the County. CDFA project information indicates that there is also one dairy in Fresno County that has been selected for funding under the AMMP program.[57] Emission reductions expected to occur for each of these projects are listed below, and an annual emissions reduction value has been calculated.

Table J: Fresno County CDFA-Funded Dairy Projects

Project Type	Facility	Emission Reductions Expected (MT CO_2e)	Annual Emission Reductions (MT CO_2e)
Dairy Digester Projects Funded by CDFA	Open Sky Ranch Dairy Digester	258,911	25891.1
Dairy Digester Projects Funded by CDFA	Bar 20 Dairy Biogas	374,390	37439
Dairy Digester Projects Funded by CDFA	Van Der Hoek Dairy Digester Pipeline Project	168,447	16844.7
Dairy Digester Projects Funded by CDFA	Van Der Kooi Dairy Digester Pipeline Project	170,089	17008.9
Dairy Digester Projects Funded by CDFA	Vanderham Dairy Digester Pipeline Project	186,037	18603.7
Dairy Digester Projects Funded by CDFA	Wilson Dairy Digester Project	206,745	20674.5
AMMP Projects Funded by CDFA	L & L Dairy	4,733	946.6
	Total	**1,369,352**	**137,409**

Subtracting the emission reductions expected to be achieved through the implementation of these projects from the projected emissions inventory in 2030 would leave an adjusted manure management emissions inventory of 681,282.38 MT CO_2e in 2030.

Per-Project Emissions Reductions Information. The average dairy digester project funded by the DDRDP results in an estimated emission reduction of 17,817 MT CO_2e annually, and controls methane emissions from a dairy operation up to an estimated 75 percent.[58] AMMP projects range in effectiveness of emission reductions, depending on the type of practice employed, between 1,880 MT CO_2e to 2,120 MT CO_2e per project.[59] The average project funded through USDA Natural Resources Conservation Service (NRCS) for

[55] California Department of Food and Agriculture (CDFA). 2023. Dairy Digester Research and Development Program – Annual Report 2023 (Past Projects). July. Website: https://www.cdfa.ca.gov/oefi/ddrdp/ (accessed January 2024).

[56] Dairy Cares. 2023. Climate-Smart Dairy Digesters. August. Website: https://www.dairycares.com/dairy-digesters (accessed January 2024).

[57] California Department of Food and Agriculture (CDFA). 2023. AMMP 2022 Applications Awarded – Updated March 2023. Website: https://www.cdfa.ca.gov/oefi/AMMP/ (accessed January 2024).

[58] California Air Resources Board (CARB). 2022. *Analysis of Progress toward Achieving the 2030 Dairy and Livestock Sector Methane Emissions Target*. March.

[59] Ibid.

alternative manure management practices has a control efficiency of at least 10 percent, ranging in effectiveness up to 80 percent.[60]

Measure Quantification. To provide a conservative estimate, this analysis assumes that the remaining, uncontrolled emissions could be reduced by at least 10 percent through the deployment or expansion of programs and incentives to reduce GHG emissions related to manure management. This is a conservative assumption, based on the minimum control efficiency established in USDA-NRCS Conservation Practice Standards.[61] Emission reductions realized through the implementation of dairy digesters or alternative manure management practices may achieve greater emissions reductions, depending on the specifics of the individual project and operation.

Assuming that programs and incentives could be deployed to target the remaining, uncontrolled dairies and large beef cattle and poultry operations in the County, as well as smaller operations, with an emission reduction efficiency of at least 10 percent, emissions in the County could be reduced by an estimated 68,128.23 MT CO_2e per year, or approximately 411,498.73 pounds per day.

Measure Agriculture 2 – Agricultural Burning

Biomass burning in croplands represents approximately one percent of the agricultural sector emissions inventory for the County, or an estimated 13,093 MT CO_2e per year (Appendix C). Due to existing regulations and incentive programs, agricultural burning in the Fresno County area (and throughout the San Joaquin Valley) has already been significantly reduced, and the Air District, in compliance with Senate Bill 705 (Florez, 2003), has implemented requirements in Rule 4103, Open Burning, to phase out the majority of agricultural burning by 2025.[62] However, there are some woody waste products that are not included in the burning prohibition due to feasibility issues related to alternative means of disposal.[63] Therefore, State and federal funding programs to support alternatives to burning, such as chipping and use for soil incorporation or off-site beneficial reuse, are important measures to ensure that these agricultural woody waste products are feasibly able to be disposed of through measures besides burning.[64]

Assuming that all biomass burning could be eliminated into the future through the availability of additional incentive support, based on the GHG Emissions Inventory, programs and incentives to further reduce or eliminate agricultural burning would have the potential to reduce GHG emissions by up to an estimated 13,093 MT CO_2e per year, or 79,087 pounds per day.

Measure Agricultural 3: Agricultural Equipment Reductions

Offroad agricultural equipment represents approximately 3 percent of the total GHG emissions inventory in the County, and an estimated 16 percent of agricultural sector GHG emissions. Using CARB's OFFROAD model, an estimated 392,691.35 MT CO_2e of GHG emissions resulted from the operation of agricultural

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60 Jones, J., and J.K. O'Hara (Eds), 2023. *Marginal Abatement Cost Curves for Greenhouse Gas Mitigation on U.S. Farms and Ranches*. Office of the Chief Economist, U.S. Department of Agriculture, Washington, DC.

61 Ibid.

62 San Joaquin Valley Air Pollution Control District (SJVAPCD). 2023. Agricultural Burning. Website: https://ww2.valleyair.org/agriculture/agricultural-burning (accessed December 2023).

63 Ibid.

64 San Joaquin Valley Air Pollution Control District (SJVAPCD). 2023. Alternatives to Agricultural Burning. Website: https://ww2.valleyair.org/compliance/agricultural-burning/alternatives-to-burning/

equipment in 2019. In 2030, the total emissions associated with the operation of agricultural equipment is projected to be approximately 659.75 MT CO_2e per day or 240,808 MT CO_2e per year, with an estimated 1,442,290 gallons per year of diesel and gasoline consumed per year due to operation of this equipment.

Based on projected equipment emissions in 2030, if all projected agricultural equipment in Fresno County were replaced by zero-emissions equipment, this measure would have the potential to reduce up to 240,808 MT CO_2e per year of GHG emissions, or up to 1,454,499.77 pounds per day.

LOW-INCOME DISADVANTAGED COMMUNITIES BENEFIT ANALYSIS

The CPRG program will advance the goals of the Justice40 Initiative set forth in Executive Order 14008, which aims to deliver 40 percent of the overall benefits of relevant federal investments to low income and disadvantaged communities.

METHODOLOGY

To identify low income and disadvantaged communities and existing climate risks, impacts, and vulnerabilities among LIDACs within Fresno County, three related tools were used: the Environmental Justice Screening Tool (EJScreen), the Climate and Economic Justice Screening Tool (CEJST), and CalEnviroScreen. Resources such as the EPA's Climate Change and Social Vulnerability in the United States Report and Fresno COG's Regional Transportation Network Vulnerability Assessment (2019)[65] were also reviewed.

Existing climate risks, impacts, and vulnerabilities were identified using a combination of indicators and data from CEJST, EJScreen, and CalEnviroScreen as well as previous studies. These tools provide information about environmental and socioeconomic burdens faced by populations at a census tract level, using different categories and thresholds. An overview of the indicators provided by each tool is provided in Table K.

Table K: Comparison of CalEnviroScreen, EJScreen, and CEJST Indicators

Indicator or Threshold Category	CalEnviroScreen	EJScreen	CEJST	Definition
Public Health				
Air toxics cancer risk		●		Lifetime cancer risk from inhalation of air toxics
Air toxics respiratory hazard index		●		Ratio of exposure concentration to health-based reference concentration
Asthma	●		●	CES: the number of asthma emergency department visits per 10,000 people for the years 2015-2017 CEJST: share of people who answer "yes" to both of these questions: "Have you ever been told by a health professional that you have asthma?" and "Do you still have asthma?"
Cardiovascular Disease	●		●	Share of people ages 18 years and older who have been told by a health professional that they had angina or coronary heart disease.
Diabetes			●	Share of people ages 18 years and older who have been told by a health professional that they have diabetes other than diabetes during pregnancy.
Lead paint	●	●	●	Share of homes built before 1960, which indicates potential lead paint exposure.
Low birth weight	●			Percentage of low weight births, averaged over a seven-year period (2009-2015), based on California Department of Public Health data
Low life expectancy			●	Average number of years people have left in their lives.
Economic Burdens				
Energy cost			●	Average household annual energy cost in dollars divided by the average household income.
Historic underinvestment			●	Census tracts that experienced historic underinvestment based on redlining maps between 1935 and 1940.
Housing Burden	●		●	CEJST: Share of households that are both earning less than 80percent of Housing and Urban Development's Area Median Family Income and are spending more than 30percent of their income on housing costs.

[65] WSP and VRPA Technologies Inc., 2019. *Vulnerability Assessment Summary Memorandum* November 11

Table K: Comparison of CalEnviroScreen, EJScreen, and CEJST Indicators

Indicator or Threshold Category	CalEnviroScreen	EJScreen	CEJST	Definition
Lack of green space			●	Share of land with developed surfaces covered with artificial materials like concrete or pavement, excluding crop land used for agricultural purposes.
Lack of indoor plumbing			●	Housing without indoor kitchen facilities or complete plumbing facilities.
Less than high school education	●	●		Percent of the population over age 25 with less than a high school education.
Low income		●	●	CEJST: Low median income calculated as a share of the area's median income.
Poverty	●		●	Share of people living at or below 100percent of the Federal poverty level.
Transportation barriers			●	Average relative cost and time spent on transportation relative to all other tracts.
Unemployment	●	●	●	Number of unemployed people as a share of the labor force.
Vulnerable Populations				
Linguistic isolation	●	●	●	Share of households where no one over age 14 speaks English very well.
Over age 64		●		Percent of people over the age of 64.
People of color		●		The percent of individuals who list their racial status as anything other than non-Hispanic white-alone (non-multiracial) individuals.
Under age 5		●		Percent of people under the age of 5.
Air Pollution				
Diesel Particulate Matter	●	●	●	Mixture of particles in diesel exhaust in the air, measured as micrograms per cubic meter.
Ozone	●	●		Average of the annual top ten daily maximum 8-hour ozone concentrations in air for 2017-2019
Particulate Matter 2.5	●	●	●	Fine inhalable particles with 2.5 or smaller micrometer diameters.
Pesticide Use	●			Number of pounds per square mile (on agricultural fields) of the select 132 pesticide active ingredients as defined by the California Department of Pesticide Regulation for the years 2017-2019
Toxic releases from facilities	●	●		Modeled toxicity-weighted concentrations in air of EPA Toxic Release Inventory listed chemicals.
Traffic Impact	●	●	●	CEJST: Number of vehicles (average annual daily traffic) at major roads within 500 meters.
Land and Water Pollution				
Abandoned mine land			●	Presence of an abandoned mine left by legacy coal mining operations.
Cleanup sites	●	●	●	CEJST: Number of proposed or listed Superfund or National Priorities list (NPL) sites within 5 kilometers
Formerly used Defense Sites			●	Properties that were owned, leased, or possessed by the United States, under the jurisdiction of the Secretary of Defense prior to October 1986.
Groundwater Threats	●	●	●	CEJST: Weighted formula of the density of leaking underground storage tanks and the number of all active underground storage tanks within 1,500 feet of the census tract boundaries.
Hazardous waste	●	●	●	Number of hazardous waste facilities (Treatment, Storage, and Disposal Facilities and Large Quantity Generators) within 5 kilometers.
Impaired Waters/ Wastewater discharge	●	●	●	CES: Combines the number of pollutants in all water bodies designated as impaired by the State Water Resources Control Board. EJS/CEJST: Risk-Screening Environmental Indicators (RSEI) modeled toxic concentrations at stream segments within 500 meters.
Proximity to Risk Management Plan (RMP) facilities		●	●	Count of Risk Management Plan (RMP) facilities within 5 kilometers.
Solid Wastes Sites	●			The number of closed, illegal, abandoned, and active solid waste disposal facilities in or near each census tract.
Climate Risks				
Expected agriculture loss rate			●	Expected agricultural value at risk from losses due to natural hazards

Table K: Comparison of CalEnviroScreen, EJScreen, and CEJST Indicators

Indicator or Threshold Category	CalEnviroScreen	EJScreen	CEJST	Definition
Expected building loss rate			●	Expected building value at risk from losses due to natural hazards
Expected population loss rate			●	Expected fatalities and injuries due to natural hazards
Projected flood risk			●	Number of properties are at risk of floods occurring in the next thirty years
Projected wildfire risk			●	Calculated from inputs associated with fire fuels, weather, human influence, and fire movement.

Each tool also provides indexes based on their set of indicators to assist in identifying census tracts with the highest overall environmental and socioeconomic burdens relative to the rest of the country and the state as shown in Table L. This analysis primarily uses CEJST to identify LIDACs and CalEnviroScreen scores and EJScreen indexes as a supplement.

Table L: Indexes and Methodology for CalEnviroScreen, EJScreen, and CEJST

Tool	Indexes	Method
CalEnviroScreen	Overall percentile score and percentile of each indicator compared to rest of California	For each census tract, weighted averages of all indicators are combined into two component scores: Pollution Burden (made up of Exposure Indicators and Environmental Effects Indicators) and Population Characteristics (made up of Sensitive Population Indicators and Socioeconomic Factor Indicators). The two component scores are then scaled so that they have a range from 0 to 10 and then multiplied together to produce an overall CalEnviroScreen score. The maximum overall score is 100. A census tract's overall percentile (i.e. 90th) indicates the percentage of all CES scores that fall below that score in the state (i.e. 90percent of scores).
EJScreen	13 Environmental Justice and Supplemental Indexes that combine environmental and socioeconomic data	EJ Index = (Environmental Indicator Percentile for Block Group) X (Demographic Index [average of low income and people of color] for Census Tract) Supplemental Index = (The Environmental Indicator Percentile for Block Group) X (Supplemental Demographic Index [averages of low income, unemployed, limited English speaking, limited education, and low life expectancy] for Block Group)
CEJST	Low income, disadvantaged census tracts	Meet both criteria: (1) the census tract is at or above the 65th percentile for the number of low-income households, and (2) the census tract is at or above 90th percentile for at least one category of data indicators.[66] The categories of indicators are climate change, energy, health, housing, legacy pollution, transportation, water and wastewater, and workforce development. In addition, a census tract that is completely surrounded by disadvantaged communities and is at or above the 50percent percentile for low income is also considered disadvantaged. Federally recognized Tribes are also considered disadvantaged communities.

[66] More information on CEJST methodology see https://screeningtool.geoplatform.gov/en/methodology.

Based on these sources of information, the next section describes communities within Fresno County according to the categories shown above in general terms, and then in relation to the Priority GHG Reduction Measures. For each measure, specific geographic areas are identified as recommended areas of focus during implementation. These areas indicate where each measure would have the most benefit to LIDACs and in addressing environmental justice issues.

LOW-INCOME AND DISADVANTAGED COMMUNITIES (LIDACS) ANALYSIS

This section identifies the low-income and disadvantaged communities (LIDACs) within Fresno County, including the 15 incorporated cities and the unincorporated areas. The main issues facing Fresno County residents are high levels of exposure to ozone, fine particulate matter ($PM_{2.5}$), diesel particulate matter, and air toxics (including those with high risk of cancer and respiratory diseases).

According to the CEJST, in Fresno County, most of the multiply burdened tracts are in the City of Fresno and the southern and southwestern portions of the County, particularly surrounding U.S. Route 99. Six census tracts located in the City of Fresno, the City of Sanger, and in and around the City of Huron exceed 7 out of the 8 CEJST categories of burdens. Twenty-one census tracts located in the City of Fresno, the City of Selma, the City of Orange Cove, the City of Mendota, and the City of Huron exceed 6 out of 9 CEJST categories. Figure 22 shows a map of Fresno County with an inset map of the City of Fresno showing the number of CEJST categories exceeded in each census tract. The more categories of environmental and social burdens exceeded, the more disadvantaged the census tract.

Census tracts which are surrounded by census tracts exceeding one or more categories of burdens in the CEJST are also considered low income and disadvantaged. In addition to LIDACs, an important measure of disadvantaged communities was developed by the CalEPA to meet the requirements of Senate Bill 535 (De Léon, Statutes of 2012). SB 535 census tracts include nearly all census tracts in the County west of SR - 99, and 91 percent of them (113 out of 124) overlap with LIDACs.

SB 535 Disadvantaged Communities are the 25 percent highest scoring (75^{th} percentile) census tracts in CalEnviroScreen 4.0, census tracts previously identified in the top 25 percent (75^{th} percentile) in CalEnviroScreen 3.0, census tracts with high amounts of pollution and low populations, and federally recognized tribal areas as identified by the Census in the 2021 American Indian Areas Related National Geodatabase.

Proceeds from the State's Cap-and-Trade Program are used to support California Climate Investments across the state. SB 535 requires that at least a quarter of the proceeds go to projects that provide a benefit to disadvantaged communities and at least 10 percent of the funds go to projects located within those communities. Figure 23 shows a map of low income and disadvantaged census tracts according to the CEJST as well as communities identified by CalEPA for the purpose of SB535. The inset map shows the City of Fresno and Clovis.

According to EPA's EJScreen Tool and CalEnviroScreen, most of Fresno County's population is considered disadvantaged, meaning that they are in the 90th percentile (countrywide) for at least one of the metrics of the Environmental Justice Index. Figure 24 shows a map of census tracts in the 80th and 90th percentiles for CalEnviroScreen total scores. These areas are among the most burdened with environmental pollution and socioeconomic barriers in California.

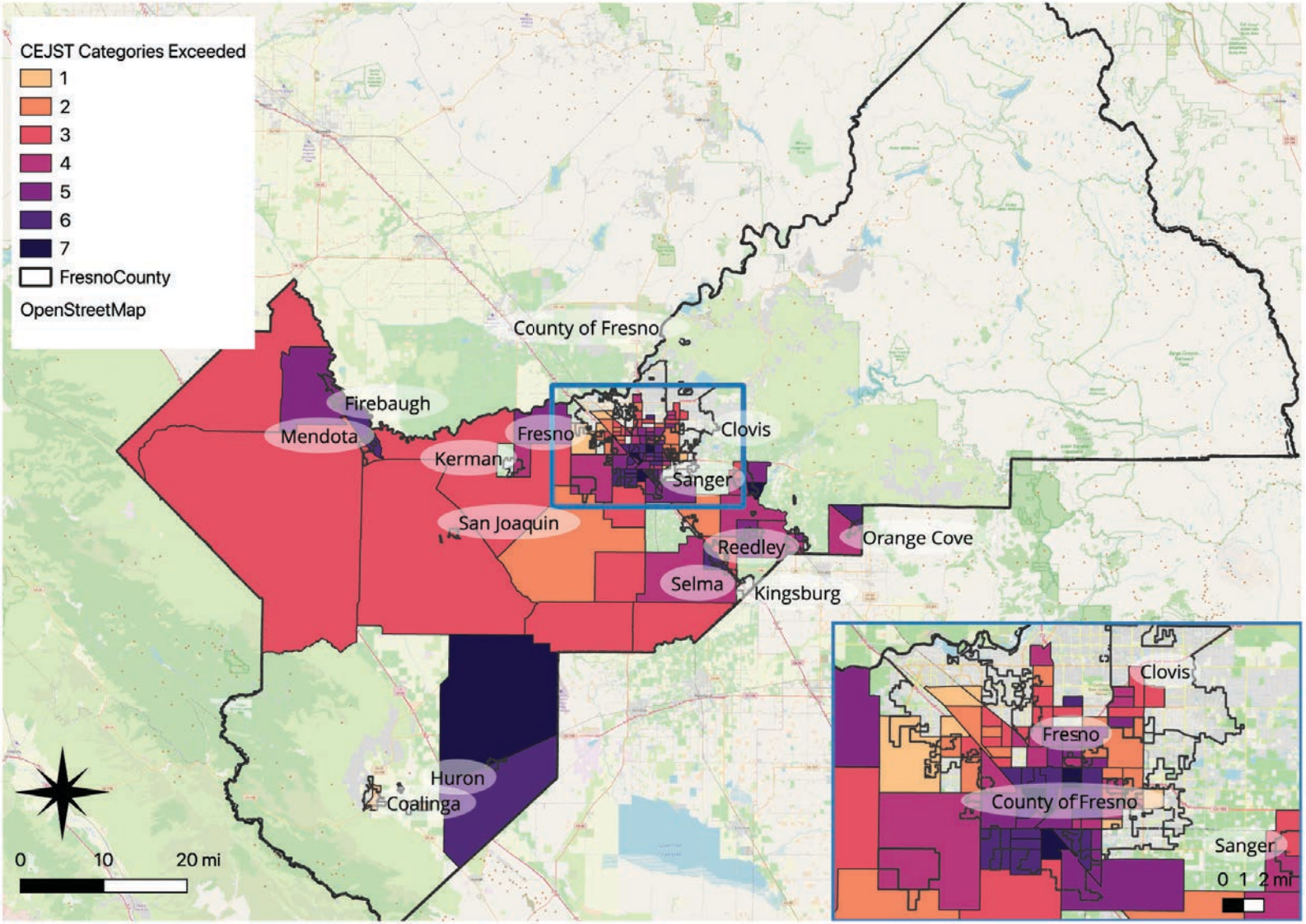

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FIGURE 22

Fresno COG Priority Climate Action Plan

Map of Fresno County with Inset Map of the City of Fresno
Showing the Number of CEJST Categories Exceeded

SOURCE: SSG

I:\20231104\G\Fig22 - Map of Fresno County with CEJST categories exceeded.ai (1/26/2024)

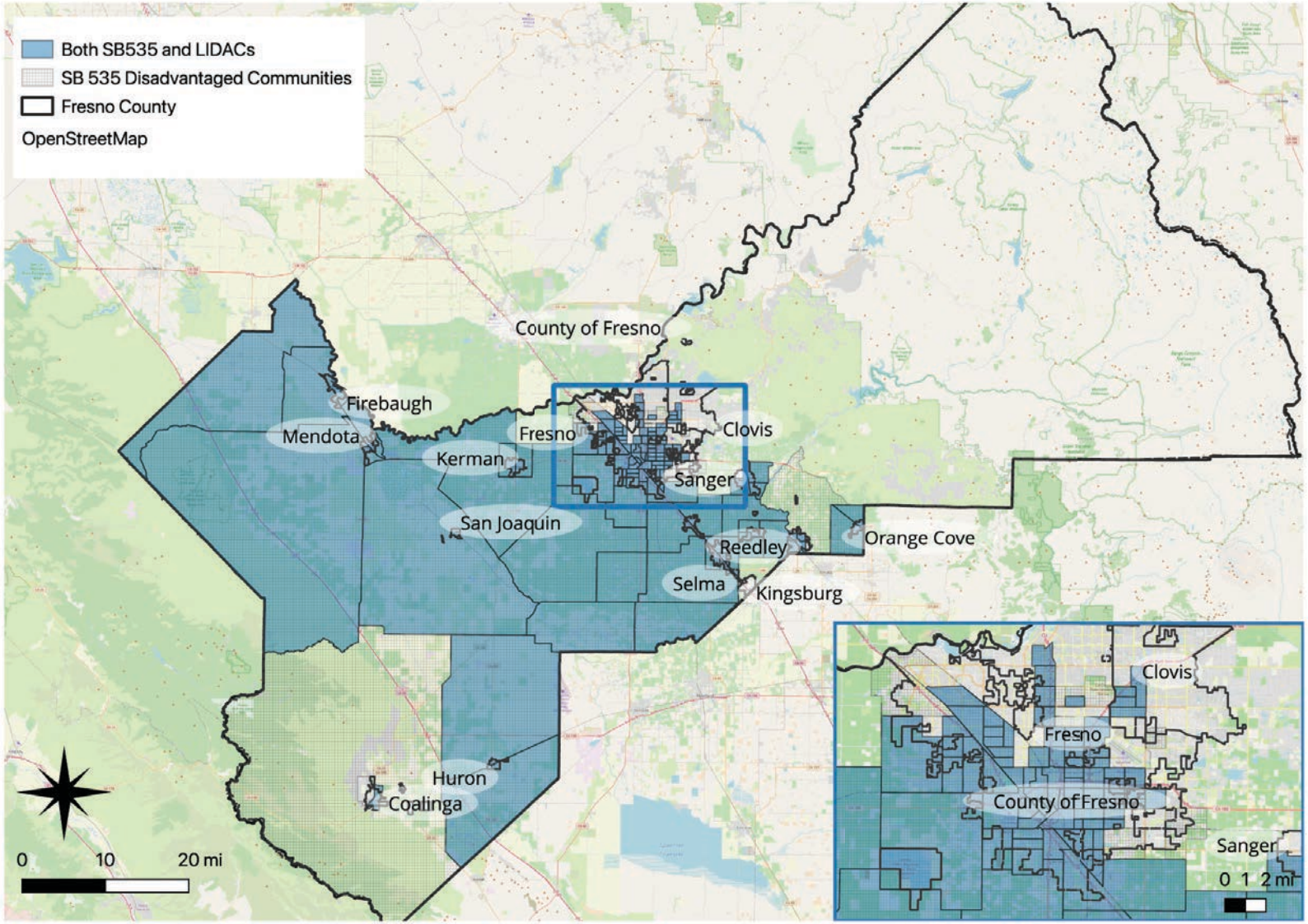

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FIGURE 23

Fresno COG Priority Climate Action Plan

Figure 23 Map of Low Income and Disadvantaged Census Tracts According to the CEJST

SOURCE: SSG

I:\20231104\G\Fig23 - Map of low income dis CEJST.ai (1/26/2024)

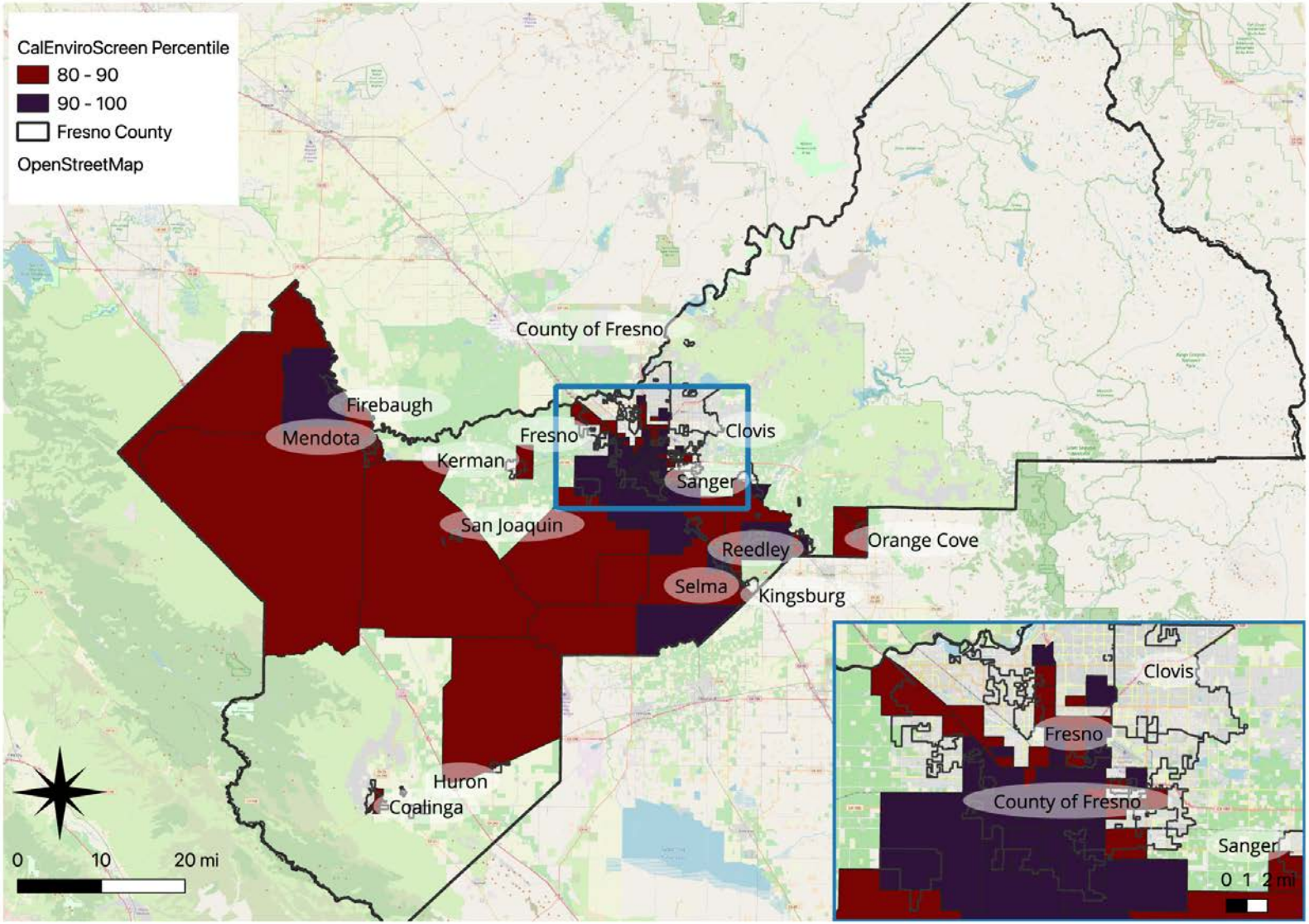

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FIGURE 24

Fresno COG Priority Climate Action Plan

Map of Census Tracts in the 80th and 90th Percentiles for CalEnviroScreen Total Scores

SOURCE: SSG

I:\20231104\G\Fig24 - Map of census tracts 80-90th CalEnviroScreen total scores.ai (1/26/2024)

Socioeconomic Burdens

Households in Fresno County earn less income than the rest of California and the country as a whole. Average median household income in the County is $69,571 compared to $91,551 (California) and $74,755 (US). Nearly 1 in 5 people, and more than a quarter of children, live in poverty, compared to 12 percent of all Californians.

Fresno County's 326,981 households are linguistically diverse, with 55 percent of households speaking English at home, 35 percent speaking Spanish, and 5.6 percent speaking Asian and Pacific Islander languages. Nearly 20 percent of the population is foreign born, slightly less than the average percentage in California as a whole (26 percent), with most immigrants arriving from Latin America (66 percent) and Asia (29 percent).

Figure 25 below presents the tracts that correspond to the 90th percentile (countrywide) and above for the percentage of people below 2 times the Federal Poverty Line as well as tracks with the most important percentage of people with limited English skills (linguistic isolation). The west part of Fresno County (except Coalinga) and the south of Fresno city are the most impacted locations where poverty and linguistic isolation occur. The cities of Parlier, Orange Cove, Reedley, Selma and Sanger also fall partially or totally into the 90th percentile for poverty and/or linguistic isolation.

Figure 26 presents the tracts with the most people without a high school degree or equivalent in grey. In the daker tracks in the west part of Fresno County, 38 percent to 70 percent of adults have less than high school education. A quarter of adults have attained a bachelor's degree or higher, considerably less than the average across California.

In the same figure below are the 90th percentile tracts for unemployment (countrywide). Outside Fresno, these tracks are more spread out and are not necessarily the same as the tracks with low education. On the other hand, the south of Fresno has more unemployment and low education than the north. This can be related to the type of jobs offered in the city, that may require more education than jobs in the countryside, which are more linked to agriculture.

Climate Change

Some locations in Fresno County are also subject to floods and/or wildfires, which is closely tied to its major economic sector: agriculture. Some tracts in Fresno are subject to both flood and wildfire, which makes them even more vulnerable. The expected agriculture loss due to climate change in Fresno County falls in the 80th to 90th percentile as shown in Figure 27, but since it is such an important sector of the economy, it should be considered in this analysis.

Figure 28 shows the 100-year estimated floodplain for the most affected parts of the county. The regions around the San Joaquin River are at higher risk of major flooding events, especially the cities of Firebaugh and Mendota. A large part of Huron is also at risk.

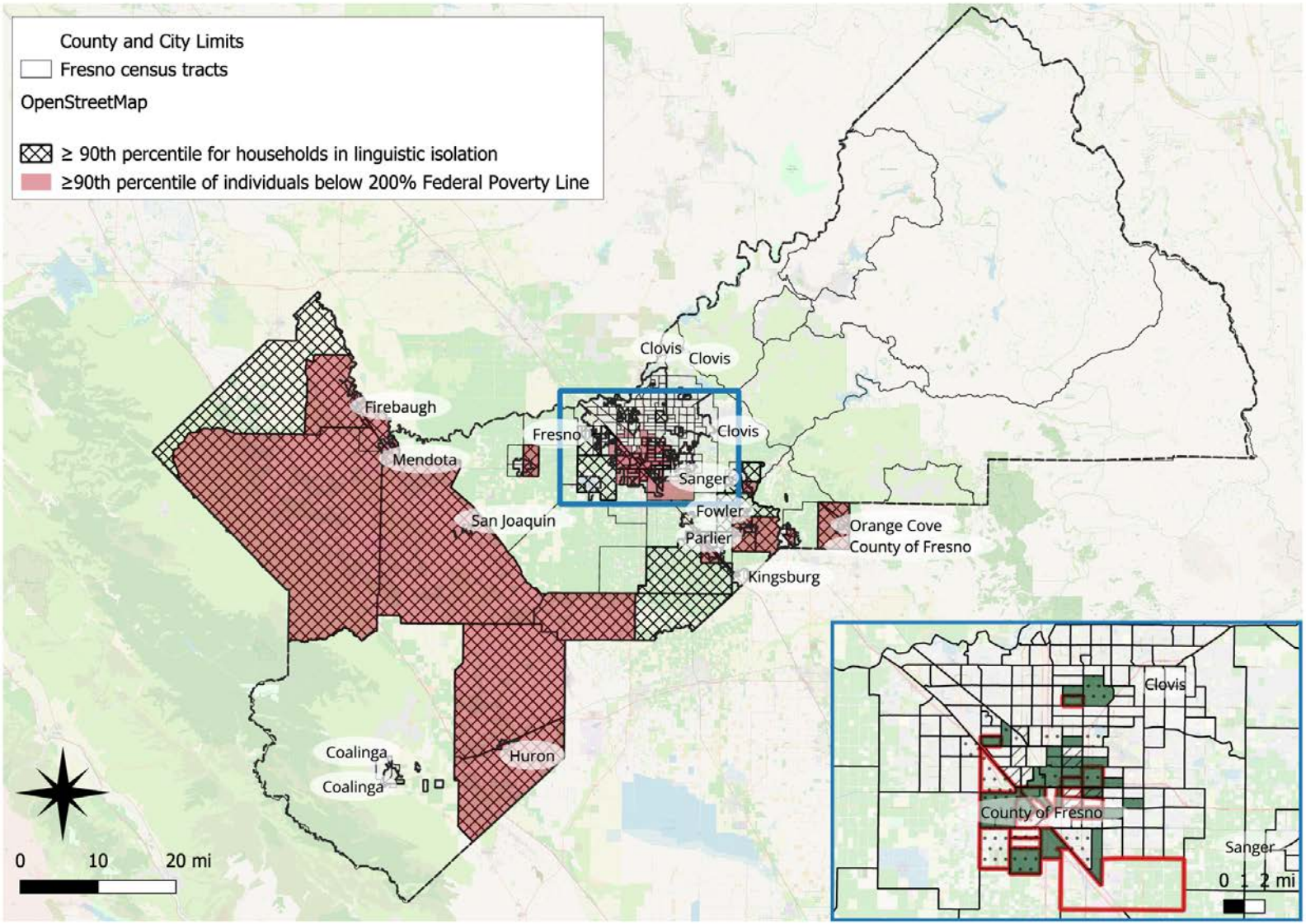

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FIGURE 25

Fresno COG Priority Climate Action Plan

Map of the 90th Percentile and Above Extreme Poverty and Linguistic Isolation

SOURCE: SSG

I:\20231104\G\Fig25 - Map 90th percentile above extreme poverty and linguistic isolation.ai (1/26/2024)

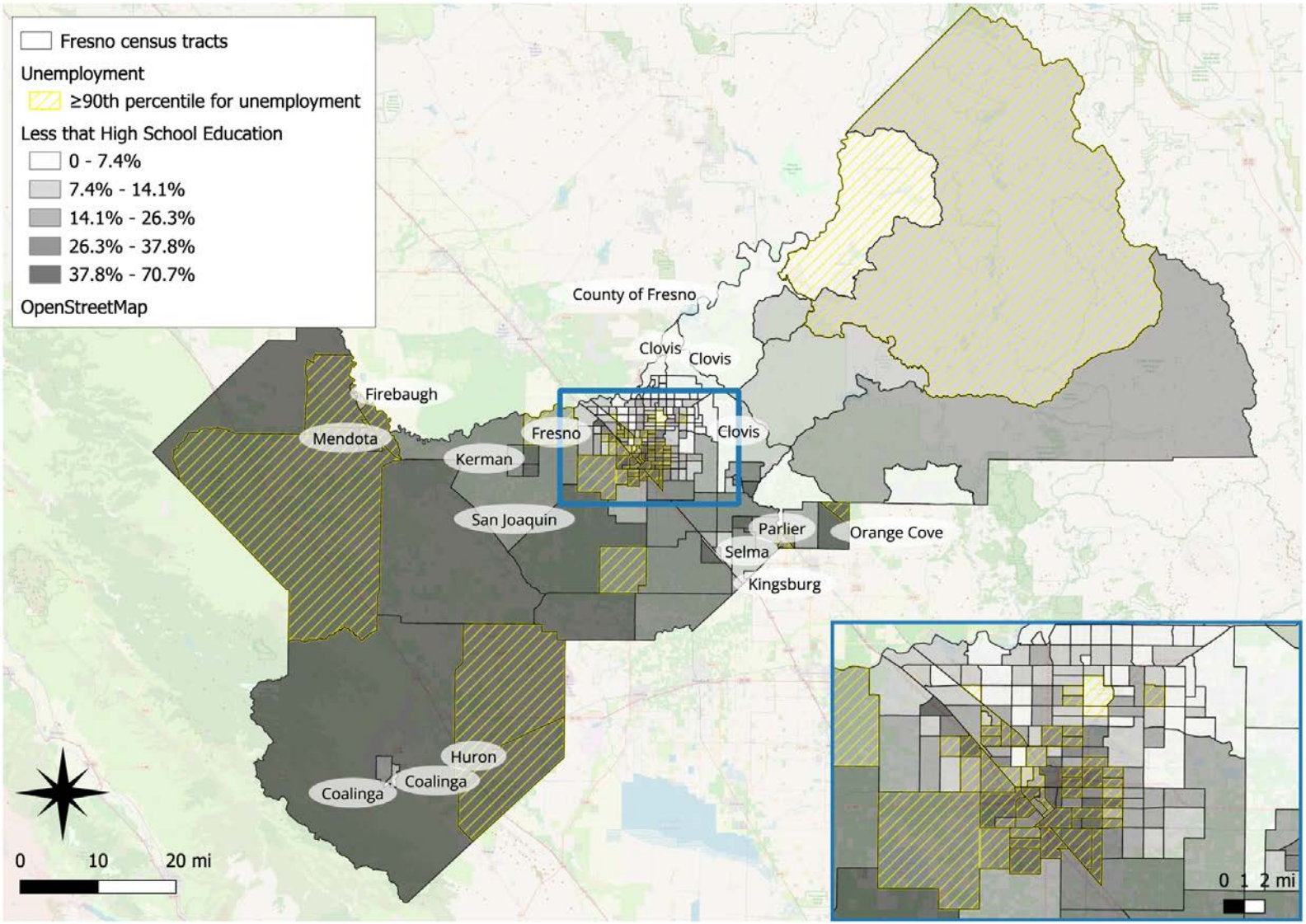

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FIGURE 26

Fresno COG Priority Climate Action Plan

Map of the Percentage of People Without a High School Degree and the 90th Percentile and Above for Unemployment

SOURCE: SSG

I:\20231104\G\Fig26 - Map of people without high school degree 90th percentile unemployment.ai (1/26/2024)

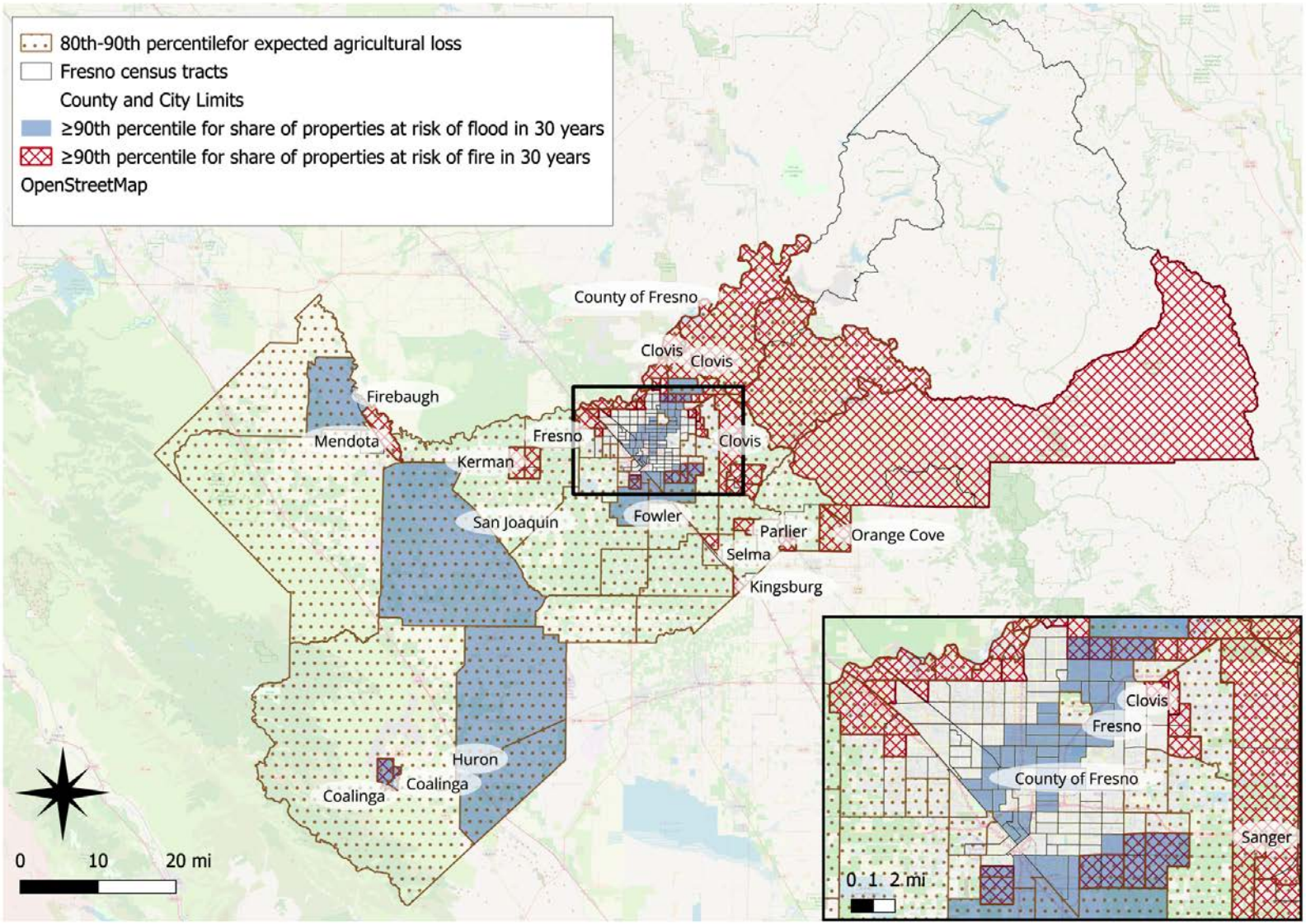

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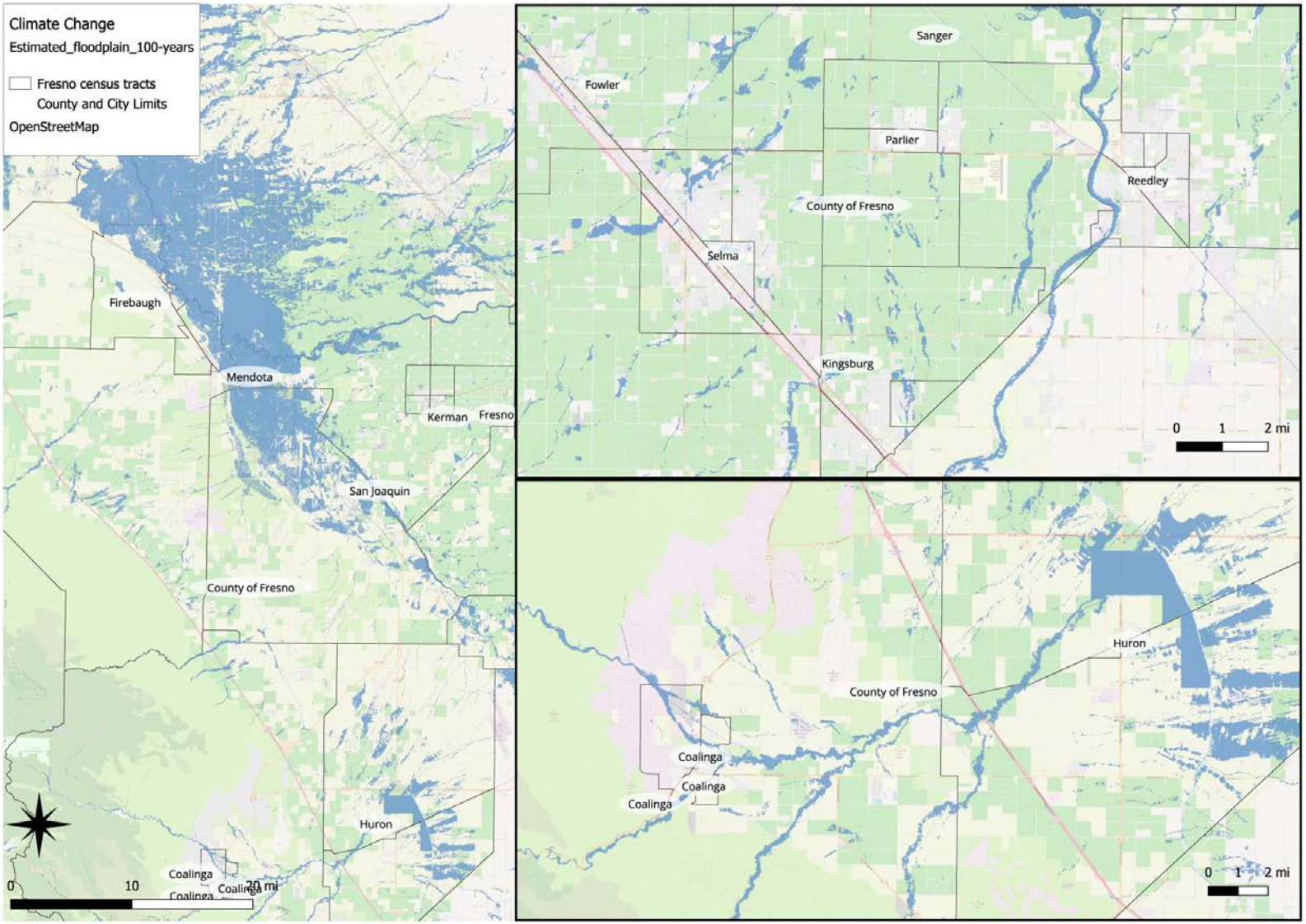
FIGURE 27

Fresno COG Priority Climate Action Plan

Map of the 90th Percentile and Above for Flood Risk and Wildfires and 80th to 90th Percentile for Expected Agriculture Loss Due to Climate Change

SOURCE: SSG

I:\20231104\G\Fig27 - Map of the 90th percentile flood risk and wildfires and 80th to 90th Ag loss.ai (1/26/2024)



LSA

FIGURE 28

Fresno COG Priority Climate Action Plan

Map of the 100-year Floodplain (EJ Screen Tool)

SOURCE: SSG

I:\20231104\G\Fig28 - Map of the 100-year floodplain.ai (1/26/2024)

Housing and Energy

The oldest houses in Fresno County are mostly in the city of Fresno. Figure 29 shows the tracts with the most homes built before 1960, as well as tracts with the most houses without indoor plumbing or kitchen. In green are the tracts within the 90th percentile (nationally) for housing burden, while the red contours show the tracts with the highest energy burden. Some tracts are included in more than one of these categories in Fresno, Selma, Orange Cove, Huron and Firebaugh.

Transportation

Fresno County is located on key transportation corridors and lies within a few hundred miles of many large cities such as San Francisco, Los Angeles, Sacramento, Las Vegas, and Phoenix. As a result, industries expected to grow in the coming decades include logistics (e.g., warehousing and freight transportation), in addition to education, healthcare and social services, public administration, and hospitality.

Figure 30 presents the main pollution burdens communities face from transportation, which include diesel particulate matter, $PM_{2.5}$, and noise pollution from traffic proximity.

Legacy Pollution, Water and Wastewater

Fresno County is one of the largest agricultural producing counties in the United States. Around one in three jobs are tied to agriculture, including food processing, distribution, and retail. Figure 31 shows a map of the drinking water contamination index per tracts presented with groundwater threats and pesticide usage. Some tracts fall into the 90th percentile Countywide for the indexes.

Figure 32 shows the 80th and above percentile of tracts for air toxic release, ozone and asthma. These indexes appear in the same tracks, mostly on the western portion of Fresno County, while toxic air releases are concentrated within the City of Fresno and surrounding cities including Parlier, Selma, Sanger, and Reedley.

Low Income, Disadvantaged Community Profiles in Fresno County

The following information on individual communities within Fresno County was gathered from the U.S. Census[67] and EJScreen[68]. Figure 33 shows a map of incorporated communities in central and eastern Fresno County in relation to CEJST, LIDACs, and SB535 census tracts.

Communities in Central and Eastern Fresno County

Fresno. The City of Fresno is the most populous city of the County with 543,428 people. A majority (52 percent) of which are of Hispanic or Latino origin and 27 percent are white. Approximately 58 percent speak English at home, but 9 percent have limited English skills. Unemployment is at 10 percent and 22 percent of people have less than a high school education.

[67] U.S. Census Bureau, 2022. *American Community Survey 5-year estimates for Fresno County*. http://censusreporter.org/profiles/05000US06019-fresno-county-ca/

[68] United States Environmental Protection Agency. Version 2.2. (June 2023) EJScreen. website: www.epa.gov/ejscreen

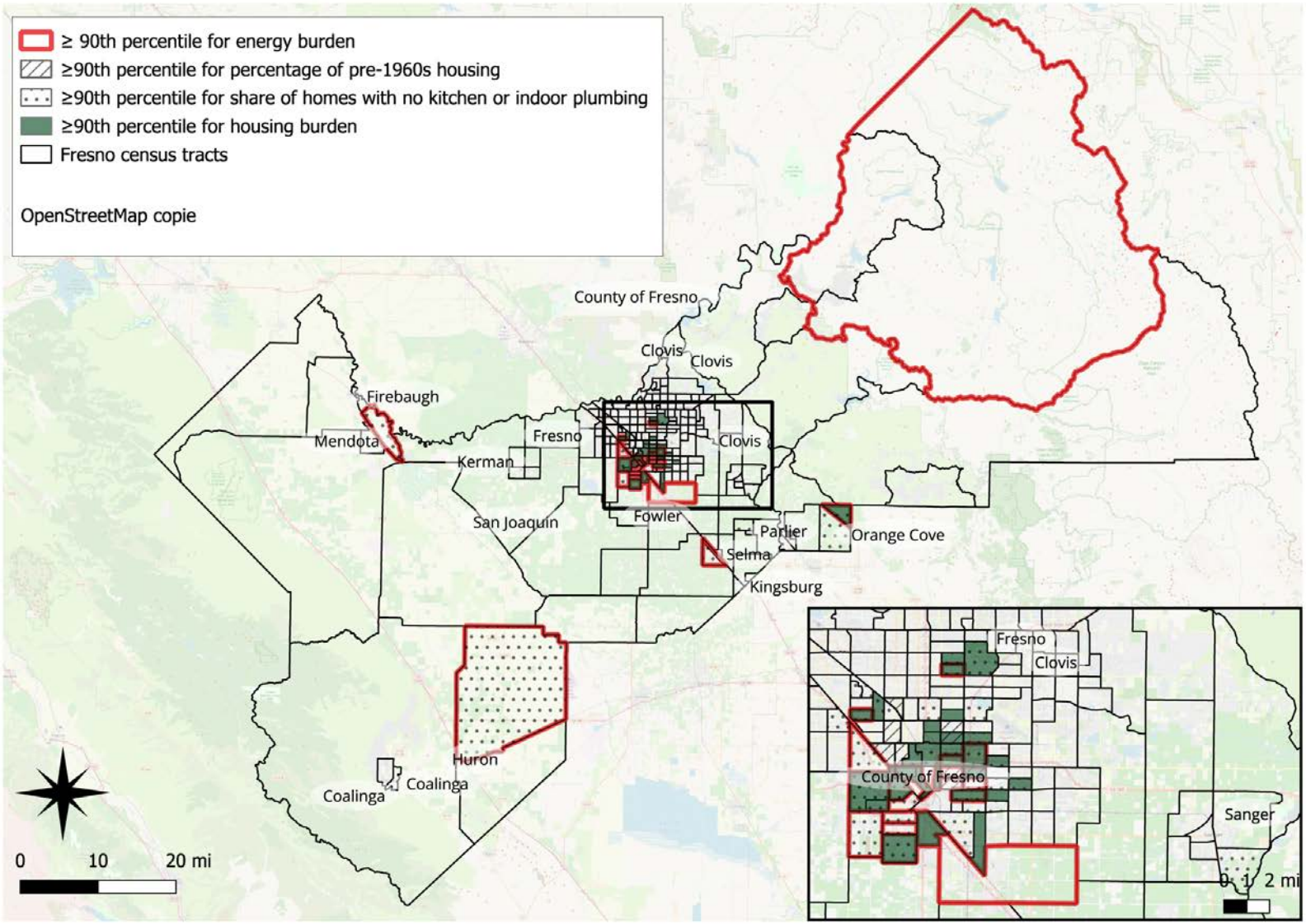


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FIGURE 29

Fresno COG Priority Climate Action Plan

Map for Housing and Energy Burden

SOURCE: SSG

I:\20231104\G\Fig29 - Map for Housing and Energy Burden.ai (1/26/2024)

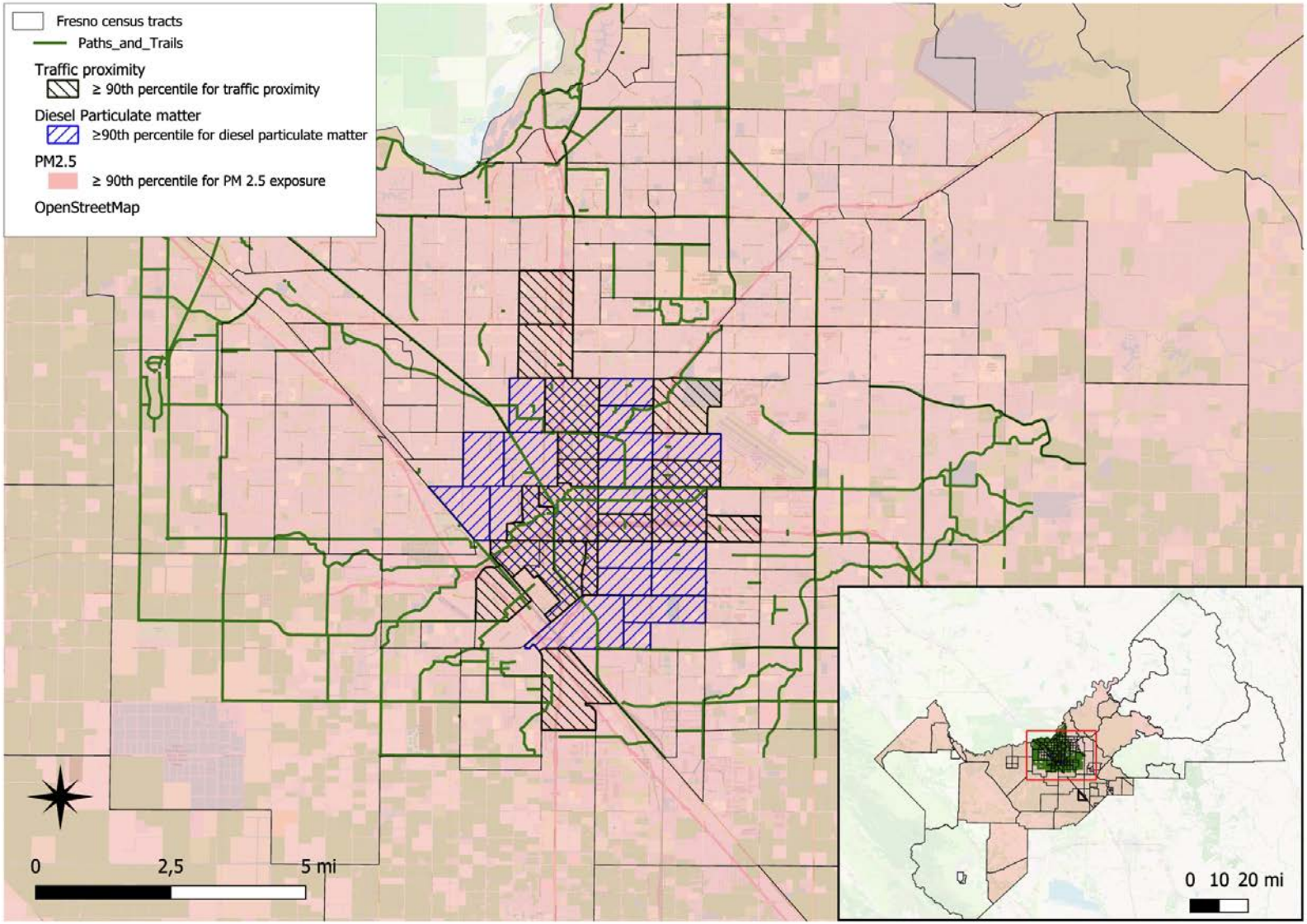

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FIGURE 30

Fresno COG Priority Climate Action Plan

Map of the 90th Percentile for the Transportation Related Burdens

SOURCE: SSG

I:\20231104\G\Fig30 - Map of the 90th percentile transportation Burdens.ai (1/26/2024)

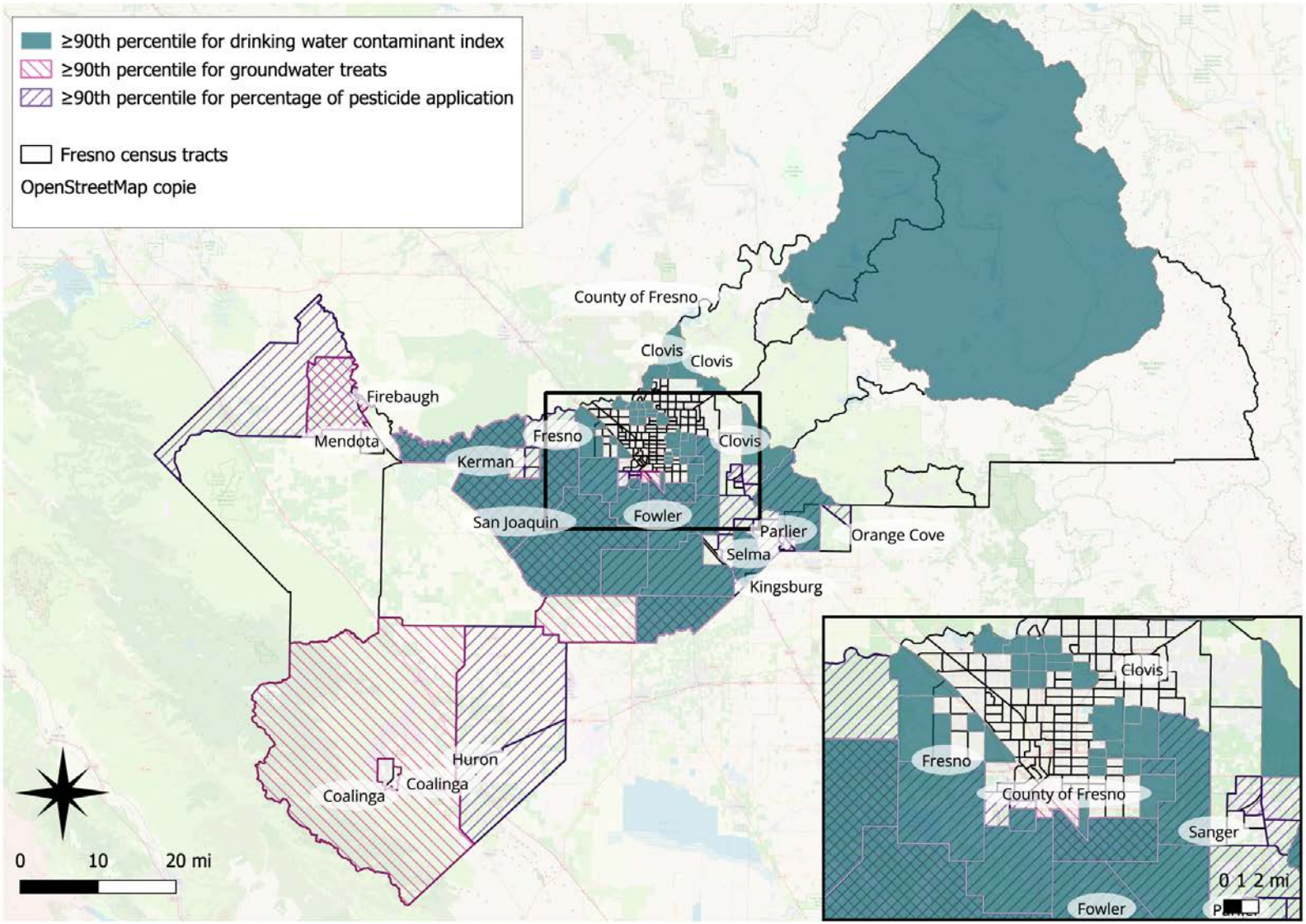

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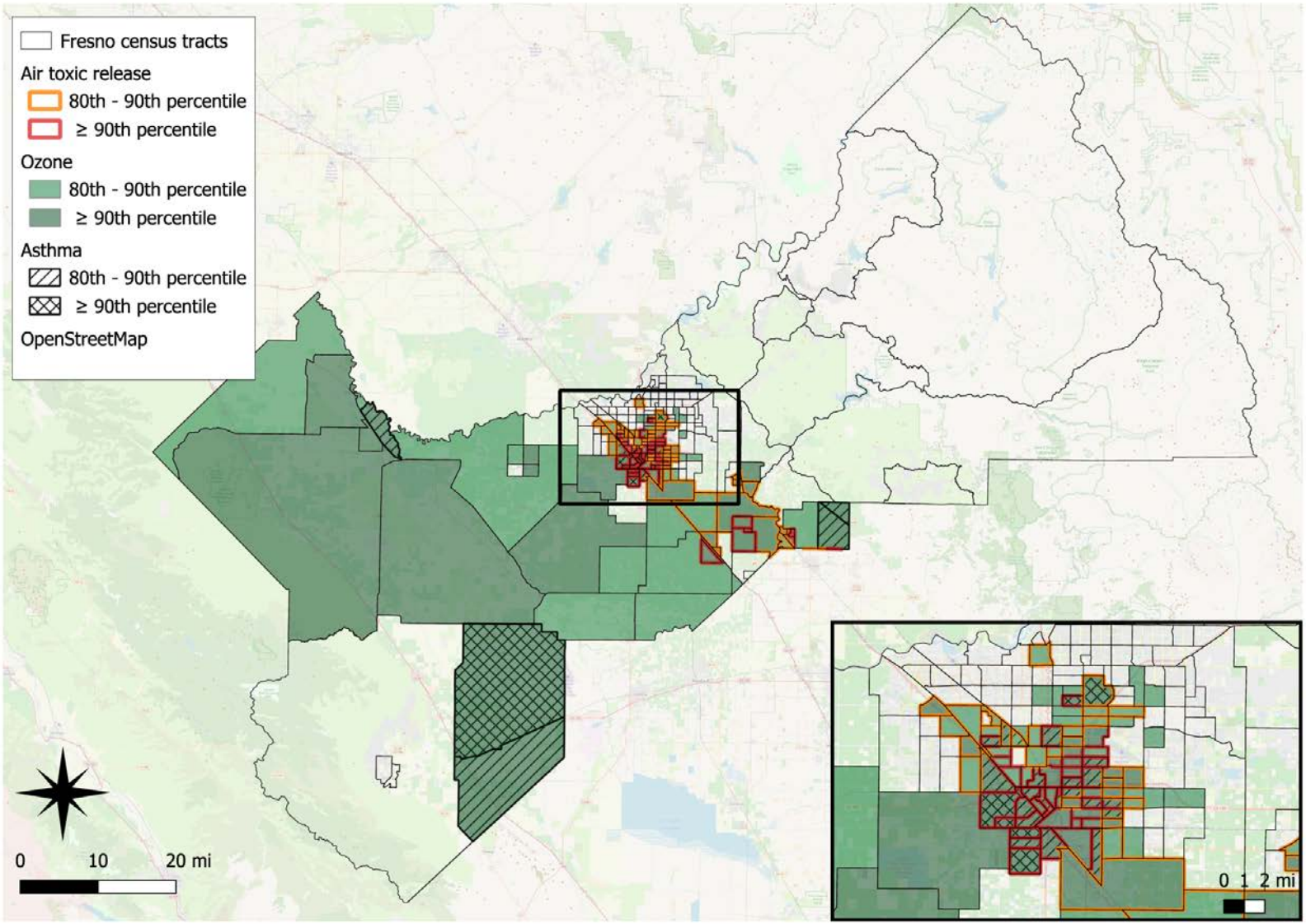
FIGURE 31

Fresno COG Priority Climate Action Plan

Map of the Drinking Water Contamination Index Per Tracts Presented with Groundwater Threats and Pesticide Usage

SOURCE: SSG

I:\20231104\G\Fig31 - Map of the drinking water contamination.ai (1/26/2024)



LSA

FIGURE 32

Fresno COG Priority Climate Action Plan

Map of Air Pollution, 80th Percentile and Above for Air Toxic Release, Ozone, and Asthma by Tracts

SOURCE: SSG

I:\20231104\G\Fig32 - Map of air pollution.ai (1/26/2024)

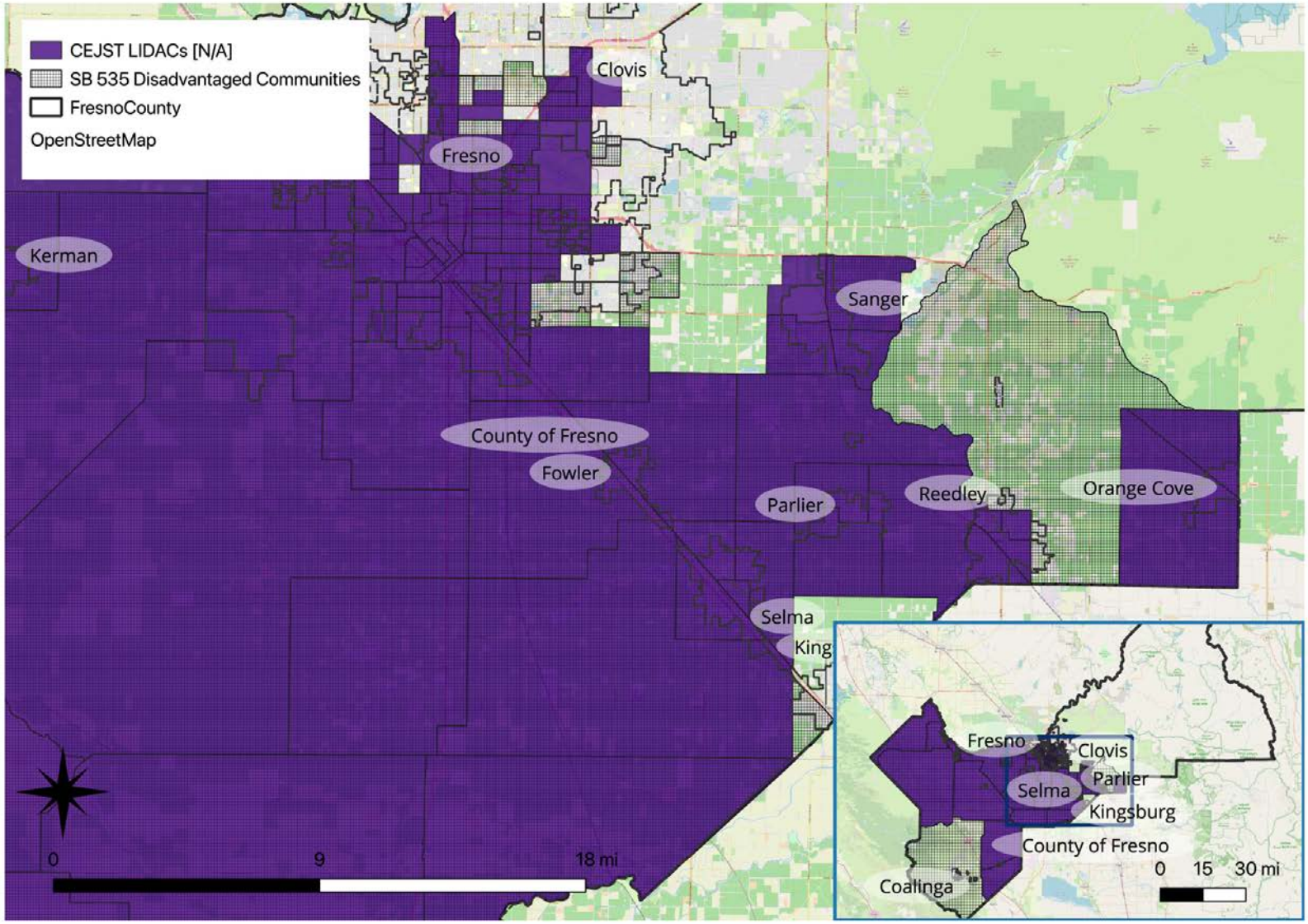


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FIGURE 33

Fresno COG Priority Climate Action Plan

Map of Incorporated Communities in Central and Eastern Fresno County in Relation to CEJST LIDACs and SB535 Census Tracts

SOURCE: SSG

I:\20231104\G\Fig33 - Map of inc communities CEJST LIDACs and SB535 census tracts.ai (1/26/2024)

As compared to the US, Fresno ranks over the 90th percentile for most of the EPA indexes: $PM_{2.5}$, ozone, respiratory HI, toxic release to air, superfund proximity and hazardous waste proximity. It is also notable that four other indexes are found in between 85th and 90th percentile: diesel particulate matter, air toxic cancer risk, risk management plan (RMP) facility proximity and wastewater discharge. Life expectancy is lower in the communities located downtown and there is a higher cancer prevalence in the north of Fresno, between Fig Garden and Pinedale neighborhoods. People with disabilities are also reside at an increased rate in downtown.

A large risk with climate change is increased wildfires for the communities at the edge of the city, where forested areas are more present. Flood risk is also important across Fresno, along SR-168 to downtown, and to the south around Calwa (see Figure 27).

Clovis. The city of Clovis is a suburb located right next to the city of Fresno (pop: 124,523). Per capita income is $36,386 and 23 percent are low income. Half of the population (48 percent) are white people while 33 percent are of Hispanic origins. Languages used at home are mostly English (76 percent) and Spanish (13 percent). Clovis disadvantaged communities are located at the south and west part of the city and are considered disadvantaged because they are low-income areas in high areas of ozone concentration, which is one of the highest in the country, like most of Fresno County. Some tracts in the southwest of Clovis, adjacent to the City of Fresno, are also impacted by the same factors mentioned for Fresno. Also, the North-East part of Clovis is subject to flood risk along SR-168, while the North and East part are subject to wildfires.

Fowler. Fowler is a small city approximately 11 miles south of the city of Fresno and bisected by SR-99. The city's approximately 7,168 residents are 67 percent Hispanic, 20 percent White, 9 percent Asian, and 3 percent two or more races. The per capita income is $23,685, 9 percent of residents are unemployed, and 14 percent are living with disabilities. One in four residents lacks a high school diploma and 40 percent are low income. Just over half of households speak a language other than English at home, with 46 percent speaking Spanish, 1 percent speaking Chinese (including both Mandarin and Cantonese) and 5 percent speaking other European or Asian languages. Fowler is in the top 10 percent of communities nationally for high levels of particulate matter, ozone, air toxics releases, and RMP facility proximity. The community also experiences very high levels of diesel particulate matter, toxic releases to air, Superfund site proximity, hazardous waste site proximity, and wastewater discharge. The community has low levels of flood and wildfire risk compared to other areas of the state.

Parlier. Parlier is a small city in rural Fresno County with a population of approximately 14,402 . Ninety-seven percent of residents are people of color and the population is predominantly (96percent) Hispanic. A majority (81 percent) of residents speak Spanish at home. The per capita income is $17,010, and 67 percent of residents are low income. Half of residents have not completed high school and 12 percent live with a disability. Parlier is in the top 1 percent of census tracts nationally for levels of particulate matter, ozone, and RMP facility proximity, and is in the top 10 percent for air toxics releases, Superfund proximity, and wastewater discharge. Other major issues include diesel particulate matter, traffic proximity, lead paint, and proximity to hazardous waste facilities.

Kingsburg. Kingsburg is a small community approximately 21 miles from the City of Fresno on the banks of the Kings River. Of the city's 12,865 people, 57 percent are people of color and 39 percent are low income. The per capita income is $32,827. Twelve percent of the population lives with disabilities. One in four residents speaks a language other than English at home, with 16 percent speaking Spanish. Kingsburg

ranks in the 90th percentile nationally for high levels of particulate matter and ozone. Additional major issues facing the community include high levels of diesel particulates, air toxics releases, traffic proximity, Superfund proximity, RMP facility proximity, hazardous waste proximity, and wastewater discharge. The City contains one hazardous waste treatment or disposal facility, two water dischargers, one brownfield, three toxic release inventory facilities, and two facilities reporting to the EPA, in addition to nine schools, one hospital, and 13 places of worship.

Sanger. Sanger has a population of 26,241 and has a mean per capita income of $20,569. Nearly half of the population (43 percent) is low income and 29 percent has less than a high school education. Most people have Hispanic origins (82 percent) and 16 percent are white. While 50 percent of people speak Spanish at home, 14 percent have limited English skills. Sanger is considered disadvantaged under Justice40 (CEJST) and EPA inflation reduction act (IRA) criteria. The main indices are ozone concentration, $PM_{2.5}$, proximity to a facility that use hazardous substances, and wastewater discharge.

Selma. Selma is a small city south of Fresno and Fowler with a population of approximately 24,300. Eighty-nine percent of residents are people of color, with 85 percent being Hispanic, 1 percent Asian and 1 percent two or more races. More than half (55 percent) of residents speak a language other than English at home (predominantly Spanish). Per capita income is $20,849, 27 percent of the population has less than a high school diploma (which puts it in 89th percentile of census tracts nationally for this indicator), and 13 percent live with disabilities. The community is in the top 10 percent or higher of communities nationally for high levels of particulate matter, ozone, diesel particulate matter, air toxics releases, traffic proximity, Superfund proximity, RMP facility proximity, hazardous waste facilities, and wastewater discharge. Selma contains 1 Superfund site, 2 hazardous waste facilities, two water dischargers, and a two toxic release inventory sites and one air pollution site reporting to the EPA. Selma is considered disadvantaged under Justice40 (CEJST) and EPA IRA criteria.

Reedley. Reedley is a small city southeast of the City of Fresno with a population of approximately 25,381. Eighty-four percent of the population are people of color; 77 percent of people are Hispanic, three percent are Asian, two percent are black, two percent are two or more races, and 16 percent are white. The per capita income is $21,538 and 51 percent of residents are low income. More than a third of the population does not have a high school diploma, 15 percent are unemployed, and 10 percent live with disabilities. Twelve percent of households have limited English proficiency and 59 percent of all households speak Spanish at home. The community is in the top 10 percent or higher of communities nationally for high levels of particulate matter, ozone, air toxics releases, and RMP facility proximity. Other issues facing the community include high levels of diesel particulates, traffic proximity, Superfund proximity, hazardous waste facility proximity, and wastewater discharge. The community contains one hazardous waste facility, four water discharge facilities, and one toxic release facility monitored by the EPA, in addition to eight schools, three hospitals, and 24 places of worship. The community is in the top 20 percent of communities within the State for wildfire risk. Reedley is considered disadvantaged under Justice40 (CEJST) and EPA IRA criteria.

Orange Cove. Orange Cove is a small community southwest of the City of Fresno on the border with Tulare County. The population of Orange Cove is approximately 9,463 people, 96 percent are Hispanic, 19 percent are two or more races, 1.5 percent are Black, and 2 percent are White. More than half of the population lacks a high school diploma, per capita income is $12,306, and the majority of the population is low income. Eighty-four percent of households speak Spanish at home, and 34 percent of households are limited English proficiency. Orange Cove is in the top 1 percent of census tracts nationally for levels of

ozone, and in the top 10 percent for levels of particulate matter, air toxics release, lead paint exposure, underground storage tanks, and asthma rates. It is also at very high risk of wildfires. Orange Cove is considered disadvantaged under Justice40 (CEJST) and EPA IRA criteria.

Communities in Southern and Western Fresno County

The southwestern portion of the County includes Coalinga and Huron, while the western portion of the County includes Kerman, Firebaugh, and Mendota. Figure 34 includes a map of incorporated communities in southwestern Fresno County in relation to LIDACs and SB535 census tracts. Figure 35 shows a map of incorporated communities in Western Fresno County in relation to LIDACs and SB535 census tracts. The southern and western parts of Fresno County are characterized by its agricultural economy, Hispanic communities, low levels of English-speaking households, low high school education, relative poverty, high ozone concentration, and high $PM_{2.5}$ concentrations.

Coalinga. Coalinga is a small city in southwestern Fresno County with a population of approximately 10,500 people in 3,412 households. Per capita income is $24,607 and 39 percent are low income. More than two-thirds of the population (68 percent) are people of color, with 63 percent of Hispanic origin and 3 percent of American Indian origin. Ten percent of households are limited English speaking, and languages used at home are mostly English (64 percent) and Spanish (34 percent), as well as Tagalog (1 percent). Coalinga is in the 86th percentile nationally for levels of ozone exposure and in the 82nd and 87th percentiles respectively for proximity to RMP facilities and hazardous waste sites, with two hazardous waste facilities and one water discharge facility within the city. The community is in the 95th percentile for wildfire risk. The community contains a Justice40 CEJST disadvantaged community as well as an EPA IRA disadvantaged community.

Huron. Huron is a small city in southwestern Fresno County with a population of approximately 6,000 people in 1,645 households. Almost the entire population (95 percent) is Hispanic, with 2 percent American Indian, 2 percent White, and 1 percent Black making up the remainder. Per capita income is $14,320 per year, 70 percent of residents are low income, and approximately 19 percent of the population is unemployed. Fewer than one third of residents completed high school. Ninety-two percent of households speak a language other than English at home (90 percent Spanish, 2 percent Arabic), and nearly half of households speak only Limited English. The community is in the top 10 percent of census tracts in the state and across the country for ozone levels and underground storage tank leaks and in the top 20 percent of communities experiencing high levels of particulate matter. Asthma is of particular concern as the community is in the top 2 percent statewide, exacerbated by 21 percent of households lacking health insurance. The community contains a Justice40 CEJST disadvantaged community as well as an EPA IRA disadvantaged community.

