**Max 25 pages**

**Section 1: Overall Project Summary and Approach**

UC Davis operates the Renewable Anaerobic Digester (READ) Facility on campus to process food waste from campus and outside entities. The READ facility was built in 2013 by Cleanworld, who operated the facility until 2017 when UC Davis took over ownership and operation. Since 2017, UC Davis has successfully owned and operated the facility. Over the last six years, facility staff worked hand-in-hand with Atlas Disposal waste diversion company and UC Davis Housing to correctly collect and process the current feedstock of pre- and post-consumer food waste. The READ Facility not only diverts food waste from landfill and reduces GHGs, it also holds significant reputational capital as an innovation leader, utilizing numerous proven technologies that are first in class. Our facility serves as a site for student and faculty research advancing the science and operational practices, including improving the economics of digester systems.

In a groundbreaking move to further demonstrate its position as a sustainability leader UC Davis has published an ambitious plan to eliminate 95% of fossil fuel use from campus operations by 2040. In support of this plan and our campus commitment to sustainability, including diverting 90% of our solid waste from landfill, the Facilities Management team at UCD has determined that with minimal investment, the facility could be upgraded and improved to maximize the use of more contaminated feedstocks and reduce green house gas emissions by converting flared biogas to green electricity to power our growing fleet of electric buses and other campus vehicles.

In the last five years, the READ facility has collected and processed approximately 20,000 tons of pre-and post-consumer food waste. Over the next five years, with the support of grant funding to implement necessary maintenance and upgrades, the READ facility could process over 50,000 tons of highly contaminated pre- and post-consumer, and commercial food waste. In order to expand capacity to process pre- and post- consumer waste and achieve an estimated reduction of 2,016 metric tons (MT) of CO2e/yr, UC Davis is seeking $2,826,545 million in funding to replace an existing tank at the facility. We anticipate these funds will be augmented by an anticipated award from the California Department of Resources Recycling and Recovery (CalRecycle), currently under review with our Contracts and Grants Administration, to upgrade the feedstock processing equipment and purchase a gas engine generator. The increased feedstock capacity, new generator and new tank will allow the facility to create 33 MMSCF/YR of valuable biogas in the form of 2.1 GWh/yr of carbon-negative, green electricity. These upgrades are critical to ensure the future operation and economic viability of the facility.

**Connection to Existing Priority Climate Action Plan (PCAP)**

UC Davis is sited in Yolo County, which is covered by the Sacramento Metropolitan Air Quality Management District PCAP[[1]](#footnote-1). This proposed project aligns with fulfillment of Measure BE-7 - Reduce Solid Waste (pg. 40). This calls for implementing an organics diversion program to reduce the quantity of organic waste sent to landfills and the associated processing facilities required to process organic waste. The READ Facility processes both onsite and offsite food waste and achieves landfill diversion.

1. **Description of GHG Reduction Measures**

The READ Facility has an award in review from CalRecycle (ORG7) to add new equipment to increase processing throughput. The funded project will increase the facility’s overall diversion capacity from 5,500 tons per year (TPY) to over 14,500 TPY. The proposed project will replace the rudimentary Doda Bioseparator with a more advanced depackaging machine, enabling the acceptance of highly contaminated post-consumer food waste. The additional 30 tons per day (TPD) of food diversion will be managed and hauled by Atlas Disposal, a 25-year Sacramento-based diversion company.

The CalRecycle grant will fund the purchase and installation a gas engine generator to convert flared biogas into 33 MMSCF/YR of valuable biogas in the form of 2.1 GWh/yr of carbon-negative, green electricity. This green electricity will power all of UC Davis' electrified bus fleet, which serves the campus and surrounding community, including grade-school students, low-income residents, disabled persons, and older adults. Additionally, all processed feedstock entering the digester will be significantly less contaminated, providing a new opportunity to compost 100% of the solid digestate. When used as green electricity to displace natural gas consumption, the new biogas is estimated to reduce emissions by 2,016 metric tons (MT) of CO2e/yr.

