

Climate Pollution Reduction Grants – Implementation Grants

Sample Workplan Outline for General Competition

Instructions: This optional outline is intended to assist Climate Pollution Reduction Grant – Implementation Grant applicants with preparing their workplan for the general competition. Applicants are encouraged but not required to follow this outline; applications should address all of the sections (corresponding with the evaluation criteria) outlined in the Notice of Funding Opportunity (NOFO) (Funding Opportunity Number EPA-R-OAR-CPRGI-23-07). The workplan must not exceed a maximum of 25 pages. Pages in excess of the 25-page limit for the workplan (which does not include the 10-page technical appendix, 10-page budget narrative, optional budget spreadsheet, or GHG calculations spreadsheet) will not be reviewed. Please consult Section IV.B. of the NOFO for more information about the project narrative instructions, format, and content and required supplemental materials (i.e., Memorandum of Agreement, if applicable; budget narrative; and technical appendix.) and the evaluation criteria in Section V.B. Applicants should ensure that their workplans are written clearly using understandable terms. Doing so will help ensure that the evaluation team members understand the purpose and expected outputs and outcomes of the overall project.

1. OVERALL PROJECT SUMMARY AND APPROACH

a. Description of GHG Reduction Measures

The City of Gresham proposes one GHG reduction measure in this application. The Gresham WWTP Anaerobic Digestion Expansion project will reduce waste methane generation from Gresham and other local communities by facilitating increased capture and re-use of high strength organic waste (HSOW) such as FOG (Fats, Oils, and Grease) and food waste slurry. While HSOW represents a broad variety of liquid organic waste that could be used as feedstock to the anaerobic digesters for production of biogas, the assumptions and calculations for this measure assume that all future increases in HSOW have the characteristics of FOG that is currently received and processed at the Gresham WWTP. The WWTP currently has existing facilities where waste haulers offload FOG from tanker trucks into receiving tanks before it is ultimately injected into two existing anaerobic digesters. The expansion proposed in this measure includes the following improvements:

- Expand the existing FOG receiving station and storage capacity to triple the amount of FOG delivered from the community to the WWTP
- Construct a third anaerobic digester to allow digestion of the increased quantity of FOG received
- With the increased quantity of FOG and increased digester capacity, produce roughly twice the current amount of biogas
- Combust all biogas either in the cogeneration system or the waste gas flare, which converts methane to carbon dioxide, a much less potent greenhouse gas.

This measure represents a reduction in GHG emissions compared to the ‘baseline’ case, in which the FOG is disposed of in landfills where it produces methane as it decomposes. The resulting GHG emission reduction is quantified as the difference between the carbon dioxide equivalent of methane produced in landfills (baseline case), and the carbon dioxide produced from biogas combustion at the Gresham WWTP (proposed case).

This anaerobic digestion expansion measure is a component of a larger digestion and cogeneration expansion effort that is planned for the WWTP. A preliminary design for the larger

expansion was developed by Jacobs in 2023, and provides initial engineering considerations and cost estimates for the anaerobic digestion expansion and HSOW receiving expansion described in this measure. The preliminary design report, titled “Predesign Report for the WWTP Anaerobic Digestion and Cogeneration Expansion Project” (Jacobs, 2023) is included as an attachment with this application.

With the major features of the measure described as above and in the expansion predesign report, remaining tasks for the project include:

- Procure engineering services for detailed design and construction plans
- Bid the project for construction
- Negotiate and manage new and existing contracts with liquid waste haulers for delivery of additional HSOW to the Gresham WWTP

FOG and other HSOWs are produced through commercial and industrial operations in the metropolitan area, and waste producers pay hauling services to remove and dispose of the waste. Hauling services bring the waste to the Gresham WWTP and pay a tipping fee (currently around \$0.09 per gallon) to the City to dispose of the waste. This market for waste disposal ensures that the Gresham WWTP maintains a steady supply of HSOW for the digesters.

An additional benefit from the increased digested HSOW is increased production of biogas, which is currently fed to a cogeneration system to produce both electric power and captured heat. Both of these resources reduce the amounts that the City needs to purchase from electric and gas utilities, resulting in both an economic savings for the City and reduced utility emissions.

