Oregon's CERTA Grant

Climate Pollution Reduction Implementation Grant Quality Assurance Project Plan

Submitted to: EPA Region 10
QAPP Control #: DEQ25-HQ-0017-QAPP
Version 1.0
March 25, 2025

State of Oregon
DEQ Department of Environmental Quality

This document was prepared by:
Oregon Department of Environmental Quality
Office of Greenhouse Gas Programs
700 NE Multnomah Street, Suite 600
Portland Oregon, 97232
www.oregon.gov/deq

State of Oregon
DEQ Department of Environmental Quality

Translation or other formats

Español | 한국어 | 繁體中文 | Русский | Tiếng Việt | العربية
800-452-4011 | TTY: 711 | deqinfo@deq.oregon.gov

Non-discrimination statement

DEQ does not discriminate on the basis of race, color, national origin, disability, age or sex in administration of its programs or activities. Visit DEQ's Civil Rights and Environmental Justice page.

Approvals

Grant Number (FAIN): 84101101 Note: Oregon Department of Environmental Quality has been delegated authority by EPA Region 10 for Oregon DEQ to approve this QAPP per Oregon DEQ's approved Quality Management Plan.

DEQ Quality Assurance Officer

_____

Travis Bartholomew Date

DEQ Office of Greenhouse Gas Programs Manager

_____

Colin McConnaha Date

USEPA Region 10 Grants Project Officer:

_____

Rebecca Derr Date

USEPA Region 10 Quality Assurance Manager:

_____

Cindy Fields Date

QAPP Revision History

Version No.	Description	Author	Date
1.0	Original Version	Oregon DEQ	March 25th, 2025

Abbreviations

CAA	Clean Air Act
CBI	Consumption-Based Inventory
CFR	Code of Federal Regulations
CCAP	Comprehensive Climate Action Plan
CEJST	Climate and Economic Justice Screening Tool
CPRG	Climate Pollution Reduction Grant
DP	Data Planner
DEQ	Oregon Department of Environmental Quality
DQI	Data Quality Indicators
EPA	U.S. Environmental Protection Agency
ETO	Energy Trust of Oregon
GHG	Greenhouse Gas
GHGRP	Greenhouse Gas Reporting Program (40 CFR Part 98)
GPL	Grant Project Lead
ICR	Information Collection Request
LIDAC	Low-income and disadvantaged communities
OAR	EPA Office of Air and Radiation
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OHA	Oregon Health Authority
OHCS	Oregon Housing and Community Services
ORDEQ	Oregon Department of Environmental Quality
OR GHGRP	Oregon DEQ Greenhouse Gas Reporting Program
PM	Project Manager
PO	EPA Project Officer for Grant
POP	Period of Performance
POR	EPA Project Officer's Representative
PWP	Project Work Plan
PCAP	Priority Climate Action Plan
QA	Quality Assurance
QAM	Quality Assurance Manager
QAMD	Quality Assurance Manager Delegate
QAPP	Quality Assurance Project Plan
QC	Quality Control
SAP	Site Assurance Plan
SBI	Sector-Based Inventory
SIT	State Inventory Tool (provided by the EPA)
TL	Task Leader

Table of Contents

Distribution list

This section presents the primary staff who will be working on the project. This section presents specific staff members who will be identifying existing[1] data resources for evaluation and potential use under the project. This section also includes all other staff serving in project-specific roles for implementing the Quality Assurance Project Plan. The listing in **Table 1.1** includes staff responsible for implementing independent internal quality management steps and staff serving in external oversight roles.

This QAPP and, as applicable, all major deliverables relying on existing data will be distributed to the staff presented in **Table 1.1.** Additionally, this QAPP will be provided to any unlisted staff who are assigned to perform work under this project. A secured copy of this QAPP will be maintained in the project files under: \\deqhq1\aqcommon\Office.*GHG.Programs\Climate Pollution Reduction Grant\CERTA CPRG Impl\CERTA_CPRGImplementationQAPP2025.docx.*

Table 1.1 QAPP Distribution List

Name	Organization	Role
Rebecca Derr	US EPA, Region 10	EPA Project Officer or Designee
Cindy Fields	US EPA, Region 10	EPA Quality Assurance Manager or Designee
Travis Bartholomew	ORDEQ	Quality Assurance Officer
Colin McConnaha	ORDEQ	Manager, Office of Green House Gas Programs
Morgan Schafer	ORDEQ	Grantee Project Lead, Climate Pollution Investments Coordinator
Kali Glenn-Haley	ORDEQ	Grantee Project Manager, Climate Equity and Resilience Through Action
TBD	ORDEQ	Grantee Data Planner, Climate Equity and Resilience Through Action
Task Leaders	ORDEQ	Identified in Appendix A, measure specific assigned task leaders

[1] The term “existing data” is defined by the EPA’s *Environmental Information Quality Policy* (CIO 2105.4 as “… data that have been collected, derived, stored, or reported in the past or by other parties (for a different purpose and/or using different methods and quality criteria). Sometimes referred to as data from other sources.” The term “secondary data” may also be used to describe “existing data” in historical EPA quality-related documents.

Project/task organization

The primary personnel responsible for the implementation of this project are the Oregon DEQ Project Lead (PL), Project Manager (PM), Data Planner (DP), Quality Assurance Officer (QAO), and Task Leaders (TLs). Their duties are outlined briefly in this section. The biannual progress reports (to the EPA PO) required in the grant agreement will be reviewed by the DP, PL, PM and the PM's manager Colin McConnaha, Office of Greenhouse Gas Programs Manager to ensure the project is meeting milestones and that the resources committed to the project are sufficient to meet project objectives.

Morgan Schafer is the Oregon DEQ CPRG Project Lead (PL) and will provide advice and review materials as requested by the PM. The PM, Kali Glenn-Haley, in conjunction with the CERTA DP, is responsible for Oregon DEQ's technical and financial performance as well as maintaining communications with the EPA to ensure mutual understanding of grant requirements, EPA expectations, and conformity with EPA quality procedures; managing oversight and conduct of project activities including allocation of resources to specific tasks; ensuring that quality procedures are incorporated into all aspects of the project; developing, conducting, and/or overseeing QA plans as necessary; ensuring that any corrective actions are implemented; operating project activities within the documented and approved Quality Assurance Project Plan; and ensuring that all products delivered to the EPA are of specified type, quantity, and quality.

The PM and DP will assign a TL for each measure or part of a measure to provide accurate and verified activity and location-based data. The DP will then review all activity data and calculate greenhouse gas and other emission reductions and determine reductions by location, including LIDAC areas, using CEJST. These reductions will be compared to Oregon's CERTA workplan data analysis which included modeling and calculations for measures. Staff experts, the grant lead and the QA Officer will review the DP calculations. **Appendix A Table 1.1** presents the TLs who will be responsible for day-to-day task-level activities, including planning, reporting, and controlling of technical and financial resources allocated to the task by the PM. Accordingly, each TL is primarily responsible for implementing the Quality Program and this Quality Assurance Project Plan on task-level assignments.

Task-level management system. All Task Leaders report to the PM and DP. For each of the major deliverables under each measure, the assigned TL(s) will review all QA-related plans and reports and is responsible for transmitting them to the QA Manager for review and approval. Each TL is responsible for ensuring that quality procedures are implemented at the task level and for maintaining the official, approved, task-level QAPP content. Each TL will discuss any concerns about quality or any proposed revisions to task-level QAPP content with the QC Manager to identify, resolve, or preclude problems or to amend task-level plans, if necessary. As this is a multiagency grant, each TL is assigned by the respective agency implementing each measure and are identified in the activity appendix. In addition, each TL will work with the Oregon DEQ PM, DP and the QA Manager to identify and implement quality improvements. The Oregon DEQ PM is responsible for ensuring the consistency of similar or related QA measures

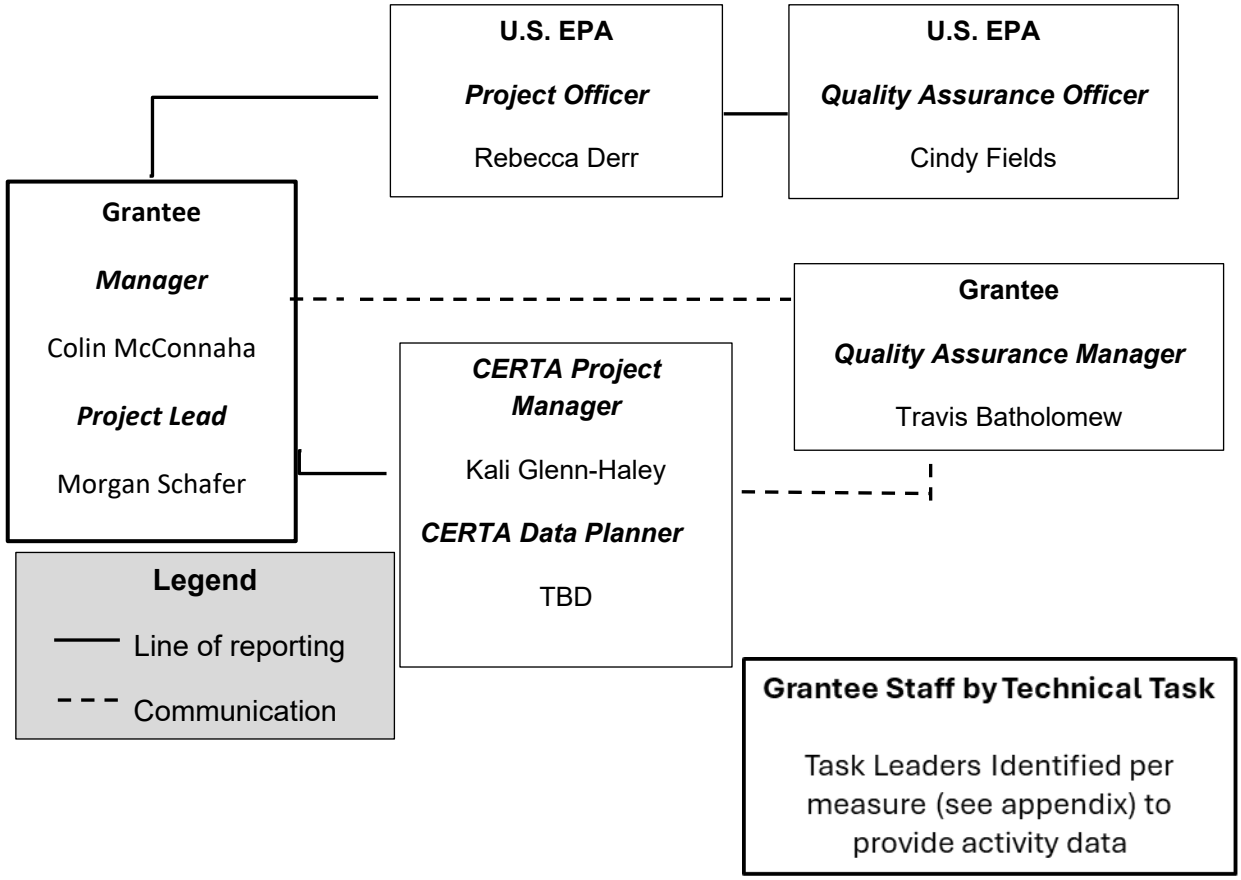
across tasks, and the TLs are responsible for overseeing task-level work performed by technical staff and providing assurance that all required QA/QC procedures are being implemented.

Project-level management system. Tasks are expected to proceed concurrently, in parallel. The PM will maintain close communications with each TL and ensure any difficulties encountered or proposed changes at the task level are reviewed for implications on other similar or related tasks. The PM is also responsible for communicating progress or difficulties encountered (across all tasks) to the EPA PO, who provides EPA's primary oversight function for this project at EPA OAR/ Region 10 and is responsible for review and approval of this QAPP and any future revisions. The PM (with support from TLs and assigned Oregon DEQ technical staff) will be responsible for consulting with the EPA PO, on planning, scheduling, and implementing the QA/QC for all project deliverables and obtaining required EPA approvals.

The QA Officer, Travis Bartholomew, is responsible for overseeing the program quality system, monitoring, and facilitating QA activities on tasks, and generally helping the Oregon DEQ PM and TLs understand and comply with EPA QA requirements. They are employed by Oregon DEQ's laboratory, which is in a separate department at DEQ and a separate agency from Oregon DOE, OHCS, OHA, ODOT and Energy Trust of Oregon. At the request of the Oregon DEQ PM, Travis Bartholomew is responsible for conducting periodic independent audits of this project's QA program, they will produce written documentation of the audit results and recommendations. They will work closely with the PM, DP, and Task Leaders to improve any deficiencies noted during these audits.

Additionally, QC functions will be carried out by other technical staff and monitored by the PM, who will work with the QA Manager to oversee this plan and implement quality improvements. Other technical staff will include persons with expertise in industrial processes and air pollution engineering, technical reviewers, database specialists, quality auditors, and technical editors. The PM will ensure that technical staff do not review work in a QA capacity for which they were a primary or contributing author. **Exhibit 1.1** presents the organizational chart.

Exhibit 1.1 Project Organization



Reason for project

This QAPP supports grant award # 84101101 with a project period of 10/01/2024 - 09/30/2029, Oregon will begin distributing $197 million to residents, businesses, and Tribes to support climate pollution reduction measures through the CERTA grant. These measures will reduce greenhouse gas emissions from buildings, housing, transportation, and waste, while providing benefits to surrounding communities. DEQ will be announcing when funds become available on the CERTA web page and through the Climate Pollution Reduction Planning Grant GovDelivery notifications.

Problem Purpose and background

The money was awarded to Oregon by the Environmental Protection Agency as part of the Climate Pollution Reduction Grant under the Inflation Reduction Act. This funding will support programs across the state identified in Oregon's Priority Climate Action Plan, which Oregon developed as part of the EPA's Climate Pollution Reduction Grant Program. Led by DEQ's Office of Greenhouse Gas Programs, this work is a multi-agency effort that funds initiatives for Oregon Departments of Energy, Transportation, Housing and Community Services, the State Health Authority, and Energy Trust of Oregon.