1. **Demonstration of Funding Need**

UC Davis needs an additional $2,826,545 million to perform necessary maintenance to the facility in parallel to the project to be funded by CalRecycle. The CPRG Implementation grant funding would be used to replace a 150,000 gallon hydrolysis tank which developed a gas leak that significantly impacts facility operations. Without the additional funds, READ is in jeopardy of shutdown, despite the anticipated CalRecycle award. A new tank is necessary to achieve the GHG emissions goals proposed and ensure the continued economic viability of the facility. UC Davis is facing a structural deficit in core funds which had previously supported the maintenance and operation of the READ facility, sustaining the project and associated research projects. However, budget cuts to campus operations have forced the difficult decision to reduce support of the facility, which now must become fully self supporting. In order to maintain the significant research and reputational value of the facility to the University, and support campus sustainability and decarbonization goals, the project team developed this plan to upgrade the facility and expand capacity, rather than shutter the site. When completed, this project will ensure ongoing support of climate resiliency research, agricultural engineering, and development of solid waste management best practices. Researchers in engineering and plant sciences who currently depend on the facility will be able to continue their research, and tours of the facility are which are held monthly, can continue to promote the sharing best practices and waste management principles with visitors like staff and faculty from the UC and Cal State University systems, other institutions of higher education, municipal and state representatives and energy managers, CalRecycle, energy managers, and students in UC Davis courses.

1. **Transformative Impact**

The READ Facility recently installed an ammonia extraction system that is the first of its kind. The digestate produced by the digester process contains ammonia, which is challenging to dispose of since it cannot be discharged through the campus sewer system. However, UC Davis partnered with consultant Advanced Environmental Methods (AEM), a waste-to-nutrient recovery company, to devise an ammonia distillation process to remove the ammonia from the digestate. Further, the ammonia byproduct is being used to create an organic fertilizer for agricultural use. California Safe Soils (CSS) in Sacramento purchases the fertilizer to use in their organic fertilizer product.

READ is one of just a few anaerobic digester sites globally that can remove ammonia from digestate, recover it, and concentrate it as a value-added product while keeping nitrogen out of California waterways. Although there are other anaerobic digesters in the region, most are co-digestion facilities and are limited in the amount of high-solids food waste they can accept.

This project will sustain these cutting edge practices, increase our volume of production, thus increasing our economic sustainability, and allow others to learn from our practices. Keeping our unique digester site open and operating at capacity will keep this in vivo laboratory available for students and faculty to use for future research projects which may push these advances even further.

**Section 2: Impact of GHG Reduction Measures**

1. **Magnitude of GHG Reductions from 2025 through 2030**

The project will result in an increase of 9,333 gross tons per year (8,400 net tons per year) of diverted food waste digested. From 2025 through 2030, this results in 12,096 MTCO2e of emissions reductions (Table 1).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 1** | |  |  |  |
| **YEAR** | **Feedstock diverted**  **Gross** | **Feedstock diverted**  **Net** | **Net GHG Benefit (MTCO2e)** | **Total** |
| **2025** | 9,333 | 8,400 | 2,016 |  |
| **2026** | 9,333 | 8,400 | 2,016 |  |
| **2027** | 9,333 | 8,400 | 2,016 |  |
| **2028** | 9,333 | 8,400 | 2,016 |  |
| **2029** | 9,333 | 8,400 | 2,016 |  |
| **2030** | 9,333 | 8,400 | 2,016 | **12,096** |

1. **Magnitude of GHG Reductions from 2025 through 2050**

Assuming an annual increase of 9,333 gross tons per year (8,400 net tons per year) of diverted food waste digested over the time horizon, from 2025 through 2050, this results in 52,416 MTCO2e of emissions reductions (Table 2).