Potential risks that could lead to delays or interruption of the measure implementation are described below:

- Financial – the financial risk of this measure is minimal, as it is economically self-sustaining due to tipping fee revenue and offset of utility usage. However, issues with design, planning, or budgeting could result in an estimated project cost that exceeds the available project budget. A contingency line-item in the project budget and a value engineering study at the 90% design phase will both help ensure that the project is in line with the available budget.
- Schedule – a typical project of this scale might take three years to complete, with one year for design and two years for construction and startup. With an estimated performance period of 5 years as given in the Notice of Funding Opportunity, the project will be completed within the required timeframe.
- Regulatory – some regulatory review and approval will be needed before Gresham can make significant process changes to the WWTP. The preliminary design report for the larger expansion project was shared with Oregon Department of Environmental Quality (DEQ), which manages the NPDES permit and has regulatory oversight of the Gresham WWTP. DEQ did not have objections to the facility expansion described in the report.

This application and associated measure are related to the Priority Climate Action Plan (PCAP) developed and submitted by Oregon Metro. The applicable Oregon Metro PCAP measure is “Waste-1: Expand the availability of residential composting programs,” which intends to “reduce GHG emissions by keeping food out of landfills” through improved collection and processing of

food waste. The Oregon Metro PCAP, produced under EPA grant agreement #02J36101, is included as an attachment with this application.

This application measure was selected as a priority because it has been a necessary improvement for the Gresham WWTP for decades. Construction of a third anaerobic digester has been listed in the WWTP's unfunded CIP list since 2005, meaning that it is part of the City's intended work plan but has not had sufficient funding to proceed. The third anaerobic digester has been included in the Gresham WWTP Master Plan updates since 2011. This measure also aligns well with the goals of the CPRG program in that it will:

- Achieve significant cumulative GHG reductions by 2030 and beyond;
- Offset existing utility costs for the WWTP, which reduces the overall WWTP operating cost and represents a substantial community benefit for wastewater rate-payers of Gresham, of which roughly 48% of residents live in disadvantaged communities according to the Council on Environmental Quality's Climate and Economic Justice Screening Tool (CEJST);
- Fill a funding gap that the City has been unable to fill by other methods including general revenue, development charges, and other grant applications;
- Represent an innovative approach to emission reduction through improved waste collection and processing, which can be used as a model for other waste processing facilities across the region and beyond.

b. Demonstration of Funding Need

The City of Gresham has been planning for this project since 2005 but there has never been sufficient funding available to complete it among the other necessary projects and operating costs. Gresham has been working to identify other funding opportunities to help complete the project but so far has had limited success. In 2022, Gresham was awarded a \$100,000 grant through the Oregon Department of Energy's Community Renewable Energy Projects program to help fund a preliminary design effort for expansion of anaerobic digestion and cogeneration at the WWTP. Gresham was also awarded a \$107,548 grant from the Energy Trust of Oregon to help fund the same preliminary design (documentation for both these grants is provided as attachment to this application). The total cost of this preliminary design effort was over \$830,000. Given the estimated project cost for this measure, larger grant opportunities will be necessary to move the project forward substantially. In 2023, Jacobs provided a technical memorandum to summarize and evaluate outside funding opportunities for Gresham WWTP projects including the anaerobic digestion expansion. The technical memorandum showed that loan and grant opportunities were limited for this project, but highlighted the CPRG program as a unique funding opportunity for the project. No other significant funding opportunities appear to be available for this project in the near future.

c. Transformative Impact

Collection and processing of organic waste represents a substantial opportunity for greenhouse gas reduction that is not widely adopted. This project and emission reduction measure can serve as a model for businesses and public agencies that are interested in the economic and environmental benefits of producing biogas from organic waste. Gresham was an early adopter of these efforts, installing its first biogas-fueled cogeneration system in 2005, and a FOG receiving station in 2012 to accept deliveries of the liquid waste to be fed to the digesters. As ever, Gresham hopes to demonstrate the practical and economic viability of such measures, while reducing waste disposal and GHG emission.