Under this project, Oregon DEQ will identify, evaluate, and utilize activity data to analyze reductions of greenhouse gas (GHG) emissions from the 12 measures funded through the Climate Equity and Resilience Through Action Grant, a CPRG implementation grant. This QAPP focuses on the handling of environmental information under sector-specific tasks by technical staff charged with completing the following subtasks:

- Analyze GHG and emissions reductions achieved, and the location of those reductions, for each measure based on activity data
    - Clean Air Act (CAA) section 137 also requires that CPRG Implementation grant recipients address the degree to which a grant reduces GHG emissions in total and with respect to low-income and disadvantaged communities, where “greenhouse gas” refers to the air pollutants carbon dioxide (CO2), hydrofluorocarbons (HFCs), methane (CH4), nitrous oxide (N2O), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6).
    - Examples of expected direct and indirect benefits to these communities from GHG reduction measures could include improved public health resulting from reductions in co-pollutants (e.g., CAPs, such as NOx, ozone, PM2.5, and HAPs)
- Develop uncertainty analyses for the emissions reduction analysis for each measure, and
- Present the associated analyses in a technical report as part of the grant deliverables.

Unless otherwise noted, this QAPP document describes ORDEQ’s GHG emission calculations from the implementation of the CERTA grant. Activity data for each measure and quality assurance of the activity data are outlined in the appendix. The body of this QAPP addresses how DEQ will calculate actualized GHG and criteria pollutant reductions from grant implementation based on measure activity data and attribute emission reductions to

geographical locations. The primary output of the grant is GHGs reduced during the grant period (10/ 2024- 09/2029) and estimated out to 2050.

Actions to be taken, action limits, and expected outcomes

Activity data will be received from task leads and verified by the CERTA DP and Quality Assurance Officer. This data will then be used to calculate GHG reductions based on the models developed for the CERTA application and the Priority Climate Action Pan. Quality assurance and verification of activity data is outlined in the appendix.

The summary below provides methodologies and key assumptions underlying the greenhouse gas (GHG) and co-pollutant reductions anticipated from the CERTA grant measure implementation. This summary includes the technical assumptions, models, and methodologies used for estimating GHG reductions. Assumptions, emissions factors and other information will be verified to be up to date throughout the grant process. The PCAP appendix includes cumulative greenhouse gas reductions for the periods 2025-2030; detailed annual reductions are available in the CERTA application spreadsheet workbook and will be used as a reference when reporting achieved GHG and emission reductions.

As calculations are made, DEQ will provide EPA with information on what type of method and/or tool was used to estimate the base year, projected year, and projected year with measure emissions. If a specific model or tool (e.g., MOVES, AVERT, custom Excel-based tool, etc.) was used, DEQ will specify and/or include links to any relevant reference documentation. In cases where no specific tool or model was used, DEQ will summarize how calculations were performed (e.g., assumed X% reduction in Y activity type, applied Z emission factor). DEQ will also provide updated key assumptions related to the implementation of the measure as needed.

DEQ will use internal staff experts to review all calculations and assumptions. The DP will verify that all data has been input correctly for EPA reporting. The electricity intensity values used in all of the measure calculations incorporate Oregon's Clean Energy Targets. The Oregon Clean Energy Targets require Oregon's two largest utilities to reduce GHG emissions from the electricity provided to the state to 80% below baseline emissions levels by 2030, 90% below baseline emissions level by 2035, and 100% below baseline emissions level by 2040. The baseline emissions level is defined as the average emissions for each utility during the 2010, 2011, and 2012 emissions year.

Transportation Models and Tools

- Caret®EV Planner: Utilized for the Oregon Clean Vehicle Rebate Program, this tool forecasts the impact of EV rebates on market share growth and associated GHG emission reductions. Developed by the Center for Sustainable Energy, it incorporates various incentives and current market data to model the light-duty transportation sector's transition to EVs. The model will be used as a reference to check output assumptions

against for the implementation grant but will not be used to calculate actualized reductions form implementation.

- AFLEET Tool (Argonne National Laboratory): Deployed for estimating the emissions benefits of installing light-duty EV charging infrastructure. It compares the emissions from electric vehicle charging to those from conventional gasoline vehicles.
- Heavy Duty Vehicle Emissions Calculator (Argonne National Laboratory): Used for assessing the GHG reductions from transitioning medium and heavy-duty vehicles from diesel to electric.
- Diesel Emissions Quantifier (EPA): Used to verify criteria pollutant and mortality data per decreased diesel usage.

General Assumptions:

- Fuel and Electricity Carbon Intensity: Uses national and state-specific data to calculate emissions from traditional and electric vehicles.
- Vehicle Fleet Dynamics: Includes assumptions about vehicle retirement rates and the adoption of new EVs influenced by available incentives.
- Infrastructure Utilization: Estimates the installation and usage rates of EV charging infrastructure.

Measure 1: Oregon Clean Vehicle Rebate Program

General description: Aims to increase EV adoption through Charge Ahead Rebates, with a projection of issuing 4,403 rebates; **GHG reductions are calculated based on the substitution of EVs for ICE vehicles, considering the energy mix of Oregon and expected improvements in EV efficiency.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from rebate issuance. Activity data will include the type (PHEV/ BEV, make and model) of the electric vehicle, if it is new or used (model year), and its location. Please see Appendix 1 for additional activity data details. When not collected via activity data, DEQ will use optional survey-based information to determine average vehicle miles traveled to calculate displaced fossil fuel usage and GHGs reduced. To account for the increase in emissions associated with electricity use DEQ will first calculate the kilowatt hours equivalent to the annual volume of fuel consumed (10% ethanol). This estimate of power usage will be multiplied by a state-specific electricity sector emissions factor, reported to Oregon's Greenhouse Gas Reporting program. For projection purposes, the electricity emissions factor will be adjusted over time to incorporate Oregon-specific clean electricity targets.

Specific models and tools: DEQ will use current Argonne National Laboratory's AFLEET Vehicle Emissions Calculator, emissions factors for fuel combustion from 40 CFR part 98 table

C-1 and table C-2 and emissions factors for the electricity carbon intensity as reported to Oregon DEQ's greenhouse gas reporting program.

Key assumptions affecting GHG emissions: GHG reductions will be based on project period and not vehicle lifetime. DEQ will use utility specific emissions factor data from the Greenhouse Gas Reporting Program

Measure 2*:* Community Charging Rebates – Light Duty Charging Infrastructure Rebates

General description: Supports the expansion of EV charging infrastructure, particularly in LIDAC communities. **Calculations will be based on the number of installed Level 2 and DCFC chargers; emission reductions are estimated by comparing the projected use of this infrastructure to conventional vehicle emissions.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data will include charger type, total annual electricity distribution, and location. Please see Appendix 1 for additional activity data details. The methodology assumes that charging infrastructure for light-duty vehicles contributes to emissions reductions by displacing the energy and emissions associated with light-duty gasoline vehicles. DEQ will estimate these mitigated emissions using reported electricity data to estimate the equivalent amount of gasoline displaced during the period and associated emissions. To account for the increase in emissions associated with electricity dispensed DEQ will calculate emissions from electricity based on reported kilowatt hours and state specific electricity sector emissions factor reported to Oregon's Greenhouse Gas Reporting program. The resulting net value is the estimate of mitigated emissions from the charging infrastructure.

Specific models and tools to check calculated reductions: Argonne National Laboratory's AFLEET Charging and Fueling Infrastructure Emissions Tool, AFLEET Tool: Assumptions input into the tool will reflect the number of chargers funded, estimated charger utilization rates, utility specific emissions factors.

Key assumptions affecting GHG emissions: GHG reductions will be based on project period and not vehicle lifetime. DEQ will use utility specific emissions factor data from the Greenhouse Gas Reporting Program

Measure 3: Medium- Heavy-Duty ZEV Rebate

General description: Provides incentives for the adoption of electric medium and heavy-duty vehicles, with an emphasis on reducing diesel pollution in vulnerable communities; **emission reductions are calculated based on the vehicles miles traveled from newly purchased vehicles and displaced diesel fuel.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from recipients. Please see Appendix 1 for additional activity data details. GHG emissions reduction benefits will be calculated based on a calculation of the diesel gallons that

would have been combusted by an equivalent ICE vehicle traveling the same distance. The calculation will assume the diesel was blended with 5 percent biodiesel, and emissions calculations will be completed using EPA 40 CFR, part 98 Table C-1 and Table C-2 emissions factors. To account for the increase in emissions associated with electricity consumed DEQ will use estimated charging data, in KWh, and utility specific emissions factors to estimate the emissions associated with charging the vehicle within the program period. .

Specific models and tools: DEQ will use current Argonne National Laboratory's Heavy Duty Vehicle Emissions Calculator, emissions factors for fuel combustion from 40 CFR part 98 table C-1 and table C-2 and emissions factors for the electricity carbon intensity as reported to Oregon DEQ's greenhouse gas reporting program.

Measure 4: Medium and Heavy-Duty Diesel Emissions Mitigation Award Program

General description: Award program supporting businesses, governments and equipment owners in replacing older and more polluting diesel engines with new electric vehicles. **DEQ will calculate emission reductions attributable to this project by estimating the net emissions associated with the targeted diesel engine being replaced with an equivalent electric vehicle.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data will include Recipient-reported data for the diesel vehicle type being replaced including class and vintage, and vehicle miles traveled . Please see Appendix 1 for additional activity data details. Avoided GHG emissions will be calculated based on recipient data for diesel gallons consumed by vehicles being replaced. Emissions will be quantified using the GHG emissions produced from the combustion of the estimated fuel quantity and calculated with EPA 40 CFR, part 98 Table C-1 and Table C-2 emission factors. To calculate net emissions and account for emissions from electricity DEQ used the same methodology for electricity emissions as described in measure 3.

Specific models and tools used: EPA's Diesel Emissions Quantifier tool. Emissions factors from EPA 40 CFR Part 98 Table C-1 and C-2.

Key assumptions about implementation: DEQ will verify vehicles purchased by recipients will scrap old diesel medium- and heavy-duty trucks and replacing them with all electric trucks at 45% reimbursement (based on EPA's DERA program maximum allowed amount).

Key details of reference scenario: Avoided emissions are based on replaced vehicle types and usage from recipient reported activities.

*Key assumptions affecting GHG emissions***:** Net emissions are based on avoided diesel fuel combustion and the emissions associated with increased electricity consumption.

Measure 5: Medium Heavy-Duty Charging Infrastructure Awards

General description: Oregon DEQ's award program for supporting medium- and heavy-duty zero-emission vehicle charging and fueling infrastructure projects program invests directly in MHD ZEV Charging infrastructure for private fleets, tribes, local government, school districts, and transit providers. **Calculations will be based on number of installed chargers; emission reductions are estimated by comparing the use of this infrastructure to conventional vehicle emissions.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data will include utilization rate, type of charger and location. Please see Appendix 1 for additional activity data details. The methodology assumes that charging infrastructure for the medium and heavy-duty fleets will contribute to emissions reductions by displacing the energy and associated emissions associated with the equivalent heavy-duty vehicle combusting diesel.

Specific models and tools used to verify calculations: GHG and co-pollutant emissions will based on emissions outputs from Argonne National Laboratory's AFLEET Charging and Fueling Infrastructure Emissions tool's Emissions Tool. These estimates will be adjusted over time to reflect usage, the number of chargers installed, and expected changes to the carbon intensity of Oregon's electricity.

Key assumptions about implementation: The recipient reported utilization rate in KWh for each charger and type of charger will be used on a per port and compared to equivalent to Argonne National Laboratory's AFLEET CFI Emissions tool's high utilization for the project period. DEQ will calculate avoided emissions over time based on reported power per charger and annual utilization rate, to determine displacement of current diesel vehicles. We will also verify if these chargers are placed at the same location as vehicles supported through the rebate or award program to prevent double counting towards reductions from this grant funding.

Key assumptions affecting GHG emissions: DEQ will first use recipient-reported kWh dispensed from each charger type and convert that to the equivalent amount of avoided B5 diesel gallons. Emissions from the combustion of this fuel will be calculated using The AFLEET CFI tool. To account for the increase in emissions associated with electricity use DEQ used the same methods as described in measure 3.

Measure-specific activity data not already listed above: The analysis will be based on recipient-reported information, and if not reported DEQ will assume Level 2 Chargers are 9.6 kW and DC fast chargers are 125 kW.

Building Measures models and Tools

- Energy Systems Simulator (ESS) model developed by Sustainability Solutions Group was used for measures 6-9. The document Data, Methods, and Assumptions Manual for the State of Oregon Resilient Efficient Buildings Taskforce describes the modeling approach, data and assumptions, and general methodology used by the ESS. This will be used only as comparison to calculated reductions from implementation.

Measure 6: Incentives for Building More Energy Efficient Housing

General description: Financial incentives to construct new residential buildings that are at least 10 percent more energy efficient than buildings constructed under Oregon's base building code. **Calculations will be based on reduced kW used per building based on implemented activities.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data will include kWh and location of project. Please see Appendix 1 for additional activity data details. GHG emissions reductions will be based on reduced fuel combustion and grid-supplied electricity consumed from recipient reported activity data including lighting, appliances, heating, and cooling.

Specific models and tools used to compare GHG reductions: Energy Systems Simulator

Key assumptions about implementation: The calculations will be based on recipient reported number of incentives and reduced emissions from activity estimates and their locations.

*Key assumptions affecting GHG emissions***:** DEQ will include expected changes to the carbon intensity of Oregon's electricity because of HB 2021 when modeling.

Measure 7: Commercial Building Performance Standards Incentives

General description: Financial incentives for commercial building owners that voluntarily comply or achieve early compliance with commercial building performance standards (BPS). **Calculations will be based on reduced kW used per building based on implemented activities.**

GHG reduction calculation method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data will include recipient-reported data for building square footage and type of treatment for energy efficiency that we implemented. Please see Appendix 1 for additional activity data details. Activity data will be site specific and may include more efficient lighting, appliances, heating, cooling, and other end-uses and will also include building square footage. DEQ will calculate estimated emissions reductions from avoided natural gas combustion and grid-supplied electricity used in commercial buildings. Starting values for energy intensities for commercial buildings will be taken from the regional Commercial Building Stock Assessment (CBSA) recently completed by the Northwest Energy Efficiency Alliance.