With secured funding, UC Davis will install advanced feedstock processing equipment to divert highly contaminated food waste streams away from landfills. The READ facility at UC Davis and RegionalSan's anaerobic digesters will digest the diverted feedstock to produce biogas, thereby eliminating methane emissions from landfills. UC Davis will convert the biogas to carbon-negative green electricity to fuel electric vehicles and the electrified campus bus fleet. This green electricity will avoid further GHG emissions as it displaces carbon intensive power from the grid. The project will result in the reduction of 2,016 MT CO2e/yr and 2,688 MT CO2e over a 10 year period. After ten years of operation, UC Davis and its project partners will affect the reduction of 20,160 MT CO2e from the environment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 2** | |  |  |  |
| **YEAR** | **Feedstock diverted**  **Gross** | **Feedstock diverted Net** | **Net GHG Benefit (MTCO2e)** | **Total** |
| **2031** | 9,333 | 8,400 | 2,016 |  |
| **2032** | 9,333 | 8,400 | 2,016 |  |
| **2033** | 9,333 | 8,400 | 2,016 |  |
| **2034** | 9,333 | 8,400 | 2,016 |  |
| **2035** | 9,333 | 8,400 | 2,016 |  |
| **2036** | 9,333 | 8,400 | 2,016 |  |
| **2037** | 9,333 | 8,400 | 2,016 |  |
| **2038** | 9,333 | 8,400 | 2,016 |  |
| **2039** | 9,333 | 8,400 | 2,016 |  |
| **2040** | 9,333 | 8,400 | 2,016 |  |
| **2041** | 9,333 | 8,400 | 2,016 |  |
| **2042** | 9,333 | 8,400 | 2,016 |  |
| **2043** | 9,333 | 8,400 | 2,016 |  |
| **2044** | 9,333 | 8,400 | 2,016 |  |
| **2045** | 9,333 | 8,400 | 2,016 |  |
| **2046** | 9,333 | 8,400 | 2,016 |  |
| **2047** | 9,333 | 8,400 | 2,016 |  |
| **2048** | 9,333 | 8,400 | 2,016 |  |
| **2049** | 9,333 | 8,400 | 2,016 |  |
| **2050** | 9,333 | 8,400 | 2,016 | **52,416** |

1. **Cost Effectiveness of GHG Reductions**

|  |  |  |
| --- | --- | --- |
| EPA Funds Requested | GHG Reduction 2025-2030 | Cost Effectiveness of GHG Reductions |
| $2,826,545 | 12,096 MTCO2e | $233/MTCO2e |

1. **Documentation of GHG Reductions Assumptions**

The estimates in the previous sections were calculated using the California Air Resources Board (CARB) Benefits Calculator tool developed for the CalRecycle Organics Programs. Although the calculator includes a 10-year projection, the annual GHG reduction figure was extrapolated to determine the net GHG reduction through 2050. A copy of the calculator and its methodology is included in this application package.

The CARB Benefits Calculator estimates GHG reductions resulting from various project types for processing organic waste. For the READ Facility, the “Standalone Anaerobic Digestion Project” type was selected. This section will describe the methodology and assumptions associated with this project type, taken from the calculator’s quantification methodology documentation. Further references can be viewed in the footnoted document. Additionally, the attached CARB Benefits Calculator.xlsx shows each calculation and related assumptions.

**Calculation Method for Emission Reduction Estimates from Standalone Anaerobic Digestion Projects[[2]](#footnote-2)**

Both the GHG emission reductions and air pollutant emission estimates from Standalone AD projects are estimated as the difference between the baseline sending the organic materials to a landfill versus digesting those materials using a dedicated digester. Equation 11 estimates the GHG reductions and Equations 12 through 16 estimate the criteria and toxics emissions.A screenshot of a document

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**Section 3: Environmental Results – Outputs, Outcomes and Performance Measures**

1. **Expected outputs and outcomes**

UC Davis will increase local food waste diversion by:

1. Replacing the current Doda Bioseparator that admits significant quantities of inorganic material into the digester with an efficient depackager, increasing the acceptance of highly contaminated post-consumer food waste, nearly tripling today’s throughput capacity.
2. Installing a depackager which removes nearly all contaminants of excess grit, plastic films, and other non-digestible materials from landfill-diverted food waste, converting current and future digestate into usable compost.
3. Adding a generator will transform the currently flared biogas into valuable green electricity. The 33 MMSCF/YR of biogas will displace about 200,000 therms per year of petroleum natural gas.

The new equipment will provide an outlet for diversion of locally-sourced food waste and fully utilize the available Anaerobic Digester (AD) capacity at UC Davis. Moreover, the new depackager equipment will be slightly oversized. The Sacramento Regional County Sanitation District (RegionalSan) can receive and digest the excess capacity of processed food waste (3,000 TPY). This overflow enables the project to maximize its throughput while diverting the most material.

With secured funding, UC Davis will install advanced feedstock processing equipment to divert highly contaminated food waste streams away from landfills. The READ facility at UC Davis and RegionalSan's anaerobic digesters will digest the diverted feedstock to produce biogas, thereby eliminating methane emissions from landfills. UC Davis will convert the biogas to carbon-negative green electricity to fuel electric vehicles and the electrified campus bus fleet. This green electricity will avoid further GHG emissions as it displaces carbon intensive power from the grid. The project will result in the reduction of 2,016 MT CO2e/yr and 2,688 MT CO2e during the grant term. After ten years of operation, UC Davis and its project partners will affect the reduction of 20,160 MT CO2e from the environment.