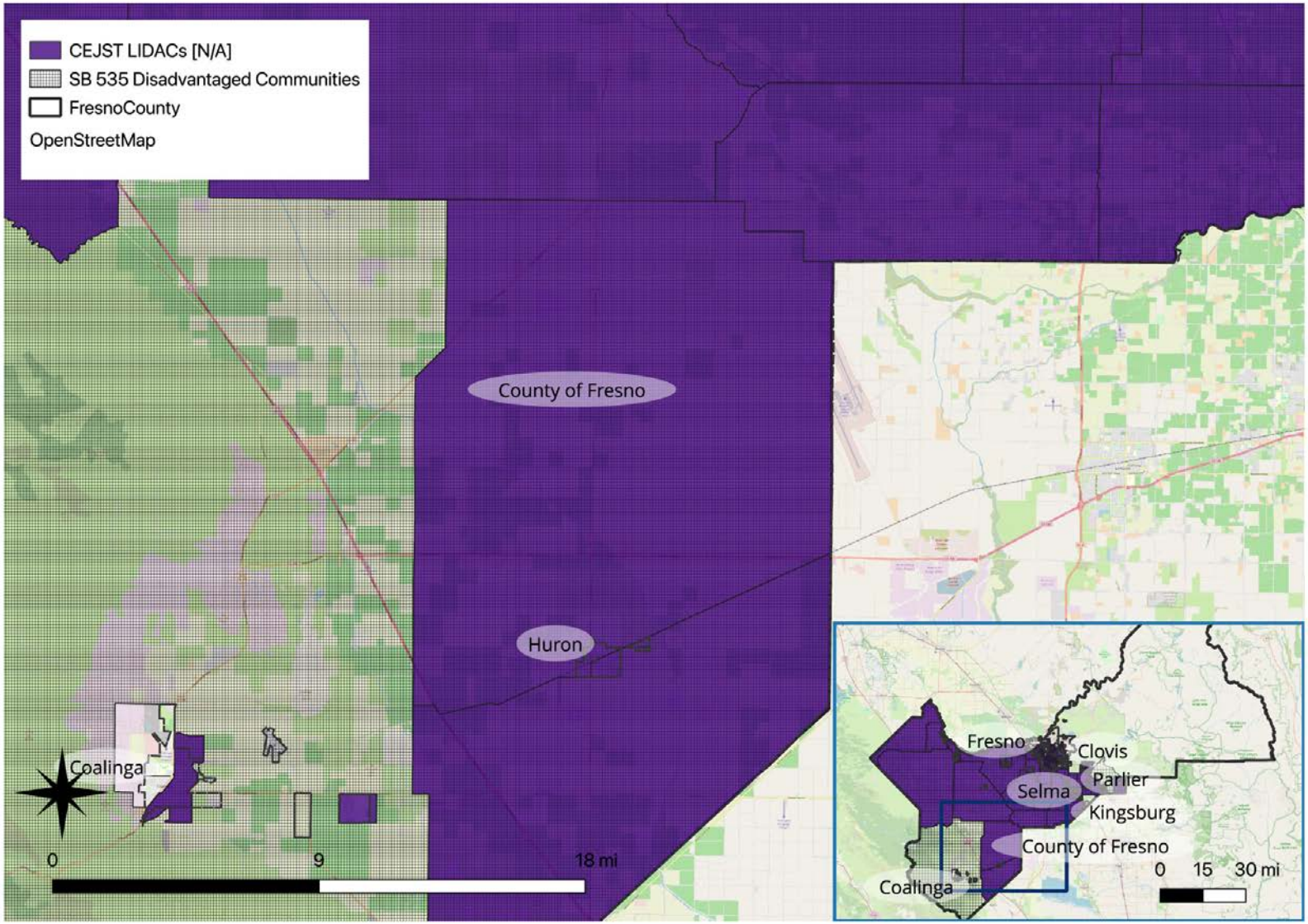

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FIGURE 34

Fresno COG Priority Climate Action Plan

Map of Incorporated Communities in Southwestern Fresno County in Relation to LIDACs and SB535 Census Tracts

SOURCE: SSG

I:\20231104\G\Fig34 - Map of inc communities SW Fresno CountyLIDACs and SB535 census tracts.ai (1/26/2024)

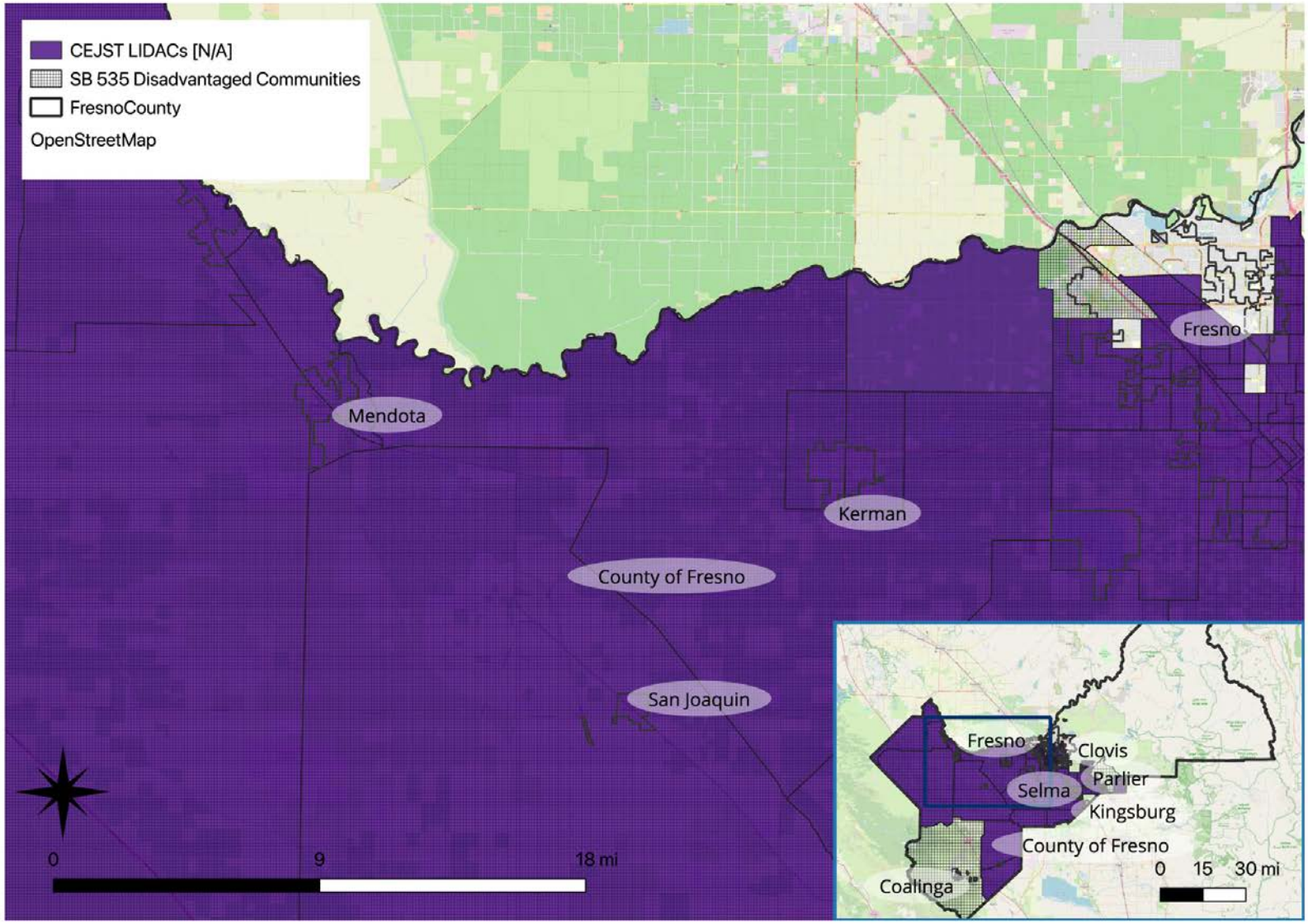

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FIGURE 35

Fresno COG Priority Climate Action Plan

Map of Incorporated Communities in Western Fresno County in Relation to LIDACs and SB535 Census Tracts

SOURCE: SSG

I:\20231104\G\Fig35 - Map of inc communities in W Fresno County to LIDACs and SB535 census tracts.ai (1/26/2024)

Kerman. Kerman is a rural community west of the City of Fresno with a population of 13,314 people. Eighty-seven percent of the population is Hispanic, 9 percent are white, and the remaining population is Asian (1 percent), other race (1 percent) and two or more races (1 percent). Nearly two thirds of households speak a language other than English at home, with the majority (59 percent) speaking Spanish. Per capita income is $19,887, more than half of households are low income and 11 percent of the working aged population is unemployed. Kerman is in the top 10 percent of census tracts in the country for high levels of particulate matter and ozone as well as proximity to hazardous waste facilities and wastewater discharge. The community contains hazardous waste facilities and waste dischargers, and has a facility on the EPA's toxic release inventory; the community also experiences high levels of toxic releases to the air compared to the rest of the state. Residents experience barriers to healthy food access, broadband internet, and transportation options.

Firebaugh. Firebaugh is a small rural community on the San Joaquin River, on the border between Fresno County and Madera County. Of the 5,930 people living in Firebaugh, 65 percent are low income, 20 percent are unemployed, and 55 percent lack a high school diploma. Ninety-five percent of people are Hispanic, 78 percent of households speak Spanish at home, and 52 percent of households have limited English proficiency. The per capita income is $17,929. The community is in the top 10 percent nationwide for air toxics release, ozone, and asthma rates as well as proximity to RMP facilities and underground storage tanks. Other issues facing Firebaugh residents include high levels of traffic and particulate matter. Whereas there are only six schools and one hospital, Firebaugh contains 26 brownfields. Flood risk is a major issue (the community is in the top 6 percent of census tracts in the state and in the top 4 percent nationally) as is wildfire (top 25 percent in the state and top 11 percent nationally).

Mendota. Mendota is a rural community of 10,394 people where 99 percent of the population is of Hispanic origins, 80 percent speak Spanish at home and up to 43 percent of the population has limited English skills.

Per capita income is as low as $11,612, 72 percent of people are considered to have low income (33 percent under poverty line) and 62 percent have less than a high school education. Agriculture is the main industry, employing nearly 60 percent of the city's working force. Almost as many people (44 percent) use carsharing/vanpooling to go to work as those who drive alone (48 percent), compared to an average of 80 percent driving alone in most of the cities in Fresno County.

The main pollution issues that make Mendota a disadvantaged community are high levels of ozone, toxic releases in the air, and traffic proximity. Mendota residents tend to lack access to broadband internet, health insurance, and healthy food access. In terms of climate risks, part of Mendota is located in the 100-year floodplain, including the airport, and the center of town is also at risk of wildfire. The 100 years flood risk map around the San Joaquin River and Fresno Slaugh show that Mendota and the towns around (Firebaugh, Tranquility, San Joaquin, etc.) are at risk of flooding.

San Joaquin San Joaquin is a small rural community approximately 20 miles southwest of the City of Fresno. Of the community's approximately 3,750 residents, 98 percent are Hispanic, 1 percent are Black, and 1 percent are two or more races. Eighty-one percent of residents speak Spanish at home and 43 percent have limited English proficiency. Per capita income is $15,779, 17 percent of residents are unemployed, and more than half lack a high school diploma. The town has slightly more men (47 percent) than women (53 percent) and is in the top 10 percent of census tracts within the State for number of children under 5 who are living there.

The major issues facing San Joaquin residents include high levels of ozone, toxic releases to the air, RMP facility proximity, and underground storage tank and wastewater discharge. Other issues include high levels of particulate matter, diesel particulates, lead paint exposure, and superfund site proximity. The community is in the top 10 percent in the state for rates of asthma.

Unincorporated Areas

In addition to the cities and towns within Fresno County, the unincorporated areas of Fresno County are home to 158,846 people, or roughly a tenth of the county's total population. They live in small agricultural towns with low population densities. Nonetheless, they share the same socioeconomics and environmental burdens as residents of the county's incorporated cities.

In the areas of the County to the west of SR-99, major issues include high levels (in the top 20 percent of census tracts) of pesticide exposure, contaminated drinking water, and asthma. People living in these areas tend to have lower levels of educational attainment and unemployment, and higher levels of poverty and linguistic isolation compared to the country as a whole. Traffic and diesel exposure are much less than in incorporated areas.

In unincorporated areas to the east of SR-99, major issues include high levels (in the top 20 percent of census tracts) of ozone and $PM_{2.5}$ exposure and contaminated drinking water. Other issues include relatively high levels of pesticide exposure (85th percentile) and high asthma rates (60th percentile).

LIDAC BENEFIT ANALYSIS

This section qualitatively analyzes the potential benefits to the communities within Fresno County resulting from the PCAP priority measures.

Measure Transportation 1- EV Strategy

> *Develop a robust public electric vehicle charging network in Fresno County, including in the disadvantaged communities, to increase electric vehicle adoption in Fresno County. (Implementing measures could include a neighborhood electric vehicle (NEV) network)*

This measure will develop a robust public electric vehicle charging network in Fresno County, with an emphasis on low income and disadvantaged communities. Since this action will be implemented across the county, it would directly target LIDACs and reduce their transportation barriers, their household costs for transportation, and diesel consumption. The impacts of this measure will intersect with and complement the electrification of municipal and transit fleets (Measure Transportation 2: Municipal Fleet Conversion). LIDACs in Fresno could be positively impacted by access to cleaner transportation options as they are areas that face both poverty burdens and transportation barriers.

In addition to reducing household transportation costs, the measure could also improve accessibility to primary services, businesses, jobs, and green spaces.

Co-benefits from the implementation of this measure will result from the adoption of low-emissions vehicles reducing air pollution and community exposure to $PM_{2.5}$ and noise reduction, especially in census tracts with a high traffic proximity index, because fewer combustion engine vehicles will be on the streets.

Census tracts facing these burdens are concentrated in the cities of Fresno and Selma as shown in Figure 36.

Measure Transportation 2 – Municipal Fleet Conversion

> *Continue to convert the municipal fleet (including transit) into zero emission vehicles and provide a sustainable and reliable support system for such zero-emission fleet which could include, but not limited to maintenance, charging facilities, training of personnel, etc. (Implementing measures could include fleet electrification, installation of electric vehicle charging infrastructure, etc.)*

This measure involves electrification of vehicle fleets by municipalities and other governmental entities within Fresno County in addition to supportive infrastructure such as charging facilities and personnel training. While the measure's impacts may be relatively small, it may directly benefit residents in the municipalities where the fleets are used.

Direct benefits to communities include local reductions in $PM_{2.5}$ resulting from combustion in vehicles, and reduced exposure to diesel particulate emissions, ozone, and noise. The introduction of electric vehicles also leads to capacity building in terms of training drivers and municipal employees on electric vehicle use and maintenance. Infrastructure construction for EV charging stations will create new or improved local jobs and build capacity through training; new jobs will be created in EV manufacturing and other technology sectors. Reduced maintenance for EVs may reduce the requirement for internal combustion engine mechanics.

Figure 37 below provides an overview of the census tracts that have been identified as potentially benefiting from the mitigating actions of the PCAP.

Indirect benefits to LIDACs would include:

- Reducing air pollution from mobile sources moving southeast to northwest due to wind flows and particulate matter getting trapped within the Central Valley, thereby reducing $PM_{2.5}$ exposure.

- Capacity building such as training sessions to target communities that face low median incomes, improving their access to opportunities and reducing their unemployment rates. LIDAC communities census tract IDs facing socio-economic burdens are adjacent to the census tracts where the mitigation measure will be implemented and therefore stand to benefit.

Measure Transportation 3 – Bike and Pedestrian Network

> *Build a well-connected bike and pedestrian system that provides alternative transportation options including micro-mobility such as shared e-bike and e-scooter. (Implementing measures could include pedestrian network improvements, bike parking, expanded bikeway networks, electric bikeshare program, scooter share program, dedicate land for bike trails)*

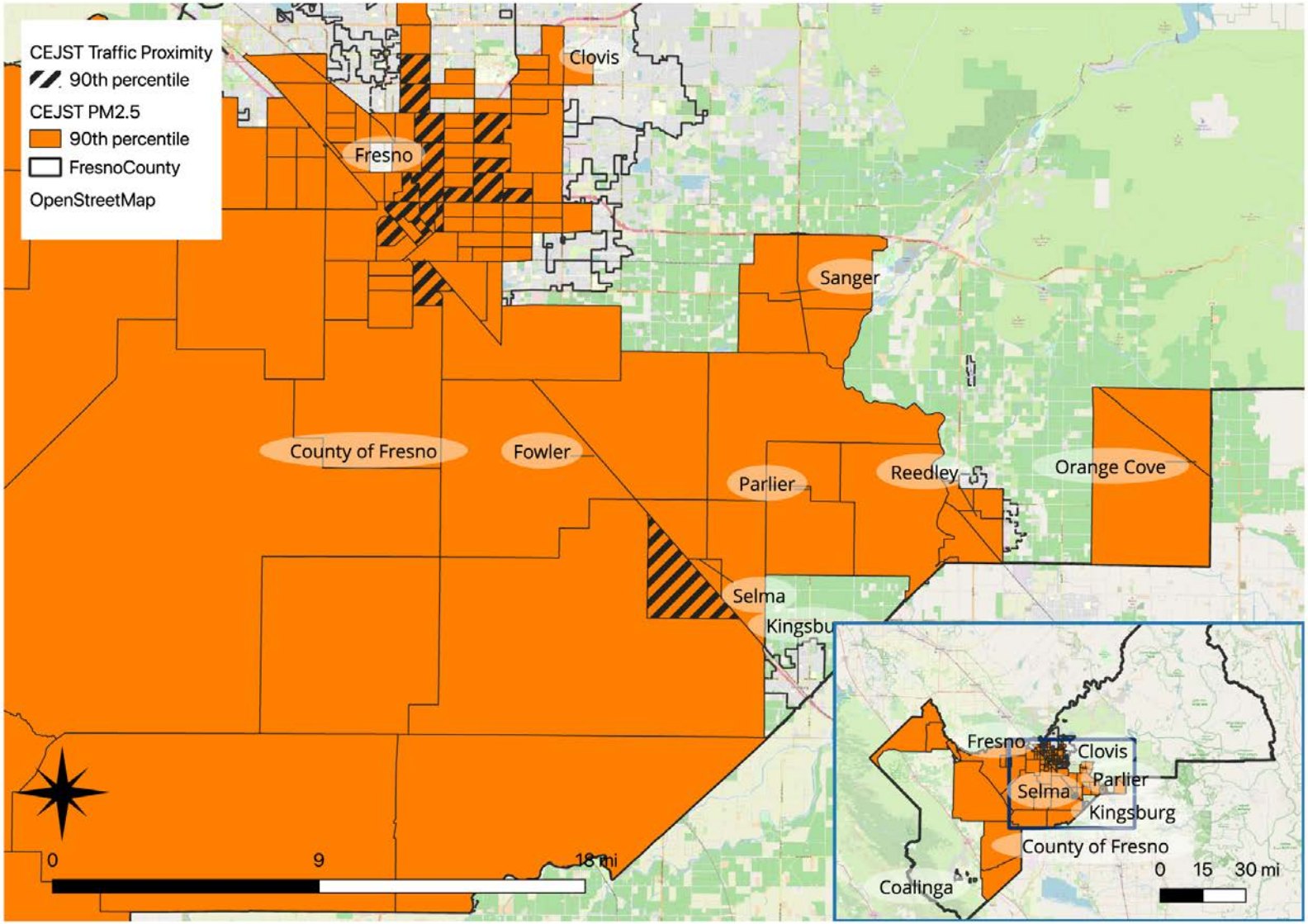

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FIGURE 36

Fresno COG Priority Climate Action Plan

Map of LIDACs with 90th Percentile for PM2.5 Exposure and Traffic Proximity in Fresno County

SOURCE: SSG

I:\20231104\G\Fig36 - Map of LIDACs90th percentile for PM2.5 Exp and Traff Prox.ai (1/26/2024)

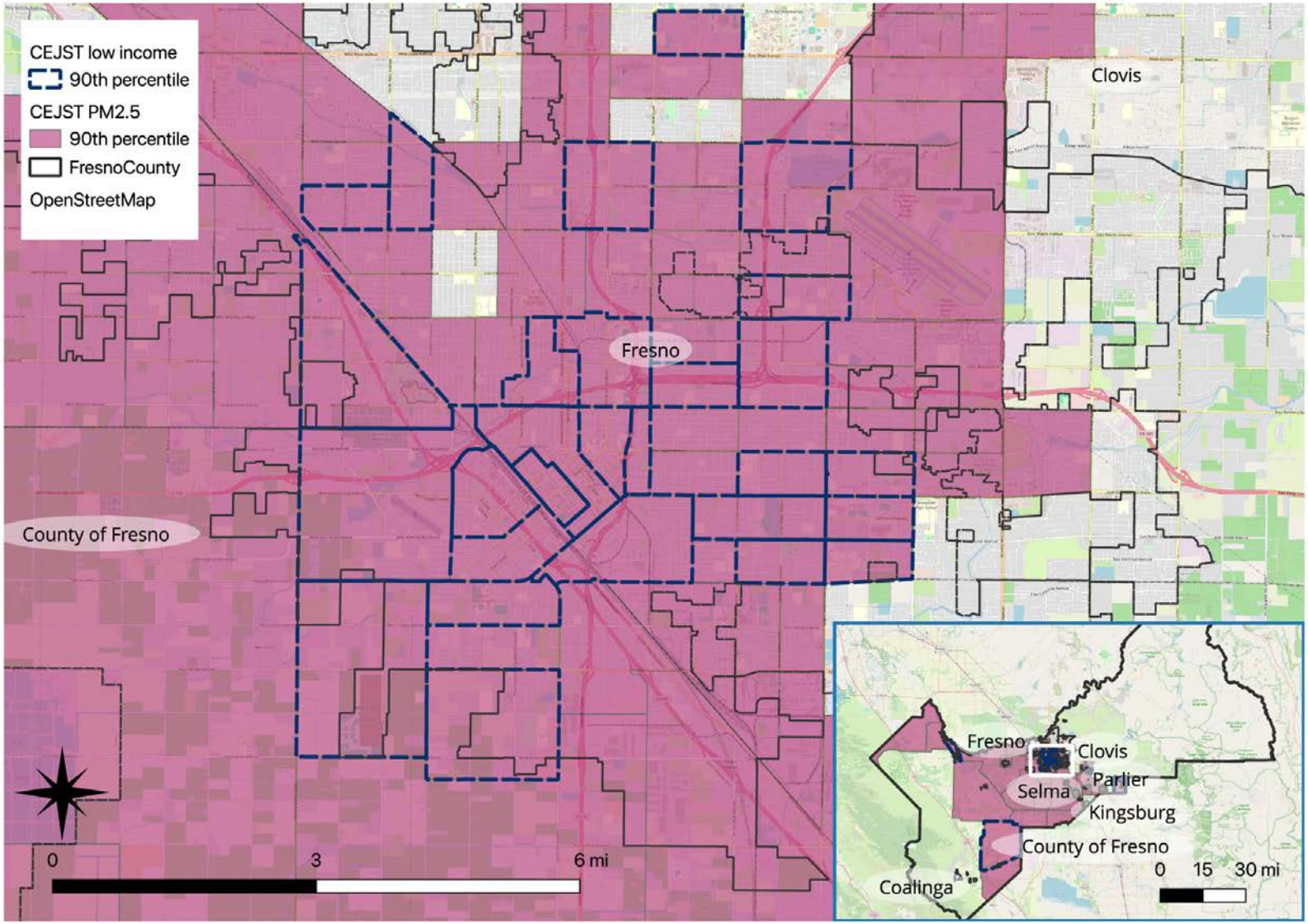

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FIGURE 37

Fresno COG Priority Climate Action Plan

Map of LIDACs with 90th Percentile for PM2.5 Exposure and Low-Income Households, Within or Near Incorporated Areas Within Fresno County

SOURCE: SSG

I:\20231104\G\Fig37 - Map of LIDACs with 90th percentile for PM2.5 Exp low-income households Fresno County.ai (1/26/2024)

This measure will promote a higher share of active transportation modes (e.g., biking and walking) and support reductions in car trips that will reduce $PM_{2.5}$ emissions, reduce traffic congestion in high concentration areas, and improve health and life expectancy (e.g., lowered air pollution, increase in physical activity). LIDAC census tracts where people, experience disproportionately high air pollution and lower life expectancy burdens, could benefit from this action are shown in Figure 38.

Accessible and safe active transportation options can positively impact households financially by reducing the costs of transportation (e.g., the cost of public transit, and/or private vehicle fuel and maintenance costs). They also improve access to primary services, businesses, jobs, and education. In addition, there are the co-benefits related to social interactions with more people walking and cycling. Conversely, a co-harm of active transportation is a potential loss of jobs, especially those related to vehicle sales and maintenance, gasoline and diesel fuel sales, and private vehicle sharing and taxis.

Measure Transportation 4 – Public Transportation

> *Enhance the public transportation system by maintaining/expanding the existing transit system and implementing other transit strategies such as micro transit.*

This measure will support the implementation of transit projects identified by three transit agencies in Fresno County. The transit improvement projects include new services, expanded services, amenity improvements, facility upgrades and maintenance, capital/operational improvements, etc. Implementing these projects will incentivize more people to use public transportation to travel throughout the region and reduce VMT.

Direct benefits from this measure include reduced $PM_{2.5}$, diesel, ozone, and noise (traffic proximity) levels in the region due to fewer private vehicles on the road. The expansion of transit routes will reduce barriers to travel for low-income households that depend on public transit and improve connectivity to the rest of the city including access to services, education, jobs, parks, and green spaces. In addition, improvements in access to public transit may reduce poverty burdens due to reduced transportation costs. Increasing service times, routes, and transit vehicle trip frequencies will result in the creation of new jobs (e.g., transit drivers and maintenance operators). Figure 39 shows the LIDAC census tracts possibly impacted by the expansion and improvement of transit services in Fresno County.

Measure Transportation 5 – Carpool/Vanpool and Other Shared Mobility Options

> *Provide incentives for carpool and vanpool, and other shared mobility options. (Implementation measures could include commute trip reduction programs, end-of trip facilities, car-sharing program, employer-sponsored vanpool/shuttle, priced workplace parking, and/or employee parking "cash-out" programs.)*

This measure will promote continued use of carpool and vanpool and other shared mobility options within the County, based on the forecasts by CalVans and other vanpool services. This will benefit both rural agricultural workers as well as employees at large urban employers within the county's urbanized areas. The measure will reduce the number of people driving alone to work as well as improve transportation access for low-income households.

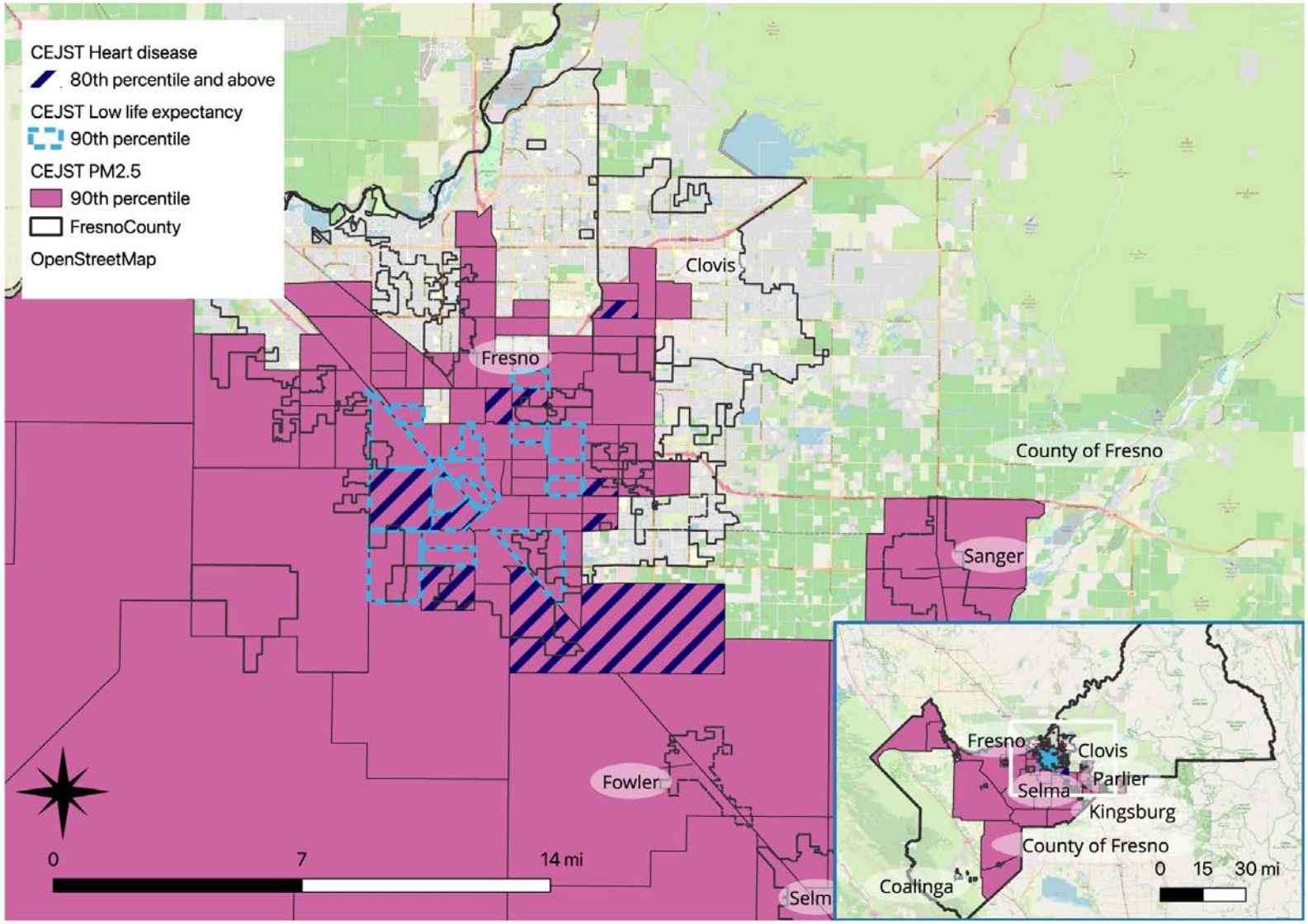

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FIGURE 38

Fresno COG Priority Climate Action Plan

LIDAC Census Tract IDs with High Percentiles for Coronary Heart Disease Low Life Expectancy, and PM2.5 Exposure in Fresno County

SOURCE: SSG

I:\20231104\G\Fig38 - LIDAC Census Tract IDs with High Percentiles for Coronary Heart Disease.ai (1/26/2024)

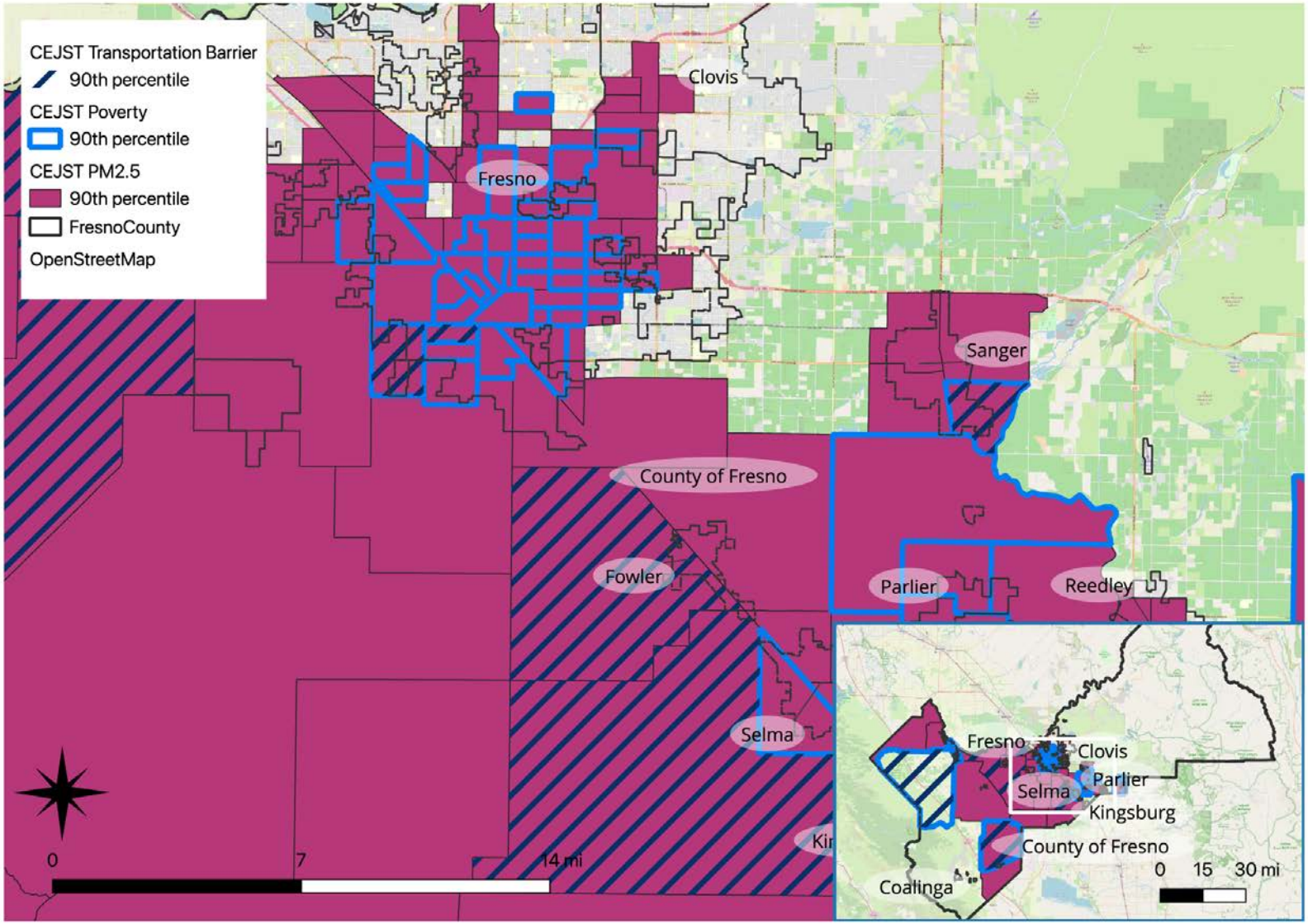

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FIGURE 39

Fresno COG Priority Climate Action Plan

LIDAC Census Tracts Possibly Impacted by the Expansion and Improvement of Transit Services in Fresno County

SOURCE: SSG

I:\20231104\G\Fig39 - LIDAC census tracts impacted by the expansion.ai (1/26/2024)

Direct and indirect benefits of implementing this measure include a reduction in vehicle trips that will reduce $PM_{2.5}$ emissions and ozone, a reduction in traffic congestion and noise in high concentration areas, and improvements in health (e.g., reduced asthma rates) and life expectancy from lowered air pollution.

Measure Building Energy 1 – Incentive Programs for the Purchase of Certified Energy-Efficient Appliances

> *This measure includes heating and cooling equipment, lighting, and building products to replace inefficient products. (Implementation could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting.)*

This program will provide LIDACs with direct benefits including reduced energy costs from energy efficiency measures and from the installation of electric heat pumps and energy-efficient lighting. The switch from fossil fuel appliances to electric ones would also provide benefits due to improvement in indoor air quality and local air quality.

The direct and indirect benefits for LIDACs would include:

- Reductions in energy burden due to lower energy bills resulting from energy efficiency measures and the switch to renewable energy;
- Increased resilience to cope with wildfire smoke and temperature extremes by incorporating and/or upgrading heating, ventilation and air conditioning systems (HVAC), and upgrading home building envelope (insulation); and
- Improved public health resulting from improvements in indoor air quality and reductions in co-pollutants (ozone, $PM_{2.5}$ and hazardous air pollutants) such as reductions in new asthma cases and reductions in hospital admissions and emergency department visits.

Indirect benefits such as the creation of new jobs to implement and undertake retrofits and install equipment, and complementary community capacity building through training sessions. Targeting training efforts to communities with low median income, below poverty level, and high unemployment rates would contribute to reducing these socio-economic burdens. Figure 40 shows a map of census tracts with disproportionately high for energy burden and illustrates LIDACs which could benefit from this measure.

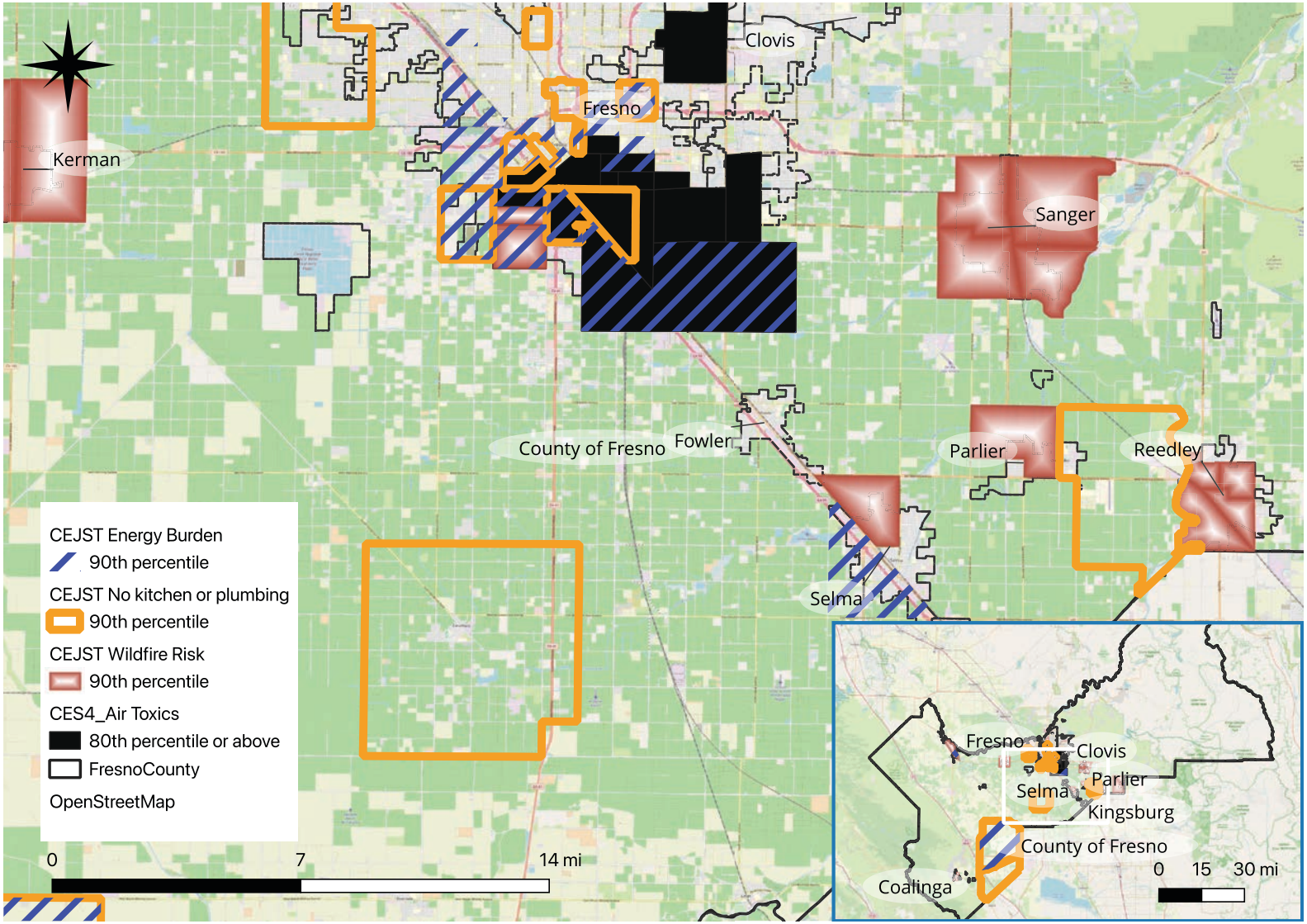

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FIGURE 40

Fresno COG Priority Climate Action Plan

Census Tracts with Disproportionately High for Energy Burden, Wildfire Risk, Lack of Indoor Kitchen or Plumbing, and Asthma

SOURCE: SSG

I:\20231104\G\Fig40 - CEJST Energy Burden.ai (1/26/2024)

Measure Building Energy 2 – Incorporate Water Efficiency Measures

Incorporate water efficiency measures that reduce water heating energy consumption (Install alternative types of water heaters in place of gas storage tank heater in residences.)

Similar to Measure Building Energy 1, this measure involves electrifying water heating equipment to improve energy efficiency primarily in low income and disadvantaged communities within Fresno County. This program will provide LIDACs with direct benefits including reduced energy costs related to water heating. The switch from fossil fuel appliances to electric ones would also provide benefits due to the improvement in indoor air quality and local air quality.

The direct and indirect benefits for LIDACs would include:

- Reductions in energy burden due to lower energy bills resulting from energy efficiency measures and the switch to renewable energy;
- Improved public health resulting from reductions in co-pollutants (ozone, $PM_{2.5}$ and hazardous air pollutants) such as reductions in new asthma cases and reductions in hospital admissions and emergency department visits; and
- Indirect benefits include the creation of new jobs to implement and undertake retrofits and install equipment, and complementary community capacity building through training sessions. Targeting training efforts to communities with low median income, below poverty level, and high unemployment rates would contribute to reducing the socio-economic burden in these areas.

Measure Building Energy 3 – Bundle On-Site Renewable Energy Generation

Bundle on-site renewable energy generation with energy efficiency improvements. (Implementation could include establishment of on-site renewable energy systems such as solar power and/or wind power, limitations on non-renewable energy sources.)

This measure would increase the amount of on-site renewable energy generation within Fresno County, including rooftop and ground mount solar as well as small-scale wind power at both homes and businesses.

New renewable energy generation on sites within the County's boundaries would decrease the need for new electricity development within and beyond the county's boundaries and would stimulate the broader deployment of new technologies. Reduced reliance on fossil gas power plants in the region and increased use of renewable energy resources could result in reductions in ozone, $PM_{2.5}$, and other air quality issues.

The direct and indirect benefits for LIDACs would include:

- Decreased energy costs and improved energy security from more resilient energy sources;

- Creation of high-quality jobs and workforce development opportunities in disadvantaged communities with an emphasis on expanding opportunity for workers from disadvantaged populations and under-represented small businesses/contractors; and

- Improved public health resulting from reductions in co-pollutants (ozone, $PM_{2.5}$ and hazardous air pollutants) such as reductions in new asthma cases and reductions in hospital admissions and emergency department visits.

Measure Solid Waste and Wastewater 1 – Programs and Incentives to Reduce or Divert Waste

> *Programs and incentives to reduce or divert waste (including food and/or yard waste) through improved production practices, improved collection services, and increased reuse or recycling rates. (Implementation measures could include organics diversion program, educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs. Local recycling and composting initiatives at the neighborhood level, expansion of local business recycling and composting efforts.)*

This measure would decrease the amount of organic food and yard waste going to landfills and could include educational programs, recycling and composting collection, waste to energy, and circular economy initiatives.

Reducing organic waste going to landfills would decrease the need for new landfills to be opened to serve the County's population, would stimulate the development of new economic opportunities and new technologies, and would reduce emissions from waste vehicles traveling to and from landfill sites. CalRecycle estimates that by 2025, diverting and recycling an additional 20 million tons of organic waste that are currently landfilled will create 11,700 permanent jobs and more than 80 new or expanded compost or anaerobic digestion facilities across the state.[69]

The direct and indirect benefits for LIDACs would include:

- Improved public health resulting from reductions in co-pollutants (ozone, $PM_{2.5}$ and hazardous air pollutants) such as reductions in new asthma cases and reductions in hospital admissions and emergency department visits;

- Creation of jobs, workforce development, and new economic development and investment opportunities in low carbon/circular economy industries, with an emphasis on expanding opportunity for workers from disadvantaged populations and under-represented small businesses/contractors;

- Indirect benefits could include a reduction in the use of pesticides on local farms due to an increase in availability of compost and fertilizers created using local organic waste.

[69] https://laborcenter.berkeley.edu/wp-content/uploads/2020/09/Putting-California-on-the-High-Road.pdf

Measure Solid Waste and Wastewater 2 – Wastewater Treatment Facility Efficiency

Installation of renewable energy and energy efficiency measures at wastewater treatment facilities.

Similar to Measure Building Energy 3, this measure would reduce energy use and increase the amount of on-site renewable energy generation at wastewater treatment facilities within Fresno County and reduce the amount of non-renewable energy used to treat wastewater.

New renewable energy generation on sites within the county's boundaries would decrease the need for new electricity development within and beyond the county's boundaries and would stimulate the broader deployment of new technologies. Reduced reliance on fossil gas power plants in the region and increased use of renewable energy resources could result in reductions in ozone, $PM_{2.5}$, and other air quality issues. The facility would benefit from reduced costs for energy and create new opportunities for increasing financial performance for municipalities and special utility districts.

The direct and indirect benefits for LIDACs would include:

- Decreased energy costs and improved energy security from more resilient energy sources;
- Creation of high-quality jobs and workforce development opportunities in disadvantaged communities with an emphasis on expanding opportunity for workers from disadvantaged populations and under-represented small businesses/contractors; and
- Improved public health resulting from reductions in co-pollutants (ozone, $PM_{2.5}$ and hazardous air pollutants) such as reductions in new asthma cases and reductions in hospital admissions and emergency department visits.

Measure Agriculture 1 – Manure Management

Programs and incentives to reduce GHG emissions associated with manure management from livestock and poultry operations. (Implementation measures could include additional funding or outreach support for existing programs available through the California Department of Food and Agriculture (CDFA) and United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), educational programs, or direct funding opportunities for projects proposed as part of PCAP development.)

This measure will support agricultural producers within Fresno County in reducing GHG emissions associated with manure produced by livestock and poultry operations. The measure will reduce local emissions from one of the most potent GHG, methane, as well as reduce other co-pollutants such as nitrous oxide emissions.

In addition to emission reduction benefits, this measure will provide economic and environmental benefits to farmers as well as agricultural workers throughout rural areas of the County. Promoting and implementing alternative manure management practices would create new jobs, workforce development, and economic development opportunities due to the deployment of new technologies and the ability to create and sell high quality compost to crop producers in the region. This could indirectly

benefit residents by promoting organic agriculture and reducing pesticide use and exposure. Alternative manure management practices also reduce contamination to local water sources and reduce the risk of contaminated water supply.

LIDACs that would most benefit from this measure include those with high levels of pesticide exposure, high unemployment, low incomes, and high levels of underground storage tank leaks and contaminated water sources.

Measure Agriculture 2 – Agricultural Burning

> *Programs and incentives to reduce GHG emissions associated with agricultural burning, including orchards and vineyards, through chipping and use for soil incorporation, on-site land application on agricultural land, off-site beneficial re-use, or other approved methods. (Implementation measures could include additional funding or outreach support for existing programs available through the San Joaquin Valley Air Pollution Control District (SJVAPCD) and USDA-NRCS, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)*

This measure aims to reduce agricultural burning in the San Joaquin Valley and in Fresno County by promoting and incentivizing cleaner alternative practices such as soil incorporation, on-site land application, and off-site beneficial re-use of agricultural residue. Reducing agricultural burning will improve local air quality by reducing $PM_{2.5}$ emissions and the ability for ozone to form and linger in the valley. This will directly benefit residents across the county by reducing asthma rates and incidences of hospitalization for people living with respiratory diseases, and indirectly improve life expectancy, particularly among the most vulnerable populations such as people under the age of 5, elderly people, and those people with chronic respiratory problems. Figure 41 shows a map of CJEST areas and exposure to $PM_{2.5}$ pollution.

Measure Agriculture 3 – Agricultural Equipment Reduction

> *Programs and incentives to reduce GHG emissions associated with the operation of various agricultural equipment, such as tractors, harvesting equipment, utility terrain vehicles, dairy feed mixing electrification and agricultural pumps through zero-emission replacement as well as the installation of charging or re-fueling stations to support deployment. (Implementation measures could include additional funding or outreach support for existing programs available through USDA-NRCS and the SJVAPCD, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)*

This measure will reduce GHG emissions and particulate matter from off-road vehicles used in agricultural production. Replacing farm vehicles such as tractors and harvesting equipment with zero-emission vehicles will reduce $PM_{2.5}$ and diesel emissions from agricultural operations across the County and indirectly reduce rates of asthma, cardiovascular disease and improve life expectancy. Indirect benefits to LIDACs would include reducing air pollution from mobile sources moving southeast to northwest due to wind flows and particulate matter getting trapped within the Central Valley, thereby reducing $PM_{2.5}$ exposure. Conversely, a co-harm that could result is a potential loss of jobs, especially those related to farm equipment and vehicle sales and maintenance, and gasoline and diesel fuel sales.

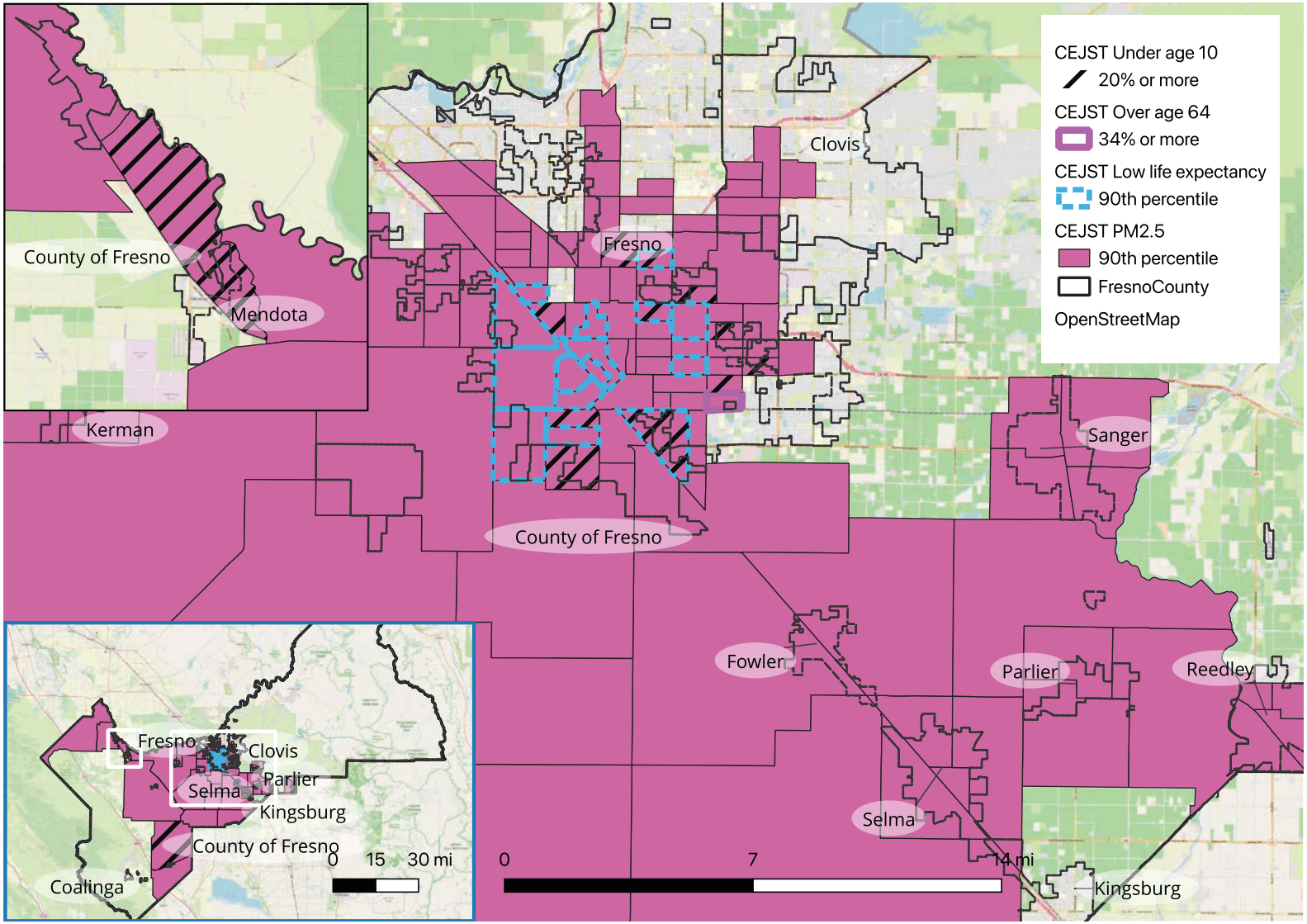

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FIGURE 41

Fresno COG Priority Climate Action Plan

PM2.5 Exposure by CJEST Area

SOURCE: SSG

I:\20231104\G\Fig41 - PM2.5 Exposure by CJEST Area.ai (1/26/2024)

NEXT STEPS

The PCAP was the first region-wide climate action planning effort in Fresno County. It provided a valuable educational experience to the communities in the region as well as to the municipality staff on climate action planning. However, due to the constrained timeline (5 months) for the PCAP development, the process for many components of the PCAP was shortened or simplified. In addition, to facilitate the interest of the implementation grant application, considerable efforts were directed to make sure such funding interests were accommodated in the PCAP process.

The Comprehensive Climate Action Plan (CCAP) will build on the PCAP process, address the additional requirements for the CCAP, and expand/enhance the PCAP components in the CCAP. Fresno COG is expected to start the CCAP process in late spring/early summer of 2024. It is anticipated that the CCAP process will take approximately 18 months to complete. The structure of the process will be similar with the PCAP's three-pronged approach, which includes a Stakeholder Steering Committee, a public engagement process, and a Fresno COG decision making committee process. The Stakeholder Steering Committee, which was discussed in the Public Outreach chapter, will largely remain the same except including a few more sector representatives and community groups to expand on the outreach efforts. Additional analysis and discussions are anticipated in the areas of GHG emission forecasting and emission reduction target setting, identification of GHG reduction measures for the Fresno County region, and more specific LIDAC analysis based on the findings.

The public outreach for the CCAP will build upon the previous efforts and relationships established during the PCAP process. The dedicated community engagement hub built during the PCAP process will continue to be used to convey updated information, timeline, and key input opportunities. Public and stakeholder engagement will be conducted through a combination of in-person and virtual meetings; booths held at community or organization planned events as available; social media posts and advertising targeting the Fresno County region in multiple languages and targeting low-income, disadvantaged communities; media interviews; communications through member agencies and stakeholder outreach partnerships who will assist Fresno COG in reaching low-income and disadvantaged community members using recommended means of communication and engagement to reach the public in low-income and disadvantaged communities throughout the region. A consultant team with climate action planning and public outreach expertise will be hired to assist Fresno COG with the CCAP development efforts.

Specifically, here are some of the examples of the anticipated expanded efforts for the CCAP that will build on the PCAP but will differ from the PCAP.

- **GHG Inventory:** For the GHG emissions inventory, the inventory will continue to be refined to increase accuracy and comprehensiveness. Additional sources/sinks will be evaluated, including natural lands and urban forestry. Transportation emissions will continue to be refined regarding quantifying emissions from aviation and rail activity. Additionally, for sectors where a "scaled" emissions inventory was developed, such as agriculture, the emissions inventory will continue to be refined using Fresno County-specific activity information and emission factors, as available, to build an emissions inventory that captures emission sources that may not be included in the State inventory (such as specific crop types).

- **GHG Model:** The CCAP will include a model of the Fresno County region to systematically evaluate actions and policies and their GHG impacts, financial impacts and implementation mechanisms, while being supported by an extensive engagement process. Using the model, the CCAP will identify mechanisms to specifically target LIDAC neighborhoods through policies, incentives, and investments related to GHG reductions for key measures.

- **Low Income and Disadvantaged Communities:** The PCAP used CEJST to identify the low income and disadvantaged communities in Fresno County. The EPA developed EJScreen tool with a finer geographic scale of census block groups than CEJST, which is based on census track level data. As recommended by the EPA, the EJScreen tool will be applied to the CCAP process when identifying the low income and disadvantaged communities in the Fresno County for further analysis.

APPENDIX A:

STAKEHOLDER STEERING COMMITTEE PRESENTATIONS AND MEETING NOTES

FRESNO COG PRIORITY CLIMATE ACTION PLAN
STAKEHOLDER STEERING COMMITTEE MEETING AGENDA

Date: Wednesday, October 25th 2023

Time: 2 PM- 3:30 PM

Join Zoom Meeting:
https://us06web.zoom.us/j/81050422449?pwd=6bDY5aaIemjwQPydBeJptK2XZhNZZH.1

Meeting ID: 810 5042 2449
Passcode: 319815
Telephone #: +1 669 444 9171

1. **Welcome & Introduction – Simran Jhutti, Fresno COG**
2. **Project Overview – Simran Jhutti, Fresno COG**
   - **Timeline**
   - **Deliverable**
   - **Role of Stakeholder Steering Committee (SSG)**
3. **Public Outreach – Brenda Thomas, Fresno COG**
4. **U.S. EPA Implementation Grants – Kristine Cai, LSA**
5. **Other Items**
6. **Ajournment**

Fresno Council of Governments
Priority Climate Action Plan (PCAP)

Stakeholder Steering Committee Meeting

October 25, 2023

Fresno Council of Governments

LSA

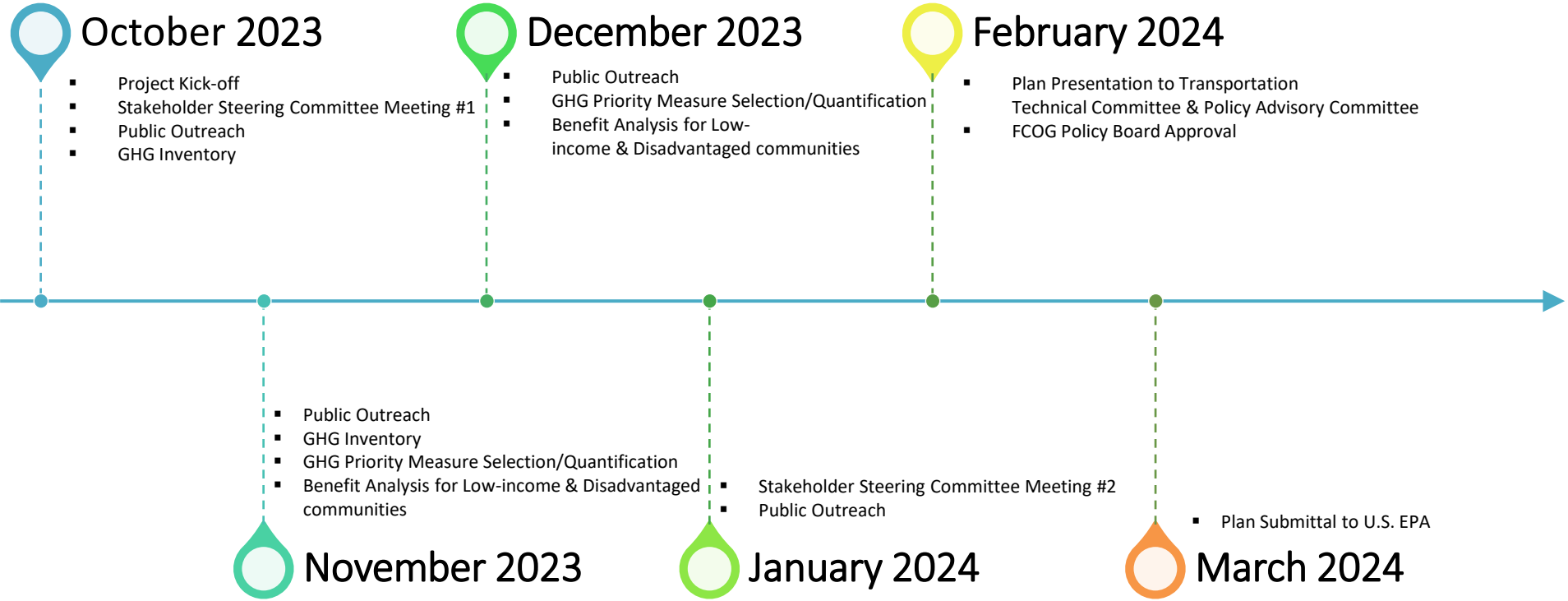
Priority Climate Action Plan (PCAP)

Project Overview

Priority Climate Action Plan

- It is the first element of the Fresno County Climate Action Plan
- Consisting of Greenhouse Gas (GHG) inventory from various sectors, identifying priority sectors, and a low-income disadvantaged communities benefit analysis
- The plan is due March 1, 2024
- This plan is essential in accessing the $4.6 billion of implementation grants

Timeline


October 2023
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Stakeholder Steering Committee Meeting #2
Public Outreach
February 2024
Plan Presentation to Transportation Technical Committee & Policy Advisory Committee
FCOG Policy Board Approval
March 2024
Plan Submittal to U.S. EPA

Priority Climate Action Plan (PCAP)
Deliverables

What is GHG Inventory?

- A greenhouse gas inventory is a historical accounting of the amount of greenhouse gases emitted to, or removed from, the atmosphere over a specific historical period of time (e.g., one year) from all various activities across the economy
- GHGs are emitted and sequestered from a variety of categories, and the magnitude of emissions and/or sinks for each category varies by region, depending on economic and other circumstances

GHG Inventory

The Greenhouse Gas inventory will consist of GHG emission from the following sectors:

- Transportation
- Waste Management
- Agriculture
- Residential/Commercial Building
- Electricity Generation
- Industry (manufacturing, refineries, etc.)

What is Measure?

- “Measure” is intended to reflect the full breadth of the CPRG authorizing language directing planning grants to eligible entities for plans that include “programs, policies, measures, and projects that will achieve or facilitate the reduction of greenhouse gas air pollution.” (EPA)

GHG Priority Measure Selections/Quantification

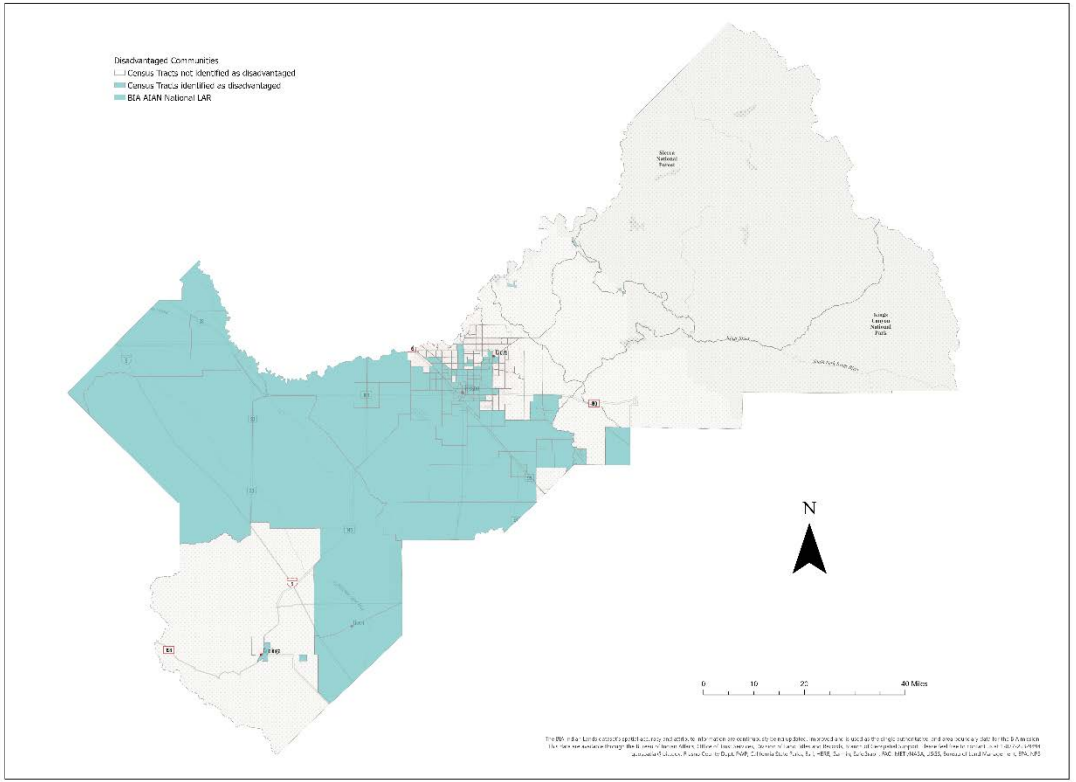
The PCAP requires measure-level GHG quantification for priority measures in one or more sectors (i.e., industry, electricity generation, transportation, commercial and residential buildings, agriculture, and waste management)

Low-Income and Disadvantaged Communities (LIDAC)

Fresno COG utilized the Climate and Economic Justice Screening Tool (CEJST) with EPA's Environmental Justice Screening and Mapping Tool (EJScreen) to identify LIDAC in Fresno County

https://arcg.is/1X4PKn

Disadvantaged Communities in Fresno County - CEJST 1.0



Benefit Analysis for LIDAC

- The PCAP will include a preliminary analysis of benefits for LIDACs anticipated to result from the GHG reduction measure(s)

Deliverables of the Priority Climate Action Plan

1. Inventory of GHG emission sectors
2. GHG Priority Measure Selections/Quantification
3. Preliminary analysis of benefits for LIDACs anticipated to result from the GHG reduction measure(s)

Stakeholder Steering Committee

Membership

- 16 local governments
- Disadvantaged Communities Representative
- Transit
- The Air District
- Industry Representatives

Role

- Provide input and guidance to approve recommendations
- Considering, sharing insight from external stakeholders and connecting staff with tribes, community groups, additional industry stakeholders, and the general public
- Attending meetings coinciding with project milestones

Stakeholder Steering Committee

- Fresno County- Mohammad Khorsand
- Clovis- Ryan Burnett
- Coalinga- Larry Miller
- Firebaugh- Ben Gallegos
- Fowler- Dawn Marple
- Fresno- Sophia Pagoulatos
- Huron- John Kunkel
- Kerman- Jesus Orozco
- Kingsburg- Christina Windover
- Mendota- Jeff O'Neal
- Orange Cove- Chris Howard
- Parlier- Javier Andrade
- Reedley- Rodney Horton
- San Joaquin- Eric VonBerg
- Sanger- Derek Sylvester
- Selma- Lupe Macias
- San Joaquin Valley Air Pollution Control District – Kevin Wing
- Central Valley Community Foundation (Disadvantaged Communities) – Angela Castellanos
- Fresno County Rural Transit Agency (Transit) - Moses Stites
- (Agriculture Industry)
- Building Industry Association (Commercial/Residential Building)- Mike Prandini

Priority Climate Action Plan (PCAP) Public Outreach

Fresno COG's Online Community Engagement Hub

publicinput.com/fresnoCPRG
-or-
publicinput.com/fresnoPCAP

Climate Pollution Reduction Grants - PCAP/CCAP

Fresno COG received a $1 million planning grant from the EPA's Climate Protection Reduction Grants (CPRG) program to conduct a comprehensive climate action planning process and prepare a Regional Climate Action Plan for the Fresno County region. The Regional Climate Action Plan will cover the 15 incorporated cities in Fresno County and the unincorporated Fresno County areas. The Priority Climate Action Plan (PCAP) is the first component of the Regional Climate Action Plan which includes a greenhouse gas (GHG) inventory, identification and quantification of priority GHG emissions reduction measures, a benefit analysis for low-income and disadvantaged communities, and identification of implementation authorities. Outreach to stakeholders and the general public, especially the low-income and disadvantaged communities, is also a required component of the PCAP.

A Comprehensive Climate Action Plan (CCAP) and Status Report will be developed after the PCAP, which will contain more detailed and robust technical analysis, a Greenhouse Gas (GHG) forecast, and targets for GHG reduction.

PCAP Planning Timeline:

October 25, 2023 at 2 pm - Stakeholder Steering Committee Meeting #1

Fresno COG will host the first Priority Climate Action Plan (PCAP) Stakeholder Steering Committee meeting at 2 pm on October 25, 2023 via Zoom.

Submit questions or comments regarding the PCAP in one of the following ways:

Email: fresnopcap@publicinput.com

Voicemail: 855.925.2801, enter code 2970 when prompted, then leave your comments.

LSA

Fresno Council of Governments

Fresno COG's Online Community Engagement Hub

PCAP Timeline

When/How to provide input

Background on CPRG

PCAP/CCAP

Opportunities to learn, comment and further engage

Meeting information and related links

CCAP Sign-up form

(email communications)

Who/How to contact at Fresno COG

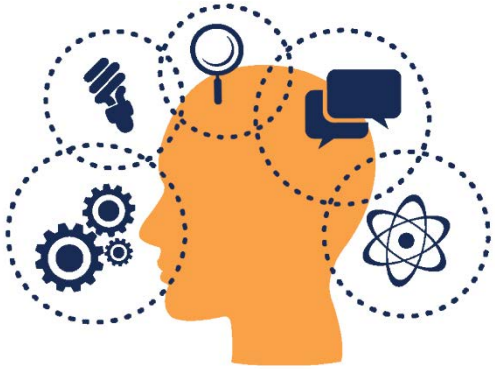
Additional Comment Features

- Dedicated project email address
- Voicemail line to receive comments
- Staff email
- Social media

Submit questions or comments regarding the PCAP in one of the following ways:

Email: fresnopcap@publicinput.com

Voicemail: 855.925.2801, enter code 2970 when prompted, then leave your comments.



Community Input on Priority Measures (mid-Nov. – mid-Dec.)

Online and hard copy surveys

Community partner and stakeholder resources

Social media posts and advertisements (FB/LI/Insta/X)

In-person and virtual meetings

Community Input Results

– ***Who will see it?***
– ***How will it be used?***

All input posted online

Stakeholder Steering Committee at meeting #2 – January 10, 2024

Summaries provide to Fresno COG's standing committees and Policy Board – February 2024

EPA Climate Pollution Reduction Grants (CPRG)

Implementation Grants

Grant Funding

- A total of $4.6 billion nationwide
- Awards: $2-500 million
- No match required

Timeline

- Notice of Intent: Feb. 1, 2024
- Application deadline: April 1, 2024
- Deadline to submit questions to EPA: March 15, 2024

Eligible Applicants

- State agencies
- Municipalities
- The Air District
- Council of Governments
- A Coalition of the eligible entities

Examples of GHG Reduction Measures

The GHG reduction measures must be included in the PCAP to be eligible for funding

- **Transportation Sector**:
  - programs to increase the share of electric vehicles and/or to expand EV charging infrastructure
- **Agricultural Sector**:
  - Incentive programs to fund electric agricultural equipment technologies
- **Building Sector**:
  - Programs and policies to promote electrification of government-owned, commercial and residential building

The Application

Technical, comprehensive, detailed, resource demanding, requires collaborative efforts

- GHG Reduction Quantification
- Cost Effectiveness
- Assumptions & Methodology
- Environmental Results : GHG and Co-pollutants
- Low-income and Disadvantage Communities Benefit Analysis
- Programmatic Capability and Past Performance
- Detailed Budget Plan
- All partners must sign Memorandum of Agreement (MOA)

Questions to Ask

- Individual applications or applications by a coalition of entities (one or multiple applications?)
- Who is the lead?
- What measures/programs/projects to submit for funding?
- How much to ask for?
- What does it take to put the application together?
- Any outside assistance needed?

Recommended Approach

- Coordinated efforts
- Determine needs early on
- Pool resources
- Take action ASAP

EPA Implementation Grant link:

https://www.epa.gov/inflation-reduction-act/cprg-implementation-grants

Questions?

Fresno COG project manager:

Simran Jhutti

Jhutti@fresnocog.org

Fresno COG Public Information:

Brenda Thomas

bthomas@fresnocog.org

LSA project manager:

Kristine Cai

Kristine.cai@lsa.net

Stakeholder Steering Committee Meeting

October 25, 2023

Attendees:

1. Simran Jhutti
2. Brenda
3. Kristine Cai
4. Ben Gallegos
5. Nicola Steelnack
6. Mohammad Khorsand
7. Larry Miller
8. Nancy Richardson
9. Kevin Wing
10. Gelasio Rodriguez
11. Lupe Macias
12. John Kunkel
13. Denise Flores
14. Jennifer Rodriguez
15. Sophia Torres
16. Mike Prandini
17. Jessica Coria
18. Beth Weinman
19. Angela Castellanos
20. Jeff Long
21. Orie Rubalcava
22. Ryan Trelstad
23. Sophia Pagoulatos
24. Matthew Gillian
25. Jesus Orozco
26. Leslie Martinez
27. Beth Weinman
28. Gracyna Mohabir
29. April Henry
30. Moses Stites
31. Christina Windover
32. Sarah Sharpe
33. Janelle Del Campo
34. Jeff Roberts
35. Todd Sobrado
36. Amy Fischer
37. Chris Howard
38. Drew Wilson

39. Francisca Cid
40. Eric VonBerg
41. Jocelyne Mejia-Talamantes
42. Veronica Martinez
43. Rodney Horton
44. Mariana Alvarenga
45. Christina Windover
46. Mary Gonzalez
47. Geri Yang-Johnson
48. Veronica Martinez
49. Brian Dodds
50. David Lopez
51. Ryan Burnett
52. Radley Reep
53. Todd DeYoung
54. Dawn Marple
55. Sharn Dhah
56. Beth Weinman
57. Laura Gromis
58. Matthew Gillian
59. Sarah Sharpe
60. Marcus Evans
61. Jeremy Murphy

Q&A Session

Mike Prandini – Regarding the application; Does the application require a cost-effective analysis?

Kristine Cai- Yes, for PCAP portion will just be a quantification process.

Kristine Cai – Don't wait till March to start the application process, should start now.

Eric VonBerg – Do you have any ideas on the areas the EPA is looking at for the best chance of winning?

Kristine Cai – They do list criteria they are looking at such as how well you have documented your technical functions and methodology.

Mohammad Khorsand- Is there any indication that the air district is going to compete against the cities and the counties?

Kevin Wing – Working to coordinate to help each other out.

Kristine Cai – Fresno COG has received a 1 million planning grant. PCAP is the first phase of the planning grant. The second portion is the CCAP, third phase is the status report.

The implementation grant is separate from the planning grant and is nationwide competitive 4.6 billion available. The Implementation grant is based on the PCAP.

Mike Prandini – How soon is EPA going to tell you whether it meets the criteria?

Kristine Cai – Plan is due March 1st. The guidelines don't list anything about rejecting applications.

Nicola Steelnack – Is there an overall plan to help incorporate community feedback into the PCAP and into implementation grant and moving forward to let community members know how their input was used?

Brenda Thomas – Anyone who participates and offers a contact will stay in the process, keeping them informed throughout the process moving forward.

Simran Jhutti – It will be integrated in the plan.

Kristine Cai – For PCAP there is a requirement to provide benefit analysis for the priority measure process. As far as the Priority measures selection process, when technical information is available, that information will be taken out to the public and asked for input. Those opinions will be brought back to this committee.

Matthew Gillian – who is representing the disadvantaged communities on the stakeholder committee?

Simran Jhutti - Angela Castellanos, Central Valley Community Foundation

Sarah Sharpe – we have a lot of disadvantage communities and believe there should be more than one representative on the committee.

Leslie Martinez – concerned that there is no direct connection between disadvantage communities.

Angela Castellanos – Working with diverse stakeholders across the region. We engage with a lot of communities.

FRESNO COG PRIORITY CLIMATE ACTION PLAN
STAKEHOLDER STEERING COMMITTEE MEETING AGENDA

Date: Wednesday, January 10th, 2024

Time: 2:00 PM- 3:30 PM

Join Zoom Meeting:
https://us06web.zoom.us/webinar/register/WN_nQHS5CsBTYS1t0exkhd1_g
Webinar ID: 893 2600 0231
Passcode: 378061
Telephone#: +1(669) 444-9171

1. **Project Progress Report [Information] - Simran Jhutti, Fresno COG**
2. **GHG Inventory Review [Information] - Jessica Coria, LSA**
3. **GHG Priority Measure Outreach Report [Information] - Brenda Thomas, Fresno COG**
4. **Recommendation of Priority Measures [Action] - Kristine Cai, LSA & Simran Jhutti, Fresno COG**
5. **Climate Pollution Reduction Grants (CPRG) Applications for Implementation [Information] - Simran Jhutti, Fresno COG**
6. **Other Items**
7. **Adjournment**

City of Clovis
City of Coalinga
City of Firebaugh
City of Fowler
City of Huron
City of Kerman
City of Kingsburg
City of Mendota
City of Orange Cove
City of Parlier
City of Reedley
City of Sanger
City of San Joaquin
City of Selma
County of Fresno

Fresno Council of Governments
Priority Climate Action Plan (PCAP)

Stakeholder Steering Committee Meeting

January 10, 2024

FRESNO Council of Governments

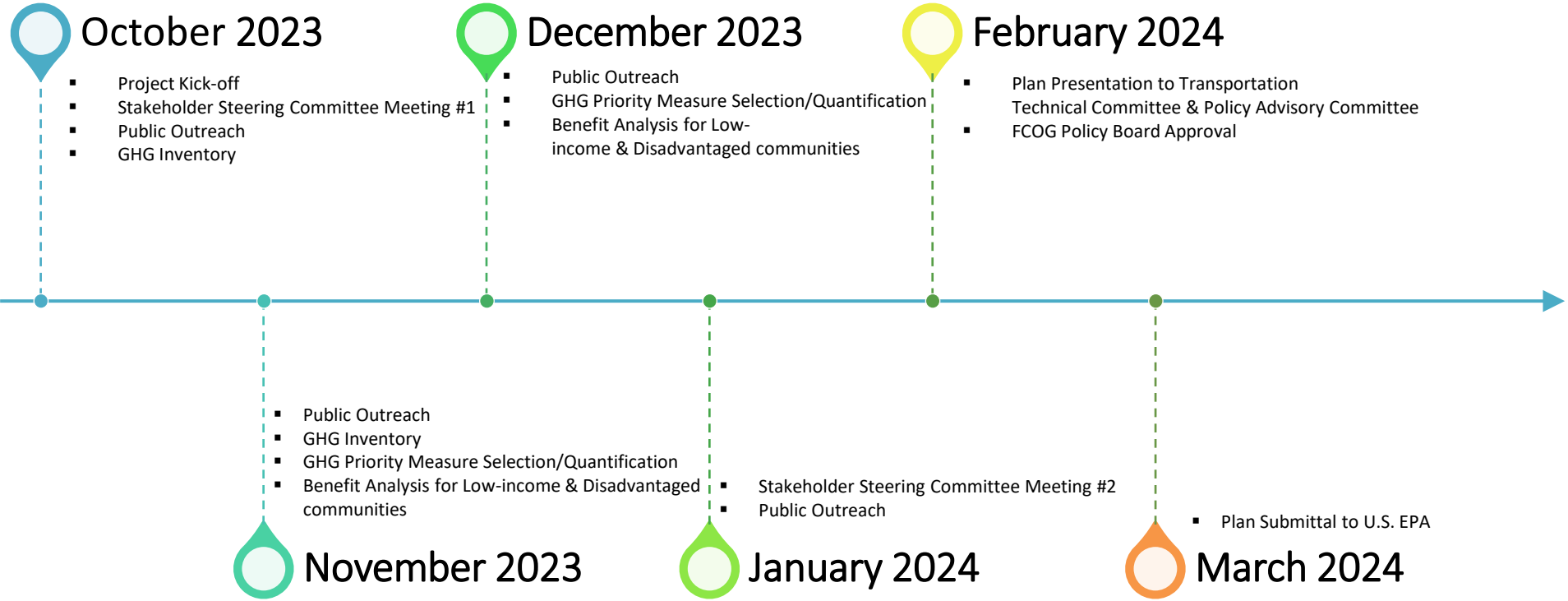
LSA

Project Progress Report

Project Progress

- Identified GHG priority sectors
- Hosted two Virtual Outreach meetings and three events in Lanare, Tombstone, and Cantua Creek
- After today's Stakeholder Steering Committee meeting, priority measures for reduction will be selected and quantified.

Timeline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GHG Emissions Inventory

What is GHG Inventory?