Key details of reference scenario: The reference scenario estimates energy use and GHG emissions for commercial buildings that are subject to Oregon's BPS but are not yet required to comply with the BPS until a future date. Tier 1 building BPS compliance phases in for buildings 200,000 square feet and up in July 2028, buildings 90,000-199,999 square feet in July 2029, and buildings 35,000-89,999 square feet in July of 2030. The modeling assumes that after Tier 1 compliance is required, no additional "early adopter" energy savings or emission reductions will occur. Energy and GHG emissions reductions are only modeled for Tier 1 early compliance until the compliance deadline. Tier 2 buildings (20,000-35,000 square feet) must report energy

usage but are not required to meet BPS targets. Tier 2 buildings are modeled to receive incentives and create GHG emission in all program years. Calculate reductions will be made for the project period of the grant and estimated to 2050.

Measure 8: Heat Pump Incentives

General description: Financial incentives to purchase and install heat pumps in owner-occupied, rental, and newly constructed housing. **Calculations for greenhouse gas emissions reductions are based on avoided energy use over the project period of the heat pump unit, as compared to projected emissions rates for new and existing housing units heated by other sources.**

GHG reduction estimate method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data includes information on the location, the type of housing (new, rental, etc.) as provided by the recipient and collected as activity data. Please see Appendix 1 for additional activity data details.

Key assumptions affecting GHG emissions: When there is not activity data DEQ will make assumptions that were used in past modeling. For heat pumps installed in existing housing, GHG emissions savings will be calculated as the difference between average energy use emissions for housing units with Energy Star heat pumps and the baseline emissions rate for existing housing units with conventional heating systems (electric resistance heat, natural gas, wood, propane, and fuel oil), projected over the lifetime of units installed between 2025 and 2029. The baseline emissions rate reflects current heat source percentages for existing Oregon homes. For heat pumps installed in new residential units, GHG emissions savings are calculated as the difference between estimated emissions associated with electricity consumed by high-efficiency heat pumps over the project period of the units and projected emissions associated with other energy sources (recipient reported or averaged) used to heat newly constructed residential units over the lifetime of the systems. DEQ will use utility specific emissions factors to calculate emissions from electricity use.

Measure 9: Weatherization Assistance for Existing Houses

General description: This measure provides financial assistance for weatherization improvements in existing residential buildings, with a priority for residential weatherization investments in low-income and disadvantaged communities. **Calculations for greenhouse gas emissions reductions are based on avoided energy use over the project period due to implemented activities.**

GHG reduction estimate method(s): DEQ will calculate net emissions based on activity data provided from recipients. Activity data will include project-specific implemented measures and locations, we well as reduced energy use from weatherization activities. Greenhouse gas emissions reductions are estimated for energy savings resulting from weatherization improvements over the remaining lifetime of the house. Please see Appendix 1 for additional activity data details.

Key assumptions affecting GHG emissions: Building data (including building type, number of stories, number of units, and year built), total floorspace area for each building

Materials and Waste Measures Models and Tools

- Embodied carbon calculator by ARUP for Alameda County, California: Deployed for assessing embodied carbon in buildings and their materials. Inputs customized for Oregon.
- Waste Impact Calculator web app by Oregon DEQ: Utilized for quantifying the weight of food waste and yard debris available for anaerobic digestion and composting under new infrastructure.
- Waste Impact Calculator factors, version 1.3, by Oregon DEQ: Utilized for quantifying emissions associated with landfilling, composting, and anaerobic digestion under new infrastructure.
- CoolClimate.org's peer-reviewed regression model (customized for Oregon): utilized to estimate household consumption-based emissions for building reuse and space-efficient housing.
- EPA WARM: used to provide methane potential for landfills, and potential reductions.
- EPA LMOP: used for methane recovery estimates for landfills.
- All GHG emissions are reported in annualized terms.

Measure 10: Building reuse and space-efficient housing

General description: DEQ will calculate net emissions based on activity data provided from recipients as outlined in Appendix A. Please see Appendix 1 for additional activity data details. **GHG reductions are calculated from both lower embodied impacts (less construction material) and reduced consumption-based impacts of households living in those units (for example, households in denser neighborhoods utilize more compact infrastructure and drive fewer miles).**

GHG reduction estimate method(s): Activity data will be used to field-verify the model inputs used previously to predict GHG emissions reductions from this Measure. For consumption-based and operational emissions, the model was an Oregon-specific adaptation of the work of Jones and Kammen (2014, https://doi.org/10.1021/es4034364). For embodied carbon of residential construction, the model was a community wide embodied-carbon calculator developed by consulting firm ARUP (https://www.arup.com/) for Alameda County, California.

Specific models and tools used: Embodied carbon calculator developed by ARUP; consumption-based model based on the "CoolClimate" equations and data of Jones & Kammen (2014, Table 3, model 1). Internal mechanics of GHG emissions models have been vetted independently. The work of Jones & Kammen (2014) is peer-reviwed, while ARUP is a renowned sustainability consultant.

Key details of reference scenario: Conventional development with a 50% mix of dwellings (typically single-family detached residences, or SFRs) at 2262 square feet, and 50% smaller units (typically not SFR) averaging 1149 square feet.

Measure 11: Food waste infrastructure improvements

General description: Under the measure scenario, Oregon will increase its capacity to (aerobically) compost food waste and yard debris and anaerobically digest food waste. Under the reference scenario, Oregon's compost and anaerobic digestion (AD) capacity remains unchanged. **Calculations for greenhouse gas emissions reductions are based on avoided methane emissions from landfills based on diverted waste, and (for AD) reducing emissions associated with electrical generation.**

GHG reduction estimate method(s): DEQ will calculate net emissions based on activity data provided from recipients. Project-specific activity data for end-of-life treatments of yard debris and food waste (tonnage) will be used to determine GHG reductions through an Oregon-specific, open-source life cycle model of solid waste, with results expressed in annual equivalents. For AD, this model includes displacement of electrical generation. Please see Appendix 1 for additional activity data details.

The internal mechanics of the main model used to calculate emissions reductions, DEQ's Waste Impact Calculator (WIC), have been vetted independently by LCA consultant Sphera. DEQ may review/improve WIC's composting factors as the underlying life cycle databases are updated.

Specific models and tools used: Waste Impact Calculator by Oregon DEQ (version 1.3).

Key details of reference scenario: Oregon's existing capacity for composting and AD is maintained but does not increase.

Key assumptions affecting GHG emissions: For both scenarios, it is presumed that food waste composition does not change over time and that the ratio of food waste to yard debris does not change.

Measure-specific activity data not already listed above: If not reported through activity data, **the r**atio of food waste to yard debris based on Oregon-specific records in Waste Impact Calculator web app (2021 results). Yearly equivalent processing and transport emissions intensities from Waste Impact Calculator, version 1.3, in kgCO2e/short ton: 79.10 (food waste AD), 95.18 (food waste composting), 399.38 (food waste landfilling), 95.18 (yard debris composting), 232.48 (yard debris composting).

Measure 12: Landfill methane controls

General description: Install enhanced methane controls at municipal solid waste (MSW) and/or potentially industrial landfills, limited to installations that exceed regulatory requirements. **Calculations for greenhouse gas emissions reductions are based on avoided methane emissions captured from installed technology.**

GHG reduction estimate method(s): DEQ will calculate net emissions based on activity data provided from recipients. DEQ will report avoided emissions using environmental data of methane captured from installation of site-specific technologies. For additional details of data reporting, please see Appendix A.

Specific models and tools used: Data will be directly reported through project implementation using project specific SAPs.

Key details of reference scenario: Direct capture systems will provide information on how much additional methane is being captured and not released through reported activity data.

Key assumptions affecting GHG emissions: N/A

a. Data gathering and reporting to DEQ (subject to terms of QAPP and SAP)
b. Making informed projections into the future (supported with all assumptions and calculations shown) regarding both the “as implemented” scenario and the counterfactual (“baseline”) emissions forecast (e.g., what would have happened in the absence of CPRG sub-award implementation).

Relevant Clean Air Act mandates and authorizations

The inventory and options analyses produced under this project will support a grant application authorized under 42 U.S.C.A. § 7437 for *Greenhouse Gas Air Pollution Plans and Implementation Grants*. The inventory and options analyses will be used to evaluate opportunities for reducing GHG emissions from all major-emitting sources including both mobile source categories and stationary source categories. This project will include the fundamental research necessary to evaluate and plan new programs (and amendments to existing Clean Air Act [CAA] programs) for reducing emissions from fossil fuel combustion activities. Many sectors and activities that will be included in the GHG inventory (and subsequent emissions reductions options analyses) include major sources of criteria and toxic pollutants. Accordingly, the purpose of this project (to evaluate and plan for reductions in GHG emissions, including reductions from usage or production of fossil fuels) is also consistent with the following statutory mandates and authorizations under Clean Air Act Title I:

- ***§ 7403. Research, investigation, training, and other activities***
  (a) Research and development program for prevention and control of air pollution
  The Administrator shall establish a national research and development program for the prevention and control of air pollution ….
  (1) conduct, and promote the coordination and acceleration of, research, investigations … and studies related to the causes … extent, prevention, and control of air pollution;
  (2) encourage, cooperate with, and render technical services and provide financial assistance to air pollution control agencies and other appropriate public or private agencies, institutions, and organizations, and individuals in the conduct of such activities ….
  (b) Authorized activities of Administrator in establishing research and development program
  In carrying out the provisions of [paragraph (a)] the Administrator is authorized to–
  (1) collect and make available, through publications and other appropriate means, the results of and other information, including appropriate recommendations by him in connection therewith, pertaining to such research and other activities;….
  (2) make grants to air pollution control agencies … for purposes … in subsection (a)(1) ….

- ***§ 7404. Research related to fuels and vehicles***
  (a) Research programs; grants; ….
  The Administrator shall give special emphasis to research and development into new and improved methods, having industry-wide application, for the prevention and control of air pollution and control of air pollution resulting from the combustion of fuels… he shall–
  (1) conduct and accelerate research programs directed toward development of improved , cost-effective techniques for–
  (A) control of combustion byproducts of fuels, ….

(B) improving efficiency of fuels combustion so as to decrease atmospheric emissions ….

- ***§ 7405. Grants for support of air pollution planning and control programs***
  (a) Amounts; limitations; assurances of plan development capability.
  (1)(A) The Administrator may make grants to air pollution control agencies … in an amount up to three-fifths of the cost of implementing programs for the prevention and control of air pollution …. For the purpose of this section, "implementing" means any activity related to the planning, developing, establishing, carrying-out, improving, or maintaining of such programs….
  (C) With respect to any air quality control region or portion thereof for which there is an applicable implementation plan under section 7410 … grants under subparagraph (A) may be made only to air pollution control agencies which have substantial responsibilities for carrying out such applicable implementation plan.

Information provided by the EPA under § 7403(b)(1)

Under authority of CAA § 7403(b)(1) the EPA has provided the following resources to states to ensure reliable air emissions inventories are produced to support plans for reducing emissions:

- Agency-wide Quality Program Documents
- Quality Assurance-specific Directives
  - CIO 2105.4 – *Environmental Information Quality Policy*, March 20, 2024
  - CIO 2105-P-01.4 – *Environmental Information Quality Procedure*, March 20, 2024
  - CIO 2105-S-02.1 – EPA's Environmental Information QA Project Plan (QAPP) Standard, March 20, 2024
  - EPA Regional Sites for Quality Management Plans and Guidance:
    - Region 10
- QA Guidance
  - EPA QA/G-4 – *Guidance on Systematic Planning Using Data Quality Objectives Process*
  - EPA QA/G-5 – *Guidance for Quality Assurance Project Plans*

Oregon DEQ will utilize these resources, as applicable, to ensure evaluation of existing data and utilization of those data are consistent with the EPA's relevant directives and guidance.

Quality objectives/criteria

The primary objectives of this project are to calculate greenhouse gas reductions from the implementation of the CERTA grant. In addition, other emission reductions and the location of all reductions will be determined. Accordingly, all quality objectives and criteria are aligned with these primary objectives. The quality system used for this project is the joint responsibility of the Oregon DEQ PM and measure leaders. As discussed in the Project/task organization section, an organizationally independent QA Manager will maintain oversight of all required measures in this QAPP. QC functions will be carried out by technical staff and will be carefully monitored by the responsible DP, who will work with the QA Manager to identify and implement quality improvements. All activities performed under this project will conform to this QAPP.

Data quality, management, and analyses

For this project, Oregon DEQ will use a variety of QC techniques and criteria to ensure the quality of data and analyses. Data of known and documented quality are essential components for the success of the project. Measure-specific activity data quality control and assurance are outlined in Appendix 1.

The data quality objectives and criteria for this project are accuracy, precision, bias, completeness, representativeness, and comparability. *Accuracy* is a measure of the overall agreement of a measurement to a known value. It includes a combination of random error (precision) and systematic error (bias). *Precision* is a measure of how reproducible a measurement is or how close a calculated estimate is to the actual value. *Bias* is a systematic error in the method of measurement or calculation. If the calculated value is consistently high or consistently low, the value is said to be biased. Our goal is to ensure that the information and data generated and collected are as accurate, precise, and unbiased as possible within project constraints. It is not anticipated that this project will include primary data collection. Generally, existing data and tools provided by the EPA and other qualified sources will be used for project tasks. A subject matter specialist familiar with technical reporting standards (such as a permit writer, GHGRP sector specialist, or compliance engineer with knowledge of the state's facilities operating in the sector) will be used to QA all data utilized for developing the statewide GHG inventory. Oregon DEQ will verify the accuracy of all data by checking for logical consistency among datasets. All existing environmental data shall meet the applicable criteria defined in CFR and associated guidance, such as the validation templates provided in the *EPA QA Handbook Volume II*.