UC Davis will pre-process a portion of the waste (3,000 net tons per year) for delivery to RegionalSan for digestion. OWL and UC Davis will install and operate the new feedstock processing equipment at full capacity by May 2025. Before depackager installation, in October 2024, UC Davis will begin to ramp up its existing, already-diverted feedstock supplies which are currently available through Atlas. UC Davis will use existing feedstock to bring the digester to full capacity before the depackager is available. Once UC Davis installs the depackager, newly-diverted feedstock will replace a portion of the already-diverted feedstock.

The advanced depackager reduces contamination entering the digester. Therefore, the solid digestate will contain less contamination. Since the existing digester tanks already contain plastic admitted by the Doda Depackager, removing this material via the existing screw presses takes time. UC Davis anticipates 1-2 complete hydraulic residence times (30 to 60 days) to remove most of the existing plastic material. After this time, UC Davis can compost the solid digestate because it will contain sufficiently low levels of contamination. Solid digestate will be sent for off-site composting to Yolo County Central Landfill as early as January, 2025.

The new depackager will process a total of 15,774 gross TPY of food waste and grease trap waste, which consists of 6,441 gross TPY of existing material and 9,333 gross TPY of new material. The new advanced depackager will produce a pre-processed feedstock (combined existing and new feedstock) with less than 0.2% contamination, removing nearly all inorganic matter. As a result, 1,232 TPY of rejected inorganics will be collected and landfilled (933 TPY of which results from the new feedstock). RegionalSan will receive approximately 3,000 net TPY of the new pre-processed feedstock for digestion. Please refer to the Letter of Commitment from RegionalSan.

The digestate is currently landfilled because of high levels of inorganic contamination, however, UC Davis can compost the digestate after the installation of the depackager. As a result of the proposed project, the new quantity of solid digestate produced will be an estimated 577 TPY. This is a decrease from the 957 TPY of existing solid digestate. This reduction occurs because less inorganic contamination entering the digester tanks requires the tanks to be screened (solid removed) less frequently, and because the physical contamination is prevented from entering the digester and does not end up in the solid digestate.

The project will produce 2.6 million gallons per year of liquid digestate, more than the 1.5 million gallons produced currently. UC Davis employs the Ammonia Extraction System to enable the liquid digestate to be de-ammoniated and conveyed by UC Davis' existing sewer system for disposal at the UC Davis Wastewater Treatment Plant. UC Davis sells approximately 15 tons per year of nitrogen ammonium fertilizer to a local fertilizer supplier. Over time, fertilizer production will increase to approximately 37 tons of nitrogen ammonium fertilizer per year. UC Davis will displace an equivalent amount of fertilizer produced from fossil natural gas with these tons of ammonium fertilizer.

The project to be funded by CalRecycle will yield 33.3 MMSCF/YR of biogas. This biogas routes through the existing gas processing equipment, dehydrates, and removes H2S and siloxanes. These impurities adsorb onto absorbent media, are collected, and are landfilled approximately once per year.

1. **Performance Measures and Plan**

As an awardee of CalRecycle grant funds, the project is required to submit quarterly progress reports on the project status. These reports will be made available to EPA which include the following information:

* Description of work completed, delays or issues encountered
* Work to be conducted during the next reporting cycle
* Performance data, to include quantities of waste diverted from landfill, quantity of biogas produced, digestate produced
* Community benefits that occurred as a result of the project
* Additionally, the UC Davis Office of Sustainability releases an annual report of total waste diverted from landfill, which reports feedstock processed by READ[[3]](#footnote-3).

These measures will be monitored closely by the project team at their biweekly meetings and quarterly when reports are due to CalRecycle, to ensure the project is on track to achieve targeted outcomes. If measures are not meeting expected goals, the project team will review performance records and identify and take corrective measures to ensure successful delivery of outcomes.

1. **Authorities, Implementation Timeline, and Milestones**

UC Davis anticipates construction will commence by September 2024, with depackager commissioning starting in October 2024 at full capacity. The generator will be operational in July 2025.