- A greenhouse gas inventory is a historical accounting of the amount of greenhouse gases emitted to, or removed from, the atmosphere over a specific historical period of time (e.g., one year) from all various activities across the economy
- GHGs are emitted and sequestered from a variety of categories, and the magnitude of emissions and/or sinks for each category varies by region, depending on economic and other circumstances

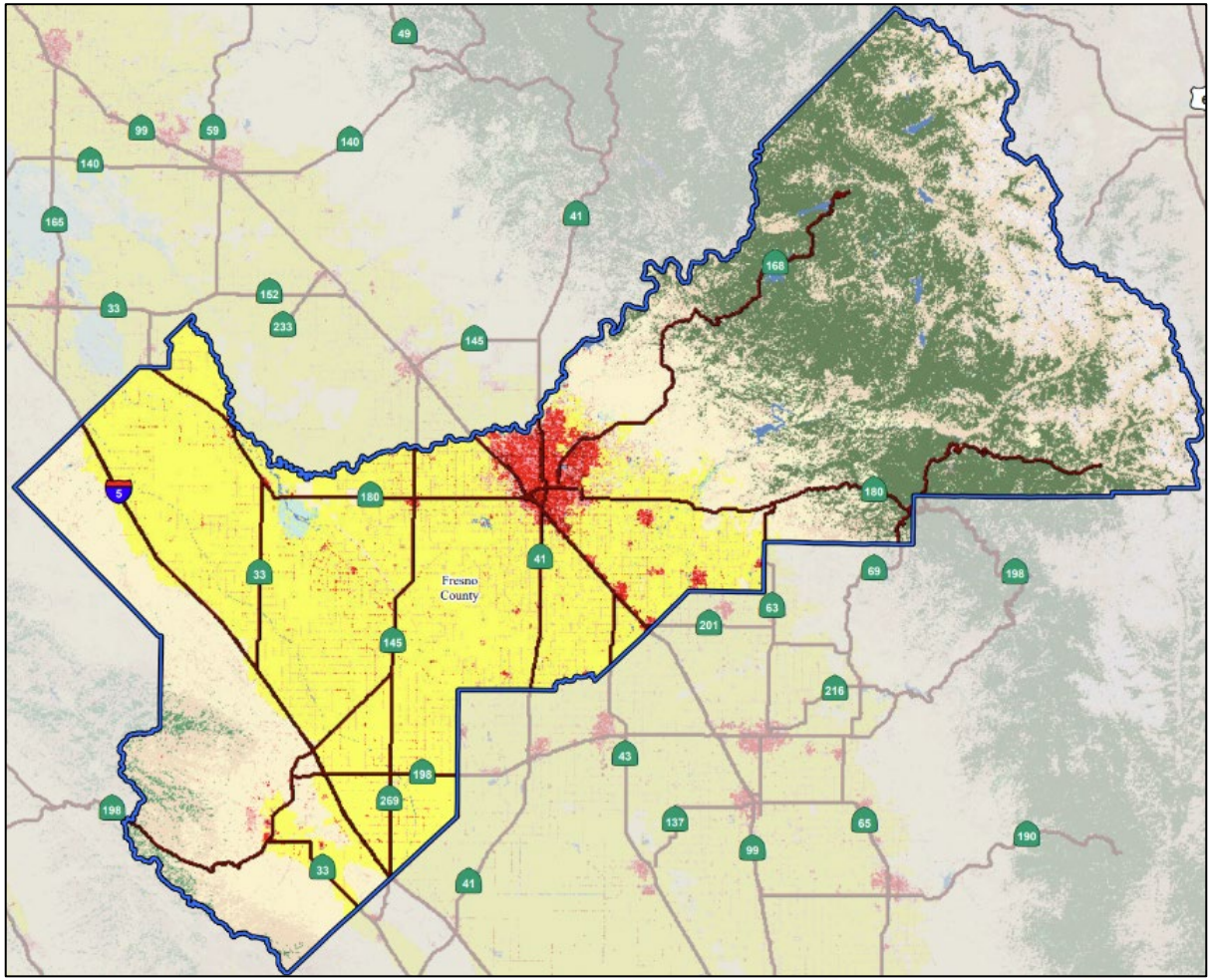
GHG Inventory

The emissions inventory for the PCAP consists of GHG emissions from the following sectors:

- Transportation
- Residential/Commercial Buildings
- Agriculture
- Waste Management (Solid Waste and Wastewater)
- Industry (i.e., manufacturing facilities)
- Other (consumer products, offroad equipment)

Inventory Preparation Methodology

- Draft GHG Emissions Inventory for Fresno County PCAP prepared utilizing three major resources:
  - California GHG Emissions Inventory - data and associated modeling tools (EMFAC, OFFROAD) developed/maintained by CARB
  - US EPA's Community GHG Emissions Inventory Quantification Tool
    - Associated modeling tools utilized to obtain County-level information included State and Local Planning for Energy (SLOPE) and Facility Level Information on GreenHouse gases Tool (FLIGHT)
  - City of Fresno GHG Reduction Plan - GHG Emissions Inventory (LSA, 2021)
- Pollutants analyzed include CO_2, CH_4, N_20 – converted to CO_2e
- 2019 selected as GHG Emissions Inventory base-year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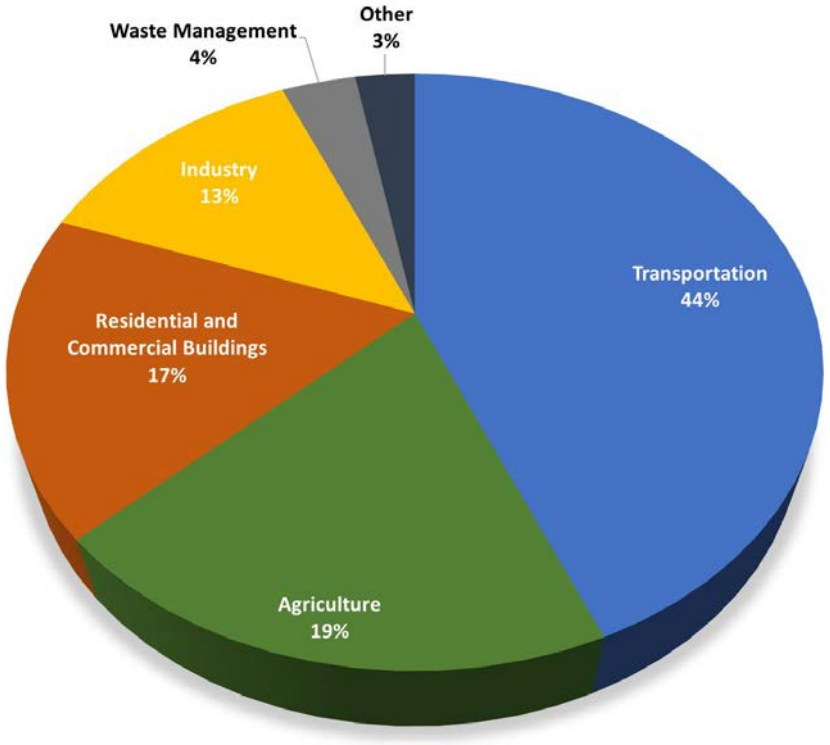
Land Cover - National Land Cover Database
Open Water
Perennial Snow/Ice
Developed Open Space
Developed Low Intensity
Developed Medium Intensity
Developed High Intensity
Barren Land
Deciduous Forest
Evergreen Forest
Mixed Forest
Dwarf Scrub
Shrub/Scrub
Grassland/Herbaceous
Sedge/Herbaceous
Lichens
Moss
Pasture/Hay
Cultivated Crops
Woody Wetlands

Overview of GHG Emissions Inventory Results

Sector	2019 Emissions (MT CO_2e)	% Total Inventory
Transportation	5,770,484.52	44%
Agriculture	2,555,749.14	19%
Residential and Commercial Buildings	2,307,702.56	17%
Industry	1,732,518.24	13%
Waste Management (Solid Waste and Wastewater)	468,556.29	4%
Other	375,459.91	3%
Total:	**13,210,470.67**	**100%**



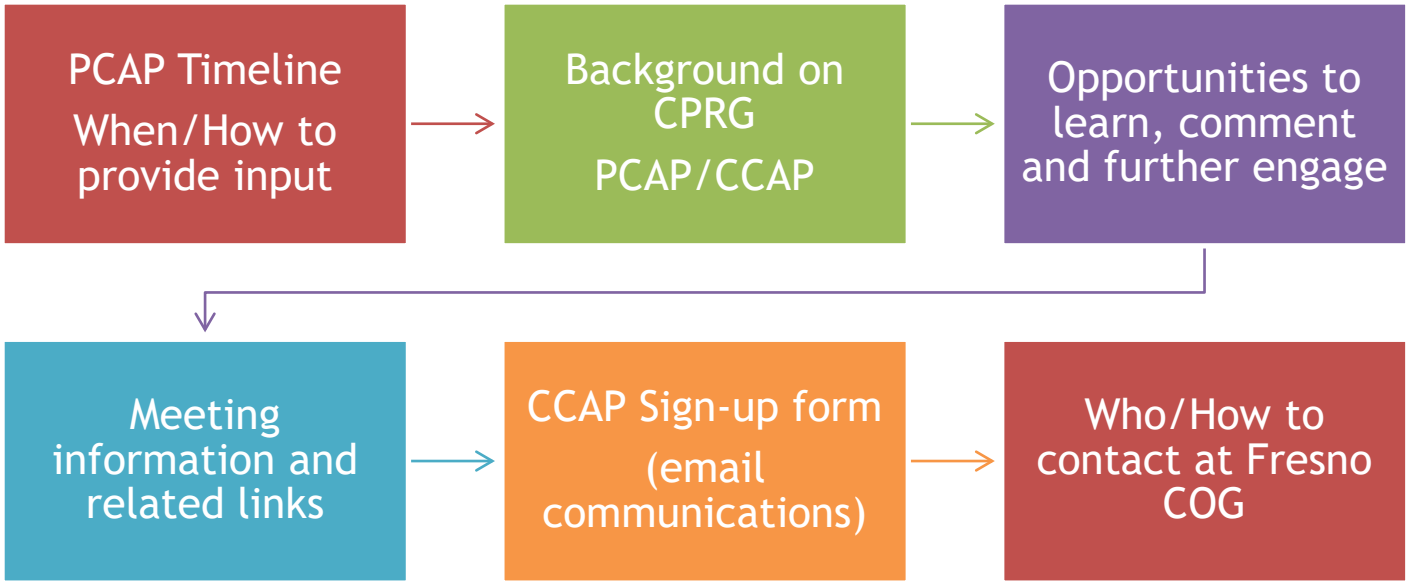
Outreach Report

Priority Climate Action Plan (PCAP) Public Outreach

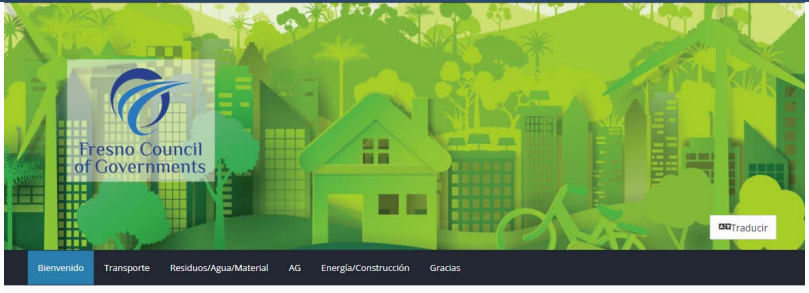
Climate Pollution Reduction Grants - PCAP/CCAP

Fresno COG received $1 million from the EPA's Climate Protection Reduction Grants (CPRG) program to prepare plans to reduce greenhouse gases in the Fresno County region. The program requires development of two plans, a Priority Climate Action Plan (PCAP) and a Comprehensive Climate Action Plan (CCAP).

Fresno COG's Online Community Engagement Hub



Fresno COG's Community Engagement Survey - Spanish/English



Encuesta sobre medidas de reducción de gases de efecto invernadero

Tómese un momento para decirnos cuál de las siguientes medidas de reducción de gases de efecto invernadero es más importante para usted.

~ Consejo de Gobiernos de Fresno

Fresno COG está redactando un plan para la región del condado de Fresno que incluye una lista de medidas de reducción de gases de efecto invernadero (GEI) de alta prioridad que se pueden implementar pronto. Esas medidas definen qué tipos de proyectos calificarán para competir por $4.6 mil millones en fondos de la EPA.

Para que los proyectos califiquen bajo el programa, deben beneficiar a las comunidades de bajos ingresos y desfavorecidas "de primera línea". Un mapa que muestra las comunidades de primera línea del condado de Fresno está disponible en este enlace .

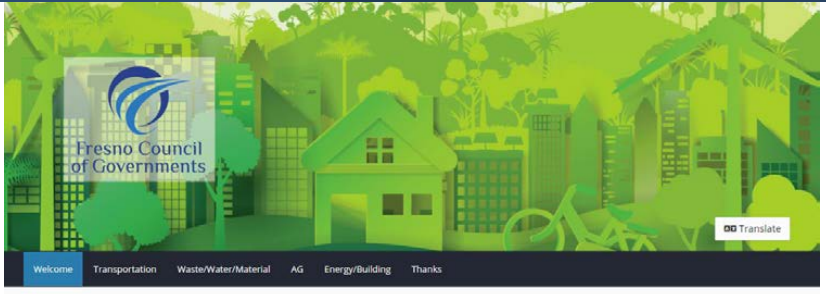
Como residentes de la región del condado de Fresno, necesitamos que nos diga cuáles de las medidas de reducción de gases de efecto invernadero, en las siguientes páginas, son más importantes para usted. Las hemos dividido en listas cortas por "sector".

Primero necesitamos saber el área del condado en la que vive. Las ubicaciones son para nuestro uso exclusivo y **no se compartirán ni venderán con nadie, y no le enviaremos nada por correo a menos que usted lo solicite** . Necesitamos esta información para determinar si hemos cumplido o no con los requisitos de extensión de la EPA para llegar a las comunidades desfavorecidas.

¿Dónde vive?

Sobre el proyecto

Fresno COG recibió fondos del programa de Subvenciones para la Reducción de la Protección del Clima (CPRG) de la EPA para preparar un plan para la región del condado de Fresno que identifica formas en que podríamos reducir los gases de efecto invernadero y luego estudiar cómo afectaría a nuestras poblaciones



Greenhouse Gas Reduction Measures Survey

Please take a moment to tell us which of the following greenhouse gas reducing measures are most important to you.

~ Fresno Council of Governments

(En Español)

Fresno COG is drafting a plan for the Fresno County Region that includes a list of high-priority, greenhouse gas (GHG) reduction measures that can be implemented soon. Those measures define what types of projects will qualify to compete for $4.6 billion in EPA funding.

For projects to qualify under the program, they must benefit low-income, disadvantage "frontline" communities. A map showing Fresno County's Frontline Communities is available at this link.

As residents of the Fresno County region, we need you to tell us which of the greenhouse gas reduction measures on the following pages are most important to you. We have broken them down into short lists by "sector".

First we need to know the area of the County you live in. Locations are for our use only and will **not be shared or sold with anyone, and we will not mail anything to you unless you request it.** We need this information to determine whether or not we have met the EPA's outreach requirements for reaching disadvantaged communities.

Where do you live?

This question is closed to responses.

About The Project

Fresno COG received funding from the EPA's Climate Protection Reduction Grants (CPRG) program to prepare a plan for the Fresno County region that identifies ways we could reduce greenhouse gas, then studying how it would affect our disadvantaged populations. This plan is called the **Priority Climate Action Plan (PCAP)** and it is due on March 1, 2024.

Community Input on Priority Measures (mid-Nov. – mid-Dec.)

Online and hard copy surveys

Community partner and stakeholder meetings and resources

Social media posts and advertisements (FB/LI/Insta/X)

In-person and virtual meetings

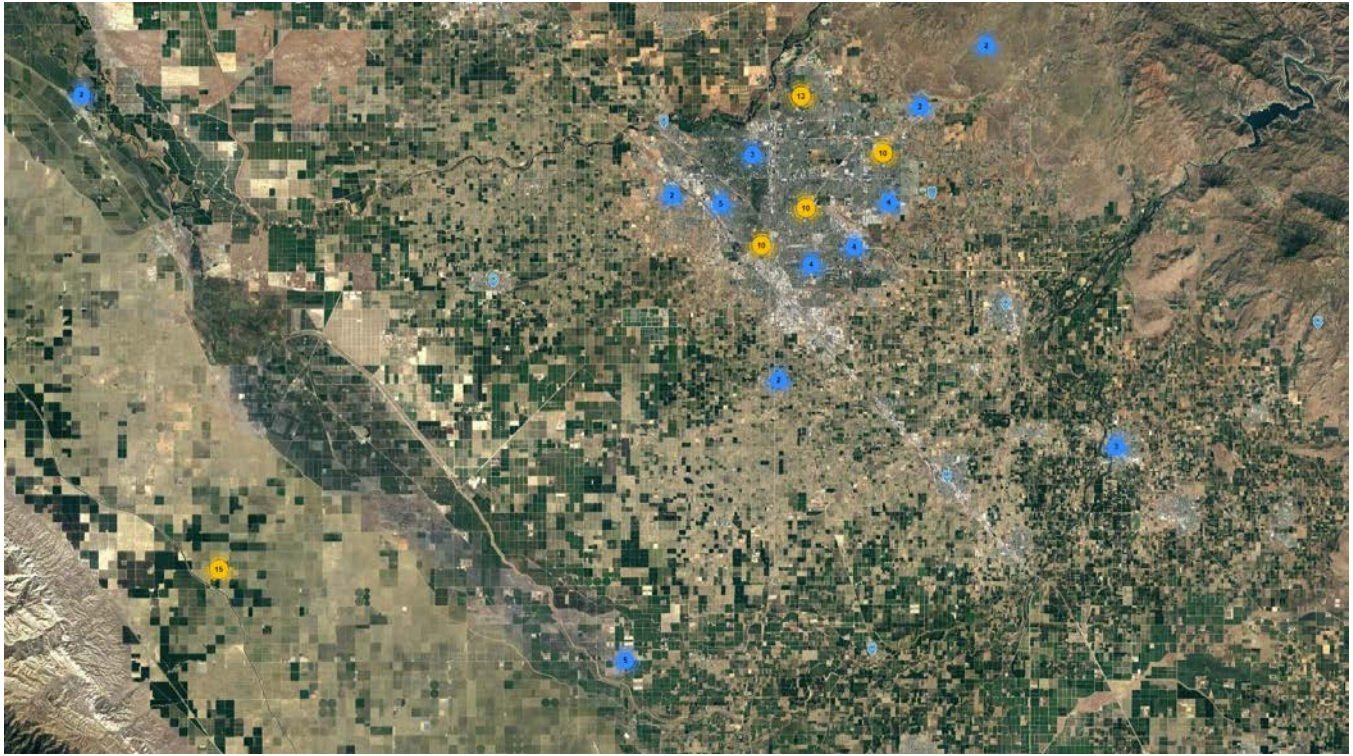
Additional Comment Features

- Dedicated project email address
- Voicemail line to receive comments
- Staff email
- Social media

Public Input Received

Survey:

- 554 views
- 117 respondents
- 1,261 responses
- 22 Additional Comments
- 24 Subscribers



Public Input: Priority measures ranking

Transportation Measures

98%	C. *Build a well-connected bike and pedestrian system that provides more options for walking and biking, including things like e-bike and e-scooter.* _(Examples: Implementing measures could include pedestrian network improvements, bike parking, expanded bikeway networks, electric bikeshare program, scooter share program, dedicate land for bike trails)_	Rank: 2.33
98%	D. *Maintain and expand the existing transit system and offer other transit strategies such as micro transit.*	Rank: 2.45
100%	A. *Develop a public electric vehicle charging network in Fresno County, including in the disadvantaged communities, large enough to increase electric vehicle purchases in Fresno County.* _(Examples: Implementing measures could include a neighborhood electric vehicle (NEV) network.)_	Rank: 3.29
98%	B. *Continue to convert the governments' vehicles (including transit) to zero emission vehicles and provide a sustainable and reliable support system for such zero-emission fleet* _(Examples: Maintenance, charging facilities, training of personnel, etc.)_	Rank: 3.29
98%	E. *Provide incentives for carpool and vanpool, and other shared mobility options.* _(Examples: Could include commute trip reduction programs, end-of trip facilities, car-sharing program, employer-sponsored vanpool/shuttle, priced workplace parking, and/or employee parking "cash-out" programs)_	Rank: 3.60

Waste, Water and Sustainable Materials

98%	G. *Programs and incentives to reduce or divert waste (including food and/or yard waste) through improved production practices, improved collection services, and increased reuse or recycling rates.* _(Examples: Could include organics diversion program, educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs. Local recycling and composting initiatives at the neighborhood level, expansion of local business recycling and composting efforts)_	Rank: 2.24
98%	F. *Reduce methane emissions from landfills and wastewater treatment facilities by creating standards and providing incentives.* _(Examples: Could include methane recovery in landfills and/or methane recovery in wastewater treatment plants.)_	Rank: 2.44
98%	H. *Policies and programs to reduce construction and demolition waste through building or material reuse, deconstruction, and material diversion.* _(Examples: Could include recycle programs for demolished construction waste, or adoption of a construction and demolition waste recovery ordinance that meets or exceeds the CALGreen voluntary guidance of a 65-75% reduction in nonhazardous construction and demolition waste)_	Rank: 2.62
100%	I. *Installation of renewable energy and energy efficiency measures at wastewater treatment facilities.*	Rank: 2.67

Public Input: Priority measures ranking

Agricultural Measures

98%	J. *Programs and incentives to reduce greenhouse gas emissions associated with manure management from livestock and poultry operations.* _(Examples: funds or outreach on programs from the CA Dept. of Food and Ag and US Dept. of Ag (USDA), educational programs)_	Rank: 2.12
95%	M. *Programs and incentives to reduce greenhouse gas emissions associated with the operation of agricultural equipment, including tractors, harvesting equipment, and agricultural pumps.* _(Examples: funds or outreach for programs through USDA-NRCS and the Air District.)_	Rank: 2.33
98%	K. *Programs and incentives to reduce greenhouse gas emissions associated with agricultural burning, including cropland management of almonds, walnuts, and other tree crops.* _(Examples: Funds or outreach for programs through the Air District, and USDA, educational programs)_	Rank: 2.60
95%	L. *Programs and incentives to reduce greenhouse gas emissions related to fertilizer application on managed soils.* _(Examples: Funds or outreach for program through USDA Natural Resources Conservation (USDA-NRCS), educational programs)_	Rank: 2.88

Public Input: Priority measures ranking

Energy/Building Measures

100%	O. *Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products.* _(Examples: could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting) _	Rank: 2.86
100%	S. *Incorporate water efficiency measures that reduce water heating energy consumption* _(Examples: Install alternative types of water heaters in place of gas storage tank heater in residences.)_	Rank: 4.35
100%	T. *Incorporate energy efficiency measures into green building policies by using green building rating systems for new and existing buildings.* _(Examples: could include establishment of on-site renewable energy systems such as solar power and/or wind power, limitations on non-renewable energy sources)_	Rank: 4.73
100%	Q. *Programs and policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings and commercial buildings, including building codes related to electric vehicle charging.*	Rank: 5.08
100%	M. *Use of the most up-to-date building energy codes or stretch codes for new commercial and residential buildings. *	Rank: 5.67
100%	N. *Develop incentive programs to use of end-use energy efficiency measures in existing government-owned, commercial, and residential buildings.*	Rank: 5.82
100%	P. *Programs and policies to promote electrification of government-owned, commercial, and residential buildings.*	Rank: 6.10
100%	U. *Bundle on-site renewable energy generation with energy efficiency improvements.*	Rank: 6.33
100%	V. *Encourage on-site renewable energy generation throughout a region by coordinating with neighboring local governments.*	Rank: 6.75
100%	R. *New benchmarking and building performance standards that exceed the California Energy Commissions current building envelope energy efficiency standards. *	Rank: 7.31

Priority Measure Selection

Priority Measures Selection Process

Priority Measures must be:

- *near-term*
- *implementation ready*
- *cost feasible*
- *considerable GHG reduction*

GHG Inventory

Stakeholder Survey

Public Input

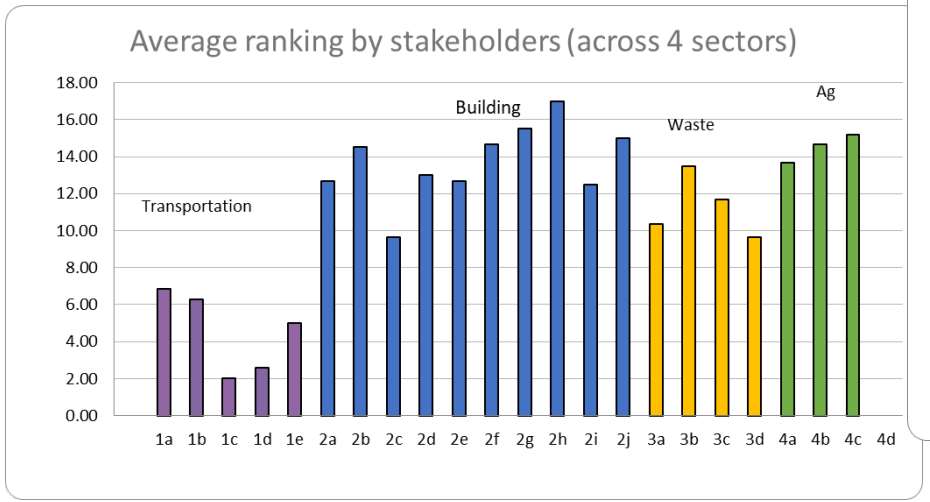
Sector Meetings

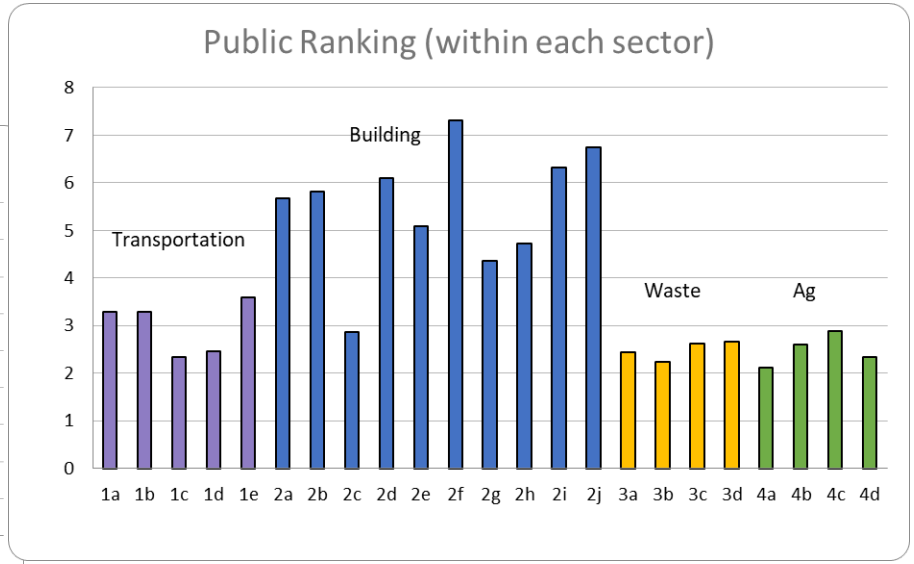
Project Interests

Sectors Selected

- Transportation
- Agriculture
- Building/Energy
- Waste

GHG Reduction Measure Survey Results





Priority Measures Recommended

TRANSPORTATION:
5 MEASURES

AGRICULTURE:
3 MEASURES

BUILDING/ENERGY:
3 MEASURES

WASTE:
2 MEASURES

Transportation Sector

1. Develop a robust public electric vehicle charging network in Fresno County, including in the disadvantaged communities, to increase electric vehicle adoption in Fresno County. *(Implementing measures could include a neighborhood electric vehicle (NEV) network)*

2. Continue to convert the municipal fleet (including transit) into zero emission vehicles and provide a sustainable and reliable support system for such zero-emission fleet which could include, but not limited to maintenance, charging facilities, training of personnel, etc. *(Implementing measures could include fleet electrification, installation of electric vehicle charging infrastructure, etc.)*

3. Build a well-connected bike and pedestrian system that provide alternative transportation options including micro-mobility such as shared e-bike and e-scooter. *(Implementing measures could include pedestrian network improvements, bike parking, expanded bikeway networks, electric bikeshare program, scooter share program, dedicate land for bike trails)*

4. Enhance the public transportation by maintaining/expanding the existing transit system and implementing other transit strategies such as micro transit.

5. Provide incentives for carpool and vanpool, and other shared mobility options. *(Implementation measures could include commute trip reduction programs, end-of trip facilities, car-sharing program, employer-sponsored vanpool/shuttle, priced workplace parking, and/or employee parking "cash-out" programs.)*

Agricultural Sector

1. Programs and incentives to reduce GHG emissions associated with manure management from livestock and poultry operations. *(Implementation measures could include additional funding or outreach support for existing programs available through the California Department of Food and Agriculture (CDFA) and United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), educational programs, or direct funding opportunities for projects proposed as part of PCAP development.)*

2. Programs and incentives to reduce GHG emissions associated with agricultural burning, including orchards and vineyards, through chipping and use for soil incorporation, on-site land application on agricultural land, off-site beneficial re-use, or other approved methods. *(Implementation measures could include additional funding or outreach support for existing programs available through the San Joaquin Valley Air Pollution Control District (SJVAPCD) and USDA-NRCS, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)*

3. Programs and incentives to reduce GHG emissions associated with the operation of various agricultural equipment, such as tractors, harvesting equipment, utility terrain vehicles, dairy feed mixing electrification and agricultural pumps through zero-emission replacement as well as the installation of charging or re-fueling stations to support deployment. *(Implementation measures could include additional funding or outreach support for existing programs available through USDA-NRCS and the SJVAPCD, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)*

Building/Energy Sector

1. Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products. *(Implementation could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting.)*
2. Incorporate water efficiency measures that reduce water heating energy consumption (Install alternative types of water heaters in place of gas storage tank heater in residences.)
3. Bundle on-site renewable energy generation with energy efficiency improvements. *(Implementation could include establishment of on-site renewable energy systems such as solar power and/or wind power, limitations on non-renewable energy sources.)*

Waste, Water, and Sustainable Materials Management Sector

1. Programs and incentives to reduce or divert waste (including food and/or yard waste) through improved production practices, improved collection services, and increased reuse or recycling rates. *(Implementation measures could include organics diversion program, educational programs to inform residents about reuse, recycling, composting, waste to energy and zero waste programs. Local recycling and composting initiatives at the neighborhood level, expansion of local busin recycling and composting efforts.)*
2. Installation of renewable energy and energy efficiency measures at wastewater treatment facilities.


ACTION

Implementation Grants

Timeline

- Notice of Intent: Feb. 1, 2024
- Application deadline: April 1, 2024
- Deadline to submit questions to EPA: March 15, 2024

Eligible Applicants

- State agencies
- Municipalities
- The Air District
- Council of Governments
- A Coalition of the eligible entities

Note to Applicants

- May submit no more than two grant applications
  - one as the individual applicant
  - one as the lead applicant.
- May participate in multiple coalitions, but only serve as the lead applicant for one application.

★ **Apply as a coalition to spread GHG reduction measures and benefits across jurisdictional boundaries.**

★ **EPA will avoid duplicative efforts and not fund implementation of the same measure in the same location.**

The Application

Technical, comprehensive, detailed, resource demanding, requires collaborative efforts

- GHG Reduction Quantification
- Cost Effectiveness
- Assumptions & Methodology
- Environmental Results : GHG and Co-pollutants
- Low-income and Disadvantage Communities Benefit Analysis
- Programmatic Capability and Past Performance
- Detailed Budget Plan
- All partners must sign Memorandum of Agreement (MOA)

Award Sizes/Tiers

EPA expects to award 30 to 115 grants ranging from $2 million to $500 million each; however, actual sizes will vary based on the tiers outlined below.

- Tier A – four to 10 grants ranging from $200 million to $500 million each
- Tier B – six to 13 grants ranging from $100 million to $199.9 million each
- Tier C – six to 12 grants ranging from $50 million to $99.9 million each
- Tier D – six to 30 grants ranging from $10 million to $49.9 million each
- Tier E – 10 to 50 grants ranging from $2 million to $9.9 million each

Questions to Ask

- Individual applications or applications by a coalition of entities (one or multiple applications?)
- Who is the lead?
- What measures/programs/projects to submit for funding?
- How much to ask for?
- What does it take to put the application together?
- Any outside assistance needed?

Recommended Approach

- Coordinated efforts
- Determine needs early on
- Pool resources
- Take action ASAP

Proposed Unofficial Coalitions

- Currently, coordinating with State agencies to ensure there will be oversight of awarded funds. These applications are technically intensive and may require external assistance to ensure all aspects of grant application are addressed.
  - **Transportation Sector** - Fresno Council of Governments
  - **Waste Management (Solid Waste and Wastewater) Sector –** Tranquility Resource Conservation District
  - **Agriculture Sector –** San Joaquin Valley Air Pollution Control District
  - **Energy/Building -** Urban Municipality

EPA Implementation Grant link:

https://www.epa.gov/inflation-reduction-act/cprg-implementation-grants

Questions?

Fresno COG project manager:

Simran Jhutti

Jhutti@fresnocog.org

Fresno COG Public Information:

Brenda Thomas

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LSA project manager:

Kristine Cai

Kristine.cai@lsa.net

Stakeholder Steering Committee Meeting

January 10, 2024

Attendees:

1. Simran Jhutti
2. Brenda Thomas
3. Sophia Pagoulatos
4. Christina Windover
5. Gelasio Rodriguez (Javier Andrade)
6. Larry Miller
7. Dawn Marple
8. Lupe Macias
9. Rodney Horton
10. Angela Castellanos
11. Kristine Cai
12. Carol Fraser
13. Kristine Cai
14. Sophie Lévesque
15. Kevin Wing
16. Derek Sylvester
17. Mike Prandini
18. Jesus Orozco
19. Moses Stites
20. Esteban Soto
21. Jessica Coria
22. Ryan Burnett
23. David
24. Jocelyne Mejia-Talamantes
25. Todd DeYoung
26. Brian Dodds
27. Drew Wilson
28. Nicola Steelnack
29. Marcus Evans
30. Mariana Alvarenga
31. Faye
32. Cody Laird
33. Gloria
34. Jan Minami
35. Ben
36. TERRI FIGGS
37. Orie Rubalcava
38. Natalie Delgado

39. Steve Haze
40. Sophia Torres
41. Mohammad Khorsand
42. Maya Mubarak
43. Kamara Biawogi

Q&A Session

Sophia Pagoulatos – How do we decide how and when we are going to apply to the EPA?

Simran Jhutti – This group is key in who is willing to apply under each sector. Four sectors have been identified. The lead applicants should form a solicitation under their sector umbrella.

Gelasio Rodriguez – To be clear once PCAP is finalized then we would apply for the implementation funding. If there is no jurisdiction to take the lead, then we couldn't apply?

Simran Jhutti – This is a one–time funding opportunity, so we hope that a region jumps at the opportunity. Encourage jurisdictions to start looking at what is on their list.

Moses Stites – Torn between transportation and building energy. There might be an opportunity for coalition. There may be an overlap between them.

Steve Haze – This is a great opportunity, additionally would like to work with San Joaquin Valley Air Pollution Control District. Would like to offer services.

Sophia Pagoulatos – Looking at the next steps, February 1st is when an intent to file and application is due, what is involved in that?

Simran Jhutti – It's an informal email stating that you are intending to apply.

Sophia Pagoulatos – Do we have to have coalitions formed by then?

Simran Jhutti - Lead applicants should fill out the notice of intent.

Gelasio Rodriguez – What will the structure look like?

Simran Jhutti – Dependent on the city.

Fresno CPRG Ag. Measures Meeting
Monday, 12/11/2023 2:00-3:00pm

Attendees:

- Todd DeYoung, SJVAPCD
- David Lopez, SJVAPCD
- Aaron Tarango, SJVAPCD
- Kevin Wing, SJVAPCD
- Brian Dodds, SJVAPCD
- Roger Isom, **President/CEO of California Cotton, Ginners, & Growers Association AND Western Agricultural Processors Association**
- Chris McGlothlin, **Director of Technical Services of California Cotton, Ginners, & Growers Association AND Western Agricultural Processors Association**
- Manuel Cunha, **President of Nisei Farmers League AND California African American Farmers**
- Kristine Cai, LSA
- Jessica Corria, LSA
- Simran Jhutti, FCOG

Meeting Summary:

Both Roger and Manuel as representatives of Farming organizations in the SJV region require implementation funding from EPA that covers all counties served by the SJVAPCD. Both Simran and Todd to follow up with answers from CARB & EPA. The candidate priority measures were well received by Roger and Manuel. The attendees are in favor of a follow up before the commencement of the PCAP, tentatively scheduling a meeting in January.

SJVAPCD:

- Monitoring/Coordinating the PCAP's for the State, Bakersfield, and Fresno project.
- Provided brief overview of Fresno MSA's $1 million EPA CPRG
- Funds can be used for existing programs and different ways, may not follow strict existing guidelines
- EPA will not fund same program in same area more than once
- Applications will compete in "grant size $ amount" brackets
- There will be a lot of consideration in thinking about who can apply and identifying priorities statewide and/or regionally
- Agency's can only serve as lead on one.
- State contacts for EPA are struggling to answer for applicability of the Fresno MSA PCAP beyond the Fresno region.
- Deciding whether strategies should be fed into the State PCAP or the regional PCAP's (Fresno and Bakersfield)
- With CARB applying for funding for the ag. sector that would be able to 150 million for farmer program, would be eligible to serve the whole State.
- The EPA is looking for existing programs with robust policies and procedures and shovel ready projects

President of Nisei Farmers League AND California African American Farmers:

- Confidentiality guidelines inquiry for SJVAPCD

- Supply and cost of electric trucks is not feasible to go after funds for, however would farmers be able to ask for funds to purchase a used 2013 or newer clean diesel trucks (tier 4 engine trucks) as a part of their farm equipment?
- Due to CARB disallowing ag. burning by the year 2025, only for special diseased crops that the commissioner of agriculture recognizes. Inquiring whether implementation dollars be used for chipping and grinding of trees, allowing growers to hire chippers and grinders since there is a lot of acreage. Ideas: Funding for chipping equipment and/or helping the farmer hire those for those services for a certain amount of acreage.
- More supportive for all 8 counties not just Fresno.
- Concerns about the individual city's funding for their waste and wastewater facilities

California Cotton, Ginners, & Growers Association AND Western Agricultural Processors Association:

- The four candidate priorities for ag. are acceptable, except the fertilizer application (lowest priority)
- Agrees with Manuel to find funding for equipment and ag. burning
- Yard trucks, UTV's can be included under the farm equipment
- Does not agree with putting farmer against farmer, only wants to be a part of EPA grant implementation if it involves all 8 counties served by the Air District

FCOG:

- Discussing the programs and incentives or strategies for GHG emission reduction in the ag. sector
- Shared the 4 Candidate priority measures for feedback
- Discussed finding implementation projects they may want to pursue using the $4.6 billion implementation grants from EPA, went over the deadlines, and who is eligible to apply
- Questions on NOFO are due by March 15
- Discussing brainstorming of ideas for grant awards
- Outlining that they need to ensure their comments/feedback are in the PCAP to help bolster their applications to EPA
- Reviewed the PCAP deliverables, deadlines, and process
- Justifying what farm equipment is ready
- Strategies set forth are implementation ready

LSA:

- Ag. emissions are primarily coming from cattle (manure management), 1% from biomass, some emissions from fertilizer and poultry.
- Ag. equipment is contributing to the largest off-road emissions category
- Wants to receive feedback from the ag. sector before making information
- Want to make sure they are capturing what the Ag. sector would like to see in the PCAP
- Reviewing the NOFO guidelines, to make sure the project will score more points.
- The magnitude of GHG reduction will be the most competitive (ex: diesel vs. electric)
- The region needs to identify how many applications and who will be serving as lead
- The application needs to quantify the reduction of GHG by implementing
- Want to make sure the description of the projects in mind are included in the PCAP strategies

Fresno CPRG Chaffee Zoo. Meeting
Monday, 12/13/2023 3:00-4:00pm

Attendees:

- Amy Avery, Fresno Chaffee Zoo
- Sean den Bok, Fresno Chaffee Zoo
- Kristine Cai, LSA
- Jessica Corria, LSA
- Simran Jhutti, FCOG
- Brenda Thomas, FCOG

Meeting Summary:

Fresno Chaffee Zoo is interested in pursuing their plans from their Master Plan for sustainable infrastructure development that is closely aligned with the parking/transport into the Zoo. It has not been decided which agencies in the Fresno region will be applying. However, if FCOG applies for the transportation sector for GHG reduction, there will be option for the Chaffee Zoo to apply for funds or receive funds.

Chaffee Zoo:

- Recognizing they want to reimagine how the public accesses the Zoo
- FCRTA is interested in bringing in EV buses into the Zoo
- Zoo is designing a vertical parking structure with EV chargers, green efficiency
- They are pushing for sustainable development
- Interested in knowing where the charging pads for buses should be
- Zoo has taken the lead on building the parking structure
- The Zoo would either need to go to the awarding entity or entities
- Will be meeting with Councilmember Arias

FCOG:

- Provided overview of the Stakeholder Steering Committee members and who is eligible to apply for EPA implementation grants
- Reviewing that only one application for a sector can be awarded in a region
- FCOG has interest in applying for Transportation sector
- Provided the measures memo, stakeholder steering committee meeting, and the NOFO

LSA:

- Urged the Chaffee Zoo staff to begin meeting with City of Fresno or other eligible entities to discuss what they want to apply for
- Ensure that the measures outlined have some compatibility with what they want to do
- Suggesting Transit gets involvement to have public transportation connected since the Chaffee Zoo does not have the capacity to operate
- Outlining the process if FCOG were to receive the Implementation funding it could either be a competitive process or a written in contract to each sub-grantee
- Suggesting they talk to the City about their priority and is aware of the Zoo's interest to properly address the Zoo to be able to secure funding
- Not sure which sector the parking structure will fall under (transportation or energy/building)
- EPA has emphasized that there needs to benefit to the Disadvantaged Communities, and due to Justice 40 the Fresno region will need to emphasize this (Roeding Park is located in a disadvantaged community)

Name/Title/Jurisdiction:

Instructions: Please rank the following GHG reduction priority measures from 1-23 from the following four sectors; (1) Transportation, (2) Energy/Building, (3) Waste, Water, and Sustainable Materials Management, and (4) Agriculture. Feel free to add any additional comments. Please submit your response by Tuesday, December 12th. Include any additional comments, measures, and policies you do not see. Suggestions for language to be changed are welcomed.

Transportation Candidate Priority Measures	Ranking	Comments
Develop a robust public electric vehicle charging network in Fresno County, including in the disadvantaged communities, to increase electric vehicle adoption in Fresno County. (Implementing measures could include a neighborhood electric vehicle (NEV) network)		
Continue to convert the municipal fleet (including transit) into zero emission vehicles and provide a sustainable and reliable support system for such zero-emission fleet which could include, but not limited to maintenance, charging facilities, training of personnel, etc. (Implementing measures could include fleet electrification, installation of electric vehicle charging infrastructure, etc.)		
Build a well-connected bike and pedestrian system that provide alternative transportation options including micro-mobility such as shared e-bike and e-scooter. (Implementing measures could include pedestrian network improvements, bike parking, expanded bikeway networks, electric bikeshare program, scooter share program, dedicate land for bike trails		
Enhance the public transportation by maintaining/expanding the existing transit system and implementing other transit strategies such as micro transit.		
Provide incentives for carpool and vanpool, and other shared mobility options. (Implementation measures could include commute trip reduction programs, end-of trip facilities, car-sharing program, employer-sponsored vanpool/shuttle, priced workplace parking, and/or employee parking "cash-out" programs.)		
Energy/Building Candidate Priority Measures		
Adoption and implementation of the most up-to-date building energy codes or stretch codes for new commercial and residential buildings.		
Develop incentive programs for implementation of end-use energy efficiency measures in existing government-owned, commercial, and residential buildings.		

Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products. (Implementation could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting.)		
Programs and policies to promote electrification of government-owned, commercial, and residential buildings.		
Programs and policies to accelerate the incorporation of efficient electric technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings and commercial buildings, including building codes related to electric vehicle charging.		
Implementation of a new benchmarking and building performance standards that exceed the 2022 Title 24 building envelope energy efficiency standards.		
Incorporate water efficiency measures that reduce water heating energy consumption (Install alternative types of water heaters in place of gas storage tank heater in residences.)		
Incorporate energy efficiency measures into green building policies by using rating systems such as LEED and the Green Globes Rating System for new and existing buildings. ○ Include requirements for third-party verïcation of energy performance. ○ Install energy e^{s} ciency landscaping and energy e^{s} cient street- lighting. ○ Train sta^{r} to ensure energy e^{s} ciency improvements are sustained.		
Bundle on-site renewable energy generation with energy efficiency improvements.(Implementation could include establishment of on-site renewable energy systems such as solar power and/or wind power, limitations on non-renewable energy sources.)		
Encourage on-site renewable energy generation throughout a region by coordinating with neighboring local governments.		

Waste, Water, and Sustainable Materials Management Sector Candidate Priority Measures		
Implement standards and incentives to reduce methane emissions from landfills and wastewater treatment facilities, including through collection for use or destruction (Implementation measures could include methane recovery in landfills and/or methane recovery in wastewater treatment plants.)		

Programs and incentives to reduce or divert waste (including food and/or yard waste) through improved production practices, improved collection services, and increased reuse or recycling rates. (Implementation measures could include organics diversion program, educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs. Local recycling and composting initiatives at the neighborhood level, expansion of local business recycling and composting efforts.)		
Policies and programs to reduce construction and demolition waste through building reuse, deconstruction, and material diversion and reuse. (Implementation programs could include recycle programs for demolished construction waste, or adoption of a construction and demolition waste recovery ordinance that meets or exceeds the CALGreen voluntary guidance of a 65-75% reduction in nonhazardous construction and demolition waste)		
Installation of renewable energy and energy efficiency measures at wastewater treatment facilities.		
Agricultural Sector Candidate Priority Measures		
Programs and incentives to reduce GHG emissions associated with manure management from livestock and poultry operations. (Implementation measures could include additional funding or outreach support for existing programs available through the California Department of Food and Agriculture (CDFA) and United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), educational programs, or direct funding opportunities for projects proposed as part of PCAP development.)		
Programs and incentives to reduce GHG emissions associated with agricultural burning, including burning resulting from cropland management of almonds, walnuts, and other tree crops. (Implementation measures could include additional funding or outreach support for existing programs available through the San Joaquin Valley Air Pollution Control District (SJVAPCD) and USDA-NRCS, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)		
Programs and incentives to reduce GHG emissions related to fertilizer application on managed soils. (Implementation measures could include additional funding or outreach support for existing programs available through USDA-NRCS, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)		
Programs and incentives to reduce GHG emissions associated with the operation of agricultural equipment, including tractors, harvesting equipment, and agricultural pumps. (Implementation measures could include additional funding or outreach support for existing programs available through USDA-NRCS and the		

SJVAPCD, educational programs, or other direct funding opportunities for projects proposed as part of PCAP development.)		

APPENDIX B:

SURVEY HUB RANKING SHEET

Greenhouse Gas Reduction Measures Survey

Please scroll through the tabs to view the final sector rankings.

~ Fresno Council of Governments

Please rank transportation measures A through E in order of importance to you by clicking on them and dragging them up and down in the list below. (Your top measure will be ranked most important while the bottom measure will be ranked the least important).

After ranking, click the CONFIRM PRIORITIES button that will appear before continuing to the next page.

A. **Develop a public electric vehicle charging network in Fresno County, including disadvantaged communities, large enough to increase electric vehicle purchases in Fresno County.** *(Examples: Implementing measures could include a neighborhood electric vehicle (NEV) network.)* 1st

C. **Build a well-connected bike and pedestrian system that provides more options walking and biking, including things like e-bike and e-scooter.** *(Examples: Implementing measures could include pedestrian network improvements, bike parking, expanded bikeway networks, electric bikeshare program, scooter share program, dedicate land for bike trails)* 2nd

D. **Maintain and expand the existing transit system and offer other transit strate such as micro transit.** 3rd

B. **Continue to convert the governments' vehicles (including transit) to zero emiss vehicles and provide a sustainable and reliable support system for such zero-emission fleet** *(Examples: Maintenance, charging facilities, training of personnel, etc.)* 4th

E. **Provide incentives for carpool and vanpool, and other shared mobility options.** *(Examples: Could include commute trip reduction programs, end-of trip facilities, car-sharing program, employer-sponsored vanpool/shuttle, priced workplace parking, and/or employee parking "cash-out" programs)* 5th

Closed to responses

Continue

Greenhouse Gas Reduction Measures Survey

Please scroll through the tabs to view the final sector rankings.

~ Fresno Council of Governments

Please rank agricultural measures J through M in order of importance to you by clicking on them and dragging them up and down in the list below. (Your top measure will be ranked most important while the bottom measure will be ranked the least important).

After ranking, click the CONFIRM PRIORITIES button that will appear before continuing to the next page.

M. **Programs and incentives to reduce greenhouse gas emissions associated with** 1st **operation of agricultural equipment, including tractors, harvesting equipment, and agricultural pumps.** *(Examples: funds or outreach for programs through USDA-NRCS and the Air District.)*

K. **Programs and incentives to reduce greenhouse gas emissions associated with** 2nd **agricultural burning, including cropland management of almonds, walnuts, and other tree crops.** *(Examples: Funds or outreach for programs through the Air District, and USDA, educational programs)*

L. **Programs and incentives to reduce greenhouse gas emissions related to fertiliz** 3rd **application on managed soils.** *(Examples: Funds or outreach for program through USDA Natural Resources Conservation (USDA-NRCS), educational programs)*

J. **Programs and incentives to reduce greenhouse gas emissions associated with n** 4th **management from livestock and poultry operations.** *(Examples: funds or outreach on programs from the CA Dept. of Food and Ag and US Dept. of Ag (USDA), educational programs)*

Closed to responses

You are doing great! Almost done...

Please rank energy and building measures M through V in order of importance to you by clicking on them and dragging them up and down in the list below. (Your top measure will be ranked most important while the bottom measure will be ranked the least important).

After ranking, click the CONFIRM PRIORITIES button that will appear before continuing to the next page.

V. **Encourage on-site renewable energy generation throughout a region by coordi** 1st
with neighboring local governments.

R. **New benchmarking and building performance standards that exceed the Califc** 2nd
Energy Commissions current building envelope energy efficiency standards.

O. **Incentive programs for the purchase of certified energy-efficient appliances, h** 3rd
and cooling equipment, lighting, and building products to replace inefficient products. *(Examples: could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting)*

N. **Develop incentive programs to use of end-use energy efficiency measures in ex** 4th
government-owned, commercial, and residential buildings.

Q. **Programs and policies to accelerate the incorporation of efficient electric** 5th
technologies and electric vehicle charging at new single-family, multi-unit, or affordable residential buildings and commercial buildings, including building codes related to electric vehicle charging.

T. **Incorporate energy efficiency measures into green building policies by using gr** 6th
building rating systems for new and existing buildings. *(Examples: could include establishment of on-site renewable energy systems such as solar power and/or wind power, limitations on non-renewable energy sources)*

P. **Programs and policies to promote electrification of government-owned, comm** 7th
and residential buildings.

M. **Use of the most up-to-date building energy codes or stretch codes for new** 8th
commercial and residential buildings.

U. **Bundle on-site renewable energy generation with energy efficiency improveme** 9th

S. **Incorporate water efficiency measures that reduce water heating energy** 10th
consumption *(Examples: Install alternative types of water heaters in place of gas storage tank heater in residences.)*

Closed to responses

APPENDIX C:

INVENTORY DATA

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Inventory Summary

Base Year - 2019

Sector	2019 Emissions (MT CO2e)	% Total Inventory
Transportation	5,769,119.50	44%
Agriculture	2,555,749.14	19%
Residential and Commercial Buildings	2,307,702.56	17%
Industry	1,732,518.24	13%
Waste Management	468,556.29	4%
Other	375,459.91	3%
Total:	**13,209,105.64**	**100%**

Source	2019 Emissions (MT C	Notes/Methodology
Transportation (on-road)	5,147,623.89	*EMFAC Model (see later worksheet)*
Aircraft	571,958.21	*Included in Transportation Sector*
Municipal Fleets	17,085.75	*Included in Transportation Sector*
Offroad Equipment	701,234.55	*OFFROAD Model (see later worksheet); included in relevant sectors*
Agriculture	2,163,057.79	*Inventory scaled down from CARB State inventory based on County's % of acreage or agricultural commodity (see later worksheets)*
Industrial	1,732,518.24	*EPA Local GHG Inventory Tool*
Residential Energy	1,135,329.87	*EPA Local GHG Inventory Tool*
Commercial/Institutional	1,046,150.47	*EPA Local GHG Inventory Tool*
Fugitive Emissions	227,634.91	*Scaled up from City GHG Reduction Plan emissions inventory based on population of County*
Solid Waste + Wastewater	468,556.29	*Solid waste scaled up from City GHG Reduction Plan emissions inventory based on population of County; wastewater calculated from EPA Local GHG Inventory Tool*

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Agriculture Emissions Inventory Calculations

Percentage of Fresno County Ag Land/Commodities VS California State Totals

Percentages Applied to CARB Statewide Emissions Inventory for Agricultural Emissions as scaling factor

	Fresno Co.	California	Percentage (%)	Notes
Total Agricultural Acreage				
Land in Farms (Acres)	1,646,540	24,522,801	7%	*Used to scale fertilizer application rates for managed soils*
Crops in Production (Acres) (Dec 31, 2017)				
Almonds	227,096	1,265,815	18%	
Grapes	206,218	935,272	22%	
Vegetables harvested, all	170,064	1,170,573	15%	
Walnut	10,567	416,201	3%	
Wheat	38,612	227,712	17%	
Rice	2,219	436,710	1%	
Corn	1,365	94,541	1%	
Barley	4,313	46,843	9%	
Livestock Inventory (Dec 31, 2017)				
Broilers and other meat-type cl	21,434,530	44,695,175	48%	
Cattle and calves	375,990	5,185,593	7%	
Goats	6,239	133,330	5%	
Hogs and pigs	3,200	96,456	3%	
Horses and ponies	3,222	99,621	3%	
Layers (D) Pullets (D)	Withheld	18,679,190	U	**Applied Broilers % in inventory*
Sheep and lambs	30,883	475,291	6%	
Turkeys	1,080,017	3,756,534	29%	

Data Source:

USDA NASS 2017 Census of Agriculture Website:
https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_1_State_Level/California/

Current California GHG Emission Inventory Data - California Air Resources Board
Available at: https://ww2.arb.ca.gov/ghg-inventory-data
(2022 Edition: 2000 to 2020 - Last updated on 10/26/2022)
IPCC Categorization
Units: million tonnes (Tg) of CO2 equivalent - based on IPCC 4th Assessment 100-yr GWPs

(MMT CO2e/Year) **(MMT CO2e/Year)**

Type of emission	IPCC Level 1	IPCC Level 2	IPCC Level 3	IPCC Level 4	IPCC Level 5	Sector & Activity Details	GHG	Gas_FAR_G	2019	% Scaler	County Emissions
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Anaerobic lagoon > Livestock population - Dairy cows	CH4	25	8.37E+00	7	5.86E-01
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1ai - Dairy Cows	Livestock population - Dairy cows	CH4	25	6.26E+00	7	4.39E-01
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Beef cows	CH4	25	1.50E+00	7	1.05E-01
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen applied in fertilizer - Synthetic fertilizers	N2O	298	1.43E+00	7	1.00E-01
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Liquid/slurry > Livestock population - Dairy cows	CH4	25	1.28E+00	7	8.99E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1ai - Dairy Cows	Livestock population - Dairy replacements 12-24 months	CH4	25	8.39E-01	7	5.87E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Beef cattle	N2O	298	7.14E-01	7	5.00E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen applied in fertilizer - Synthetic fertilizers	N2O	298	6.83E-01	7	4.78E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in managed manure - Dairy cows	N2O	298	6.73E-01	7	4.71E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Residential use of nitrogen fertilizer on turf - Synthetic ferti	N2O	298	6.51E-01	7	4.56E-02
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Dry lot > Livestock population - Dairy heifers	N2O	298	4.44E-01	7	3.11E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Commercial use of nitrogen fertilizer on turf - Synthetic fert	N2O	298	4.42E-01	7	3.09E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in crop residues	N2O	298	4.30E-01	7	3.01E-02
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Anaerobic lagoon > Livestock population - Hens 1+ yr	CH4	25	5.69E-02	48	2.73E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Steer stockers	CH4	25	3.82E-01	7	2.68E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in managed manure - Poultry	N2O	298	5.55E-02	48	2.67E-02
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Anaerobic lagoon > Livestock population - Dairy cows	N2O	298	3.27E-01	7	2.29E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Steer feedlot	CH4	25	2.87E-01	7	2.01E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in managed manure - Dairy cows	N2O	298	2.86E-01	7	2.00E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1ai - Dairy Cows	Livestock population - Dairy calves	CH4	25	2.58E-01	7	1.81E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Dairy cows	N2O	298	2.50E-01	7	1.75E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1ai - Dairy Cows	Livestock population - Dairy replacements 0-12 months	CH4	25	2.36E-01	7	1.65E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Residential use of nitrogen fertilizer on turf - Synthetic ferti	N2O	298	2.11E-01	7	1.48E-02
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Liquid/slurry > Livestock population - Dairy cows	N2O	298	1.99E-01	7	1.39E-02
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Dry lot > Livestock population - Feedlot - steers 500+ lbs	N2O	298	1.96E-01	7	1.37E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Heifer feedlot	CH4	25	1.78E-01	7	1.25E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Heifer stockers	CH4	25	1.74E-01	7	1.22E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in managed manure - Poultry	N2O	298	2.36E-02	48	1.13E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in managed manure - Dairy heifers	N2O	298	1.60E-01	7	1.12E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Beef cattle	N2O	298	1.52E-01	7	1.06E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Drained histosols	N2O	298	1.49E-01	7	1.04E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1f - Horses		Livestock population - Horses	CH4	25	3.47E-01	3	1.04E-02
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Bulls	CH4	25	1.48E-01	7	1.04E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Commercial use of nitrogen fertilizer on turf - Synthetic fert	N2O	298	1.44E-01	7	1.00E-02
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Almond	N2O	298	4.52E-02	18	8.13E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C7 - Rice Cultivations			Rice crop area	CH4	25	8.01E-01	1	8.01E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C2 - Liming			Limestone applied to soils	CO2	1	1.14E-01	7	7.99E-03
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Beef replacements 12-24 months	CH4	25	1.09E-01	7	7.62E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Anaerobic lagoon > Livestock population - Pullets	CH4	25	1.53E-02	48	7.35E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Dry lot > Livestock population - Feedlot - heifers 500+ lbs	N2O	298	9.94E-02	7	6.96E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry without bedding > Livestock population - Hens 1+ yr	N2O	298	1.40E-02	48	6.73E-03
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1c - Sheep		Livestock population - Sheep	CH4	25	1.10E-01	6	6.60E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Sheep, goat, horse	N2O	298	1.63E-01	4	6.51E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Solid storage > Livestock population - Dairy cows	N2O	298	9.02E-02	7	6.31E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in managed manure - Beef cattle	N2O	298	8.74E-02	7	6.12E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Solid storage > Livestock population - Dairy cows	CH4	25	7.16E-02	7	5.01E-03
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Beef calves	CH4	25	7.11E-02	7	4.98E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in managed manure - Dairy heifers	N2O	298	6.97E-02	7	4.88E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen applied in fertilizer - Organic fertilizers	N2O	298	6.06E-02	7	4.25E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry without bedding > Livestock population - Hens 1+ yr	CH4	25	8.48E-03	48	4.07E-03

Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Almond	CH4	25	2.22E-02	18	3.99E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Dairy cows	N2O	298	5.31E-02	7	3.72E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Pasture > Livestock population - Not on feed - beef cows	CH4	25	5.03E-02	7	3.52E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Dairy heifers	N2O	298	4.89E-02	7	3.42E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Anaerobic digester > Livestock population - Dairy cows	CH4	25	4.25E-02	7	2.97E-03
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1a - Cattle	3A1aii - Other Cattle	Livestock population - Beef replacements 0-12 months	CH4	25	4.07E-02	7	2.85E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Sheep, goat, horse	N2O	298	6.91E-02	4	2.77E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry with bedding > Livestock population - Turkeys	N2O	298	9.50E-03	29	2.75E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in managed manure - Beef cattle	N2O	298	3.71E-02	7	2.60E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry with bedding > Livestock population - Broilers	N2O	298	5.23E-03	48	2.51E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry with bedding > Livestock population - Broilers	CH4	25	4.91E-03	48	2.36E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Dry lot > Livestock population - Dairy heifers	CH4	25	3.36E-02	7	2.35E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry with bedding > Livestock population - Turkeys	CH4	25	6.81E-03	29	1.97E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry without bedding > Livestock population - Pullets	N2O	298	3.78E-03	48	1.81E-03
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen applied in fertilizer - Organic fertilizers	N2O	298	2.58E-02	7	1.80E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2f - Horses		Pasture > Livestock population - Horses	CH4	25	5.82E-02	3	1.75E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Dry lot > Livestock population - Feedlot - steers 500+ lbs	CH4	25	1.79E-02	7	1.25E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2c - Sheep		Dry lot > Livestock population - Sheep	N2O	298	2.04E-02	6	1.22E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Pasture > Livestock population - Not on feed - calves <500 l	CH4	25	1.71E-02	7	1.20E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Anaerobic lagoon > Livestock population - Hens 1+ yr	N2O	298	2.37E-03	48	1.14E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry without bedding > Livestock population - Pullets	CH4	25	2.28E-03	48	1.10E-03
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Pasture > Livestock population - Not on feed - steers 500+ l	CH4	25	1.43E-02	7	9.98E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Daily spread > Livestock population - Dairy cows	N2O	298	1.36E-02	7	9.51E-04
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1d - Goats		Livestock population - Goats	CH4	25	1.69E-02	5	8.44E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2f - Horses		Dry lot > Livestock population - Horses	N2O	298	2.46E-02	3	7.39E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Dairy heifers	N2O	298	1.04E-02	7	7.27E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Daily spread > Livestock population - Dairy cows	CH4	25	1.04E-02	7	7.26E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Pasture > Livestock population - Not on feed - heifers 500+	CH4	25	1.03E-02	7	7.22E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in managed manure - Sheep, goat, horse	N2O	298	1.74E-02	4	6.96E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Dry lot > Livestock population - Feedlot - heifers 500+ lbs	CH4	25	9.59E-03	7	6.72E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Liquid/slurry > Livestock population - Dairy heifers	CH4	25	7.25E-03	7	5.07E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Anaerobic digester > Livestock population - Dairy cows	N2O	298	6.69E-03	7	4.68E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Deep pit > Livestock population - Dairy cows	CH4	25	6.58E-03	7	4.61E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2c - Sheep		Pasture > Livestock population - Sheep	CH4	25	6.68E-03	6	4.01E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Poultry	N2O	298	8.00E-04	48	3.84E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Walnut	N2O	298	1.22E-02	3	3.66E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Pasture > Livestock population - Not on feed - bulls 500+ lb	CH4	25	4.95E-03	7	3.47E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Anaerobic lagoon > Livestock population - Pullets	N2O	298	6.39E-04	48	3.07E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in managed manure - Sheep, goat, horse	N2O	298	7.39E-03	4	2.96E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market 1	CH4	25	9.35E-03	3	2.81E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market 1	CH4	25	8.98E-03	3	2.70E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Walnut	CH4	25	8.40E-03	3	2.52E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Liquid/slurry > Livestock population - Feedlot - heifers 500+	CH4	25	3.45E-03	7	2.41E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Liquid/slurry > Livestock population - Feedlot - steers 500+	CH4	25	3.45E-03	7	2.41E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2c - Sheep		Dry lot > Livestock population - Sheep	CH4	25	3.01E-03	6	1.81E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Daily spread > Livestock population - Dairy heifers	N2O	298	2.54E-03	7	1.77E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Wheat	CH4	25	9.04E-04	17	1.54E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2f - Horses		Dry lot > Livestock population - Horses	CH4	25	5.06E-03	3	1.52E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market 5	CH4	25	4.78E-03	3	1.44E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Pasture > Livestock population - Dairy cows	CH4	25	1.98E-03	7	1.39E-04
Included E	3 - Agriculture, I	3A - Livestock	3A1 - Enteric Fermentation	3A1h - Swine		Livestock population - Swine	CH4	25	3.98E-03	3	1.19E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Liquid/slurry > Livestock population - Dairy heifers	N2O	298	1.57E-03	7	1.10E-04
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Wheat	N2O	298	5.92E-04	17	1.01E-04
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Daily spread > Livestock population - Dairy heifers	CH4	25	1.38E-03	7	9.69E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market <	CH4	25	3.22E-03	3	9.67E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - breeding	CH4	25	2.95E-03	3	8.86E-05

Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Poultry	N2O	298	1.70E-04	48	8.16E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in managed manure - Swine	N2O	298	2.44E-03	3	7.32E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market 180+ lbs	CH4	25	2.34E-03	3	7.02E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market 120-179 lb	CH4	25	2.25E-03	3	6.75E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2d - Goats		Dry lot > Livestock population - Goats	N2O	298	1.29E-03	5	6.44E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2d - Goats		Pasture > Livestock population - Goats	CH4	25	1.25E-03	5	6.24E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Rice	N2O	298	4.22E-03	1	4.22E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Deep pit > Livestock population - Dairy cows	N2O	298	5.86E-04	7	4.11E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Anaerobic lagoon > Livestock population - Other chickens	CH4	25	7.86E-05	48	3.77E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market 50-119 lbs	CH4	25	1.20E-03	3	3.59E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C4 - Direct N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Swine	N2O	298	1.06E-03	3	3.17E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in managed manure - Swine	N2O	298	1.04E-03	3	3.11E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Liquid/slurry > Livestock population - Feedlot - heifers 500+	N2O	298	4.35E-04	7	3.04E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2aii - Other Cattle	Liquid/slurry > Livestock population - Feedlot - steers 500+	N2O	298	4.35E-04	7	3.04E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C2 - Liming			Dolomite applied to soils	CO2	1	3.86E-04	7	2.70E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2a - Cattle	3A2ai - Dairy Cows	Pasture > Livestock population - Dairy heifers	CH4	25	3.56E-04	7	2.49E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market < 50 lbs	CH4	25	8.07E-04	3	2.42E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Pasture > Livestock population - Broilers	CH4	25	4.96E-05	48	2.38E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - breeding	CH4	25	7.41E-04	3	2.22E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Pasture > Livestock population - Turkeys	CH4	25	6.88E-05	29	1.99E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Barley	CH4	25	2.06E-04	9	1.86E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Barley	N2O	298	1.99E-04	9	1.79E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market 180+ l	CH4	25	5.59E-04	3	1.68E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market 120-1	CH4	25	5.37E-04	3	1.61E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market 1	N2O	298	4.46E-04	3	1.34E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market 1	N2O	298	4.29E-04	3	1.29E-05
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Rice	CH4	25	1.27E-03	1	1.27E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry without bedding > Livestock population - Other chic	N2O	298	2.49E-05	48	1.20E-05
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market 50-11	CH4	25	2.86E-04	3	8.57E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market 180+ lbs	N2O	298	2.41E-04	3	7.22E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market 120-179 lb	N2O	298	2.31E-04	3	6.94E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market 5	N2O	298	2.28E-04	3	6.85E-06
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C5 - Indirect N2O Emissions from Managed Soils			Nitrogen in unmanaged manure - Swine	N2O	298	2.24E-04	3	6.73E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market < 50 lb	CH4	25	1.93E-04	3	5.78E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Poultry without bedding > Livestock population - Other chic	CH4	25	1.17E-05	48	5.62E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2d - Goats		Dry lot > Livestock population - Goats	CH4	25	1.08E-04	5	5.42E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - breeding	CH4	25	1.77E-04	3	5.31E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - market <	N2O	298	1.61E-04	3	4.82E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market 50-119 lbs	N2O	298	1.23E-04	3	3.70E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic lagoon > Livestock population - Swine - breeding	N2O	298	1.04E-04	3	3.13E-06
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Corn	CH4	25	2.89E-04	1	2.89E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - market < 50 lbs	N2O	298	8.67E-05	3	2.60E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market 180+ l	N2O	298	8.15E-05	3	2.45E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market 120-1	N2O	298	7.83E-05	3	2.35E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2i - Poultry		Anaerobic lagoon > Livestock population - Other chickens	N2O	298	4.22E-06	48	2.02E-06
Included E	3 - Agriculture, I	3C - Aggregate Sc	3C1 - Emissions from Biomass Burning	3C1b - Biomass B		Crop acreage burned - Corn	N2O	298	1.97E-04	1	1.97E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Deep pit > Livestock population - Swine - breeding	N2O	298	5.63E-05	3	1.69E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market 180+ l	N2O	298	4.89E-05	3	1.47E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market 120-1	N2O	298	4.70E-05	3	1.41E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market 50-11	N2O	298	4.17E-05	3	1.25E-06
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - market < 50 lb	N2O	298	2.94E-05	3	8.81E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Pasture > Livestock population - Swine - market 180+ lbs	CH4	25	2.62E-05	3	7.85E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Pasture > Livestock population - Swine - market 120-179 lbs	CH4	25	2.51E-05	3	7.54E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market 50-11	N2O	298	2.50E-05	3	7.51E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Liquid/slurry > Livestock population - Swine - breeding	N2O	298	1.91E-05	3	5.72E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market < 50 lb	N2O	298	1.76E-05	3	5.29E-07

Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market 180+ l	CH4	25	1.75E-05		3	5.25E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market 120-1	CH4	25	1.68E-05		3	5.04E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Pasture > Livestock population - Swine - market 50-119 lbs	CH4	25	1.34E-05		3	4.02E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - breeding	N2O	298	1.14E-05		3	3.43E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Pasture > Livestock population - Swine - market < 50 lbs	CH4	25	9.02E-06		3	2.71E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market 50-11	CH4	25	8.94E-06		3	2.68E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Pasture > Livestock population - Swine - breeding	CH4	25	8.26E-06		3	2.48E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - market < 50 lb	CH4	25	6.03E-06		3	1.81E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Solid storage > Livestock population - Swine - breeding	CH4	25	5.52E-06		3	1.66E-07
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - breedin	CH4	25			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - breedin	N2O	298			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	CH4	25			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	N2O	298			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	CH4	25			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	N2O	298			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	CH4	25			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	N2O	298			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	CH4	25			3	0.00E+00
Included E	3 - Agriculture, I	3A - Livestock	3A2 - Manure Management	3A2h - Swine		Anaerobic digester > Livestock population - Swine - market	N2O	298			3	0.00E+00
												2.16305779
												2.76E-01
												#########

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Summary Tables of Agricultural Sector Emissions for County of Fresno

Row Labels	Sum of County Emissions
1 - Energy	**2.95**
2 - Industrial Processes and Product Use	
3 - Agriculture, Forestry and Other Land Use	**2.16**
3A - Livestock	**1.61**
3A1 - Enteric Fermentation	0.75
3A1a - Cattle	0.73
3A1c - Sheep	0.01
3A1d - Goats	0.00
3A1f - Horses	0.01
3A1h - Swine	0.00
3A2 - Manure Management	0.86
3A2a - Cattle	0.79
3A2c - Sheep	0.00
3A2d - Goats	0.00
3A2f - Horses	0.00
3A2h - Swine	0.00
3A2i - Poultry	0.06
3C - Aggregate Sources and Non-CO2 Emissions	**0.55**
3C1 - Emissions from Biomass Burning	0.01
3C1b - Biomass Burning in Croplands	0.01
3C2 - Liming	0.01
	0.01
3C4 - Direct N2O Emissions from Managed So	0.39
	0.39
3C5 - Indirect N2O Emissions from Managed S	0.13
	0.13
3C7 - Rice Cultivations	0.01
4 - Waste	**0.28**
Grand Total	**5.39**

Agricultural Source Category	Emissions (MMT CO2e)	Percent of Ag Inventory
Enteric Fermentation - Cattle	0.73	29%
Manure Management - Cattle	0.79	32%
Agricultural Offroad Equipment	0.39	16%
Manure Management - Poultry	0.06	2%
Emissions from Biomass Burning	0.01	1%
N2O Emissions from Managed Soils	0.52	21%
Total	**2.52**	**100%**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

County Emissions (Scaled for Population - Base Inventory from City of Fresno GHG Plan)

County of Fresno Population	
2022 Population (Estimate)	1,015,190
2020 Population (Census)	1,008,650
2019 (Census)	984,521

Source: https://www.census.gov/quickfacts/fact/table/fresnocountycalifornia,CA/PST045222

2019 Population Information: https://data.census.gov/table/ACSDP5Y2019.DP05?g=040XX00US06_050XX00US06019 (American Community Survey 2019 ACS 5-Year Estimates Data Profiles)

County Emissions -

Scaled Up Based on Population from City of Fresno GHG Reduction Plan Emissions Inventory

Sector	2019 Emissions (MT CO_2e)
Solid Waste	200,840.85
Fugitive Emissions	227,634.91

Per Capita Emissions Used for Scaling

Calculated from City of Fresno GHG Reduction Plan

Sector	Per Capita MT CO2e
Solid Waste	0.20
Fugitive Emissions	0.23

From Fresno City GHG Reduction Plan Update:

	2015	2020
Population	574,590	624,040

Source: https://www.fresnocog.org/wp-content/uploads/publications/Demographics/Fresno_COG_2050_Projections_Final_Report_050417.pdf

ABAU Forecast (MT CO2e)	2020
Transportation	1,170,329.08
Residential Energy	324,759.75
Commercial Energy	355,121.34
Industrial Energy	10,506.20
Solid Waste	127,303.25
Fugitive Emissions	144,286.70
Agriculture	19.00

County of Fresno GHG Emissions Inventory
Fresno County Priority Climate Action Plan
Prepared by LSA - January, 2024