Uncertainty can be evaluated using a few different approaches. The most useful uncertainty analysis is quantitative and is based on statistical characteristics of the data such as the variance and bias of estimates. In a sensitivity analysis, the effect of a single variable on the resulting emissions estimate generated by a model (or calculation) is evaluated by varying its value while holding all other variables constant. Sensitivity analyses will help focus on the data that have the greatest impact on the output data. Additional statistical tests may be utilized

depending on the need for more or less rigorous tools and on the specific project activity being evaluated.

When available, data originally gathered using published methods whose applicability, sensitivity, accuracy, and precision have been fully assessed, such as EPA reference methods, will be preferred and considered to be of acceptable quality. Project decisions may be adversely impacted if, for example, existing data were used in a manner inconsistent with the originator's purpose. Metadata can be described as the amount and quality of information known about one or more facets of the data or a dataset. It can be used to summarize basic information about the data (e.g., how, why, and when the existing data were collected), which can make working with specific data or datasets easier and provides the user with more confidence. Metadata are valuable when evaluating existing data, as well as when planning for collection primary data that may be required in the future. However, the effort needed to locate and obtain original source materials can be costly. Accordingly, a graded approach to planning will be applied and ongoing discussions with the EPA will be held to determine what magnitude and rigor of QA effort are appropriate and affordable for the project.

For the data analysis completed under this project, analytical methods will be reviewed to ensure the approach is appropriate and calculations are accurate. Spreadsheets will be used to store data and complete necessary analyses. The design of spreadsheets will be configured for the intended use. All data and methodologies specific to each analysis will be defined and documented. Tables and fields will be clearly and unambiguously named. Spreadsheets will be checked to ensure algorithms call data correctly and units of measure are internally consistent. Hand-entered or electronically transferred data will be checked to ensure the data are accurately transcribed and transferred.

Representativeness is a qualitative term that expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Oregon DEQ will use the most complete and accurate information available to compile representative data for this project.

Data c*omparability* is a qualitative term that expresses the measure of confidence that one dataset can be compared to another and can be combined for the decision(s) to be made. Oregon DEQ will compare datasets when available from different sources to check for the quality of the data, including the modeled reductions submitted in the grant workplan. This QA step will also ensure that any highly correlated datasets or indicators are identified. Supporting data, such as information on test methods used and complete test reports, are important to ensure the comparability of emissions data.

Document preparation

All documents produced under this project will undergo internal QC review, as well as technical review and an editorial review, before submission to the EPA PO. QC will be performed by an engineer, scientist, or economist, as appropriate, with sufficient knowledge. The technical

reviewer will review the document for accuracy and integrity of the technical methodologies, analyses, and conclusions.

An editorial review of all final documents will be performed. Editors will verify clarity, spelling, and grammatical correctness, and ensure documents are free of typographical errors. Editors will verify that references are cited correctly. This will include a comparison against the original documents.

The *QC Documentation Form* (**Appendix B**) will be used to track the approval process. The form must be completed and signed for all document deliverables. The signatures required include those of the TL and technical and editorial reviewers. Completion of this form certifies that technical review, editorial review, and all required QC procedures have been completed to the satisfaction of the TL. Copies of these signed forms will be maintained in the project files.

Special training/certifications

All Oregon DEQ staff assigned to work on this project shall have appropriate technical and QA training to properly perform their assignments. Oregon DEQ staff serving in QAM role under this project will have completed a training course on QA/QC activities similar to the course available on EPA's website. The PM and all TLs under this project will have completed an online training course on air emissions inventory on the Air Knowledge website.

If training is required for new staff the PM in coordination with the associated TL will identify available training resources for the task segment and incorporate the required training into the project schedule. Training records maintained in either Workday or here: \\deqhq1\aqcommon\Office.GHG.Programs\Climate Protection Program\Federal\Climate Pollution Reduction Grants\CERTA\Training.

Documents and records

Oregon DEQ will document in electronic form QC activities for this project. The QAPP will be organized as part of the quality management system's document control system and assigned a document control number. DEQ will conduct an annual review of the QAPP document in accordance with the QMS. This QAPP will be made publicly available on ORMS. The TL is responsible for ensuring that copies of all completed QC forms, along with other QA records (including this QAPP), will be maintained in the project files. In accordance with 2 CFR 200.334, DEQ will retain project files, financial records, supporting documents, and statistical records for 5 years after successful grant completion. The types of documentation that will be prepared for this project include:

- Planning documentation (e.g., QAPP)
- Implementation documentation (i.e., Review/Approval Forms and QA records)
- Assessment documentation (i.e., QA audit reports).
- Measure specific activity data

Detailed documentation of QC activities for a specific task or subtask will be maintained using the *QC Documentation Form* shown in **Appendix B**. This form will document the completion of the QC techniques planned for use on this project as listed in the table in **Appendix A**. One or more completed versions of these forms, as necessary, will be maintained in the project files. The types of documents for which QC will be conducted and documented may include raw data, data from other sources such as data bases or literature, field logs, sample preparation and analysis logs, instrument printouts, model input and output files, and results of calibration and QC checks.

Technical reviews will be used along with other technical assessments (i.e., QC checks) and QA audits to corroborate the scientific defensibility of any data analyses. A technical review (i.e., internal senior review) is a documented critical review of a specific technical work product. It is conducted by subject matter experts who are collectively equivalent (or senior) in technical expertise to those who performed the work. Given the nature of the deliverables under this project, a technical review is an in-depth assessment of the assumptions, calculations, extrapolations, alternative interpretations, and conclusions in technical work products. Technical review of proposed methods and associated data will be documented in the *QC Documentation Form* shown in **Appendix B**. The form will include the reviewer's charge, comments, and corrective actions taken.

Additionally, Oregon DEQ has developed and instituted document control mechanisms for the review, revision, and distribution of QAPPs. Each QAPP has a signed approval form, title page, table of contents, and a document control format that conforms to EPA's Environmental Information QAPP Standard; see header at the top of the page. The distribution list for this QAPP was presented in **Table 1.1**. During the project, any revision to the QAPP will be circulated to everyone on the distribution list, as well as to any additional staff supporting this project. Any revision to the QAPP will be documented in a QAPP addendum, approved by the

same signatories to this QAPP, and circulated to everyone on the distribution list by the Oregon DEQ's PM.

At this time, Oregon DEQ does not know if the project will collect or handle personally identifiable information (PII) subject to the Privacy Act of 1974. However, if during this project technical staff determine that PII is required to support project objectives, Oregon DEQ will meet all requirements of the Privacy Act of 1974. **Appendix C** indicates the status of the state's determination regarding the applicability of the Privacy Act of 1974 under this project.

Existing data acquisition and management protocols (Group B)

Need and intended use of data used

Existing data resources may be used to analyze activity data and calculate achieved GHG reductions. Existing data resources may include sector-specific or facility-specific GHG emissions estimates, emissions factors, or activity data for use with emissions factors. Existing data resources from previously completed inventories (Oregon Priority Climate Action Plan) and EPA data analysis will be utilized to develop GHG emissions estimates.

Identification of data sources and acquisition

In addition to Oregon's PCAP, the following data sources will be utilized under each task to develop estimates for the major-emitting sectors in Oregon:

- Transportation: OR GHGRP published data on fuel and supplied to Oregon.
- Building Efficiency: OR GHGRP published data on emissions associated with electricity delivered to Oregon; OR GHGRP published data on fuel use and industrial source emissions.
- Materials and waste: Forest resource data published by state or federal forestry officials.

Quality control

All environmental information operations conducted for this project will involve existing, non-direct measurement data. One internal assessment will be conducted during the course of the project life, other QA actives will occur as necessary. All data received will be reviewed by a senior technical staff member to assess data quality and completeness before their use. In addition to reviewing and assessing the data collected, all data entered spreadsheets and all calculations completed for analyses will be reviewed by a senior technical reviewer. The reviewer will evaluate the approach to ensure the methods are appropriate and have been applied correctly to the analysis. The technical reviewer will also confirm all data were entered correctly and that calculations are complete and accurate. Calculations will be checked by repeating each calculation, independently, and comparing the results of the two calculations. Any data entry and calculation errors will be identified and corrected. Data tables prepared for the draft and final reports will be checked against the spreadsheets used to store the data and complete the analysis.

Where calculations are required to assess the data/datasets, calculations will be performed using computer spreadsheets and calculators to reduce typographical or translation errors– mathematical/statistical calculations are performed using spreadsheets or software programs with predefined formulas and functions. Oregon DEQ will ensure that any manipulations performed on the data/dataset were done correctly. Such calculations could involve statistical checks to look for data outliers. One approach, for example, that may be used to identify outliers or unusual data points is sorting a datasheet for one or more data variables. This approach is a simple but effective way to highlight unusually high or low values. Graphing data using boxplots, histograms, and scatterplots is another method used to identify gaps in the data (missing data), outliers, or unusual data points. Another approach is the use of Z-scores, which can quantify the unusualness of an observation when data follow a normal distribution. A Z-score for a particular value indicates the number of standard deviations above and below the mean that the value falls. For example, a Z-score of 2 indicates that an observation is two standard deviations above the average while a Z-score of -2 indicates the value is two standard deviations below the mean. A Z-score of zero represents a value that equals the mean. As appropriate, we will also use hypothesis tests to find outliers, or an interquartile range (IQR) to calculate boundaries for what constitutes minor and major outliers. The methods used will be driven by the scale and type of data. Oregon DEQ will determine outlier detection methods to be used based on the initial review of the data. Identified outliers will be highlighted to the EPA PO or delegate with options for treatment.

Instruments/Equipment Calibration, Testing, Inspection, and Maintenance

This project does not require supplies for the collection and analysis of samples nor the use of any laboratory equipment. However, this project does include services provided by contractors or subawardees for gathering and analyzing environmental data. The PM maintains contractor oversight for the life of this project. Contractor services will be reviewed as outlined in the Statement of Work for individual subcontracts.

Non-direct measurements

All existing data received will be reviewed by a senior technical staff member to assess data quality and completeness before their use.

Consistent with the EPA's QA requirements, this QAPP describes the procedures that will be used to ensure the selection of appropriate data and information to support the goals and objectives of this project. Specific elements addressed by this QAPP include:

- Identifying the sources of existing data,
- Presenting the hierarchy for data selection,
- Describing the review process and data quality criteria,
- Discussing quality checks and procedures should errors be identified, and
- Explaining how data will be managed, analyzed, and interpreted.

Data presented in the GHG inventory will be traced to its source (e.g., database input and output). Key resources include data collected by the EPA (e.g., GHGRP data), and data from EPA-approved data sources (e.g., EIA Form 923 data). These sources may include primary literature (i.e., peer-reviewed journal articles and reports) or databases. We may also use approved existing sources (e.g., handbooks, databases). Original sources for all information and data contained in the document will be included in a list of references with appropriate citations. When peer-reviewed literature or EPA-approved data sources cannot be used, we will document any significant limitations to the data sources used.

We will document information regarding each dataset and our rationale/selection criteria for selecting the data sources used in the inventory. The TL will be responsible for overseeing and confirming the selection of the data for the project tasks.

Table 3.1 presents an example hierarchy for data quality when identifying and reviewing available sources of data and information. When evaluating data resources, efforts will be made to identify and select data sources that most closely conform to the highest ranked criteria. Data quality metrics and documentation may not be provided by each source, and as necessary, we may consult with subject matter experts from permitted facilities or trade associations operating in Oregon to qualify data for use to meet project objectives.

Any available data quality information will be reviewed by Oregon DEQ and project advisors to ensure that the data represent full-scale designs and commercial processes, and that they are applicable to economic and regulatory conditions in the United States. Oregon DEQ will document data sources used and any significant limitations of utilized data or information to ensure that the data are appropriate for their intended use. An internal technical reviewer will review the approach for selecting and compiling data; the review will include examination of the data sources and the intended use of the data. The specific QC techniques used will depend on the technical activity or analysis to which they are applied. The Oregon DEQ TL is responsible for verifying the usability of data and related information. Determination of useability will be

documented and saved in this folder: \\deqhq1\aqcommon\Office.GHG.Programs\Climate Protection Program\Federal\Climate Pollution Reduction Grants\CERTA\Data useability Determinations.

Table 3.1 Existing Data Quality Ranking Hierarchy

Quality Rank	Source Type
Highest	Federal, state, and local government agencies
Second	Consultant reports for state and local government agencies
Third	NGO studies; peer-reviewed journal articles; trade journal articles; conference proceedings
Fourth	Conference proceedings and other trade literature: non-peer-reviewed
Fifth	Individual estimates (e.g., via personal communication with vendors)

Oregon DEQ will work with EPA to ensure that all data used for the project are appropriate for their intended use. The main criteria that will be used in the selection of the data are the quality of the data (based on peer review, credible source, and/or QA documentation), availability, suitability for the intended purpose, and agreement with SIT estimates.

Oregon DEQ will use the Secondary Data Quality Ranking Hierarchy when identifying and reviewing available sources of information. The source types in **Table 3.1** appear in the order in which they are likely to meet data quality criteria. For example, federal government data are more likely to be from a credible source, thoroughly reviewed, suitable, available, and representative, and any exceptions to these data criteria are likely to be noted in the government data, providing transparency. Data from individuals are expected to be less reliable, not peer reviewed, and may not be suitable or representative.

If it is determined that data meeting the fourth (i.e., conference proceedings and other trade literature: non-peer-reviewed) or fifth (i.e., individual estimates such as personal communications with vendors) level are from the best or only available data source, the TL will include in the inventory a description of these data with associated limitations for review by the EPA PO.

These measures of data quality will be used to judge whether the data are acceptable for their intended use. In cases where available data do not or may not meet data quality acceptance criteria, the TL will include in the inventory a discussion for review by the EPA PO or delegate explaining how emissions estimates that relied on such data compare to SIT estimates.

We will also consider, for example, the age (i.e., date of dataset) and the representativeness of the data and will include in the inventory report for review by the EPA of any quality concerns regarding data that are outdated or that have other quality issues, like data gaps or

inconsistency with other sources. Any data source utilized that is older than 10 years will specifically be flagged in the inventory report.