**Timeline and Milestones**

|  |  |  |
| --- | --- | --- |
| Task Name | Start | Finish |
| **Permitting** | **4/8/2024** | **5/5/2025** |
| Revise Air Permit | 4/8/2024 | 4/12/2024 |
| Receive ATC | 4/15/2024 | 9/27/2024 |
| Obtain/Retire ERCs | 9/30/2024 | 10/11/2024 |
| Air board inspection | 4/21/2025 | 4/21/2025 |
| Receive Permit to Operate | 5/5/2025 | 5/5/2025 |
| **Procure long-lead equipment** | **4/8/2024** | **4/4/2025** |
| Finalize equipment details with suppliers | 4/8/2024 | 5/17/2024 |
| Purchase depackager | 5/20/2024 | 6/28/2024 |
| Purchase generator | 5/20/2024 | 6/28/2024 |
| Purchase tank material | 5/20/2024 | 5/20/2024 |
| Receive depackager | 7/1/2024 | 9/20/2024 |
| Receive generator | 7/1/2024 | 4/4/2025 |
| Receive tank material | 5/21/2024 | 9/23/2024 |
| **Construction** | **8/12/2024** | **5/9/2025** |
| Civil work | 3/3/2025 | 3/7/2025 |
| Trenching, conduit, conductors | 3/10/2025 | 3/14/2025 |
| Concrete pad | 3/17/2025 | 3/21/2025 |
| Install Generator | 4/7/2025 | 4/18/2025 |
| Demo Doda | 8/12/2024 | 8/23/2024 |
| Install depackager | 9/23/2024 | 10/18/2024 |
| Install tank | 2/5/2025 | 4/29/2025 |
| Generator mechanical | 4/21/2025 | 5/2/2025 |
| Generator electrical | 5/5/2025 | 5/9/2025 |
| Depackager mechanical | 10/21/2024 | 10/25/2024 |
| Depackager electrical | 10/28/2024 | 11/1/2024 |
| Mechanical completion | 5/9/2025 | 5/9/2025 |
| **Start-Up** | **5/12/2025** | **5/30/2025** |
| Commissioning | 5/12/2025 | 5/23/2025 |
| Source test | 5/26/2025 | 5/30/2025 |
| Operation | 5/30/2025 | 5/30/2025 |

**Section 4: Low-Income and Disadvantaged Communities**

1. **Community Benefits**

The project site is situated in Census Tract 6113010501 which is designated as a low-income community census tract by the California Air Resources Board, and a priority population for investment. Approximately 31% of UC Davis undergraduate students are under-represented minorities and 36% are first-generation college students. According to the 2019 American Community Survey, the Census Tract that comprises the UC Davis campus contains 8,900 residents (predominantly students residing on-campus) with a median household income of $24,813 (30% of the State median household income) and 62% of whom are below the poverty level. Off-campus within Davis, residents aged 18-24 (most of whom are UC Davis students) exhibit a median household income of $22,000 (26% of the State median household income) and 74% are below the poverty level. The project will serve this low income priority population and the surrounding area by increasing the quantity and type of material that can be accepted for processing, and generate green electricity for the benefit of the population. After installation, the project will reduce toxic air contaminant emissions and reduce ammonia pollution. Further benefits include generating and economic benefit through generation of biofuel for use on campus and liquid fertilizer that can be sold to sustain ongoing maintenance and operational costs.

1. **Community Engagement**

The project team has engaged with the campus office of Sustainability, the campus Environmental Health & Safety (EHS) unit, and two Associated Students of UC Davis bodies as partners in conducting ongoing community engagement activities throughout the grant term and life of the project. UC Davis Sustainability and EHS are staff units responsible for providing vision, direction, and support for sustainability in all its dimensions working toward a more environmentally and socially sustainable campus, and, responsible in part for the environmental health and regulatory compliance of the University, respectively.

The ASUCD Environmental Policy & Planning Commission (EPPC) is an advisory board to the ASUCD Senate and is responsible for researching environmental issues affecting the campus and the surrounding area, and for making recommendations for improvement. Their Environmental Justice team seeks to better understand environmental justice concerns on campus. The Commission conducts environmental education and outreach with students, administration, staff and City of Davis partners create a more sustainable environment on campus. The Commission meets weekly and serves as a standing body fielding community ideas and concerns related to sustainability issues on campus, such as composting. Members of the project team presented to the EPPC in April 2023, and fielded questions from the members about the scope of the project, timeline, needs and benefits. The project team answered questions, offered tours of the site, and discussed how the proposed project fulfills waste diversion requirements and goals of the campus. The commission is supportive of this project and has requested updates as the project progresses, which the project team will provide.