2. IMPACT OF GHG REDUCTION MEASURES

a. Magnitude of GHG Reductions from 2025 through 2030

The magnitude of GHG reductions for this measure is based on the difference in emissions between the 'baseline' case and the proposed case, defined as follows:

- 'Baseline' case: existing conditions, no added diversion of HSOW to the Gresham WWTP. The Gresham WWTP continues to receive and process its current quantity of HSOW, while all other HSOW in this scenario is disposed of in landfills where it produces methane released to the atmosphere.
- Proposed case: the Gresham WWTP expands its receiving and processing capacity for HSOW, and triples the quantity of HSOW delivered to and digested at the WWTP. Thus a specific quantity of HSOW ultimately releases carbon dioxide into the atmosphere from combustion of biogas, rather than methane.

While HSOW represents a broad variety of liquid organic waste that could be used as feedstock to the anaerobic digesters for production of biogas, the assumptions and calculations for this measure assume that all future increases in HSOW have the characteristics of FOG that is currently received and processed at the Gresham WWTP. Gresham has many years of data to quantify biogas production potential from FOG, and market analysis indicates that there is sufficient FOG in the metropolitan area to support the increased delivery quantities (see "Predesign Report for the WWTP Anaerobic Digestion and Cogeneration Expansion Project" (Jacobs, 2023)).

The magnitude of GHG reduction resulting from this measure was estimated using the BEAM*2022 tool. Inputs were generated from historical average FOG characteristics over the last three years. Some default values were assumed for methane emissions from FOG disposed of in landfills under the 'baseline' condition. Input values, historical data, and the BEAM*2022 worksheet are included as attachments with this application, and assumptions and calculation method are documented in the technical appendix. The resulting calculations estimate an annual GHG emission reduction of approximately 7,630 mtCO₂e per year. Based on an estimated project completion by 6/30/2028, **the magnitude of GHG emission reductions from 2025 through 2030 is 19,100 mtCO₂e.**

b. Magnitude of GHG Reductions from 2025 through 2050

Using the same methodology as in section 2.a above, **the magnitude of GHG emission reductions from 2025 through 2050 is 172,000 mtCO₂e.**

c. Cost Effectiveness of GHG Reductions

The cost effectiveness of GHG reductions is defined as the grant dollars requested divided by cumulative GHG metric ton of CO₂-equivalent emission reductions to be achieved from 2025 through 2030. For the \$26,202,000 grant request, and the estimated 2025-2030 GHG reduction of 19,100 mtCO₂e, **the estimated cost effectiveness of this measure is \$1,370 per mtCO₂e.**

d. Documentation of GHG Reduction Assumptions – Up to 10 additional pages as an appendix to the workplan (see Appendix C of the NOFO)

The GHG reduction calculations are provided in the accompanying *GHGcalcs_Gresham Oregon.xlsx* spreadsheet. Assumptions and methodology are documented the accompanying

technical appendix.

3. ENVIRONMENTAL RESULTS – OUTPUTS, OUTCOMES, AND PERFORMANCE MEASURES

a. Expected Outputs and Outcomes

In addition to the GHG emission reduction, this measure will also result in increased electrical and heat production through the existing cogeneration system at the Gresham WWTP. The increased electrical generation will further offset the WWTP's electrical utility usage, likely saving over \$60,000 per year. The increased heat will be captured by the existing cogenerator heat exchange system to heat the digesters and office buildings at the WWTP, reducing the WWTP's usage of natural gas. While these expected values are difficult to quantify and are likely small in comparison with overall plant operating costs, they nonetheless represent a benefit to the rate payers of the City of Gresham, approximately 48% of whom reside in census tracts that are listed as Disadvantaged in the CEJST screening tool.

b. Performance Measures and Plan

Gresham currently tracks and evaluates key metrics regarding FOG delivery, biogas production, and electrical generation on a monthly basis. Recurring energy management meetings are held monthly between City engineering staff and WWTP operations staff to ensure all goals are being met and discuss any required changes. Key metrics tracked and discussed include:

- Gallons of FOG received each month
- Biogas produced per each month
- kWh of electrical power produced each month and year
- Electric and natural gas utility usage at the WWTP each month and year
- Regulatory emissions testing requirements, status, and results

Following implementation of the proposed GHG reduction measure, such energy management meetings will continue to be held and updated to include additional metrics if needed.

c. Authorities, Implementation Timeline, and Milestones

This GHG emission reduction measure is an expansion of existing facilities and infrastructure. The implementing entity, the City of Gresham, has the authority to implement the measure and will coordinate with relevant regulatory and permitting agencies.

Involved parties include:

- The City of Gresham – owns the relevant WWTP facilities, infrastructure, and equipment. Gresham also manages delivery contracts with companies that deliver FOG to the WWTP. The City of Gresham will be responsible for all engineering, permitting, and construction associated with implementation of the proposed measure.
- The WWTP operations and maintenance staff – the WWTP is currently operated and maintained by an O&M contractor. The O&M contractor is responsible for maintaining all WWTP facilities, infrastructure, and equipment in good working condition. The contract also specifies requirements for annual run-time of the cogeneration system with associated penalties, which ensures FOG receiving equipment, digester facilities, and the cogeneration system are maintained as a priority.

An estimated implementation timeline is presented below to describe the tasks and milestones associated with implementation of the proposed GHG reduction measure:

Design Phase:

Task	Weeks	Start Date	End Date
RFP and contracting for design consultant	14	7/1/2025	10/7/2025
Preliminary design	26	10/8/2025	4/8/2026
Detailed design	39	4/9/2026	1/7/2027

Construction Phase:

Task	Weeks	Start Date	End Date
Construction bid and contracting	10	1/8/2027	3/19/2027
Construction	50	3/20/2027	3/4/2028
Startup and commissioning	13	3/5/2028	6/4/2028
Project closeout and final reporting	4	6/5/2028	6/30/2028

As stated in the CPRG Notice of Funding Opportunity, the estimated project start date for awards is October 1, 2024. This coincides with the beginning of Gresham's fiscal year budget planning period, enabling Gresham to quickly add the project to its Capital Improvement Plan for the following fiscal year starting July 1, 2025. Once the budget is available, Gresham will be able to hire a design consultant to produce a detailed project design based on some of the preliminary design work already completed for the 2023 expansion preliminary design report. The timeline above is a reasonable estimate that shows completion in just under 4 years from the estimated project start date, which provides just over 1 year of extra time if needed during design or construction.

4. LOW-INCOME AND DISADVANTAGED COMMUNITIES

a. Community Benefits

This GHG reduction measure includes a side benefit of reducing the electrical power and natural gas utilities consumed by the WWTP. This reduces the annual operating cost of the WWTP and the associated revenue that is needed from wastewater utility rate payers in the community. According to the CEJST screening tool, 10 Gresham census tracts are identified as disadvantaged with a combined population of 52,792 people, out of a total estimated Gresham population of 117,107 people. Since WWTP operation and improvements are largely funded from wastewater utility rate revenues, all Gresham residents stand to benefit from a reduced operating cost of the WWTP. A list of the CEJST 'disadvantaged' census tract ID's and documentation of the population estimate for Gresham are provided as attachments with this application.

5. JOB QUALITY

Implementation of this GHG reduction measure may be expected to result in new jobs during both the construction phase and long-term operation. Job creation potential was not quantified for this measure, but could include:

- Construction contract work, for which the City will require prevailing wage documentation and/or Davis-Bacon requirements;
- New long-term O&M contract employees under current or future operations contracts. Wastewater operators and maintenance staff are typically skilled positions.