Representativeness will be evaluated by determining that the emissions or activity data are descriptive of conditions in the United States, data are current, and data are descriptive of similar processes within Oregon. Any incomplete datasets will be identified, and deficiencies will be evaluated to determine whether data are missing or confusing and if they meet the secondary-use quality objectives.

Key screening criteria will be used to screen the sources identified. The Oregon DEQ TL will provide oversight to the screening process to ensure sources collected are the most relevant and meet quality requirements. Available data and information from the selected sources will be compiled and relevant summary information will be extracted out of the information sources to develop the required output for each of the project tasks.

Criteria for accepting existing data for intended use

The criteria for determining whether the data are acceptable for use in developing the statewide inventory will be based on a comparison of the associated emissions estimate to the emissions estimate produced using the EPA's SIT. While some differences between the state's calculations and SIT calculations are expected, differences of more than 10 percent must be accompanied by an explanation subject to approval by the EPA prior to using the state's estimate in lieu of the SIT estimate.

Criteria for options identification in planning phase

The criteria for reviewing all activities under each task and identifying the best options for emissions reductions will be based on the following criteria[2] in the EPA's CPRG program guidance:

1. Quantity of reductions in emissions of climate pollution under the option.
2. Number of jobs likely to be created by the option.
3. Environmental justice benefits of the project including the number of people living in overburdened neighborhoods that will benefit from the option.
4. Quantity of reductions in criteria and toxic air pollutants that can be achieved by option.
5. Number of people living, working, recreating, and going to school in the area(s) benefiting from the option.

Criteria and options will also reflect public input.

[2] CPRG Program Guidance, page 4. Available at https://www.epa.gov/inflation-reduction-act/climate-pollution-reduction-grants#CPRGProgramGuidance.

Data management

Data management procedures include file storage and file transfer. All project and data files will be stored on Oregon DEQ project servers. Files will be organized and maintained by the TL in folders by project, task, and function, including a system of file labeling to ensure version control. The TL will make sure that staff are trained and adhere to the project file organization and version control labeling to ensure that files are placed in consistent locations. All files will be backed up each night to avoid loss of data. Data are stored in various formats that correspond to the software being used. As necessary, data will be transferred using various techniques, including email or shared drives. Typically, records will be archived once the project is completed. Record retention times will be based on contractual and statutory requirements or will follow Oregon DEQ practices for storing materials of up to 5 years after the end of the period of performance. Multiple project staff are granted access rights to the archived file system for each project. Records may be retrieved from archived file system by the TL, PM, or other project staff with access during the records retention period. As soon as allowed by applicable regulations or the grant agreement, records will be destroyed according to Oregon DEQ policies and procedures. For any sensitive information that is gathered under the project, Oregon DEQ's policy is consistent with EPA–recommended methods of destruction, which include degaussing, reformatting, or secure deletion of electronic records; physical destruction of electronic media; recycling; shredding; incineration; and pulping. Should the grant specify some other manner of disposition (e.g., transfer to the client), Oregon DEQ will comply with that directive. As noted above, Oregon DEQ has developed a file naming convention/nomenclature for electronic file tracking and record keeping. For those records and files gathered or provided to Oregon DEQ, the filename may include the identification of "original" in its filename.

Similarly, files that have undergone a review by an independent, qualified person will include, at the end of the filename, the initials of the reviewer if more than one reviewer reviewed the file, along with the date reviewed and version number, to track which staff person(s) reviewed the file and when. Filenames of draft versions will follow an incremental, decimal numbering system. More specifically, each successive draft of a document is numbered sequentially from version 0.1, 0.2, 0.3… until a final version is complete. Final versions will be indicated by whole numbers (e.g., version 1.0). Final versions of documents that undergo revisions will be labeled version X.1 for the first set of revisions. While the document is under review, subsequent draft versions will increase incrementally (e.g., 1.2, 1.3, 1.4) until a revised final version is complete (e.g., version 2.0).

In the event data retrieval is requested and to prevent loss of data, all draft and final file versions will be retained electronically—that is, superseded versions will not be deleted.

Note that changes made to deliverables will be done using the software's *track changes* feature, which allows a user to track and view all changes that are made to the document version. All deliverable reviews will be documented in a QC Documentation Form (see **Appendix B**) for the project. This form will be maintained in the project files.

For this project, it is not anticipated that any special hardware or software will be used. General software available through the Microsoft Suite including Excel, PowerPoint, Access, and Word will be sufficient to perform the work for this project.

For this project, it is not anticipated that any confidential business information or personally identifiable information will be collected.

Assessment and Oversight (Group C)

Oregon DEQ is committed to preparing a comprehensive and reliable inventory of GHG emissions from Oregon. Under this project our senior management team has dedicated the necessary resources to ensure we deliver an inventory that can be relied upon for future policy decisions. Accordingly, under this project, we will concurrently implement existing quality management systems that Oregon DEQ has previously utilized for submissions to the EPA under Title I of the Act where task-level deliverables will be subjected to required, regular reviews (e.g., quarterly) to ensure that technical, financial, and schedule requirements of this project are consistent with the EPA PO's and QAM's expectations. This section discusses Elements C.1 (assessments and response actions) and C.2 (reporting) applicable to this project. DEQ's Quality Management Plan covers data integrity and ethics.

Assessments and response actions

The QA program includes periodic review of data files and draft deliverables. The essential steps in the QA program are as follows:

1. Identify and define the problem
2. Assign responsibility for investigating the problem
3. Investigate and determine the cause of the problem
4. Assign and accept responsibility for implementing appropriate corrective actions
5. Establish the effectiveness of and implement the corrective action
6. Verify that the corrective action has eliminated the problem.

The DP and measure specific TLs will provide day-to-day oversight of the quality system. Periodic project file reviews will be carried out by the DP and PM, at least once per year to verify that required records, documentation, and technical review information are maintained in the files. The DP will ensure that problems found during the review are brought to the attention of the Task Leaders and are corrected immediately. All nonconforming data will be noted, and corrective measures to bring nonconforming data into conformance will be recorded. The QA Manager will work with the PM and DP to ensure that no conflicts of interest exist prior to the file reviews. If determined that a conflict of interest exists, QA will designate another staff member with the necessary independence to conduct the reviews.

The DP, TLs and QA Manager are responsible for determining whether the quality system established for the project is appropriate and functioning in a manner that ensures the integrity of all work products. All technical staff have roles and will participate in the corrective action process. Corrective actions for errors found during QC checks will be determined by the TL and, if necessary, with the QA Manager. The originator of the work will make the corrections and will note on the QC form that the errors were corrected. A reviewer or TL, not involved in the creation of the work, will review the corrections to ensure the errors were corrected. Any problems noted during audits will be reviewed and corrected by the QA Manager and discussed with the TL as needed. Depending on the severity of the deficiency, the TL may consult the QA Manager and stop work until the cited deficiency is resolved. Deficiencies identified and their

resolution will be documented in monthly project reports, as applicable. The QA Manager and TL will comply and respond to all internal and EPA audits on the project, as needed. The QA Manager will produce a report outlining any corrective actions taken.

Reports to management

The biannual progress reports (to the EPA PO) required in the grant agreement will be reviewed by the DP, PL, PM and the PM's manager Colin McConnaha, Office of Greenhouse Gas Programs Manager to ensure the project is meeting milestones and that the resources committed to the project are sufficient to meet project objectives. These progress reports will describe the status of the project, accomplishments during the reporting period, activities planned for the next period, and any special problems or events including any QA/QC issues.

Any QC issues impacting the quality of a deliverable, the project budget, or schedule will be identified and promptly discussed with the assigned TL and the DP as appropriate.

Based on the technical work completed during the reporting period, progress reports will be reviewed internally by the DP, prior to submitting to the PM and PL. The PM will conduct a final review of the report before transmitting the progress report to the EPA PO and the PM's manager will be cc'd on all progress reports.

Data validation and usability (Group D)

Data review, verification, validation

All work conducted under this project will be subject to technical and editorial review. When existing data for the same GHG-emitting activity are available from multiple sources, the background information documents will be reviewed for all sources to determine the dataset that is the most representative of operations in the state. Reviews will be conducted by an independent, qualified person—or a person not directly involved in the production of the deliverable. The term “validation” refers to whether the data meet the QAPP-defined user requirements while the term “verification” refers to whether conclusions can be correctly drawn from the data. The quality of data used and generated for the project will be reviewed and verified at multiple levels by the project team. This review will be conducted by the Oregon DEQ DP or a senior technical reviewer with specific, applicable expertise. All original and modified data files will be reviewed for input, handling, and calculation errors. Additionally, all units of measure will be checked for consistency. Any potential issues identified through this review process will be evaluated and, if necessary, data will be corrected, and analysis will be revised as necessary, using corrected data. These corrections will be documented in project records. These measures of data quality will be used to judge whether the data are acceptable for their intended use. In cases where available data do not or may not meet data quality acceptance criteria, the TL will document these findings in the inventory along with corrective actions or use of alternative data sources.

Verification and validation methods

As a standard operating procedure, all data (retrieved and generated) will be verified and validated through a review of data files by an independent, qualified technical staff member (i.e., someone other than the document originator), and ultimately, the Oregon DEQ DP. The verification and identification of activity data is provided as **Appendix A**. Forms for documenting QC activities and review of deliverables are included in **Appendix B**. Documentation of calculations will be included in spreadsheet work products and in supporting memoranda, as appropriate.

The DP is responsible for day-to-day technical activities of tasks, including planning, data gathering, documentation, reporting, and controlling technical and financial resources. The TL is the primary person responsible for quality of work on tasks under this project and will approve all-related plans and reports. These reports will be transmitted by the TL to the QAM for final review and approval.

Source data will be verified and validated through a review of data files by the technical staff or third-party verifiers, and ultimately the TL. Reviews of analyses will include a thorough evaluation of content and calculated values. All original and modified data files will be reviewed for input, handling, and calculation errors. Additionally, all measurement units will be checked for consistency. Any potential issues identified through this review process will be evaluated, errors corrected, and analysis repeated using the corrected data. All corrections will be documented in project records.

Source data will be verified and validated through a review of data files by the technical staff, and ultimately the DP. Typical data verification reviews can include checks of the following:

- Data sources are clearly documented
- Calculations are appropriately documented
- All relevant assumptions are clearly documented
- Conclusions are relevant and supported by results
- Text is well-written and easy to understand

The documented review process will be stored with deliverables for the project. For the narrative describing the methodologies used for the inventory, all comments on drafts will be clearly and concisely summarized including a description of how substantive issues raised by commenters were resolved.

As discussed in the Project/task organization and Data Management sections, QC objectives include verification that data in database tables are stored and transferred correctly, algorithms call data correctly, units are internally consistent, and reports pull the required data. These data management issues will be addressed as part of the QC checks of data acquisition and document preparation.

For this project, it is not anticipated that any special data validation software will be required. However, where calculations are required to assess the data/datasets, calculations will be

performed using computer spreadsheets (like Excel spreadsheets with predefined functions, or formulas) and calculators to reduce typographical or translation errors. General software available through the Microsoft Suite including Excel, PowerPoint, Access, and Word will be sufficient to perform the work as described in the Data Management section for this project.

Reconciliation with user requirements

All data (retrieved and generated) and deliverables in this project will be analyzed and reconciled with project data quality requirements. To ensure deliverables meet user requirements, the TL or senior technical lead will review all data and deliverables throughout the project to ensure that the data, methodologies, and tools used meet data quality objectives, are clearly conveyed, and represent sound and established science.

Oregon DEQ will review each project with the EPA at the planning stage to ensure the approach is fundamentally sound and will meet the project objectives. The TL or senior technical lead will evaluate data continuously during the life term of the project to ensure they are of sufficient quality and quantity to meet the project goals. Prior to submission of draft and final products, the TL or senior technical lead will make a final assessment to determine whether the objectives have been fulfilled in a technically sound manner. Assumptions made in preparing project analyses will be clearly specified in the inventory.

As discussed in Section 1.7.1, uncertainty can be evaluated using a few different approaches. The most useful uncertainty analysis is quantitative and is based on statistical characteristics of the data such as the variance and bias of estimates. In a sensitivity analysis, the effect of a single variable on the resulting emissions estimate generated by a model (or calculation) is evaluated by varying its value while holding all other variables constant. Sensitivity analyses will help focus on the data that have the greatest impact on the output data. Additional statistical tests may be utilized depending on the need for more or less rigorous tools and on the specific inventory activity being evaluated.

References

EIA, Form 923 at https://www.eia.gov/electricity/data/eia923/. Accessed on 7/26/2023.

EPA, *Chief Information Officer's Policy Directive on Information Technology / Information Management: Quality Assurance Project Plan (QAPP) Standard*, Directive # CIO 2105-S-02.0. Available at https://www.epa.gov/irmpoli8/quality-assurance-project-plan-qapp-standard. Accessed on 7/24/2023.

EPA, EPA-454/B-17-001, *Quality Assurance Handbook for Air Pollution Measurement Systems, Ambient Air Quality Monitoring Program, Volume II*. Available at https://www3.epa.gov/ttnamti1/files/ambient/pm25/qa/Final%20Handbook%20Document%201_17.pdf. Accessed on 6/23/2023.

EPA, *GHGRP State and Tribal Fact Sheet*. Available at https://www.epa.gov/ghgreporting/ghgrp-state-and-tribal-fact-sheet. Accessed on 6/23/2023.

EPA, *Chief Information Officer's Policy Directive on Environmental Information Quality Policy* available at EPA IT/IM Directive: Environmental Information Quality Policy, Directive # CIO 2105.3. Accessed on 7/26/2023.

EPA, *State GHG Emissions and Removals*. Available at https://www.epa.gov/ghgemissions/state-ghg-emissions-and-removals. Accessed on 6/23/2023.

EPA, *State Inventory and Projection Tool* at https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Accessed on 7/26/2023.

EPA, Greenhouse Gas Reporting Program (GHGRP) at https://www.epa.gov/ghgreporting/data-sets. Accessed on 7/26/2023.

EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021* at https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021. Accessed on 7/26/2023.