The Campus Center of for the Environment (CCE) is an environmental advocacy group that actively engages students in projects and programs that advance campus sustainability efforts. The CCE also encourages and supports inter-group collaboration ag student groups and relevant departments on campus. The EPPC and CCE will include information about the biodigester upgrade in future education and engagement activities, and will relay concerns and feedback reported to their bodies to the project team. UC Davis Sustainability will engage the staff and student populations on behalf of our project team with education and outreach activities led by a Climate Action Fellow, designed to be both interactive and informative. The staff and student organizations involved in the planning activities will ensure engagement efforts have reached a broad representation of the campus community. In addition, the Facilities Management webpages hosts a form where community members can report concerns or issues observed at the project site. The Project Manager will receive these notifications and be responsible for responding. Translation for these responses as well as education and outreach materials will be provided in English and Spanish as needed.

**Section 5: Job Quality**

The project will create one full-time, permanent, union represented labor position. Wages and benefits will be determined by human resources, but are estimated to be $20-25/hour with a full UC staff benefits practice including health insurance, time off and retirement plan. In addition, the facility hosts UC Davis students as interns and is the subject of several ongoing federally funded research projects led by UC Davis faculty.

**Section 6: Programmatic Capability and Past Performance**

1. **Past Performance (10 points)**

This project team was awarded a grant from the California Department of Resources Recycling and Recovery (CalRecycle), on December 14, 2023 from the Organics Grant Program. Work will begin in April 2024 to upgrade the feedstock processing equipment and purchase a gas engine generator at the READ Facility. Our contact with CalRecycle is Andrew Lavin, (916) 341-6524, [Andrew.Lavin@CalRecycle.ca.gov](mailto:Andrew.Lavin@CalRecycle.ca.gov). This will be the first federally funded award for this project team.

1. **Reporting Requirements (10 points)**

The READ facility is managed by the Facilities Management department of the UC Davis, Finance, Operations and Administration (FOA) division, led by Vice Chancellor Clare Shinnerl. The project team has been managing the READ anaerobic digester since 2017 after taking over from Cleanworld which built the facility in 2013. Lead engineer Joe Yonkoski supervises the facility including operations, budget, coordinating site tours by municipal, industry and other educational institution staff, and facilitating access by UC Davis interns and researchers as both an operational site and working laboratory. Yonkoski and his team of operators successfully complete and manage multiple reporting requirements including to The UC Davis Office of Sustainability and University Office of the President for use in tracking campus and UC-wide sustainability goals.

As an awardee of CalRecycle grant funds, the project is required to submit quarterly progress reports on the project status to address the following areas:

* Description of work completed, delays or issues encountered
* Work to be conducted during the next reporting cycle
* Performance data, to include quantities of waste diverted from landfill, quantity of biogas produced, digestate produced
* Community benefits that occurred as a result of the project

Additionally, the UC Davis Office of Sustainability releases an annual report of total waste diverted from landfill, which reports feedstock processed by READ[[4]](#footnote-4).

The Facilities Management division is supported by the UC Davis, Office of Research Sponsored Programs, and the Contracts and Grant Accounting offices which provides financial services for externally funded projects, ensures compliance with regulatory requirements, and helps UC Davis staff and faculty manage over $1 billion in research funding annually. In addition the project team with work with the FOA Business Partners group, which provides business, budget planning and analysis service to our operational units, including Facilities Management, to ensure reporting requirements for this award are met.

1. **Staff Expertise**

A highly-experienced, well-qualified UC Davis project team are ready and excited to take on this vital project. UC Davis Utilities and Engineering has approximately 100 staff, from low and high-voltage electricians to pipe fitters, from construction crews to Professional Engineers and experienced managers ready to serve this project and the READ facility. UC Davis has owned and operated the READ facility since 2017, gaining extensive expertise in running an AD plant.