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory
Region Type: County
Region: Fresno
Calendar Year: 2019
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Y	Vehicle Category	Category Subtype	Model Year	Horsepower Bin	Fuel	HC_tpd	CO2_tpd	NH3_tpd	Fuel Consumpti	Total_Population
Fresno	2019	Agricultural	Agricultural Tractors	Aggregate	Aggregate	Gasoline	0.000142	0.044031	3.58987E-07	1426.995705	5.337634
Fresno	2019	Agricultural	Agricultural Tractors	Aggregate	Aggregate	Diesel	0.74431	819.9775	0.006709639	26671221.22	10416.85
Fresno	2019	Agricultural	ATVs	Aggregate	Aggregate	Gasoline	0.14361	15.3503	0.000125152	497487.4037	1664.318
Fresno	2019	Agricultural	ATVs	Aggregate	Aggregate	Diesel	0.007075	5.498	4.49885E-05	178832.1962	365.9816
Fresno	2019	Agricultural	ATVs	Aggregate	Aggregate	Electric	0	0	0	0	161.6996
Fresno	2019	Agricultural	Bale Wagons (Self Propelled)	Aggregate	Aggregate	Diesel	0.00325	4.07901	3.33774E-05	132677.0345	37.6023
Fresno	2019	Agricultural	Balers (Self Propelled)	Aggregate	Aggregate	Diesel	0.000182	0.179491	1.46872E-06	5838.25019	3.34495
Fresno	2019	Agricultural	Combine Harvesters	Aggregate	Aggregate	Diesel	0.025089	41.90939	0.000342932	1363177.149	173.0287
Fresno	2019	Agricultural	Construction Equipment	Aggregate	Aggregate	Diesel	0.017764	21.17889	0.000173301	688880.7581	390.5401
Fresno	2019	Agricultural	Cotton Pickers	Aggregate	Aggregate	Diesel	0.000658	1.144534	9.36539E-06	37227.99046	5.016208
Fresno	2019	Agricultural	Forage & Silage Harvesters	Aggregate	Aggregate	Diesel	0.007521	11.20035	9.16492E-05	364311.183	26.83129
Fresno	2019	Agricultural	Forklifts	Aggregate	Aggregate	Diesel	0.020486	18.41647	0.000150697	599028.3339	465.3196
Fresno	2019	Agricultural	Hay Squeeze/Stack Retriever	Aggregate	Aggregate	Diesel	0.002246	3.324419	2.72028E-05	108132.6038	33.79466
Fresno	2019	Agricultural	Nut Harvester	Aggregate	Aggregate	Diesel	0.032739	31.5528	0.000258187	1026310.598	505.1531
Fresno	2019	Agricultural	Other Harvesters	Aggregate	Aggregate	Diesel	0.025992	34.13099	0.000279284	1110170.725	347.2723
Fresno	2019	Agricultural	Sprayers/Spray Rigs	Aggregate	Aggregate	Diesel	0.050361	51.95515	0.000425134	1689933.274	957.1818
Fresno	2019	Agricultural	Swathers/Windrowers/Hay Conditioners	Aggregate	Aggregate	Diesel	0.009937	10.80169	8.83871E-05	351344.0888	136.5813
Fresno	2019	Airport Ground Support	A/C Tug Narrow Body	Aggregate	Aggregate	Diesel	5.94E-05	0.098938	8.09583E-07	3218.138855	2.70249
Fresno	2019	Airport Ground Support	A/C Tug Wide Body	Aggregate	Aggregate	Diesel	4.1E-05	0.103451	8.46513E-07	3364.939732	1.278073
Fresno	2019	Airport Ground Support	Baggage Tug	Aggregate	Aggregate	Diesel	8.69E-05	0.060904	4.98358E-07	1981.003939	1.921987
Fresno	2019	Airport Ground Support	Belt Loader	Aggregate	Aggregate	Diesel	3.61E-05	0.033004	2.70062E-07	1073.511756	1.658568
Fresno	2019	Airport Ground Support	Bobtail	Aggregate	Aggregate	Diesel	6.03E-06	0.012629	1.03336E-07	410.7683085	0.34147
Fresno	2019	Airport Ground Support	Cargo Loader	Aggregate	Aggregate	Diesel	2.78E-05	0.10571	8.64998E-07	3438.416314	3.648849
Fresno	2019	Airport Ground Support	Cargo Tractor	Aggregate	Aggregate	Diesel	8.64E-05	0.086253	7.05786E-07	2805.541963	2.419557
Fresno	2019	Airport Ground Support	Forklift	Aggregate	Aggregate	Diesel	2.91E-05	0.034134	2.79313E-07	1110.284058	2.643952
Fresno	2019	Airport Ground Support	Lift	Aggregate	Aggregate	Diesel	1.62E-05	0.032825	2.68599E-07	1067.696176	1.580517
Fresno	2019	Airport Ground Support	A/C Tug Narrow Body	Aggregate	Aggregate	Gasoline	8.3E-05	0.104235	1.46665E-06	4186.55	0.59
Fresno	2019	Airport Ground Support	A/C Tug Wide Body	Aggregate	Aggregate	Gasoline	2.93E-05	0.090941	1.26973E-06	3624.45	0.2
Fresno	2019	Airport Ground Support	Air Conditioner	Aggregate	Aggregate	Gasoline	3.43E-08	9.34E-05	0	0	0
Fresno	2019	Airport Ground Support	Air Conditioner	Aggregate	Aggregate	Nat Gas	0	0.000502	0	3.65	0.14
Fresno	2019	Airport Ground Support	Air Start Unit	Aggregate	Aggregate	Gasoline	3.53E-06	0.008832	1.21475E-07	346.75	0.41
Fresno	2019	Airport Ground Support	Baggage Tug	Aggregate	Aggregate	Gasoline	0.000493	0.920286	1.29786E-05	37047.5	8.17
Fresno	2019	Airport Ground Support	Baggage Tug	Aggregate	Aggregate	Nat Gas	0	0.151166	0	8413.25	1.62
Fresno	2019	Airport Ground Support	Belt Loader	Aggregate	Aggregate	Gasoline	0.00012	0.219441	3.1008E-06	8851.25	3.86
Fresno	2019	Airport Ground Support	Belt Loader	Aggregate	Aggregate	Nat Gas	0	0.014572	0	799.35	0.41
Fresno	2019	Airport Ground Support	Bobtail	Aggregate	Aggregate	Gasoline	7.92E-05	0.147904	2.08425E-06	5949.5	1.32
Fresno	2019	Airport Ground Support	Bobtail	Aggregate	Aggregate	Nat Gas	0	0.003646	0	197.1	0.04
Fresno	2019	Airport Ground Support	Cargo Loader	Aggregate	Aggregate	Gasoline	3.33E-05	0.060544	8.54159E-07	2438.2	1.03
Fresno	2019	Airport Ground Support	Cargo Loader	Aggregate	Aggregate	Nat Gas	0	0.012851	0	715.4	0.16
Fresno	2019	Airport Ground Support	Cargo Tractor	Aggregate	Aggregate	Gasoline	0.001129	1.02867	1.54835E-05	44197.85	6.36
Fresno	2019	Airport Ground Support	Cargo Tractor	Aggregate	Aggregate	Nat Gas	0	0.018353	0	1000.1	0.68
Fresno	2019	Airport Ground Support	Cart	Aggregate	Aggregate	Gasoline	4.22E-06	9.44E-08	5.06322E-09	14.38859176	0.347523
Fresno	2019	Airport Ground Support	Catering Truck	Aggregate	Aggregate	Gasoline	0.000166	0.165643	2.34766E-06	6701.4	0.69
Fresno	2019	Airport Ground Support	Catering Truck	Aggregate	Aggregate	Nat Gas	0	0.012685	0	686.2	0.15
Fresno	2019	Airport Ground Support	Deicer	Aggregate	Aggregate	Gasoline	1.31E-06	0.002265	2.55736E-08	73	0.49
Fresno	2019	Airport Ground Support	Forklift	Aggregate	Aggregate	Gasoline	3.46E-05	0.025049	3.98949E-07	1138.8	0.98
Fresno	2019	Airport Ground Support	Forklift	Aggregate	Aggregate	Nat Gas	0	0.050485	0	2671.8	2.28
Fresno	2019	Airport Ground Support	Fuel Truck	Aggregate	Aggregate	Gasoline	3.66E-07	0.000978	1.79015E-08	51.1	0.59
Fresno	2019	Airport Ground Support	Fuel Truck	Aggregate	Aggregate	Nat Gas	0	0.003071	0	160.6	0.02
Fresno	2019	Airport Ground Support	Generator	Aggregate	Aggregate	Gasoline	1.41E-05	0.008636	1.31704E-07	375.95	0
Fresno	2019	Airport Ground Support	Ground Power Unit	Aggregate	Aggregate	Gasoline	5.13E-05	0.155874	2.17632E-06	6212.3	0.78
Fresno	2019	Airport Ground Support	Hydrant Truck	Aggregate	Aggregate	Gasoline	0.000222	0.172357	2.46402E-06	7033.55	0.57
Fresno	2019	Airport Ground Support	Lav Cart	Aggregate	Aggregate	Gasoline	3.65E-07	8.16E-09	4.38024E-10	1.24477365	0.030065
Fresno	2019	Airport Ground Support	Lav Truck	Aggregate	Aggregate	Gasoline	4.65E-05	0.08384	1.17767E-06	3361.65	0.93
Fresno	2019	Airport Ground Support	Lav Truck	Aggregate	Aggregate	Nat Gas	0	0.001751	0	87.6	0
Fresno	2019	Airport Ground Support	Lift	Aggregate	Aggregate	Gasoline	7.55E-05	0.075031	1.06386E-06	3036.8	1.7
Fresno	2019	Airport Ground Support	Lift	Aggregate	Aggregate	Nat Gas	0	0.002221	0	116.8	0
Fresno	2019	Airport Ground Support	Maint. Truck	Aggregate	Aggregate	Gasoline	3.77E-05	0.079563	1.1099E-06	3168.2	1.19
Fresno	2019	Airport Ground Support	Other	Aggregate	Aggregate	Gasoline	3.06E-05	0.019152	2.94097E-07	839.5	1.78
Fresno	2019	Airport Ground Support	Other	Aggregate	Aggregate	Nat Gas	0	0.017318	0	923.45	0.32
Fresno	2019	Airport Ground Support	Passenger Stand	Aggregate	Aggregate	Gasoline	1.21E-05	0.025689	3.60588E-07	1029.3	0.81
Fresno	2019	Airport Ground Support	Passenger Stand	Aggregate	Aggregate	Nat Gas	0	7.02E-05	0	0	0
Fresno	2019	Airport Ground Support	Service Truck	Aggregate	Aggregate	Gasoline	0.000206	0.230828	3.26447E-06	9318.45	3.47
Fresno	2019	Airport Ground Support	Service Truck	Aggregate	Aggregate	Nat Gas	0	0.032228	0	1759.3	0.32
Fresno	2019	Airport Ground Support	Sweeper	Aggregate	Aggregate	Gasoline	1.79E-06	0.001809	2.04589E-08	58.4	0.02
Fresno	2019	Airport Ground Support	Sweeper	Aggregate	Aggregate	Nat Gas	0	0.000383	0	0	0
Fresno	2019	Airport Ground Support	Water Truck	Aggregate	Aggregate	Gasoline	3.5E-06	0.006417	8.8229E-08	251.85	0.31
Fresno	2019	Airport Ground Support	Other	Aggregate	Aggregate	Diesel	0.000113	0.235001	1.92294E-06	7643.819657	8.57577
Fresno	2019	Airport Ground Support	Passenger Stand	Aggregate	Aggregate	Diesel	4.38E-07	0.001135	9.28382E-09	36.90372515	0.536595
Fresno	2019	Construction and Mining	Bore/Drill Rigs	Aggregate	Aggregate	Diesel	0.000932	3.605668	2.95041E-05	117280.7213	59.43265
Fresno	2019	Construction and Mining	Cranes	Aggregate	Aggregate	Diesel	0.005827	8.580743	7.02138E-05	279103.8454	178.798
Fresno	2019	Construction and Mining	Crawler Tractors	Aggregate	Aggregate	Diesel	0.013741	21.20762	0.000173536	689815.3682	329.3434
Fresno	2019	Construction and Mining	Excavators	Aggregate	Aggregate	Diesel	0.013489	38.15983	0.000312251	1241216.074	640.1206
Fresno	2019	Construction and Mining	Graders	Aggregate	Aggregate	Diesel	0.010137	14.35567	0.000117468	466943.5032	206.9397
Fresno	2019	Construction and Mining	Asphalt Pavers	Aggregate	Aggregate	Gasoline	0.000566	0.058319	1.22318E-06	3488.891779	6.677026
Fresno	2019	Construction and Mining	Bore/Drill Rigs	Aggregate	Aggregate	Gasoline	0.000164	0.051593	8.0465E-07	2295.873684	6.385298
Fresno	2019	Construction and Mining	Bore/Drill Rigs	Aggregate	Aggregate	Diesel	4.15E-05	0.000475	3.88101E-09	15.44111312	2.519491
Fresno	2019	Construction and Mining	Cement And Mortar Mixers	Aggregate	Aggregate	Gasoline	0.007255	7.78E-06	4.58693E-06	12606.38535	685.2113
Fresno	2019	Construction and Mining	Cement And Mortar Mixers	Aggregate	Aggregate	Diesel	5.07E-05	0.000692	5.65634E-09	22.50449949	17.2895
Fresno	2019	Construction and Mining	Concrete/Industrial Saws	Aggregate	Aggregate	Gasoline	0.00532	0.137706	5.65835E-06	16106.75121	98.70906
Fresno	2019	Construction and Mining	Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	3.57E-05	0.026896	2.20082E-07	874.8413728	1.601042
Fresno	2019	Construction and Mining	Cranes	Aggregate	Aggregate	Gasoline	7.58E-05	0.045864	6.7898E-07	1938.15	1.53
Fresno	2019	Construction and Mining	Crushing/Proc. Equipment	Aggregate	Aggregate	Gasoline	3.69E-05	5.05E-08	2.78773E-08	79.3136329	0.579207
Fresno	2019	Construction and Mining	Dumpers/Tenders	Aggregate	Aggregate	Gasoline	0.000765	0.002982	4.70802E-07	1308.62841	46.03225
Fresno	2019	Construction and Mining	Dumpers/Tenders	Aggregate	Aggregate	Diesel	5.04E-06	5.54E-05	4.52982E-10	1.802248117	0.728248
Fresno	2019	Construction and Mining	Excavators	Aggregate	Aggregate	Diesel	3.61E-05	0.000397	3.24203E-09	12.89885753	1.146607
Fresno	2019	Construction and Mining	Other	Aggregate	Aggregate	Gasoline	2.78E-05	0.073625	1.0255E-06	2927.3	2.415953
Fresno	2019	Construction and Mining	Other	Aggregate	Aggregate	Diesel	0.000106	0.001465	1.19739E-08	47.63977442	10.94368
Fresno	2019	Construction and Mining	Pavers	Aggregate	Aggregate	Diesel	9.48E-06	0.000104	8.50593E-10	3.384194738	0.450396
Fresno	2019	Construction and Mining	Paving Equipment	Aggregate	Aggregate	Gasoline	0.011371	0.052562	8.1641E-06	23054.20089	491.8589
Fresno	2019	Construction and Mining	Paving Equipment	Aggregate	Aggregate	Diesel	1.61E-05	0.000177	1.44799E-09	5.761027505	1.122709
Fresno	2019	Construction and Mining	Plate Compactors	Aggregate	Aggregate	Gasoline	0.004706	5.31E-06	2.95859E-06	8295.345311	269.295
Fresno	2019	Construction and Mining	Plate Compactors	Aggregate	Aggregate	Diesel	3.43E-05	0.000495	4.04592E-09	16.09721162	10.00613
Fresno	2019	Construction and Mining	Rollers	Aggregate	Aggregate	Gasoline	0.002558	0.165549	4.08815E-06	11644.8524	52.2666
Fresno	2019	Construction and Mining	Rollers	Aggregate	Aggregate	Diesel	0.000238	0.003044	2.48866E-08	99.01475996	30.32492
Fresno	2019	Construction and Mining	Rough Terrain Forklifts	Aggregate	Aggregate	Gasoline	0.000487	0.331967	4.77204E-06	13621.8	6.32
Fresno	2019	Construction and Mining	Rubber Tired Loaders	Aggregate	Aggregate	Gasoline	0.000267	0.172744	2.51133E-06	7168.6	4.079107
Fresno	2019	Construction and Mining	Rubber Tired Loaders	Aggregate	Aggregate	Diesel	5.88E-06	6.46E-05	5.28191E-10	2.101475316	0.264624
Fresno	2019	Construction and Mining	Signal Boards	Aggregate	Aggregate	Gasoline	0.000113	1.54E-07	8.28042E-08	234.6240254	3.237326
Fresno	2019	Construction and Mining	Signal Boards	Aggregate	Aggregate	Diesel	0.000548	0.019408	1.58753E-07	631.2789191	87.94761
Fresno	2019	Construction and Mining	Skid Steer Loaders	Aggregate	Aggregate	Gasoline	0.003757	0.47413	9.04385E-06	25797.51691	59.68162
Fresno	2019	Construction and Mining	Skid Steer Loaders	Aggregate	Aggregate	Diesel	0.001919	0.020946	1.71238E-07	681.291596	119.1868
Fresno	2019	Construction and Mining	Surfacing Equipment	Aggregate	Aggregate	Gasoline	0.006118	6.46E-06	3.56303E-06	10066.40937	131.3104
Fresno	2019	Construction and Mining	Tampers/Rammers	Aggregate	Aggregate	Gasoline	0.000586	1E-06	5.07777E-07	1408.682711	78.75774
Fresno	2019	Construction and Mining	Tractors/Loaders/Backhoes	Aggregate	Aggregate	Gasoline	0.000103	0.111585	1.6137E-06	4606.3	2.145014
Fresno	2019	Construction and Mining	Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	0.000172	0.00189	1.54481E-08	61.46223838	8.390634
Fresno	2019	Construction and Mining	Trenchers	Aggregate	Aggregate	Gasoline	0.004612	0.303982	7.52729E-06	21460.71468	52.02976
Fresno	2019	Construction and Mining	Trenchers	Aggregate	Aggregate	Diesel	0.000217	0.002556	2.08964E-08	83.13882388	13.13783
Fresno	2019	Construction and Mining	Highway Tractors	Aggregate	Aggregate	Diesel	0.004455	8.06763	6.60151E-05	262413.9458	145.7215
Fresno	2019	Construction and Mining	Highway Trucks	Aggregate	Aggregate	Diesel	0.021906	48.39813	0.000396028	1574235.014	152.5166
Fresno	2019	Construction and Mining	Other	Aggregate	Aggregate	Diesel	0.005861	10.8025	8.83938E-05	351370.5516	220.536
Fresno	2019	Construction and Mining	Pavers	Aggregate	Aggregate	Diesel	0.001345	2.544467	2.08206E-05	82763.30853	78.27193
Fresno	2019	Construction and Mining	Paving Equipment	Aggregate	Aggregate	Diesel	0.00072	1.480317	1.2113E-05	48149.92248	44.34833
Fresno	2019	Construction and Mining	Rollers	Aggregate	Aggregate	Diesel	0.004486	6.597166	5.39827E-05	214584.4992	408.0276
Fresno	2019	Construction and Mining	Rough Terrain Forklifts	Aggregate	Aggregate	Diesel	0.002239	7.161814	5.86031E-05	232950.6901	411.0572
Fresno	2019	Construction and Mining	Rubber Tired Dozers	Aggregate	Aggregate	Diesel	0.004026	4.233719	3.46433E-05	137709.2025	36.3426
Fresno	2019	Construction and Mining	Rubber Tired Loaders	Aggregate	Aggregate	Diesel	0.032513	58.17774	0.000476052	1892333.884	532.756
Fresno	2019	Construction and Mining	Scrapers	Aggregate	Aggregate	Diesel	0.021062	37.89179	0.000310058	1232497.592	299.3277
Fresno	2019	Construction and Mining	Skid Steer Loaders	Aggregate	Aggregate	Diesel	0.002505	6.937377	5.67666E-05	225650.4731	533.0439
Fresno	2019	Construction and Mining	Surfacing Equipment	Aggregate	Aggregate	Diesel	0.000248	0.796151	6.51468E-06	25896.22935	24.47798
Fresno	2019	Construction and Mining	Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	0.028778	53.01057	0.00043377	1724262.532	1607.778
Fresno	2019	Construction and Mining	Trenchers	Aggregate	Aggregate	Diesel	0.001969	2.190848	1.79271E-05	71261.21562	96.58721
Fresno	2019	Forestry	Extraction	Aggregate	Aggregate	Diesel	0.008591	6.391369	5.22988E-05	207890.5815	30.28127
Fresno	2019	Forestry	Maintenance & Construction	Aggregate	Aggregate	Diesel	0.003422	1.36811	1.11948E-05	44500.20265	13.95584
Fresno	2019	Forestry	Manufacturing	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Forestry	Shredders	Aggregate	Aggregate	Gasoline	0.004494	6.56E-06	3.4854E-06	9949.285678	140.3414
Fresno	2019	Forestry	Shredders	Aggregate	Aggregate	Diesel	1.25E-07	0	0	0	0
Fresno	2019	Forestry	Skidders	Aggregate	Aggregate	Diesel	0.003223	9.497675	7.77168E-05	308928.7	33.54
Fresno	2019	Forestry	Chainsaws	Aggregate	Aggregate	Gasoline	0.038359	4.09E-06	3.08346E-06	8802.743092	89.45107
Fresno	2019	Industrial		Aggregate	Aggregate	Diesel	0.000373	1.833511	1.50031E-05	59638.1783	196.9202
Fresno	2019	Industrial		Aggregate	Aggregate	Diesel	0.006143	7.719819	6.31691E-05	251100.7947	369.4097
Fresno	2019	Industrial	Aerial Lifts	Aggregate	Aggregate	Gasoline	0.001556	0.411508	6.65485E-06	18989.33915	34.36483
Fresno	2019	Industrial	Aerial Lifts	Aggregate	Aggregate	Diesel	7.41E-05	0.000905	7.40001E-09	29.4418921	13.54217
Fresno	2019	Industrial	Aerial Lifts	Aggregate	Aggregate	Electric	0.000233	5.23E-07	1.14297E-07	326.5541775	5.33341
Fresno	2019	Industrial	Forklifts	Aggregate	Aggregate	Gasoline	0.014089	13.57601	0.000210274	600227.5646	163.2492
Fresno	2019	Industrial	Forklifts	Aggregate	Aggregate	Electric	4.33E-05	4.82E-08	1.26391E-08	36.11091124	0.185073
Fresno	2019	Industrial	Forklifts	Aggregate	Aggregate	Nat Gas	0	21.69406	0	1199941.15	299.16
Fresno	2019	Industrial	Other General Industrial Equipment	Aggregate	Aggregate	Gasoline	0.000668	0.187293	3.5796E-06	10208.5597	22.31236
Fresno	2019	Industrial	Other General Industrial Equipment	Aggregate	Aggregate	Diesel	5.75E-05	0.0007	5.72496E-09	22.77751796	2.789271
Fresno	2019	Industrial	Other Material Handling Equipment	Aggregate	Aggregate	Gasoline	0.000136	0.110862	1.59835E-06	4562.5	4.18
Fresno	2019	Industrial	Sweepers/Scrubbers	Aggregate	Aggregate	Gasoline	0.000926	0.780919	1.19377E-05	34071.70682	29.85781
Fresno	2019	Industrial	Sweepers/Scrubbers	Aggregate	Aggregate	Diesel	1.4E-05	0.000179	1.46662E-09	5.835146444	1.088999
Fresno	2019	Industrial	Other General Industrial Equipment	Aggregate	Aggregate	Diesel	0.002743	3.728451	3.05088E-05	121274.4792	94.04301
Fresno	2019	Industrial	Other Material Handling Equipment	Aggregate	Aggregate	Diesel	0.001095	2.186	1.78874E-05	71103.52608	28.28809
Fresno	2019	Lawn and Garden	Chainsaws	Aggregate	Aggregate	Gasoline	0.184547	2.840224	0.00005743	162061.6736	32826.79
Fresno	2019	Lawn and Garden	Chainsaws	Aggregate	Aggregate	Electric	0	0	0	0	19544.22
Fresno	2019	Lawn and Garden	Chainsaws Preempt	Aggregate	Aggregate	Gasoline	0.16033	1.529324	0.00003369	95182.92501	17675.97
Fresno	2019	Lawn and Garden	Chainsaws Preempt	Aggregate	Aggregate	Electric	0	0	0	0	10523.81
Fresno	2019	Lawn and Garden	Chippers/Stump Grinders	Aggregate	Aggregate	Gasoline	0.000234	0.026252	0.000000596	1648.305134	241.613
Fresno	2019	Lawn and Garden	Chippers/Stump Grinders	Aggregate	Aggregate	Diesel	3.16E-06	0.003175	0.000000026	103.2878842	0.246135
Fresno	2019	Lawn and Garden	Chippers/Stump Grinders	Aggregate	Aggregate	Electric	0	0	0	0	88.02063
Fresno	2019	Lawn and Garden	Lawn Mowers	Aggregate	Aggregate	Gasoline	0.056685	6.642142	0.000146496	386571.4014	83112.96
Fresno	2019	Lawn and Garden	Lawn Mowers	Aggregate	Aggregate	Electric	0	0	0	0	27108.66
Fresno	2019	Lawn and Garden	Leaf Blowers/Vacuums	Aggregate	Aggregate	Gasoline	0.304718	7.849603	0.0001481	421107.1767	33655.75
Fresno	2019	Lawn and Garden	Leaf Blowers/Vacuums	Aggregate	Aggregate	Electric	0	0	0	0	77517.38
Fresno	2019	Lawn and Garden	Other	Aggregate	Aggregate	Gasoline	0.000955	0.12878	0.000002849	7895.114171	1096.583
Fresno	2019	Lawn and Garden	Other	Aggregate	Aggregate	Diesel	1.39E-06	0.001593	1.306E-08	51.80773718	0.210903
Fresno	2019	Lawn and Garden	Rear Engine Riding Mowers	Aggregate	Aggregate	Gasoline	0.113391	11.16356	0.000258932	728258.5968	8347.337
Fresno	2019	Lawn and Garden	Rear Engine Riding Mowers	Aggregate	Aggregate	Diesel	0.001219	1.276041	0.000010427	41505.49611	1246.969
Fresno	2019	Lawn and Garden	Rear Engine Riding Mowers	Aggregate	Aggregate	Electric	0	0	0	0	407.7248
Fresno	2019	Lawn and Garden	Snowblowers	Aggregate	Aggregate	Gasoline	0.000722	0.085087	2.13664E-06	5724.744819	1892.24
Fresno	2019	Lawn and Garden	Snowblowers	Aggregate	Aggregate	Electric	0	0	0	0	148.7716
Fresno	2019	Lawn and Garden	Tillers	Aggregate	Aggregate	Gasoline	0.002331	0.124637	2.79136E-06	7389.610209	2016.254
Fresno	2019	Lawn and Garden	Tillers	Aggregate	Aggregate	Electric	0	0	0	0	266.291
Fresno	2019	Lawn and Garden	Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Gasoline	0.196256	6.012569	0.0001126	318488.1059	62826.56
Fresno	2019	Lawn and Garden	Trimmers/Edgers/Brush Cutters	Aggregate	Aggregate	Electric	0	0	0	0	86980.48
Fresno	2019	Lawn and Garden	Wood Splitters	Aggregate	Aggregate	Gasoline	0.011963	1.104047	2.48145E-05	68462.05588	2458.236
Fresno	2019	Light Commercial	Air Compressors	Aggregate	Aggregate	Gasoline	0.074516	9.945187	0.000218324	617264.0455	6182.029
Fresno	2019	Light Commercial	Air Compressors	Aggregate	Aggregate	Diesel	0.000816	0.580541	4.75002E-06	18883.13972	24.45879
Fresno	2019	Light Commercial	Air Compressors	Aggregate	Aggregate	Electric	0	0	0	0	74245.3
Fresno	2019	Light Commercial	Gas Compressors	Aggregate	Aggregate	Nat Gas	0	4.284804	0	235286.3	2.6
Fresno	2019	Light Commercial	Generator Sets	Aggregate	Aggregate	Gasoline	0.212749	16.73959	0.000357038	998035.3775	38661.86
Fresno	2019	Light Commercial	Generator Sets	Aggregate	Aggregate	Diesel	0.00285	2.834841	2.31865E-05	92208.22339	321.7352
Fresno	2019	Light Commercial	Generator Sets	Aggregate	Aggregate	Electric	0	0	0	0	7267.136
Fresno	2019	Light Commercial	Generator Sets	Aggregate	Aggregate	Nat Gas	0	0.139758	0	7559.15	7.9
Fresno	2019	Light Commercial	Pressure Washers	Aggregate	Aggregate	Gasoline	0.053168	6.587805	0.000149967	424713.8517	21516.24
Fresno	2019	Light Commercial	Pressure Washers	Aggregate	Aggregate	Diesel	1.27E-05	0.014606	1.19463E-07	475.0980299	9.69567
Fresno	2019	Light Commercial	Pressure Washers	Aggregate	Aggregate	Electric	0	0	0	0	39493.32
Fresno	2019	Light Commercial	Pumps	Aggregate	Aggregate	Gasoline	0.017147	2.668462	4.87604E-05	137486.5274	3455.327
Fresno	2019	Light Commercial	Pumps	Aggregate	Aggregate	Diesel	0.00171	1.561296	1.27704E-05	50783.91516	168.6701
Fresno	2019	Light Commercial	Pumps	Aggregate	Aggregate	Electric	0	0	0	0	40345.91
Fresno	2019	Light Commercial	Welders	Aggregate	Aggregate	Gasoline	0.037282	4.573817	9.82984E-05	278202.3923	4596.589
Fresno	2019	Light Commercial	Welders	Aggregate	Aggregate	Diesel	0.003955	3.049617	2.49496E-05	99194.1992	184.6665
Fresno	2019	Light Commercial	Welders	Aggregate	Aggregate	Electric	0	0	0	0	18850.9
Fresno	2019	Locomotive	Line Haul	Aggregate	Aggregate	Diesel	0.052199	0	0.001	0	0
Fresno	2019	Locomotive	Passenger	Aggregate	Aggregate	Diesel	0.002571	0	0.0000362	0	0
Fresno	2019	Locomotive	Short Line	Aggregate	Aggregate	Diesel	0.004005	0	0.0000545	0	0
Fresno	2019	Locomotive	Switcher	Aggregate	Aggregate	Diesel	0.012233	0	0.0000981	0	0
Fresno	2019	Military Tactical Support	A/C Unit	Aggregate	Aggregate	Diesel	0.000119	0.349663	2.86119E-06	11373.4	7.31
Fresno	2019	Military Tactical Support	Aircraft Support	Aggregate	Aggregate	Diesel	3.94E-05	0.10638	8.70478E-07	3460.2	3.05
Fresno	2019	Military Tactical Support	Cart	Aggregate	Aggregate	Diesel	1.57E-05	0.047916	3.92082E-07	1558.55	1.13
Fresno	2019	Military Tactical Support	Communications	Aggregate	Aggregate	Diesel	5.21E-06	0.008641	7.07033E-08	281.05	0.41
Fresno	2019	Military Tactical Support	Compressor	Aggregate	Aggregate	Diesel	0.000119	0.335636	2.74641E-06	10917.15	8.73
Fresno	2019	Military Tactical Support	Crane	Aggregate	Aggregate	Diesel	6.23E-06	0.035684	2.91996E-07	1160.7	0.9
Fresno	2019	Military Tactical Support	Deicer	Aggregate	Aggregate	Diesel	2.93E-06	0.005947	4.86659E-08	193.45	0.16
Fresno	2019	Military Tactical Support	Generator	Aggregate	Aggregate	Diesel	0.000949	2.685087	2.19713E-05	87337.2	64.82
Fresno	2019	Military Tactical Support	Hydraulic Unit	Aggregate	Aggregate	Diesel	4.24E-05	0.090109	7.37335E-07	2930.95	3.01
Fresno	2019	Military Tactical Support	Lift	Aggregate	Aggregate	Diesel	1.27E-06	0.001908	1.56098E-08	62.05	0.08
Fresno	2019	Military Tactical Support	Light	Aggregate	Aggregate	Diesel	3.14E-06	0.003591	2.93832E-08	116.8	0.17
Fresno	2019	Military Tactical Support	Other Tactical Support Equipment	Aggregate	Aggregate	Diesel	2.9E-05	0.086518	7.07952E-07	2814.15	1.73
Fresno	2019	Military Tactical Support	Pressure Washers	Aggregate	Aggregate	Diesel	2.17E-06	0.006172	5.05024E-08	200.75	0.16
Fresno	2019	Military Tactical Support	Pump	Aggregate	Aggregate	Diesel	5.84E-05	0.096281	7.87837E-07	3131.7	4.64
Fresno	2019	Military Tactical Support	Start Cart	Aggregate	Aggregate	Diesel	1.62E-06	0.005611	4.59113E-08	182.5	0
Fresno	2019	Military Tactical Support	Test Stand	Aggregate	Aggregate	Diesel	5.72E-05	0.190766	1.56098E-06	6205	3.45
Fresno	2019	Military Tactical Support	Welder	Aggregate	Aggregate	Diesel	3.32E-05	0.061494	5.03187E-07	2000.2	3.55
Fresno	2019	Oil Drilling	Drill Rig (Mobile)	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Oil Drilling	Workover Rig (Mobile)	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Pleasure Craft	Personal Water Craft	Aggregate	Aggregate	Gasoline	0.995618	16.892	0.000352665	1002593.326	4652.757
Fresno	2019	Pleasure Craft	Personal Water Craft	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Pleasure Craft	Sailboat Auxiliary Inboard Engine	Aggregate	Aggregate	Gasoline	0.011129	0.788267	1.26091E-05	35701.01944	100.589
Fresno	2019	Pleasure Craft	Sailboat Auxiliary Inboard Engine	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Pleasure Craft	Vessels W/Inboard Engines	Aggregate	Aggregate	Gasoline	0.114169	11.00223	0.000173667	491178.4091	1987.116
Fresno	2019	Pleasure Craft	Vessels W/Inboard Engines	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Pleasure Craft	Vessels W/Inboard Jet Engines	Aggregate	Aggregate	Gasoline	0.088429	1.1472	2.53924E-05	71482.12904	746.0578
Fresno	2019	Pleasure Craft	Vessels W/Inboard Jet Engines	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Pleasure Craft	Vessels W/Outboard Engines	Aggregate	Aggregate	Gasoline	1.315738	19.93135	0.000415089	1165998.465	8813.028
Fresno	2019	Pleasure Craft	Vessels W/Outboard Engines	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Pleasure Craft	Vessels W/Sterndrive Engines	Aggregate	Aggregate	Gasoline	0.162586	18.32999	0.000277779	782478.2143	6164.049
Fresno	2019	Pleasure Craft	Vessels W/Sterndrive Engines	Aggregate	Aggregate	Diesel	0	0	0	0	0
Fresno	2019	Portable Equipment	Rental Compressor	Aggregate	Aggregate	Diesel	0.000743	2.325564	1.90294E-05	75643.07206	60.97765
Fresno	2019	Portable Equipment	Rental Generator	Aggregate	Aggregate	Diesel	0.021665	43.66354	0.000357286	1420234.009	129.1437
Fresno	2019	Portable Equipment	Rental Other	Aggregate	Aggregate	Diesel	0.002853	9.54232	7.80821E-05	310380.861	176.736
Fresno	2019	Portable Equipment	Rental Pump	Aggregate	Aggregate	Diesel	0.004859	21.37911	0.000174939	695393.3117	254.8172
Fresno	2019	Portable Equipment	Rental Compressor	Aggregate	Aggregate	Diesel	0.000506	1.919991	1.57107E-05	62451.09948	34.70273
Fresno	2019	Portable Equipment	Rental Generator	Aggregate	Aggregate	Diesel	0.01269	33.16982	0.000271419	1078907.081	220.6102
Fresno	2019	Portable Equipment	Rental Other	Aggregate	Aggregate	Diesel	0.002413	5.331162	4.36234E-05	173405.482	56.26799
Fresno	2019	Portable Equipment	Rental Pump	Aggregate	Aggregate	Diesel	0.011112	36.64601	0.000299864	1191976.523	394.3717
Fresno	2019	Recreational	All Terrain Vehicles (Atvs) Active	Aggregate	Aggregate	Gasoline	0.032249	6.806227	0.000101535	282241.3246	10973.91
Fresno	2019	Recreational	Golf Carts	Aggregate	Aggregate	Gasoline	0.001025	0.307916	4.62829E-06	13125.29221	346.0824
Fresno	2019	Recreational	Minibikes	Aggregate	Aggregate	Gasoline	0	0	0	0	0
Fresno	2019	Recreational	Road Motorcycles Active	Aggregate	Aggregate	Gasoline	0.173522	5.155164	9.23485E-05	258308.4974	9648.475
Fresno	2019	Recreational	Snowmobiles Active	Aggregate	Aggregate	Gasoline	0.082106	0.705694	1.85034E-05	52336.40579	791.3498
Fresno	2019	Transport Refrigeration Ur	Instate Genset	Aggregate	Aggregate	Diesel	0.001631	2.968257	6.65073E-08	96547.8	221.19
Fresno	2019	Transport Refrigeration Ur	Instate Trailer	Aggregate	Aggregate	Diesel	0.066829	61.33255	1.37435E-06	1994949.63	1509.06
Fresno	2019	Transport Refrigeration Ur	Instate Truck	Aggregate	Aggregate	Diesel	0.004741	7.221635	1.62042E-07	234896.47	311.65
Fresno	2019	Transport Refrigeration Ur	Out of State Genset	Aggregate	Aggregate	Diesel	0.00148	2.305316	5.16625E-08	74984.5	1116.89
Fresno	2019	Transport Refrigeration Ur	Out of State Trailer	Aggregate	Aggregate	Diesel	0.025318	33.85238	7.58925E-07	1101108.73	5504.08
Fresno	2019	Transport Refrigeration Ur	Railcar TRU	Aggregate	Aggregate	Diesel	0.00075	1.331263	2.98446E-08	43301.7	180.5522
			Totals				**6.053753**	**1921.191**	**0.017821328**	**67059802.64**	**805462.4**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

OFFROAD Equipment - Summary of CO2 Emissions for Fresno County in 2022 by Equipment Type

Row Labels	Sum of CO2_tpd	
Agricultural	1070.74	
Airport Ground Support	4.76	
Construction and Mining	336.26	
Forestry	0.00	
Forestry	17.26	
Industrial	52.23	
Lawn and Garden	38.79	
Light Commercial	52.98	
Locomotive	0.00	
Military Tactical Support	4.12	
Oil Drilling	0.00	
Pleasure Craft	68.09	
Portable Equipment	153.98	
Recreational	12.98	
Transport Refrigeration Unit	109.01	
Grand Total	**1921.19**	**Tons Per Day**
TPD to TPY (365 days per year)	**701,234.55**	**Tons Per Year**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: County
Region: Fresno
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

Region	Year	Vehicle	Model Year	Speed	Fuel	Populatior	Total VMT	CO2_TOTEX	CH4_TOTE	N2O_TOTE	Fuel Consumption
Fresno	2019	HHDT	Aggregate	Aggregate	Gasoline	8.517899	53579.99093	191.2240793	0.074236	0.022235	20.18391
Fresno	2019	HHDT	Aggregate	Aggregate	Diesel	12433.1	601903900.5	1168480.785	5.288471	183.9291	104286.1
Fresno	2019	HHDT	Aggregate	Aggregate	Natural Ga	247.8138	5566542.181	10957.07977	24.84297	2.233672	1266.471
Fresno	2019	LDA	Aggregate	Aggregate	Gasoline	317885.1	4080323716	1417110.017	70.74539	50.94214	149577.5
Fresno	2019	LDA	Aggregate	Aggregate	Diesel	922.5395	9973703.304	2618.86517	0.020231	0.412232	233.7318
Fresno	2019	LDA	Aggregate	Aggregate	Electricity	3626.471	42168159.35	0	0	0	0
Fresno	2019	LDA	Aggregate	Aggregate	Plug-in Hyl	4227.149	68736624.8	11469.12595	0.313347	0.188422	1210.579
Fresno	2019	LDT1	Aggregate	Aggregate	Gasoline	36240.96	386942418	161251.2983	16.70868	11.04115	17020.25
Fresno	2019	LDT1	Aggregate	Aggregate	Diesel	33.41854	151475.6768	66.94510222	0.002094	0.010538	5.974802
Fresno	2019	LDT1	Aggregate	Aggregate	Electricity	8.365765	78702.46834	0	0	0	0
Fresno	2019	LDT1	Aggregate	Aggregate	Plug-in Hyl	0.237582	3871.416164	0.652152906	1.76E-05	1.06E-05	0.068835
Fresno	2019	LDT2	Aggregate	Aggregate	Gasoline	131591.6	1676430825	746191.5182	37.59635	30.76765	78761.31
Fresno	2019	LDT2	Aggregate	Aggregate	Diesel	250.2307	3408285.196	1229.768458	0.004906	0.193576	109.7559
Fresno	2019	LDT2	Aggregate	Aggregate	Electricity	5.243979	62705.55038	0	0	0	0
Fresno	2019	LDT2	Aggregate	Aggregate	Plug-in Hyl	129.9545	2218045.826	367.3315695	0.009708	0.005886	38.77224
Fresno	2019	LHDT1	Aggregate	Aggregate	Gasoline	13706.25	149748869.9	162578.488	6.55934	7.14695	17160.33
Fresno	2019	LHDT1	Aggregate	Aggregate	Diesel	11973.62	147006809.6	105151.491	1.771455	16.55176	9384.694
Fresno	2019	LHDT2	Aggregate	Aggregate	Gasoline	2338.361	26423547.56	31732.50827	0.887471	1.149674	3349.4
Fresno	2019	LHDT2	Aggregate	Aggregate	Diesel	4099.588	50791936.96	44367.08862	0.575366	6.983767	3959.731
Fresno	2019	MCY	Aggregate	Aggregate	Gasoline	16276.51	31312921.76	7394.960013	9.914988	1.749894	780.5459
Fresno	2019	MDV	Aggregate	Aggregate	Gasoline	138860.5	1653631630	884455.2782	51.47339	38.2218	93355.2
Fresno	2019	MDV	Aggregate	Aggregate	Diesel	1756.378	25050796.77	11656.88779	0.020249	1.834896	1040.369
Fresno	2019	MDV	Aggregate	Aggregate	Electricity	2.487452	22289.80061	0	0	0	0
Fresno	2019	MDV	Aggregate	Aggregate	Plug-in Hyl	329.85	5590245.175	950.3614347	0.024692	0.015004	100.3117
Fresno	2019	MH	Aggregate	Aggregate	Gasoline	1963.528	5391022.805	11606.29647	0.181901	0.222478	1225.057
Fresno	2019	MH	Aggregate	Aggregate	Diesel	727.5182	2162035.589	2570.839264	0.016407	0.404673	229.4455
Fresno	2019	MHDT	Aggregate	Aggregate	Gasoline	1219.274	19288466.63	41114.17243	1.603788	1.240606	4339.645
Fresno	2019	MHDT	Aggregate	Aggregate	Diesel	7712.969	109864515.9	148007.8951	1.381757	23.29774	13209.6
Fresno	2019	MHDT	Aggregate	Aggregate	Natural Ga	46.78591	854789.0711	1058.170104	1.03119	0.215715	122.3083
Fresno	2019	OBUS	Aggregate	Aggregate	Gasoline	380.4009	6676517.79	13788.85739	0.330375	0.365112	1455.429
Fresno	2019	OBUS	Aggregate	Aggregate	Diesel	162.1569	3615021.323	6391.619862	0.119583	1.006097	570.4474
Fresno	2019	OBUS	Aggregate	Aggregate	Natural Ga	0.175646	3904.113238	4.507634487	0.003411	0.000919	0.521014
Fresno	2019	SBUS	Aggregate	Aggregate	Gasoline	339.0218	6307173.095	6128.824372	0.650085	0.299698	646.904
Fresno	2019	SBUS	Aggregate	Aggregate	Diesel	854.0977	6484046.526	8867.495455	0.026897	1.395821	791.4176
Fresno	2019	SBUS	Aggregate	Aggregate	Natural Ga	136.4668	1163568.577	1818.525337	4.793205	0.370718	210.1938
Fresno	2019	UBUS	Aggregate	Aggregate	Gasoline	85.99337	1313902.332	2593.625016	0.02102	0.042799	273.7599
Fresno	2019	UBUS	Aggregate	Aggregate	Diesel	9.301699	271579.9262	309.2112446	0.000986	0.048673	27.59688
Fresno	2019	UBUS	Aggregate	Aggregate	Electricity	0.476909	16047.47738	0	0	0	0
Fresno	2019	UBUS	Aggregate	Aggregate	Natural Ga	143.8645	5907067.052	9722.078292	14.57328	1.981909	1123.724
					Totals		**9,136,921,260.89**	**5,022,203.79**	**251.5672**	**384.2933**	**505887.3**

Pollutant	Total fr	GWP	MT CO_2e
CO2 Total	#####	1	########
CH4 Total	251.57	25	6,289.18
N20 Total	384.29	310	########
Total			########

Local GHG Inventory Tool: Community Module

Version 2023.3

What is the Local GHG Inventory Tool: Community Module?

This tool is designed to help tribes evaluate and estimate greenhouse gas emissions within their communities. This tool can help communities understand their greenhouse gas emissions profile and the sectors driving emissions, provides a baseline for tracking emission trends, and can feed into an action plan that will address and reduce emissions.

The tool helps users to develop a base year greenhouse gas inventory for local communities, according to the Global Protocol for Community-Scale GHG Emissions (GPC).

Use of default data:
This tool gives users the option of applying their own locality-specific data or in some cases using pre-loaded default data. The default data are gathered by federal agencies and other sources covering the default emission factors and system assumptions needed to calculate emissions according to the GPC.

Important Terminology:
Scope - A common means of categorizing direct and indirect emissions to improve transparency and for identifying different types of climate policies and goals. See the GPC for an expanded definition of these terms. There are three *scopes* of emissions:

Scope 1 - All direct GHG emission sources from activities taking place within the tribe's geopolitical boundary.

Scope 2 - Energy-related indirect GHG emissions that result as a consequence of consumption of grid-supplied electricity, heating and/or cooling, within the tribe's geopolitical boundary.

- *Location-based method* reflects emissions using only grid-average emission factors. In the United States, the standard grid-average emission factors are the U.S. Environmental Protection Agency's Emissions & Generation Resource Integrated Database (eGRID). Communities must report Scope 2 emissions using the location-based method.
- *Market-based method* reflects emissions from electricity based on where tribes have specifically chosen to procure power. This method derives emission factors from contractual instruments, such as Renewable Energy Credits (RECs) and utility-specific emission factors. Tribes have the option to report Scope 2 emissions using the market-based method, in addition to the location-based method, to account for avoided emissions from renewable energy sources.

Scope 3 - All other indirect emissions that occur as a result of activities within the tribe's geopolitical boundary. These emissions are not covered in Scope 2, such as emissions from waste disposal, or emissions from agriculture, land management, and urban forestry.

Emission Factors - An emission factor is an amount of GHG emissions associated with a unit of activity data. For example, kg CO_2 emitted per kWh electricity produced (kg CO_2/kWh), or lb CO_2 emitted per gallon of gasoline (lb CO_2/gal).

Read Me

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How this tool is organized:

There are two main sections of this tool: 1) Background Data Collection and 2) Emissions Calculations. In each, the user will enter data according to the sectors outlined in the GPC and will receive customized results. Please refer to the *User's Guide* for more detailed instructions.

1) Background Data Collection
On the Control Sheet, the user will identify the tribe and the inventory year for baseline measurements. Depending on what data is available and at what scale, the user can determine how to configure the tool.

Also on the Control Sheet, the user will set up information about their electricity providers. Users can select their eGRID region, view the default emission factors for the region, and set new emission factors, including utility-specific emission factors (if desired).

2) Emissions
After the user configures the tool on the Control Sheet, the tool calculates the tribe's emissions, or the baseline greenhouse gas inventory for the tribe. The inventory is separated into eight main emission sectors categorized into three scopes, as shown below. Users can also enter emissions for any additional sources they desire.

Scope 1
1. Stationary Combustion of Fossil Fuels
2. Mobile Combustion of Fossil Fuels
3. Solid Waste Disposal
4. Wastewater Treatment

Scope 2
5. Building/Facility Electricity Consumption

Scope 3
6. Water Consumption
7. Agriculture & Land Management
8. Urban Forestry
+ Other Additional Emission Sources (optional)

For each source, the user will be asked to enter data about their tribe's activities (e.g., electricity consumed, fuel used) during the inventory baseline year. Default emission factors for each activity are provided, and users are given the option to override these factors, if necessary. There are multiple sheets for some emissions sources, but not for all sources. Each emissions source follows a distinct process that users will follow to determine the emissions, as explained below:

Stationary Combustion, Electricity Use, and Mobile Combustion
1) Users enter activity/fuel use data on Entry Sheet OR
2) Users can batch import data on Data Sheet ;
3) Emissions are calculated and summarized on the Calculation Sheet.

Solid Waste
1) Users answer questions about their tribe's solid waste disposal system on the Control Sheet;
2) Based on the answers to the questions, users enter data about their solid waste system and view emissions summary on the Entry Sheet.

Wastewater Treatment
1) Users answer questions about their tribe's wastewater treatment system(s) on the Control Sheet;
2) Based on the answers to the questions, users enter data about their wastewater treatment systems on the Entry Sheet; and
3) Emissions are calculated and summarized on the Calculation Sheet.

Employee Commutes, Water Consumption, Agriculture & Land Management, Urban Forestry
1) Users enter necessary data and view emissions on a single sheet.

Additional Emission Sources
1) Users may enter emissions from any additional sources on a single sheet.

Tribe's emissions for the inventory year are summarized on the Emissions Summary sheet.

How to use this tool:

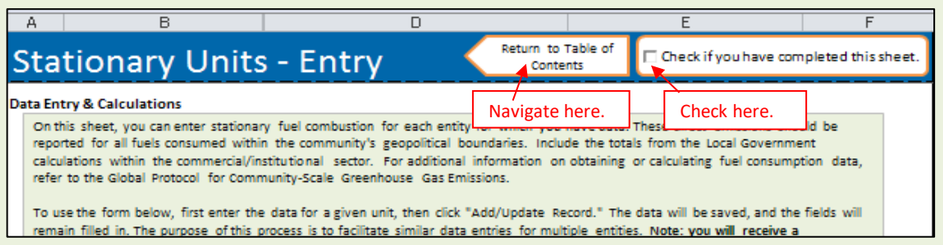
This tool is designed to be flexible to your tribe's needs, and can be conducted at any scale you decide. For example, you may choose to conduct a high-level inventory, entering fuel consumption and electricity use data for the tribe as a whole. Alternatively, you can enter data at the sector level, at the facility/building type level, at the account level, or any combination of the above. The more specific the data provided, the more accurate the tool will be for estimating your tribe's emissions and the impacts of emissions reduction measures.

Configuration:
Use the Control Sheet to configure the tool to your tribe. Select a baseline year, identify eGRID regions , and click the "Set Up" button to get started.

Data entry:
As you move through the tool, enter data in yellow cells. Instructions at the top of each sheet will explain which data fields require user input, and which have default values that the user can choose to override.

On the Mobile Combustion worksheet, you will be asked to calculate emissions one sector at a time. This is because the necessary background calculations are too complex to calculate all sectors at once. On this sheet, follow the instructions, enter the necessary sector, data, and click the "Update CH_4/N_2O Calcs" button to run the calculations.

Navigation:
The tool is designed to move from left to right by the sheet tabs at the bottom of your screen. Once you have completed a tab, check the box provided to help track your progress throughout the tool. Progress is tracked on the Table of Contents, which can be quickly reached by clicking the large navigational arrows at the top of each tab. The image below provides an example.



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Clicking on each box will take you to its respective worksheet in the tool. Use this table of contents to keep track of your progress as you move through the tool.

The background color of completed sheets are filled in below. Incomplete sheets have a white background, while sheets that require no action by the user are grey.

Introduction | Read Me | Definitions

Inventory Control Sheet

Scope 1

Stationary Units- Entry Sheet
Stationary Units- Data Sheet
Stationary Units - Calculation & Summary

Mobile Units- Entry Sheet
Mobile Units- Data Sheet
Mobile Units- Summary Sheet
Mobile Units- Calculation Sheet

Solid Waste - Control Sheet
Solid Waste - Entry, Calculation & Summary

Wastewater - Control Sheet
Wastewater - Entry Sheet
Wastewater - Calculation & Summary

Scope 2

Electricity Use - Entry Sheet
Electricity Use - Data Sheet
Electricity Location - based Calculation & Summary
Electricity Market-based - Calculation & Summary

Scope 3

Water Use
Waste Production
Additional Emission Sources
Agriculture & Land Management
Urban Forestry

Inventory Emissions Summary

Definitions

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Please refer to this list for an explanation of any terms you may find within this tool.

Term	Definition
Base Year	A measurement, calculation, or time used as a basis for comparison. According to LGOP, it is good practice to aim for a base year that is likely to be representative of the general level of emissions over the surrounding period.
BAU	Business As Usual. Used to refer to a future scenario in which there are no changes to the status quo.
Biogenic	Biogenic emissions or fuels are produced by the biological processes of living organisms. Note that this term refers only to recently produced (i.e., non-fossil) material of biological origin
BOD_5	Biological Oxygen Demand. The amount of oxygen consumed in five days by decomposing waste, used to measure the amount of waste input or output into a system.
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent emissions. This is determined by multiplying the emissions of methane and nitrous oxide by their Global Warming Potential.
CH_4	Methane. Methane is a greenhouse gas with a GWP that is 25 times that of CO_2. It is produced through anaerobic decomposition of waste, enteric fermentation, production of natural gas and petroleum products, and other industrial processes.
Contractual Instrument	Any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims. They can include energy attribute certificates (RECs, GOs, etc.), direct contracts, and residual grid mix emission rates.
Denitrification	The process by which microorganisms remove nitrogen from its fixed form in the soil and release it into the atmosphere in the form of nitrous oxide (N_2O)
Direct Emissions	The emissions generated on-site (as opposed to electricity delivered through a grid system), such as from the combustion of fossil fuels
EF	Emission Factor. The value for scaling emissions to activity data in terms of a standard rate of emissions per unit of activity (e.g., grams of carbon dioxide emitted per barrel of fossil fuel consumed).
Effluent	The treated or untreated wastewater that flows out of a source
Energy Attribute Certificate	A category of contractual instrument that represents certain information (or attributes) about the energy generated, but does not represent the energy itself. This category includes a variety of instruments with different names, including certificates, tags, credits, or generator declarations.
EPA	United States Environmental Protection Agency
Fossil Fuel	Any fuel derived from the pre-historic burial of organic matter. Examples include natural gas (methane or CH_4) and petroleum products (gasoline, diesel, kerosene, propane, and others). Combustion of petroleum products releases greenhouse gases into the atmosphere.
Fugitive Emissions	Emissions of gases that escape from pressurized equipment, such as fuel transportation pipelines or wastewater treatment plants.
G.G.E.	Gallon of gasoline equivalent
GHG	greenhouse gas
GPC	Global Protocol for Community-Scale GHG Emissions
GWP	Global Warming Potential. Conversion factor used to compare all greenhouse gas emissions to carbon dioxide equivalent units. The GWP represents the combined effect of the differing times these gases remain in the atmosphere and their relative effectiveness in absorbing outgoing thermal infrared radiation.
Indirect Emissions	Refers to indirect emissions associated with the consumption of purchased or acquired electricity, steam, heating, or cooling. These emissions can be allocated in an inventory to an entity, but are generated offsite. An example is electricity that is not generated directly at a facility. A facility uses electricity on-site, but the fuels used to generate the electricity are combusted off-site, perhaps at a regional power plant. If the generation source is at a different site that is also operated by the community, it is not an indirect emission source.
kg	kilograms
kWh	kilowatt-hour
LEED	Leadership in Energy and Environmental Design
LFG	landfill gas
LGOP	Local Government Operations Protocol
Location-based method	Reflects the average emissions intensity of grids on which energy consumption occurs (using exclusively grid-average emission factor data).
Market-based method	Reflects emissions from electricity based on where communities have specifically chosen to procure power (e.g., Renewable Energy Credits (RECs)), using utility-specific emission factors to estimate emissions from grid electricity purchases, where applicable, and accounting for other contractual instruments.
mcf	thousand cubic feet of natural gas
MG	million gallons
MMBtu	million British Thermal Units, a measure of energy
Mobile Combustion	The combustion of fuels to power a moving vehicle, such as gasoline or diesel fuel in a car or truck
MT CO_2e	Metric tons of carbon dioxide equivalent. This is the standard unit for measuring greenhouse gas emissions.
N_2O	nitrous oxide
Nitrification	Biological process in which ammonia is converted to nitrate (NO_3).
Operational Control	A Local government has operational control over an operation if it has the full authority to introduce and implement its operating procedures
RPS	Renewable Portfolio Standard
Scope 1 Emissions	All direct GHG emissions
Scope 2 Emissions	Indirect GHG emissions from the consumption of purchased electricity, heat, or steam.
Scope 3 Emissions	Other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, outsourced activities, etc. The Scope 3 emissions included in this inventory are imported water consumption, waste generation, urban forestry, and agriculture & land management.
Short Tons	American ton, equal to 2,000 lbs. One short ton = 0.907 metric tons

Inventory Control Sheet

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Check if you have completed this sheet.

Complete the 4 steps below to set up the tool for your community.

1) Please enter the name of your city, the inventory year, and population below.

City	Fresno
Year	2019
Population	984,521

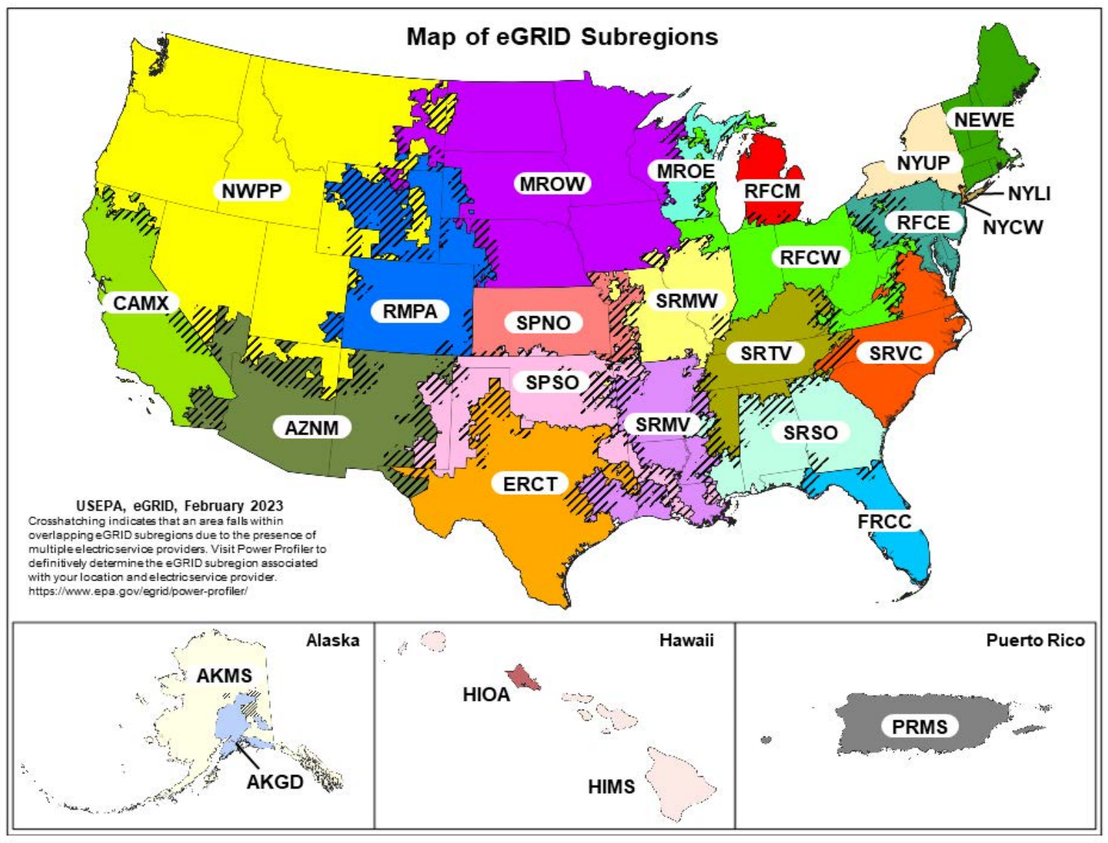
2) The sectors included in the community inventory are defined below. These are the main sectors defined in the Global Protocol for Community-Scale GHG Emissions and the main sectors used to categorize GHG emissions. These sectors will be used to standardize data entry for calculations throughout the tool.

1	Residential
2	Commercial/Institutional
3	Industrial
4	Energy Generation

3) Select the eGRID subregion where your community is located and enter utility-specific emissions factors, if available, for the utilities that provide electric service for your community.

These utility selections and emission factors will be used to help calculate your emissions throughout the tool.
The eGRID subregion emission factors will be used to estimate location-based emissions. Utility-specific emissions factors will be used to estimate market-based emissions.
Please see the map below the table to identify the eGRID subregion that includes your community and continue to Step 4 below once this table is complete. For help determining your eGRID subregion, visit EPA's website by clicking the map below.

		Emission Factors (lb/MWh)			Total EF
	eGRID Subregion	**CO_2**	**CH_4**	**N_2O**	**lb CO_2e/MWh**
Select your subregion:	CAMX eGRID subregion	453.21	0.033	0.004	455.19
	Utility Name				
☑					-
☐					-
☐					-
☐					-
☐					-
☐					-



4) Finally, please click on the "Set Up" button below.

This will set up each sheet based on your entries above. You can always come back and change an emission factor.
However, please do not edit or delete sector names.

Helpful Hints

Setting up a base year:

The GHG emissions inventory for your tribe should encompass all GHG emissions occurring during a selected calendar year. As the *Global Protocol for Community Scale GHG emissions* indicates, reporting on a calendar year basis is considered standard under existing international, national, state, and voluntary reporting programs. As your tribe monitors and tracks progress over time in reducing GHG emissions, it is necessary that you establish a performance base year with which future years may be compared. The tool can be used to develop a base year of emissions, as well as used to track emissions over time if different versions of the Excel file are saved.

The selection of the base year should take into account several factors: data availability, anomalies present in the baseline caused by external factors such as weather or economic conditions, emission reduction efforts that the city has undertaken in recent years, and the context in larger state, national, or voluntary efforts.

The *Global Protocol for Community Scale GHG emissions* is available online at: https://ghgprotocol.org/greenhouse-gas-protocol-accounting-reporting-standard-cities

Following revised reporting requirements under the UNFCCC, this tool presents CO_2 equivalent values for CO_2, CH_4, and N_2O based on the IPCC Fifth Assessment Report (AR5) GWP values. If you would like to use different GWP values for this inventory (e.g., IPCC AR4), please use the button to the right to navigate to the Factors sheet where alternative values can be entered before clicking "Set Up" above.

Factors - GWP Entry

Stationary Units - Entry

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☑ Check if you have completed this sheet.

Data Entry & Calculations

On this sheet, you can enter stationary fuel combustion for each entity for which you have data. These direct emissions should be reported for all fuels consumed within the tribe's geopolitical boundaries. Include the totals from the Tribal Government Operations calculations within the commercial/institutional sector. For additional information on obtaining or calculating fuel consumption data, refer to the Global Protocol for Community-Scale Greenhouse Gas Emissions.

To use the form below, first enter the data for a given unit, then click "Add/Update Record." The data will be saved, and the fields will remain filled in. The purpose of this process is to facilitate similar data entries for multiple entities. **Note: you will receive a confirmation message when the record has been successfully added**. At any point, you may click "Reset Form" to clear all fields. (If you would like to enter more than one record at a time, you may proceed to the "Stationary-Data" sheet and directly add data there.)

If you would like to change any aspect of a previous entry, select "Edit Record." A drop-down menu will appear. Select the entry you would like to change, make changes to the entry fields as needed, then click "Add/Update Record." To delete a record entirely, click the "Delete Record" button. A dropdown menu will appear for you to select the entry to delete. After you confirm that you would like the entry deleted, the saved data will be erased.

1) Describe the fuel consuming unit you are entering

ID#	Unit Description	Facility Type (if applicable)	Sector
4	Natural Gas Consumption	Residential: Single Family Units	Residential

2) Enter the activity data for the year 2019

Fuel Type	Fuel Use (mcf):
Natural Gas	11,468,732

Helpful Hints -- Potentially Useful Conversions

Natural Gas/Digester Gas
To convert **ccf** to **mcf**, multiply by 0.1
To convert **scf** to **mcf**, multiply by 0.001
To convert **therms** to **mcf**, multiply by 0.0973

Liquid Fuels
To convert **barrels** to **gallons**, multiply by 42

Coal
To convert **pounds** to **short tons**, ***divide*** by 2000

Stationary Units - Data

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Check if you have completed this sheet.

This sheet stores the individual data records added via the form on the previous sheet. If you wish to add multiple records at once without using the input form, you may directly add data to this sheet. Please click on the button to the right to generate a template file with instructions for this process. Please be careful to follow the instructions and enter data using the format and parameters specified in the template.

Create Data File Template

ID#	Unit Description	Sector	Fuel Type	Amount of Fuel Used	Unit	Facility Type
Saved Data						
1	Natural Gas Consumption	Commercial/Instit	Natural Gas	5375488.142	mcf	Commercial/Institutional: Other
2	Natural Gas Consumption	Industrial	Natural Gas	23424250.19	mcf	Industrial: Miscellaneous
3	Natural Gas Consumption	Residential	Natural Gas	11468732.38	mcf	Residential: Single Family Units

Stationary Units - Calculation & Summary

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Fuel Summary
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- CH_4 emissions by fuel type
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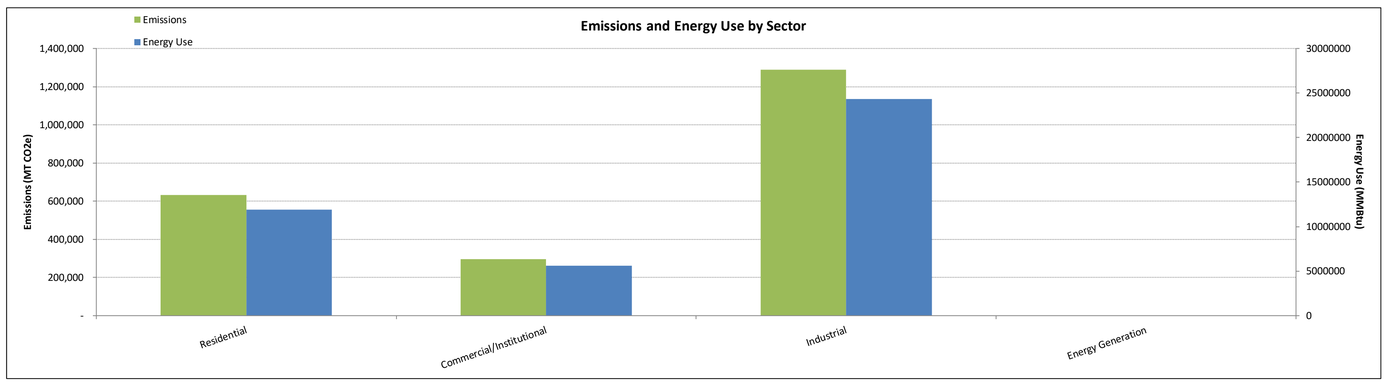
- Activity data by sector and fuel type
- CO_2 emissions by sector and fuel type
- CH_4 emissions by sector and fuel type
- N_2O emissions by sector and fuel type
- Energy use by sector and fuel type

Sector Summary

Emissions by Sector (MT CO_2e)				
Sector	**CO_2**	**CH_4**	**N_2O**	**Total**
Residential	629,668	1,567	315	631,550
Commercial/Institutional	295,131	734	148	296,013
Industrial	1,286,062	3,200	644	1,289,906
Energy Generation	-	-	-	-
Total Stationary Combustion Emissions	**2,210,861**	**5,501**	**1,108**	**2,217,469**

Fuel and Energy (MMBtu) Use by Sector				
Sector	**mcf**	**gal**	**tons**	**Energy Use**
Residential	11,468,732	-	-	11,904,544
Commercial/Institutional	5,375,488	-	-	5,579,757
Industrial	23,424,250	-	-	24,314,372
Energy Generation	-	-	-	-
Total Stationary Combustion Energy Use	40,268,471	-	-	**41,798,673**

Check to display: ☑ Emissions ☑ Energy Use

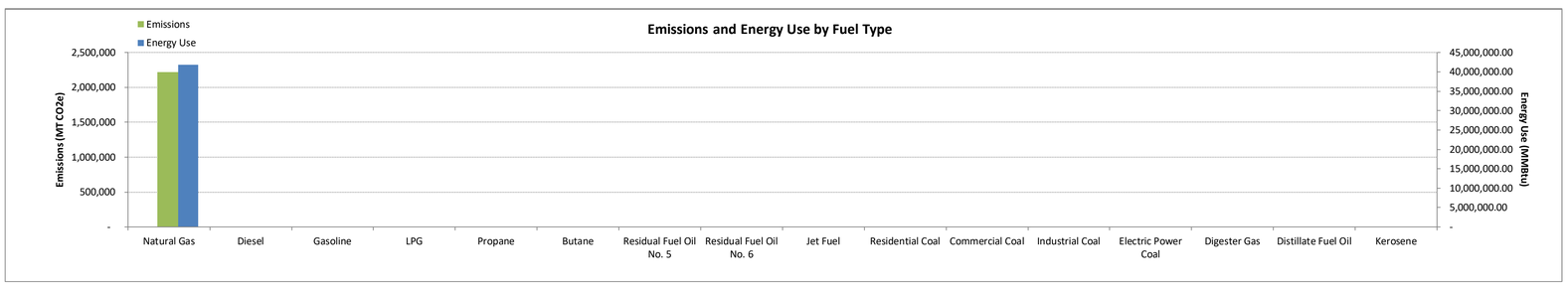


Fuel Summary

Emissions by Fuel Type				
Fuel Type	**CO_2**	**CH_4**	**N_2O**	**TOTAL**
Natural Gas	2,210,861	5,501	1,108	2,217,469
Diesel	-	-	-	-
Gasoline	-	-	-	-
LPG	-	-	-	-
Propane	-	-	-	-
Butane	-	-	-	-
Residual Fuel Oil No. 5	-	-	-	-
Residual Fuel Oil No. 6	-	-	-	-
Jet Fuel	-	-	-	-
Residential Coal	-	-	-	-
Commercial Coal	-	-	-	-
Industrial Coal	-	-	-	-
Electric Power Coal	-	-	-	-
Digester Gas	-	-	-	-
Distillate Fuel Oil	-	-	-	-
Kerosene	-	-	-	-
Total Emissions from Stationary Fuel Combustion	**2,210,861**	**5,501**	**1,108**	**2,217,469**

Fuel and Energy Use by Type			
Fuel Type	**Fuel Consumed**		**Energy Use (MMBtu)**
Natural Gas	40,268,471	mcf	##########
Diesel	0	gal	-
Gasoline	0	gal	-
LPG	0	gal	-
Propane	0	gal	-
Butane	0	gal	-
Residual Fuel Oil No. 5	0	gal	-
Residual Fuel Oil No. 6	0	gal	-
Jet Fuel	0	gal	-
Residential Coal	0	tons	-
Commercial Coal	0	tons	-
Industrial Coal	0	tons	-
Electric Power Coal	0	tons	-
Digester Gas	0	tons	-
Distillate Fuel Oil	0	gal	-
Kerosene	0	gal	-
Total Stationary Fuel Consumed			##########

Check to display: ☑ Emissions ☑ Energy Use



Background Calculations

CO_2 Emissions by Fuel Type

CO_2 Emissions = Fuel use × CO_2 Emission Factor (kg CO_2/unit of fuel) × MT/kg

	Fuel Use	**Unit**	**kg CO_2/unit**	**MT/kg**	**MT CO_2**	**× GWP =**	**MT CO_2e**
Natural Gas	40268470.71	mcf	54.90	0.001	2210860.75	1	2,210,860.75
Diesel	0	gal	10.21	0.001	0.00	1	-
Gasoline	0	gal	8.50	0.001	0.00	1	-
LPG	0	gal	6.02	0.001	0.00	1	-
Propane	0	gal	5.72	0.001	0.00	1	-
Butane	0	gal	6.67	0.001	0.00	1	-
Residual Fuel Oil No. 5	0	gal	10.21	0.001	0.00	1	-
Residual Fuel Oil No. 6	0	gal	11.27	0.001	0.00	1	-
Jet Fuel	0	gal	9.75	0.001	0.00	1	-
Residential Coal	0	tons	2386.36	0.001	0.00	1	-
Commercial Coal	0	tons	2047.51	0.001	0.00	1	-
Industrial Coal	0	tons	2136.50	0.001	0.00	1	-
Electric Power Coal	0	tons	1886.60	0.001	0.00	1	-
Digester Gas	0	mcf	34.11	0.001	0.00	1	-
Distillate Fuel Oil	0	gal	10.28	0.001	0.00	1	-
Kerosene	0	gal	10.15	0.001	0.00	1	-

CH_4 Emissions by Fuel Type

CH_4 Emissions = Fuel use × CH_4 Emission Factor (kg CH_4/unit of fuel) × MT/kg; CO_2 equivalent emissions = MT CH_4 × Global Warming Potential of CH_4

	Fuel Use	**Unit**	**kg CH_4/unit**	**MT/kg**	**MT CH_4**	**× GWP =**	**MT CO_2e**
Natural Gas	40268470.71	mcf	0.00488	0.001	1.96E+02	28	5,500.71
Diesel	0	gal	0.00041	0.001	0.00E+00	28	-
Gasoline	0	gal	0.00036	0.001	0.00E+00	28	-
LPG	0	gal	0.00028	0.001	0.00E+00	28	-
Propane	0	gal	0.00027	0.001	0.00E+00	28	-
Butane	0	gal	0.00031	0.001	0.00E+00	28	-
Residual Fuel Oil No. 5	0	gal	0.00042	0.001	0.00E+00	28	-
Residual Fuel Oil No. 6	0	gal	0.00045	0.001	0.00E+00	28	-
Jet Fuel	0	gal	0.00041	0.001	0.00E+00	28	-
Residential Coal	0	tons	0.27423	0.001	0.00E+00	28	-
Commercial Coal	0	tons	0.23529	0.001	0.00E+00	28	-
Industrial Coal	0	tons	0.24585	0.001	0.00E+00	28	-
Electric Power Coal	0	tons	0.21703	0.001	0.00E+00	28	-
Digester Gas	0	mcf	0.00210	0.001	0.00E+00	28	-
Distillate Fuel Oil	0	gal	0.00042	0.001	0.00E+00	28	-
Kerosene	0	gal	0.00041	0.001	0.00E+00	28	-

N_2O Emissions by Fuel Type

N_2O Emissions = Fuel use × N_2O Emission Factor (kg N_2O/unit of fuel) × MT/kg; CO_2 equivalent emissions = MT N_2O × Global Warming Potential of N_2O

	Fuel Use	**Unit**	**kg N_2O/unit**	**MT/kg**	**MT N_2O**	**× GWP =**	**MT CO_2e**
Natural Gas	40268470.71	mcf	0.00010	0.001	4.1799	265	1,107.66
Diesel	0	gal	0.00008	0.001	0	265	-
Gasoline	0	gal	0.00007	0.001	0	265	-
LPG	0	gal	0.00006	0.001	0	265	-
Propane	0	gal	0.00005	0.001	0	265	-
Butane	0	gal	0.00006	0.001	0	265	-
Residual Fuel Oil No. 5	0	gal	0.00008	0.001	0	265	-
Residual Fuel Oil No. 6	0	gal	0.00009	0.001	0	265	-
Jet Fuel	0	gal	0.00008	0.001	0	265	-
Residential Coal	0	tons	0.03989	0.001	0	265	-
Commercial Coal	0	tons	0.03422	0.001	0	265	-
Industrial Coal	0	tons	0.03576	0.001	0	265	-
Electric Power Coal	0	tons	0.03157	0.001	0	265	-
Digester Gas	0	mcf	0.00041	0.001	0	265	-
Distillate Fuel Oil	0	gal	0.00008	0.001	0	265	-
Kerosene	0	gal	0.00008	0.001	0	265	-

Activity Data by Sector and Fuel Type

Fuel use data by sector and fuel type. Units: Natural Gas and Digester Gas (mcf), Bituminous Coal (short tons), all other (gallons)

	Natural Gas	Diesel	Gasoline	LPG	Propane	Butane	Residual Fuel Oil No. 5	Residual Fuel Oil No. 6	Jet Fuel	Residential Coal	Commercial Coal	Industrial Coal	Electric Power Coal	Digester Gas	Distillate Fuel Oil	Kerosene	Gas Products (mcf)	Petroleum Products (gal)	Coal (tons)
Residential	11,468,732	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11,468,732	-	-
Commercial/Institutional	5,375,488	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,375,488	-	-
Industrial	23,424,250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23,424,250	-	-
Energy Generation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	40,268,471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40,268,471	-	-

Emissions by Sector and Fuel Type

CO_2 Emissions = Units of Fuel Consumed × kg CO2 / unit × MT/kg

CO_2	Natural Gas	Diesel	Gasoline	LPG	Propane	Butane	Residual Fuel Oil No. 5	Residual Fuel	Jet Fuel	Residential C	Commercial Coal	Industrial Coal	Electric Power Coal	Digester Gas	Distillate Fuel Oil	Kerosene	**TOTAL**

Residential	629,668	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	629,668
Commercial/Institutional	295,131	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	295,131
Industrial	1,286,062	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1,286,062
Energy Generation	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Total	2,210,861	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	**2,210,861**

CH_4 *Emissions = Units of Fuel Consumed × kg* CH_4 */ unit × MT/kg ×* $GWP\ CH_4$

CH_4	Natural Gas	Diesel	Gasoline	LPG	Propane	Butane	Residual Fuel Oil No. 5	Residual Fuel Jet Fuel	Residential Cı	Commercial Coal	Industrial Coal	Electric Power Coal	Digester Gas	Distillate Fuel Oil	Kerosene	**TOTAL**
Residential	1,566.64	-	-	-	-	-		-	-	-	-	-	-	-	-	1,566.64
Commercial/Institutional	734.30	-	-	-	-	-		-	-	-	-	-	-	-	-	734.30
Industrial	3,199.77	-	-	-	-	-		-	-	-	-	-	-	-	-	3,199.77
Energy Generation	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Total	5,500.71	-	-	-	-	-		-	-	-	-	-	-	-	-	**5,500.71**

N_2O *Emissions = Units of Fuel Consumed × kg* N_2O */ unit × MT/kg ×* $GWP\ N_2O$

N_2O	Natural Gas	Diesel	Gasoline	LPG	Propane	Butane	Residual Fuel Oil No. 5	Residual Fuel Jet Fuel	Residential Cı	Commercial Coal	Industrial Coal	Electric Power Coal	Digester Gas	Distillate Fuel Oil	Kerosene	**TOTAL**
Residential	315.470	-	-	-	-	-		-	-	-	-	-	-	-	-	315.470
Commercial/Institutional	147.864	-	-	-	-	-		-	-	-	-	-	-	-	-	147.864
Industrial	644.331	-	-	-	-	-		-	-	-	-	-	-	-	-	644.331
Energy Generation	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Total	1,107.665	-	-	-	-	-		-	-	-	-	-	-	-	-	**1,107.665**

Energy Use by Sector and Fuel Type

Energy Consumed (MMbtu) = Units of Fuel Consumed × Heat Content of Fuel (MMBtu/unit)

	Natural Gas	Diesel	Gasoline	LPG	Propane	Butane	Residual Fuel Oil No. 5	Residual Fuel Jet Fuel	Residential Cı	Commercial Coal	Industrial Coal	Electric Power Coal	Digester Gas	Distillate Fuel Oil	Kerosene	**TOTAL**
Residential	11,904,544	-	-	-	-	-		-	-	-	-	-	-	-	-	11,904,544
Commercial/Institutional	5,579,757	-	-	-	-	-		-	-	-	-	-	-	-	-	5,579,757
Industrial	24,314,372	-	-	-	-	-		-	-	-	-	-	-	-	-	24,314,372
Energy Generation	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
Total	41,798,673	-	-	-	-	-		-	-	-	-	-	-	-	-	**41,798,673**

Wastewater - Control

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Check if you have completed this sheet.

Please answer the following questions about your community's wastewater treatment system.

Emissions resulting from wastewater treated within the community's boundaries are Scope 1.

1) It is assumed that wastewater services belong to the commercial/institutional sector as they are either municipally or privately owned.

Commercial/Institutional

2) Do you have one or more facilities where wastewater is treated in ***anaerobic*** conditions?

Anaerobic

- (●) Yes, we have one or more facilities with anaerobic treatment.
- ( ) No, all facilities use aerobic treatment.

3) Do you have one or more facilities where wastewater is treated in ***aerobic*** conditions?

Aerobic

- (●) Yes, we have one or more facilities with aerobic treatment.
- ( ) No, all facilities use anaerobic treatment.

4) Is data available for your treatment system on both the amount of digester gas produced per day and the fraction of CH_4 in the biogas?

Digester Gas Data

- ( ) Yes, we have data on both the amount of digester gas produced and its methane content.
- (●) No, both data items are not available. We would like to use default values.

5) Is data available for the treatment system on both the BOD_5 influent to your WWT process and the amount of BOD_5 removed during primary treatment?

BOD Data

- ( ) Yes, we have data on both the amount of BOD5 and its removal rate.
- (●) No, both data items are not available. We would like to use default values.

6) Is any portion of your population served by septic systems?

Septic Systems

- (●) Yes.
- ( ) No, no portion of the population uses septic systems.

7) Is there any industrial nitrogen load into your wastewater treatment system?

Industrial Load

- (●) Yes.
- ( ) No, there is no industrial load to our system, or it is negligible.

8) Do one or more centralized wastewater treatment plants in your community conduct nitrification/denitrification?

Nitrification/Denitrification

- (●) Yes.
- ( ) No, no nitrification or denitrification occurs.

9) Do one or more centralized wastewater treatment plants in your community ***not conduct*** nitrification/denitrification?

Without Nitrification/Denitrification

- (●) Yes.
- ( ) No, all plants conduct nitrification/denitrification.

10) Do you collect measurements of Nitrogen load in your system's effluent discharged to water bodies?

Effluent N Load

- ( ) Yes, we have data on the N load discharged.
- (●) No, we have no data on the N load discharged. We will use default data.

Enter data about wastewater system

Wastewater - Entry

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Check if you have completed this sheet.

This sheet is where you will enter data for your wastewater treatment system. Fields are provided based on your responses to the questions on the previous sheet. To reset all values to 0, click the box below.

Information on population served by various systems.

Population Served by Facilities with Nitrification/Denitrification
- people

Population Served by Facilities without Nitrification/Denitrification
876,224 people

Population Served by Anaerobic Treatment Facilities
529,373 people

Population Served by Aerobic Treatment Facilities
346,851 people

Population Served by Septic Systems
108,297 people

Site-Specific Data Collected

Industrial N Load
kg N/day

Average Total Nitrogen Discharged (measured)
kg N/day

Wastewater - Calculation & Sumary

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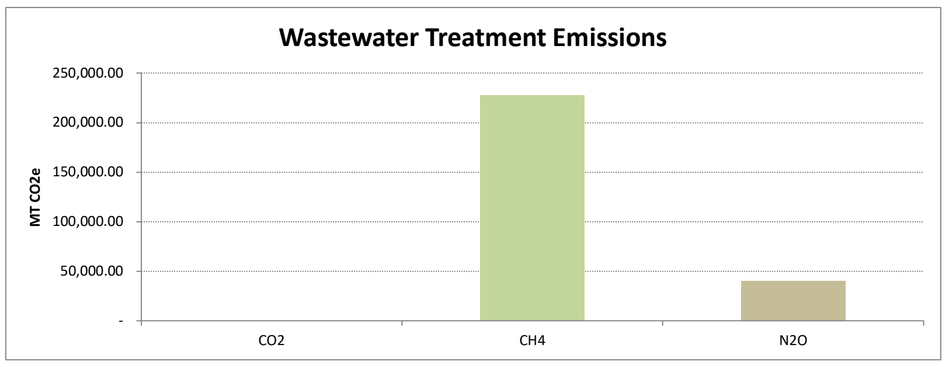
This sheet shows the formulas used to determine your tribe's emissions from wastewater treatment, using methodology from the Local Government Operations Protocol (2010). The yellow cells link to the values you entered on the previous sheet, "Wastewater-Entry."

Your total emissions are summarized in the table below. You may scroll down to view the detailed calculations, but **no action is required on this sheet.** If you would like to change any of the entered values, you may do so on the previous sheet.

GHG Emissions Summary	
	MT CO_2e
CO_2	-
CH_4	227,595.72
N_2O	40,119.72
Total Emissions from Wastewater Treatment	**267,715.44**



Background Calculations

LGOP Equation 10.2 - Stationary CH_4 from Incomplete Combustion of Digester Gas (anaerobic facilities only, default data)

Population Served by Anaerobic Digesters	× Default Digester Gas Production (ft^3/person/day)	× Default % CH_4 in Digester Gas	× Methane Density (g/m^3)	× 1- CH_4 Destruction Efficiency	× m^3/ft^3	× day/yr	× MT/g =	**MT CH_4**	× GWP =	**MT CO_2e**
529,373	1	35%	662	1%	0.028316847	365.25	0.000001	12.68595	28	**355.21**

LGOP Equation 10.4 - Process CH_4 from Wastewater Treatment Lagoons (default data)

Effective Population Served by Lagoons	× Factor for Industrial Discharge into System	× Default BOD_5 Load (kg BOD_5/day)	× 1 - Default BOD_5 Percentage Removed	× Maximum CH_4 Production Capacity (kg CH_4/kg BOD_5)	× Anaerobic CH_4 Correction Factor	× day/yr	× MT/kg =	**MT CH_4**	× GWP =	**MT CO_2e**
529,373	1.25	0.09	68%	0.6	0.8	365.25	0.001	7047.73465	28	**197336.57**

LGOP Equation 10.6 - Fugitive CH_4 Emissions from Septic Systems (default BOD_5 load)

Population 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**
108,297	0.09	0.6	0.5	365.25	0.001	1067.99794	28	**29903.94**

LGOP Equation 10.7 - Process N_2O Emissions from WWTP with Nitrification/Denitrification

Effective Population Served by Nit/Denit	× Factor for Industrial Discharge into System	× Nit/Denit Emissions Factor (g N_2O/person/yr)	× MT/g =	**MT N_2O**	× GWP =	**MT CO_2e**
-	1.25	7	0.000001	0	265	**0.00**

LGOP Equation 10.8 - Process N_2O Emissions from WWTP without Nitrification/Denitrification

Effective Population Served without Nit/Denit	× Factor for Industrial Discharge into System	× No Nit/Denit Emissions Factor (g N_2O/person/yr)	× MT/g =	**MT N_2O**	× GWP =	**MT CO_2e**
876,224	1.25	3.2	0.000001	3.504896	265	**928.80**

LGOP Equation 10.9 - Process N_2O Emissions from Effluent Discharge (site-specific N load data)

Measured Average Total N Discharged (kg N/day)	× Effluent Emission Factor (kg N_2O-N/kg sewage)	× day/yr	× MT/kg	× N_2O/N_2 Molecular Weight Ratio =	**MT N_2O**	× GWP =	**MT CO_2e**
0	0.005	365.25	0.001	1.571428571	0	265	**0.00**

LGOP Equation 10.10 - Process N_2O Emissions from Effluent Discharge (default N load data)

Population Served	Factor for Industrial Discharge into System	× [Total N Load (kg N/person/day)	- N uptake* (kg N/kg BOD5)	× BOD5 Load]	× Effluent Emissions Factor (kg N_2O-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**
Anaerobic Treatment with Nitrification/Denitrification												
-	1.25	0.026	0.005	0.09	0.005	1.571428571	0.3	365.25	0.001	0.000	265	**0.00**
Anaerobic Treatment without Nitrification/Denitrification												
876,224	1.25	0.026	0.005	0.09	0.005	1.571428571	1	365.25	0.001	80.310	265	**21282.21**
Aerobic Treatment with Nitrification/Denitrification												
-	1.25	0.026	0.05	0.09	0.005	1.571428571	0.3	365.25	0.001	0.000	265	**0.00**
Aerobic Treatment without Nitrification/Denitrification												
876,224	1.25	0.026	0.05	0.09	0.005	1.571428571	1	365.25	0.001	67.580	265	**17908.71**

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

Effective Population Calculations

System	Industrial Load (lbs N/day)	× kg/lb	÷ Population Equivalency Factor (kg N/person/day)	= Population Equivalent of Industrial Loading	+ Population Served	= Effective Population
Anaerobic	0	0.45359237	0.026	0	529,373	529,373
Aerobic	0	0.45359237	0.026	0	346,851	346,851
Nit/Denit	0	0.45359237	0.026	0	-	-
No Nit/Denit	0	0.45359237	0.026	0	876,224	876,224

Cell Color Codes

Data entered on previous sheet
Calculated or Entered Data
CH_4 Emissions
N_2O Emissions
Value depends on system type

Electricity Use - Data

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☑ Check if you have completed this sheet.