6. PROGRAMMATIC CAPABILITY AND PAST PERFORMANCE

a. Past Performance

- The City of Gresham has a history of successful management of federal and non-federal grant agreements. Recent examples include:
 - 2022 Oregon Department of Energy, CREP grant, \$100,000 (pending completion)
 - 2022 Energy Trust of Oregon, PDA Incentive, \$107,548.50
 - 2021 Energy Trust of Oregon, PDA Incentive, \$92,451.50
 - 2019 Federal FEMA PDM grant, \$438,741 (pending completion)

b. Reporting Requirements

The City of Gresham has been consistent and timely in its reporting requirements for the above grants. Documentation of past reporting, including quarterly reports and funding approvals, is provided as attachments to this application. The reviewer will note that the documentation is not exhaustive, as not all projects are complete and some completed projects do not have relevant reporting requirements or approvals.

c. Staff Expertise

The City of Gresham will manage the implementation of the proposed GHG reduction measure through design and construction, and ensure long-term operation and maintenance through O&M contractors. Current City of Gresham staff includes some staff members that have been successfully managing improvements projects at the WWTP for decades. Other City staff members are newer but have the benefit of strong institutional knowledge and standards.

The engineering design expertise will come from a design consultant selected for the project. Complex design and construction projects such as this anaerobic digestion expansion use a qualifications-based selection for solicitation of design contracts to ensure that the most qualified engineering consultants are selected for the design.

Long-term operation and maintenance expertise will be provided by the O&M staff for the WWTP. The WWTP is currently operated and maintained by a contractor, who is required by contract to maintain key certifications among staff at the plant, including Oregon wastewater operator certifications.

7. BUDGET (OPTIONAL BUDGET SPREADSHEET AND UP TO 10 ADDITIONAL PAGES MAY BE ADDED IF NEEDED AS AN APPENDIX TO THE WORKPLAN)

a. Budget Detail

The budget request in this application is based on an engineer's estimate of project costs in the preliminary design report titled "Predesign Report for the WWTP Anaerobic Digestion and Cogeneration Expansion Project" (Jacobs, 2023). Expansion of the anaerobic digestion system and the FOG receiving station were given line-item cost estimates for construction. To those numbers were added engineering fees (assumed 20% of construction cost), 20% contingency (given the early project stage), other costs such as staff labor, permitting, and inspections (assumed \$100,000), a 14% administration fee as is applied to all Gresham projects of any size, and an escalation factor at a rate of 4% per year from the report date (May 2023) to the estimated mid-point of the project (January 2027). The original individual line-item cost estimates for the third anaerobic digester and the FOG receiving station expansion are

\$13,195,445 and \$554,623, respectively. Final estimated project costs are presented below, broken into the given template categories:

- i. Personnel - \$3,333,000 – permitting, inspections, project management staff labor; plus 14% administration fee applied to all Gresham projects, calculated as 14% of the sum of all other costs.
- ii. Fringe Benefits - n/a
- iii. Travel - n/a
- iv. Equipment - n/a
- v. Supplies - n/a
- vi. Contractual - \$22,869,000 – engineering design and construction contracts
- vii. Other - n/a
- viii. Indirect Charges - n/a

b. Expenditure of Awarded Funds

The scope of this project is well defined, consisting of the third anaerobic digester and expansion of the existing FOG receiving station. The existing “Predesign Report for the WWTP Anaerobic Digestion and Cogeneration Expansion Project” (Jacobs, 2023) provides the basic engineering information for these new facilities, such as sizing, capacity, mechanisms, cost estimates, etc. The narrow scope and previous engineering effort will help ensure that the awarded grant funds will be expended in a timely and efficient manner. Since the project is already on the City’s unfunded CIP list, so once funding is made available the project can quickly convert to an active, funded project. Due to the estimated cost of the project (over \$10M), a value engineering study will be required that will also help ensure that the project is as cost-effective as possible.

c. Reasonableness of Costs

The funding request in the application is based on cost values given in a 2023 preliminary design report for expansion of anaerobic digestion and cogeneration expansion at the Gresham WWTP. These early-stage cost estimates provide a sound basis for the funding request in this application. The estimated costs are construction costs only, but from there an overall cost estimate was generated to include engineering services, administration costs, permitting, and escalation to the future anticipated construction timeframe. This method of cost estimating is generally reliable for Gresham WWTP capital improvement projects involving similarly complex design and construction.