Key project staff include:

* Joseph Yonkoski - UC Davis READ site supervisor: Mr. Yonkoski is a professional chemical engineer by training with previous experience designing and building carbon dioxide capture plants. Mr. Yonkoski's work at UC Davis focuses on energy infrastructure projects and manages the anaerobic digester's operations team and its budget. Mr. Yonkoski will oversee the project staff within the scope of his usual responsibilities and requests no salary support from this grant.
* Joshua Morejohn - UC Davis Utilities and Engineering Executive Director: Mr. Morejohn is a proven leader and innovative engineering manager with 15 years of experience in campus utilities and infrastructure operations. Mr. Morejohn leads the Utilities and Engineering department at UC Davis and is responsible for 100 staff and the department's role in numerous critical infrastructure and energy projects at UC Davis. Mr. Morejohn will monitor the project within the scope of his usual responsibilities and requests no salary support from this grant.
* READ Operators – UC Davis Utilities - Justin Cunningham, Anthony Parra, Antonio Machado. Justin Cunningham, Anthony Parra, Antonio Machado, who collectively have over 25 years of experience and provide day to day operational support to the facility. The operators will oversee day-to-day activities at the site, coordinate access to the facility by construction crews, and enforce site safety and logistics for visitors. The operators will also help collect measurements and data for reporting back to CalRecycle and EPA. In addition, the operators will perform routine preventative maintenance on new equipment to maintian its functionality and corrective maintenance to repair issues in a timely manner. This activity will keep the project on task to reduce greenhouse gas emissions.

Advisors to the project include:

* Jason Magness - UC Davis Campus Engineering and Executive Director: Mr. Magness serves as the Campus Engineering and Executive Director of Engineering. Mr. Magness is responsible for planning, design, and construction management of all engineering activities for the UC Davis campus.

Aimee Pfohl - UC Davis Environmental Manager: Mrs. Pfohl acts as the primary contact with permitting authorities and has been successful in acquiring and modifying many permits for campus projects. Mrs. Pfohl is experienced in purchasing and allocating Energy Reduction Credits (ERCs) for similar projects.

**Budget Narrative**

1. **Budget Detail**

Total Project Budget Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project Costs** | | | | | |
|  | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** |
| **Personnel** | $73,236 | $76,165 | $79,212 | $82,380 | $85,676 |
| **Fringe** | $37,918 | $40,596 | $43,487 | $46,565 | $49,885 |
| **Equipment & Other Expenses** |  |  |  |  |  |
| Feedstock & Generator Upgrades | $2,271,671 |  |  |  |  |
| Stainless Tank | $1,500,000 |  |  |  |  |
| Construction | $2,756,687 |  |  |  |  |
| **Indirect Costs** | $238,206 | 49,623 | 52,147 | 54,802 | 57,613 |
|  | **Total Project Costs**  $6,877,718  **Additional Project Income – CalRecycle Award Under Review with the Sponsor** | | | | |
|  | | | | | |
| **CPRG Implementation**  **Grant Request** |  |  |  |  |  |
| Personnel | $73,236 | $76,165 | $79,212 | $82,380 | $85,676 |
| Fringe | $37,918 | $40,596 | $43,487 | $46,565 | $49,885 |
| Construction & Other Expenses | $1,950,000 |  |  |  |  |
| Indirect Costs | 47,240 | 49,623 | 52,147 | 54,802 | 57,613 |
|  | **Total EPA Request**  $2,826,545 | | | | |

**Expenditures by Quarter, Year 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Oct – Dec  2024 | Jan – Mar  2025 | April – June  2025 | July – Sept 2025 |
| **Federal (EPA Request)** |  |  |  |  |
| Personnel | $27,788.50 | $27,788.50 | $27,788.50 | $27,788.50 |
| Construction & Other Expenses | $900,000 | $525,000 | $525,000 | $0 |