This sheet stores the individual data records added via the form on the previous sheet. If you wish to add multiple records at once without using the input form, you may directly add data to this sheet. Please click on the button to the right to generate a template file with instructions for this process. Please be careful to follow the instructions and enter data using the format and parameters specified in the template. **Once you have manually entered all data to this sheet, please select the "Update Electricity Calculations with Manual Data" button to the right.**

Create Data File Template

ID#	Unit Description	Sector	Utility	Electricity Consumed (kWh)	Facility Type	Contractual Instrument Description	Supplier-Specific CO_2 Emissions Rate	Supplier-Specific CH_4 Emissions Rate	Supplier-Specific N_2O Emissions Rate
Saved Data									
1	Electricity Consumption	Residential	CAMX eGRID subregion	2439941102	Residential: Sing	0	0	0	0
2	Electricity Consumption	Commercial/Institutional	CAMX eGRID subregion	2336501581	Commercial/Inst	0	0	0	0
3	Electricity Consumption	Industrial	CAMX eGRID subregion	1220847963	Industrial: Misce	0	0	0	0

Electricity Use - Calculation & Summary

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- Emissions by Sector

Electricity Summary
- Electricity Use by Sector

Background Calculations
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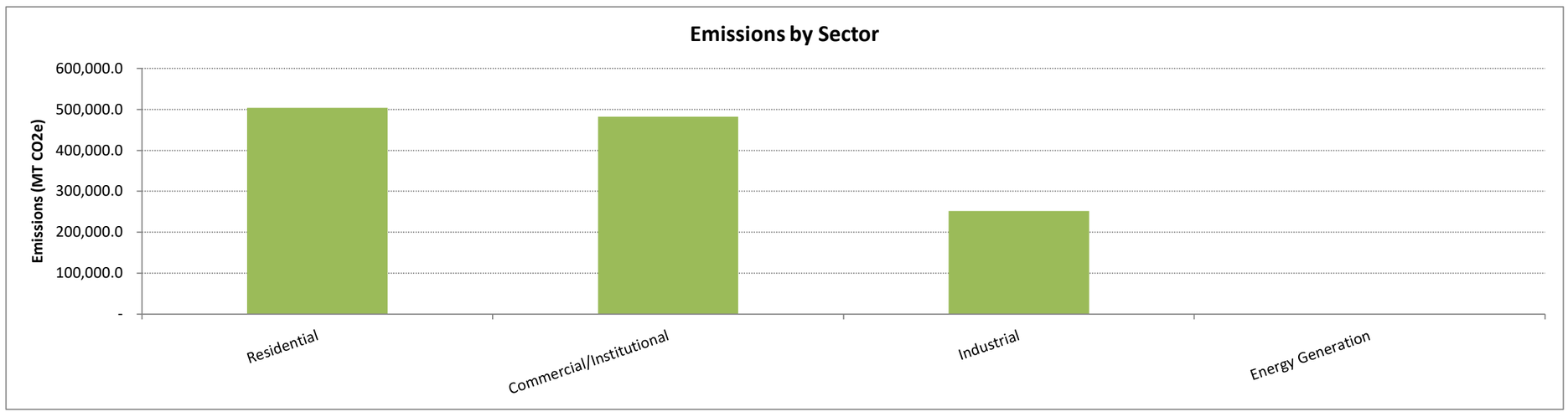
- Activity data by sector and utility
- CO_2 emissions by sector and utility
- CH_4 emissions by sector and utility
- N_2O emissions by sector and utility

This sheet is where Scope 2 emissions from grid electricity usage using the **location-based method** are calculated.

Electricity use by sector shows the total amount of grid-purchased electricity usage and **does not** include kWh purchased through contractual instruments (e.g., RECs, PPAs). Emissions are calculated by each utility entered on the Electricity-Entry tab, by sector, using exclusively the eGRID emissions rate.

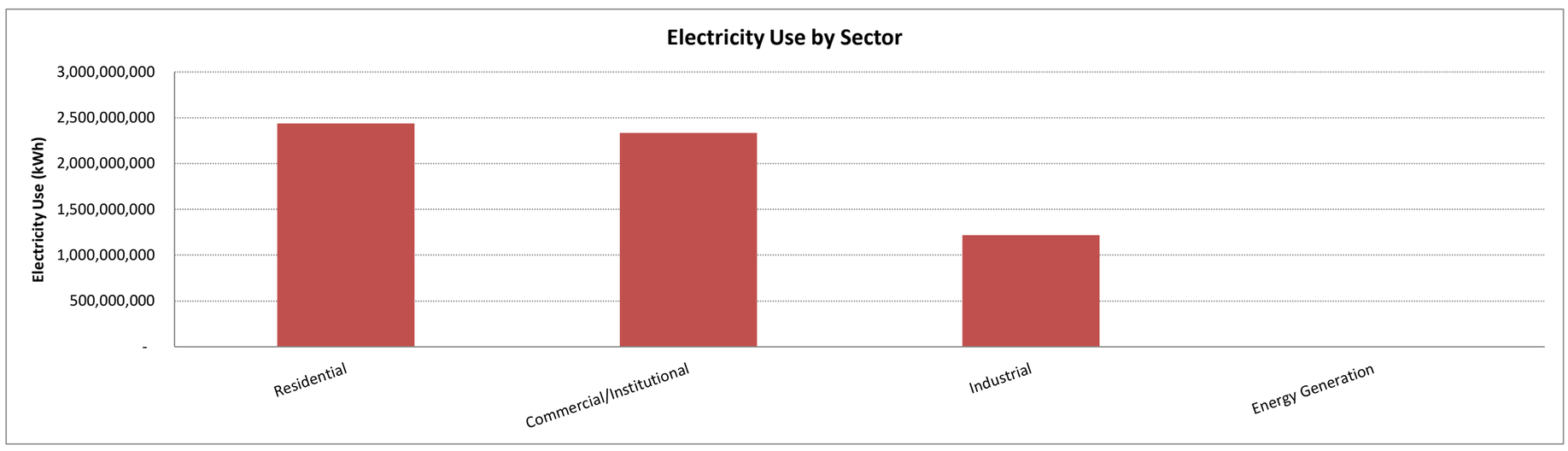
GHG Summary

Emissions by Sector (in CO_2e)				
	CO_2	**CH_4**	**N_2O**	**Total**
Residential	501,583.9	1,022.6	1,173.1	503,779.7
Commercial/Institutional	480,319.6	979.3	1,123.4	482,422.3
Industrial	250,972.3	511.7	587.0	252,071.0
Energy Generation	-	-	-	-
Total Emissions from Electricity Use	**1,232,875.9**	**2,513.6**	**2,883.5**	**1,238,273.0**



Electricity Summary

Electricity Use by Sector (in kWh)	
Sector	**kWh**
Residential	2,439,941,102
Commercial/Institutional	2,336,501,581
Industrial	1,220,847,963
Energy Generation	-
Total Electricity Use	**5,997,290,646**



Background Calculations

CO_2 Emissions by Utility

Emissions = Electricity Consumed (kWh) × eGRID Regional Emissions Factor (lb CO_2/MWh) × MWh/kWh × MT/lb × CO_2 GWP

Utility	kWh	eGRID Regional EF (lb CO_2/MWh)	MWh/kWh	MT/lb	MT CO_2	× GWP =	MT CO_2e
CAMX eGRID subregion	5,997,290,646	453	0.001	0.000454	1,232,876	1	1,232,876
-	-	-	0.001	0.000454	-	1	-
-	-	-	0.001	0.000454	-	1	-
-	-	-	0.001	0.000454	-	1	-
-	-	-	0.001	0.000454	-	1	-
-	-	-	0.001	0.000454	-	1	-

CH_4 Emissions by Utility

Emissions = Electricity Consumed (kWh) × eGRID Regional Emissions Factor (lb CH_4/MWh) × MWh/kWh × MT/lb × CH_4 GWP

Utility	kWh	eGRID Regional EF (lb CH_4/MWh)	MWh/kWh	MT/lb	MT CH_4	× GWP =	MT CO_2e
CAMX eGRID subregion	5,997,290,646	0.0330	0.001	0.000453592	90	28	2,513.58
-	-	-	0.001	0.000453592	-	28	-
-	-	-	0.001	0.000453592	-	28	-
-	-	-	0.001	0.000453592	-	28	-
-	-	-	0.001	0.000453592	-	28	-

Market-based Electricity Use - Calculation & Summary

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GHG Summary
- Emissions by Sector

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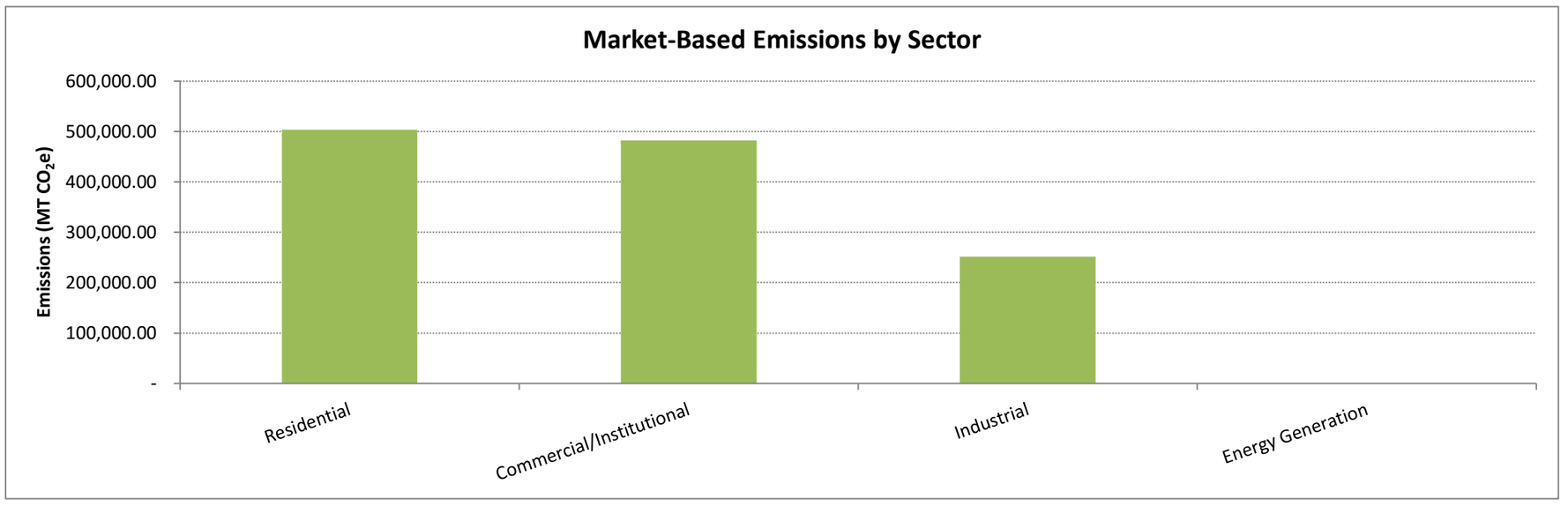
- Activity data by sector and utility
- CO_2 emissions by sector and utility
- CH_4 emissions by sector and utility
- N_2O emissions by sector and utility

This sheet is where Scope 2 emissions from electricity usage using the **market-based method** are calculated.

Emissions are calculated for each electricity unit entered on the Electricity-Entry tab, by sector, using the utility-specific emissions rates, excluding the electricity purchased through contractual instruments. The Electricity Use by Sector table shows the total amount of kWh grid usage and purchased contractual instruments that are associated with direct electricity use (e.g., utility electricity purchases, RECs, PPAs). Emissions from electricity purchased through contractual instruments are calculated based on the emission factors entered for each contractual instrument (generally, emission factors for contractual instruments are zero). If electricity is purchased from more than one utility, then the total kWh from contractual instruments is divided based on proportion of total electricity purchased and subtracted from the utilities. Finally, to calculate the total emissions by sector, emissions from contractual instruments and emissions from other grid-supplied electricity are summed.

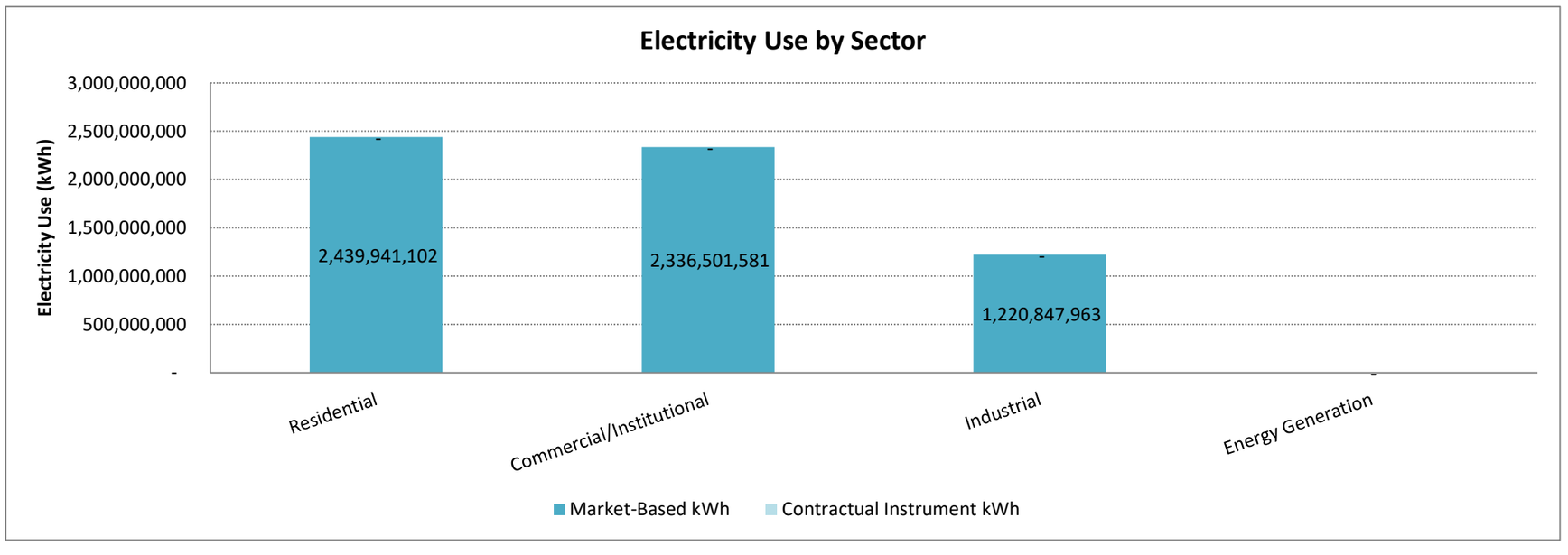
GHG Summary

Emissions by Sector (in MT CO_2e)				
	CO_2	CH_4	N_2O	Total
Residential	501,583.92	1,022.63	1,173.14	503,779.69
Commercial/Institutional	480,319.64	979.27	1,123.41	482,422.32
Industrial	250,972.33	511.68	586.99	252,071.01
Energy Generation	-	-	-	-
Total Emissions from Electricity Use	**1,232,875.90**	**2,513.58**	**2,883.54**	##########



Electricity Summary

Electricity Use by Sector (in kWh)			
Sector	**Grid-Supplied kWh**	**Contractual Instrument kWh**	**Market-Based kWh**
Residential	2,439,941,102	-	##########
Commercial/Institutional	2,336,501,581	-	##########
Industrial	1,220,847,963	-	##########
Energy Generation	-	-	-
Total Electricity Use	**5,997,290,646**	**-**	##########



Background Calculations

Contractual Instrument Calculations

CO_2 Emissions by Contractual Instrument

Emissions = Electricity Consumed (kWh) × Contractual Instrument Emissions Factor (lb CO_2/MWh) × MWh/kWh × MT/lb × CO_2 GWP

Contractual Instrument	kWh	EF (lb CO_2/MWh)	MWh/kWh	MT/lb	MT CO_2	× GWP =	MT CO_2e
	-	-	0.001	0.000454	-	1	-

	-	-	0.001	0.000454	-	1	-
	-	-	0.001	0.000454	-	1	-
	-	-	0.001	0.000454	-	1	-
	-	-	0.001	0.000454	-	1	-
	-	-	0.001	0.000454	-	1	-

CH_4 Emissions by Contractual Instrument

Emissions = Electricity Consumed (kWh) × Contractual Instrument Emissions Factor (lb CH_4/MWh) × MWh/kWh × MT/lb × CH_4 GWP

Contractual Instrument	kWh	EF (lb CH_4/MWh)	MWh/kWh	MT/lb	MT CH_4	× GWP =	MT CO_2e
	-	-	0.001	0.000453592	-	28	-
	-	-	0.001	0.000453592	-	28	-
	-	-	0.001	0.000453592	-	28	-
	-	-	0.001	0.000453592	-	28	-
	-	-	0.001	0.000453592	-	28	-
	-	-	0.001	0.000453592	-	28	-

N_2O Emissions by Contractual Instrument

Emissions = Electricity Consumed (kWh) × Contractual Instrument Emissions Factor (lb N_2O/MWh) × MWh/kWh × MT/lb × N_2O GWP

Contractual Instrument	kWh	EF (lb N_2O/MWh)	MWh/kWh	MT/lb	MT N_2O	× GWP =	MT CO_2e
	-	-	0.001	0.000453592	-	265	-
	-	-	0.001	0.000453592	-	265	-
	-	-	0.001	0.000453592	-	265	-
	-	-	0.001	0.000453592	-	265	-
	-	-	0.001	0.000453592	-	265	-
	-	-	0.001	0.000453592	-	265	-

Activity Data by Sector and Contractual Instrument

Electricity use data by sector and fuel type (kWh)

Sector							TOTAL
Residential	-	-	-	-	-	-	-
Commercial/Institutional	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	-	-
Energy Generation	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

CO_2 Emissions by Sector and Contractual Instrument

Emissions = Electricity Consumed (kWh) × Emissions Factor (lb CO_2/MWh) × MWh/kWh × MT/lb × CO_2 GWP

Sector							TOTAL
Residential	-	-	-	-	-	-	-
Commercial/Institutional	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	-	-
Energy Generation	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

CH_4 emissions by Sector and Contractual Instrument

Emissions = Electricity Consumed (kWh) × Emissions Factor (lb CH_4/kWh) × MWh/kWh × MT/lb × CH_4 GWP

Sector							TOTAL
Residential	-	-	-	-	-	-	-
Commercial/Institutional	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	-	-
Energy Generation	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

N_2O emissions by Sector and Contractual Instrument

Emissions = Electricity Consumed (kWh) × Emissions Factor (lb N_2O/kWh) × MWh/kWh × MT/lb × N_2O GWP

Sector							TOTAL
Residential	-	-	-	-	-	-	-
Commercial/Institutional	-	-	-	-	-	-	-
Industrial	-	-	-	-	-	-	-
Energy Generation	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-

Market-Based Calculations

Activity Data by Sector and Utility

Electricity use data by sector and fuel type (kWh) with electricity from contractual instruments removed

Sector	CAMX eGRID sub	-	-	-	-	-	TOTAL
Residential	2,439,941,102	-	-	-	-	-	#########
Commercial/Institutional	2,336,501,581	-	-	-	-	-	#########
Industrial	1,220,847,963	-	-	-	-	-	#########
Energy Generation	-	-	-	-	-	-	-
Total	############	-	-	-	-	-	#########

CO_2 Emissions by Sector and Utility

Emissions = Electricity Consumed (kWh) × Utility Emissions Factor (lb CO_2/MWh) × MWh/kWh × MT/lb × CO_2 GWP

Sector	CAMX eGRID sub	-	-	-	-	-	TOTAL
Residential	501,583.9	-	-	-	-	-	501,583.9
Commercial/Institutional	480,319.6	-	-	-	-	-	480,319.6
Industrial	250,972.3	-	-	-	-	-	250,972.3
Energy Generation	-	-	-	-	-	-	-
Total	1,232,875.9	-	-	-	-	-	#########

CH_4 emissions by Sector and Utility

Emissions = Electricity Consumed (kWh) × Utility Emissions Factor (lb CH_4/kWh) × MWh/kWh × MT/lb × CH_4 GWP

Sector	CAMX eGRID sut	-	-	-	-	-	TOTAL
Residential	1,022.6	-	-	-	-	-	1,022.63
Commercial/Institutional	979.3	-	-	-	-	-	979.27
Industrial	511.7	-	-	-	-	-	511.68
Energy Generation	-	-	-	-	-	-	-
Total	2,513.58	-	-	-	-	-	**2,513.58**

N_2O emissions by Sector and Utility

Emissions = Electricity Consumed (kWh) × Utility Emissions Factor (lb N_2O/kWh) × MWh/kWh × MT/lb × N_2O GWP

Sector	CAMX eGRID sut	-	-	-	-	-	TOTAL
Residential	1,173.143	-	-	-	-	-	1,173.14
Commercial/Institutional	1,123.408	-	-	-	-	-	1,123.41
Industrial	586.993	-	-	-	-	-	586.99
Energy Generation	-	-	-	-	-	-	-
Total	2,883.54	-	-	-	-	-	**2,883.54**

Water

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☐ Check if you have completed this sheet.

Data Entry and Calculations

This sheet is where you will calculate the Scope 3 emissions associated with imported water consumption by your tribe. These emissions are those that are indirectly associated with the electricity use and other emissions required to provide water to your tribe.

Any electricity use associated with water within your tribe (such as water pumps) should be entered under the Electricity tab.

Please answer the following questions about your community's water use.

1) Does your community import water?

Yes

2) What percent of water comes from imported sources?

Please enter the percent of water from imported, as opposed to local, sources. The percent of water from local sources will be computed automatically.

% imported	
% local	100%
Total	100%

3) How much water is consumed by each sector?

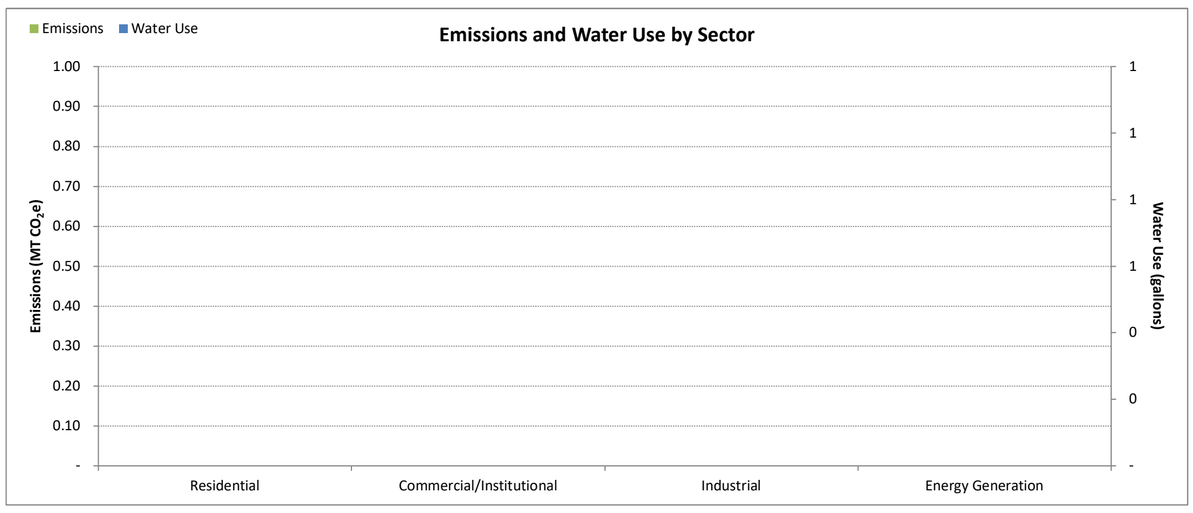
Please enter data in the yellow cells below.

Sector	Water Use (gal)
Residential	
Commercial/Institutional	
Industrial	
Energy Generation	

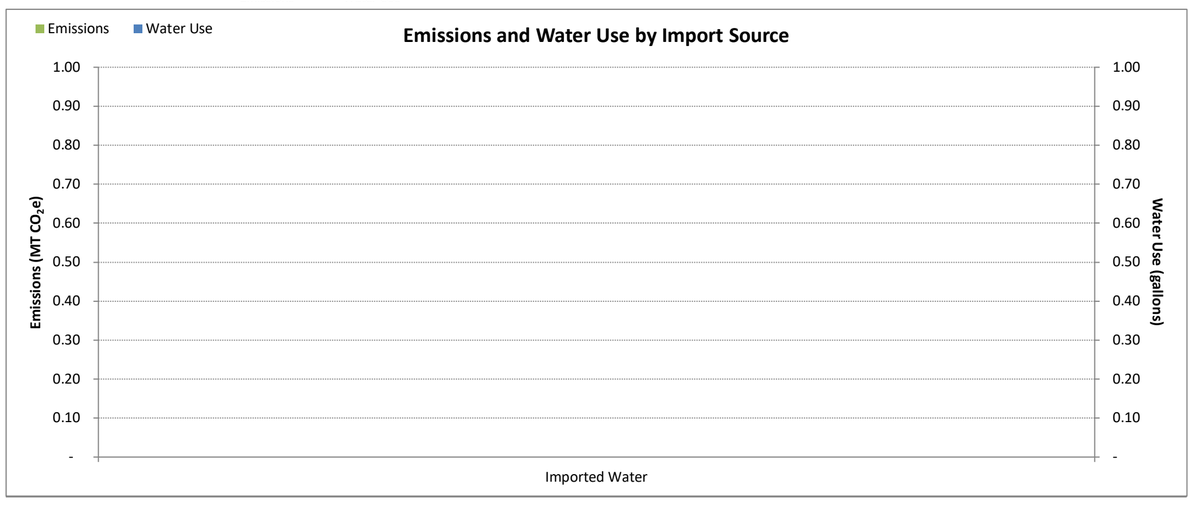
Water Emissions Summary

Water Consumption Emissions (MT CO_2e)				
Sector	**CO_2**	**CH_4**	**N_2O**	**TOTAL**
Residential	-	-	-	-
Commercial/Institutional	-	-	-	-
Industrial	-	-	-	-
Energy Generation	-	-	-	-
Total Emissions from Water Consumption	-	-	-	-

Check to display: ▫ Emissions ▫ Water Use



Check to Display: ▫ Emissions ▫ Water Use



Background Calculations

Imported Water Consumption by Sector

Imported Water (gallons) = Total Water Consumption (gal) × Percent of Water Imported

Imported Water by Sector (gallons)		
Sector	**Imported Water**	**TOTAL**
Residential	-	-
Commercial/Institutional	-	-
Industrial	-	-
Energy Generation	-	-
Total	-	-

Emissions from Imported Water by Sector

CO_2 Emissions (MT CO_2 e) = Imported Water Consumed (gal) × Water Electricity Intensity (kWh/Mgal) × Electricity Emission Factor (lb CO_2 /MWH) × MG/gal × MT/lb × MWh/kWh × GWP CO_2

CO_2 Emissions from Imported Water (MT CO_2e)		
		TOTAL
Energy Intensity of Water (kWh/MG)	5,604	
EF (lb CO2/MWh)	453	
Residential	-	-
Commercial/Institutional	-	-
Industrial	-	-
Energy Generation	-	-
Total	-	-

CH_4 Emissions (MT CO_2 e) = Imported Water Consumed (gal) × Water Electricity Intensity (kWh/Mgal) × Electricity Emission Factor (lb CH_4 /MWH) × MG/gal × MT/lb × MWh/kWh × GWP CH_4

CH_4 Emissions from Imported Water (MT CO_2e)		
		TOTAL
Energy Intensity of Water (kWh/MG)	5,604	
EF (lb CH_4/MWh)	0.033	
Residential	-	-
Commercial/Institutional	-	-
Industrial	-	-

Energy Generation	-	-
Total	-	**-**

N_2O Emissions (MT CO_2e) = Imported Water Consumed (gal) × Water Electricity Intensity (kWh/Mgal) × Electricity Emission Factor (lb N_2O/MWH) × MG/gal × MT/lb × MWh/kWh × GWP N_2O

N_2O Emissions from Imported Water (MT CO_2e)		
		TOTAL
Energy Intensity of Water (kWh/MG)	5,604	
EF (lb N_2O/MWh)	0.00	
Residential	-	-
Commercial/Institutional	-	-
Industrial	-	-
Energy Generation	-	-
Total	-	**-**

Total Emissions by Import Source

	Imported Water
Total Emissions (MT CO_2e)	-

Agriculture & Land Management

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Check if you have completed this sheet.

Data Entry & Calculations

This sheet is where you will calculate the Scope 3 emissions associated with the application of synthetic, organic, and manure fertilizers. A portion of applied fertilizers volatilize into the air in the form of nitrous oxide (N_2O), a greenhouse gas.

1. Enter Fertilizer Consumption Data for Each Sector.

Please enter the amount of synthetic, organic, or manure fertilizer applied.

Sector	Synthetic (short tons N)	Organic (short tons)	Manure (short tons)
Residential			
Commercial/Institutional			
Industrial			
Energy Generation			

Fertilizer Emissions Summary

Fertilizer Application Emissions (MT CO_2e)				
	Synthetic N_2O	Organic N_2O	Manure N_2O	TOTAL
Residential	-	-	-	-
Commercial/Institutional	-	-	-	-
Industrial	-	-	-	-
Energy Generation	-	-	-	-
Total Emissions from Fertilizer Application	-	-	-	-

Urban Forestry

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☐ Check if you have completed this sheet.

This sheet is where you will estimate the Scope 3 carbon dioxide sequestration associated with urban trees located within the borders of your tribe. Changes in carbon stocks in urban trees are equivalent to tree growth minus biomass losses resulting from pruning and mortality. Net carbon sequestration can be calculated using data on crown cover area or number of trees.

1. Enter Forestry Data

Please enter the total urban area and percent of that area with tree cover below in your locality.

Sector	Total Urban Area (km^2)	% Urban Area with Tree Cover
Residential		
Commercial/Institutional		
Industrial		
Energy Generation		

Helpful Hints -- Potentially Useful Conversions

Urban Area Conversions

1 km^2 = 247.1 acres

1 km^2 = 0.39 square miles

Urban Forestry Carbon Sequestration Summary

Carbon Sequestered (MT CO_2e)		
	Carbon Sequestration	**TOTAL**
Residential	-	-
Commercial/Institutional	-	-
Industrial	-	-
Energy Generation	-	-
Total Sequestration from Urban Trees	-	-

Waste Production

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Check if you have completed this sheet.

This sheet is where you will estimate the Scope 3 emissions associated with the decomposition of waste generated within the borders by your tribe, but landfilled elsewhere. This sheet applies to waste produced directly or indirectly by your tribe's activities and disposed of in a solid waste facility not operated within the tribe's geopolitical boundaries. It is optional to report these Scope 3 emissions. If the waste is disposed of in a facility operated within the tribe's geopolitical boundaries, emissions should be calculated as Scope 1 emissions on the Solid Waste-Control and Solid Waste-Entry sheets.

Calculate Scope 1 Solid Waste Emissions

To calculate Scope 3 emissions from waste, please visit EPA's WAste Reduction Model (WARM). WARM is available both as a web-based calculator and in an Excel spreadsheet. https://www.epa.gov/warm

Please enter the results from EPA's WARM model here.

Calculate Scope 3 Emissions in WARM (*links*

Enter value from Baseline Waste Management Scenario.

Solid Waste Emissions (Scope 3)		**MT CO_2e**

Please also describe how you would like these emissions to be allocated by sector.
For example, enter or estimate the percentage of total waste that comes from each sector.

Sector	**Contribution to Total Waste (%)**	**MT CO_2e**
Residential		0
Commercial/Institutional		0
Industrial		0
Energy Generation		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
0		0
Total	0%	-

Additional Emission Sources

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Check if you have completed this sheet.

Please use this sheet to enter any additional emission sources you would like to include in the inventory. One example is GHG emissions resulting from non-energy related industrial activities and product uses. The manufacture of concrete, steel, aluminum, ammonia, and other minerals and chemicals result in greenhouse gases as a byproduct. This is separate from energy consumption in industrial factilities, which should be reported under Stationary Units.

1) Would you like to add any additional emission sources? Yes

			MT CO_2e						
Description	**Sector**	**Scope**	**CO_2**	**CH_4**	**N_2O**	**HFCs**	**PFCs**	**SF_6**	**Total**
AMERICAN AVENUE LANDFILL	Industrial	1	11	154649					154660
J R SIMPLOT COMPANY	Industrial	1	14619	8	4091				18718
Algonquin Power Sanger, LLC	Industrial	1	1						1
E & J GALLO WINERY	Industrial	1		5	12				17
City of Clovis Landfill	Industrial	1		17145					17145
									0
									0
									0
									0
									0

Inventory Emissions Summary

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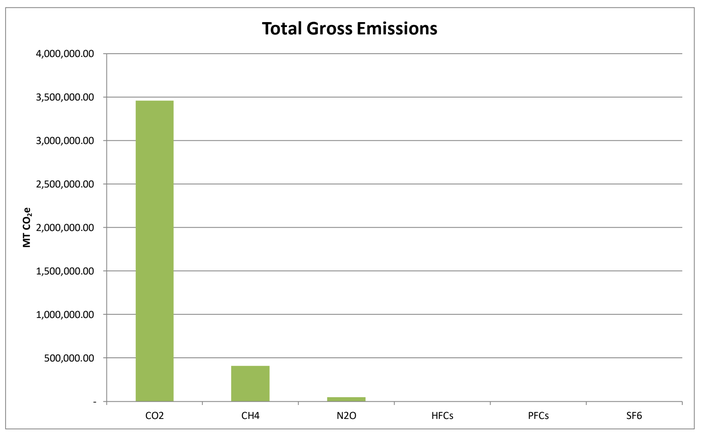
Please use the drop-down menu in the Scope 2 Emissions Selection box to determine which scope 2 emissions methodology is used in the summary tables below.

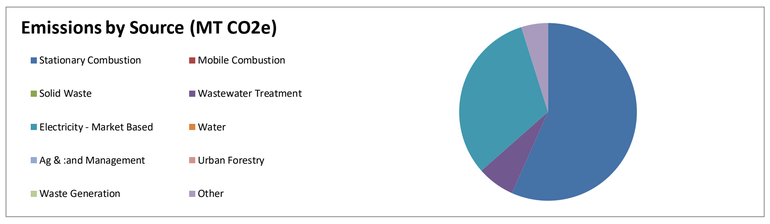
Scope 2 Emissions Selection:	Market Based

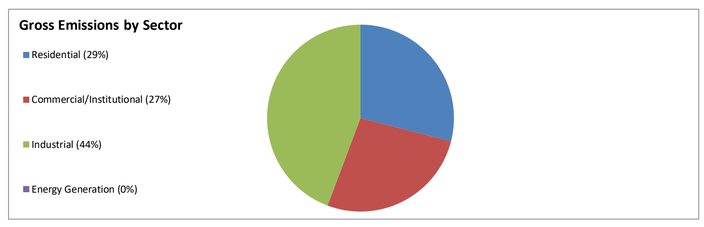
3.98 Per capita Emissions for Fresno (MT CO2e/person)

Total Fresno Emissions (MT CO2e)								
	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	Total MT CO_2e	Percent of Total
Scope 1	2,225,491.75	404,903.42	45,330.39	-	-	-	2,675,725.56	68%
Scope 2 - Location Based	1,232,875.90	2,513.58	2,883.54	-	-	-	1,238,273.02	
Scope 2 - Market Based (for informational purposes only)	1,232,875.90	2,513.58	2,883.54				1,238,273.02	32%
Scope 3	-	-	-	-	-	-	-	0%
Total Gross Emissions	**3,458,367.65**	**407,417.00**	**48,213.93**	**-**	**-**	**-**	**3,913,998.58**	**100%**
Total Net Emissions	**3,458,367.65**	**407,417.00**	**48,213.93**	**-**	**-**	**-**	**3,913,998.58**	**100%**

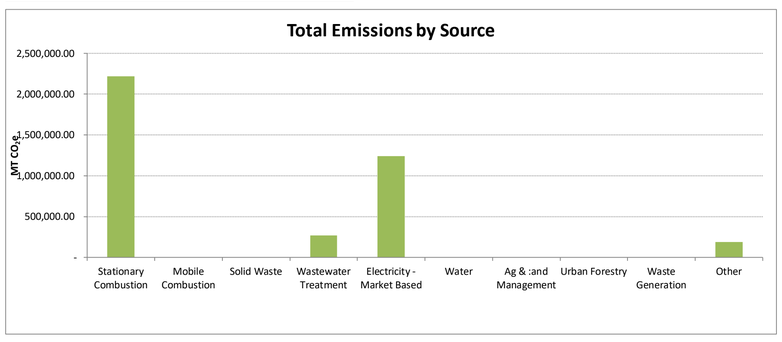


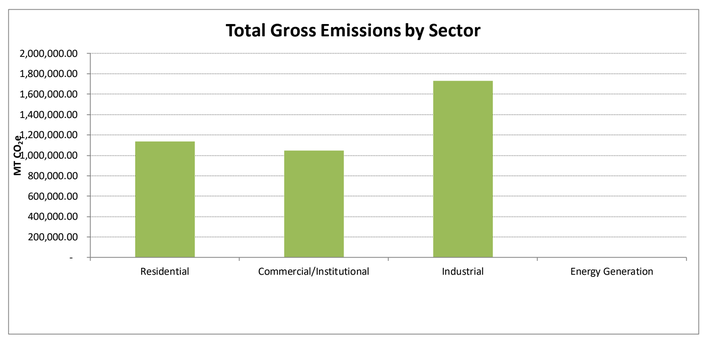
Emissions by Source ($MT CO_2e$)								
Source	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	Total	Percent of Total
Stationary Combustion	2,210,860.75	5,500.71	1,107.66	-	-	-	2,217,469.12	57%
Mobile Combustion	-	-	-	-	-	-	-	0%
Solid Waste	-	-	-	-	-	-	-	0%
Wastewater Treatment	-	227,595.72	40,119.72	-	-	-	267,715.44	7%
Electricity - Location Based	1,232,875.90	2,513.58	2,883.54	-	-	-	1,238,273.02	
Electricity - Market Based (for informational purposes only)	1,232,875.90	2,513.58	2,883.54				1,238,273.02	32%
Water	-	-	-	-	-	-	-	0%
Ag & Land Management	-	-	-				-	0%
Urban Forestry	-	-	-				-	0%
Waste Generation	-	-	-				-	0%
Other	14,631.00	171,807.00	4,103.00	-	-	-	190,541.00	5%
Total (Gross Emissions)	**3,458,367.65**	**407,417.00**	**48,213.93**	**-**	**-**	**-**	**3,913,998.58**	**100%**
Total (Net Emissions)	**3,458,367.65**	**407,417.00**	**48,213.93**	**-**	**-**	**-**	**3,913,998.58**	**100%**





Gross Emissions by Sector		
Sector	Total ($MT CO_2e$)	Percent of Total
Residential	1,135,329.87	29%
Commercial/Institutional	1,046,150.47	27%
Industrial	1,732,518.24	44%
Energy Generation	-	0%
Total	**3,913,998.58**	**100%**





Total Emissions by Sector and Source ($MT CO_2e$)											
Sector	Stationary	Electricity	Mobile	Solid Waste	Waste water	Water	Agriculture & Land Management	Urban Forestry	Other	TOTAL GROSS	TOTAL NET
Residential	631,550.18	503,779.69	-	-	-	-	-	-	-	1,135,329.87	1,135,329.87
Commercial/Institutional	296,012.70	482,422.32	-	-	########	-	-	-	-	1,046,150.47	1,046,150.47
Industrial	1,289,906.23	252,071.01	-	-	-	-	-	-	########	1,732,518.24	1,732,518.24
Energy Generation	-	-	-	-	-	-	-	-	-	-	-
Total	2,217,469.12	1,238,273.02	-	-	########	-	-	-	########	**3,913,998.58**	**3,913,998.58**

Factors

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This sheet shows all factors used to calculate your community's greenhouse gas emissions. The Unit Conversion Factors are standard conversion factors that apply to multiple sheets in the tool. Each inventory sector additionally has a separate section on this sheet containing sector-specific emission factors. The majority of cells are hard-coded values, entered directly from the source provided. Values in blue text were calculated based on the available data to convert it to an appropriate format.

Please do not make any changes to the factors on this sheet. Users have the opportunity while moving through the tool to input alternate values for many variables. Use this sheet simply as a reference or to understand factor sources.

Unit Conversion Factors

	Multiply by
kWh to MWh	0.001
lbs to metric tons	0.000453592
kg to metric tons	0.001
g to kg	0.001
lbs to MMT	4.53592E-10
scf to mcf	0.001
mcf_scf	1000
ft3 to m3	0.028316847
Per Day to Per Year	365.25
grams to MT	0.000001
lbs to kg	0.45359237
per Gallon to per MG	0.000001
ft^3 CH_4 to MT CH_4	0.00002
mt/short ton	0.90718474
CO_2 to CO_2e	1
CH_4 to CO_2e	28
N_2O to CO_2e	265
Oil barrel to gallon	42
C to CO2	3.67
Liters to gallon	0.26

* Following revised reporting requirements under the UNFCCC, this tool presents CO_2 equivalent values based on the IPCC Fifth Assessment Report (AR5) GWP values.

Legend:
Hard-wired factor
Calculated factor

Stationary Fuel Factors

Fuel Emission Factors

Fuel	kg CO_2 CO_2	kg CH_4 CH_4	kg N_2O N_2O	Heat Content (MMBtu/unit)	Unit
Natural Gas	54.903	0.0049	0.0001	1.0380	mcf
Digester Gas	34.106	0.0021	0.0004	0.6550	mcf
Diesel	10.21	0.0004	0.00008	0.1381	gal
LPG	6.02	0.0003	0.00006	0.0920	gal
Gasoline	8.50	0.0004	0.00007	0.1203	gal
Residual Fuel Oil No. 5	10.21	0.0004	0.00008	0.1400	gal
Residual Fuel Oil No. 6	11.27	0.0005	0.00009	0.1500	gal
Propane	5.72	0.0003	0.00005	0.0910	gal
Butane	6.67	0.0003	0.00006	0.1030	gal
Jet Fuel	9.75	0.0004	0.00008	0.1350	gal
Residential Coal	2386.36	0.2742	0.03989	24.9300	short tons
Commercial Coal	2047.51	0.2353	0.03422	21.3900	short tons
Industrial Coal	2136.50	0.2459	0.03576	22.3500	short tons
Electric Power Coal	1886.60	0.2170	0.03157	19.7300	short tons
Distillate Fuel Oil	10.283	0.0004	0.00008	0.1387	gal
Kerosene	10.150	0.0004	0.00008	0.1350	gal

Annually variable heat content
Annually variable carbon content

Selected Inventory Year
2019

Emission Factors Per MMBtu (multiplied by heat content to determine emissions/unit)

Fuel	kg/MMBtu CO_2	CH_4	N_2O	MMBtu/Unit	
Natural Gas	52.89	0.0047	0.0001	0.001038	MMBtu/scf
Digester Gas	52.07	0.0032	0.00063	0.000655	MMBtu/scf
Jet Fuel	72.22	0.003	0.0006	0.135	MMBtu/gal
Residential Coal	95.72	0.011	0.0016	24.93	MMBtu/short ton
Commercial Coal	95.72	0.011	0.0016	21.39	MMBtu/short ton
Industrial Coal	95.59	0.011	0.0016	22.35	MMBtu/short ton
Electric Power Coal	95.62	0.011	0.0016	19.73	MMBtu/short ton

Source: The Climate Registry 2021 Default Emission Factors and Emissions Factors for Greenhouse Gas Inventories, U.S EPA April 2022

Annually Variable Carbon Content Coefficients (MMT Carbon/Qbtu = kg C/MMBtu)

Fuel Type	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Residential Coal	26.19	26.27	26.38	26.16	26.09	26.13	26.03	25.89	26.06	25.97	26.00	25.99	25.96	26.03	25.89	26.04	26.26	25.91
Commercial Coal	26.19	26.27	26.38	26.16	26.09	26.13	26.03	25.89	26.06	25.97	26.00	25.99	25.96	26.03	25.89	26.04	26.26	25.91
Industrial Coal	25.81	25.87	25.86	25.76	25.76	25.79	25.74	25.75	25.78	25.80	25.74	25.65	25.56	25.54	25.55	25.79	25.83	25.81
Electric Power Coal	25.94	25.97	25.98	25.88	25.88	25.92	25.92	25.91	25.93	25.96	25.98	25.99	26.04	26.08	26.08	26.08	26.03	26.03
LPG	17.46	17.51	17.50	17.53	17.51	17.52	17.53	17.56	17.58	17.59	17.59	17.61	17.59	17.64	17.62	17.60	17.60	17.59
Propane	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15
Gasoline	19.42	19.44	19.49	19.44	19.36	19.36	19.35	19.36	19.37	19.32	19.47	19.34	19.36	19.61	19.43	19.32	19.47	19.57
Jet Fuel	19.40	19.40	19.39	19.37	19.35	19.34	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70
Natural Gas	14.46	14.45	14.45	14.46	14.46	14.47	14.47	14.47	14.45	14.46	14.47	14.46	14.47	14.46	14.47	14.46	14.46	14.46
Distillate Fuel Oil	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.17	20.39	20.36	20.36	20.37	20.39	20.37	20.33	20.25

Fuel Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Residential Coal	25.71	25.73	25.75	25.81	25.88	25.90	25.88	25.98	26.01	26.09	26.09	26.11	26.21	26.16	26.16	26.16	26.16	26.16
Commercial Coal	25.71	25.73	25.75	25.81	25.88	25.90	25.88	25.98	26.01	26.09	26.09	26.11	26.21	26.16	26.16	26.16	26.16	26.16
Industrial Coal	25.81	25.86	25.86	25.88	25.94	25.93	25.95	26.00	26.03	26.06	26.08	26.07	26.13	26.10	26.10	26.10	26.10	26.10
Electric Power Coal	26.04	26.04	26.05	26.05	26.06	26.05	26.04	26.07	26.06	26.08	26.09	26.08	26.12	26.13	26.13	26.13	26.13	26.13
LPG	17.66	17.72	17.78	17.74	17.68	17.66	17.73	17.71	17.73	17.78	17.78	17.83	17.82	17.85	17.85	17.85	17.85	17.85
Propane	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15	17.15
Gasoline	19.35	19.44	19.39	19.38	19.35	19.28	19.26	19.25	19.26	19.28	19.27	19.27	19.27	19.27	19.27	19.27	19.27	19.27
Jet Fuel	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70	19.70
Natural Gas	14.46	14.47	14.48	14.48	14.47	14.46	14.45	14.43	14.43	14.43	14.43	14.43	14.43	14.43	14.43	14.43	14.43	14.43
Distillate Fuel Oil	20.25	20.23	20.24	20.22	20.22	20.23	20.23	20.22	20.21	20.21	20.22	20.22	20.22	20.22	20.22	20.22	20.22	20.22

Source: CO2 from Fossil Fuel Combustion, Inventory of U.S. Greenhouse Gas Sources and Sinks

Annually Variable Heat Contents (MMBtu/Unit, see note)

Fuel Type	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Natural Gas	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00103	0.00102	0.00103	0.00103	0.00103	0.00103	0.00103
Gasoline	0.12507	0.12507	0.12507	0.12421	0.12414	0.12390	0.12407	0.12393	0.12388	0.12386	0.12383	0.12383	0.12379	0.12374	0.12371	0.12362	0.12345	0.12243
Distillate Fuel Oil	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869

Fuel Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Natural Gas	0.00103	0.00103	0.00102	0.00102	0.00102	0.00103	0.00103	0.00104	0.00104	0.00104	0.00104	0.00104	0.00104	0.00104	0.00	0.00	0.00	0.00
Gasoline	0.12157	0.12119	0.12064	0.12055	0.12052	0.12048	0.12045	0.12040	0.12036	0.12031	0.12033	0.12029	0.12029	0.12024	0.12	0.12	0.12	0.12
Distillate Fuel Oil	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.13869	0.14	0.14	0.14	0.14

Source: CO2 from Fossil Fuel Combustion, Inventory of U.S. Greenhouse Gas Sources and Sinks

Electricity Factors

eGRID Electricity Emission Factors by eGRID Subregion - *Most recent available factor is applied to all future years.*

lbs CO_2/MWh

eGRID Subregion	Subregion Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AKGD eGRID subregion	ASCC Alaska Grid	1257.19	1257.19	1257.19	1257.19	1257.19	1232.36	1258.54	1284.72	1282.789	1,280.86	1,256.87	1262.7986	1,268.73
AKMS eGRID subregion	ASCC Miscellaneous	480.1	480.1	480.1	480.1	480.1	498.86	517.295	535.73	528.496	521.2619	448.5698	464.869397	481.168994
AZNM eGRID subregion	WECC Southwest	1254.02	1254.02	1254.02	1254.02	1254.02	1311.05	1281.83	1252.61	1221.98	1,191.35	1,177.61	1165.2511	1,152.89
CAMX eGRID subregion	WECC California	878.71	878.71	878.71	878.71	878.71	724.12	702.565	681.01	669.8473	658.68	610.82	630.564968	650.31
ERCT eGRID subregion	ERCOT All	1420.56	1420.56	1420.56	1420.56	1420.56	1324.35	1288.46	1252.57	1217.149	1,181.73	1,218.17	1180.60225	1,143.04
FRCC eGRID subregion	FRCC All	1327.66	1327.66	1327.66	1327.66	1327.66	1318.57	1269.34	1220.11	1198.358	1,176.61	1,196.71	1161.03198	1,125.35
HIMS eGRID subregion	HICC Miscellaneous	1456.17	1456.17	1456.17	1456.17	1456.17	1514.92	1429.37	1343.82	1347.741	1,351.66	1,330.16	1265.13174	1,200.10
HIOA eGRID subregion	HICC Oahu	1728.12	1728.12	1728.12	1728.12	1728.12	1811.98	1716.37	1620.76	1607.054	1,593.35	1,621.86	1599.11991	1,576.38
MROE eGRID subregion	MRO East	1858.72	1858.72	1858.72	1858.72	1858.72	1834.72	1763.52	1692.32	1641.986	1,591.65	1,610.80	1566.68667	1,522.57
MROW eGRID subregion	MRO West	1813.81	1813.81	1813.81	1813.81	1813.81	1821.84	1772.255	1722.67	1675.637	1628.603	1536.361	1480.75526	1425.15002
NEWE eGRID subregion	NPCC New England	908.9	908.9	908.9	908.9	908.9	927.68	877.815	827.95	778.1794	728.4087	722.0735	679.986862	637.900225
NWPP eGRID subregion	WECC Northwest	921.1	921.1	921.1	921.1	921.1	902.24	880.515	858.79	838.999	819.2079	842.5793	754.166824	665.754349
NYCW eGRID subregion	NPCC NYC/Westchester	922.22	922.22	922.22	922.22	922.22	815.45	760.125	704.8	657.7344	610.6687	622.4161	659.556675	696.69725
NYLI eGRID subregion	NPCC Long Island	1412.2	1412.2	1412.2	1412.2	1412.2	1536.8	1477.77	1418.74	1383.364	1,347.99	1,336.11	1268.65331	1,201.20
NYUP eGRID subregion	NPCC Upstate NY	819.68	819.68	819.68	819.68	819.68	720.8	702.035	683.27	590.5943	497.92	545.79	477.292851	408.80
RFCE eGRID subregion	RFC East	1095.53	1095.53	1095.53	1095.53	1095.53	1139.07	1099.195	1059.32	1003.372	947.42	1,001.72	930.138052	858.56
RFCM eGRID subregion	RFC Michigan	1641.41	1641.41	1641.41	1641.41	1641.41	1563.28	1607.195	1651.11	1655.283	1,659.46	1,629.38	1599.30581	1,569.23
RFCW eGRID subregion	RFC West	1556.39	1556.39	1556.39	1556.39	1556.39	1537.82	1544.67	1551.52	1536.057	1,520.59	1,503.47	1441.47377	1,379.48
RMPA eGRID subregion	WECC Rockies	2035.81	2035.81	2035.81	2035.81	2035.81	1883.08	1894.57	1906.06	1865.286	1824.513	1896.74	1859.69506	1822.65042
SPNO eGRID subregion	SPP North	1971.42	1971.42	1971.42	1971.42	1971.42	1960.94	1879.825	1798.71	1807.234	1815.757	1799.448	1760.55037	1721.65255
SPSO eGRID subregion	SPP South	1761.14	1761.14	1761.14	1761.14	1761.14	1658.14	1641.085	1624.03	1611.523	1599.017	1580.603	1559.61485	1538.6266
SRMV eGRID subregion	SERC Mississippi Valley	1135.46	1135.46	1135.46	1135.46	1135.46	1019.74	1011.92	1004.1	1003.256	1,002.41	1,029.82	1041.36717	1,052.92
SRMW eGRID subregion	SERC Midwest	1844.34	1844.34	1844.34	1844.34	1844.34	1830.51	1804.89	1779.27	1764.512	1,749.75	1,810.83	1760.78709	1,710.75
SRSO eGRID subregion	SERC South	1490.37	1490.37	1490.37	1490.37	1490.37	1489.54	1492.505	1495.47	1410.577	1,325.68	1,354.09	1251.57107	1,149.05
SRTV eGRID subregion	SERC Tennessee Valley	1494.89	1494.89	1494.89	1494.89	1494.89	1510.44	1525.645	1540.85	1449.28	1,357.71	1,389.20	1363.17543	1,337.15
SRVC eGRID subregion	SERC Virginia/Carolina	1146.39	1146.39	1146.39	1146.39	1146.39	1134.88	1126.645	1118.41	1077.139	1,035.87	1,073.65	1003.26113	932.87

eGRID Subregion	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AKGD eGRID subregion	1,097.634	926.537	999.409	1,072.280	1055.9575	1,039.635	1,114.400	1,097.630	1,067.680	1,067.680	1,067.680	1,067.680	1,067.680
AKMS eGRID subregion	580.833	680.498	591.812	503.125	514.104	525.083	549.312	534.073	485.186	485.186	485.186	485.186	485.186
AZNM eGRID subregion	1,014.239	875.591	959.618	1,043.645	1033	1,022.355	952.321	846.616	819.656	819.656	819.656	819.656	819.656
CAMX eGRID subregion	609.478	568.644	548.253	527.862	512.199	496.536	453.209	513.455	531.678	531.678	531.678	531.678	531.678
ERCT eGRID subregion	1,142.894	1,142.750	1,075.953	1,009.156	970.414	931.672	868.640	818.600	813.552	813.552	813.552	813.552	813.552
FRCC eGRID subregion	1,100.269	1,075.189	1,043.436	1,011.683	971.7625	931.842	861.028	835.079	832.924	832.924	832.924	832.924	832.924
HIMS eGRID subregion	1,070.453	940.807	1,046.412	1,152.016	1131.3525	1,110.689	1,185.595	1,143.227	1,134.391	1,134.391	1,134.391	1,134.391	1,134.391
HIOA eGRID subregion	1,527.906	1,479.436	1,571.162	1,662.888	1666.4155	1,669.943	1,694.541	1,652.952	1,633.097	1,633.097	1,633.097	1,633.097	1,633.097
MROE eGRID subregion	1,593.176	1,663.781	1,665.997	1,668.212	1673.114	1,678.016	1,502.559	1,526.374	1,582.135	1,582.135	1,582.135	1,582.135	1,582.135
MROW eGRID subregion	1,395.130	1,365.109	1,301.963	1,238.817	1239.3325	1,239.848	1,098.353	979.536	995.790	995.790	995.790	995.790	995.790
NEWE eGRID subregion	604.376	570.852	564.504	558.156	540.234	522.312	488.888	528.238	539.367	539.367	539.367	539.367	539.367
NWPP eGRID subregion	786.357	906.959	779.079	651.199	645.118	639.037	715.241	599.967	634.599	634.599	634.599	634.599	634.599
NYCW eGRID subregion	681.102	665.506	650.658	635.810	616.112	596.414	553.801	634.612	816.756	816.756	816.756	816.756	816.756
NYLI eGRID subregion	1,198.705	1,196.213	1,187.268	1,178.322	1181.2815	1,184.241	1,208.975	1,203.927	1,210.940	1,210.940	1,210.940	1,210.940	1,210.940
NYUP eGRID subregion	387.256	365.713	330.187	294.661	273.8865	253.112	232.305	233.512	233.081	233.081	233.081	233.081	233.081
RFCE eGRID subregion	844.002	829.444	793.811	758.178	737.072	715.966	695.034	652.458	672.787	672.787	672.787	672.787	672.787
RFCM eGRID subregion	1,550.347	1,531.464	1,401.755	1,272.045	1292.3025	1,312.560	1,189.335	1,153.058	1,214.061	1,214.061	1,214.061	1,214.061	1,214.061
RFCW eGRID subregion	1,380.180	1,380.884	1,312.162	1,243.439	1204.7675	1,166.096	1,067.679	984.977	1,046.132	1,046.132	1,046.132	1,046.132	1,046.132
RMPA eGRID subregion	1,780.170	1,737.690	1,552.729	1,367.768	1320.6915	1,273.615	1,242.611	1,144.801	1,158.860	1,158.860	1,158.860	1,158.860	1,158.860
SPNO eGRID subregion	1,648.322	1,574.992	1,493.671	1,412.350	1287.7685	1,163.187	1,069.971	954.032	991.729	991.729	991.729	991.729	991.729
SPSO eGRID subregion	1,507.240	1,475.853	1,362.091	1,248.329	1207.4555	1,166.582	1,001.985	931.756	1,031.601	1,031.601	1,031.601	1,031.601	1,031.601
SRMV eGRID subregion	1,037.448	1,021.978	930.434	838.889	846.767	854.645	806.755	740.359	772.737	772.737	772.737	772.737	772.737
SRMW eGRID subregion	1,741.376	1,772.005	1,692.298	1,612.590	1638.37	1,664.150	1,584.391	1,480.699	1,543.034	1,543.034	1,543.034	1,543.034	1,543.034
SRSO eGRID subregion	1,146.434	1,143.821	1,116.598	1,089.374	1058.651	1,027.928	969.165	860.179	891.907	891.907	891.907	891.907	891.907
SRTV eGRID subregion	1,336.715	1,336.280	1,260.857	1,185.433	1108.485	1,031.537	949.695	834.182	931.586	931.586	931.586	931.586	931.586
SRVC eGRID subregion	894.729	856.583	830.934	805.285	774.3065	743.328	675.417	623.111	639.665	639.665	639.665	639.665	639.665

lbs CH_4/MWh

eGRID Subregion	Subregion Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AKGD eGRID subregion	ASCC Alaska Grid	0.0266	0.0266	0.0266	0.0266	0.0266	0.0256	0.026355	0.02711	0.027424	0.027737	0.026076	0.0262054	0.0263352
AKMS eGRID subregion	ASCC Miscellaneous	0.0239	0.0239	0.0239	0.0239	0.0239	0.02075	0.0217	0.02265	0.022216	0.021782	0.018745	0.01869881	0.01865272
AZNM eGRID subregion	WECC Southwest	0.018	0.018	0.018	0.018	0.018	0.01745	0.018125	0.0188	0.018966	0.019132	0.019207	0.01892981	0.01865292
CAMX eGRID subregion	WECC California	0.03024	0.03024	0.03024	0.03024	0.03024	0.03024	0.029265	0.02829	0.028615	0.02894	0.02849	0.02980314	0.03111618
ERCT eGRID subregion	ERCOT All	0.021	0.021	0.021	0.021	0.021	0.01865	0.018205	0.01776	0.017232	0.016703	0.016851	0.01677595	0.0167007
FRCC eGRID subregion	FRCC All	0.054	0.054	0.054	0.054	0.054	0.04592	0.043555	0.04119	0.040214	0.039238	0.03891	0.03947759	0.04004528
HIMS eGRID subregion	HICC Miscellaneous	0.101	0.101	0.101	0.101	0.101	0.31468	0.224915	0.13515	0.103774	0.072399	0.073985	0.07102991	0.06807502
HIOA eGRID subregion	HICC Oahu	0.0911	0.0911	0.0911	0.0911	0.0911	0.10947	0.10026	0.09105	0.096397	0.101745	0.099299	0.09485231	0.09040612
MROE eGRID subregion	MRO East	0.041	0.041	0.041	0.041	0.041	0.02759	0.02819	0.02879	0.026385	0.023981	0.024288	0.02429549	0.02430337
MROW eGRID subregion	MRO West	0.028	0.028	0.028	0.028	0.028	0.028	0.028485	0.02897	0.028884	0.028798	0.028528	0.0280619	0.027596
NEWE eGRID subregion	NPCC New England	0.08	0.08	0.08	0.08	0.08	0.08649	0.081735	0.07698	0.076332	0.075684	0.071757	0.07229772	0.07283823
NWPP eGRID subregion	WECC Northwest	0.022	0.022	0.022	0.022	0.022	0.01913	0.017735	0.01634	0.015817	0.015293	0.01605	0.01432373	0.01259737
NYCW eGRID subregion	NPCC NYC/Westchester	0.038	0.038	0.038	0.038	0.038	0.03602	0.03112	0.02622	0.024985	0.023751	0.023808	0.02465853	0.02550877
NYLI eGRID subregion	NPCC Long Island	0.102	0.102	0.102	0.102	0.102	0.11541	0.102955	0.0905	0.093682	0.096865	0.081486	0.07984369	0.07820158
NYUP eGRID subregion	NPCC Upstate NY	0.024	0.024	0.024	0.024	0.024	0.02482	0.021115	0.01741	0.016674	0.015939	0.016297	0.01594571	0.01559402
RFCE eGRID subregion	RFC East	0.028	0.028	0.028	0.028	0.028	0.03027	0.028835	0.0274	0.027119	0.026838	0.027071	0.02675759	0.02644407
RFCM eGRID subregion	RFC Michigan	0.035	0.035	0.035	0.035	0.035	0.03393	0.03324	0.03255	0.03198	0.031409	0.030464	0.0304124	0.03036061
RFCW eGRID subregion	RFC West	0.02	0.02	0.02	0.02	0.02	0.01823	0.0183	0.01837	0.018245	0.018119	0.018204	0.01765652	0.01710884
RMPA eGRID subregion	WECC Rockies	0.024	0.024	0.024	0.024	0.024	0.02288	0.023255	0.02363	0.02294	0.022249	0.02266	0.02215874	0.02165768
SPNO eGRID subregion	SPP North	0.024	0.024	0.024	0.024	0.0240	0.02382	0.02252	0.02122	0.021114	0.021009	0.020807	0.02051142	0.02021564
SPSO eGRID subregion	SPP South	0.03	0.03	0.03	0.03	0.0300	0.02498	0.02475	0.02452	0.023884	0.023248	0.0232	0.02347535	0.0237507
SRMV eGRID subregion	SERC Mississippi Valley	0.042	0.042	0.042	0.042	0.0420	0.02431	0.023055	0.0218	0.020624	0.019448	0.020663	0.02080802	0.02095275
SRMW eGRID subregion	SERC Midwest	0.021	0.021	0.021	0.021	0.021	0.02115	0.02086	0.02057	0.02007	0.019571	0.020484	0.02003294	0.01958237
SRSO eGRID subregion	SERC South	0.04	0.04	0.04	0.04	0.0400	0.02627	0.024955	0.02364	0.022956	0.022272	0.022822	0.02274143	0.02266135
SRTV eGRID subregion	SERC Tennessee Valley	0.023	0.023	0.023	0.023	0.0230	0.02005	0.01996	0.01987	0.018574	0.017277	0.017696	0.01754092	0.01738564
SRVC eGRID subregion	SERC Virginia/Carolina	0.029	0.029	0.029	0.029	0.0290	0.02377	0.023015	0.02226	0.021886	0.021512	0.021692	0.02281971	0.02394782

eGRID Subregion	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AKGD eGRID subregion	0.0364821	0.046629	0.0618145	0.077	0.0795	0.082	0.098	0.100	0.091	0.091	0.091	0.091	0.091
AKMS eGRID subregion	0.02736136	0.03607	0.029535	0.023	0.0235	0.024	0.026	0.027	0.025	0.025	0.025	0.025	0.025
AZNM eGRID subregion	0.04251546	0.066378	0.072689	0.079	0.078	0.077	0.068	0.054	0.052	0.052	0.052	0.052	0.052
CAMX eGRID subregion	0.03211059	0.033105	0.0330525	0.033	0.0335	0.034	0.033	0.032	0.031	0.031	0.031	0.031	0.031
ERCT eGRID subregion	0.04926785	0.081835	0.0789175	0.076	0.071	0.066	0.057	0.052	0.054	0.054	0.054	0.054	0.054
FRCC eGRID subregion	0.06391114	0.087777	0.0813885	0.075	0.0705	0.066	0.055	0.049	0.053	0.053	0.053	0.053	0.053
HIMS eGRID subregion	0.08170751	0.09534	0.09517	0.095	0.1065	0.118	0.143	0.110	0.135	0.135	0.135	0.135	0.135
HIOA eGRID subregion	0.12490806	0.15941	0.170205	0.181	0.1805	0.180	0.185	0.178	0.176	0.176	0.176	0.176	0.176
MROE eGRID subregion	0.10773169	0.19116	0.17358	0.156	0.1625	0.169	0.147	0.139	0.148	0.148	0.148	0.148	0.148
MROW eGRID subregion	0.0944825	0.161369	0.1381845	0.115	0.1265	0.138	0.119	0.104	0.107	0.107	0.107	0.107	0.107
NEWE eGRID subregion	0.08442062	0.096003	0.0930015	0.090	0.086	0.082	0.077	0.074	0.072	0.072	0.072	0.072	0.072
NWPP eGRID subregion	0.05520218	0.097807	0.0794035	0.061	0.0625	0.064	0.068	0.056	0.058	0.058	0.058	0.058	0.058
NYCW eGRID subregion	0.02493688	0.024365	0.0231825	0.022	0.022	0.022	0.021	0.022	0.019	0.019	0.019	0.019	0.019
NYLI eGRID subregion	0.10530629	0.132411	0.1292055	0.126	0.1325	0.139	0.157	0.138	0.126	0.126	0.126	0.126	0.126
NYUP eGRID subregion	0.02314001	0.030686	0.025843	0.021	0.0195	0.018	0.017	0.016	0.015	0.015	0.015	0.015	0.015
RFCE eGRID subregion	0.05018854	0.073933	0.0619665	0.050	0.0555	0.061	0.053	0.045	0.049	0.049	0.049	0.049	0.049
RFCM eGRID subregion	0.1002228	0.170085	0.1185425	0.067	0.098	0.129	0.114	0.101	0.115	0.115	0.115	0.115	0.115
RFCW eGRID subregion	0.08365392	0.150199	0.1290995	0.108	0.1125	0.117	0.099	0.086	0.095	0.095	0.095	0.095	0.095
RMPA eGRID subregion	0.09990784	0.178158	0.157579	0.137	0.13	0.123	0.117	0.101	0.109	0.109	0.109	0.109	0.109
SPNO eGRID subregion	0.09700232	0.173789	0.1613945	0.149	0.1365	0.124	0.112	0.100	0.108	0.108	0.108	0.108	0.108
SPSO eGRID subregion	0.07959585	0.135441	0.1152205	0.095	0.093	0.091	0.07	0.060	0.080	0.080	0.080	0.080	0.080
SRMV eGRID subregion	0.04978887	0.078625	0.0643125	0.050	0.0525	0.055	0.043	0.032	0.040	0.040	0.040	0.040	0.040
SRMW eGRID subregion	0.11421169	0.208841	0.1454205	0.082	0.1335	0.185	0.169	0.156	0.171	0.171	0.171	0.171	0.171
SRSO eGRID subregion	0.06318668	0.103712	0.095356	0.087	0.084	0.081	0.071	0.060	0.067	0.067	0.067	0.067	0.067
SRTV eGRID subregion	0.07801232	0.138639	0.1158195	0.093	0.095	0.097	0.087	0.075	0.087	0.087	0.087	0.087	0.087
SRVC eGRID subregion	0.05983541	0.095723	0.0813615	0.067	0.067	0.067	0.058	0.050	0.052	0.052	0.052	0.052	0.052

lbs CH_4/GWh

2005	2007	2009	2010	2012	2014
25.60	27.11	27.74	26.08	26.34	46.63
20.75	22.65	21.78	18.74	18.65	36.07
17.45	18.80	19.13	19.21	18.65	66.38
30.24	28.29	28.94	28.49	31.12	33.11
18.65	17.76	16.70	16.85	16.70	81.84
45.92	41.19	39.24	38.91	40.05	87.78
314.68	135.15	72.40	73.98	68.08	95.34
109.47	91.05	101.74	99.30	90.41	159.41
27.59	28.79	23.98	24.29	24.30	191.16
28.00	28.97	28.80	28.53	27.60	161.37
86.49	76.98	75.68	71.76	72.84	96.00
19.13	16.34	15.29	16.05	12.60	97.81
36.02	26.22	23.75	23.81	25.51	24.37
115.41	90.50	96.86	81.49	78.20	132.41
24.82	17.41	15.94	16.30	15.59	30.69
30.27	27.40	26.84	27.07	26.44	73.93
33.93	32.55	31.41	30.46	30.36	170.09
18.23	18.37	18.12	18.20	17.11	150.20
22.88	23.63	22.25	22.66	21.66	178.16
23.82	21.22	21.01	20.81	20.22	173.79
24.98	24.52	23.25	23.20	23.75	135.44
24.31	21.80	19.45	20.66	20.95	78.63
21.15	20.57	19.57	20.48	19.58	208.84
26.27	23.64	22.27	22.82	22.66	103.71
20.05	19.87	17.28	17.70	17.39	138.64
23.77	22.26	21.51	21.69	23.95	95.72

lbs N_2O/MWh

eGRID Subregion	Subregion Name	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
AKGD eGRID subregion	ASCC Alaska Grid	0.0064	0.0064	0.0064	0.0064	0.0064	0.00651	0.006975	0.00744	0.007564	0.007688	0.007179	0.00738698	0.00759476
AKMS eGRID subregion	ASCC Miscellaneous	0.0044	0.0044	0.0044	0.0044	0.0044	0.00408	0.00428	0.00448	0.004381	0.004281	0.003681	0.00361441	0.00354823
AZNM eGRID subregion	WECC Southwest	0.015	0.015	0.015	0.015	0.015	0.01794	0.017255	0.01657	0.016076	0.015582	0.015723	0.01541462	0.01510615
CAMX eGRID subregion	WECC California	0.00808	0.00808	0.00808	0.00808	0.00808	0.00808	0.007155	0.00623	0.006198	0.006165	0.006027	0.00585055	0.005674
ERCT eGRID subregion	ERCOT All	0.015	0.015	0.015	0.015	0.015	0.01511	0.01455	0.01399	0.013547	0.013104	0.014071	0.01320286	0.01233473
FRCC eGRID subregion	FRCC All	0.016	0.016	0.016	0.016	0.016	0.01694	0.016095	0.01525	0.014391	0.013533	0.013746	0.01279957	0.01185274
HIMS eGRID subregion	HICC Miscellaneous	0.018	0.018	0.018	0.018	0.018	0.04688	0.034295	0.02171	0.017757	0.013804	0.013882	0.01328256	0.01268332
HIOA eGRID subregion	HICC Oahu	0.0212	0.0212	0.0212	0.0212	0.0212	0.02362	0.022255	0.02089	0.021435	0.021981	0.022411	0.02198072	0.02155025
MROE eGRID subregion	MRO East	0.03	0.03	0.03	0.03	0.03	0.03036	0.029705	0.02905	0.028046	0.027041	0.027522	0.02653815	0.0255547
MROW eGRID subregion	MRO West	0.029	0.029	0.029	0.029	0.029	0.03071	0.02995	0.02919	0.02849	0.02779	0.026291	0.02527608	0.02426106
NEWE eGRID subregion	NPCC New England	0.015	0.015	0.015	0.015	0.015	0.01701	0.016105	0.0152	0.014528	0.013855	0.012976	0.01184189	0.01070769
NWPP eGRID subregion	WECC Northwest	0.014	0.014	0.014	0.014	0.014	0.0149	0.01427	0.01364	0.01307	0.0125	0.013072	0.01172371	0.01037502
NYCW eGRID subregion	NPCC NYC/Westchester	0.006	0.006	0.006	0.006	0.006	0.00546	0.004405	0.00335	0.003078	0.002807	0.0028	0.00286634	0.00293229
NYLI eGRID subregion	NPCC Long Island	0.016	0.016	0.016	0.016	0.016	0.01809	0.015595	0.0131	0.012737	0.012373	0.010285	0.01007645	0.0098682
NYUP eGRID subregion	NPCC Upstate NY	0.011	0.011	0.011	0.011	0.011	0.01119	0.010545	0.0099	0.008333	0.006766	0.007242	0.0055344	0.0038269
RFCE eGRID subregion	RFC East	0.017	0.017	0.017	0.017	0.017	0.01871	0.01787	0.01703	0.015996	0.014962	0.01533	0.01340855	0.0114873
RFCM eGRID subregion	RFC Michigan	0.025	0.025	0.025	0.025	0.025	0.02717	0.02748	0.02779	0.027839	0.027888	0.026841	0.02547817	0.02411554
RFCW eGRID subregion	RFC West	0.024	0.024	0.024	0.024	0.024	0.02571	0.02582	0.02593	0.025532	0.025133	0.024747	0.02320669	0.02166649
RMPA eGRID subregion	WECC Rockies	0.03	0.03	0.03	0.03	0.03	0.02875	0.02882	0.02889	0.02804	0.02719	0.029207	0.02866805	0.0281295
SPNO eGRID subregion	SPP North	0.03	0.03	0.03	0.03	0.03	0.03209	0.030645	0.0292	0.029046	0.028891	0.028624	0.02788376	0.02714401
SPSO eGRID subregion	SPP South	0.023	0.023	0.023	0.023	0.023	0.02261	0.022515	0.02242	0.022104	0.021788	0.020851	0.020413	0.01997501
SRMV eGRID subregion	SERC Mississippi Valley	0.013	0.013	0.013	0.013	0.013	0.01171	0.01143	0.01115	0.010902	0.010654	0.010756	0.01068144	0.01060709
SRMW eGRID subregion	SERC Midwest	0.029	0.029	0.029	0.029	0.029	0.0305	0.03005	0.0296	0.029291	0.028983	0.029574	0.02853671	0.02749911
SRSO eGRID subregion	SERC South	0.025	0.025	0.025	0.025	0.025	0.02547	0.02502	0.02457	0.022673	0.020776	0.020888	0.01818786	0.01548781
SRTV eGRID subregion	SERC Tennessee Valley	0.024	0.024	0.024	0.024	0.024	0.02564	0.02556	0.02548	0.023783	0.022086	0.022412	0.02159813	0.02078407
SRVC eGRID subregion	SERC Virginia/Carolina	0.019	0.019	0.019	0.019	0.019	0.01979	0.019435	0.01908	0.018263	0.017447	0.01764	0.01611992	0.01459944

eGRID Subregion	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
AKGD eGRID subregion	0.00737788	0.007161	0.0090805	0.011	0.011	0.011	0.013	0.014	0.012	0.012	0.012	0.012	0.012
AKMS eGRID subregion	0.00477311	0.005998	0.004999	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004
AZNM eGRID subregion	0.01220957	0.009313	0.0106565	0.012	0.0115	0.011	0.01	0.007	0.007	0.007	0.007	0.007	0.007
CAMX eGRID subregion	0.004855	0.004036	0.004018	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
ERCT eGRID subregion	0.01195486	0.011575	0.0112875	0.011	0.01	0.009	0.008	0.007	0.008	0.008	0.008	0.008	0.008
FRCC eGRID subregion	0.01195187	0.012051	0.0110255	0.010	0.0095	0.009	0.007	0.006	0.007	0.007	0.007	0.007	0.007
HIMS eGRID subregion	0.01395166	0.01522	0.01511	0.015	0.0165	0.018	0.022	0.017	0.021	0.021	0.021	0.021	0.021
HIOA eGRID subregion	0.02300512	0.02446	0.02623	0.028	0.0275	0.027	0.028	0.027	0.027	0.027	0.027	0.027	0.027
MROE eGRID subregion	0.02686635	0.028178	0.027089	0.026	0.0255	0.025	0.022	0.020	0.022	0.022	0.022	0.022	0.022
MROW eGRID subregion	0.02380403	0.023347	0.0216735	0.020	0.02	0.020	0.017	0.015	0.015	0.015	0.015	0.015	0.015
NEWE eGRID subregion	0.01177534	0.012843	0.0124215	0.012	0.0115	0.011	0.01	0.010	0.009	0.009	0.009	0.009	0.009
NWPP eGRID subregion	0.01229951	0.014224	0.011612	0.009	0.009	0.009	0.01	0.008	0.008	0.008	0.008	0.008	0.008
NYCW eGRID subregion	0.00295164	0.002971	0.0029855	0.003	0.003	0.003	0.002	0.003	0.002	0.002	0.002	0.002	0.002
NYLI eGRID subregion	0.0135311	0.017194	0.016597	0.016	0.017	0.018	0.02	0.018	0.016	0.016	0.016	0.016	0.016
NYUP eGRID subregion	0.00398245	0.004138	0.003569	0.003	0.0025	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
RFCE eGRID subregion	0.01135665	0.011226	0.010113	0.009	0.0085	0.008	0.007	0.006	0.007	0.007	0.007	0.007	0.007
RFCM eGRID subregion	0.02428827	0.024461	0.0212305	0.018	0.018	0.018	0.016	0.014	0.016	0.016	0.016	0.016	0.016
RFCW eGRID subregion	0.02185024	0.022034	0.020517	0.019	0.018	0.017	0.014	0.012	0.014	0.014	0.014	0.014	0.014
RMPA eGRID subregion	0.02695025	0.025771	0.0228855	0.020	0.019	0.018	0.017	0.014	0.016	0.016	0.016	0.016	0.016
SPNO eGRID subregion	0.02618051	0.025217	0.0236085	0.022	0.02	0.018	0.016	0.014	0.016	0.016	0.016	0.016	0.016
SPSO eGRID subregion	0.0198325	0.01969	0.017345	0.015	0.014	0.013	0.01	0.009	0.012	0.012	0.012	0.012	0.012
SRMV eGRID subregion	0.01092704	0.011247	0.0091235	0.007	0.0075	0.008	0.006	0.004	0.006	0.006	0.006	0.006	0.006
SRMW eGRID subregion	0.02893506	0.030371	0.0281855	0.026	0.0265	0.027	0.025	0.023	0.025	0.025	0.025	0.025	0.025
SRSO eGRID subregion	0.01540641	0.015325	0.0141625	0.013	0.0125	0.012	0.01	0.009	0.010	0.010	0.010	0.010	0.010
SRTV eGRID subregion	0.02048903	0.020194	0.018597	0.017	0.0155	0.014	0.013	0.011	0.013	0.013	0.013	0.013	0.013
SRVC eGRID subregion	0.01418822	0.013777	0.0123885	0.011	0.01	0.009	0.008	0.007	0.007	0.007	0.007	0.007	0.007

lbs N_2O/GWh

2005	2007	2009	2010	2012	2014
6.51	7.44	7.69	7.18	7.59	7.16
4.08	4.48	4.28	3.68	3.55	6.00
17.94	16.57	15.58	15.72	15.11	9.31
8.08	6.23	6.17	6.03	5.67	4.04
15.11	13.99	13.10	14.07	12.33	11.58
16.94	15.25	13.53	13.75	11.85	12.05
46.88	21.71	13.80	13.88	12.68	15.22
23.62	20.89	21.98	22.41	21.55	24.46
30.36	29.05	27.04	27.52	25.55	28.18
30.71	29.19	27.79	26.29	24.26	23.35
17.01	15.20	13.86	12.98	10.71	12.84
14.90	13.64	12.50	13.07	10.38	14.22
5.46	3.35	2.81	2.80	2.93	2.97
18.09	13.10	12.37	10.28	9.87	17.19
11.19	9.90	6.77	7.24	3.83	4.14
18.71	17.03	14.96	15.33	11.49	11.23
27.17	27.79	27.89	26.84	24.12	24.46
25.71	25.93	25.13	24.75	21.67	22.03
28.75	28.89	27.19	29.21	28.13	25.77
32.09	29.20	28.89	28.62	27.14	25.22
22.61	22.42	21.79	20.85	19.98	19.69
11.71	11.15	10.65	10.76	10.61	11.25
30.50	29.60	28.98	29.57	27.50	30.37
25.47	24.57	20.78	20.89	15.49	15.33
25.64	25.48	22.09	22.41	20.78	20.19
19.79	19.08	17.45	17.64	14.60	13.78

Sources:
Emissions & Generation Resource Integrated Database (eGRID). https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid
CARB (California Air Resources Board). 2010. Local Government Operations Protocol, Version 1.1. California Air Resources Board, California Climate Action Registry, ICLEI, and The Climate Registry.