EPA, *State and Tribal Greenhouse Gas Data and Resources* at https://www.epa.gov/ghgemissions/state-and-tribal-greenhouse-gas-data-and-resources. Accessed on 7/26/2023.

EPA, Fuel heating values and CO2 emission factors at eCFR :: 40 CFR Part 98 -- Mandatory Greenhouse Gas Reporting. Accessed on 7/26/2023.

EPA, Global warming potentials at https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98/subpart-A?toc=1. Accessed on 7/26/2023.

USDA Forest Service, *Greenhouse gas emissions and removals from forest land, woodlands, and urban trees in the United States, 1990-2019* at https://www.fs.usda.gov/research/treesearch/62418. Accessed on 7/26/2023.

US DOT, *Highway Statistics Series* at https://www.fhwa.dot.gov/policyinformation/statistics/2021/vm1.cfm . Accessed on 7/26/2023.

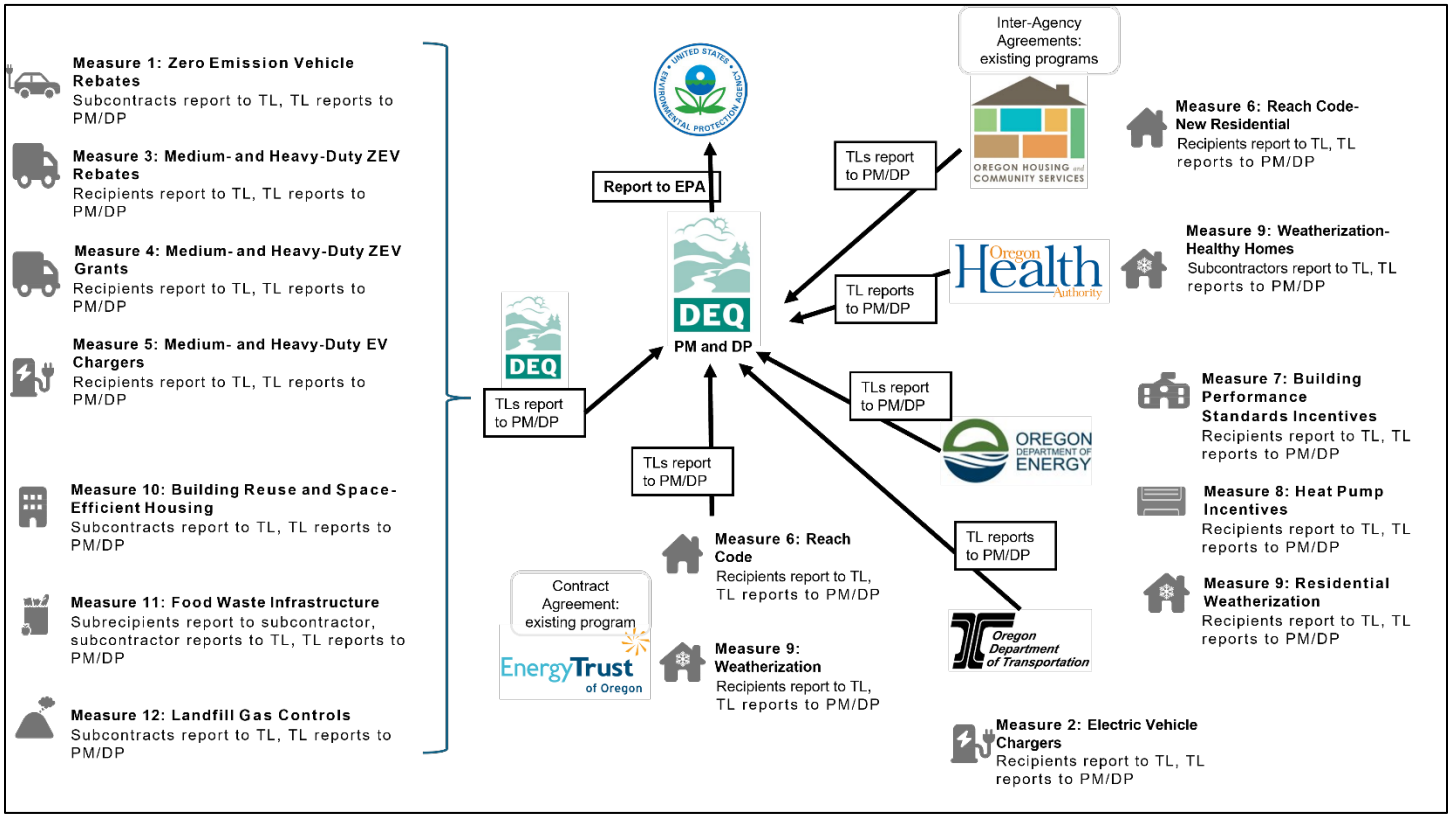
Appendix A: CERTA Activity Data

All activity data will be provided to the CERTA Data Planner and used to model the GHG emission reductions, other emissions, and location of reductions from implementation of each measure. Activity data will be retained according to 2 CFR 200.334. Activity data will be provided to the PM and DP electronically on a biannual basis unless otherwise noted in the measure activity data (See Exhibit 1.2 for flow of information from TL to PM and DP). All Task Leads are required to submit a final report to the PM within 60 days of project completion.

Table 1.1 Task Leaders for each measure

Measure	Organization	Relationship	Name	Email
1	DEQ	Internal	Erica Timm	Erica.Timm@deq.oregon.gov
2	ODOT	IAA	Jenna Compton	Jenna.l.compton@odot.oregon.gov
3	DEQ	Internal	Dalton Sheppard	Dalton.Sheppard@deq.oregon.gov
4	DEQ	Internal	Rhett Lawrence	Rhett.Lawrence@deq.oregon.gov
5	DEQ	Internal	Tracie Weitzman	Tracie.Weitzman@deq.oregon.gov
6	OHCS	IAA	Timothy Clark	timothy.i.clark@hcs.oregon.gov
6	ETO	Contract	Thad Roth	thad.roth@energytrust.org
7	ODOE	IAA	Blake Shelide	blake.shelide@energy.oregon.gov,
8	ODOE	IAA	Duard Healy	Duard.Headley@energy.oregon.gov
9	ODOE	IAA	Andy Cameron	andy.cameron@energy.oregon.gov
9	OHA	IAA	Matthew Ulsh	matthew.w.ulsh@oha.oregon.gov
9	ETO	Contract	Thad Roth	thad.roth@energytrust.org
10	DEQ	Internal	Jamie Nash	jamie.nash@deq.oregon.gov
11	DEQ	Internal	Jamie Nash	jamie.nash@deq.oregon.gov
12	DEQ	Internal	Allie Buccini	Alison.Buccini@deq.oregon.gov,

Exhibit 1.2 CERTA Reporting Organization



Measure 1: Expansion of Oregon Clean Vehicle Rebate Program

Agency: Oregon Department of Environmental Quality

Contact:

Erica Timm, Oregon Clean Vehicle Rebate Coordinator, Erica.Timm@deq.oregon.gov, 503-863-4839

Activity:

The program provides rebates for the purchase or lease of a zero-emission vehicle. The grant funding supports the Charge Ahead Rebate program, which offers income-eligible applicants $7500 towards a new ZEV or $5000 towards a used ZEV, making ZEVs more accessible for those with low or moderate incomes. The CERTA funding increases the number of available rebates for low- and moderate-income households, encouraging higher adoption of EVs, reducing air pollution and advancing progress toward GHG reduction goals.

Activity data:

DEQ contracts with a third-party contractor, to collect, review and process rebate applications. All data is submitted via an online application portal by the applicant. CSE uses standard operating procedures to review applications and determine eligibility. Approved applications are compiled on a payment list for DEQ to review,

ensure vehicle eligibility and submit for payment. The program will collect the data outlined below from rebate recipients:

- Zip code of rebated vehicle
- Model year of rebated vehicle
- Model and make of rebated vehicle

Survey data is also collected from some rebate recipients that may be used to inform the models:

- Whether the vehicle is a replacement or additional vehicle
- If replaced, the type and model year of vehicle the rebated vehicle replaced
- If the vehicle is new or used
- Location of charging for rebated vehicle
- Average miles traveled by the rebated vehicle
- Purchase or lease date

Survey data will be shared with the CERTA DP to inform vehicle miles traveled and other potential support data for the calculation of GHG reductions.

Collection and organization of data:

Rebate recipient data will be collected from each rebate recipient via fields within required application form. Survey data is collected through a post-rebate online survey sent to all rebate recipients.

Verification of accuracy:

Rebate recipient data is verified by the submitted purchase/lease agreement, vehicle registration and proof of residency documentation required by the rebate application. The rebate recipient must also sign the application confirming the data provided is accurate to the best of their knowledge.
Survey data is anonymous and not verified.

Frequency of reporting:

Rebate recipients will report the data at the time of the application submission.
DEQ will report to EPA semi-annually, including more detailed one-year and final reports.

Measure 2: Expansion of Community Charging Rebate Program

Agency: Oregon Department of Transportation

Contacts:

Jenna Compton, Transportation Electrification Financial Coordinator, Jenna.l.compton@odot.oregon.gov, 503-979-7070

Baxter Shandobil, Transportation Electrification Analyst, Baxter.SHANDOBIL@odot.oregon.gov, 971-458-2907

Bill Peters, Clean Fuels Program Manager, Bill.N.PETERS@deq.oregon.gov, 503-229-6901

Activity:

The program provides rebates to public and private entities to help offset the costs of purchasing, installing, and maintaining qualified Level 2 and DCFC charging equipment at various locations, including but not limited to publicly accessible parking areas, workplaces, and multi-family housing (MFH) within LIDAC communities in Oregon. Rebates are awarded on a first-come, first-served basis.

Activity Data:

- Location of charger (zip code or census tract)
- Date of completed installation
- Type of charger (Level 2 or DCFC)
- Annual Electricity Distribution for each charger

Equipment Owners of the Community Charging Rebates program will track and report EV Charger utilization data annually, including the number of kWh hours charged. Given the nature of the reporting process, applicants with limited time or resources may face challenges in meeting registration and reporting requirements for the Clean Fuels Program. If the Clean Fuels Program (CFP) method proves to be too cumbersome for applicants, or if applicants experience unforeseen reporting difficulties, ODOT will instead implement a different method to collect the total annual electricity distribution for each charger:

- ODOT will pursue the use of CFP aggregators to reduce the burden on applicants, and improve data collection; or
- ODOT will require equipment owners to monitor the kWh distribution using the Electric Vehicle Service Provider's (EVSP) software and report it to ODOT either via email or by submitting it through ODOT’s Cognito Forms.

Collection and Organization of Data:

Data will either be collected and stored through DEQ’s Clean Fuels Program portal in a secure SQL database or ODOT will collect and store the data sent by email, or in Cognito Forms within a spreadsheet.

Verification of Accuracy:

Data accuracy is verified through spot checks and reporting validations by DEQ’s Clean Fuels Program staff when data is submitted to DEQ on a quarterly basis. Entities cannot exceed set reporting limits, and at least once a year, all charger data is checked for outliers. Any data received will go through this verification process. The largest reporting entities in the program are subject to third party verification.

For those not reporting through the Clean Fuels Program data, ODOT will check the data for reasonableness and outliers, annually.

Frequency of Reporting:

Reports will be submitted annually for a period of up to five years.

Measure 3: Expansion of Medium- Heavy-Duty ZEV Rebate Program

Contact:

Dalton Sheppard, Medium & Heavy-Duty Vehicle Rebate Coordinator, Dalton.Sheppard@deq.oregon.gov, 503-863-0717.

Activity:

The program provides rebates for the purchase or lease of medium and heavy duty zero-emission vehicles such as trucks and buses. Rebate amounts range from $2,500 up to $120,000 per vehicle based on gross vehicle weight rating. CERTA funding will significantly expand the program, allowing public and private fleets to upgrade their vehicles to new, zero emissions models.

Activity data:

- Annual vehicle miles travelled, for three years after completion of each award
- Annual vehicle miles travelled in Oregon, for three years after completion of each award
- Vehicle make, model and year
- Date of purchase
- Zip code

Vehicle odometer readings will be tracked by vehicle owners and reported to DEQ by email.

Collection and organization of data:

DEQ will collect the emailed odometer readings in a spreadsheet organized by vehicle identification number and miles traveled by calendar year.

Verification of accuracy:

Owner attestation is not verified by site visits or inspections due to complexity and cost. If reported miles traveled vary significantly from average miles traveled from the other vehicles, DEQ will ask the vehicle owner to reverify miles.

Frequency of reporting:

Rebate recipients will report to DEQ once each year for three years after project completion. DEQ will report to EPA semi-annually, including more detailed one-year and final reports.

Measure 4: Expansion of Medium and Heavy-Duty Diesel Emissions Mitigation Award Program

Agency: Oregon Department of Environmental Quality

Contact:

Rhett Lawrence, Air Quality Program Analyst, Rhett.Lawrence@deq.oregon.gov, 503-880-9146

Activity:

Provide incentives to replace Medium- heavy- duty diesel vehicles with new zero emissions vehicles.

Activity data:

- Annual vehicle miles travelled, for three years after completion of each award
- Date of purchase of new vehicle
- Zip code for vehicle's home base
- Annual vehicle miles travelled in Oregon, for three years after completion of each award
- Vehicle make and engine model year of vehicle being replaced

Vehicle odometer readings will be tracked by vehicle owners and reported to DEQ by email.

Collection and organization of data:

DEQ will collect the emailed odometer readings in a spreadsheet organized by vehicle identification number and miles traveled per calendar year.

Verification of accuracy:

Owner attestation is not verified by site visits or inspections due to complexity and cost. If reported miles traveled vary significantly from average miles traveled from the other vehicles, DEQ will ask the vehicle owner to reverify miles.

Frequency of reporting:

Grant recipients will report to DEQ once each year for three years after project completion. DEQ will report to EPA semi-annually, including more detailed one-year and final reports.