Mobile Factors

Fuel CO_2 Emission Factors

Other Fuels	kg CO_2/gallon (GGE for CNG) Total	Biogenic Portion	Fossil portion	MMBTU/unit
Gasoline	8.78		8.78	0.13
Diesel	10.21		10.21	0.14
Biodiesel (B5)	10.17	0.47	9.70	0.14
Biodiesel (B20)	10.06	1.89	8.17	0.14
B100	9.45	9.45		0.13
Ethanol (E85)	6.20	4.89	1.32	0.09
E100	5.75	5.75		0.08
CNG	6.84		6.84	0.13
LNG	4.46		4.46	0.08
LPG	5.79		5.79	0.09
Methanol	4.10		4.10	
Residual Fuel	11.80		11.80	0.15
Jet Fuel	9.57		9.57	0.14
Aviation Gasoline	8.31		8.31	0.12

Default CH_4 and N_2O Emission Factors for Highway Vehicles by Model Year

Vehicle Type and Year	CH_4 (g/mi) Gasoline	Gasoline	Gasoline	Diesel	Diesel	Diesel
	Passenger Car	Light Truck (Vans, Pickup Trucks, SUVs)	Heavy-Duty Vehicle	Passenger Car	Light Truck (Vans, Pickup Trucks, SUVs)	Heavy-Duty Vehicle
1980	0.1696	0.1594	0.4604	0.0006	0.0011	0.0051
1981	0.1423	0.1634	0.4492	0.0006	0.0011	0.0051
1982	0.1406	0.1594	0.4492	0.0006	0.0011	0.0051
1983	0.1389	0.1614	0.4492	0.0005	0.0009	0.0051
1984	0.0704	0.1594	0.4492	0.0005	0.0009	0.0051
1985	0.0704	0.1479	0.4492	0.0005	0.0009	0.0051
1986	0.0704	0.1442	0.4492	0.0005	0.0009	0.0051
1987	0.0704	0.0813	0.3675	0.0005	0.0009	0.0051
1988	0.0704	0.0813	0.3492	0.0005	0.0009	0.0051
1989	0.0704	0.0813	0.3492	0.0005	0.0009	0.0051
1990	0.0704	0.0813	0.3246	0.0005	0.0009	0.0051

Vehicle Type and Year	N_2O (g/mi) Gasoline	Gasoline	Gasoline	Diesel	Diesel	Diesel
	Passenger Car	Light Truck (Vans, Pickup Trucks, SUVs)	Heavy-Duty Vehicle	Passenger Car	Light Truck (Vans, Pickup Trucks, SUVs)	Heavy-Duty Vehicle
1980	0.0197	0.0555	0.0497	0.0012	0.0017	0.0048
1981	0.0443	0.0513	0.0538	0.0012	0.0017	0.0048
1982	0.0458	0.0555	0.0538	0.0012	0.0017	0.0048
1983	0.0473	0.0534	0.0538	0.001	0.0014	0.0048
1984	0.0647	0.0555	0.0538	0.001	0.0014	0.0048
1985	0.0647	0.066	0.0538	0.001	0.0014	0.0048
1986	0.0647	0.0681	0.0538	0.001	0.0014	0.0048
1987	0.0647	0.1035	0.0849	0.001	0.0014	0.0048
1988	0.0647	0.1035	0.0933	0.001	0.0014	0.0048
1989	0.0647	0.1035	0.0933	0.001	0.0014	0.0048
1990	0.0647	0.1035	0.1142	0.001	0.0014	0.0048

1991	0.0704	0.0813	0.3246	0.0005	0.0009	0.0051
1992	0.0704	0.0813	0.3246	0.0005	0.0009	0.0051
1993	0.0704	0.0813	0.3246	0.0005	0.0009	0.0051
1994	0.0802	0.1294	0.3246	0.0005	0.0009	0.0051
1995	0.0795	0.122	0.3246	0.0005	0.0009	0.0051
1996	0.0782	0.1146	0.409	0.0005	0.0009	0.0051
1997	0.0704	0.0813	0.3675	0.0005	0.0009	0.0051
1998	0.0617	0.0646	0.3492	0.0005	0.0009	0.0051
1999	0.0531	0.0517	0.3246	0.0005	0.0009	0.0051
2000	0.0434	0.0452	0.1278	0.0005	0.0009	0.0051
2001	0.0337	0.0452	0.0924	0.0005	0.0009	0.0051
2002	0.024	0.0412	0.0655	0.0005	0.0009	0.0051
2003	0.0215	0.0333	0.0648	0.0005	0.0009	0.0051
2004	0.0175	0.034	0.063	0.0005	0.0009	0.0051
2005	0.0105	0.0221	0.0577	0.0005	0.0009	0.0051
2006	0.0102	0.0242	0.0634	0.0005	0.0009	0.0051
2007	0.0095	0.0221	0.0602	0.0302	0.0009	0.0095
2008	0.0078	0.0115	0.0298	0.0302	0.029	0.0095
2009	0.0075	0.0105	0.0297	0.0302	0.029	0.0095
2010	0.0076	0.0108	0.0299	0.0302	0.029	0.0095
2011	0.0072	0.0103	0.0322	0.0302	0.029	0.0095
2012	0.0072	0.0095	0.034	0.0302	0.029	0.0095
2013	0.0071	0.0095	0.0339	0.0302	0.029	0.0095
2014	0.0071	0.0095	0.032	0.0302	0.029	0.0095
2015	0.0071	0.0096	0.0304	0.0302	0.029	0.0095
2016	0.0071	0.0096	0.0313	0.0302	0.029	0.0095
2017	0.0071	0.0095	0.0313	0.0302	0.029	0.0095
2018	0.0071	0.0095	0.0315	0.0302	0.029	0.0095
2019	0.0068	0.0094	0.0332	0.0302	0.029	0.0095
2020	0.0065	0.0091	0.0321	0.0302	0.029	0.0095

1991	0.0647	0.1035	0.1142	0.001	0.0014	0.0048
1992	0.0647	0.1035	0.1142	0.001	0.0014	0.0048
1993	0.0647	0.1035	0.1142	0.001	0.0014	0.0048
1994	0.0626	0.0764	0.1142	0.001	0.0014	0.0048
1995	0.0627	0.0806	0.1142	0.001	0.0014	0.0048
1996	0.063	0.0848	0.0515	0.001	0.0014	0.0048
1997	0.0647	0.1035	0.0849	0.001	0.0014	0.0048
1998	0.0603	0.0982	0.0933	0.001	0.0014	0.0048
1999	0.056	0.0908	0.1142	0.001	0.0014	0.0048
2000	0.0503	0.0871	0.168	0.001	0.0014	0.0048
2001	0.0446	0.0871	0.1726	0.001	0.0014	0.0048
2002	0.0389	0.0787	0.175	0.001	0.0014	0.0048
2003	0.0355	0.0618	0.1724	0.001	0.0014	0.0048
2004	0.0304	0.0631	0.166	0.001	0.0014	0.0048
2005	0.0212	0.0379	0.1468	0.001	0.0014	0.0048
2006	0.0207	0.0424	0.1673	0.001	0.0014	0.0048
2007	0.0181	0.0373	0.1553	0.0192	0.0014	0.0431
2008	0.0085	0.0088	0.0164	0.0192	0.0214	0.0431
2009	0.0067	0.0064	0.0083	0.0192	0.0214	0.0431
2010	0.0075	0.008	0.0241	0.0192	0.0214	0.0431
2011	0.0052	0.0061	0.0015	0.0192	0.0214	0.0431
2012	0.0049	0.0036	0.0015	0.0192	0.0214	0.0431
2013	0.0046	0.0036	0.0015	0.0192	0.0214	0.0431
2014	0.0046	0.0035	0.0015	0.0192	0.0214	0.0431
2015	0.0046	0.0034	0.0015	0.0192	0.0214	0.0431
2016	0.0046	0.0033	0.0015	0.0192	0.0214	0.0431
2017	0.0046	0.0035	0.0015	0.0192	0.0214	0.0431
2018	0.0046	0.0033	0.0015	0.0192	0.0214	0.0431
2019	0.0042	0.0031	0.0021	0.0192	0.0214	0.0431
2020	0.0038	0.0029	0.0061	0.0192	0.0214	0.0431

Source: Emissions Factors for Greenhouse Gas Inventories, U.S EPA April 2023. Note that values are held constant by EPA for certain time series/vehicle types. See https://www.epa.gov/system/files/documents/2023-03/ghg_emission_factors_hub.pdf

Default CH_4 and N_2O Emission Factors for Alternative Fuel Vehicles

CH_4 (g/mi)	Passenger Car	Light Truck (Vans, Pickup Trucks, SUVs)	Heavy-Duty Vehicle
Methanol	0.015	NA	0.075
CNG	0.146	0.158	0.921
LNG	NA	0.158	0.921
LPG	0.015	0.016	0.003
Ethanol (E85)	0.015	0.016	0.075
Biodiesel (B5)	0.03	0.029	0.009
Biodiesel (B20)	0.03	0.029	0.009

N_2O (g/mi)	Passenger Car	Light-Duty Vehicle	Heavy-Duty Vehicle	
Methanol	0.004	NA	0.028	
CNG	0.004	0.005	0	
LNG	NA	0.005	0	
LPG	0.004	0.005	0.007	
Ethanol (E85)	0.004	0.005	0.028	
Biodiesel (B5)	0.019	0.021	0.043	equal to B20?
Biodiesel (B20)	0.019	0.021	0.043	

Source: Emissions Factors for Greenhouse Gas Inventories, U.S EPA April 2023.

Non-CO_2 Emission Factors for Other Vehicles

Vehicle Types	**CH_4 (g/gallon fuel)** Gasoline	Diesel	Residual Fuel	Jet Fuel	Aviation Gasoline	**N_2O (g/gallon fuel)** Gasoline	Diesel	Residual Fuel	Jet Fuel	Aviation Gasoline	
Motorcycles (1996 +)	0.007					0.0083					VMT
Motorcycles (- 1995)	0.007					0.0083					VMT
Agricultural Equipment	1.93	1.27				1.20	1.07				gal
Construction Equipment	2.85	1.01				1.47	0.94				gal
Utility and Recreational Equipment	2.87	0.73				1.50	0.66				gal
Aircraft				0	7.06				0	0.11	gal
Ships and Boats	4.61	6.41	1.11			0.08	0.17	0.32			gal
Locomotives		0.80					0.26				gal

Source: Emissions Factors for Greenhouse Gas Inventories, U.S EPA April 2023.

Wastewater

Default Factors Used to Calculate Emissions from Wastewater Treatment

Variable Description	**Shorthand**	**Value**
Density of Methane	$\rho(CH_4)$	662
CH_4 Destruction Efficiency	DE	0.99
Default biogas production	Digester Gas	1
Fraction of CH_4 in Biogas (default)	F CH4 default	0.65
Maximum CH_4 Production Capacity	Bo	0.6
Anaerobic CH_4 Correction Factor	MCF anaerobic	0.8
Industrial Discharge Factor	F ind	1.25
Default fraction BOD_5 removed in	F p	0.325
Septic CH_4 Correction Factor	MCF septic	0.5
Default BOD_5 Load	BOD_5 load	0.09
Emissions Factor, Nitrification/Den	EF nit/denit	7
Emissions Factor, no Nitrification/I	EF no nit/denit	3.2
Emissions Factor, Effluent	EF effluent	0.005
Molecular Weight Ratio of N2O to	N2O/N2	1.571428571
Total N Load	N Load	0.026
Nitrogen uptake in aerobic system	N uptake aerobic	0.05
Nitrogen uptake in anaerobic syste	N uptake anaerobic	0.005
Fraction of nitrogen removed with	Nit/denit default	0.7
Fraction of nitrogen removed with	No Nit/denit default	0

Used in Equation...									
10.1	10.2								
10.1	10.2								
	10.2								
		10.3	10.4	10.5	10.6				
		10.3	10.4						
			10.4			10.7	10.8		10.10
			10.4						
				10.5	10.6				
					10.6				10.10
						10.7			
							10.8		
								10.9	10.10
								10.9	10.10
									10.10
									10.10
									10.10
									10.10
									10.10

Source: CARB (California Air Resources Board). 2010. Local Government Operations Protocol, Version 1.1. California Air Resources Board, California Climate Action Registry, ICLEI – Local Governments for Sustainability, and The Climate Registry.

Employee Commute

Employee Commute Factors - For simplicity, assumes all modes use gasoline, and all alternative transportation options have effective emissions of zero.

Mode	**Average mpg**	**people/mode**	**kg CO_2/gal**
Single Occupancy Vehicle	21.6	1	8.78
Carpool	21.6	2.42	8.78
Motorcycle	43.4	1	8.78
Transit			0
Bike			0
Walk			0
Work at home			0
Other			0

Old Table Rows

Mode	**Average m**	**people/mo**	**kg CO_2/gal**
Single Occupancy Vehicle	20.5	1	8.78
Carpool	20.5	2.498	8.78
Motorcycle	56.5	1	8.78

carpool calculation		Weighted Average
In 2-person carpool	10,382,478	2.416031
In 3-person carpool	1,759,044	
In 4-person carpool	641,090	
In 5- or 6-person carpool	330,934	
In 7-or-more-person carpool	274,032	
Total	13,387,578	

Sources:
Average Fuel Efficiency of each Mode: FHWA (Federal Highway Administration). 2012. Highway Statistics 2010. Federal Highway Administration, U.S. Department of Transportation.
Average Number of Carpoolers: U.S. Census Bureau. 2008. American Community Survey: Table S0801 – Commuting Characteristics by Sex, San Bernardino County, California. U.S. Census Bureau.
CO_2 per Gallon of Gasoline: CARB (California Air Resources Board). 2010. Local Government Operations Protocol, Version 1.1. California Air Resources Board, California Climate Action Registry, ICLEI, and The Climate Registry.

Water

Electricity Use in Southern California Water Systems- Average used to develop calculations in the Water worksheet
Table C-4: Potential Adjustments to WER Table 1-3, Electricity Use in Typical Urban Water Systems (CEC 2006)

Southern California (kWh/MG)		**kWh/MG**
	Adjusted	**w/ Losses**
SWP west branch	7900	9232
SWP east branch	9900	11569
MWD west branch	906	1013
MWD east branch	540	604

Source: CEC (California Energy Commission). 2006. Refining Estimates of Water-Related Energy Use in California. California Energy Commission. CEC-500-2006-118.

eGRID Electricity Emission Factors

CAMX eGRID subregion	(lb/MWh)																								
Gas	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CO_2	878.71	878.71	878.71	878.71	878.71	724.12	702.57	681.01	669.85	658.68	610.82	630.56	650.31	609.48	568.64	548.25	527.86	512.20	496.54	453.21	513.46	531.68	531.68	531.68	531.68	531.68
CH_4	0.0302	0.0302	0.0302	0.0302	0.0302	0.0302	0.0293	0.0283	0.0286	0.0289	0.0285	0.0298	0.0311	0.0321	0.0331	0.0331	0.0330	0.0335	0.0340	0.0330	0.0320	0.0310	0.0310	0.0310	0.0310	0.0310
N_2O	0.008	0.008	0.008	0.008	0.008	0.008	0.007	0.006	0.006	0.006	0.006	0.006	0.006	0.005	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004

Source: Emissions & Generation Resource Integrated Database (eGRID). https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid.

Land Use Factors

Emission Factors For N_2O

Fertilizer Type	**Percent N Content**	**Percent N lost to Volatilization**	**Percent N Leach and Runoff**	**Percent from Applied N**	**Percent from Volatized N**	**Percent from Leached and Runoff N**
Synthetic	1	0.1	0.3	0.0125	0.01	0.025
Organic	0.037	0.2	0.3	0.0125	0.01	0.025
Manure	0.005	0.2	0.3	0.0125	0.01	0.025

Sources: Unless otherwise noted, all fertilizer emission factors are IPCC default values from the Revised 1996 Guidelines for National GHG Inventories.
Fertilizer Emissions = ((Fertilizer Consumption in the Park)*(Percent N Content)*(1-Percent N lost to Volatilization)*(Percent from Applied N)+(Fertilizer Consumption in the Park)*(Percent N Content)*(Percent N lost to Volatilization)*(Percent from Volatized N)+(Fertilizer Consumption in the Park)*(Percent N content)*(1-Percent N lost to Volatilization)*(Percent N Leach and Runoff)*(Percent from Leached and Runoff))

N2O/N2O-N	1.571428571

Carbon Sequestration Factor 2.23 (metric ton C/hectare/year)
Source: EPA State Inventory Tools, Land-Use Land Use Change and Forestry module.

Background Controls

Tool Name Community Greenhouse Gas Inventory Tool

Mobile Entry Row	9
Mobile Min Vehicle	0
Mobile Max Vehicle	8
Electricity Entry Row	12
Electricity Min Unit	9
Electricity Max Unit	11
Electricity Lookup Colu	21
Stationary Entry Row	12
Stationary Min Unit	9
Stationary Max Unit	11

Lists

	4

Sector	Landfills
Residential	0
Commercial/Institutio	0
Industrial	0
Energy Generation	0
0	0
0	0
0	0
0	0
0	0
0	0
0	
0	
0	
0	
0	
0	
0	
0	
0	
0	

Stationary Fuels	Facility Types	Water Importers	Comprehensive	Yes/No	Scope	Emission Factors Choice
Natural Gas	Residential: Single	SWP west branch	Comprehensive	Yes	1	TRUE
Digester Gas	Residential: Apart	SWP east branch	Partial	No	2	TRUE
Diesel	Residential: Mobi	MWD west branc	N/A		3	TRUE
LPG	Commercial/Insti	MWD east branch				TRUE
Gasoline	Commercial/Institutional: Food Sales					TRUE
Residual Fuel Oil N	Commercial/Institutional: Food Service					
Residual Fuel Oil N	Commercial/Institutional: Health Care					
Propane	Commercial/Institutional: Lodging					
Butane	Commercial/Institutional: Mercantile					
Jet Fuel	Commercial/Institutional: Office					
Residential Coal	Commercial/Institutional: Public Assembly					
Commercial Coal	Commercial/Institutional: Public Order and Safety					
Industrial Coal	Commercial/Institutional: Religious Worship					5
Electric Power Coa	Commercial/Institutional: Service					
Distillate Fuel Oil	Commercial/Institutional: Warehouse and Storage					
Kerosene	Commercial/Institutional: Other					
	Commercial/Institutional: Vacant					
	Industrial: Food					
	Industrial: Beverage and Tobacco Products					
	Industrial: Textile Mills					
	Industrial: Textile Product Mills					
	Industrial: Apparel					
	Industrial: Leather and Allied Products					
	Industrial: Wood Products					
	Industrial: Paper					
	Industrial: Printing and Related Support					
	Industrial: Petroleum and Coal Products					
	Industrial: Chemicals					
	Industrial: Plastics and Rubber Products					
	Industrial: Nonmetallic Mineral Products					
	Industrial: Primary Metals					
	Industrial: Fabricated Metal Products					
	Industrial: Machinery					
	Industrial: Computer and Electronic Products					
	Industrial: Electrical Equip., Appliances, and Components					
	Industrial: Transportation Equipment					
	Industrial: Furniture and Related Products					
	Industrial: Miscellaneous					
	Energy Generation: Electricity Generators					

Fuels

Vehicle Types	Gasoline	Diesel	Biodiesel (B5)	Biodiesel (B20)	Ethanol (E85)	CNG	LNG	LPG	Residual Fuel	Jet Fuel	Aviation Gasoline
Units	Gallons	Gallons	Gallons	Gallons	Gallons	G.G.E.	Gallons	Gallons	Gallons	Gallons	Gallons
0	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Passenger Car	1	1	1	1	1	1			1		
Light Truck (Vans, Picku	1	1	1	1	1	1			1		
Heavy-Duty Vehicle	1	1	1	1	1	1		1	1		
Motorcycle	1										
Agricultural Equipment	1	1									
Construction Equipmer	1	1									
Utility and Recreational	1	1									
Aircraft											1
Ship or Boat	1	1								1	
Locomotive		1									

Available Fu	#N/A
1	#VALUE!
2	#VALUE!
3	#VALUE!
4	#VALUE!
5	#VALUE!
6	#VALUE!
7	#VALUE!
8	#VALUE!
9	#VALUE!
10	#VALUE!
11	#VALUE!

List of Utilities

	0	0	0	0	0
	1	0	0	0	0

Selected Util	1
CAMX eGRID subregion	
1	0
2	0
3	0
4	0
5	0
6	0

List of Contractual Instruments Contract Entry 73

	Contractual Instrument Descriptions
1	
2	
3	
4	
5	
6	

APPENDIX D:

VEHICLE DATA

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Transit Fleet Emissions Calculations

EMFAC Emission Rates

Source: EMFAC2021 (v1.0.2) Emission Rates (Available at: https://arb.ca.gov/emfac/emissions-inventory)
Region Type: County
Region: Fresno
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	Total VMT	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX
Fresno	2019	HHDT	Aggregate	Aggregate	Gasoline	8.517899465	163.853183	3126.310352	0	107.0878551	1.256927581	0	0
Fresno	2019	HHDT	Aggregate	Aggregate	Diesel	12433.10424	1929179.17	1655.642174	16367.27388	0	0.005894173	0.322210475	0
Fresno	2019	HHDT	Aggregate	Aggregate	Natural Ga	247.8138363	17841.4813	1653.751758	9498.697373	0	3.606573544	31.82994165	0
Fresno	2019	LDA	Aggregate	Aggregate	Gasoline	317885.0779	11758858	305.3432794	0	77.24677546	0.003846075	0	0.094386021
Fresno	2019	LDA	Aggregate	Aggregate	Diesel	922.539539	28742.6608	238.2059228	0	0	0.001840207	0	0
Fresno	2019	LDA	Aggregate	Aggregate	Electricity	3626.470542	121522.073	0	0	0	0	0	0
Fresno	2019	LDT1	Aggregate	Aggregate	Gasoline	36240.95681	1115107.83	363.8098921	0	101.4375092	0.013849948	0	0.180349977
Fresno	2019	LDT1	Aggregate	Aggregate	Diesel	33.41854253	436.529328	400.9329671	0	0	0.01253883	0	0
Fresno	2019	LDT1	Aggregate	Aggregate	Electricity	8.365764927	226.808266	0	0	0	0	0	0
Fresno	2019	LDT2	Aggregate	Aggregate	Gasoline	131591.5962	4831212.75	391.0852976	0	100.7044672	0.00534285	0	0.118871406
Fresno	2019	LDT2	Aggregate	Aggregate	Diesel	250.2306628	9822.14754	327.3280946	0	0	0.00130581	0	0
Fresno	2019	LDT2	Aggregate	Aggregate	Electricity	5.243979303	180.707638	0	0	0	0	0	0
Fresno	2019	LHDT1	Aggregate	Aggregate	Gasoline	13706.24743	457947.614	969.8845457	123.9041661	25.37383964	0.017874065	0.122452615	0.040810454
Fresno	2019	LHDT1	Aggregate	Aggregate	Diesel	11973.6156	449562.109	645.1986335	138.7512247	0	0.010795938	0.005098128	0
Fresno	2019	LHDT2	Aggregate	Aggregate	Gasoline	2338.360614	80805.9559	1073.971236	142.7161616	26.33400397	0.010373871	0.125361374	0.038195822
Fresno	2019	LHDT2	Aggregate	Aggregate	Diesel	4099.587787	155327.024	786.5553454	222.6581553	0	0.01014195	0.005098128	0
Fresno	2019	MHDT	Aggregate	Aggregate	Gasoline	1219.27432	58986.1365	1900.123502	555.8230403	53.41238449	0.045250996	0.232077929	0.061372081
Fresno	2019	MHDT	Aggregate	Aggregate	Diesel	7712.968954	352129.859	1169.46414	2405.177567	0	0.010743614	0.030404712	0
Fresno	2019	MHDT	Aggregate	Aggregate	Natural Ga	46.78590625	2739.70856	1024.214058	5786.660899	0	0.783326883	18.2158759	0

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Transit Fleet Emissions Calculations

Fresno FAX Bus Emissions

FIXED ROUTE BUSES 2022
X_datetime_insert : Between(Calendar) 1/1/2022 12:00:00 AM, 12/31/2022 12:00:00 AM
PROCST_proc_status = A
manufacturer = NWFLYR, PROTERRA, GILLIG

Sum(METER 1 USAG	Count Distinct(EQ EQUIP NO)
5350166	125

Table 1: Annual Fleet Information - FAX Buses — **Emissions (Source: EMFAC 2021)**

EQ EQUIP NO	Year	Manufacturer	Model	Sum(METER 1 USAGE)	PROCST PROC STATUS	Description	Fuel Type	Vehicle Type	NOx_RUNEX	NOx_IDLEX	NOx_STREX	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX
0506	2005	NWFLYR	C40LF	6730	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0507	2005	NWFLYR	C40LF	3078	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0508	2005	NWFLYR	C40LF	10387	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0509	2005	NWFLYR	C40LF	11470	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0510	2005	NWFLYR	C40LF	13947	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0601	2006	NWFLYR	C40LF	21452	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0602	2006	NWFLYR	C40LF	14535	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0603	2006	NWFLYR	C40LF	23532	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0604	2006	NWFLYR	C40LF	34815	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0605	2006	NWFLYR	C40LF	23036	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0606	2006	NWFLYR	C40LF	30555	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0608	2006	NWFLYR	C40LF	39131	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0609	2006	NWFLYR	C40LF	40510	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0610	2006	NWFLYR	C40LF	41839	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0611	2006	NWFLYR	C40LF	32382	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0612	2006	NWFLYR	C40LF	40766	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0613	2006	NWFLYR	C40LF	41253	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0614	2006	NWFLYR	C40LF	49034	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0615	2006	NWFLYR	C40LF	44670	A	40` CNG LOW FLO	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0901	2009	NWFLYR	C40LF	42144	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0902	2009	NWFLYR	C40LF	44841	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0903	2009	NWFLYR	C40LF	54522	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0904	2009	NWFLYR	C40LF	54347	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0905	2009	NWFLYR	C40LF	45553	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0906	2009	NWFLYR	C40LF	48904	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0907	2009	NWFLYR	C40LF	54450	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0908	2009	NWFLYR	C40LF	52513	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0909	2009	NWFLYR	C40LF	53152	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0910	2009	NWFLYR	C40LF	57769	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0911	2009	NWFLYR	C40LF	51212	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0912	2009	NWFLYR	C40LF	50738	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0913	2009	NWFLYR	C40LF	46256	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0914	2009	NWFLYR	C40LF	48620	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0915	2009	NWFLYR	C40LF	51693	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
0916	2009	NWFLYR	C40LF	45241	A	40` CNG BUS	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1101	2011	GILLIG	LOW FLOOR CNG	40415	A	2011 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1102	2012	GILLIG	LOW FLOOR CNG	50452	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1103	2012	GILLIG	LOW FLOOR CNG	56038	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1104	2012	GILLIG	LOW FLOOR CNG	45200	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1105	2012	GILLIG	LOW FLOOR CNG	58611	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1106	2012	GILLIG	LOW FLOOR CNG	48268	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1107	2012	GILLIG	LOW FLOOR CNG	39031	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1108	2012	GILLIG	LOW FLOOR CNG	53433	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1109	2012	GILLIG	LOW FLOOR CNG	46038	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1201	2012	GILLIG	29` LOW FLR CNG	48450	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1202	2012	GILLIG	29` LOW FLR CNG	43763	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1203	2012	GILLIG	29` LOW FLR CNG	32074	A	2012 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1401	2013	GILLIG	LOW FLOOR CNG	56188	A	2013 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1402	2013	GILLIG	LOW FLOOR CNG	39704	A	2013 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1403	2014	GILLIG	LOW FLOOR CNG	40793	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1404	2014	GILLIG	LOW FLOOR CNG	57145	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1405	2014	GILLIG	LOW FLOOR CNG	65992	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1406	2014	GILLIG	LOW FLOOR CNG	53717	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1407	2014	GILLIG	LOW FLOOR CNG	53577	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1408	2014	GILLIG	LOW FLOOR CNG	48916	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1409	2014	GILLIG	LOW FLOOR CNG	63710	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1410	2014	GILLIG	LOW FLOOR CNG	56765	A	2014 LOW FLOOF	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1601	2016	GILLIG	LF CNG BRT+	46310	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1602	2016	GILLIG	LF CNG BRT+	45991	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1603	2016	GILLIG	LF CNG BRT+	28797	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1604	2016	GILLIG	LF CNG BRT+	50720	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1605	2016	GILLIG	LF CNG BRT+	49543	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1606	2016	GILLIG	LF CNG BRT+	58946	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1607	2016	GILLIG	LF CNG BRT+	45870	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1608	2016	GILLIG	LF CNG BRT+	61399	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1609	2016	GILLIG	LF CNG BRT+	47342	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1610	2016	GILLIG	LF CNG BRT+	49004	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1611	2016	GILLIG	LF CNG BRT+	50829	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1612	2016	GILLIG	LOW FLOOR CNG	47940	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1613	2016	GILLIG	LOW FLOOR CNG	57335	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1614	2016	GILLIG	LOW FLOOR CNG	57325	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1615	2016	GILLIG	LOW FLOOR CNG	51966	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1616	2016	GILLIG	LOW FLOOR CNG	41999	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1617	2016	GILLIG	LOW FLOOR CNG	46095	A	2016 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1701	2017	GILLIG	LF CNG BRT+	36412	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1702	2017	GILLIG	LF CNG BRT+	47398	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1703	2017	GILLIG	LF CNG BRT+	48931	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1704	2017	GILLIG	LF CNG BRT+	52350	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1705	2017	GILLIG	LF CNG BRT+	53518	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1706	2017	GILLIG	LF CNG BRT+	39115	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1707	2017	GILLIG	LF CNG BRT+	41586	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1708	2017	GILLIG	LF CNG BRT+	60934	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1709	2017	GILLIG	LF CNG BRT+	35324	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1710	2017	GILLIG	LF CNG BRT+	45691	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1711	2017	GILLIG	LF CNG BRT+	48422	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1712	2017	GILLIG	LF CNG BRT+	49730	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1713	2017	GILLIG	LF CNG BRT+	52370	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1714	2017	GILLIG	LF CNG BRT+	48784	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1715	2017	GILLIG	LF CNG BRT+	43907	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1716	2017	GILLIG	LF CNG BRT+	42891	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1717	2017	GILLIG	LF CNG BRT+	44477	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1718	2017	GILLIG	LF CNG BRT+	44803	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1719	2017	GILLIG	LF CNG BRT+	36142	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1720	2017	GILLIG	LF CNG BRT+	42757	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1721	2017	GILLIG	LF CNG BRT+	52184	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1722	2017	GILLIG	LF CNG BRT+	45318	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1723	2017	GILLIG	LF CNG BRT+	45390	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1724	2017	GILLIG	LF CNG BRT+	38945	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1725	2017	GILLIG	LF CNG BRT+	51040	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1726	2017	GILLIG	LF CNG BRT+	46070	A	2017 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1801	2018	GILLIG	LOW FLOOR CNG	46231	A	2018 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1905	2019	GILLIG	LOW FLOOR CNG	47635	A	2019 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
1906	2019	GILLIG	LOW FLOOR CNG	55626	A	2019 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2001	2020	GILLIG	LOW FLOOR CNG	63062	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2002	2020	GILLIG	LOW FLOOR CNG	47807	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2004	2020	GILLIG	LOW FLOOR CNG	60485	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2005	2020	GILLIG	LOW FLOOR CNG	47574	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2006	2020	GILLIG	LOW FLOOR CNG	41805	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2007	2020	GILLIG	LOW FLOOR CNG	61596	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2008	2020	GILLIG	LOW FLOOR CNG	57205	A	2020 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2101	2021	PROTERRA	ZX5	31583	A	2021 ZX5 ELECTR	Electric	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2102	2021	PROTERRA	ZX5	30877	A	2021 ZX5 ELECTR	Electric	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2103	2021	GILLIG	LOW FLOOR CNG	42464	A	2021 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2104	2021	GILLIG	LOW FLOOR CNG	50769	A	2021 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2105	2021	GILLIG	LOW FLOOR CNG	49881	A	2021 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2106	2021	GILLIG	LOW FLOOR CNG	55837	A	2021 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2107	2021	GILLIG	LOW FLOOR CNG	46216	A	2021 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2108	2021	GILLIG	LOW FLOOR CNG	54500	A	2021 GILLIG LF C	Natural Gas	Bus	0.117706116	6.878527119	0	1024.214058	5786.660899	0	0.783326883	18.2158759	0
2201	2022	PROTERRA	ZX5	13	A	2022 ZX5 ELECTR	Electric	Bus	0	0	0	0	0	0	0	0	0
2202	2022	PROTERRA	ZX5	841	A	2022 ZX5 ELECTR	Electric	Bus	0	0	0	0	0	0	0	0	0
2203	2022	PROTERRA	ZX5	1121	A	2022 ZX5 ELECTR	Electric	Bus	0	0	0	0	0	0	0	0	0
2204	2022	PROTERRA	ZX5	1191	A	2022 ZX5 ELECTR	Electric	Bus	0	0	0	0	0	0	0	0	0
2205	2022	PROTERRA	ZX5	59	A	2022 ZX5 ELECTR	Electric	Bus	0	0	0	0	0	0	0	0	0

2206	2022	PROTERRA	ZX5	121 A	2022 ZX5 ELECTR Electric	Bus	0	0	0	0	0	0	0	0	0
2207	2022	PROTERRA	ZX5	410 A	2022 ZX5 ELECTR Electric	Bus	0	0	0	0	0	0	0	0	0

Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Table 2: Annual RunEx Emissions

Runex Emissions (Tons/year)			
Annual Mileage*	CO2	CH4	N2O
5,283,950.0	5,965.5	4.6	1.2

**Only natural gas-powered bus milage included*

Table 3: Annual Emissions from Idling

Idlex Emissions (Tons/year)				
# Buses	Days*	CO2	CH4	N2O
116.0	260.0	192.4	0.6	0.0

** Assuming 260 operating days for idling emissions*

Table 4: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	6,157.9	1.0	6,157.9
CH4 Total	5.2	25.0	129.2
N20 Total	1.3	310.0	389.1
		Total	**6,676.2**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Transit Fleet Emissions Calculations

Fresno Handy Ride Transit Program Emissions

Table 1: Annual Fleet Information - Handy Ride Buses/Vans

CALENDAR YEAR MILEAGE REPORT

EQUIP ID	VIN	YR	MANUFACTURER	MODEL	DESCRIPTION	IN SERVICE DATE	STATUS / NOTES	Beginning Mileage	Ending Mileage	Total Miles Traveled	CO2_RUN EX	CO2_IDLE X	CO2_STR EX	CH4_RUN EX	CH4_IDLE X	CH4_STRE X	N2O_RU NEX	N2O_IDLE X	N2O_STR EX
7049	1FDFE4FN7PDD018(	2022	FORD	E450	FORD E-450 CUTAV	March 2023?	GASOLINE-NOT YET IN FLEET			0	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7050	1FDFE4FN1PDD096:	2022	FORD	E450	FORD E-450 CUTAV	March 2023?	GASOLINE-NOT YET IN FLEET			0	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7051	1FDFE4FN5PDD096:	2022	FORD	E450	FORD E-450 CUTAV	March 2023?	GASOLINE-NOT YET IN FLEET			0	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
3985	1FDXE45S17DB493(	2007	FORD	E450	FORD E-450 CUTAWAY		GASOLINE	458846.1	458851	4.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
3994	1FDFE4FS5BDB0534	2011	FORD	E450	11 FORD ELDORAD	1/6/2012	GASOLINE	274231.7	274247.2	15.5	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
3995	1FDFE4FS1BDB0534	2011	FORD	E450	11 FORD ELDORAD	1/6/2012	GASOLINE	256121.5	256771.3	649.8	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
3996	1FDXE45S05HA600{	2006	FORD	E450	2006 ELDORADO		GASOLINE	228916.1	228918.2	2.1	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7001	1FDFE4FS8DDB161:	2013	ELDORADO	E 450	13 FORD E 450 ELD	11/13/2013	GASOLINE	239013	252380.8	13367.8	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7002	1FDFE4FSXDDB161:	2013	ELDORADO	E 450	13 FORD E 450 ELD	11/13/2013	GASOLINE	227964.2	247167	19202.8	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7003	1FDFE4FS6DDB161:	2013	ELDORADO	E 450	13 FORD E 450 ELD	12/31/2013	GASOLINE	220119.7	239911.6	19791.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7014	1FDFE4FS9EDA992(	2014	FORD	E450	15 FORD E450 STAI	11/25/2014	GASOLINE	252377.2	284156	31778.8	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7015	1FDFE4FS0EDB1802	2014	FORD	E450	15 FORD E450 STAI	11/30/2014	GASOLINE	278198	307473.1	29275.1	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7016	1FDFE4FS1EDB1801	2014	FORD	E450	15 FORD E450 STAI	12/9/2014	GASOLINE	299126.8	317382	18255.2	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7017	1FDFE4FS8EDB1802	2014	FORD	E450	15 FORD E450 STAI	12/18/2014	GASOLINE	293410.8	325402	31991.2	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7018	1FDFE4FS7EDA992(	2014	FORD	E450	15 FORD E450 STAI	11/24/2014	GASOLINE	282785.8	307488.1	24702.3	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7019	1FDFE4FS5EDB1802	2014	FORD	E450	15 FORD E450 STAI	12/1/2014	GASOLINE	301015.4	332368.2	31352.8	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7020	1FDFE4FS6EDB1803	2014	FORD	E450	15 FORD E450 STAI	12/1/2014	GASOLINE	268585.2	300487.5	31902.3	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7021	1FDFE4FS9EDB1802	2014	FORD	E450	15 FORD E450 STAI	12/1/2014	GASOLINE	268551.5	301788	33236.5	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7022	1FDFE4FS2EDB1802	2014	FORD	E450	15 FORD E450 STAI	12/1/2014	GASOLINE	267809.5	302416.6	34607.1	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7023	1FDFE4FS3EDB1802	2014	FORD	E450	15 FORD E450 STAI	1/8/2015	GASOLINE	280836.2	311422.4	30586.2	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7024	1FDFE4FS4EDB1802	2014	FORD	E450	15 FORD E450 STAI	1/1/2015	GASOLINE	227438.5	260893.5	33455	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7025	1FDFE4FS7EDB1802	2014	FORD	E450	15 FORD E450 STAI	1/1/2015	GASOLINE	246902.7	278021.2	31118.5	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7026	1FDFE4FS7EDB1801	2014	FORD	E450	15 FORD E450 STAI	1/18/2015	GASOLINE	235988.2	267689.2	31701	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7027	1FDEE3FL0FDA1227	2015	FORD	E450	15 FORD E450 STAI	11/5/2015	GASOLINE	165356.9	181685.8	16328.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7028	1FDEE3FL4FDA3054	2015	FORD	E450	15 FORD E450 STAI	11/5/2015	GASOLINE	174492.5	195832.3	21339.8	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7029	1FDEE3FL5FDA3053	2015	FORD	E450	15 FORD E450 STAI	11/5/2015	GASOLINE	162188.5	180737.4	18548.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7030	1FDEE3FL5FDA3054	2015	FORD	E450	15 FORD E450 STAI	1/14/2016	GASOLINE	166051.7	185763.1	19711.4	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7031	1FDEE3FL9FDA3054	2015	FORD	E450	15 FORD E450 STAI	1/14/2016	GASOLINE	161652.2	179783.3	18131.1	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7032	1FDEE3FL7FDA3053	2015	FORD	E450	15 FORD E450 STAI	2/12/2016	GASOLINE	164415.7	187065	22649.3	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7033	1FDFE4FS2FDA0865	2015	FORD	E450	15 FORD E450 STAI	10/10/2015	GASOLINE	221394.2	253234.1	31839.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7034	1FDFE4FS0FDA0869	2015	FORD	E450	15 FORD E450 STAI	10/1/2015	GASOLINE	237986.4	279436.4	41450	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7035	1FDFE4FS1HDC7801	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	136560.5	170816.2	34255.7	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7036	1FDFE4FS3HDC7801	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	133422.7	170916.3	37493.6	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7037	1FDFE4FS3HDC7803	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	135960.2	179999.4	44039.2	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7038	1FDFE4FS4HDC7801	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	149564.5	191179.6	41615.1	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7039	1FDFE4FS7HDC7802	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	142241.4	185168.3	42926.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7040	1FDFE4FS9HDC7802	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	143063.3	181985.7	38922.4	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7041	1FDFE4FSXHDC7803	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	133320.4	176263.7	42943.3	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7042	1FDFE4FS2HDC7802	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	146711.7	186392.1	39680.4	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7043	1FDFE4FS4HDC7802	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	146188	185181.9	38993.9	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7044	1FDFE4FS0HDC7801	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	157539.7	195736.3	38196.6	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7045	1FDFE4FS0HDC7802	2017	FORD	E450	18 FORD E450 STAI	3/6/2018	GASOLINE	116537.6	152263.3	35725.7	1900.124	555.823	53.41238	0.045251	0.232078	0.061372	0.04586	0.006002	0.029897
7046	1GBE4V1255F53418	2005	CHEVY	C4500	05 CHEVY C4500		DIESEL-UNUSED			0	1169.464	2405.178	0	0.010744	0.030405	0	0.184084	0.378596	0
7047	1GDE5V1958F4170:	2008	GMC	C5500	08 GMC C5500		DIESEL-UNUSED			0	1169.464	2405.178	0	0.010744	0.030405	0	0.184084	0.378596	0
7048	1GDE5V1918F4173-	2008	GMC	C5500	08 GMC C5500		DIESEL-UNUSED			0	1169.464	2405.178	0	0.010744	0.030405	0	0.184084	0.378596	0
3989	1FD4E45S28DA528{	2008	FORD	E450	08 FORD AEROTECI	4/25/2007	CNG	296765	296765.4	0.4	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
3990	1FD4E45S48DA549(	2008	FORD	E450	08 FORD AEROTECI	4/25/2007	CNG	315582.9	315602.3	19.4	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
3993	1FD4E45S88DA014(	2008	FORD	E450	2008 STARCRAFT		CNG	309748.3	309773	24.7	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
7008	1FDFE4FS5EDA9197	2014	FORD	E450	14 FORD E450 STAI	9/13/2014	CNG	203065.5	213714.4	10648.9	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
7009	1FDFE4FS3EDA919(	2014	FORD	E450	14 FORD E450 STAI	9/18/2014	CNG	193939.5	212008.2	18068.7	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
7010	1FDFE4FS4EDA9197	2014	FORD	E450	14 FORD E450 STAI	9/18/2016	CNG	202248.7	213505.2	11256.5	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
7011	1FDFE4FS4EDA883(	2014	FORD	E450	14 FORD E450 STAI	9/24/2014	CNG	205537.1	222063.8	16526.7	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
7012	1FDFE4FS6EDA883(	2014	FORD	E450	14 FORD E450 STAI	9/13/2014	CNG	204831.1	213047	8215.9	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0
7013	1FDFE4FS5EDA883(	2014	FORD	E450	14 FORD E450 STAI	9/30/2014	CNG	193481.3	211403.8	17922.5	1024.214	5786.661	0	0.783327	18.21588	0	0.208793	1.179649	0

CALENDAR YEAR MILEAGE REPORT

EQUIP ID	VIN	YR	MANUFACTURER	MODEL	DESCRIPTION	IN SERVICE DATE	STATUS / NOTES	Beginning Mileage	Ending Mileage	Total Miles Traveled	CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX

Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Table 2: Annual RunEx Emissions

Runex Emissions				
Fuel Type	Annual Mileage	CO2	CH4	N2O
Gas	1,071,788.9	2,244.9	0.1	0.1
CNG	82,683.7	93.3	0.1	0.0

Table 3: Annual Emissions from Idling

Idling Emissions					
Fuel Type	# Bus	Days	CO2	CH4	N2O
Gas	39.0	260.0	6.2	0.0	0.0
CNG	9.0	260.0	14.9	0.0	0.0

* Assuming 260 operating days for idling emissions*

Table 4: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO2e
CO2 Total	2,359.3	1.0	2,359.3
CH4 Total	0.2	25.0	4.4
N20 Total	0.1	310.0	23.7
		Total	**2,387.4**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Transit Fleet Emissions Calculations

FCRTA Transit Emissions

Table 1: Annual Fleet Information - FCRTA Vehicles

TOTAL IN FLEET	VEHICLE #	VEHICLE ASSIGNMENT	LICENSE #	FUEL TYPE	VIN #	SEATING	W/C	USAGE	RECENT ODOMETER	Drive Cam/ Mobile Eye	Column13	Column14	Column15	Column16	Column17	Column18	Column19	Column20	Column21
											CO2_RUNEX	CO2_IDLEX	CO2_STREX	CH4_RUNEX	CH4_IDLEX	CH4_STREX	N2O_RUNEX	N2O_IDLEX	N2O_STREX
32	**RT 142** 2009 CHEV	Sanger-Reedley-College	1322587	GAS	1GBDV13W58I	4	1	SPARE	146335	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
33	**RT 143** 2009 CHEV	Rural Transit	1329227	GAS	1GBDV13WX8I	4	1	SPARE	13971	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
34	**RT 144** 2009 CHEV	KRC/SRC Back up	1322589	GAS	1GBDV13W48I	4	1	SPARE	138523	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
35	**RT 145** 2009 CHEV	Kingsburg-Reedley-College	1322588	GAS	1GBDV13W08I	4	1	SPARE	154547	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
36	**RT 146** 2013 CHEV	Huron	1409579	GAS	1GB6G5BG6D1	17	3	REG	66459	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
37	**RT 147** 2013 CHEV	Fleet back-up spare	1409581	GAS	1GB6G5BG9D1	17	3	REG	176469	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
38	**RT 148** 2013 CHEV	Huron	1409582	GAS	1GB6G5BG8D1	17	3	REG	73911	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
39	**RT 149** 2013 CHEV	Firebaugh	1409580	GAS	1GB6G5BGXD1	17	3	REG	140958	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
40	**RT 150** 2013 CHEV	Del Rey	1409584	GAS	1GB6G5BGXD1	17	3	REG	137212	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
41	**RT 151** 2013 CHEV	Mendota/Firebaugh	1409583	GAS	1GB6G5BG8D1	17	3	REG	110169	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
42	**RT 152** 2013 CHEV	San Joaquin	1409586	GAS	1GB6G5BG6D1	17	3	REG	147120	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
43	**RT 153** 2013 CHEV	Fleet back-up spare	1409587	GAS	1GB6G5BG2D1	17	3	SPARE	97004	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
44	**RT 154** 2013 CHEV	Coalinga	1418627	GAS	1GB6G5BG0D1	17	3	REG	82872	N/A	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
45	**RT 155** 2013 CHEV	Orange Cove	1418663	GAS	1GB6G5BG9D1	17	3	REG	85922	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
46	**RT 156** 2013 CHEV	Sanger	1409466	GAS	1GB6G5BG6D1	17	3	REG	77203	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
47	**RT 157** 2013 CHEV	Selma	1418577	GAS	1GB6G5BG0D1	17	3	REG	64239	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
48	**RT 158** 2013 CHEV	Sanger Back up	1418545	GAS	1GB6G5BG9D1	17	3	REG	47188	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
49	**RT 159** 2013 CHEV	Kerman	1418610	GAS	1GB6G5BG3D1	17	3	REG	73405	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
50	**RT 160** 2013 CHEV	Reedley	1418578	GAS	1GB6G5BG0D1	17	3	REG	81764	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
51	**RT 161** 2013 CHEV	Kingsburg	1418552	GAS	1GB6G5BG8D1	17	3	SPARE	78617	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
52	**RT 162** 2013 CHEV	Selma back-up	1418551	GAS	1GB6G5BG2D1	17	3	SPARE	69345	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
53	**RT 163** 2013 CHEV	Selma	1418765	GAS	1GB6G5BG7D1	17	3	REG	95052	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
54	**RT 164** 2013 CHEV	Fleet back-up spare	1418698	GAS	1GB6G5BG9D1	17	3	SPARE	70241	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
55	**RT 165** 2013 CHEV	Huron/Coalinga	1418699	GAS	1GB6G5BG4D1	17	3	REG	122602	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
56	**RT 166** 2013 CHEV	Selma	1418772	GAS	1GB6G5BG8D1	17	3	REG	84147	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
57	**RT 167** 2013 CHEV	Selma	1418773	GAS	1GB6G5BG7D1	17	3	REG	96569	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
58	**RT 168** 2013 CHEV	Reedley	1418697	GAS	1GB6G5BG8D1	17	3	REG	98818	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
59	**RT 169** 2013 CHEV	Fleet Back up	1409588	GAS	1GB6G5BG3D1	17	3	REG	71727	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
60	**RT 170** 2013 CHEV	Fleet Back-up	1418770	GAS	1GB6G5BG9D1	17	3	SPARE	74277	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
61	**RT 171** 2013 CHEV	Fleet back-up spare	1418771	GAS	1GB6G5BG2D1	17	3	SPARE	63801	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
62	**RT 172** 2013 CHEV	Selma back-up spare	1418919	GAS	1GB6G5BG9D1	17	3	SPARE	72021	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
63	**RT 173** 2013 CHEV	Fleet back-up spare	1418694	GAS	1GB6G5BG8D1	17	3	SPARE	68224	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
64	**RT 174** 2013 CHEV	Kingsburg	1418626	GAS	1GB6G5BGXD1	17	3	REG	89860	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
65	**RT 175** 2013 CHEV	Reedley	1418768	GAS	1GB6G5BG5D1	17	3	REG	81777	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
68	**RT 178** 2013 CHEV	Coalinga Back-up	1418695	GAS	1GB6G5BG3D1	10	6	SPARE	49470	N/A	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
69	**RT 179** 2013 CHEV	Fleet back-up spare	1418629	GAS	1GB6G5BG6D1	10	6	SPARE	65083	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
70	**RT 180** 2013 CHEV	Coalinga	1418696	GAS	1GB6G5BG1D1	13	3	SPARE	73569	N/A	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
71	**RT 181** 2013 CHEV	Fleet back-up spare	1418625	GAS	1GB6G5BGXD1	13	3	SPARE	85281	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
72	**RT 182** 2013 CHEV	Fleet back-up spare	1418733	GAS	1GB6G5BG8E1	13	3	SPARE	78262	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
73	**RT 183** 2013 CHEV	Fleet back-up spare	1418734	GAS	1GB6G5BG1E1	13	3	SPARE	75726	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
74	**RT 184** 2014 FORD	Auberry	1447611	GAS	1FTSS3EL3EDA	9	2	REG	132944	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
75	**RT 185** 2014 FORD	Auberry back-up	1447612	GAS	1FTSS3ELXEDA	9	2	SPARE	96559	Yes	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
76	**RT 186** 2014 FORD	CNG Service Truck	1332152	GAS	1FDUF4GY0EEI	1	0	REG	75516	N/A	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
77	**RT 187** 2014 FORD	CNG Service Truck	1332151	GAS	1FDUF4GY12EI	1	0	REG	155300	N/A	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
116	**RT 225** 2017 Ford V	City of Kingsburg	1577194	GAS	1F66F5DY2H0A	22	2	REG	5515	N/A	1900.1235	555.82304	53.4123845	0.045251	0.23207793	0.06137208	0.04586006	0.00600183	0.02989702
86	**RT 196** 2016 Zenith	Fowler Transit	1483706	Electric	3C6URVUG5GE	9	1	REG	11243	Yes	0	0	0	0	0	0	0	0	0
87	**RT 197** 2016 Zenith	Fowler Transit Back-up	1483708	Electric	3C6URVUG7GE	9	1	SPARE	8785	Yes	0	0	0	0	0	0	0	0	0
88	**RT 198** 2016 Zenith	Fleet back-up spare	1483707	Electric	3C6URVUG6GE	9	1	REG	14925	Yes	0	0	0	0	0	0	0	0	0
89	**RT 199** 2016 Zenith	Selma	1483709	Electric	3C6URVUG8GE	9	1	REG	7301	Yes	0	0	0	0	0	0	0	0	0
92	**RT 202** 2016 Zenith	Fleet back-up spare	1492378	Electric	3C6URVUG6GE	9	1	SPARE	13910	Yes	0	0	0	0	0	0	0	0	0
93	**RT 203** 2016 Zenith	Parlier	1492377	Electric	3C6URVUG8GE	9	1	REG	24935	Yes	0	0	0	0	0	0	0	0	0
94	**RT 204** 2018 Proter	Fleet Back up	1287352	Electric	1M9TH16J5JL8	30	2	REG	23658	Yes	0	0	0	0	0	0	0	0	0
95	**RT 205** 2018 Proter	Southeast Transit Corridor	1287353	Electric	1M9TH16J9JL8	30	2	REG	39940	Yes	0	0	0	0	0	0	0	0	0
97	**RT 206** 2018 Proter	Fleet back-up spare	1287351	Electric	1M9TH16J8JL8	30	2	SPARE	13525	Yes	0	0	0	0	0	0	0	0	0
98	**RT 207** 2018 Prote	Fleet back-up spare	1287349	Electric	1M9TH16J4JL8	30	2	SPARE	13485	Yes	0	0	0	0	0	0	0	0	0
99	**RT 208** 2018 Prote	Fleet back-up spare	1287350	Electric	1M9TH16J8JL8	30	2	SPARE	28806	Yes	0	0	0	0	0	0	0	0	0
100	**RT 209** 2019 Chevy	MV Supervisor	1554074	Electric	1G1FY6SO4K41	4	0	REG	9849	Yes	0	0	0	0	0	0	0	0	0
101	**RT 210** 2019 Chevy	MV Supervisor	1554073	Electric	1G1FY6SO9K41	4	0	REG	7648	Yes	0	0	0	0	0	0	0	0	0
102	**RT 211** 2019 Chevy	MV Supervisor	1554161	Electric	1G1FY6SO9K41	4	0	REG	996	Yes	0	0	0	0	0	0	0	0	0
103	**RT 212** 2019 Chevy	Biola Micro Transit	1554163	Electric	1G1FY6SO9K41	4	0	REG	11587	Yes	0	0	0	0	0	0	0	0	0
104	**RT 213** 2019 Chevy	Biola Micro Transit	1554162	Electric	1G1FY6SO0K41	4	0	REG	10746	Yes	0	0	0	0	0	0	0	0	0
105	**RT 214** 2019 Chevy	Biola Micro Transit	1554177	Electric	IG1FY6S03K41	4	0	SPARE	11900	Yes	0	0	0	0	0	0	0	0	0
106	**RT 215** 2019 Chevy	Biola Micro Transit	1554174	Electric	1G1FY6SO3K41	4	0	SPARE	11860	Yes	0	0	0	0	0	0	0	0	0
107	**RT 216** 2019 Chevy	Biola Micro Transit	1554175	Electric	1G1FY6SOXK41	4	0	REG	11832	Yes	0	0	0	0	0	0	0	0	0
108	**RT 217** 2019 Chevy	Biola Micro Transit	1554178	Electric	1G1FY6SO4K41	4	0	SPARE	5548	Yes	0	0	0	0	0	0	0	0	0
109	**RT 218** 2019 Chevy	Fleet Back-up	1554176	Electric	1G1FY6SO4K41	4	0	SPARE	4912	No	0	0	0	0	0	0	0	0	0
110	**RT 219** BYD 2019 K	Fleet Back up	1317335	Electric	4B9KALA66K20	33	2	SPARE	2791	Yes	0	0	0	0	0	0	0	0	0
111	**RT 220** BYD 2019 K	Fleet Back up	1317336	Electric	4B9KALA64K20	33	2	SPARE	5980	Yes	0	0	0	0	0	0	0	0	0
112	**RT 221** 2019 Chevy	Fleet Back up	1568916	Electric	1G1FY6S05K41	4	0	SPARE	265	No	0	0	0	0	0	0	0	0	0
113	**RT 222** 2019 Chevy	Fleet Back up	1568919	Electric	1G1FY6S04K41	4	0	SPARE	250	No	0	0	0	0	0	0	0	0	0
114	**RT 223** 2019 Chevy	Fleet Back up	1568917	Electric	1G1FY6S05K41	4	0	SPARE	423	No	0	0	0	0	0	0	0	0	0
115	**RT 224** 2019 Chevy	Fleet Back up	1568918	Electric	1G1FY6S02K41	4	0	SPARE	6710	No	0	0	0	0	0	0	0	0	0
117	**RT 226** 2020 Chevy	Fleet Back up	1589743	Electric	1G1FY6S08L41	4	0	SPARE	25555	No	0	0	0	0	0	0	0	0	0
118	**RT 227** 2020 Chevy	Fleet Back up	1589746	Electric	1G1FY6S08L41	4	0	SPARE	19500	No	0	0	0	0	0	0	0	0	0
119	**RT 228** 2020 Chevy	Fleet Back up	1589745	Electric	1G1FY6S0XL41	4	0	SPARE	10500	No	0	0	0	0	0	0	0	0	0
120	**RT 229** 2020 Chevy	Fleet Back up	1589744	Electric	1G1FY6S04L41	4	0	SPARE	5660	No	0	0	0	0	0	0	0	0	0
121	**RT 230** 2021 BYD K	Fleet Back up	1287415	Electric	4B9KDLA63L20	356	2	SPARE	356	No	0	0	0	0	0	0	0	0	0
122	**RT 231** 2021 BYD K	Fleet Back up	1287414	Electric	4B9KDLA65L20	598	2	SPARE	598	No	0	0	0	0	0	0	0	0	0
1	**RT 111** 2007 BLUE	Out of Service	1346104	CNG	1BDJJBMA67F2	37	2	O/O/S	198253	No	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
2	**RT 112** 2007 BLUE	Out of Service	1312637	CNG	1BDJJBMA87F2	37	2	Training	206032	No	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
3	**RT 113** 2007 BLUE	Out of Service	1346103	CNG	1BDJJBMAX7F2	37	2	Training	173831	No	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
4	**RT 114** 2007 BLUE	Out of Service	1312638	CNG	1BDJJBMA17F2	37	2	Training	218636	No	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
5	**RT 115** 2008 GMC	Fleet Back Up	1327431	CNG	1GDE5V1G08F	22	2	SPARE	62831	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
6	**RT 116** 2008 GMC	Firebaugh back-up spare	1327430	CNG	1GDE5V1G58F	22	2	SPARE	88597	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
7	**RT 117** 2008 GMC	Reedley Back Up Spare	1339052	CNG	1GDE5V1G38F	22	2	SPARE	89862	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
8	**RT 118** 2008 GMC	Fleet back-up spare	1327429	CNG	1GDE5V1G48F	22	2	SPARE	119070	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
9	**RT 119** 2008 GMC	South East Reedley College	1327428	CNG	1GDE5V1G88F	22	2	REG	88927	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
10	**RT 120** 2008 GMC	Sanger/Reedley College	1339053	CNG	1GDE5V1G28F	22	2	REG	156439	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
11	**RT 121** 2008 GMC	Fleet back-up spare	1327419	CNG	1GDE5V1G88F	22	2	SPARE	102995	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
12	**RT 122** 2008 GMC	Regular back-up spare	1327418	CNG	1GDE5V1G18F	22	2	SPARE	10203	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
13	**RT 123** 2008 GMC	Kingsburg back-up spare	1327417	CNG	1GDE5V1G98F	22	2	SPARE	88926	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
14	**RT 124** 2008 GMC	Mendota back-up spare	1327416	CNG	1GDE5V1G38F	22	2	SPARE	88910	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
15	**RT 125** 2009 GMC	Orange Cove back-up spare	1331521	CNG	1GDE5V1G09F	22	2	SPARE	56420	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
16	**RT 126** 2008 GMC	Parlier back-up spare	1327415	CNG	1GDE5V1G78F	22	2	SPARE	77713	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
17	**RT 127** 2009 GMC	Fleet Back Up	1327414	CNG	1GDE5V1G79F	22	2	SPARE	97701	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
18	**RT 128** 2009 GMC	Reedley Back-up Spare	1327413	CNG	1GDE5V1G09F	22	2	SPARE	106462	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
19	**RT 129** 2009 GMC	Fleet back-up spare	1327412	CNG	1GDE5V1G59F	22	2	SPARE	90746	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
20	**RT 130** 2009 GMC	Huron back-up spare	1327411	CNG	1GDE5V1G79F	22	2	SPARE	81127	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
21	**RT 131** 2009 GMC	Sanger	1327410	CNG	1GDE5V1G49F	22	2	REG	110258	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
22	**RT 132** 2009 GMC	Sanger	1327535	CNG	1GDE5V1G69F	22	2	REG	113498	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
23	**RT 133** 2009 GMC	Sanger	1327536	CNG	1GDE5V1G29F	22	2	REG	88955	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
24	**RT 134** 2009 GMC	San Joaquin back-up spare	1327537	CNG	1GDE5V1G49F	22	2	SPARE	115736	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
25	**RT 135** 2009 GMC	Selma back-up spare	1327538	CNG	1GDE5V1G09F	22	2	SPARE	77043	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
26	**RT 136** 2009 GMC	Selma back-up spare	1327539	CNG	1GDE5V1G29F	22	2	SPARE	58742	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
27	**RT 137** 2009 GMC	Fleet back-up spare	1327540	CNG	1GDE5V1G69F	22	2	SPARE	59334	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
28	**RT 138** 2008 GMC	Fleet back-up spare	1327541	CNG	1GDE5V1G69F	22	2	SPARE	92330	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
29	**RT 139** 2009 GMC	Fleet back-up spare	1327542	CNG	1GDE5V1G59F	22	2	SPARE	76743	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
30	**RT 140** 2009 GMC	Fleet back-up spare	1327543	CNG	1GDE5V1G39F	22	2	SPARE	185420	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
31	**RT 141** 2009 GMC	Fleet back-up spare	1327544	CNG	1GDE5V1G89F	22	2	SPARE	98905	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
66	**RT 176** 2013 CHEV	Mendota Back-up	1419188	CNG	1GB6G5BG3D1	13	3	SPARE	17309	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
67	**RT 177** 2013 CHEV	Mendota Back-up spare	1419189	CNG	1GB6G5BG6D1	13	3	SPARE	9203	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
78	**RT 188** 2016 El Dor	Orange Cove Inter-City	1474038	CNG	1N9AMALG3G	35	2	REG	117843	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
79	**RT 189** 2016 El Dor	Westside Transit	1474039	CNG	1N9AMALG5G	35	2	REG	104239	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
80	**RT 190** 2016 El Dor	South East Corridor	1474040	CNG	1N9AMALG7G	35	2	REG	176506	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
81	**RT 191** 2016 El Dor	Coalinga Inter-City	1474041	CNG	1N9AMALG9G	35	2	REG	176506	N/A	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
82	**RT 192** 2016 El Dor	range Cove Inter-City Back-u	1474042	CNG	1N9AMALG5G	35	2	SPARE	139264	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
83	**RT 193** 2016 El Dor	Westside Transit Back-up	1474043	CNG	1N9AMALG7G	35	2	SPARE	103470	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
84	**RT 194** 2016 El Dor	theast Transit Corridor Back	1474044	CNG	1N9AMALG9G	35	2	SPARE	116201	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
85	**RT 195** 2016 El Dor	Coalinga Inter-City Back-up	1474045	CNG	1N9AMALG0G	35	2	SPARE	132579	N/A	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
90	**RT 200** 2016 FORD	Kerman Transit Back-up	1528629	CNG	1FDFE4FS2GD	12	2	SPARE	10479	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0
91	**RT 201** 2016 FORD	Kerman Transit Back-up	1528630	CNG	1FDFE4FS4GD	12	2	SPARE	21479	Yes	1024.21406	5786.6609	0	0.78332688	18.2158759	0	0.20879274	1.17964868	0

Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

Table 2: Annual RunEx Emissions

Runex Emissions				
Fuel Type	Annual Mileage	CO2	CH4	N2O
Gas	180,035.0	377.1	0.0	0.0
CNG	180,035.0	203.3	0.2	0.0

Table 3: Annual Emissions from Idling

Idlex Emissions					
Fuel Type	#Buses	Days	CO2	CH4	N2O
Gas	45.0	260.0	7.2	0.0	0.0
CNG	43.0	260.0	71.3	0.2	0.0

** Assuming 260 operating days for idling emissions*

Table 4: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO2e
CO2 Total	658.8	1.0	658.8
CH4 Total	0.4	25.0	9.8
N20 Total	0.1	310.0	20.2
		Total	**688.8**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

Summary of GHG Emissions Inventory from Municipal Fleets

Table 1: Annual Emissions by Municipality (Tons per Year)

Municipality	CO2	CH4	N2O	MT CO2e
Fresno	85.36	0.04	0.01	89.09
Clovis	39.38	0.03	0.01	41.93
Huron	0.78	0.00	0.00	0.80
Selma	555.59	0.01	0.04	568.40
Sanger	319.97	0.00	0.02	326.12
Reedley	18.83	0.00	0.00	19.29
Kerman	179.07	0.00	0.01	180.75
Orange	35.65	0.00	0.00	36.66
Fresno COG	100.26	0.00	0.01	101.98
Total Emissions	**1,334.89**	**0.09**	**0.09**	**1,365.02**

Table 2: Annual Emissions in MT CO2e (Tons per Year)

Pollutant	Emissions	GWP	MT CO2e
CO2 Total	1,334.89	1	1,334.89
CH4 Total	0.09	25	2.37
N20 Total	0.09	310	27.76
		Total	**1,365.02**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

City of Fresno

Table 1: Fleet Information

EQUIP NO	YEAR	MANUFACTURER	MODEL	DESCRIPTION	FUEL TYPE	METER (MILES)	AVERAGE ANNUAL MILEAGE
LDA Gasoline Vehicles							
120200	2008	TOYOTA	PRIUS	08 TOYOTA PRIUS HYBRID	UNL	45,890	2,868
120226	2014	TOYOTA	CAMRY	2014 CAMRY SEDAN I-4	UNL	52,202	5,220
120323	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	3,185	1,062
120324	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	11,814	3,938
120325	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	7,373	2,458
120326	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	17,895	5,965
120327	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	13,409	4,470
120328	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	8,564	2,855
120329	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	16,111	5,370
120330	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	8,962	2,987
120331	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	7,242	2,414
120332	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	11,100	3,700
120360	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	1,294	1,294
120361	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	1,138	1,138
120362	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	777	777
120363	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	962	962
120364	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	958	958
120365	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	1,593	1,593
120366	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	890	890
120367	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	1,045	1,045
120368	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	948	948
120369	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	1,010	1,010
120370	2023	TOYOTA	PRIUS	2023 TOYOTA PRIUS	UNL	733	733
120252	2017	FORD	TAURUS	2017 FORD TAURUS SEDAN (7905)	UNL	73484	10498
120253	2017	FORD	TAURUS	2017 FORD TAURUS SEDAN (7906)	UNL	68260	9751
120254	2017	FORD	TAURUS	2017 FORD TAURUS SEDAN (7907)	UNL	90900	12986
120255	2017	FORD	TAURUS	2017 FORD TAURUS SEDAN (7908)	UNL	98424	14061
120256	2017	FORD	TAURUS	2017 FORD TAURUS SEDAN (7909)	UNL	112142	16020
120299	2020	FORD	FUSION	2020 FORD FUSION	UNL	21886	5472
110549	2009	TOYOTA	CAMRY HYBRID	09 CAMRY HYBRID WAS 120201	UNL	86052	5737
120228	2014	FORD	TAURUS	2014 FORD TAURUS SEDAN	UNL	181180	18118
120300	2020	FORD	FUSION	2020 FORD FUSION	UNL	28441	7110
120209	2010	TOYOTA	PRIUS	2010 TOYOTA HYBRID PRIUS	UNL	33786	2413
120257	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	125541	20924
120258	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	119481	19914
120259	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	118580	19763
120260	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	129142	21524
120262	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	123954	20659
120263	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	118225	19704
120264	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	116997	19500
120265	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	119420	19903
120266	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	113658	18943
120267	2018	FORD	FUSION	18 FORD FUSION RELIEF	UNL	102802	17134
120312	2020	FORD	FUSION	2020 FORD FUSION	UNL	45461	11365
120313	2020	FORD	FUSION	2020 FORD FUSION	UNL	47795	11949
120314	2020	FORD	FUSION	2020 FORD FUSION	UNL	46785	11696
120315	2020	FORD	FUSION	2020 FORD FUSION	UNL	47537	11884
120316	2020	FORD	FUSION	2020 FORD FUSION	UNL	44309	11077
120317	2020	FORD	FUSION	2020 FORD FUSION	UNL	47989	11997
120318	2020	FORD	FUSION	2020 FORD FUSION	UNL	47159	11790
120333	2021	TOYOTA	PRIUS	2021 TOYOTA PRIUS	UNL	2568	856
110471	2005	HONDA	CIVIC HYBRID	05 HONDA CIVIC HYBRID (WAS 140042)	UNL	48,869	2,572
110478	2004	HONDA	CIVIC	08 CHEV. 1/2 TON TRUCK WY SV TRUCK	UNL	69,501	3,475
140059	2008	TOYOTA	YARIS	08 TOYOTA YARIS LIFTBACK	UNL	89,720	5,608
140060	2008	TOYOTA	YARIS	08 TOYOTA YARIS LIFTBACK	UNL	130,061	8,129
140063	2008	TOYOTA	YARIS	08 TOYOTA YARIS LIFTBACK	UNL	141,032	8,815
140084	2016	TOYOTA	COROLLA	2016 TOYOTA COROLLA	UNL	24,005	3,001
140085	2017	TOYOTA	COROLLA	2017 TOYOTA COROLLA	UNL	7,276	1,039
140086	2017	TOYOTA	COROLLA	2017 TOYOTA COROLLA	UNL	13,578	1,940
140096	2021	CHEVROLET	SPARK	2021 CHEVROLET SPARK	UNL	13,617	4,539
140097	2021	CHEVROLET	SPARK	2021 CHEVROLET SPARK	UNL	18,021	6,007
140098	2021	CHEVROLET	SPARK	2021 CHEVROLET SPARK	UNL	14,602	4,867
140099	2021	CHEVROLET	SPARK	2021 CHEVROLET SPARK	UNL	39,491	13,164
140069	2009	TOYOTA	COROLLA	2009 TOYOTA COROLLA RELIEF	UNL	202760	13517
140070	2009	TOYOTA	COROLLA	2009 TOYOTA COROLLA RELIEF	UNL	206637	13776
110474	2005	HONDA	CIVIC HYBRID	05 HONDA CIVIC HYBRID (WAS 140048)	UNL	122364	6440
LDA Electric Vehicles							
140088	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	12,052	4,017
140089	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	25,821	8,607
140090	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	13,444	4,481
140091	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	15,989	5,330
140092	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	24,163	8,054

Table 2: Fleet Emissions Summary

Vehicle Class	CO2 (Tons)	CH4 (Tons)	N2O (Tons)
Gasoline			
LDA	2.72	0.00	0.00
LDT1	1.94	0.00	0.00
LDT2	2.34	0.00	0.00
LHDT1	5.79	0.00	0.00
LHDT2	6.89	0.00	0.00
MHDT	23.30	0.00	0.00
Total Gasoline	**42.98**	**0.00**	**0.00**
Diesel			
LHDT1	3.30	0.00	0.00
LHDT2	5.49	0.00	0.00
MHDT	5.39	0.00	0.00
HHDT	8.83	0.00	0.00
Total Diesel	**23.02**	**0.00**	**0.00**
Natural Gas			
HHDT	19.36	0.04	0.00
Combined Total	**85.36**	**0.04**	**0.01**

Table 3: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	85.36	1	85.36
CH4 Total	0.04	25	1.08
N20 Total	0.01	310	2.65
		Total	**89.09**

Table 4: Summary of Annual Milage by Vehicle Class

Vehicle class	Annual Mileage
Gasoline	
LDA	8,095
LDT1	4,847
LDT2	5,430
LHDT1	5,413
LHDT2	5,820
MHDT	11,123
Diesel	
LHDT1	4,641
LHDT2	6,337
MHDT	4,184
HHDT	4,837
Natural Gas	
HHDT	10,621

140093	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	26,677	8,892
140094	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	14,444	4,815
140095	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	20,422	6,807
140100	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	18,269	6,090
140101	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	19,422	6,474
140104	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	17,695	5,898
140105	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	7,796	2,599
140106	2021	CHEVROLET	BOLT EV	2021 CHEVROLET BOLT EV	EV	14,961	4,987
140087	2020	CHEVROLET	BOLT EV	2020 CHEVROLET BOLT EV	EV	4330	1083
LDA Natural Gas Vehicles							
140077	2012	HONDA	CIVIC/CNG	12 HONDA CIVIC CNG RELIEF	CNG	156437	13036
140078	2012	HONDA	CIVIC/CNG	12 HONDA CIVIC CNG RELIEF	CNG	136494	11375
140079	2012	HONDA	CIVIC/CNG	12 HONDA CIVIC CNG RELIEF	CNG	150054	12505
140081	2014	HONDA	CIVIC/CNG	14 HONDA CIVIC CNG RELIEF	CNG	104468	10447
140082	2014	HONDA	CIVIC/CNG	14 HONDA CIVIC CNG RELIEF	CNG	103320	10332
140083	2014	HONDA	CIVIC/CNG	14 HONDA CIVIC CNG RELIEF	CNG	111587	11159
LDT1 Gasoline Vehicles							
160026	2002	CHEVROLET	ASTRO	2002 USED PASSENGER VAN	UNL	69,707	3,169
160059	2015	TOYOTA	SIENNA	2015 TOYOTA SIENNA VAN	UNL	11,659	1,295
160060	2016	TOYOTA	SIENNA	2016 TOYOTA SIENNA VAN	UNL	11,870	1,484
160076	2021	FORD	TRANSIT CONNECT	FORD TRANSIT 5 PASSENGER VAN	UNL	6,427	2,142
160082	2020	FORD	TRANSIT CONNECT	FORD TRANSIT CONNECT CARGO VAN	UNL	488	122
160077	2020	FORD	TRANSIT CONNECT	FORD TRANSIT CONNECT CARGO VAN	UNL	3931	983
110335	1999	GMC	SONOMA	99 GMC SONOMA-190015	UNL	136,822	5,473
110413	2005	FORD	RANGER	05 FORD RANGER PU (WAS 190065)	UNL	141,346	7,439
110476	2007	FORD	RANGER	05 HONDA CIVIC HYBRID (WAS 140048)	UNL	97,262	5,721
110482	2006	FORD	RANGER	04 HONDA CIVIC (WAS 140039)	UNL	68,796	3,822
110496	2000	FORD	RANGER	2004 1/2 TON TRUCK	UNL	179,706	7,488
110497	2008	FORD	RANGER	00 FORD RANGER	UNL	134,921	8,433
110503	2004	FORD	RANGER	05 CHEV. 1/2 TON	UNL	155,987	7,799
110511	2008	FORD	RANGER	2004 1/2 TON TRUCK (WAS 200176)	UNL	71,875	4,492
110512	2006	FORD	RANGER	08 FORD RANGER WAS 190103	UNL	125,364	6,965
110517	2005	FORD	RANGER	06 CHEV. 1/2 TON TRUCK WAS 200238	UNL	133,975	7,051
110518	2005	FORD	RANGER	05 FORD RANGER PU WAS 190076	UNL	131,108	6,900
110520	2005	FORD	RANGER	01 FORD 1/2 TON TRUCK	UNL	90,862	4,782
110531	2004	FORD	RANGER	05 CHEV. CARGO VAN WAS 250034	UNL	114,552	5,728
110565	2006	FORD	RANGER	06 FORD RANGER- WAS 190085	UNL	83,649	4,647
110567	2006	FORD	RANGER	06 FORD RANGER- WAS 190084	UNL	50,227	2,790
110569	2008	FORD	RANGER	08 FORD RANGER- WAS 190112	UNL	139,980	8,749
110570	2011	FORD	RANGER	2011 FORD RANGER PICKUP- WAS 190121	UNL	118,609	9,124
110584	2014	TOYOTA	TACOMA	2014 TOYOTA TACOMA- WAS 190125	UNL	90,127	9,013
110585	2014	TOYOTA	TACOMA	2014 TOYOTA TACOMA- WAS 190124	UNL	98,766	9,877
110587	2002	FORD	RANGER	02 FORD RANGER WAS 190034	UNL	121,203	5,509
110593	2010	FORD	RANGER	2010 FORD RANGER PICKUP WAS 190119	UNL	90,352	6,454
110594	2010	FORD	RANGER	2010 FORD RANGER PICKUP WAS 190120	UNL	95,288	6,806
110595	2002	FORD	RANGER	2002 FORD RANGER WAS 190042	UNL	95,359	4,335
110665	2006	FORD	RANGER	2006 FORD RANGER WAS 190093	UNL	65,590	3,644
110670	2007	FORD	RANGER	07 FORD RANGER WAS 190097	UNL	41,714	2,454
110672	2006	FORD	RANGER	06 FORD RANGER WAS 190081	UNL	71,344	3,964
110813	2008	TOYOTA	TACOMA	08 TOYOTA TACOMA CREW CAB	UNL	101,480	6,343
190024	2000	FORD	RANGER	00 FORD RANGER	UNL	72,366	3,015
190046	2003	FORD	RANGER	03 FORD RANGER	UNL	127,695	6,081
190047	2003	FORD	RANGER	2003 FORD RANGER	UNL	89,925	4,282
190073	2005	FORD	RANGER	05 FORD RANGER PU	UNL	156,569	8,240
190078	2005	FORD	RANGER	05 FORD RANGER PU	UNL	64,021	3,370
190079	2006	FORD	RANGER	06 FORD RANGER 2.3 ENG	UNL	149,178	8,288
190083	2006	FORD	RANGER	06 FORD RANGER	UNL	98,124	5,451
190086	2006	FORD	RANGER	06 FORD RANGER	UNL	87,705	4,873
190087	2005	CHEVROLET	COLORADO	05 CHEV. COLORADO CREW CAB	UNL	98,410	5,179
190092	2006	FORD	RANGER	06 FORD RANGER	UNL	96,561	5,365
190102	2008	FORD	RANGER	08 FORD RANGER	UNL	108,223	6,764
190110	2008	FORD	RANGER	08 FORD RANGER	UNL	78,698	4,919
190114	2008	FORD	RANGER	08 FORD RANGER	UNL	50,589	3,162
190115	2008	FORD	RANGER	08 FORD RANGER	UNL	100,385	6,274
190118	2009	TOYOTA	TACOMA	09 TOYOTA TACOMA DOUBLE CAB	UNL	90,564	6,038
190123	2014	TOYOTA	TACOMA	2014 TOYOTA TACOMA	UNL	103,299	10,330
190126	2014	TOYOTA	TACOMA	2014 TOYOTA TACOMA	UNL	99,239	9,924
190127	2014	TOYOTA	TACOMA	2014 TOYOTA TACOMA	UNL	42,308	4,231
190129	2017	TOYOTA	TACOMA	2017 TOYOTA TACOMA	UNL	48,341	6,906
190135	2022	TOYOTA	TACOMA	2022 TOYOTA TACOMA DOUBLE CAB 2WD	UNL	20,990	10,495
190138	2022	FORD	MAVERICK	2022 FORD MAVERICK	UNL	2,526	1,263
190139	2022	FORD	MAVERICK	2022 FORD MAVERICK	UNL	1,819	910
190140	2022	FORD	MAVERICK	2022 FORD MAVERICK	UNL	2,032	1,016
190151	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	2,016	2,016
190152	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	2,492	2,492
190153	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	2,064	2,064
190154	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	772	772
190155	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	1,922	1,922
190156	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	1,157	1,157
190157	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	1,629	1,629

190162	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	2,451	2,451
190163	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	5	5
190165	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	5	5
190166	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	5	5
190167	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	5	5
190104	2007	FORD	RANGER	07 FORD RANGER	UNL	46763	2751
190164	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	5	5
190146	2023	FORD	RANGER	2.3L 2WHL DRIVE CREW CAB	UNL	861	861
190147	2023	FORD	RANGER	2.3L 2WL DRIVE CREW CAB	UNL	377	377
190148	2023	FORD	RANGER	2.3L 2WL DRIVE CREW CAB	UNL	733	733
110550	2007	FORD	RANGER	07 FORD RANGER	UNL	88381	5199
110457	2004	FORD	RANGER	2004 FORD RANGER (WAS 190061)	UNL	45009	2250
110506	2007	CHEVROLET	1500	2004 FORD RANGER	UNL	168,838	9,932
110513	2005	CHEVROLET	1500	06 FORD RANGER WAS 190080	UNL	146,986	7,736
190158	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	2,029	2,029
190159	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	989	989
190160	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	672	672
190161	2023	FORD	MAVERICK	2023 FORD MAVERICK	UNL	1,790	1,790
110394	2005	FORD	ESCAPE	05 FORD ESCAPE(WAS 240033) 3.0 LTR	UNL	151,889	7,994
110576	2006	JEEP	WRANGLER	06 JEEP WRANGLER- WAS 240036	UNL	68,993	3,833
240032	2005	CHEVROLET	TRAILBLAZER	05 CHEV. TRAILBLAZER	UNL	106,676	5,615
240046	2006	TOYOTA	HIGHLANDER H	07 TOYOTA HIGHLANDER HYBRID	UNL	50,538	2,808
240052	2008	FORD	ESCAPE	08 FORD ESCAPE HYBRID	UNL	76,014	4,751
240061	2012	FORD	ESCAPE	2012 FORD ESCAPE SUV	UNL	57,114	4,760
240064	2014	FORD	ESCAPE	2014 FORD ESCAPE SUV	UNL	39,610	3,961
240067	2014	FORD	ESCAPE	2014 FORD ESCAPE SUV	UNL	18,400	1,840
240068	2014	FORD	ESCAPE	2014 FORD ESCAPE SUV	UNL	63,195	6,320
240070	2015	FORD	ESCAPE	2015 FORD ESCAPE SUV	UNL	70,385	7,821
240071	2015	FORD	ESCAPE	2015 FORD ESCAPE SUV	UNL	67,605	7,512
240074	2016	FORD	ESCAPE	2016 FORD ESCAPE SUV	UNL	52,283	6,535
240077	2017	FORD	ESCAPE	2017 FORD ESCAPE SUV	UNL	46,271	6,610
240078	2017	FORD	ESCAPE	2017 FORD ESCAPE SUV	UNL	25,823	3,689
240083	2018	FORD	ESCAPE	2018 FORD ESCAPE	UNL	23,856	3,976
240084	2018	FORD	ESCAPE	2018 FORD ESCAPE	UNL	3,818	636
240085	2018	FORD	ESCAPE	2018 FORD ESCAPE	UNL	4,645	774
240086	2018	FORD	ESCAPE	2018 FORD ESCAPE	UNL	12,587	2,098
240116	2019	FORD	ESCAPE	2019 FORD TRUCK ESCAPE	UNL	23,104	4,621
240117	2019	FORD	ESCAPE	2019 FORD TRUCK ESCAPE	UNL	19,747	3,949
240118	2019	FORD	ESCAPE	2019 FORD TRUCK ESCAPE	UNL	29,075	5,815
240119	2019	FORD	ESCAPE	2019 FORD TRUCK ESCAPE	UNL	19,134	3,827
240120	2019	FORD	ESCAPE	2019 FORD TRUCK ESCAPE	UNL	27,725	5,545
240128	2019	FORD	ESCAPE	2019 FORD ESCAPE 4DR S FWD	UNL	40,793	8,159
240148	2020	FORD	ESCAPE	2020 FORD ESCAPE	UNL	12,480	3,120
240149	2020	FORD	ESCAPE	2020 FORD ESCAPE	UNL	4,258	1,065
240150	2020	FORD	ESCAPE	2020 FORD ESCAPE	UNL	5,454	1,364
240151	2020	FORD	ESCAPE	2020 FORD ESCAPE	UNL	6,379	1,595
240155	2021	FORD	ESCAPE	2021 FORD ESCAPE SE HYBRID	UNL	6,186	2,062
240174	2023	FORD	ESCAPE	2023 FORD ESCAPE HYBRID	UNL	346	346
240175	2023	FORD	ESCAPE	2023 FORD ESCAPE HYBRID	UNL	389	389
240176	2023	FORD	ESCAPE	23 FORD ESCAPE HYBRID	UNL	23	23
240177	2023	FORD	ESCAPE	IFMCU0MZ7PUA60270	UNL	5	5
240179	2023	FORD	ESCAPE	2023 FORD ESCAPE SUV	UNL	5	5
240089	2018	FORD	ESCAPE	2018 FORD ESCAPE FAX SUPERVISOR	UNL	125610	20935
240090	2018	FORD	ESCAPE	2018 FORD ESCAPE FAX SUPERVISOR	UNL	119766	19961
240091	2018	FORD	ESCAPE	2018 FORD ESCAPE FAX SUPERVISOR	UNL	133387	22231
240092	2018	FORD	ESCAPE	2018 FORD ESCAPE FAX SUPERVISOR	UNL	133602	22267
240129	2019	FORD	ESCAPE	2018 FORD ESCAPE SUPERVISOR	UNL	28512	5702
250019	2003	FORD	WINDSTAR	03 FORD WINDSTAR CARGO VAN	UNL	45,976	2,189
250063	2016	FORD	TRANSIT CONNECT	2016 FORD TRANSIT CNNCT MINI CARGO VAN	UNL	71,933	8,992
250064	2016	FORD	TRANSIT CONNECT	2016 FORD TRANSIT CNNCT MINI CARGO VAN	UNL	45,386	5,673
250071	2017	FORD	TRANSIT CONNECT	2017 FORD TRANSIT CNNCT MINI CARGO VAN	UNL	72,509	10,358
250084	2022	FORD	TRANSIT CONNECT	2022 FORD TRANSIT CONNECT CARGO VAN	UNL	11,294	5,647
250085	2022	FORD	TRANSIT CONNECT	2022 FORD TRANSIT CONNECT CARGO VAN	UNL	28,186	14,093
250086	2022	FORD	TRANSIT CONNECT	2022 FORD TRANSIT CONNECT CARGO VAN	UNL	23,797	11,899
250104	2023	FORD	TRANSIT CONNECT	2023 FORD TRANSIT CONNECT CARGO VAN	UNL	23	23
250105	2023	FORD	TRANSIT CONNECT	2023 FORD TRANSIT CONNECT CARGO VAN	UNL	643	643
LDT1 Natural Gas Vehicles							
160058	2012	FORD	TRANSIT CONNECT	13 FORD TRANS CONNECT CNG FAX SUPERVISOR	CNG	134274	11190
LDT2 Gasoline Vehicles							
160037	2005	CHEVROLET	EXPRESS	05 CHEV. PASS. VAN	UNL	114,150	6,008
160056	2013	DODGE	CARAVAN	2013 DODGE PASSENGER VAN	UNL	27,492	2,499
160057	2013	DODGE	CARAVAN	2013 DODGE PASSENGER VAN	UNL	34,315	3,120
110597	2006	FORD	RANGER	06 FORD RANGER EXT CAB WAS 190089	UNL	71,361	3,965
110667	2006	FORD	RANGER	06 FORD RANGER EXTENDED CAB WAS 190088	UNL	62,809	3,489
110668	2007	FORD	RANGER	07 FORD RANGER EXTENDED CAB WAS 190098	UNL	58,182	3,422

110324	1998	FORD	F250	98 FORD 7000 GVW-WAS 200037	UNL	116,671	4,487
110347	1999	DODGE	RAM 150	99 DODGE 1/2 TON SHORT BED TRUCK-200060	UNL	125,569	5,023
110418	2003	CHEVROLET	1500	2003 CHEV 1/2 TON TRUCK (WAS 200137)	UNL	212,945	10,140
110450	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK (WAS 200267)	UNL	168,783	9,928
110456	2004	CHEVROLET	1500	04 CHEV 1/2 TON TRUCK WAS 200178	UNL	184,442	9,222
110477	2008	CHEVROLET	1500	07 FORD RANGER (WAS 190099)	UNL	133,505	8,344
110483	1998	FORD	F250	06 FORD RANGER (WAS 190091)	UNL	164,020	6,308
110494	2004	CHEVROLET	1500	98 FORD 7000 GVW	UNL	84,884	4,244
110499	2004	CHEVROLET	1500	08 FORD RANGER	UNL	109,668	5,483
110501	2005	CHEVROLET	1500	04 CHEV EXTENDED CAB TRUCK	UNL	143,399	7,547
110507	2008	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK (WAS 200263)	UNL	115,599	7,225
110508	2006	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK (WAS 200278)	UNL	107,651	5,981
110509	2007	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK (WAS 200243)	UNL	153,130	9,008
110510	2004	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK (WAS 200265)	UNL	190,628	9,531
110515	2006	CHEVROLET	1500	05 CHEV. 1/2 TON TRUCK WAS 200186	UNL	151,094	8,394
110519	2001	FORD	F150	05 FORD RANGER PU WAS 190066	UNL	133,394	5,800
110522	2008	CHEVROLET	1500	05 FORD RANGER PU	UNL	117,421	7,339
110524	2000	FORD	F150	08 CHEV. 1/2 TON TRUCK WAS 200294	UNL	150,205	6,259
110526	2005	CHEVROLET	1500	00 FORD 1/2 TON TRUCK	UNL	123,686	6,510
110529	2008	CHEVROLET	1500	2006 FOR E350 BRAUN PARATRANSIT VAN	UNL	123,434	7,715
110534	2006	CHEVROLET	1500	08 FORD F350 CREW CAB FLATBED WAS 260103	UNL	85,501	4,750
110536	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK -WAS 200230	UNL	114,803	6,378
110537	2007	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK - WAS 200245	UNL	110,386	6,493
110538	2009	FORD	F150	07 CHEV. 1/2 TON TRUCK - WAS 200252	UNL	132,589	8,839
110539	2009	FORD	F150	09 FORD F150 SINGLE CAB P/U -WAS 200303	UNL	124,276	8,285
110541	2006	CHEVROLET	1500	09 FORD F150 SINGLE CAB P/U - WAS 200304	UNL	122,408	6,800
110542	1999	FORD	F250	06 CHEV. 1/2 TON TRUCK -WAS 200246	UNL	155,429	6,217
110543	2008	CHEVROLET	1500	99 7000 GVW PICKUP-WAS 110317	UNL	136,067	8,504
110544	2006	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK 4.8L -WAS 200280	UNL	185,937	10,330
110547	2003	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK -WAS 200236	UNL	93,749	4,464
110553	2003	CHEVROLET	1500	02 CHEV SILVERADO 1/2 TON- WAS 200118	UNL	95,074	4,527
110554	2000	FORD	F150	03 CHEV 1/2 TON- WAS 200141	UNL	102,064	4,253
110555	2004	CHEVROLET	1500	00 FORD 1/2 TON TRUCK 4.6- WAS 200095	UNL	151,198	7,560
110556	2000	FORD	F150	2004 TRUCK- WAS 200174	UNL	79,343	3,306
110557	2000	FORD	F150	00 FORD 1/2 TON- WAS 200083	UNL	130,280	5,428
110558	2000	CHEVROLET	1500	00 FORD 1/2 TON TRUCK- WAS 200094	UNL	121,704	5,071
110559	2003	CHEVROLET	1500	00 CHEV P/U- WAS 200080	UNL	99,415	4,734
110568	2001	FORD	F150	01 FORD 1/2 TON TRUCK- WAS 200100	UNL	123,943	5,389
110571	2009	FORD	F150	F150 REG CAB PICK UP- WAS 200300	UNL	120,773	8,052
110572	2009	FORD	F150	F150 REG CAB PICK UP- WAS 200301	UNL	127,723	8,515
110573	2010	FORD	F150	2010 FORD F-150 LONG BED- WAS 200313	UNL	95,338	6,810
110579	2002	CHEVROLET	1500	02 CHEV 1/2 TON TRUCK- WAS 200126	UNL	185,714	8,442
110582	2002	CHEVROLET	1500	02 CHEV 1/2 TON SHORT BED- WAS 200123	UNL	72,611	3,301
110583	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK- WAS 200242	UNL	14,578	810
110586	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK WAS 200233	UNL	161,370	8,965
110588	2005	CHEVROLET	1500	05 CHEV. 1/2 TON TRUCK WAS 200190	UNL	171,378	9,020
110590	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK WAS 200264	UNL	188,139	11,067
110591	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK WAS 200250	UNL	143,156	7,953
110592	2005	CHEVROLET	1500	05 CHEV. 1/2 TON TRUCK WAS 200197	UNL	181,429	9,549
110596	1998	FORD	F250	98 FORD 7000 GVW WAS 110521/200045	UNL	97,323	3,743
110661	2011	FORD	F150	2011 FORD F 150 LB WAS 200317	UNL	95,758	7,366
110662	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK WAS 200257	UNL	147,194	8,658
110663	2009	FORD	F150	2009 FORD F150 EXTENDED CAB-WAS 200305	UNL	69,089	4,606
110664	2011	FORD	F150	2011 FORD F 150 LB PICK UP WAS 200319	UNL	59,439	4,572
110669	2009	FORD	F150	2009 FORD F-150 LONG BED WAS 200311	UNL	51,541	3,436
110671	2006	CHEVROLET	1500	6400 GVWR 06 CHEV. 1/2 WAS 200249	UNL	153,450	8,525
110673	2002	FORD	F150	02 FORD EXTENDED CAB WAS 200130	UNL	127,010	5,773
110675	2002	FORD	F150	02 FORD F150 WAS 200132	UNL	159,710	7,260
110814	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	49,830	2,768
110815	2005	CHEVROLET	1500	05 CHEV. 1/2 TON TRUCK- WAS 200198	UNL	69,205	3,642
110816	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK- WAS 200217	UNL	105,141	5,841
200016	1997	FORD	F150	97 FORD 1/2 TON	UNL	71,339	2,642
200131	2002	FORD	F150	02 FORD EXTENDED CAB	UNL	126,560	5,753
200138	2003	CHEVROLET	1500	03 CHEV PICK UP	UNL	144,840	6,897
200140	2003	FORD	F150	2003 FORD USED EXTENDED CAB TRUCK	UNL	136,821	6,515
200144	2003	CHEVROLET	1500	2003 EXTENDED CAB TRUCK	UNL	193,408	9,210
200145	2003	FORD	F150	2003 USED BUY BACK EXTENDED CAB TRUCK	UNL	64,653	3,079

200148	2004	CHEVROLET	1500	2004 1/2 TON TRUCK	UNL	176,124	8,806
200151	2004	CHEVROLET	1500	04 CHEV 1500	UNL	85,276	4,264
200152	2004	CHEVROLET	1500	04 CHEV 1500	UNL	87,874	4,394
200153	2004	CHEVROLET	1500	2004 1/2 TON TRUCK	UNL	92,481	4,624
200154	2004	CHEVROLET	1500	2004 1/2 TON TRUCK	UNL	112,674	5,634
200155	2004	CHEVROLET	1500	2004 1/2 TON TRUCK	UNL	114,789	5,739
200160	2004	CHEVROLET	1500	04 CHEV 1/2 TON	UNL	166,217	8,311
200168	2004	CHEVROLET	1500	2004 1/2 TON TRUCK	UNL	136,561	6,828
200173	2004	CHEVROLET	1500	04 CHEV 1/2 TON TRUCK	UNL	92,885	4,644
200175	2004	CHEVROLET	1500	2004 1/2 TON TRUCK	UNL	100,440	5,022
200184	2004	FORD	F150	USED EXTENDED CAB TRUCK	UNL	132,839	6,642
200185	2004	CHEVROLET	1500	04 CHEV EXTENDED CAB	UNL	80,103	4,005
200193	2005	CHEVROLET	1500	05 CHEV. 1/2 TON TRUCK	UNL	99,433	5,233
200194	2005	CHEVROLET	1500	05 CHEV. 1/2 TON TRUCK	UNL	158,675	8,351
200219	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	172,305	9,573
200220	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	98,883	5,494
200221	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	111,683	6,205
200223	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	175,442	9,747
200224	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	185,582	10,310
200225	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	124,913	6,940
200228	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	111,528	6,196
200231	2006	CHEVROLET	1500	06 CHEV. EXTENDED CAB TRUCK	UNL	134,639	7,480
200232	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	128,629	7,146
200234	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	154,677	8,593
200235	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	195,117	10,840
200239	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	128,032	7,113
200241	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	52,174	2,899
200244	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	155,734	8,652
200247	2006	CHEVROLET	1500	06 CHEV. 1/2 TON 4.8L	UNL	77,361	4,298
200248	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	59,721	3,318
200251	2006	CHEVROLET	1500	06 CHEV. 1/2 TON TRUCK	UNL	126,967	7,054
200253	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	48,672	2,863
200254	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	48,615	2,860
200255	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	129,101	7,594
200259	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	162,367	9,551
200260	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	148,846	8,756
200261	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	173,818	10,225
200262	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	167,062	9,827
200266	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	76,432	4,496
200268	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	82,541	4,855
200269	2007	CHEVROLET	1500	07 CHEV. 1/2 TON TRUCK	UNL	80,295	4,723
200270	2007	CHEVROLET	1500	07 CHEV. SHORT BED 1/2 TON TRUCK	UNL	86,610	5,095
200271	2007	CHEVROLET	1500	07 CHEVY 1/2 TON	UNL	122,556	7,209
200275	2007	CHEVROLET	1500	07 CHEVY CREW CAB 1/ TON TRUCK	UNL	26,081	1,534
200277	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	153,202	9,575
200279	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	100,756	6,297
200281	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	141,647	8,853
200282	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	81,396	5,087
200283	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	65,714	4,107
200284	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	200,422	12,526
200285	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	130,437	8,152
200296	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	116,487	7,280
200297	2008	CHEVROLET	1500	08 CHEV. 1/2 TON TRUCK	UNL	163,351	10,209
200302	2009	FORD	F150	09 FORD F150 SINGLE CAB PICK UP TRUCK	UNL	93,981	6,265
200306	2009	FORD	F150	2009 FORD F-150 LONG BED	UNL	59,602	3,973
200312	2009	FORD	F150	2009 FORD F-150 LONG BED	UNL	141,270	9,418
200314	2011	FORD	F150	2011 FORD F 150 HEAVY DUTY SUSPENSION	UNL	49,480	3,806
200315	2011	FORD	F150	2011 FORD F 150 LONG BED PICK UP	UNL	133,613	10,278
200316	2011	FORD	F150	2011 FORD F 150 LONG BED PICK UP	UNL	119,159	9,166
200318	2011	FORD	F150	2011 FORD F 150 LONG BED PICK UP	UNL	33,383	2,568
200329	2013	FORD	F150	2013 SUPER CREW CAB SHORT BED PU	UNL	108,296	9,845
200330	2013	FORD	F150	2013 HALF TON LONG BED P.U. V-6	UNL	64,033	5,821
200331	2014	FORD	F150	2014 HALF TON LONG BED EXT WAS 200331	UNL	15,016	1,502
200332	2014	FORD	F150	2014 FORD F 150 LONG BED PICK UP WITH V6	UNL	102,567	10,257
200333	2014	FORD	F150	2014 FORD F 150 PICK UP WITH V6	UNL	101,739	10,174
200334	2014	FORD	F150	2014 FORD F 150 PICK UP WITH V6	UNL	42,171	4,217
200335	2014	FORD	F150	2014 FORD F 150 PICK UP WITH V6	UNL	90,688	9,069
200336	2014	FORD	F150	2014 FORD F 150 PICK UP V6	UNL	114,660	11,466
200337	2014	FORD	F150	2014 FORD SHORT BED PICK UP WITH V6	UNL	74,929	7,493
200338	2014	FORD	F150	2014 FORD SHORT BED PICK UP WITH V6	UNL	40,917	4,092
200339	2014	FORD	F150	2014 FORD LONG BED PICK UP WITH V6	UNL	32,898	3,290
200340	2014	FORD	F150	2014 HAF TON LONG BED PU WITH V6	UNL	101,470	10,147
200341	2014	FORD	F150	2014 FORD LONG BED PICK UP WITH V6	UNL	75,186	7,519
200342	2014	FORD	F150	2014 FORD SHORT BED PICK UP WITH V6	UNL	62,149	6,215
200343	2014	FORD	F150	2014 FORD SHORT BED PICK UP WITH V6	UNL	57,287	5,729
200344	2014	FORD	F150	2014 FORD SHORT BED PICK UP WITH V6	UNL	44,095	4,410

200348	2015	FORD	F150	2015 FORD PU SUPER CREW CAB	UNL	73,925	8,214
200350	2015	FORD	F150	2015 FORD PU SUPER CREW CAB	UNL	36,880	4,098
200353	2016	FORD	F150	2016 FORD PU SUPER CREW CAB	UNL	70,065	8,758
200354	2016	FORD	F150	2016 FORD PU REG CAB	UNL	82,561	10,320
200355	2016	FORD	F150	2016 FORD SHORT BED PU REG CAB	UNL	53,724	6,716
200356	2016	FORD	F150	2016 FORD SHORT BED PU REG CAB	UNL	41,011	5,126
200357	2016	FORD	F150	2016 FORD SHORT BED PU REG CAB	UNL	66,069	8,259
200358	2016	FORD	F150	2016 FORD SHORT BED PU REG CAB	UNL	30,176	3,772
200360	2016	FORD	F150	2016 FORD SHORT BED PU REG CAB	UNL	17,397	2,175
200361	2016	FORD	F150	2016 FORD F-150 EXT CAB	UNL	29,288	3,661
200367	2017	FORD	F150	2017 FORD PU SUPER CREW CAB	UNL	51,631	7,376
200368	2017	FORD	F150	2017 FORD PU SUPER CREW CAB	UNL	48,731	6,962
200370	2017	FORD	F150	2017 FORD SHORT BED PU EXT CAB	UNL	35,688	5,098
200371	2017	FORD	F150	2017 FORD SHORT BED PU EXT CAB	UNL	38,949	5,564
200372	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	47,954	6,851
200373	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	66,315	9,474
200374	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	52,798	7,543
200375	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	58,958	8,423
200376	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	36,631	5,233
200377	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	27,605	3,944
200378	2017	FORD	F150	2017 FORD SHORT BED PU EXT CAB	UNL	44,889	6,413
200379	2017	FORD	F150	2017 FORD SHORT BED PU EXT CAB	UNL	13,219	1,888
200382	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	15,358	2,194
200383	2017	FORD	F150	2017 FORD LONG BED PICK UP WITH V6	UNL	49,902	7,129
200384	2017	FORD	F150	2017 FORD F-150 EXT CAB	UNL	33,907	4,844
200385	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	28,670	4,778
200386	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	22,351	3,725
200387	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	8,690	1,448
200388	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	15,011	2,502
200389	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	21,600	3,600
200390	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	18,040	3,007
200391	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	30,068	5,011
200392	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	23,783	3,964
200393	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	23,450	3,908
200394	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	20,457	3,410
200395	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	22,000	3,667
200396	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	21,732	3,622
200397	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	11,709	1,952
200398	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	15,188	2,531
200399	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	7,007	1,168
200400	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	13,064	2,177
200401	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	17,305	2,884
200402	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	17,111	2,852
200403	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	39,396	6,566
200404	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	19,724	3,287
200405	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	16,564	2,761
200406	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	17,878	2,980
200407	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	23,518	3,920
200408	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	31,857	5,310
200409	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	47,188	7,865
200410	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	40,745	6,791
200412	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	23,813	3,969
200413	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	15,284	2,547
200414	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	9,274	1,546
200415	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	19,927	3,321
200416	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	22,272	3,712
200417	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	20,779	3,463
200418	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	11,985	1,998
200419	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	31,808	5,301
200420	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	25,225	4,204
200421	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	8,807	1,468
200422	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	41,608	6,935
200423	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	18,298	3,050
200424	2018	FORD	F150	2WD SHORTBED 3.3 LTR AUTOMATIC	UNL	23,748	3,958
200430	2018	FORD	F150	CREW CAB 2WD 2.7 ECO BOOST	UNL	10,052	1,675
200431	2018	FORD	F150	CREW CAB 2WD 2.7 ECO BOOST	UNL	28,176	4,696
200432	2018	FORD	F150	CREW CAB 2WD 2.7 ECO BOOST	UNL	34,319	5,720
200433	2018	FORD	F150	SUPER CAB 1/2 TON TRUCK	UNL	41,537	6,923
200434	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	45,653	7,609
200435	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	79,821	13,304
200437	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	54,657	9,110
200438	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	45,342	7,557
200439	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	58,113	9,686
200440	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	47,408	7,901
200441	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	45,870	7,645
200442	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	18,416	3,069
200443	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	63,632	10,605
200444	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	53,796	8,966
200445	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	74,404	12,401
200446	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	57,855	9,643
200447	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	46,959	7,827
200448	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	81,764	13,627
200449	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	49,595	8,266

200450	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	49,708	8,285
200451	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	60,464	10,077
200452	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	43,352	7,225
200453	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	58,030	9,672
200454	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	47,419	7,903
200455	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	34,406	5,734
200456	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	54,372	9,062
200457	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	58,659	9,777
200458	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	47,833	7,972
200459	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	77,274	12,879
200460	2018	FORD	F150	F-150 SERIES REGULAR CAB	UNL	54,665	9,111
200461	2018	FORD	F150	F150 SERIES PK 2WD SUPERCAB	UNL	29,260	4,877
200478	2019	FORD	F150	F-150 SERIES 2WD SUPERCAB	UNL	52,843	10,569
200479	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	38,527	7,705
200481	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	18,164	3,633
200482	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	46,103	9,221
200483	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	32,052	6,410
200484	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	35,304	7,061
200485	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	16,256	3,251
200486	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	32,315	6,463
200487	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	43,555	8,711
200488	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	32,536	6,507
200489	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	45,678	9,136
200490	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	38,436	7,687
200491	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	41,143	8,229
200492	2019	FORD	F150	2019 F150 2WD REG CAB LONG BED	UNL	56,490	11,298
200493	2019	FORD	F150	2019 F150 2WD REG CAB LONG BED	UNL	48,875	9,775
200494	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	16,182	3,236
200495	2019	FORD	F150	2019 F150 2WD REG CAB	UNL	28,672	5,734
200496	2019	FORD	F150	2019 F150 2WD REG CAB- BLUETOOTH	UNL	40,126	8,025
200497	2019	FORD	F150	2019 F150 2WD REG CAB- BLUETOOTH	UNL	43,911	8,782
200498	2019	FORD	F150	2019 F150 2WD REG CAB- BLUETOOTH	UNL	42,335	8,467
200499	2019	FORD	F150	19 F150 2WD REG CAB BLUETOOTH	UNL	50,405	10,081
200500	2019	FORD	F150	19 F150 2WD REG CAB	UNL	20,860	4,172
200501	2019	FORD	F150	19 FORD F150 2D REG CAB BLUETOOTH	UNL	27,386	5,477
200502	2019	FORD	F150	19 FORD F150 2D REG CAB BLUETOOTH	UNL	23,834	4,767
200510	2020	FORD	F150 4X4	F150 4X4 4WD REG CAB	UNL	28,584	7,146
200514	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	26,808	6,702
200515	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	36,184	9,046
200516	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	45,947	11,487
200517	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	43,937	10,984
200518	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	41,556	10,389
200519	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	25,653	6,413
200520	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	23,602	5,901
200521	2020	FORD	F150	2020 F150 SERIES 2WD SUPERCREW	UNL	23,937	5,984
200522	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	33,096	8,274
200523	2020	FORD	F150	F150 TRUCK LONG BED	UNL	33,958	8,490
200524	2020	FORD	F150	F150 TRUCK LONG BED	UNL	32,532	8,133
200525	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	4,676	1,169
200526	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	10,470	2,618
200527	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	45,932	11,483
200528	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	32,006	8,002
200529	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	13,806	3,452
200530	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	36,837	9,209
200531	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	15,388	3,847
200532	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	16,167	4,042
200533	2020	FORD	F150	F150 TRUCK REGULAR CAB	UNL	19,258	4,815
200537	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	5,096	2,548
200538	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	4,193	2,097
200539	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	5	3
200540	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	4,126	2,063
200541	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	5,157	2,579
200542	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	15,654	7,827
200543	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	13,371	6,686
200544	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	4,137	2,069
200545	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	5,107	2,554
200546	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	8,489	4,245
200548	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	14,879	7,440
200549	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	3,633	1,817
200550	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	2,580	1,290
200551	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	17,765	8,883
200552	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	19,132	9,566
200553	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	14,449	7,225
200554	2022	FORD	F150	2022 FORD F150 REG CAB LONG BED	UNL	560	280
200555	2022	FORD	F150	2022 FORD F150 2WD SUPERCREW	UNL	12,086	6,043
200556	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	1,989	995
200558	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	19,817	9,909
200559	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	18,182	9,091
200560	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	3,708	1,854
200561	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	5,830	2,915
200562	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	1,695	848
200563	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	11,041	5,521
200564	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	7,060	3,530

200565	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	5,444	2,722
200567	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	4,041	2,021
200568	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	8,936	4,468
200569	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	10,766	5,383
200570	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	2,812	1,406
200571	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	12,474	6,237
200572	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	4,540	2,270
200573	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	13,030	6,515
200574	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	7,130	3,565
200575	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	2,977	1,489
200576	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	6,905	3,453
200577	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	4,449	2,225
200578	2022	FORD	F150	2022 FORD F150 CREW CAB	UNL	10,670	5,335
200579	2022	FORD	F150	2022 FORD F150 CREW CAB	UNL	13,187	6,594
200580	2022	FORD	F150	2022 FORD F150 CREW CAB	UNL	2,026	1,013
200581	2022	FORD	F150	2022 FORD F150 REG CAB	UNL	3,800	1,900
200583	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	6,101	6,101
200584	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	9,803	9,803
200585	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5,825	5,825
200586	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	412	412
200587	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	593	593
200588	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	716	716
200589	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	2,571	2,571
200590	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	5,888	5,888
200591	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	5,012	5,012
200592	2022	FORD	F150	2023 FORD F150 CREW CAB	UNL	2,635	1,318
200593	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	4,110	4,110
200594	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,783	3,783
200595	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,032	3,032
200596	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,200	3,200
200597	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	1,137	1,137
200598	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	795	795
200599	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	1,643	1,643
200600	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	2,674	2,674
200601	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	2,710	2,710
200602	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	4,373	4,373
200603	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	1,411	1,411
200604	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	2,625	2,625
200605	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	301	301
200606	2023	FORD	F150	2023 FORD F150 CREW CAB	UNL	1,240	1,240
200607	2023	FORD	F150	2023 F150 REG CAB LONG BED	UNL	68	68
200608	2023	FORD	F150	2023 F150 REG CAB LONG BED	UNL	5,300	5,300
200609	2023	FORD	F150	2023 F150 REG CAB LONG BED	UNL	5,985	5,985
200610	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,265	3,265
200611	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	4,870	4,870
200612	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,773	3,773
200613	2023	FORD	F150	2023 FORD F150 EXT SHORT BED	UNL	949	949
200614	2023	FORD	F150	2023 FORD F150 EXT SHORT BED	UNL	299	299
200615	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,630	3,630
200616	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	3,869	3,869
200617	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	4,189	4,189
200618	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	1,397	1,397
200619	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	2,700	2,700
200620	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	2,508	2,508
200621	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	197	197
200622	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	219	219
200623	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	629	629
200624	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	215	215
200626	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	70	70
200627	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	69	69
200628	2023	FORD	F150	2023 F150 REG CAB LONG BED	UNL	68	68
200629	2023	FORD	F150	2023 F150 REG CAB LONG BED	UNL	5	5
200630	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200631	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200632	2023	FORD	F150	2023 F150 REG CAB LONG BED	UNL	5	5
200633	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200634	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200635	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200636	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200637	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200638	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200639	2023	FORD	F150	2023 FORD F150 SUPER CAB	UNL	5	5
200640	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200641	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200642	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	0	0
200643	2023	FORD	F150	2023 FORD F150 REG CAB	UNL	5	5
200644	2023	FORD	F150	2023 FORD F150 SUPER CAB	UNL	5	5
200625	2023	FORD	F150	2023 FORD F-150 ECOBOOST CREW CAB	UNL	444	444
110447	2004	CHEVROLET	1500	04 1500 TRUCK (WAS 200149) SHELTER CREW	UNL	117134	5857
200170	2004	CHEVROLET	1500	04 CHEV 1/2 TON TRUCK MAINT. PATS TRUCK	UNL	103469	5173
200503	2020	FORD	F150	F150 PICKUP	UNL	10187	2547
200504	2020	FORD	F150	F150 PICKUP	UNL	21534	5384

110459	2003	FORD	F150	03 FORD EXTENDED CAB (WAS 200146)	UNL	144219	6868
110453	2003	FORD	EXPEDITION	2003 BUY BACK 4X2 SUV (WAS 240022)	UNL	122,479	5,832
240059	2010	DODGE	DAKOTA	2010 HALF TON EXTRA CAB 4X4 PICK UP	UNL	116,146	8,296
240060	2010	FORD	F150	2010 FORD F 150 4X4 PICKUP	UNL	89,010	6,358
240065	2013	FORD	EXPEDITION	2013 4X2 SUV AIRPORT COMMAND VEHICLE	UNL	93,352	8,487
240072	2016	FORD	EXPEDITION	2016 FORD EXPEDITION COMMAND VEHICLE	UNL	131,486	16,436
240075	2016	FORD	F150 4X4	2016 FORD F 150 4X4 PU SHORT BED	UNL	28,638	3,580
110382	2004	CHEVROLET	1500	04 CHEV CARGO VAN(WAS 250028)	UNL	98,585	4,929
250031	2005	CHEVROLET	1500	05 CHEV. CARGO VAN	UNL	49,490	2,605
250035	2005	CHEVROLET	1500	05 CHEV CARGO VAN	UNL	82,888	4,363
250040	2006	CHEVROLET	G2500	06 CHEV. CARGO VAN	UNL	87,904	4,884
250043	2006	CHEVROLET	G2500	06 CHEV. CARGO VAN	UNL	58,614	3,256
250044	2006	CHEVROLET	G2500	06 CHEV. CARGO VAN	UNL	52352	2908
LHDT1 Gasoline Vehicles							
110801	2006	CHEVROLET	EXPRESS	06 CHEV. 12 PASS. VAN	UNL	130,651	7,258
160034	2005	CHEVROLET	EXPRESS	05 CHEV. PASS. VAN G3500	UNL	130,945	6,892
160039	2006	CHEVROLET	EXPRESS	06 CHEV. 12 PASS. VAN	UNL	97,257	5,403
160040	2006	CHEVROLET	2500	06 CHEV. 12 PASS. VAN	UNL	102,042	5,669
160041	2006	CHEVROLET	2500	06 CHEV. 12 PASS. VAN	UNL	145,403	8,078
160042	2007	CHEVROLET	2500	07 CHEV. 12 PASS VAN	UNL	113,269	6,663
160047	2008	CHEVROLET	2500	08 CHEV. 12 PASS VAN	UNL	165,694	10,356
160055	2010	CHEVROLET	3500	2010 CHEVY 3500 12 PASSENGER VAN	UNL	118,067	8,433
160064	2017	FORD	TRANSIT 350	17 FORD TRUCK TRANSIT WAGON	UNL	22,586	3,227
160066	2018	FORD	TRANSIT 150	3.7L AUTO MID ROOF XL 10 PASSENGER VAN	UNL	20,231	3,372
160074	2020	FORD	TRANSIT 350	2020 FORD TRANSIT 10 PASNGR	UNL	5,804	1,451
160075	2020	FORD	TRANSIT 350	FORD TRANSIT 10 PASNGR	UNL	11,647	2,912
160081	2022	FORD	TRANSIT 350	ADA ACCESIBLE PASSNGR TRANSPORT VAN	UNL	28629	14315
160067	2018	FORD	TRANSIT 150	2018 FORD TRANSIT 150 10-PASS. VAN CCC	UNL	81097	13516
160068	2018	FORD	TRANSIT 150	2018 FORD TRANSIT 150 10-PASS. VAN SV	UNL	2175	363
110332	2000	FORD	F150	00 FORD 1/2 TON-WAS 200098	UNL	216,228	9,010
110346	2000	FORD	F150	00 FORD 1/2 TON SHORT BED-200087	UNL	171,703	7,154
110378	2000	FORD	F150	00 FORD 1/2 TON PU(WAS 200093)	UNL	137,492	5,729
110379	2001	FORD	F150	01 FORD EXTENDED CAB(WAS 200128)	UNL	159,731	6,945
110385	2002	FORD	F150	2002 FORD F150 CREW CAB(WAS 200139)	UNL	160,331	7,288
110445	2000	FORD	F150	00 FORD EXTENDED CAB (WAS 200117)	UNL	137,360	5,723
110446	2002	CHEVROLET	2500	02 CHEV 3/4 TON PICKUP (WAS 220006)	UNL	142,195	6,463
220007	2002	CHEVROLET	2500	02 CHEV 2500 P/U	UNL	230,350	10,470
220008	2002	CHEVROLET	2500	02 CHEV 3/4 TON PICKUP	UNL	261,128	11,869
220011	2005	FORD	F250	05 FORD F250 PICKUP	UNL	99,102	5,216
220014	2006	FORD	F350	06 FORD 1 TON PICKUP	UNL	213,783	11,877
220015	2006	FORD	F350	06 FORD F350 PICK UP	UNL	101,304	5,628
220017	2006	FORD	F350	06 FORD F350 PICK UP	UNL	107,664	5,981
220018	2006	FORD	F350	06 FORD F350 PICK UP	UNL	112,701	6,261
220021	2008	FORD	F350	08 FORD 1 TON PICK UP	UNL	165,054	10,316
220022	2008	FORD	F350	08 FORD 1 TON PICK UP	UNL	120,384	7,524
220023	2008	FORD	F350	08 FORD 1 TON PICK UP	UNL	99,536	6,221
220029	2015	FORD	F350	2015 FORD CREW CAB PICKUP	UNL	98,638	10,960
220030	2016	FORD	F250	2016 FORD F250 PICKUP BOX DELETE	UNL	76,416	9,552
220031	2016	FORD	F350	2015 FORD CREW CAB PICKUP	UNL	95,199	11,900
220059	2023	FORD	F350	2023 FORD F350 REG SRW PICK UP	UNL	2,118	2,118
220060	2023	FORD	F350	2023 FORD F350 REG SRW PICK UP	UNL	284	284
110432	2002	CHEVROLET	2500	2002 3/4 TON SERVICE TRUCK (WAS 230010)	UNL	196,591	8,936
110589	2006	FORD	F350	06 FORD 1 TON SRW UTILITY WAS 230013	UNL	62,441	3,469
110674	2008	FORD	F350	07 FORD F350 4X4 PICK UP WAS 240044	UNL	82,522	5,158
230014	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	78,962	4,387
230020	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	75,821	4,212
230021	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	78,780	4,377
230022	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	112,714	6,262
230024	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	34,369	1,909
230025	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	92,792	5,155
230026	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	181,201	10,067
230027	2006	FORD	F350	06 FORD 1 TON SGLE REAR WHEEL UTILITY	UNL	142,148	7,897
230028	2008	FORD	F350	08 FORD 1 TON SINGLE REAR WHEEL UTILITY	UNL	123,442	7,715
230029	2008	FORD	F350	08 FORD 1 TON SINGLE REAR WHEEL UTILITY	UNL	152,988	9,562
230032	2008	FORD	F350	08 FORD 1 TON SINGLE REAR WHEEL UTILITY	UNL	117,648	7,353
230035	2008	FORD	F250	08 FORD 3/4 TON S R W UTILITY	UNL	42,565	2,660

230036	2012	FORD	F350	2012 FORD F 350 SRW UTILITY TRUCK	UNL	56,053	4,671
230037	2012	FORD	F350	2012 FORD F 350 SRW UTILITY TRUCK	UNL	76,283	6,357
230038	2014	FORD	F350	2014 FORD F-350 1 TON SRW UTILITY	UNL	34,723	3,472
230039	2014	FORD	F350	2014 FORD F-350 1 TON SRW UTILITY	UNL	77,347	7,735
230040	2017	FORD	F350	2017 FORD F-350 1 TON SRW UTILITY	UNL	30,686	4,384
230041	2017	FORD	F350	2017 FORD F-350 1 TON SRW UTILITY	UNL	34,427	4,918
230044	2019	FORD	F250	19 FORD SUPER DUTY SRW	UNL	14,374	2,875
230045	2019	FORD	F350	19 FORD SUPER DUTY SRW	UNL	35,923	7,185
230046	2019	FORD	F350	19 FORD SUPER DUTY SRW	UNL	43,507	8,701
230047	2019	FORD	F350	19 FORD SUPER DUTY SRW	UNL	13,829	2,766
230049	2019	FORD	F250	SUPER DUTY F-250 SRW	UNL	23,505	4,701
230050	2019	FORD	F250	SUPER DUTY F-250 SRW	UNL	22,493	4,499
230051	2019	FORD	F250	SUPER DUTY F-250 SRW	UNL	16,144	3,229
230052	2019	FORD	F250	2019 FORD SUPER DUTY SRW	UNL	39,547	7,909
230053	2019	FORD	F250	2019 FORD SUPER DUTY SRW	UNL	32,511	6,502
230054	2019	FORD	F250	F250 2019 SUPERDUTY SRW	UNL	16,595	3,319
230055	2019	FORD	F250	F250 2019 SUPERDUTY SRW	UNL	18,453	3,691
230058	2020	FORD	F350	FORD F350 SRW UTILITY TRUCK	UNL	22,426	5,607
230059	2021	FORD	F250	2021 FORD F250 SRW	UNL	6,144	2,048
230060	2021	FORD	F250	2021 FORD F250 SRW	UNL	16,123	5,374
230063	2022	FORD	F350	2022 FORD F350 REG CAB SRW UTILITY	UNL	7,362	3,681
230064	2022	FORD	F350	2022 FORD F350 REG CAB SRW ANIMAL TRANSP	UNL	13,222	6,611
230065	2022	FORD	F350	2022 FORD F350 REG CAB SRW UTILITY	UNL	19,504	9,752
230066	2022	FORD	F350	2022 FORD F350 REG CAB SRW ANIMAL TRANSP	UNL	12,110	6,055
230070	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	8,312	4,156
230071	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	8,632	4,316
230073	2022	FORD	F350	2022 FORD F350 REG CAB SRW UTILITY	UNL	3,613	1,807
230074	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	1,773	887
230075	2022	FORD	F350	2022 FORD F250 REG CAB SRW UTILITY	UNL	6,893	3,447
230076	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	7,309	3,655
230077	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	6,152	3,076
230078	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	1,605	803
230079	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	5	3
230080	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	1,803	902
230081	2022	FORD	F250	2022 FORD F250 REG CAB SRW UTILITY	UNL	7,501	3,751
230082	2022	FORD	F350	2022 FORD F350 SUPER CAB SRW UTILITY	UNL	6,145	3,073
230083	2022	FORD	F350	2022 FORD F350 SUPER CAB SRW UTILITY	UNL	5,884	2,942
230086	2023	FORD	F250	2023 FORD F250 REG SRW UTILITY	UNL	324	324
230087	2023	FORD	F250	2023 FORD F250 CHEMICAL SPRAY	UNL	19	19
230088	2023	FORD	F350	2023 FORD F350 REG SRW UTILITY	UNL	821	821
230089	2023	FORD	F350	2023 FORD F350 REG SRW UTILITY	UNL	862	862
230090	2023	FORD	F350	2023 FORD F350 REG SRW UTILITY	UNL	67	67
230091	2023	FORD	F350	2023 FORD F350 SRW UTILITY	UNL	5	5
230092	2023	FORD	F350	2023 FORD F350 SRW UTILITY	UNL	5	5
260216	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	26	26
260217	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	19	19
260221	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	19	19
260222	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	490	490
260223	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	19	19
260224	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	5	5
230072	2020	FORD	F250	2022 FORD F250 SRW UTILITY	UNL	13015	3254
220061	2023	FORD	F350	2023 FORD F350 REG CAB SRW PICK UP 4X4	UNL	470	470
240041	2006	FORD	F350	06 FORD F350 4X4 FLATBED	UNL	80,998	4,500
110530	2005	CHEVROLET	2500	08 CHEV. 1/2 TON TRUCK WAS 200288	UNL	100,572	5,293
250052	2007	CHEVROLET	2500	07 CHEV. AWD CARGO VAN	UNL	48,449	2,850
250056	2007	CHEVROLET	2500	07 CHEV. CARGO VAN	UNL	218,163	12,833
250058	2011	FORD	E250	2011 FORD 3/4 TON UTILITY VAN	UNL	110,241	8,480
250059	2011	FORD	E250	2011 FORD 3/4 TON UTILITY VAN	UNL	108,935	8,380
250061	2015	FORD	TRANSIT 250	2015 FORD TRANSIT 250 CARGO VAN	UNL	30,016	3,335
250062	2015	FORD	TRANSIT 250	2015 FORD 250 VAN-MEDIUM ROOF HT	UNL	82,061	9,118
250073	2018	FORD	TRANSIT 350	TRANSIT 350 TALL AND LONG CARGO	UNL	28,758	4,793
250077	2019	FORD	TRANSIT 250	FORD TRANSIT VAN T-250 148 MD R	UNL	20,384	4,077
250078	2019	FORD	TRANSIT 250	FORD TRANSIT VAN T-250 148 MD R	UNL	32,764	6,553
250081	2022	FORD	TRANSIT 250	2022 FORD TRANSIT 250 CARGO VAN	UNL	24,692	12,346
250082	2022	FORD	TRANSIT 250	2022 FORD TRANSIT 250 CARGO VAN	UNL	6,689	3,345
250083	2022	FORD	TRANSIT 250	2022 FORD TRANSIT 250 CARGO VAN	UNL	13,915	6,958
250087	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	9,087	9,087
250088	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	58	58
250089	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	1,535	1,535
250090	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	2,905	2,905
250091	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	2,975	2,975
250092	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	1,346	1,346
250093	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	2,218	2,218
250094	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	53	53
250095	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	59	59

250096	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	80	80
250097	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	57	57
250098	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	58	58
250099	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	58	58
250102	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	79	79
250103	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	57	57
250106	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	55	55
250107	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	66	66
250108	2023	FORD	TRANSIT	2023 FORD TRANSIT CARGO VAN	UNL	55	55
250074	2018	FORD	E350	2018 E-350 CARGO VAN SHELTER CREW	UNL	23395	3899
110527	2006	FORD	E350	05 CHEV. 1/2 TON TRUCK- WAS 200210	UNL	75,901	4,217
110533	2008	FORD	F350	04 FORD RANGER WAS 190053	UNL	153,526	9,595
110551	2006	FORD	F350	03 CHEV 1/2 TON - WAS 200133	UNL	105,352	5,853
110580	2005	FORD	F350	2005 FORD F350 UTILITY TRUCK- WAS 260055	UNL	109,989	5,789
230057	2020	FORD	F350	2020 FORD S-DUTY F350 SRW 2WD SUPER 168"	UNL	23,419	5,855
230084	2022	FORD	F350	2022 FORD F350 SRW UTILITY TRUCK	UNL	3,646	1,823
260050	2004	FORD	F350	04 FORD UTILITY BODY TRUCK	UNL	65,895	3,295
260052	2005	FORD	F350	2005 GRAFFITI TRUCK	UNL	229,137	12,060
260070	2006	FORD	F350	06 FORD F350 UTILITY BODY TRUCK	UNL	88,610	4,923
260071	2006	FORD	F350	06 FORD F350 UTILITY BODY TRUCK	UNL	151,700	8,428
260072	2006	FORD	F350	06 FORD F350 UTILITY BODY TRUCK	UNL	188,833	10,491
260076	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	88,711	4,928
260078	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	85,193	4,733
260080	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	162,974	9,054
260082	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	153,624	8,535
260083	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	182,854	10,159
260087	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	96,077	5,338
260088	2006	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	156,961	8,720
260090	2006	FORD	F350	06 FORD F350 CREW CAB UTILITY BODY TRUCK	UNL	166,473	9,249
260091	2006	FORD	F350	06 FORD F350 CREW CAB UTILITY BODY TRUCK	UNL	52,153	2,897
260100	2007	FORD	F350	07 FORD F350 UTILITY	UNL	103,726	6,102
260104	2008	FORD	F350	08 FORD F350 UTILITY BODY	UNL	79,512	4,970
260105	2008	FORD	F350	08 FORD F350 UTILITY BODY	UNL	113,730	7,108
260106	2008	FORD	F350	08 FORD F350 UTILITY BODY	UNL	94,102	5,881
260107	2008	FORD	F350	08 FORD F350 UTILITY BODY	UNL	50,740	3,171
260108	2008	FORD	F350	08 FORD F350 UTILITY BODY	UNL	45,985	2,874
260109	2008	FORD	F350	08 FORD F350 UTILITY BODY	UNL	97,377	6,086
260121	2010	FORD	F350	2010 FORD F-350 DOUBLE CAB PICKUP	UNL	129,788	9,271
260128	2011	FORD	F350	2011 FORD F350 DRW UTILITY TRUCK	UNL	102,993	7,923
260129	2011	FORD	F350	2011 FORD F350 DRW UTILITY TRUCK	UNL	57,102	4,392
260130	2012	FORD	F350	FORD F 350 DOUBLE CAB UTILITY TRUCK	UNL	103,265	8,605
260131	2012	FORD	F350	FORD F 350 DOUBLE CAB UTILITY TRUCK	UNL	71,480	5,957
260132	2012	FORD	F350	FORD F 350 DOUBLE CAB UTILITY TRUCK	UNL	51,247	4,271
260134	2012	FORD	F350	1 TON UTILITY TRUCK	UNL	58,317	4,860
260135	2013	FORD	F350	06 FORD F350 UTILITY TRUCK	UNL	99,290	9,026
260137	2015	FORD	F350	1 TON UTILITY TRUCK	UNL	144,391	16,043
260138	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA	UNL	80,497	10,062
260139	2016	FORD	F350	1 TON CREW CAB DUMP BED UTILITY TRK	UNL	52,546	6,568
260141	2016	FORD	F350	1 TON CREW CAB DUMP BED UTILITY TRK	UNL	57,573	7,197
260142	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA	UNL	68,669	8,584
260143	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA	UNL	65,116	8,140
260144	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA	UNL	62,936	7,867
260145	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA	UNL	68,203	8,525
260146	2016	FORD	F350	1 TON CREW CAB UTILITY TRUCK 60"CA	UNL	39,893	4,987
260147	2016	FORD	F350	1 TON CREW CAB UTILITY TRUCK 60"CA	UNL	72,543	9,068
260151	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA CONE TRUCK	UNL	44,685	5,586
260152	2017	FORD	F350	2017 FORD F350 IRRIGATION SPEC TRUCK	UNL	43,951	6,279
260153	2017	FORD	F350	2017 FORD F350 POOL TECHNICIAN	UNL	52,980	7,569
260156	2017	FORD	F350	2017 FORD F350	UNL	60,361	8,623
260157	2017	FORD	F350	F-350	UNL	61,163	8,738
260159	2017	FORD	F350	2017 FORD S-DUTY F350 CREW CAB	UNL	34,592	4,942
260160	2017	FORD	F350	2017 FORD S-DUTY F350 CREW CAB	UNL	41,337	5,905
260161	2017	FORD	F350	2017 FORD S-DUTY F350 CREW CAB	UNL	41,104	5,872
260162	2017	FORD	F350	2017 FORD S-DUTY F350 CREW CAB	UNL	26,516	3,788
260163	2017	FORD	F350	2017 FORD F350 REG CAB	UNL	69,999	10,000
260164	2017	FORD	F350	2017 FORD F350 REG CAB	UNL	64,740	9,249
260165	2017	FORD	F350	2017 FORD F350 REG CAB	UNL	48,054	6,865
260166	2017	FORD	F350	2017 FORD F350 CREW CAB	UNL	41,722	5,960
260167	2017	FORD	F350	2017 FORD F350 CREW CAB	UNL	48,118	6,874
260168	2017	FORD	F350	2017 FORD F350 REG CAB	UNL	57,974	8,282
260169	2017	FORD	F350	S-DUTYý SRWý 2 WDý BOX DELETE	UNL	31,824	4,546
260170	2018	FORD	F350	DRWý GASOLINE POWEREDý DUMP TRUCK	UNL	34,236	5,706
260176	2019	FORD	F350	19 FORD SUPER DUTY DRW	UNL	26,932	5,386
260177	2019	FORD	F350	19 FORD SUPER DUTY DRW PK 2WD	UNL	30,401	6,080
260178	2019	FORD	F350	19 FORD SUPER DUTY DRW PK 2WD	UNL	39,969	7,994
260179	2019	FORD	F350	19 FORD SUPER DUTY DRW PK 2WD	UNL	30,455	6,091

260180	2019	FORD	F350	19 FORD SUPER DUTY DRW PK 2WD	UNL	66,714	13,343
260181	2019	FORD	F350	19 FORD SUPER DUTY DRW PK 2WD	UNL	19,135	3,827
260182	2019	FORD	F350	F350 DRW 2WD REG CAB	UNL	48,347	9,669
260183	2019	FORD	F350	F350 S-DTY DRW 2WD REG CAB	UNL	54,153	10,831
260184	2019	FORD	F350	F350 S--DTY DRW 2WD CREW	UNL	39,214	7,843
260185	2019	FORD	F350	F350 S-DTY DRW 2WD CREW	UNL	42,813	8,563
260186	2019	FORD	F350	2019 FORD TRUCK S-DUTY DRW 2WD CREW CAB	UNL	14,757	2,951
260187	2019	FORD	F350	2019 FORD TRUCK S-DUTY DRW 2WD CREW CAB	UNL	25,030	5,006
260188	2019	FORD	F350	2019 FORD TRUCK S-DUTY DRW 2WD CREW CAB	UNL	18,467	3,693
260189	2019	FORD	F350	2019 FORD TRUCK S-DUTY DRW 2WD CREW CAB	UNL	18,055	3,611
260190	2019	FORD	F350	2019 FORD TRUCK S-DUTY DRW 2WD CREW CAB	UNL	29,429	5,886
260191	2019	FORD	F350	2019 FORD TRUCK S-DUTY DRW 2WD CREW CAB	UNL	21,052	4,210
260194	2019	FORD	F350	2019 SDTY F350 DRW 2WD CREW CAB	UNL	20,050	4,010
260198	2020	FORD	F350	2020 FORD F350 DRW UTILITY BODY	UNL	4,857	1,214
260199	2020	FORD	F350	F350 UTILITY TRUCK DRW	UNL	10,966	2,742
260200	2022	FORD	F350	2022 FORD F350 UTILITY TRUCK	UNL	12,311	6,156
260201	2022	FORD	F350	2022 FORD F350 UTILITY TRUCK	UNL	7,679	3,840
260202	2022	FORD	F350	2022 FORD F350 UTILITY TRUCK	UNL	8,535	4,268
260203	2022	FORD	F350	FORD F350 DRW CREW CAB UTILITY TRUCK	UNL	1,401	701
260204	2022	FORD	F350	2022 FORD F350 UTILITY TRUCK	UNL	8,300	4,150
260205	2022	FORD	F350	2022 FORD F350 UTILITY TRUCK	UNL	3,099	1,550
260206	2022	FORD	F350	2022 FORD F350 DRW UTILITY CONE TRUCK	UNL	7,724	3,862
260207	2022	FORD	F350	2022 FORD F350 DRW UTILITY BODY	UNL	10,616	5,308
260208	2022	FORD	F350	2022 FORD F350 DRW FLATBED	UNL	1,735	868
260209	2022	FORD	F350	2022 FORD F350 DRW UTILITY TRUCK	UNL	5,841	2,921
260210	2022	FORD	F350	2022 FORD F350 DRW UTILITY TRUCK	UNL	6,402	3,201
260211	2022	FORD	F350	2022 FORD F350 DRW UTILITY TRUCK	UNL	1,118	559
260218	2023	FORD	F350	2023 FORD F350 DRW UTILITY	UNL	1,086	1,086
260219	2023	FORD	F350	FORD F350 DRW IRRIGATION TRUCK	UNL	18	18
260220	2023	FORD	F350	FORD F350 DRW IRRIGATION TRUCK	UNL	18	18
260228	2023	FORD	F350	FORD F350 DRW IRRIGATION TRUCK	UNL	18	18
260054	2005	FORD	F350	05 FORD F350 UTILITY TRUCK SHELTER CREW	UNL	126936	6681
260150	2016	FORD	F350	2016 FORD F350 BUS SHELTER CREW	UNL	103398	12925
260171	2018	FORD	F350	2018 FORD F350 BUS SHELTER CREW	UNL	93231	15539
260172	2018	FORD	F350	2018 FORD F350 BUS SHELTER CREW	UNL	103998	17333
260173	2018	FORD	F350	2018 FORD F350 BUS SHELTER CREW	UNL	128549	21425
260174	2018	FORD	F350	2018 FORD F350 BUS SHELTER CREW	UNL	108444	18074
260192	2020	FORD	F350	F350 SHELTER CREW	UNL	3631	908
260005	1999	CHEVROLET	3500	99 CHEV 1 TON UTILITY BODY	UNL	101,995	4,080
260046	2003	FORD	F350	03 FORD 1 TON UTILITY BODY	UNL	89,495	4,262
LHDT1 Diesel Vehicles							
220025	2008	FORD	F350	08 FORD CREW CAB PICKUP	DSL	68,574	4,286
230033	2008	FORD	F350	08 FORD 1 TON SINGLE REAR WHEEL UTILITY	DSL	88,770	5,548
230034	2008	FORD	F350	08 FORD 1 TON SINGLE REAR WHEEL UTILITY	DSL	104,258	6,516
260175	2019	FORD	F350	19 FORD SUPER DUTY DRW DIESEL	DSL	18,430	3,686
240055	2008	FORD	F350	08 FORD F350 4X4 UTILITY BODY TRUCK	DSL	91,089	5,693
220026	2008	FORD	F350	08 FORD CREW CAB PICKUP	DSL	59,751	3,734
260115	2008	FORD	F350	08 FORD F350 UTILITY BODY	DSL	85,317	5,332
260123	2011	FORD	F350	2011 FORD F350 DRW UTILITY TRUCK	DSL	93,012	7,155
260124	2011	FORD	F350	2011 FORD F350 DRW UTILITY TRUCK	DSL	69,713	5,363
260125	2011	FORD	F350	2011 FORD F350 DRW UTILITY TRUCK	DSL	90,359	6,951
260136	2015	FORD	F350	1 TON UTILITY TRUCK	DSL	67,845	7,538
260148	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA W/PTO	DSL	91,044	11,381
260149	2016	FORD	F350	1 TON UTILITY TRUCK 60"CA W/PTO	DSL	55,658	6,957
260158	2017	FORD	F350	2017 FORD F350 POWER STROKE DIESEL	DSL	87,310	12,473
260212	2023	FORD	F350	2023 FORD F350 DRW UTILITY	DSL	92	92
260213	2023	FORD	F350	2023 FORD F350 DRW UTILITY	DSL	19	19
260214	2023	FORD	F350	2023 FORD F350 DRW UTILITY	DSL	19	19
260215	2023	FORD	F350	2023 FORD F350 DRW UTILITY	DSL	20	20
260226	2023	FORD	F350	2023 FORD F350 DRW UTILITY	DSL	25	25
260227	2023	FORD	F350	2023 FORD F350 DRW UTILITY	DSL	25	25
LHDT1 Natural Gas Vehicles							
220032	2016	FORD	F250	2016 FORD F250 BUS SHELTER CREW	CNG	73535	9192
LHDT2 Gasoline Vehicles							
110552	2002	CHEVROLET	1500	06 FORD F350 UTILITY TRUCK	UNL	100,019	4,546
260064	2006	FORD	F350	06 FORD F350 FLATBED DUMP	UNL	174,061	9,670
260066	2006	FORD	F350	06 FORD F350 FLATBED DUMP	UNL	145,854	8,103
260067	2006	FORD	F350	06 FORD F350 FLATBED DUMP	UNL	126,855	7,048
260068	2006	FORD	F350	06 FORD F350 FLATBED DUMP	UNL	187,175	10,399
260098	2007	FORD	F350	07 FORD F350 FLATBED DUMP	UNL	137,771	8,104
260101	2008	FORD	F350	08 FORD F350 CREW CAB FLATBED	UNL	163,454	10,216
260102	2008	FORD	F350	08 FORD F350 CREW CAB FLATBED	UNL	111,297	6,956
260154	2017	FORD	F350	2017 FORD F350 FLATBED	UNL	48,936	6,991
260155	2017	FORD	F350	2017 FORD F350 FLATBED	UNL	36,935	5,276
260195	2020	FORD	F350	F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	19,882	4,971

260196	2020	FORD	F350	F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	15,606	3,902
260197	2020	FORD	F350	F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	13,413	3,353
260225	2023	FORD	F350	FORD F350 CC DRW LANDSCAPE DUMP TRUCK	UNL	29	29
110561	2012	FORD	F450	2003 CHEV 1/2 TON TRUCK - WAS 200135	UNL	105,833	8,819
110563	2012	FORD	F450	FORD F450 SEWER DRAG TRUCK- WAS 270112	UNL	145,196	12,100
260024	2001	FORD	F350	01 FORD FLATBED DUMP	UNL	205,776	8,947
260025	2001	FORD	F350	2001 FORD 1 TON FLATBED DUMP	UNL	170,907	7,431
260042	2002	FORD	F350	02 FORD 1 TON FLATBED DUMP	UNL	157,627	7,165
260043	2002	FORD	F350	02 FORD FLATBED DUMP	UNL	191,632	8,711
260049	2003	FORD	F350	03 FORD FLATBED W/ LIFT GATE	UNL	37,414	1,782
270055	2004	FORD	F450	2004 CLASS 4 TRUCK	UNL	135,269	6,763
270107	2012	FORD	F450	2012 FORD F 450	UNL	81,630	6,803
270108	2012	FORD	F450	2012 FORD F 450	UNL	61,320	5,110
270109	2012	FORD	F450	2012 FORD F 450	UNL	81,786	6,816
270114	2013	FORD	F550	2013 FORD F 550 VALVE EXCERSIIZING TRUCK	UNL	45,506	4,137
270115	2013	FORD	F550	2013 FORD F 550 VALVE EXCERSIIZING TRUCK	UNL	42,670	3,879
270119	2015	FORD	F450	2015 FORD F 450 V-10 GAS UTILITY TRUCK	UNL	51,443	5,716
270120	2016	FORD	F450	2016 FORD F 450 UNLEADED UTILITY TRUCK	UNL	98,033	12,254
270136	2019	FORD	F550	2019 F550 GAS	UNL	19,237	3,847
270146	2020	FORD	F450	F450 SEWER DRAG TRUCK	UNL	42,752	10,688
270147	2020	FORD	F450	F450 SEWER DRAG TRUCK	UNL	35,728	8,932
270148	2020	FORD	F450	F450 SEWER DRAG TRUCK	UNL	21,563	5,391
270149	2020	FORD	F550	F550 SERVICE TRUCK	UNL	505	126
270152	2020	FORD	F450	2020 F450 GRAFFITI TRUCK	UNL	36,481	9,120
270153	2020	FORD	F450	2020 F450 GRAFFITI TRUCK	UNL	53,163	13,291
270154	2020	FORD	F450	2020 F450 GRAFFITI TRUCK	UNL	32,560	8,140
270169	2022	FORD	F450	FORD F450 REG CAB DRW GRAFFITI TRUCK	UNL	54	27
270170	2022	FORD	F450	FORD F450 REG CAB DRW GRAFFITI TRUCK	UNL	7,639	3,820
270171	2022	FORD	F550	FORD F550 REG CAB DRW GRAFFITI TRUCK	UNL	139	70
270172	2022	FORD	F450	FORD F450 REG CAB DRW GRAFFITI TRUCK	UNL	5	3
270173	2022	FORD	F450	FORD F450REG CAB DRW GRAFFITI TRUCK	UNL	5	3
270175	2022	FORD	F450	FORD F450 REG CAB SIGN TRUCK 84"CA	UNL	2,589	1,295
270176	2023	FORD	F550	2023 FORD F550 DRW UTILITY	UNL	1,467	1,467
270178	2023	FORD	F550	FORD F550 REG CAB DRW GRAFFITI TRUCK	UNL	39	39
272661	1992	GMC	3500	92 GMC WELD.SHOP TRK	UNL	74,453	2,327
810007	1993	GMC	3500	93 GMC 1T UTIL/HOIST	UNL	152,183	4,909
270144	2020	FORD	F450	F450 MAINTENANCE CREW	UNL	46433	11608
270060	2005	FORD	F450	05 FORD F450 MAINT. SERVICE TRUCK	UNL	77528	4080
LHDT2 Diesel Vehicles							
260120	2008	FORD	F350	08 FORD FLATBED TRUCK	DSL	103,772	6,486
270052	2000	GMC	5500	2000 CLASS 5 FLATBED	DSL	66,017	2,751
270101	2011	FORD	F450	2011 FORD F 450 LEAKY SERVICE TRUCK	DSL	39,532	3,041
270102	2011	FORD	F550	2011 CLASS 5 UTILITY BODY TRUCK	DSL	103,267	7,944
270103	2011	FORD	F450	2011 FORD F 450 PIPE HAULER TRUCK	DSL	45,853	3,527
270104	2011	FORD	F550	2011 FORD F 550 GRAFFITTI TRUCK	DSL	167,873	12,913
270106	2012	FORD	F450	2012 FORD F 450 SERVICE TRUCK	DSL	58,991	4,916
270113	2013	FORD	F550	2013 FORD F550 SIGN PATCH TRUCK	DSL	166,038	15,094
270116	2015	FORD	F550	2015 FORD F 550 DIESEL UTILITY TRUCK	DSL	53,085	5,898
270117	2015	FORD	F450	2015 FORD F 450 DIESEL UTILITY TRUCK	DSL	36,612	4,068
270118	2015	FORD	F550	2015 FORD F 550 DIESEL UTILITY TRUCK	DSL	63,674	7,075
270122	2015	FORD	F550	2015 FORD F 550	DSL	113,993	12,666
270127	2017	FORD	F550	2017 REG CAB F 550 TRUCK	DSL	97,897	13,985
270128	2017	FORD	F450	2017 REG CAB F 450 TRUCK	DSL	48,619	6,946
270129	2017	FORD	F550	2017 REG CAB F 550 BUCKET TRUCK	DSL	62,220	8,889
270130	2017	FORD	F550	2017 REG CAB F 550 BUCKET TRUCK	DSL	84,439	12,063
270131	2017	FORD	F550	2017 REG CAB F 550 BUCKET TRUCK	DSL	67,945	9,706
270132	2017	FORD	F550	2017 REG CAB F 550 BUCKET TRUCK	DSL	74,648	10,664
270133	2017	FORD	F550	2017 REG CAB F 550 BUCKET TRUCK	DSL	16,775	2,396
270134	2018	FORD	F550	2018 F550 DIESELý16FT BOX SWR CAMERA VAN	DSL	34,210	5,702
270135	2018	FORD	F550	2018 F550 DIESELý16FT BOX SWR CAMERA VAN	DSL	38,674	6,446
270137	2019	FORD	F550	2019 FORD S-DUTY F550 2WD REG CAB DIESEL	DSL	58,193	11,639
270138	2019	FORD	F450	S-DUTY F450 2WD REG CAB DSL HOT BOX	DSL	29,720	5,944
270139	2019	FORD	F450	2019 TRUCK S-DUTY F450 2WD REG CAB DSL	DSL	27,772	5,554
270140	2019	FORD	F450	S-DUTY F450 2WD REG CAB DSL HOT BOX	DSL	32,564	6,513
270141	2019	FORD	F550	2019 FORD S-DUTY F550 2WD REG CAB DIESEL	DSL	22,156	4,431
270142	2020	FORD	F550	2020 FORD F550 S-DTY DIESEL	DSL	39,808	9,952
270143	2020	FORD	F550	2020 FORD F550 S-DTY DIESEL	DSL	28,491	7,123
270145	2020	FORD	F550	2020 F550 ALTEC BUCKET TRUCK	DSL	36,911	9,228

270150	2020	FORD	F450	F450 DIESEL DRW STENCIL TRUCK	DSL	20,308	5,077
270151	2020	FORD	F450	F450 DIESEL LEAD WORKER TRUCK DRW	DSL	18,740	4,685
270155	2020	FORD	F450	2020 FORD F450 DRW FLATBED	DSL	9,206	2,302
270156	2021	FORD	F550	2021 FORD F550 DRW 12FT DUMP BODY	DSL	18,546	6,182
270157	2020	FORD	F550	2020 F550 ALTEC BUCKET TRUCK	DSL	4,002	1,001
270158	2020	FORD	F550	2020 F550 ALTEC BUCKET TRUCK	DSL	25,963	6,491
270161	2022	FORD	F550	2022 FORD F550 REG ASPHALT PATCH TRUCK	DSL	10,245	5,123
270162	2022	FORD	F550	2022 FORD F550 CC DIESEL FLETBED	DSL	990	495
270164	2022	FORD	F550	2022 FORD F550 CC DRW UTILITY TRUCK	DSL	4,730	2,365
270174	2016	DODGE	5500	2016 DODGE 5500 BUCKET TRUCK	DSL	20,242	2,530
270179	2023	FORD	F550	2023 FORD F550 AERIAL BUCKET TRUCK	DSL	5	5
270180	2023	FORD	F550	2023 FORD F550 AERIAL BUCKET TRUCK	DSL	5	5
MHDT Gasoline Vehicles							
270126	2016	ISUZU	NPR	2016 ISUZU NPR GASOLINE 6.0 LITER	UNL	79,349	9,919
270125	2016	ISUZU	NPR	2016 ISUZU NPR GASOLINE 6.0 LITER	UNL	98,613	12,327
MHDT Diesel Vehicles							
260093	2007	FORD	F350	07 FORD F350 PICK UP HEAVY DUTY TOW PACK	DSL	30,998	1,823
260127	2011	ISUZU	NPR	2011 ECOMAX CABOVER UTILITY BODY TRUCK	DSL	41,121	3,163
270039	1999	FREIGHTLINER	FL50	99 FL50 FLATBED FINISHER TRUCK BODY	DSL	68,696	2,748
270177	2024	ISUZU	NPR	2024 ISUZU NPR TIRE TRUCK	DSL	443	443
280002	2000	INTERNATIONAL	4700	99 CREW CAB FLATBED DUMP	DSL	144,053	6,002
280003	2000	INTERNATIONAL	4700	99 CREW CAB FLATBED DUMP	DSL	160,460	6,686
280004	2000	FREIGHTLINER	FL70	FLATBED DUMP TRUCK	DSL	28,669	1,195
280006	2001	INTERNATIONAL	4700	2001 CREW CAB FINISHER TRUCK	DSL	77,361	3,364
280009	2003	INTERNATIONAL	4200	2003 CLASS 6 TRUCK	DSL	12,628	601
280012	2002	INTERNATIONAL	4700	2002 CREW CAB FINISHER TRUCK	DSL	83,808	3,809
280017	2005	FORD	F750	05 FORD F750 CREW CAB FINISHER TRUCK	DSL	73,613	3,874
280019	2009	FREIGHTLINER	M2	09 FREIGHTLINER 8 YD DUMP TRUCK	DSL	89,550	5,970
280020	2018	KENWORTH	T270	26ý000 GVWý PACCAR ENGý ALLISON TRANI	DSL	28,421	4,737
280021	2018	KENWORTH	T270	26ý000 GVWý PACCAR ENGý ALLISON TRANI	DSL	21,322	3,554
280022	2018	KENWORTH	T270	26ý000 GVWý PACCAR ENGý ALLISON TRANI	DSL	27,613	4,602
280023	2018	KENWORTH	T270	26ý000 GVWý PACCAR ENGý ALLISON TRANI	DSL	25,436	4,239
280024	2020	KENWORTH	T270	26000 GVW KENWORTH T270 PIPE FITTER	DSL	12,562	3,141
280025	2020	KENWORTH	T370	26000 GVW CHLORINE TRUCK	DSL	16,987	4,247
280026	2020	KENWORTH	T270	26000 GVW KENWORTH T270 PIPE FITTER	DSL	4,459	1,115
280027	2020	KENWORTH	T270	26000 GVW KENWORTH T270 PIPE FITTER	DSL	14,333	3,583
280028	2020	KENWORTH	T270	26000 GVW KENWORTH T270 PIPE FITTER	DSL	8,556	2,139
280029	2020	KENWORTH	T270	26000 GVW KENWORTH T270 PIPE FITTER	DSL	6,192	1,548
282812	1993	GMC	5500	93 GMC 5YD DUMP	DSL	17,464	563
282815	1993	GMC	5500	93 GMC 5YD DUMP	DSL	12,990	419
340051	2020	KENWORTH	T370	DITCH WITCH FXT65 VACUUM SYSTEM	DSL	12,714	3,179
290008	2011	KENWORTH	0	2011 KENWORTH ASPHALT PATCH TRUCK	DSL	149,975	11,537
290009	2013	KENWORTH	T270	2013 KENWORTH ASPHALT PATCH TRUCK	DSL	130,292	11,845
300011	2004	AUTOCAR	WX42	2004 ASPHALT PATCH TRUCK	DSL	97,918	4,896
300012	2004	AUTOCAR	WX42	2004 ASPHALT PATCH TRUCK	DSL	103,610	5,181
300028	2018	KENWORTH	T370	2018 KENWORTH T370 SIGN TRUCK	DSL	77,854	12,976
300040	2024	PB LOADER	ASPHALT PATCH	2023 PB LOADER ASPHALT PATCH TRUCK	DSL	0	0
300041	2024	PB LOADER	ASPHALT PATCH	2023 PB LOADER ASPHALT PATCH TRUCK	DSL	0	0
340045	2012	AUTOCAR	ACX-64	12 22 YD PB LOADER TRUCK	DSL	127,284	10,607
340052	2021	KENWORTH	T370	2021 KENWORTH T370 WATER TRUCK	DSL	540	180
360026	2022	KENWORTH	T370	KENWORTH T370 W/ 25YD HEIL REAR LDR	DSL	18,416	9,208
360028	2022	KENWORTH	T370	KENWORTH T370 W/ 25YD HEIL REAR LDR	DSL	14,900	7,450
HHDT Diesel Vehicles							
280030	2020	FREIGHTLINER	M2-106	M2-106 CONCRETE FINISHER TRUCK	DSL	12,941	3,235
280031	2020	FREIGHTLINER	M2-106	M2-106 CONCRETE FINISHER TRUCK	DSL	14,664	3,666
280032	2024	FREIGHTLINER	M2-106	M2-106 CONCRETE FINISHER TRUCK	DSL	1,650	1,650
280033	2024	FREIGHTLINER	M2-106	M2-106 CONCRETE FINISHER TRUCK	DSL	767	767
280034	2024	FREIGHTLINER	M2-106	M2-106 CONCRETE FINISHER TRUCK	DSL	126	126
340085	2024	KENWORTH	T880	2024 KENWORTH T880 DUMP TRUCK	DSL	5	5
290004	2002	FREIGHTLINER	CONDOR	2002 SELF LOADING DUMP TRUCK	DSL	111,123	5,051
290007	2007	PETERBILT	320	07 PETE PB LOADER	DSL	177,026	10,413
290012	2018	PETERBILT	520	2018 PB LOADER	DSL	15,868	2,645
300017	2006	PETERBILT	335	06 PETE 335 WATER TRUCK	DSL	32,682	1,816
300024	2016	FREIGHTLINER	M2	2016 FREIGHTLINER M2 WATER TRUCK	DSL	4,625	578
300037	2021	FREIGHTLINER	M2-106	2021 FREIGHTLINER 10` DUMP TRUCK	DSL	1,192	397
300042	2024	PETERBILT	548	2024 PETERBILT 548 CHLORINE TRUCK	DSL	5	5
340007	1999	FREIGHTLINER	FLD120	99 SUPER SOLO 21 YD DUMP TRUCK	DSL	173,604	6,944
340009	1999	FREIGHTLINER	FLD120	99 SUPER SOLO 21 YD DUMP TRUCK	DSL	153,964	6,159

340010	2000	FREIGHTLINER	FL112	CLASS 8 TRUCK TRACTOR	DSL	5,133	214
340014	2001	FREIGHTLINER	FLD120	2001 17 YD DUMP TRUCK	DSL	142,519	6,196
340015	2001	FREIGHTLINER	FLD120	2001 17 YD DUMP TRUCK	DSL	164,061	7,133
340016	2001	FREIGHTLINER	FLD120	2001 17 YD DUMP TRUCK	DSL	175,275	7,621
340018	2002	FREIGHTLINER	CONDOR	2002 3 AXLE SELDF LOADING DUMP TRUCK	DSL	36,093	1,641
340020	2001	VOLVO	WG64	2001 16 YD 4 AXLE DUMP TRUCK	DSL	119,232	5,184
340021	2001	VOLVO	WG64	2001 16 YD 4 AXLE DUMP TRUCK	DSL	94,749	4,120
340022	2001	VOLVO	VHD64B	2001 16 YD 4 AXLE DUMP TRUCK	DSL	142,109	6,179
340023	2001	VOLVO	VHD64B	2001 16 YD 4 AXLE DUMP TRUCK	DSL	133,749	5,815
340027	2005	PETERBILT	357	05 PETE 357 4 AXLE DUMP TRUCK	DSL	28,166	1,482
340028	2005	PETERBILT	357	05 PETE 357 4 AXLE DUMP TRUCK	DSL	82,936	4,365
340029	2005	PETERBILT	357	05 PETE 357 4 AXLE DUMP TRUCK	DSL	116,486	6,131
340030	2005	PETERBILT	357	05 PETE 357 4 AXLE DUMP TRUCK	DSL	102,453	5,392
340031	2005	PETERBILT	357	05 PETE 357 4 AXLE DUMP TRUCK	DSL	98,924	5,207
340032	2005	PETERBILT	357	05 PETE 357 4 AXLE DUMP TRUCK	DSL	147,900	7,784
340034	2005	PETERBILT	357	05 PETE 357 HEAVY HAUL TRACTOR	DSL	24,777	1,304
340035	2005	STERLING	LT9500	05 STERLING SUPER DUMP	DSL	103,872	5,467
340036	2005	STERLING	LT9500	05 STERLING 15 YD DUMP TRUCK	DSL	97,614	5,138
340050	2021	KENWORTH	T800	2021 KENWORTH T800	DSL	4,550	1,517
340077	2021	PETERBILT	520	2021 PETERBILT 520 PAINT STRIPER TRUCK	DSL	3,041	1,014
340081	2020	WESTERN STAR	4700SB	2020 WESTERN STAR 4700SB DUMP TRUCK	DSL	8,503	2,126
340084	2023	PETERBILT	567	2023 PETERBILT 567 DUMP TRUCK	DSL	61	61
360024	2022	PETERBILT	520	2022 PETERBLT 520 W/ 27 YD HEIL REAR LDR	DSL	27,171	13,586
360025	2022	PETERBILT	520	2022 PETERBLT 520 W/ 27 YD HEIL REAR LDR	DSL	25,705	12,853
360027	2022	PETERBILT	520	2022 PETERBLT 520 W/ 27 YD HEIL REAR LDR	DSL	9,721	4,861
360029	2022	PETERBILT	520	2022 PETERBLT 520 W/ 27 YD HEIL REAR LDR	DSL	16,632	8,316
300016	2006	PETERBILT	335	06 PETE 335 CHLORINE TANKER	DSL	114,595	6,366
390004	2010	VOLVO	VHD64B	2010 ROLL-OFF	DSL	120,832	8,631
390005	2010	VOLVO	VHD64B	2010 ROLL-OFF	DSL	83,176	5,941
390006	2010	VOLVO	VHD64B	2010 ROLL-OFF	DSL	270,865	19,348
390007	2022	KENWORTH	T880	2022 KENWORTH T880 ROLL-OFF TRUCK	DSL	436	218
390008	2022	KENWORTH	T880	2022 KENWORTH T880 ROLL-OFF TRUCK	DSL	987	494
848411	2002	VOLVO	VHD64B	2002 ROLL-OFF	DSL	374,392	17,018
HHDT Natural Gas Vehicles							
360007	2003	VOLVO	WX64	2003 LNG-POWERED REAR LOADER	LNG	6,580	313
360008	2005	AUTOCAR	WX-64	05 AUTOCAR 32 YD LNG REAR LOADER	LNG	149,971	7,893
360009	2005	AUTOCAR	WX-64	05 AUTOCAR 32 YD LNG REAR LOADER	LNG	141,474	7,446
360010	2005	AUTOCAR	WX-64	05 AUTOCAR 32 YD LNG REAR LOADER	LNG	151,947	7,997
360011	2005	AUTOCAR	WX-64	05 AUTOCAR 25 YD LNG REAR LOADER	LNG	176,089	9,268
360012	2005	AUTOCAR	WX-64	05 AUTOCAR 25 YD LNG REAR LOADER	LNG	159,139	8,376
360013	2005	AUTOCAR	WX-64	05 AUTOCAR 25 YD LNG REAR LOADER	LNG	143,758	7,566
360015	2015	PETERBILT	320	2014 PETE/HEIL 27 YD LNG REAR LOADER	LNG	92,707	10,301
360016	2015	PETERBILT	320	2014 PETE/HEIL 27 YD LNG REAR LOADER	LNG	102,373	11,375
360017	2016	PETERBILT	320	2016 PETE/HEIL 27 YD LNG REAR LOADER	LNG	84,111	10,514
360018	2016	PETERBILT	320	2016 PETE/HEIL 27 YD LNG REAR LOADER	LNG	85,950	10,744
360019	2018	PETERBILT	520	2018 PETE/HEIL 27 YD LNG REAR LOADER	LNG	54,858	9,143
360020	2019	PETERBILT	520	2018 PETE/HEIL 27 YD LNG REAR LOADER	LNG	49,996	9,999
360021	2019	PETERBILT	520	2018 PETE/HEIL 27 YD LNG SIDE LOADER	LNG	43,050	8,610
360022	2019	PETERBILT	520	2018 PETE/HEIL 27 YD LNG SIDE LOADER	LNG	49,952	9,990
360023	2020	PETERBILT	520	2020 PETRBLT 520 W/ 27 YD HEIL REAR LDR	LNG	26,346	6,587
360030	2022	PETERBILT	520	2022 PETRBLT 520 W/ 27YD HEIL REAR LDR	LNG	12,704	6,352
380136	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	126,945	14,105
380137	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	127,903	14,211
380138	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	125,279	13,920
380139	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	125,187	13,910
380140	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	119,769	13,308
380141	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	127,552	14,172
380142	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	135,716	15,080
380144	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	103,662	11,518
380145	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	106,478	11,831
380146	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	103,348	11,483
380147	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	129,234	14,359