Measure 5: Expansion of Medium Heavy-Duty Charging Infrastructure Award

Agency: Oregon Department of Environmental Quality

Contact:

Tracie Weitzman, MHD ZEV Infrastructure Grants Analyst, Tracie.Weitzman@deq.oregon.gov, 503-847-1834

Activity:

Grants to public or private entities for capital improvements to support the installation of charging infrastructure for zero-emission medium- and heavy-duty vehicles. For grant-funded charging infrastructure projects DEQ will collect annual usage for three years after completion of each rebate.

Activity data:

- Total Annual Electricity Distribution per port (kWh) usage will be tracked by infrastructure owners through charging pedestal operating software and reported to DEQ by email for three years
- Location (zip code or census tract) of charger
- Date of completed installation

Collection and organization of data:

DEQ will collect the emailed usage in a spreadsheet organized by awardee and zip code and usage per calendar year.

Verification of accuracy:

Owner attestation is not verified by site visits or inspections due to complexity and cost.

Frequency of reporting:

Grant recipients will report Total annual Electricity Distribution (KWh) to DEQ once each year for three years after project completion. DEQ will report Total annual Electricity Distribution (KWh) to EPA semi-annually, including more detailed one-year and final reports.

Measure 6: Incentives for Building More Energy Efficient Housing

Agency: Oregon Housing and Community Services

Contact:

Tim Clark, State Energy Programs Coordinator, 503-559-2918, timothy.i.clark@hcs.oregon.gov

Activity:

The Oregon Multifamily Energy Program (OR-MEP), administered by Oregon Housing and Community Services, helps affordable multifamily rental housing projects in Oregon to adopt energy-efficient design, reduce energy costs for low-income residents, and stabilize operational costs for owners. The program offers financial incentives to eligible participants, including non-profit or for-profit entities, local governments, or individuals. Projects must meet program affordability requirements by demonstrating that residents in at least 50 percent of units are at or below 80 percent area median income, and units must remain affordable for at least 10 years. CPRG funding will be used to expand the program to support the construction of affordable housing projects beyond the base energy code in consumer-owned electric utilities, which predominately are in rural areas of the states. Affordable housing projects in consumer-owned electric utilities are not currently eligible for OR-MEP.

Activity data:

The following data will be tracked and reported:

- Incentive number
- Project name
- City
- Total number of dwelling units
- Estimated kWh and/ or therm savings as applicable
- Total Incentive (reserved or paid)
- Completion date

Collection and organization of data:

Reporting for CPRG funds will build off existing program reporting infrastructure currently in place within program. All of the above-mentioned data is collected over the life of the project's participation in the program via various program documents, required at different program stages. The above data will be reported and organized in a spreadsheet and will provide project level data and cumulative program level data to track program progress against goals (e.g., unit goals, incentive budget)

Verification of accuracy:

The program will leverage its existing program infrastructure and processes that has thorough existing QA steps to ensure accuracy of data. These QA processes have been fine-tuned over the years since the program launched in 2018, which leads to a streamlined QA process by program staff and a clear participation experience for program participants. For example:

Incentive Paths: The programs offer incentives for measures that result in electric savings (kWh) in two ways.

Prescriptive measures with deemed savings values sourced from regional technical groups that provide the region with reliable energy savings estimates (e.g., Regional Technical Forum) or through historical program data.

Modeled savings completed by a project team hired energy modeling consultant, using industry known modeling tools (e.g., eQuest, IES, REM/Rate, Ekotrope). The program team has established Energy Modeling Guidelines to ensure accurate code baseline inputs and consistent modeling assumptions across energy modeling companies. These modeling guidelines also provide a basis for program staff to complete QA of submitted energy models.

(See Incentives at a Glance for more details)

Incentive Reservations & Technical QA: To reserve incentives, project teams must submit proposed scope of work documents for technical QA review by program staff. This includes a program specific Energy Efficiency Plan to ensure consistent submissions with all relevant project data, specification sheets of proposed measure, construction drawings, and energy models (if pursing the modeled path). Program staff do a thorough review of these documents to ensure energy efficiency measures proposed are reasonable and specified as proposed within design. For modeled projects, energy models are reviewed carefully to ensure baseline assumption are consistent with code and savings is reasonable based proposed specifications.

Post Install QA & Incentive Payment: After all energy efficiency measures are installed in a project with reserved incentives, project team are required to work with a third-party verifier to document installation of energy efficiency upgrades with photos and program verification forms completed. Program staff review these verification documents, and work with project teams to address any outstanding issues, if applicable. Once completion documents are verified, incentives payments are issued to the project team.

The following diagram illustrates the existing program process for participants to receive program incentives, where the above QA mechanisms are integrated into these steps. (Source: Incentives at a Glance, Program Manual)

Frequency of reporting:

Data will be reported as required by CPRG funding requirements. Internally data is tracked by OHCS and program staff at a weekly level to ensure program goals are on track, and adjustments can be made in time to respond to arising needs in a timely manner.

Partner: Energy Trust of Oregon

Contact:

Thad Roth, Sector Lead, thad.roth@energytrust.org Lead staff for Residential Energy Programs.

Activity:

Construction of energy efficient housing at performance levels exceeding 10% above the current energy code.

Activity data:

- The location of the building improved
- Energy savings in kilowatts or therms
- Single family home (including units served)
- Construction completion date

Collection and organization of data:

Projects are submitted on behalf of a participating builder by an independent technical service provider referred to as a Verifier. The Verifier submits an energy model to Energy Trust demonstrating the to-be-constructed home's building performance levels and the individual improvements above code. The Verifier conducts onsite inspections which include confirmation of equipment installation and building diagnostic testing. After the home is constructed and a final inspection is conducted the Verifier submits the final project details to Energy Trust. Upon receipt and review of all submissions Energy Trust approves payment of the incentive to the builder.

Project information includes all data detailing the improvements contributing to performance above code. The site information enables Energy Trust to assign the appropriate kWh or therm savings value, which is the basis of GHG savings.

Energy Trust maintains a system-of-record organizing all project and site information and employs a team of in-house IT and data analysis professionals to support reporting, data integrity and security.

Verification of accuracy:

Verifiers conduct a minimum of two site visits for every project and Energy Trust completes post-installation inspections on a random sample of projects submitted to confirm work-quality and accuracy of information reported to Energy Trust. Information submitted to Energy Trust is subject to automated validation checks, including address validation. No less than three program staff review submittals as part of the payment processing workflow.

Savings values are reviewed on a regular cadence not to exceed three years between updates. Energy Trust conducts market research and commissions independent third-party evaluations to support the accuracy of savings claims.

Energy Trust publishes evaluation reports, reports to Oregon Public Utility Commission and an annual third-party audited financial statement on our website www.energytrust.org. Energy Trust has received an unmodified, or clean audit report every year since our inception.

Frequency of reporting:

Data will be reported as required by CPRG funding requirements. Internally data reporting will occur on a monthly basis.

Measure 7: Commercial Building Performance Standards Incentives

Agency: Oregon Department of Energy

Contact: Blake Shelide, Codes and Standards Manager, blake.shelide@energy.oregon.gov, 503-580-2598

Activity:

ODOE will offer incentives for early and voluntary adoption of Oregon's Building Performance Standard (BPS). Oregon's BPS will require large commercial buildings to meet energy performance targets and perform other actions to manage and reduce energy consumption, beginning with the largest buildings (>200,000 square feet) in 2028 and phasing in compliance for smaller buildings over time. CERTA funding will provide resources for early and voluntary adopters to implement energy retrofits and comply with the building performance standard requirements and will incentivize additional early adopter Tier 1 and voluntary Tier 2 commercial buildings thereby accelerating compliance and reducing GHG emissions more quickly

Activity data: All data from applicants will be submitted through an online portal by the applicant and managed with ODOE's incentive management system. Applications will be reviewed, approved and payment disbursed by ODOE staff. ODOE anticipates that the data collected will include:

- Building zip code
- Building gross square footage and building tier
- Implemented activities
- When available, change in projected Energy Unit Intensity from incentive implementation
- Completion date

Collection and organization of data:

Rebate recipient data will be collected from each rebate recipient via fields within required application form and system.

Verification of accuracy:

Data submitted by rebate applicants will be verified by ODOE staff as part of the application review and approval process. Rebate applicants must also attest that the data provided is accurate to the best of their knowledge.

Frequency of reporting:

Rebate applicants will report the data at the time of the application submission. ODOE will provide data to DEQ semi-annually in advance of DEQ report submission to US EPA, including more detailed data submission for one-year and final reports.

Measure 8: Heat Pump Incentives

Agency: Oregon Department of Energy

Contact:

Duard Headley, Energy Incentives Manager, Duard.Headley@energy.oregon.gov , 503-383-8140

Activity:

ODOE offers incentives for the purchase of a heat pump for residential buildings within the state of Oregon. This measure will provide 12,000 $2,000 incentives for the purchase of a heat pump for providing heating and cooling of an existing or new owner-occupied residence or rental unit. Like other ODOE heat pump incentives, these incentives encourage higher adoption of heat pumps versus, reducing air pollution and advancing progress toward GHG reduction goals.

Activity data:

ODOE staff will manage the heat pump incentive program for this measure. All data from incentive applicants is submitted through an online portal by the applicant and managed within an incentive management system. Applications are reviewed, approved and payment disbursed by ODOE staff. The program collects the data outlined below from rebate applicants.

- Zip Code (where the heat pump is used)
- Heat pump make and model
- Recipient self-report fuel source replacement
- Date of final inspection certificate
- The property category: owner-occupied residence (Community-Existing Building), residential tenancy (Rental), or residential new construction (Community-New Building)

Collection and organization of data:

Rebate recipient data will be collected from each rebate recipient via fields within required application form within the heat pump rebate portal.

Verification of accuracy:

Data submitted by rebate applicants is verified by ODOE staff as part of the application review and approval process. Rebate applicants must also attest that the data provided is accurate to the best of their knowledge.
Frequency of reporting:

- Rebate applicants will report the data at the time of the application submission.
- ODOE will provide data to DEQ semi-annually in advance of DEQ report submission to US EPA, including more detailed data submission for one-year and final reports.

Measure 9: Weatherization Assistance for Existing Houses

Agency: Oregon Department of Energy

Contact:

Andy Cameron, Energy Efficiency & Conservation Manager, andy.cameron@energy.oregon.gov, 971.720.3436

Activity:

Weatherization efforts, under the traditional definition largely comprised of building envelope measures, in Consumer Owned Utility territory. The full scope of this incentive-based measure is still being developed, but will likely include money paid to utilities for use in existing weatherization contracts.

Activity data:

Information about the home may include such fields as

- Year built
- Square footage
- Incentive amount provided
- Types of weatherization measures installed
- Location (census tract or zip code)
- Date of receipt
- Single or multifamily structure
- , kWh and/or therm savings as available

Collection and organization of data:

Data will be collected from participating utility providers and incentive recipients.

Verification of accuracy:

Utility providers will be asked for attestation from recipients that data was double checked and verified. Existing utility verification processes will be employed where possible.

Frequency of reporting:

ODOE will provide data to DEQ semi-annually in advance of DEQ report submission to US EPA, including more detailed data submission for one-year and final reports.

Agency: Oregon Health Authority

Contact:

Matthew Ulsh, HHGP Policy Analyst, matthew.w.ulsh@oha.oregon.gov, 503-383-6205

Activity:

As a CPRG sub-awardee, HHGP will be issuing $5,000 incentives for weatherization of existing residences, to subrecipient entities who are able to support this body of work for low-income Oregon households and other environmental justice communities. Distribution of these $5,000 incentives will begin in 2025 (Project Year 2) with existing HHGP grantees who have previously indicated that their programs include weatherization work. These existing grantees will receive additional funding, along with additional CERTA requirements, terms, and conditions, through a grant amendment/ contract rider.

Incentives in project years 3-5 will be distributed through a combination of new and existing grant agreements, using a combination of competitive and non-competitive solicitations.

Activity data:

- Location of residence (zip)
- Year built
- Total square footage (estimate)
- Weatherization activity types
- Completion date

Verification of accuracy:

Activity reporting and expenditure reporting will be cross-checked by HHGP annually.

Frequency of reporting:

OHA will provide data to DEQ semi-annually in advance of DEQ report submission to US EPA, including more detailed data submission for one-year and final reports.

Partner: Energy Trust of Oregon

Contact:

Thad Roth, Sector Lead, thad.roth@energytrust.org, Lead staff for Residential Energy Programs.

Activity:

Insulation and enabling repairs to improve the performance of building envelopes for single family homes.

Activity data:

- Location of the building improved
- Type(s) of weatherization improvements
- Energy savings in kilowatts or therms
- Completion date

Collection and organization of data:

Installation is performed by participating trade ally contractors who have signed a participation agreement with Energy Trust which includes service standards for work performed. Data is collected as part of the customer application for participant cost support incentive funding. Trade allies assist customers in completing this application which includes customer, site and project information. Site information includes data points such as pre-treatment building conditions and fuel source of mechanical equipment. Project information includes square footage of treatment, and amount of insulation installed. The site information enables Energy Trust to assign the appropriate kWh or therm savings value, which is the basis of GHG savings.

Energy Trust maintains a system-of-record organizing all project and site information and employs a team of in-house IT and data analysis professionals to support reporting, data integrity and security.

Verification of accuracy:

Energy Trust completes post-installation inspections on a random sample of projects submitted to confirm work-quality and accuracy of information reported to Energy Trust by installing Trade Ally Contractors. Information submitted to Energy Trust is subject to automated validation checks, including address validation. No less than three program staff review submittals as part of the payment processing workflow.

Savings values are reviewed on a regular cadence not to exceed three years between updates. Energy Trust conducts market research and commissions independent third-party evaluations to support the accuracy of savings claims.

Energy Trust publishes evaluation reports, reports to Oregon Public Utility Commission and an annual third-party audited financial statement on our website www.energytrust.org. Energy Trust has received an unmodified, or clean audit report every year since our inception.

Frequency of reporting:

Data will be reported as required by CPRG funding requirements. Internally data reporting will occur on a monthly basis.

Measure 10: Building reuse and space-efficient housing

Agency: Oregon Department of Environmental Quality

Contacts:

Jamie Nash, Grant Analyst, jamie.nash@deq.oregon.gov, 503-926-2175503-926-2175

Activity:

DEQ will collect the data outlined below from rebate recipients.

Activity data:

- Census Tract

- Typology of housing project
- If building reuse, what was the previous use?
- Number of housing units
- Square footage per housing unit
- Number of rooms per household (as defined by US Census Bureau, American Community Survey)
- Number of bedrooms per household
- Persons per household (or, if not known, estimate)
- Household income (or, if not known, estimated based on AMI requirements)
- Vehicles per household (or, if not known, estimate)
- Actual progress on electricity decarbonization (DEQ will pull from State data, rather than from rebate recipients)
- Quantities of lower embodied carbon materials used and Environmental Product Declarations (EPDs) to verify their global warming potential
- Construction completion date

Collection and organization of data:

Data will be collected from each rebate recipient via fields within required enrollment form and rebate payment request form.

Verification of accuracy:

Local government partners will be responsible to review and verify the data for accuracy before submitting to DEQ.

Frequency of reporting:

Rebate recipients will report the data at three times over the course of the project. The first, estimates at enrollment in the rebate program. Second, during the first rebate installment, for which project teams may submit for reimbursement of their respective permit and system development charge payments. And third, during the second and final rebate installment after project completion when submitting Payment Request Form. Local government partners will then, once they've verified the accuracy and completeness of the data, submit to DEQ.

Measure 11: Food waste recovery infrastructure improvements

Agency: Oregon Department of Environmental Quality

Contact:

Jamie Nash, Grant Analyst, jamie.nash@deq.oregon.gov, 503-926-2175

Activity:

This purpose of Measure 11 is to increase the processing capacity for food waste at existing (and potentially new) compost and anaerobic digester facilities. This will be done through two competitive grant processes. The

outputs of the sub-awardees work include showing an increase in processing capacity to reduce GHG and other environmental co-benefits. The two grant processes include: 1) Food Waste Processing Improvements: Funds will be utilized to build new or expand existing food waste processing improvements by funding improvements and equipment purchases. 2) Small-scale Composting: Provide funding opportunity for community composting initiatives that direct food scraps to local, small-scale uses such as community gardens and urban and small farms.

Individual grant sub-awardee projects may have some unique data qualities and QA needs, which will be detailed in their respective SAP documents.

Activity data:

Each grant sub-awardee will track and report data necessary for calculating the emissions reductions from the project. These data include:

Improvement Projects

- Baseline capacity and baseline tons of throughput feedstock prior to project implementation
- Date of installation
- Date operation began
- Year (To calculate GHG reductions, we will need 2025 baseline and post-project launch data).
- City (or waste shed or individual facility) of waste generation
- Processing site information: Name of site, Distance from center point of collection route to the composting or landfill location (in miles).
- Type of equipment installed or site improvement

- As a result of the grant, what is the added processing capacity and what is the updated annual tons of feedstock processed
- Total tons of residual material sent to landfill.
- Material type: Commercial vs residential vs mixed load.
- Method of processing (i.e. windrow, aerated static pile, in-vessel, anaerobic digestion).
- Nature of material processed (food waste, yard debris, or mix)
- Completion date

Small-scale Composting Projects

- Baseline capacity and baseline tons of throughput feedstock prior to project implementation
- Type of project, equipment installation
- Date of project launch or installation
- Material type: Commercial vs residential vs mixed load.
- As a result of the grant, what is the added processing capacity and what is the updated annual tons of feedstock processed
- Year (To calculate GHG reductions, we will need 2025 baseline and post-project launch data).
- Method of processing (i.e. windrow, aerated static pile, in-vessel, anaerobic digestion).
- Nature of material processed (food waste, yard debris, or mix)
- Transportation: DEQ will calculate reasonable activity measures for distance travelled to develop a transportation metric.
- Completion date

Collection and organization of data:

Each grantee will report data according to what is required in the grant agreement. DEQ will work internally to organize and collate the data.

Verification of accuracy:

Data submitted by grant recipients will be verified by DEQ staff as part of the reimbursement review and reporting process. Grant recipients will also attest that the data provided is accurate to the best of their knowledge.

Frequency of reporting:

Sub-awardees will be required to show impact on a bi-annual basis from equipment installation or other site improvements and an increase in processing capacity, which will require providing baseline data from 2025 and post-improvements implementation data in 2026.

DEQ will work with the third-party contractor on grant agreements and if they recommend that data is collected more frequently, DEQ will consider it.

Measure 12: Landfill methane controls

Agency: Oregon Department of Environmental Quality

Contact:

Allie Buccini, Climate Grant Analyst, Alison.Buccini@deq.oregon.gov, 503.806.2816Activity:

This purpose of this CERTA Measure 12 is to implement landfill methane controls through competitive grants. Each individual sub-award project (grant project) will have some unique data qualities and QA needs, which will be detailed in their respective SAP (Site Assurance Plan) which DEQ will require as a condition of sub-award. Each grantee will collect information required to calculate emissions, including site details, the project's status, progress, and results, and then provide that information to DEQ. DEQ will then use that information to report on the impact of the project. Reported information will be required to meet established acceptance criteria. This document will outline how each project will maintain high quality data.

Activity data:

Each project will track and report all data necessary for calculating the emissions reductions resulting from the project. Each project will have unique data needs to account for differences in specific emissions reduction approaches and corresponding appropriate data collection methods. Therefore, each project will specify all data tracking and reporting details in project SAPs.

The following environmental information operations (EIOs) for CERTA Measure 12 will produce emissions reductions estimates attributable to the project:

- Collection of baseline (pre-project) emissions data for portions of the landfill that are impacted by the grant project, and projections of future emissions through 2050.
- Collection of project emissions data for portions of the landfill that are impacted by the grant project, and projections of future emissions through 2050. Conversion of baseline and project emissions data to greenhouse gas in carbon dioxide equivalent (CO_2e metric tons).
- Estimation of emissions reduced by the project ("emissions reduced" being the difference of #2 and #1, above) across the following time periods with conversions to associated GHG:
- Annual reductions through the grant period
- Reductions through 2050
- County, Census GEOIDS, and zip code
- Completion date

Each grant project will include the following tasks:

- Project specific SAP: As part of the sub-award process, require each sub-awarded project to submit a SAP that is consistent with this QAPP and which satisfies DEQ
- Implementation of each sub-award, which includes:
- Data gathering and reporting to DEQ (subject to terms of QAPP and SAP)
- Making informed projections into the future (supported with all assumptions and calculations shown) regarding both the "as implemented" scenario and the counterfactual ("baseline") emissions forecast (e.g., what would have happened in the absence of CPRG sub-award implementation).
- Estimate of emissions reductions: DEQ uses reported data from 2A and 2B to estimate emissions reductions (subject to terms of QAPP and SAP)

Collection and organization of data:

Each project will report on data collection and organization methods in the project-specific SAP.

Verification of accuracy:

The proposed landfill methane project will reduce emissions of landfill gas from landfills located in Oregon. The primary data quality objective for the environmental information operations that will be conducted under this project is to develop reliable estimates of the quantities of avoided emissions of GHG and other pollutants resulting from this project.

The data quality indicators and criteria for this project are precision, accuracy (bias), representativeness, comparability, completeness, and sensitivity. Our goal is to ensure that the data collected is as precise, accurate, representative, comparable, complete, and sensitive as possible, within project constraints as further discussed below. Some details of these data quality indicators will be addressed in the project-specific SAPs.

Precision is the measure of agreement among repeated measurements of the same property under identical or substantially similar conditions. Ability to control precision is dependent on the heterogeneity of each landfill and over time. Changes in physical infrastructure, waste, landfill gas, weather variations, landfill conditions, and other factors can impact the applicability of the precision data quality indicator.

Accuracy (bias) is the measure of agreement between the measurements and the correct value. Each grantee will be required to ensure that data measurement devices are appropriately calibrated, and the SAP for each project will include calibration details and best practices.

The QAM will review the SAP for each project to determine the extent to which precision and accuracy (bias) are appropriately accounted for.

Completeness is a measure of the amount of valid data obtained from a measurement system, expressed as a percentage of the number of valid measurements that should have been collected (i.e., measurements that were planned to be collected). For this measure, there are two dimensions of "completeness": the first dimension is whether the landfill operator (sub-awardee) in Task 2A collected the number of samples and measurements of gas as set forth in its SAP (developed in Task 1). The second dimension is the degree to which the analysis of greenhouse gas and other emission reductions are achieved, and what communities are impacted by those reductions.

Representativeness is defined as the measure of the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Because data gathering may be very different at different landfills (e.g., some may attempt to measure emissions via sampling, while others may be conducting assessment of gas collection via continuous monitoring), this DQI will be explored explicitly in the SAP for each project. The QAM will assess the representativeness of the data reported in accordance with procedures defined in each SAP.

Comparability is the qualitative term that expresses the measure of confidence that two or more data sets can contribute to a common analysis. There are two dimensions of comparability relevant to this measure. The first is the comparability between empirical data (from Task 2A) and modeled projections (from Task 2B) at any given landfill. The second dimension involves comparability of results across different landfill sites.

Comparability between empirical and modeled data at any given site will be addressed by reviewing modeling results against empirical data and calibrating those results, and the process will be outlined in each individual SAP. Modeled results and empirical data may be inconsistent due to modeling limitations.
Comparability between projects will be assessed by the QAM based on site and project characteristics. Data between different projects may be inconsistent due to differences in physical infrastructure, waste, landfill gas, weather variations, landfill conditions, data collection methods, and other factors.

Task 1 Acceptance Criteria.

Task 1 involves each sub-awardee developing a site-specific SAP. To accept the SAP, the SAP would need to address each of the DQIs listed above to the satisfaction of DEQ and in a manner consistent with this QAPP.

Task 2A Acceptance Criteria.

The data to be reported by sub-awardees to DEQ may vary between projects and may include some or all of the following: a) quantities of gas collected and quantities sent to various control mechanisms (combustion, transformation, or other method to prevent methane emissions to the atmosphere), b)

composition of gas collected, c) estimates of quantities of gasses generated and emitted, and/or composition of gas generated and emitted.

These estimates will be acceptable if:

- At landfills subject to reporting requirements, and where the scope of data points are comparable, gas collection and composition must be consistent with quantities reported to DEQ or EPA under relevant regulations.
- At landfills that are subject to reporting requirements that involve modeling of gas generation, and which are reporting under this measure quantities of collected gas and emitted gas (whether modeled or measured), the total (collection + emissions), after being adjusted for gas oxidation using standard assumptions contained in AP-42, must be consistent with modeled results for generation using modeling techniques approved by DEQ or EPA.

Task 2B Acceptance Criteria.

In order to generate estimates of emissions reductions, data from 2A (emissions, collections, or both) must be compared against a counter-factual scenario that assumes no investment under CERTA (Task 2B). In addition, emissions for both scenarios (baseline/counter-factual and actual, CPRG-funded implementation) will need to be projected into the future. Under Task 2B, sub-awardees will be required to report to DEQ all assumptions, data points and modeling inputs and techniques used to project emissions under both the actual and counter-factual scenarios. DEQ will review those submittals and accept the estimates if underlying data points and modeling methods are comparable with those used in Task 2A and otherwise meet a professional standard of being reasonable.

Task 3 Acceptance Criteria.

In Task 3, data reported to DEQ under Tasks 2A and 2B are compared, differences calculated via subtraction and converted to estimates of CO2e using global warming potentials. This task is relatively simple and involves basic mathematics. DEQ's QAM will review calculations performed for Task 3 by DEQ's TPP and accept the results if formulas and conversion factors are applied correctly.

Frequency of reporting:

Projects will be required to report data to DEQ biannually throughout the duration of the grant period.

Appendix B: Quality control documentation form

O

Oregon DEQ

Documentation of QA Review and Approval of Electronic Deliverables

Approvals on this form verify that all technical and editorial reviews have been completed and the deliverable meets the criteria for scientific defensibility, technical, and editorial accuracy, and presentation clarity as outlined in the Quality Assurance Project Plan, QA narrative, Quality Management Plan, and/or according to direction from the EPA PO.

Client:	EPA Region 10
Grant Number:	02J38701
EPA Project Officer:	Dani Shannon
Project Number:	02J38701
Project Name:	Oregon Climate Pollution Reduction Planning Grant
Grantee Org. Project Manager	Whitney Dorer

QA Form Details

Item Number	File Name (Copy the name of the File Reviewed)	Deliverable Description	Date Sent to Client	Deliverable (Draft)	Deliverable (Final)	Document Originator	QA Review Information (Review Type)	(Reviewer Name)	(Date Review was Performed)	(Brief Summary of Review Findings and Other Notes)	QA Review Information (Have all Findings Been Resolved)	(Originator Signature)	(Reviewer Signature)	(File Location) *Copy Long Folder Path Name*
01				☐	☐		***Technical***				☐ Yes			
							Technical				☐ Yes			
02				☐	☐		***Technical***				☐ Yes			
							Technical				☐ Yes			
03				☐	☐		***Technical***				☐ Yes			
							Technical				☐ Yes			
04				☐	☐		***Technical***				☐ Yes			
							Technical				☐ Yes			
				☐	☐						☐ Yes			

Appendix C: Compliance with requirements under the Privacy Act of 1974

Important Note about Personally Identifiable Information (PII)

The Privacy Act of 1974 (5 U.S.C. § 552a) mandates how federal agencies maintain records about individuals. Per OMB Circular A-130, Personally Identifiable Information (PII) is "information that can be used to distinguish or trace an individual's identity, either alone or when combined with other information that is linked or linkable to a specific individual."

EPA systems/applications that collect PII must comply with EPA's Privacy Policy and procedures to guard against unauthorized disclosure or misuse of PII in all forms. For more information click here. If PII are collected, then the QAPP will describe how the PII are managed and controlled.

Personally identifiable information (PII):

Please verify one of the following two options by checking the corresponding box:

1. This project **will not** collect Personally Identifiable Information (PII): X
2. This project **will** collect Personally Identifiable Information (PII): ☐

This QAPP will comply with 5 U.S.C. § 552a and EPA's Privacy Policy.