380148	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	130,555	14,506
380149	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	121,624	13,514
380150	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	107,366	11,930
380151	2015	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	119,051	13,228
380152	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	124,897	15,612
380153	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	119,273	14,909
380154	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	107,660	13,458
380155	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	109,035	13,629
380157	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	112,921	14,115
380158	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	121,183	15,148
380159	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	107,648	13,456
380160	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	111,755	13,969
380161	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	125,714	15,714
380162	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	107,729	13,466
380163	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	126,083	15,760
380164	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	110,884	13,861
380165	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	120,680	15,085
380166	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	119,578	14,947
380167	2016	PETERBILT	320	PETERBUILT MODEL 320 HEIL RR SIDE LOADER	LNG	112,972	14,122
380168	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	85,339	14,223
380169	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	85,221	14,204
380170	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	81,944	13,657
380171	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	80,317	13,386
380172	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	84,585	14,098
380173	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	86,946	14,491
380174	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	72,992	12,165
380175	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	86,454	14,409
380176	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	68,053	11,342
380177	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	74,312	12,385
380178	2018	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	73,261	12,210
380179	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	55,349	11,070
380180	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	61,413	12,283
380181	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	67,341	13,468
380182	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	58,780	11,756
380183	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	58,409	11,682
380184	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	61,190	12,238
380185	2019	PETERBILT	520	PETERBUILT MODEL 520 HEIL RR SIDE LOADER	LNG	58,949	11,790
380186	2015	PETERBILT	320	PBUILT 320 GLIDER SIDE LOADER WAS 380133	LNG	64,473	7,164
380187	2015	PETERBILT	320	PBUILT 320 GLIDER SIDE LOADER WAS 380134	LNG	71,674	7,964
380188	2015	PETERBILT	320	PBILTT 320 GLIDER SIDE LOADER WAS 380135	LNG	55,144	6,127
380189	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	61,570	15,393
380190	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	42,629	10,657
380191	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	34,807	8,702
380192	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	53,645	13,411
380193	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	36,858	9,215
380194	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	63,846	15,962
380195	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	54,561	13,640
380196	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	47,955	11,989
380197	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	37,243	9,311
380198	2020	PETERBILT	520	PETERBUILT 520 HEIL SIDE LOADER	LNG	38,333	9,583
380199	2020	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	53,810	13,453
380200	2020	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	44,080	11,020

380201	2020	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	40,809	10,202
380202	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	18,570	9,285
380203	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	25,249	12,625
380204	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	18,982	9,491
380205	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	24,700	12,350
380206	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	20,531	10,266
380207	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	15,450	7,725
380208	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	16,123	8,062
380209	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	15,186	7,593
380210	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	14,403	7,202
380211	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	19,231	9,616
380212	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	20,003	10,002
380213	2022	PETERBILT	520	PETERBILT 520 HEIL SIDE LOADER	LNG	8,044	4,022
380214	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	755	755
380215	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	3,166	3,166
380216	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	3,069	3,069
380217	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	3,131	3,131
380218	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	1,213	1,213
380219	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	1,793	1,793
380220	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	2,294	2,294
380221	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	1,940	1,940
380222	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	1,869	1,869
380223	2023	MACK	LR64R	MACK LR64R HEIL SIDE LOADER	LNG	1,042	1,042

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

City of Clovis

Table 1: Fleet Information - City of Clovis Average Mileage by type of vehicle

Equip. No.	Dept.	Fuel Type	Make	Model/Type	Year
40043	PUCM	CNG	PETERBILT	FRONTLOADER	2015
40044	PUCM	CNG	PETERBILT	FRONTLOADER	2018
40045	PUCM	CNG	PETERBILT	FRONTLOADER	2018
40047	PUCM	CNG	AUTOCAR	FRONTLOADER	2019
40133	PUCM	CNG	AUTOCAR	FRONTLOADER	2019
40134	PUCM	CNG	PETERBILT	FRONTLOADER	2023
40135	PUCM	CNG	PETERBILT	FRONTLOADER	2023
40039	PUCM	CNG	PETERBILT	REARLOADER 320	2009
40041	PUCM	CNG	PETERBILT	REARLOADER 320	2009
40131	PUCM	CNG	PETERBILT	REARLOADER 320	2010
40132	PUCM	CNG	PETERBILT	REARLOADER 320	2010
40150	PUCU	CNG	PETERBILT	REARLOADER 320	2012
40151	PUCU	CNG	PETERBILT	REARLOADER 320	2012
40152	PUCU	CNG	PETERBILT	REARLOADER 520	2018
40153	PUCU	CNG	PETERBILT	REARLOADER 520	2018
40154	PUCU	CNG	PETERBILT	REARLOADER 520	2020
40021	PURS	CNG	PETERBILT	SIDELOADER	2009
40022	PURS	CNG	PETERBILT	SIDELOADER	2009
40112	PURS	CNG	PETERBILT	SIDELOADER	2017
40113	PURS	CNG	PETERBILT	SIDELOADER	2012
40116	PURS	CNG	PETERBILT	SIDELOADER	2012
40117	PURS	CNG	PETERBILT	SIDELOADER	2012
40119	PURS	CNG	PETERBILT	SIDELOADER	2010
40124	PURS	CNG	PETERBILT	SIDELOADER	2010
40125	PURS	CNG	PETERBILT	SIDELOADER	2010
40111	PURS	CNG	PETERBILT	SIDELOADER 520	2020
40114	PURS	CNG	PETERBILT	SIDELOADER 520	2020
40115	PURS	CNG	PETERBILT	SIDELOADER 520	2020
40118	PURS	CNG	PETERBILT	SIDELOADER 520	2021
40120	PURS	CNG	PETERBILT	SIDELOADER 520	2021
40121	PURS	CNG	PETERBILT	SIDELOADER 520	2021
40122	PURS	CNG	PETERBILT	SIDELOADER 520	2023
32 - Refuse (CNG) Natural Gas Trucks			**AVE Mileage/Year: 5,580**		
31001	PUSW	CNG	GLOBAL	SWEEPER	2023
31013	PUSW	CNG	AUTOCAR	SWEEPER	2015
31014	PUSW	CNG	AUTOCAR	SWEEPER	2016
31018	PUSW	CNG	AUTOCAR	SWEEPER	2018
31019	PUSW	CNG	AUTOCAR	SWEEPER	2018
31020	PUSW	CNG	AUTOCAR	SWEEPER	2020
31021	PUSW	CNG	AUTOCAR	SWEEPER	2020
31022	PUSW	CNG	AUTOCAR	SWEEPER	2020
8 - Street Sweepers (CNG) Natural Gas Trucks			**AVE Mileage/Year: 6,500**		
32010	PUST	D	CHEVROLET	3500 CAB/CHSS	2014
32003	SWTP	D	CHEVROLET	3500 FLATBED	2002
32004	PDMI	D	CHEVROLET	3500 FLATBED	2007
33041	PUST	D	CHEVROLET	3500 FLATBED	2015
45008	PUST	D	CHEVROLET	3500 SRVC TRK	2007
45018	PUFM	D	CHEVROLET	3500 SRVC TRK	2007
32008	PUST	D	CHEVROLET	3500 STENCIL	2014
32040	PUST	D	CHEVROLET	3500 STENCIL	2016
20102	PDSS	D	GMC	4500 UTILIMASTR	2007
34001	PUWR	D	CHEVROLET	C3500 AERIAL	2005
21016	FDAD	D	FORD	F250 4X4	2021
21018	FDAD	D	FORD	F250 4X4	2021
21019	FDAD	D	FORD	F250 4X4	2021
21020	FDAD	D	FORD	F250 4X4	2021
21057	FDAD	D	FORD	F250 4X4	2014
21058	FDAD	D	FORD	F250 4X4	2014

HHDT
MHDT
LHDT2
LHDT1
LDT2
LDT1
LDA

Table 2: Fleet Emissions Summary

Vehicle Class	CO2 (Tons)	CH4 (Tons)	N2O (Tons)
Gasoline			
LDA	2.84	0.00	0.00
LDT1	2.94	0.00	0.00
LDT2	2.70	0.00	0.00
Total Gasoline	**8.47**	**0.00**	**0.00**
Diesel			
LHDT2	5.12	0.00	0.00
MHDT	2.54	0.00	0.00
HHDT	5.75	0.00	0.00
Total Diesel	**13.40**	**0.00**	**0.00**
Natural Gas			
MHDT	7.34	0.01	0.00
HHDT	10.17	0.02	0.00
Total Natural Gas	**17.51**	**0.03**	**0.00**
Combined Total	**39.38**	**0.03**	**0.01**

Table 3: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	39.38	1	39.38
CH4 Total	0.03	25	0.70
N20 Total	0.01	310	1.85
		Total	**41.93**

Table 4: Summary of Annual Milage by Vehicle Class

Vehicle class	Annual Mileage
Gasoline	
LDA	8,425
LDT1	7,326
LDT2	6,255
Diesel	
LHDT2	5,900
MHDT	1,969
HHDT	3,150
Natural Gas	
MHDT	6,500
HHDT	5,580

20048	PDIN	D	DODGE	VAN 12 PASS	2007
21059	FDAD	D	FORD	F250 4X4	2014
40063	PULF	D	FORD	F250 4X4	2014
42076	PUWR	D	FORD	F450 SERVICE TR	2011
41000	PUSS	D	FORD	F450 SUPER DTY	2023
42002	PULF	D	FORD	F450 SUPER DTY	2000
42001	PUWR	D	FORD	F550 DUMP	2020
42071	PUWR	D	FORD	F550 SERVICE TR	2023
42079	PUWR	D	FORD	F650	2011
40096	PULF	D	INTERNATIONAL	7500 WATERTRUCK	2016
40077	PULF	D	INTERNATIONAL	9100 FUEL TRK	2000
40030	PUCM	D	KENWORTH	K270 Cab & Chas	2022
40060	PUCU	D	FREIGHTLINER	M2 106	2023
32005	PUST	D	ISUZU	NNR STRIPER	2022
51018	PUPR	D	FREIGHTLINER	ALTEC AERIAL	2021
33042	PUST	D	INTERNATIONAL	PATCH TRUCK	2016
32 - Class 2 - Class 7 (Diesel)			**AVE Mileage/Year: 5,900**		
21005	FDTK	D	HME	PUMPER	2017
21011	FDTK	D	INTERNATIONAL	7400 FIRETRUCK	2004
21006	FDTK	D	INTERNATIONAL	PUMPER	2020
21015	FDTK	D	PIERCE	FD RESCUE TRK	2017
21031	FDTK	D	PIERCE	FIRE TRUCK	2011
21028	FDTK	D	PIERCE	HAZMAT	2005
21026	FDTK	D	QUANTUM	WATER TENDER	2003
21073	FDTK	D	PIERCE	VELOCITY	2021
21074	FDTK	D	PIERCE	VELOCITY	2021
21075	FDTK	D	PIERCE	VELOCITY	2021
21076	FDTK	D	PIERCE	VELOCITY	2022
21072	FDTK	D	PIERCE	VELOCITY AERIAL	2020
21027	FDTK	D	PIERCE	QUANTUM	2003
21029	FDTK	D	PIERCE	QUANTUM	2006
21070	FDTK	D	PIERCE	QUANTUM	2014
21071	FDTK	D	PIERCE	QUANTUM	2018
21030	FDTK	D	PIERCE	QUINT AERIAL	2008
17 - Fire Dept. Class 7 & 8 Trucks (Diesel)			**AVE Mileage/Year: 2,640**		
40033	PUCM	D	FRTLNR/CONDOR	ROLLOFF	2003
42094	SWTP	D	PETERBLT	ROLLOFF	2020
2 - Rolloff Class 8 Trucks (Diesel)			**AVE Mileage/Year: 1,357**		
41006	PUWR	D	INTERNATIONAL	SEWER TRUCK	2009
41015	PUSS	D	INTERNATIONAL	SEWER TRUCK	2013
41020	PUSS	D	KENWORTH	SEWER TRUCK	2019
41021	PUSS	D	KENWORTH	SEWER TRUCK	2020
4 - Sewer Class 8 Trucks (Diesel)			**AVE Mileage/Year: 5,928**		
20085	PDMI	D	FREIGHTLINER	TAC/OPS VEH	2007
19384	PDMI	D	LENCO	ARMORED MILTARY	2022
20384	PDMI	D	INTERNATIONAL	ARMORED MILTARY	2014
20099	PDMI	D	VOLVO	GM BOMB TRK	1992
20200	PDMI	D	FORD	BEARCAT	2005
5 - Police Dept. Class 6 Trucks (Diesel)			**AVE Mileage/Year: 882**		
33032	PUST	D	INTERNATIONAL	DUMP TRUCK	2012
40085	PULF	D	INTERNATIONAL	DUMP TRUCK	2022
33034	PUST	D	INTERNATIONAL	DUMP TRUCK	2000
42086	PUWR	D	INTERNATIONAL	DUMP TRUCK	2014
33048	PUST	D	FREIGHTLINER	DUMP TRUCK	2021
40093	PULF	D	INTERNATIONAL	DUMP TRUCK	2016
42049	PUWR	D	FORD	DUMP TRUCK	2009
7 - Dump Class 7 & 8 Trucks (Diesel)			**AVE Mileage/Year: 2,580**		
42096	SWTP	U	CHEVROLET	1500 4x4 PU	2017
19066	PDPR	U	DODGE	1500 CREW CAB	2017
19079	PDMI	U	DODGE	1500 CREW CAB	2014
19080	PDMI	U	DODGE	1500 CREW CAB	2014
20037	PDMI	U	CHEVROLET	1500 CREW CAB	2023
20038	PDMI	U	CHEVROLET	1500 CREW CAB	2023
20039	PDMI	U	CHEVROLET	1500 CREW CAB	2023

20058	PDIN	U	CHEVROLET	1500 CREW CAB	2023
20063	PDIN	U	CHEVROLET	1500 CREW CAB	2008
20165	PDMI	U	DODGE	1500 CREW CAB	2014
31017	PUSW	U	CHEVROLET	1500 CREW CAB	2018
41018	PUSS	U	DODGE	1500 CREW CAB	2016
42016	PUWR	U	DODGE	1500 CREW CAB	2019
42088	SWTP	U	DODGE	1500 CREW CAB	2016
42090	PUWR	U	DODGE	1500 CREW CAB	2017
42091	SWTP	U	DODGE	1500 CREW CAB	2019
42095	SWTP	U	CHEVROLET	1500 CREW CAB	2023
42111	PUWR	U	CHEVROLET	1500 CREW CAB	2020
51100	PUPR	U	DODGE	1500 CREW CAB	2017
21043	FDAD	U	CHEVROLET	1500 PICKUP	2007
25002	PULF	U	CHEVROLET	1500 PICKUP	2007
25007	PUST	U	CHEVROLET	1500 PICKUP	2007
25008	SWTP	U	CHEVROLET	1500 PICKUP	2007
30011	PDMI	U	CHEVROLET	1500 PICKUP	2007
30013	PUST	U	CHEVROLET	1500 PICKUP	2007
30020	PUST	U	DODGE	1500 PICKUP	2016
30021	PUFM	U	DODGE	1500 PICKUP	2016
31016	PUST	U	CHEVROLET	1500 PICKUP	2008
32000	PUST	U	DODGE	1500 PICKUP	2016
40004	PDSS	U	CHEVROLET	1500 PICKUP	2008
42000	FDTK	U	CHEVROLET	1500 PICKUP	2007
20014	PUSS	U	FORD	F150	2020
21062	PUSS	U	FORD	F150	2017
82011	PDMI	U	FORD	F150	2020
20019	PDIN	U	FORD	F150 CREWCAB	2004
20122	FDTK	U	FORD	F150 CREWCAB	2018
20168	FDTK	U	FORD	F150 CREWCAB	2014
20177	FDTK	U	FORD	F150 CREWCAB	2018
21042	FDTK	U	FORD	F150 CREWCAB	2004
21063	FDTK	U	FORD	F150 CREWCAB	2017
20013	FDTK	U	FORD	F150 EXT CAB	2020
20173	SWTP	U	FORD	F150 EXT CAB	2013
25017	PULF	U	FORD	F150 EXT CAB	2014
25018	PUST	U	FORD	F150 EXT CAB	2014
25019	SWTP	U	FORD	F150 EXT CAB	2014
25020	PDMI	U	FORD	F150 EXT CAB	2014
30000	PUST	U	FORD	F150 EXT CAB	2023
30001	PUST	U	FORD	F150 EXT CAB	2023
30002	PUFM	U	FORD	F150 EXT CAB	2023
30003	PUST	U	FORD	F150 EXT CAB	2023
30012	PUST	U	FORD	F150 EXT CAB	2014
30015	PDSS	U	FORD	F150 EXT CAB	2012
30016	FDTK	U	FORD	F150 EXT CAB	2012
30017	PUWR	U	FORD	F150 EXT CAB	2012
30018	PULF	U	FORD	F150 EXT CAB	2012
30019	PULF	U	FORD	F150 EXT CAB	2012
33040	PUPR	U	FORD	F150 EXT CAB	2011
40001	PDMI	U	FORD	F150 EXT CAB	2012
42077	PDMI	U	FORD	F150 EXT CAB	2011
42083	PDMI	U	FORD	F150 EXT CAB	2013
51004	PUWR	U	FORD	F150 EXT CAB	2023
51082	PUST	U	FORD	F150 EXT CAB	2021
51086	PUST	U	FORD	F150 EXT CAB	2021
51092	PUST	U	FORD	F150 EXT CAB	2011
20002	PULF	U	FORD	F150 SPR/CREW	2019
25001	PUWR	U	FORD	F150 SPR/CREW	2022
33047	FDAD	U	FORD	F150 SPR/CREW	2020
42008	FDAD	U	FORD	F150 SPR/CREW	2022
42072	FDAD	U	FORD	F150 SPR/CREW	2010
42073	FDAD	U	FORD	F150 SPR/CREW	2010
42074	FDAD	U	FORD	F150 SPR/CREW	2010
42110	FDAD	U	FORD	F150 SPR/CREW	2020
21007	PUFM	U	FORD	FIRE TRUCK	1936
20005	PUSS	U	DODGE	RAM 1500	2016

20081	PULF	U	DODGE	RAM 1500	2016
20082	PUWR	U	DODGE	RAM 1500	2016
20084	PUWR	U	DODGE	RAM 1500	2016
20094	PUWR	U	DODGE	RAM 1500	2016
20095	FDTK	U	DODGE	RAM 1500	2016
20152	FDTK	U	DODGE	RAM 1500	2018
20153	PDMI	U	DODGE	RAM 1500	2018
20154	FDTK	U	DODGE	RAM 1500	2018
20155	PULF	U	DODGE	RAM 1500	2018
42104	PUST	U	DODGE	RAM 1500	2019
42105	SWTP	U	DODGE	RAM 1500	2019
40006	PDMI	U	DODGE	RAM 1500 PICKUP	2016
25004	PUST	U	CHEVROLET	SILVERADO 1500	2017
25021	PUST	U	CHEVROLET	SILVERADO 1500	2017
25022	PUFM	U	CHEVROLET	SILVERADO 1500	2017
30022	PUST	U	CHEVROLET	SILVERADO 1500	2017
32013	PUST	U	CHEVROLET	SILVERADO 1500	2016
40016	PDSS	U	CHEVROLET	SILVERADO 1500	2018
40017	FDTK	U	CHEVROLET	SILVERADO 1500	2018
42100	PUWR	U	CHEVROLET	SILVERADO 1500	2018
42101	PULF	U	CHEVROLET	SILVERADO 1500	2018
42007	PUWR	U	CHEVROLET	1500 PICKUP	2023
42043	PULF	U	CHEVROLET	1500 PICKUP	2005
45046	PULF	U	DODGE	1500 PICKUP	2016
51090	PUPR	U	CHEVROLET	1500 PICKUP	2011
35 - Class 1 Pickups (Unleaded			**AVE Mileage/Year: 6,255**		
40048	PDMI	U	CHEVROLET	2500 CREWCAB	2008
20004	PULF	U	DODGE	2500 PICKUP	2005
42026	PUST	U	CHEVROLET	3500 FLATBED	2007
51030	SWTP	U	CHEVROLET	3500 HD-DUMP	2002
21021	PDMI	U	CHEVROLET	3500 SRVC TRK	2007
42097	PUST	U	CHEVROLET	3500 SRVC TRK	2017
42098	PUST	U	CHEVROLET	3500 SRVC TRK	2017
41019	FDAD	U	FORD	E450 VIDEO VAN	2016
20028	FDAD	U	FORD	F250	2004
20136	PULF	U	FORD	F250	2018
41017	PUWR	U	FORD	F250	2016
42075	PUSS	U	FORD	F250	2011
42082	PULF	U	FORD	F250	2012
42084	PUWR	U	FORD	F250	2014
42102	PUWR	U	FORD	F250	2018
42103	PUWR	U	FORD	F250	2018
51025	FDTK	U	FORD	F250	2014
51097	FDTK	U	FORD	F250	2016
21046	PDMI	U	FORD	F250 4X4	2016
21047	FDTK	U	FORD	F250 4X4	2016
41002	PUCM	U	FORD	F250 4X4	2006
20180	PUCU	U	FORD	F250 CREW	2016
42067	PUST	U	FORD	F250 CREW	2009
42109	PUST	U	FORD	F250 CREW	2020
51002	FDTK	U	FORD	F250 CREW	2020
51003	FDTK	U	FORD	F250 CREW	2020
51087	FDTK	U	FORD	F250 CREW	2011
51088	FDTK	U	FORD	F250 CREW	2011
51108	FDTK	U	FORD	F250 CREW	2017
51112	FDTK	U	FORD	F250 CREW	2020
51113	FDTK	U	FORD	F250 CREW	2020
42060	PULF	U	FORD	F350	2023
51077	PUST	U	FORD	F350	2008
40008	SWTP	U	FORD	F350 BOX VAN	2014
20045	PDMI	U	FORD	F350 CREW	2023
33050	PUST	U	FORD	F350 CREW	2020
40095	PUST	U	FORD	F350 CREW	2012
40099	PUFM	U	FORD	F350 CREW	2021
40069	PUST	U	FORD	F350 CREW 4X4	2023
33043	PUST	U	FORD	F350 FLATBED	2016
40087	PDSS	U	FORD	F350 FLATBED	2001

42078	FDTK	U	FORD	F350 PICKUP	2012
20176	PUWR	U	FORD	F350 SERVICE TR	2017
33044	PULF	U	FORD	F350 SERVICE TR	2016
40046	PULF	U	FORD	F350 SERVICE TR	2019
42063	PUPR	U	FORD	F350 SERVICE TR	2008
42107	PDMI	U	FORD	F350 SERVICE TR	2019
45027	PDMI	U	FORD	F350 SERVICE TR	2016
51093	PDMI	U	FORD	F350 SERVICE TR	2018
51106	PUWR	U	FORD	F350 SERVICE TR	2017
51109	PUST	U	FORD	F350 SERVICE TR	2017
51110	PUST	U	FORD	F350 SERVICE TR	2018
51111	PUST	U	FORD	F350 SERVICE TR	2018
89001	PULF	U	FORD	F350 SERVICE TR	2021
89003	PUWR	U	FORD	F350 SERVICE TR	2020
89004	FDAD	U	FORD	F350 SERVICE TR	2019
89008	FDAD	U	FORD	F350 SERVICE TR	2008
89009	PULF	U	FORD	F350 SERVICE TR	2008
89010	PUST	U	FORD	F350 SERVICE TR	2008
89013	SWTP	U	FORD	F350 SERVICE TR	2019
89014	PDMI	U	FORD	F350 SERVICE TR	2019
41016	PUST	U	FORD	F450 SERVICE TR	2012
34002	PUST	U	FORD	F550	2015
20080	PUWR	U	CHEVROLET	C2500	2007
42099	PUFM	U	CHEVROLET	3500 SRVC TRK	2017
42003	PUST	U	CHEVROLET	3500HD	2022
66 - Class 2 Trucks (Unleaded)			**AVE Mileage/Year: 7,326**		
20171	PUST	U	MAZDA	6 / SEDAN	2014
20151	PDSS	U	HONDA	ACCORD	2014
89011	FDTK	U	FORD	ALTEC AERIAL	2014
18020	PULF	U	TOYOTA	CAMRY	2005
20010	PULF	U	TOYOTA	CAMRY	2020
20169	PUST	U	FORD	FUSION	2014
42108	PUST	U	FORD	FUSION	2019
42058	PDSS	U	PONTIAC	GRAN PRIX	2007
20007	FDTK	U	TOYOTA	HIGHLANDER	2016
20166	PUWR	U	CHEVROLET	IMPALA	2013
20015	PULF	U	KIA	K-5	2021
20051	PULF	U	JEEP	LAREDO	2023
20052	PUPR	U	JEEP	LAREDO	2023
20053	PDMI	U	JEEP	LAREDO	2023
20009	PDMI	U	NISSAN	MAXIMA GXE	2019
18001	PDMI	U	BMW	MOTORCYCLE	2012
18002	PUWR	U	BMW	MOTORCYCLE	2013
18003	PUST	U	BMW	MOTORCYCLE	2015
18004	PUST	U	BMW	MOTORCYCLE	2021
18007	PUST	U	BMW	MOTORCYCLE	2023
18018	PULF	U	BMW	MOTORCYCLE	2014
18019	PUWR	U	BMW	MOTORCYCLE	2019
18024	FDAD	U	BMW	MOTORCYCLE	2007
18025	FDAD	U	BMW	MOTORCYCLE	2018
20008	FDAD	U	KIA	OPTIMA	2019
42089	FDAD	U	NISSAN	PICKUP	2016
21045	FDAD	U	TOYOTA	PRIUS	2013
30014	FDAD	U	TOYOTA	PRIUS	2011
45060	FDAD	U	TOYOTA	PRIUS	2012
50090	PULF	U	RAM	PROMASTER 159	2021
50091	PUWR	U	RAM	PROMASTER 159	2021
20012	PUPR	U	TOYOTA	CAMRY	2020
20059	PDMI	U	TOYOTA	CAMRY	2005
20170	PDMI	U	CHEVROLET	CAPTIVA SUV	2015
19007	PDMI	U	DODGE	CHARGER	2013
19010	PUWR	U	DODGE	CHARGER	2021
19011	PUST	U	DODGE	CHARGER	2021
19012	PUST	U	DODGE	CHARGER	2013
19014	PUST	U	DODGE	CHARGER	2013
19017	PULF	U	DODGE	CHARGER	2013
19021	PUWR	U	DODGE	CHARGER	2018

19025	FDAD	U	DODGE	CHARGER	2021
19026	FDAD	U	DODGE	CHARGER	2021
19029	FDAD	U	DODGE	CHARGER	2013
19030	FDAD	U	DODGE	CHARGER	2013
19031	FDAD	U	DODGE	CHARGER	2019
19032	FDAD	U	DODGE	CHARGER	2019
19033	FDAD	U	DODGE	CHARGER	2013
19034	PULF	U	DODGE	CHARGER	2013
19035	PUWR	U	DODGE	CHARGER	2018
19036	PUSS	U	DODGE	CHARGER	2019
19038	PULF	U	DODGE	CHARGER	2019
19039	PUWR	U	DODGE	CHARGER	2018
19040	PUWR	U	DODGE	CHARGER	2013
19043	PUWR	U	DODGE	CHARGER	2013
19044	FDTK	U	DODGE	CHARGER	2013
19045	FDTK	U	DODGE	CHARGER	2013
19051	PDMI	U	DODGE	CHARGER	2021
19052	FDTK	U	DODGE	CHARGER	2019
19053	PUCM	U	DODGE	CHARGER	2019
19055	PUCU	U	DODGE	CHARGER	2021
19056	PUST	U	DODGE	CHARGER	2019
19057	PUST	U	DODGE	CHARGER	2019
19058	FDTK	U	DODGE	CHARGER	2019
19059	FDTK	U	DODGE	CHARGER	2017
19060	FDTK	U	DODGE	CHARGER	2019
19061	FDTK	U	DODGE	CHARGER	2019
19062	FDTK	U	DODGE	CHARGER	2019
19065	FDTK	U	DODGE	CHARGER	2019
19070	FDTK	U	DODGE	CHARGER	2019
19071	FDTK	U	DODGE	CHARGER	2019
19072	PUCM	U	DODGE	CHARGER	2019
20062	SWTP	U	DODGE	CHARGER	2006
20112	PUWR	U	DODGE	CHARGER	2008
20130	PUSS	U	DODGE	CHARGER	2008
20088	PUSS	U	CHEVROLET	COLORADO	2011
20031	PUSS	U	FORD	CROWN VIC	2004
20032	PDMI	U	FORD	CROWN VIC	2005
19002	PDIN	U	DODGE	DURANGO	2022
19003	FDTK	U	DODGE	DURANGO	2022
19004	FDTK	U	DODGE	DURANGO	2022
19005	FDTK	U	DODGE	DURANGO	2022
19008	FDTK	U	DODGE	DURANGO	2022
19013	PULF	U	DODGE	DURANGO	2021
19020	PUST	U	DODGE	DURANGO	2022
19042	SWTP	U	DODGE	DURANGO	2022
19046	PDMI	U	DODGE	DURANGO	2022
19054	PUST	U	DODGE	DURANGO	2022
19073	PUST	U	DODGE	DURANGO	2020
19074	PUFM	U	DODGE	DURANGO	2020
19075	PUST	U	DODGE	DURANGO	2020
19076	PUST	U	DODGE	DURANGO	2022
19077	PDSS	U	DODGE	DURANGO	2020
19078	FDTK	U	DODGE	DURANGO	2020
19086	PUWR	U	DODGE	DURANGO	2022
19087	PULF	U	DODGE	DURANGO	2022
19088	PULF	U	DODGE	DURANGO	2022
19089	PUPR	U	DODGE	DURANGO	2022
19090	PDMI	U	DODGE	DURANGO	2022
19091	PDMI	U	DODGE	DURANGO	2022
19092	PDMI	U	DODGE	DURANGO	2023
19093	PUWR	U	DODGE	DURANGO	2023
19094	PUST	U	DODGE	DURANGO	2023
19095	PUST	U	DODGE	DURANGO	2023
19096	PUST	U	DODGE	DURANGO	2023
19097	PULF	U	DODGE	DURANGO	2023
19098	PUWR	U	DODGE	DURANGO	2023
19099	FDAD	U	DODGE	DURANGO	2023

20167	FDAD	U	FORD	EDGE	2013
25006	FDAD	U	CHEVROLET	EQUINOX	2022
20043	FDAD	U	FORD	EXPEDITION	2022
20065	FDAD	U	FORD	EXPEDITION	2006
20101	FDAD	U	FORD	EXPEDITION	2008
21056	PULF	U	FORD	EXPEDITION	2014
19006	PUWR	U	FORD	EXPLORER	2016
19015	PUSS	U	FORD	EXPLORER	2016
19041	PULF	U	FORD	EXPLORER	2016
19047	PUWR	U	FORD	EXPLORER	2016
19048	PUWR	U	FORD	EXPLORER	2016
19050	PUWR	U	FORD	EXPLORER	2016
19063	FDTK	U	FORD	EXPLORER	2016
19081	FDTK	U	FORD	EXPLORER	2016
19082	PDMI	U	FORD	EXPLORER	2016
19083	FDTK	U	FORD	EXPLORER	2016
20087	PUCM	U	FORD	EXPLORER	2016
20115	PUCU	U	FORD	EXPLORER	2016
20150	PUST	U	FORD	EXPLORER	2016
25000	PUST	U	FORD	EXPLORER	2022
21060	FDTK	U	FORD	EXPLORER 4WD	2017
21061	FDTK	U	FORD	EXPLORER 4WD	2017
19001	FDTK	U	FORD	EXPLORER AWD	2018
19037	FDTK	U	FORD	EXPLORER AWD	2018
19064	FDTK	U	FORD	EXPLORER AWD	2017
19067	FDTK	U	FORD	EXPLORER AWD	2017
19068	FDTK	U	FORD	EXPLORER AWD	2017
19069	FDTK	U	FORD	EXPLORER AWD	2018
19084	PUCM	U	FORD	EXPLORER AWD	2017
19085	SWTP	U	FORD	EXPLORER AWD	2017
20029	PUWR	U	FORD	EXPLORER AWD	2017
20034	PUSS	U	FORD	EXPLORER AWD	2017
51105	PULF	U	TOYOTA	TACOMA	2018
19027	PUPR	U	CHEVROLET	TAHOE	2022
19028	PDMI	U	CHEVROLET	TAHOE	2022
20000	PDMI	U	CHEVROLET	TAHOE	2023
20003R	PDMI	U	CHEVROLET	TAHOE	2006
20056	PUWR	U	CHEVROLET	TAHOE	2023
20057	PUST	U	CHEVROLET	TAHOE	2023
21052	PUST	U	CHEVROLET	TAHOE 4X4	2005
20074	PUST	U	FORD	TAURUS	2001
20016	PULF	U	KIA	TELLURIDE	2021
20044	PUWR	U	KIA	TELLURIDE	2023
20055	FDAD	U	KIA	TELLURIDE	2024
20172	FDAD	U	NISSAN	TITAN	2014
20017	FDAD	U	CHEVROLET	TRAILBLAZER	2021
51107	FDAD	U	FORD	TRANSIT	2016
82009	FDAD	U	FORD	TRANSIT	2016
20036	FDAD	U	FORD	TRANSIT VAN	2016
20049	PULF	U	FORD	TRANSIT VAN	2018
20135	PUWR	U	FORD	TRANSIT VAN	2018
42059	PUSS	U	FORD	TRANSIT VAN	2016
89012	PULF	U	FORD	TRANSIT VAN	2016
20018	PUWR	U	CHEVROLET	TRAVERSE	2020
20020	PUWR	U	CHEVROLET	TRAVERSE	2020
20022	PUWR	U	CHEVROLET	TRAVERSE	2021
20054	FDTK	U	CHEVROLET	TRAVERSE	2023
20103	FDTK	U	ISUZU	TRK	2004
20067	PDMI	U	CHEVROLET	VAN 12 PASS	2022
82001	FDTK	U	FORD	VAN 12 PASS	2006
20003	PUCM	U	CHRYSLER	VAN 6 PASSENGER	2021
20006	PUCU	U	CHRYSLER	VAN 6 PASSENGER	2020
20024	PUST	U	CHRYSLER	VAN 6 PASSENGER	2021
20163	PUST	U	DODGE	VAN 7 PASSENGER	2014
20164	FDTK	U	CHRYSLER	VAN 7 PASSENGER	2013
20109	FDTK	U	FORD	VAN-12 PASS	2011
45054	FDTK	U	CHEVROLET	VAN-12 PASS	2008

20001	FDTK	U	CHEVROLET	VAN-15 PASS	2001
20050	FDTK	U	CHEVROLET	VAN-15 PASS	2002
20098	PULF	U	CHEVROLET	VAN-15 PASS	2001
25003	PUST	U	CHEVROLET	VOLT	2017
45026	SWTP	U	CHEVROLET	VOLT	2017
180 - Class 1 Light Equipment (Unleaded)			**AVE Mileage/Year: 8,425**		

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

City of Huron

City of Huron

Public Works Vehicle List 11/20/2023

Table 1: Fleet Information

TYPE	YEAR	DESCRIPTION	IDENTIFICATION			
GAS	2009	FORD PICKUP F-350 SUPER DUTY	VIN:	1FDSF30549EA94058	LHDT1	Gas
		5.4L V8	LICENSE:	7340002		
			MILEAGE:	80190		
			Annual	350		
GAS	2004	FORD WAGON ECONOLINE E-350 SUPER DUTY	VIN:		LHDT1	Gas
			LICENSE:	1168158		
			MILEAGE:	199346.7		
				490		
DIESEL	2012	FORD PICKUP F-350 SUPER DUTY	VIN:		LHDT1	Gas
		6.7L V8	LICENSE:	1320544		
			MILEAGE:	87247		
			Annual	375		
GAS	2000	CHEVROLET SILVERADO C1500	VIN:		LDT2	Gas
			LICENSE:			
			MILEAGE:	9935.3		
				200		
GAS	2021	CHEVROLET SILVERADO	VIN:	36CNWAEF3M625611	LDT2	Gas
			LICENSE:	1641844		
			MILEAGE:	2519.2		
			Annual	500		
GAS	2019	FORD XLT 156 TRUCK	VIN:		LHDT1	Gas
			LICENSE:			
			MILEAGE:			
			Annual	450		
GAS	2005	CHEVROLET	VIN:	16CEC14X852225375	LDT2	Gas
		4.3 L	LICENSE:	1210351		
			MILEAGE:	176525		
			Annual	300		
DIESEL	2017	INTERNATIONAL DUMP TRUCK	VIN:		MHDT	Diesel
		DIESEL	LICENSE:			
			MILEAGE:	23387		
			Annual	150		
DIESEL	1994	FORD F800 DUMP TRUCK	VIN:		MHDT	Diesel
		DIESEL	LICENSE:			
			MILEAGE:	48918.9		
			Annual	150		

Table 2: Fleet Emissions Summary

Vehicle Class	CO2 (g)	CH4 (g)	N2O (g)
Gasoline			
LDT2	0.14	0.00	0.00
LHDT1	0.45	0.00	0.00
Total Gasoline	**0.59**	**0.00**	**0.00**
Diesel			
MHDT	0.19	0.00	0.00
Combined Total	**0.78**	**0.00**	**0.00**

Table 3: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	0.78	1.00	0.78
CH4 Total	0.00	25.00	0.00
N20 Total	0.00	310.00	0.01
		Total	**0.80**

Table 4: Summary of Annual Milage by Vehicle Class

Averages	
LHDT1	**LDT2**
350	200
490	500
375	300
450	-
416	333

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

City of Selma

Type of Vehicle	Total Number
AMBULANCES	3
AMBULANCES	1
FIRE ENGINES	4
FIRE TRUCK/SQUAD	1
POLICE INTERCEPTORS	27
CARS	14
HYBRID	5
ELECTRIC CARS/MOTORCYCLES	3
GOLF CARTS	4
PICK UP TRUCKS	20
PICK UP TRUCKS	2
SUVS	3
MOTORCYCLES	2
VANS	2
STREET SWEEPERS	2
DUMP TRUCKS	2

Table 1: Fleet Information

Fuel Type	Annual Mileage for Each Vehicle		
DIESEL	40,000 Miles	120,000	LHDT1
GAS	20,000 Miles	20,000	LHDT1
DIESEL	< 10,000 Miles	40,000	MHDT
GAS	15,000 Miles	15,000	MHDT
GAS	40,000 Miles	1,080,000	LDA
GAS	30,000 Miles	420,000	LDA
HYBRID	20,000 Miles	100,000	LDA
ELECTRIC	<10,000 Miles	-	LDA
ELECTRIC	N/A	-	N/A
GAS	30,000 Miles	600,000	LDT1
DIESEL	25,000 Miles	50,000	LDT1
GAS	15,000 Miles	45,000	LDT1
GAS	<8,000 Miles	16,000	LDA
GAS	25,000 Miles	50,000	LDT2
DIESEL	35,000 Miles	70,000	MHDT
DIESEL	<1,000 Miles	2,000	MHDT

Table 2: Fleet Emissions Summary

Vehicle Class	CO2 (g)	CH4 (g)	N2O (g)
Gasoline			
LDA	170.08	0.00	0.00
LDT1	129.33	0.00	0.01
LDT2	21.55	0.00	0.00
LHDT1	21.38	0.00	0.00
MHDT	31.42	0.00	0.00
Total Gasoline	**373.77**	**0.01**	**0.01**
Diesel			
LDA	26.26	0.00	0.00
LDT1	22.10	0.00	0.00
LHDT1	85.34	0.00	0.01
MHDT	48.13	0.00	0.01
Total Diesel	**181.82**	**0.00**	**0.03**
Total Combined	**555.59**	**0.01**	**0.04**

Table 3: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	555.59	1	555.59
CH4 Total	0.01	25	0.28
N20 Total	0.04	310	12.52
Total			**568.40**

Table 4: Summary of Annual Milage by Vehicle Class

Vehicle class	Annual Mileage
LDA	505,333
LDT1	322,500
MHDT	37,333

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

City of Sanger

Table 1: Fleet Information

Year	Make/Description	Department	Division	On/Off Road	Fuel Type	Date issued	Date Cancelled
1976	Ford F-7000	Public Work	Sewer	On	Diesel	10/3/2022	
1981	International Dump	Public Work	Parks	On	Diesel	10/3/2022	
1981	International Dump	Public Work	Disposal	On	Diesel	10/3/2022	
1987	Flusher	Public Work	Sewer	On	Diesel	10/5/2022	
1991	Ford F150 Reg Cab	Public Work	Parks	On	Unleaded	10/5/2022	
1995	Ford F350 Pickup	Public Work	Streets	On	Unleaded	10/5/2022	
1997	GMC C2500 Pickup	Public Work	Parks	On	Unleaded	10/5/2022	
1998	Ford F150 Reg Cab	Public Work	Parks	On	Unleaded	10/5/2022	
1998	Ford F150 Super Cab	Public Work	Sewer	On	Unleaded	10/5/2022	
1998	Ford F150 Reg Cab	Public Work	Disposal	On	Unleaded	10/5/2022	
1999	Chevy C1500 Pickup	Recreation	Recreation	On	Unleaded	10/5/2022	
2001	Chevy Express 3500	Public Work	Parks	On	Unleaded	10/5/2022	
2001	Chevy Express 3500	Public Work	Parks	On	Unleaded	10/5/2022	
2004	GMC Sierra 1500	Public Work	Sewer	On	Unleaded	10/5/2022	
2005	Buick Terraza	Recreation	Recreation	On	Unleaded	10/5/2022	
2005	GMC Sierra 1500	Public Work	Streets	On	Unleaded	10/5/2022	
2005	GMC Sierra 1500	Public Work	Sewer	On	Unleaded	10/5/2022	
2006	GMC Sierra C2500 HD	Public Work	Streets	On	Unleaded	10/5/2022	
2006	GMC Sierra 1500	Public Work	Parks	On	Unleaded	2/7/2023	
2006	GMC Sierra 1500	Public Work	Streets	On	Unleaded	10/5/2022	
2006	GMC Sierra C2500 HD	Public Work	Streets	On	Unleaded	10/5/2022	
2006	GMC Sierra 1500	Public Work	Water	On	Unleaded	10/5/2022	
2006	GMC Sierra 1500	Public Work	Water	On	Unleaded	10/5/2022	
2006	International Dump	Public Work	Streets	On	Diesel	10/5/2022	
2010	Graffiti Truck	Public Work	Streets	On	Unleaded &	10/5/2022	
2019	Chevy Silverado	Public Work	Streets	On	Unleaded	10/5/2022	
2019	Vactor Truck	Public Work	Sewer	On	Diesel	10/5/2022	
2019	Chevy Silverado	Public Work	Sewer	On	Unleaded	10/5/2022	11/8/2023
2018	ACO TRUCK	Police	NA	On	UNLEADED	10/5/2022	
2014	Chevy Impala	Police	NA	On	UNLEADED	10/5/2022	
2014	Chevy Impala	Police	NA	On	UNLEADED	10/5/2022	
2014	Chevy Captiva	Police	NA	On	UNLEADED	10/5/2022	
2015	Ford Explorer	Police	NA	On	UNLEADED	10/5/2022	
2019	Chevy Silverado	Police	NA	On	UNLEADED	10/5/2022	
2021	Ford Van	Police	NA	On	UNLEADED	10/5/2022	
2022	Chevy Malibu	Police	NA	On	UNLEADED	10/5/2022	
2014	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2014	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2014	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2016	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2016	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2016	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2017	Chevy Caprice	Police	NA	On	UNLEADED	10/5/2022	
2016	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/5/2022	
2016	Ford Explorer	Police	NA	On	UNLEADED	10/5/2022	
2017	Chevy Tahoe	Police	NA	On	UNLEADED	10/5/2022	
2017	Chevy Tahoe	Police	NA	On	UNLEADED	10/7/2022	
2017	Chevy Tahoe	Police	NA	On	UNLEADED	10/7/2022	
2017	Chevy Tahoe	Police	NA	On	UNLEADED	10/7/2022	
2017	Chevy Tahoe	Police	NA	On	UNLEADED	10/7/2022	
2017	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2017	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2017	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2017	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2017	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2017	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2019	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2019	Ford Explorer	Police	NA	On	UNLEADED	10/7/2022	
2019	Chevy Traverse	Police	NA	On	UNLEADED	10/7/2022	
2020	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2021	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2021	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2021	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2021	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2021	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2022	Ford Interceptor (Explorer)	Police	NA	On	UNLEADED	10/7/2022	
2009	FORD EXPEDITION	Police	NA	On	UNLEADED	10/7/2022	
2012	2012 Chevy Tahoe	Police	NA	On	UNLEADED	10/7/2022	
2012	2012 Chevy Tahoe	Police	NA	On	UNLEADED	10/7/2022	
2001	E-One Fire Engine	Fire	Fire	On	DIESEL	10/7/2022	
2002	Chevrolet Pick-up Truck	Fire	Fire	On	UNLEADED	10/7/2022	
2007	Ford 450 Ambulance	Fire	Ambulance	On	DIESEL	10/7/2022	
2010	Chevrolet Tahoe	Fire	Fire	On	UNLEADED	10/7/2022	
2010	Smeal Fire Engine	Fire	Fire	On	DIESEL	10/7/2022	
2014	Freightliner Ambulance	Fire	Ambulance	On	DIESEL	10/7/2022	
2014	Freightliner Ambulance	Fire	Ambulance	On	DIESEL	10/7/2022	
2017	Smeal Fire Engine	Fire	Fire	On	DIESEL	10/7/2022	
2017	Freightliner Ambulance	Fire	Ambulance	On	DIESEL	10/7/2022	
2019	Freightliner Ambulance	Fire	Ambulance	On	DIESEL	10/7/2022	
2019	Chevrolet Pick-Up Truck	Fire	Fire	On	UNLEADED	10/7/2022	
2019	Chevrolet Tahoe	Fire	Fire	On	UNLEADED	10/7/2022	
2019	Seagrave Ladder Truck	Fire	Fire	On	DIESEL	10/7/2022	
2022	UNLEADED SHOP CAN	Fire	Fire	OFF	UNLEADED	10/7/2022	
2022	DIESEL SHOP CAN	Fire	Fire	OFF	DIESEL	10/7/2022	
2002	GMC Envoy	Comm Dev	Code Enfor	ON	UNLEADED	11/23/2022	
2005	GMC TRUCK	Comm Dev	Code Enfor	ON	UNLEADED	11/23/2022	

HHDT
MHDT
LHDT2
LHDT1
LDT2
LDT1
LDA

Table 2: Summary of Annual Milage by Vehicle Class

Vehicle Class	# Cars	Fuel Type	Mileage per ve	Total average Mileage
HHDT	5	Diesel	4,000	20,000
MHDT	8	Diesel	4,000	32,000
MHDT	1	Gasoline	5,000	5,000
LHDT2	3	Diesel	4,000	12,000
LHDT2	1	Gasoline	5,000	5,000
LHDT1	14	Gasoline	5,000	70,000
LDT2	35	Gasoline	8,000	280,000
LDT1	2	Gasoline	8,000	16,000
LDA	5	Gasoline	8,000	40,000

Table 3: Fleet Emissions Summary

Vehicle Class	CO2 (g)	CH4 (g)	N2O (g)
Gasoline			
LDA	13.46	0.00	0.00
LDT1	6.42	0.00	0.00
LDT2	120.71	0.00	0.00
LHDT1	74.84	0.00	0.00
LHDT2	5.92	0.00	0.00
MHDT	10.47	0.00	0.00
Total Gasoline	**231.81**	**0.00**	**0.01**
Diesel			
LHDT2	10.40	0.00	0.00
MHDT	41.25	0.00	0.01
HHDT	36.50	0.00	0.01
Total Diesel	**88.16**	**0.00**	**0.01**
Total Combined	**319.97**	**0.00**	**0.02**

Table 4: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	319.97	1	319.97
CH4 Total	0.00	25	0.11
N20 Total	0.02	310	6.04
Total			**326.12**

2022	Ford Interceptor (Explorer)	Police	NA	ON	UNLEADED	5/5/2023	
2022	Ford Interceptor (Explorer)	Police	NA	ON	UNLEADED	5/25/2023	
2023	Nissan pathfinder	police	pd	ON	Unleaded	8/25/2023	
2023	Nissan Altima	police	pd	ON	unleaded	8/25/2023	
2021	Chevrolet Silverado RST	Police	pd	ON	UNLEADED	8/25/2023	
2020	Ram 1500 Black	Police	pd	ON	UNLEADED	8/25/2023	
2023	Ford Interceptor	Police	pd	ON	UNLEADED	9/6/2023	
2022	Chevrolet Silverado crw cab	Public Work	pw	ON	UNLEADED	9/6/2023	
2023	Chevrolet Silverado Dbl 150	Public Work	pw	ON	UNLEADED	9/6/2023	
2023	Chevrolet Silverado Dbl 150	Public Work	pw	ON	UNLEADED	9/6/2023	
2023	Ford F 150 Pr Regular Cab	Public Work	pw	ON	UNLEADED	9/28/2023	
2023	Ford F 150 Pr Regular Cab	Public Work	pw	ON	UNLEADED	9/28/2023	
2023	Ford F 150 Pr Regular Cab	Public Work	pw	ON	UNLEADED	9/29/2023	
2023	Ford F 150 Pr Regular Cab	Public Work	pw	ON	UNLEADED	9/29/2023	
2019	Chevy Silverado	Recreation	Recreation	ON	UNLEADED	11/8/2023	

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

City of Reedley

Table 1: Fleet Information

	Year	VIN Number	Make	Model	Fuel Type	Mileage	Annual Mileage Usage:
	2020	3FA6P0SU5LR114494	Ford	Fusion Energi	HYBRID	10,065	4,844
	2016	3FA6P0PUXGR187679	Ford	Fusion Energi	GAS	31,628	3,500
	2015	1FADP5CU5FL110290	Ford	C-Max Hybrid	HYBRID	26,262	3,191
	2020	1G1FY6S08L4116085	Chevy	Bolt EV	ELECTRIC	4,552	2,835
	2019	1GCPWBEF4KZ182676	Chevy	Silverado	GAS	17,687	1,084
	2018	1G1RC6S56JU131429	Chevy	Volt	HYBRID	18,927	4,533
	2006	1GCEC19V56Z120608	Chevy	K1500	GAS	86,519	5,958
	2022	3GCPAAEK4NG561834	Chevrolet	Silverado 1500	GAS	1,200	1,000
	2006	2GCEC13T861122725	Chevy	LT	GAS	121,315	4,061
	2022	1FMCU9BZ7NUA66560	Ford	Escape	HYBRID	5,973	5,973
	2003	1GCCS19X138246266	Chevy	S10 Pickup	GAS	82,290	3,502
	2011	1G1ZC5E15BF103999	Chevy	Malibu	GAS	67,184	3,183
	2022	1FTFW1E54NKE91610	Ford	F150	GAS	3,335	3,100
	2018	1FTEX1CB2JKF95816	Ford	F150	GAS	35,143	4,510
	2018	1FTEW1PG8JKF95487	Ford	F-150	GAS	31,142	7,083
	2022	54F2FBCP3NWM13307	Rosenbauer	40M6508	DIESEL	4,517	4,500
	2009	3GCEK23389G179754	Chevrolet	Silverado 4X4	GAS	95,635	1,654
	2014	1FTFW1EF9EKD62240	Ford	F150	GAS	45,423	4,165
	2009	1FDAF57R69EB12964	Ford	F550	DIESEL	37,791	2,365
	2017	54F2AB713GWM11631	Rosenbauer	1/8' FX Alum Ladder Trk	DIESEL	9,744	1,701
	2005	4P1CA01HA5A005127	Pierce	Arrow XT	DIESEL	8,755	650
	1985	2FDKF3713FCA83427	Ford	F350	GAS	96,042	6,700
	2005	1HTWCA2N36J174141	Pierce	IHC7400	DIESEL	37,450	4,863
	2014	1GB0CVCG1EF105734	Chevy	C2500	GAS	39,146	626
	2016	1GCRCNEH9GZ311331	Chevy	1500	GAS	34,461	4,642
	2020	1GCRWAEH9LZ130840	Chevy	Silverado	GAS	21,677	6,262
	2020	3GCPWAEH6LG331277	Chevy	Silverado	GAS	7,589	2,409
	2023	1GB0WLE76PF152088	Chevrolet	Silverado 2500 HD	GAS	200	200
	2022	1GCRABEKXNZ612672	Chevrolet	Silverado	GAS	1,700	1,682
	2007	1GBHC24U47E160824	Chevrolet	Silverado 2500 HD	GAS	78,396	111
	2007	1GCCS13E378197522	Chevy	Colorado	GAS	87,054	2,373
	2015	1GC0CUEGXFZ552453	Chevy	Silverado	GAS	32,068	3,872
	2005	1FDXF46P66EB62568	Ford	Flatbed 450	DIESEL	44,670	1,195
	2006	1FDWF36P66EA98375	Ford	F-350	DIESEL	61,747	137
	2012	1GCESCFE2C8143719	Chevy	Colorado	GAS	49,912	5,712
	2009	1FTYR14D19PA04140	Ford	Ranger	GAS	97,136	2,009
	2019	3GCPWBEF5KG128559	Chevy	Silverado 1500 CUSTOM	GAS	48,500	12,592
	2016	1FTBF2A68GEB25797	Ford	F250	GAS	35,189	4,212
	2017	1FDBF2A63HEF21214	Ford	F250	GAS	8,771	4,786
	2021	1FDBF2A64MEC10949	Ford	F-250	GAS	7,751	2,884
	2005	1FDWF36P76EA75963	Ford	Flatbed 350	DIESEL	63,851	1,434
	2013	1GCRCSEA2DZ336567	Chevy	Silverado	GAS	54,006	3,128
	2005	1FDXF46P06EA71229	Ford	Flatbed 450	DIESEL	45,435	1,724
	2008	1FDWF34YX8EB68233	Ford	F-250	GAS	69,792	3,540
	2003	1FDNF20L73ED50366	Ford	Ford Utility	GAS	94,577	4,578
	2015	3FRXF7FC9FV659012	Ford	F750 XL Super Duty	DIESEL	21,626	1,573
	1995	1HTSLAAM5TH261415	IH- Navistar	AO300/Boom Truck	DIESEL	48,499	51
	2004	1HTMPAFN65HJ24291	Elgin Crosswind	4200 VT365 Sweeper	DIESEL	17,552	184
	2016	1FTBF2A6XGEB25798	Ford	F-250	GAS	36,955	5,055
	2014	3GCPCREC4EG169096	Chevy	Silverado	GAS	70,710	3,825
	2021	1FDBF2A60MEC10950	Ford	F-250	GAS	8,788	4,345
	2022	3C7WR4AJ5NG116606	Dodge	RAM 2500	GAS	3,289	3,254
	2022	3C7WR4AJ7NG116610	Dodge	RAM 2500	GAS	1,802	1,764
	2019	1FT7X2A6XKED40626	Ford	F-250	GAS	11,765	1,252
	2006	1FMPU16556LA15673	Ford	Expedition	GAS	119,061	2,587
	2009	1GTEC14XX9Z110797	GMC	Sierra	GAS	65,000	6,557
	2009	1GTEC14X09Z109674	GMC	Sierra	GAS	81,150	4,028
	1998	1FTZF1763WKB51997	Ford	F-150 Utility	GAS	110,041	1,784
	2006	1FDNF20596EC25309	Ford	Super Duty F250	GAS	65,500	7,875
	2012	1GCDSCFE6C8139412	Chevy	Colorado	GAS	49,815	3,684
	1994	1GCEC19K3RE309873	Chevy	Silverado	GAS	117,336	70
	2008	1FTRX12W08KB44092	Ford	F150	GAS	140,940	2,510
	2007	1GNFC13067J251913	Chevy	Tahoe	GAS	192,533	4,034
	2013	1FAHP2D88DG136938	Ford	Taurus	GAS	154,469	4,903
	2015	1FADP5CU3FL107386	Ford	C-Max Hybrid	HYBRID	65,663	6,602
	2016	1F5MK8AR3GGC36781	Ford	Explorer/ SUV	GAS	86,770	9,234
	2016	1FM5K8AR0GGC36785	Ford	Explorer/ SUV	GAS	77,147	12,147
	2016	1FM5K8AR5GGC36782	Ford	Explorer/ SUV	GAS	92,753	11,728
	2016	1FM5K8AR7GGC36783	Ford	Explorer/ SUV	GAS	45,656	7,937
	2016	1FM5K8AR9GGC36784	Ford	Explorer/ SUV	GAS	77,015	17,230
	2016	1FM5K8ARXGGC42268	Ford	Explorer/ SUV	GAS	115,337	4,226
	2016	3FA6P0G76GR359751	Ford	Fusion	GAS	108,778	12,388
	2017	1FM5K8AR8HGB47094	Ford	Explorer/ SUV	GAS	28,371	4,193
	2019	1FTYR2CM4KKB66127	Ford	Transit Van	GAS	60,500	400
	2018	2C3CDXHG6JH166844	Dodge	Charger	GAS	81,242	12,047
	2003	1FMPU16L63LC31123	Ford	Expedition	GAS	89,500	1,230
	2019	2C3CCAEG4KH528630	Chrysler	300	GAS	97,736	20,269
	2019	2C3CDXAGXKH742155	Dodge	Charger	GAS	86,600	41,437
	2020	3GCPWCED4LG224852	Chevrolet	Silverado 1500	GAS	47,612	14,403
	2020	1FM5K8AB5LGA19097	Ford	Explorer/ SUV	GAS	19,866	8,865
	2021	1GB0WLE79MF136348	Chevy	Silverado	GAS	18,853	8,753
	2021	1FM5K8AB2MGA64516	Ford	Explorer/ SUV	GAS	40,278	13,813
691	2021	1FM5K8AB4MGA64517	Ford	Explorer/ SUV	GAS	22,479	11,492
692	2020	1G1FY6S00L4125508	Chevy	Bolt EV	ELECTRIC	6,000	2,500
693	2021	1FM5K8AB6MGA64518	Ford	Explorer/ SUV	GAS	49,216	26,586
694	2021	1FM5K8AB8MGA64519	Ford	Explorer/ SUV	GAS	30,036	12,536
695	2020	2C3CDXBG8LH219538	Dodge	Charger SXT RWD	GAS	18,362	8,357
696	2020	2C3CDXBG7LH192977	Dodge	Charger SXT RWD	GAS	27,665	10,115
697	2020	2C3CDXBG0LH192982	Dodge	Charger SXT RWD	GAS	60,460	21,086
698	2021	1FMSK7BH2MGC45065	Ford	Explorer/ SUV	GAS	31,267	21,247
699	2021	1FM5K8AB4MGC31832	Ford	Explorer/ SUV	GAS	21,148	11,107
700	2021	1FM5K8AB0MGC31665	Ford	Explorer/ SUV	GAS	10,142	5,242
701	2021	1FM5K8AB9MGC31616	Ford	Explorer/ SUV	GAS	19,600	14,000
702	2021	1FM5K8AB6MGC32075	Ford	Explorer/ SUV	GAS	23,195	16,874
703	2021	1FM5K8AB9MGC31826	Ford	Explorer/ SUV	GAS	22,101	16,401
704	2022	1FM5K8AB2NGA41707	Ford	Explorer/ SUV	GAS	10,000	10,000
705	2021	2C3CDXKG9MH668969	Dodge	Charger	GAS	22,019	16,852
707	2021	2C3CDXKG5MH668984	Dodge	Charger	GAS	16,298	11,292
708	2021	2C3CDXKG7MH668985	Dodge	Charger	GAS	8,106	13,248
709	2023	3GNKBCR46PS129011	Chevrolet	Blazer	GAS	10,169	10,169
710	2023	1FMSK7DH0PGA02050	Ford	Explorer/ SUV	GAS	10,005	10,005
711	2023	1FMSK7DHXPGA01746	Ford	Explorer/ SUV	GAS	10,211	10,211
712	2023	1FM5K8AB1PGA62616	Ford	Explorer/ SUV	GAS	10,000	10,000

Table 2: Fleet Emissions Summary

Vehicle Class	CO2 (g)	CH4 (g)	N2O (g)
Gasoline			
LDA	3.44	0.00	0.00
LDT2	2.82	0.00	0.00
LHDT1	3.79	0.00	0.00
LHDT2	0.96	0.00	0.00
Total Gasoline	**11.01**	**0.00**	**0.00**
Diesel			
LHDT1	0.56	0.00	0.00
LHDT2	1.54	0.00	0.00
MHDT	2.17	0.00	0.00
HHDT	3.55	0.00	0.00
Total Diesel	**7.82**	**0.00**	**0.00**
Total Combined	**18.83**	**0.00**	**0.00**

Table 3: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	18.83	1.00	18.83
CH4 Total	0.00	25.00	0.01
N20 Total	0.00	310.00	0.45
		Total	**19.29**

Table 4: Summary of Annual Milage by Vehicle Class

	Diesel	Gas
HHDT	1,946	-
MHDT	1,684	-
LHDT2	1,780	812
LHDT1	786	3,542
LDT2	-	6,531
LDT1	-	-
LDA	-	10,230

713	2023	1FM5K8AB9PGA62606	Ford	Explorer/ SUV	GAS	4,753	4,753
714	2023	1FM5K8AB5PGA62618	Ford	Explorer/ SUV	GAS	3,986	3,986
715	2023	3GCPABEK1PG197185	Chevrolet	Silverado 1500	GAS	1,158	1,158
716	2023	3GNAXWEG2PL264723	Chevrolet	Equinox	GAS	2,293	2,293
717	2023	3GNKBCR41PS182067	Chevrolet	Blazer	GAS	5,167	5,167
827	1999	1GBGC24R1XR717530	Chevy	C2500	GAS	62,144	300
861	2006	1GCCS136168241637	Chevy	Colorado	GAS	88,985	2,423
862	2014	1FDXE4FS1EDA91579	Ford	Camera Truck/E450	GAS	7,708	221
863	2017	3GCPCNEC6HG398148	Chevy	Silverado 1500 WT	GAS	49,536	7,187
864	2017	1GC0CUEG0HZ259678	Chevy	Silverado 2500 HD	GAS	15,385	1,578
865	2017	1GB3CYCG9HF203395	Chevy	Silverado 3500	GAS	400	45
866	2019	2NP3LJ0X9KM484336	Peterbilt	Gap Vax	DIESEL	14,100	1,670
867	2020	1GCHSBEA9L1245307	Chevy	Colorado	GAS	26,744	9,373
868	2020	1GCGSBEN0L1217300	Chevy	Colorado	GAS	7,050	2,550
869	2023	1GCPSCEK4P1219262	Chevrolet	Colorado	GAS	1,512	1,512
D891	2005	1GDJ6C1C55F501687	GMC	336500	DIESEL	14,155	1,042
B-901	2019	1FDUF5HT8KEF06124	Ford	F550 - 6.7L Power Stroke Diesel	DIESEL	13,656	2,392
973	2010	1GCESCD98A8109741	Chevy	Colorado	GAS	52,400	4,400

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

Other Municipalities - Summary Data Received

Table 1: Data for City of Kerman

City of Kerman			
Fuel Type	**# Cars**	**Mileage per vehicle**	**Vehicle Class**
Gas	67	7,500	LDA
Diesel	3	7,500	LDT1

Table 2: Data for City of Orange

City of Orange			
Fuel Type	**# Cars**	**Average Mileage**	**Vehicle Class**
Gas	12	56738	LDT1
Diesel	2	18130	LHDT1

Table 3: Data for Fresno Council of Governments (COG)

Fresno COG			
Fuel Type	**# Cars**	**Mileage per vehicle**	**Vehicle Class**
Gas	10	25000	LDT1

Table 4: Fleet Emissions Summary and Total Annual MT CO2e

Vehicle Class	CO2 (g)	CH4 (g)	N2O (g)
Kerman			
LDA	169.13	0.00	0.00
LDT1	9.94	0.00	0.00
Total	**179.07**	**0.00**	**0.01**
Orange			
LDT1	22.75	0.00	0.00
LHDT1	12.89	0.00	0.00
Total	**35.65**	**0.00**	**0.00**
Fresno COG			
LDT1	100.26	0.00	0.01
Combined Total	**314.98**	**0.01**	**0.01**

Table 5: Total Annual MT CO2e

Pollutant	Emissions	GWP	MT CO_2e
CO2 Total	314.98	1	314.98
CH4 Total	0.01	25	0.18
N20 Total	0.01	310	4.23
Total			**319.39**

County of Fresno GHG Emissions Inventory

Fresno County Priority Climate Action Plan

Prepared by LSA - January, 2024

Municipal Fleet Emissions Calculations

EMFAC Emission Rates

Source: EMFAC2021 (v1.0.2) Emission Rates (Available at: https://arb.ca.gov/emfac/emissions-inventory)
Region Type: County
Region: Fresno
Calendar Year: 2019
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for CVMT and EVMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HOTSOAK and RUNLOSS, g/vehicle/day for IDLEX and DIURN. PHEV calculated based on total VMT.

EMFAC Category	Fuel	CO2	CH4	N2O
HHDT	Gasoline	3126.3104	1.2569	0.3592
HHDT	Diesel	1655.6422	0.0059	0.2606
HHDT	Natural Gas	1653.7518	3.6066	0.3371
LDA	Gasoline	305.3433	0.0038	0.0066
LDA	Diesel	238.2059	0.0018	0.0375
LDA	Electricity	0.0000	0.0000	0.0000
LDT1	Gasoline	363.8099	0.0138	0.0189
LDT1	Diesel	400.9330	0.0125	0.0631
LDT1	Electricity	0.0000	0.0000	0.0000
LDT2	Gasoline	391.0853	0.0053	0.0106
LDT2	Diesel	327.3281	0.0013	0.0515
LDT2	Electricity	0.0000	0.0000	0.0000
LHDT1	Gasoline	969.8845	0.0179	0.0195
LHDT1	Diesel	645.1986	0.0108	0.1016
LHDT2	Gasoline	1073.9712	0.0104	0.0158
LHDT2	Diesel	786.5553	0.0101	0.1238
MHDT	Gasoline	1900.1235	0.0453	0.0459
MHDT	Diesel	1169.4641	0.0107	0.1841
MHDT	Natural Gas	1024.2141	0.7833	0.2088

APPENDIX E

COMMENT LETTERS AND RESPONSES

Advancing a Whole House Approach: An Equity-Centered Strategy for Pollution Reduction and Environmental Justice

Climate Pollution Reduction Grant Program

Green & Healthy Homes Initiative (GHHI) is a 501(c)(3) nonprofit organization dedicated to advancing racial and health equity and opportunity through the creation of healthy, safe, and energy efficient homes. A national expert and advocate on green and healthy homes, GHHI's groundbreaking work across the United States includes 65 cities, counties, and states that are using housing as a platform for improved health, social, and environmental outcomes. **GHHI proposes including a whole house approach—a comprehensive strategy that bundles electrification and energy efficiency improvements along with health, safety, and other necessary home repairs—as a GHG reduction measure in your EPA Climate Pollution Reduction Grant program and offers its assistance in supporting implementation.**

The Case for a Whole House Approach to GHG Reduction Measures

- **A whole house approach could improve the equitable reach and impact of building-related GHG measures by integrating electrification and energy efficiency improvements with addressing barriers to those measures such as health and safety deficiencies in those homes.** The whole house approach would include environmental hazard removal (e.g., lead, mold, and asbestos), building structure and wiring repairs, electrical upgrades, and improving indoor ventilation. These common interventions are often considered pre-weatherization readiness measures – those completed before building envelope upgrades and appliance electrification can take place.
    - GHG Reduction measures listed by the EPA in the CPRG NOFO include, "Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products" and "Programs and policies to promote electrification of government-owned, commercial, and residential buildings". Output and outcomes examples include electrified appliances installed, buildings retrofitted, improved public health from reductions in co-pollutants, and reductions in asthma hospital admissions and emergency department visits.
- **Whole house approaches are particularly impactful for low-income and disadvantaged communities, where historical disinvestment often results in housing with a range of health, safety, and energy needs.** Whole house approaches offer holistic services to residents that reduce pollutants, improve health outcomes, and reduce residents' energy burden. This approach can also help reduce deferral rates for home electrification and weatherization programs, especially in low-income and disadvantaged communities. Many houses have years of deferred maintenance that present as barriers to electrification, including lead paint hazards, mold issues, structural defects, and poor weatherization. Residents have high energy burdens and higher rates of house-related health disparities such as lead poisoning, asthma, and COPD.
- **Health and safety hazards in the home can disqualify residents from receiving weatherization or electrification, and in addition, residents may be skeptical of any electrification or weatherization initiative that does not also address more pressing needs in the home.** Whole house programs and initiatives have been launched across the country, including the Built to Last program in Philadelphia, PA; the Trenton Whole House Program in Trenton, NJ; the Detroit 0% Interest Home Repair Loan Program in Detroit, MI, the Low-Income Weatherization Program offered statewide in California, among others. A whole house approach streamlines program administration, saving state resources while simplifying the resident experience with a one-stop shop model. **This**

approach is the most efficient and cost-effective use of federal, state, and local funding sources that have been deployed to collectively address our unified climate goals. As the next section details, whole house approaches meet a number of climate and community objectives and can strengthen a jurisdiction's Priority Climate Action Plan.

How a Whole House Approach Strengthens Priority Climate Action Plans

A whole house approach will contribute to greater reduction in pollutants and increased community benefits in low-income and disadvantaged communities, all while advancing environmental justice.

- **Whole house approaches can help achieve significant reductions in emissions of greenhouse gases (GHGs), criteria air pollutants, and hazardous air pollutants.** This approach broadens the reach and access to appliance electrification services. An estimated 10% of US CO_2 emissions stem from fossil fuel appliances, and residential appliance electrification programs can therefore reduce a significant source of GHGs. Fossil fuel appliances such as furnaces and gas water heaters are also sources of criteria air pollutants such as particulate matter and nitrogen dioxide, among others, and studies have shown that gas stoves emit hazardous air pollutants like benzene. Home health and safety services can further reduce pollutants such as lead hazard reduction. Residential energy efficiency and weatherization can decrease household energy use and therefore reduce any associated electricity generation-related pollutants. Integrating electrification and health and safety services maximizes the potential reduction of residential pollutants.
- **Whole house approaches achieve a range of community benefits.** Whole house approaches result in lower energy demand and energy bills for residents in low-income and disadvantaged communities. This approach makes communities healthier by reducing their exposure to air pollutants and other health and safety hazards, helping improve health outcomes such as asthma, lead poisoning, and more. Because whole house programs are designed to comprehensively meet the needs of communities and individual households, they both enhance community engagement and reduce barriers that families accessing assistance often face.
- **Funding a whole house approach for low-income homes is attainable.** The additional cost per unit slated for electrification could range between $5K-$20K for a single-family unit, or $2K-$20K for a multifamily unit. Additionally, other leverageable funding sources could be aligned, braided, and coordinated to maximize benefits.

GHHI's Support for Implementation of Whole House Approaches

GHHI is prepared to support with the implementation of a whole house approach in the following ways:

- **Build partnership networks, processes, and protocols** to effectively align and braid climate funding with other new and existing funds to maximize the impact of disparate home repair and home upgrade programs.
- **Engage community-based organizations in implementing programs** by providing capacity building, training, and program management support as needed.
- **Model and evaluate** health and other non-energy benefits that accrue from the implementation of residential home energy upgrade programs.
- **Leverage healthcare and other innovative funding streams** to ensure the sustainable delivery of program services beyond the longevity of CPRG funding.

To explore further how GHHI could support implementation of whole house approaches, please contact Michael McKnight, Senior Vice President of National Programs, at mmcknight@ghhi.org.

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February 22, 2024

Wynn Tucker
Green & Healthy Homes Initiative
2714 Hudson Street
Baltimore, MD 21224

Re: Your Comment Letter Regarding the Draft Priority Climate Action Plan (PCAP)

Dear Mr. Tucker,

Thank you for providing comments for Frenso COG's draft Priority Climate Action Plan (PCAP). Fresno Council of Governments' PCAP is a preliminary plan intended for the Fresno region to secure implementation funding from the Environemtal Protection Agency (EPA). We understand your concern but are pleased to inform you that the following identified GHG reduction priority measures in the Building Energy sector do include the approaches outlined in your comment letter:

1) Incentive programs for the purchase of certified energy-efficient appliances, heating and cooling equipment, lighting, and building products to replace inefficient products. (Implementation could include air distribution system updates such as right-sizing fan system equipment and converting to a variable-air-volume system, heating and cooling system upgrades, reductions in supplemental energy load consumption by installing ENERGY STAR equipment, window films, and adding insulation or reflective roof coating and/or installation of energy-efficient lighting.)
2) Incorporate water efficiency measures that reduce water heating energy consumption (Install alternative types of water heaters in place of gas storage tank heater in residences.)
3) Bundle on-site renewable energy generation with energy efficiency improvements. (Implementation could include establishment of on-site renewable energy systems such as solar power and/or wind power, limitations on non-renewable energy sources.)

We agree that a whole house approach could improve the equitable reach and impact of building related GHG measures by integrating electrification and energy efficiency improvements with addressing barriers to those measures such as health and safety deficiencies in those homes. The priority measures included in the Fresno COG PCAP can be referenced in your grant application if you decide to apply with an eligible entity/government agency. I would like to point out that the EPA implementation grant weighs heavily on whether low-income and disadvantaged communities can benefit from the implementation of the priority measures, which encourages projects that address historical disinvestment in the low-income and disadvantaged communities as pointed out in your letter.

Should you have any additional questions, comments, or concerns. Please feel free to contact Simran Jhutti, project manager via e-mail: jhutti@fresnocog.org.

Sincerely,

Simran Jhutti

We appreciate COG staff's efforts to engage with disadvantaged communities so far, and these efforts must not stop now that the PCAP has been drafted. Communities deserve a follow up to understand how their voices impacted the process and more direct and early engagement regarding what happens next including the implementation grants, highlighting how that money will help unincorporated and rural areas, and the Comprehensive Climate Action Plan. Additionally, the survey results presented in the PCAP should be updated to include the comments made by those who participated in the survey or reached out to COG staff individually including comments made during community meetings.

In regards to specific measures, we are deeply concerned about the inclusion of dairy digesters as part of an agricultural measure. Digesters incentivize herd concentration and methane production, are not proven to reduce total methane emissions from dairies, leak significant amounts of methane, and release dangerous co-pollutants into already overburdened communities. We urge the removal of all references to dairy digesters as a climate solution.

One approach we do support for reduction in agricultural emissions is support for regulatory programs that reduce manure and synthetic fertilizer overproduction and overapplication to cropland. We ask for a shift to this approach.

We also uplift the requests of disadvantaged unincorporated communities like Lanare and Cantua Creek, where residents specifically asked COG staff for active transportation investments with safe sidewalks and streets. Disadvantaged unincorporated communities must be included in the expansion of public transportation, active transportation projects, and rural ride sharing opportunities.

Finally, the PCAP is missing a commitment to refrain from spending money on freeway widening or other projects that will increase vehicle miles traveled and greenhouse gas emissions. There is also a lack of next steps for implementation. Whether or not these measures are ultimately funded by Climate Pollution Reduction Grants implementation grants, the PCAP should include implementation actions such as commitments to apply for grants and the other identified funding sources and concrete implementation schedules.

We look forward to working with FCOG staff on these projects. Thank you.

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February 22, 2024

Nicola Steelnack
Leadership Counsel for Justice and Accountability
2210 San Joaquin Street
Fresno, CA 93721

Re: Your Comment Letter Regarding the Draft Priority Climate Action Plan (PCAP)

Dear Ms. Steelnack,

Thank you for your engagement in the Priority Climate Action Plan and providing comments. Fresno Council of Governments intends on submitting a grant application that encompasses reducing greenhouse gas emissions (GHG) in the transportation sector. Fresno COG will kick-off the Comprehensive Climate Action Plan (CCAP), the second component of the Climate Pollution Reduction Grant in the summer, which will span over 18 months, and allow for more direct and extensive engagement with the public and residents in unincorporated and rural areas. The PCAP is a preliminary plan that is intended to facilitate grant application for implementation funding from EPA.

We understand your concern about dairy digesters as a means for GHG reduction. However, the California Air Resources Board (CARB) recognizes this as an effective strategy to reduce GHG emissions. CARB acknowledges that improved dairy manure management offers significant, near-term potential to achieve reductions in the State's methane emissions, and potential dairy and livestock enteric emissions reduction technologies offer longer-term potential for additional GHG emissions reductions. Per Senate Bill 1383, CARB has convened a group to tackle this issue.

The opportunity to incentivize reducing overapplication to cropland through the agricultural emissions measure can be accommodated through the measure as it stands.

In addition, the Bike & Pedestrian Network and Public Transportation priority measures included in the PCAP have the potential to deliver projects in the unincorporated communities for safe sidewalks and streets, expansion of public transportation, active transportation projects, and rural ride sharing opportunities.

We would like to reiterate that the PCAP does not encourage or advocate for freeway widening or capacity increasing projects as that would increase VMT and negate the premise for GHG reduction. Furthermore, projects of this nature would be deemed ineligible for implementation funding from EPA.

Should you have any additional questions, comments, or concerns, please feel free to contact Simran Jhutti, project manager via e-mail: jhutti@fresnocog.org.

Sincerely,

Simran Jhutti

Tranquility Resources Conservation District Comments:

Below are the recommended modifications to Fresno COG's PCAP. I've tried to minimize changes given the March 1 submittal deadline. If we can submit a CPRG that also includes priority measures contained in the State's PCAP, we will be in better position to support the range of projects envisioned (especially for McMullen Area GSA).

Building Energy Measure 3 – Bundle On-Site Renewable Energy Generation

Quantification: While the PCAP notes that the SAM from NREL plays a pivotal role in this analysis, and SAM evaluates Fuel cells and Biomass combustion for power generation, Fresno's PCAP is limited to solar PV.

Recommended modification: Expand this measure to include other Renewable Energy technologies evaluated by SAM. (This would allow for fuel cells and bioenergy generation)

Measure 2 – Wastewater Treatment Facility Efficiency

Quantification: Focus on the integration of solar generation and battery storage at three key facilities - Fresno-Clovis Regional Wastewater Reclamation Facility; the Northeast Surface Water Treatment Facility; and the Southeast Surface Water Treatment Facility.

Recommended modification:

- Expand this measure to include other Renewable Energy technologies evaluated by SAM. (This would allow for fuel cells and bioenergy generation)
- Expand the facilities to include other non-potable water treatment and management facilities
- Is it possible to use the State PCAP alone in Fresno County if both cannot be referenced? There are several priority measures in the State PCAP that could support beneficial projects in Fresno County.
- Is it possible to include some the State's PCAP measures in Fresno COG's PCAP?

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February 27, 2024

Steve Haze
Tranquility Resource Conservation District
516 W. Shaw Avenue, Suite 200
Fresno, CA 93704

Re: Your Comment Letter Regarding the Draft Priority Climate Action Plan (PCAP)

Dear Mr. Haze,

Thank you for your engagement in the Fresno Council of Government's (Fresno COG) Priority Climate Action Plan (PCAP) and providing comments on the draft document. The concerns raised by the Tranquility Resource Conservation District are related to the description of the PCAP measures and the project assumptions used in the quantification of the PCAP measure emission reduction potential.

Measure Building/Energy 3 – Bundle On-Site Renewable Energy Generation in the PCAP could include implementation measures related to solar power as quantified in this document but would also allow for any type of renewable energy generation projects. However, based on your request, the description of Measure 3 will be edited for clarification as follows (new text shown in red):

> Bundle on-site renewable energy generation with energy efficiency improvements in residences and commercial buildings. (Implementation could include establishment of on-site renewable energy systems such as solar power with fuel cells and battery storage, biomass combustion, and/or wind power; and limitations on non-renewable energy sources.). This edit would appear on page 43.

The Measure Solid Waste and Wastewater 2 -Wastewater Treatment Facility Efficiency: Installation of Renewable Energy and Energy Efficiency Measures at Wastewater Treatment Facilities is inclusive and not limited to a specific renewable energy type; therefore, it is not necessary to specify the miscellaneous renewable energy types that could be considered under this measure. Also, wastewater treatment facilities are not limited and could include non-potable water treatment.

An application, if prepared and submitted by a coalition, may reference all applicable Priority Climate Action Plans. To support your application, Fresno COG understands that you would reference both the Fresno COG PCAP and State of California PCAP (executed by the California Air Resources Board). Therefore, the project application can reference both PCAP's and specific priority measures that have the closest alignment with the project as proposed.

It should be noted that the quantification methods used in the PCAP were established to estimate the potential emission reduction associated with representative measures that could be proposed for

implementation under the PCAP. The method is not meant to be fully inclusive of all potential implementation measures or projects that could be achieved under the identified PCAP measures.

In summary, Fresno COG will not be merging or adding State PCAP measures in the Fresno COG PCAP, as adding Statewide priority measures would negate the technical and evaluative efforts of preparing a PCAP representative of the Fresno region. Additionally, both PCAPs can be referenced in a coalition application to support proposed projects for implementation. Overall, the Fresno PCAP is not as limiting in its measures as the applicant may expand on the renewable energy or wastewater facility specific to their project without limiting the measure verbatim.

Should you have any additional questions, comments, or concerns, please feel free to contact Simran Jhutti, project manager via e-mail: jhutti@fresnocog.org.

Sincerely,

Simran Jhutti