**5 Year Budget Detail**

**EPA Request**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Personnel** | **YEAR 1** | **YEAR 2** | **YEAR 3** | **YEAR 4** | **YEAR 5** |  | **TOTAL** |
| Project Operator @ $73,154/year 0.5FTE with 4% escalation | *38,420* | *39,957* | *41,556* | *43,218* | *44,947* |  | *$208,098* |
| Project Operator @ $73,154/year 0.5FTE with 4% escalation | *17,752* | *18,462* | *19,200* | *19,968* | *20,767* |  | *$96,149* |
| Project Operator @ $73,154/year 0.5FTE with 4% escalation | *17,064* | 17,746 | 18,456 | 19,194 | 19,962 |  | *$92,422* |
| TOTAL PERSONNEL | *$73,236* | *$76,165* | *$79,212* | *$82,380* | *$85,676* |  | *$396,669* |
| **Fringe Benefits** |  |  |  |  |  |  |  |
| *Full time employees @ 51.4%* | *37,918* | *40,596* | *43,487* | *46,565* | *49,885* |  | *$218,451* |
| TOTAL FRINGE BENEFITS | *$37,918* | *$40,596* | *$43,487* | *$46,565* | *$49,885* |  | *$218,451* |
| TOTAL TRAVEL | *$0* | *$0* | *$0* | *$0* | *$0* |  | *$0* |
| **Equipment** | *$0* | 0 | 0 | 0 | 0 |  |  |
| TOTAL EQUIPMENT | *$0* | *$0* | *$0* | *$0* | *$0* |  | *$0* |
| TOTAL SUPPLIES | *$0* | *$0* | *$0* | *$0* | *$0* |  | *$0* |
| TOTAL CONTRACTUAL | *$0* | *$0* | *$0* | *$0* | *$0* |  | *$0* |
| **OTHER** |  |  |  |  |  |  |  |
| *Other Expense – welded tank* | *$1,500,000* |  |  |  |  |  |  |
| *Capital Project Delivery Service, UCD DCM* | *$450,000* |  |  |  |  |  | *$450,000* |
| TOTAL OTHER | *$1,950,000* | *$0* | *$0* | *$0* | *$0* |  | *$1,950,000* |
| TOTAL DIRECT | *$2,061,154* | *$116,761* | *$122,699* | *$128,945* | *$135,561* |  | *$2,565,120* |
| Modified Total Direct Costs | $111,154 | $116,761 | $122,699 | $128,945 | $135,561 |  | $615,120 |
| **Indirect Costs** |  |  |  |  |  |  |  |
| *On-Campus/Other Sponsored Activities F&A (42.5% of MTDC)* | *47,240* | 49,623 | 52,147 | 54,802 | 57,613 |  | *$261,425* |
| TOTAL INDIRECT | *$47,240* | *$49,623* | *$52,147* | *$54,802* | *$57,613* |  | *$261,425* |
|  |  |  |  |  |  |  |  |
| **Requested Amount:** | ***$2,108,394*** | ***$166,384*** | ***$174,846*** | ***$183,747*** | ***$193,174*** |  | ***$2,826,545*** |

1. **Expenditure of Awarded Funds**

The funds will be expended in a manner consistent with EPA and UC Davis protocols. The project team will meet (biweekly) to track project deliverables against the proposed timeline. Equipment bids will be secured early in the process and lead times have been factored into the project timeline. The timeline was developed in collaboration with the equipment vendors and our on-campus Design Construction Management staff to allow sufficient time for project tasks based on previous experience.

Project lead Yonkoski will meet quarterly with the Facilities Management department budget analyst to ensure timely delivery of project tasks are tracking with expenditure of project funds as expected.

1. **Reasonableness of Costs**

**Personnel Costs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | FTE | Annual Salary | Cost Year 1 | Total Project Cost |
| Justin Cunningham (Operator) | 50% | $73,154 | $38,420 | $208,098 |
| Anthony Parra (Operator) | 25% | $67,600 | $17,752 | $96,149 |
| Antonio Machado (Operator) | 25% | $64,980 | $17,064 | $92,422 |

The biodigester operators are instrumental to the success of the project. Lead Operator, Justin Cunningham, will oversee day-to-day activities at the site and coordinate access to the facility by construction crews. Cunningam will also enforce site safety and logistics for visitors. Operators Parra and Machado will support Lead Operator Cunningham with daily responsibilities and unforeseen activities that arise.

Once construction is complete, the operators will undergo training to use the new equipment and will begin operating the facility to process new feedstock and produce electricity from biogas. Such operation will continue for the total project period. The operators will also help collect measurements and data for reporting back to CalRecycle and EPA. In addition, the operators will perform routine preventative maintenance on new equipment to maintian its functionality and corrective maintenance to repair issues in a timely manner. This activity will keep the project on task to reduce greenhouse gas emissions.

**Fringe Benefits**

|  |  |  |
| --- | --- | --- |
|  | Cost Year 1 | Total Project Cost |
| Justin Cunningham (Operator) | $19,892 | $114,602 |
| Anthony Parra (Operator) | $9,191 | $52,951 |
| Antonio Machado (Operator) | $8,835 | $50,898 |

The fringe benefits were calculated based on the established fringe benefits policy of UC Davis.

**Trave**l

None

**Equipment**

None

**Supplies**

None

**Contractual**

None

**Construction**

|  |  |  |
| --- | --- | --- |
|  | Tank Cost | 30% of Equipment Cost |
| Installation of 150,000 gallon welded stainless steel anaerobic digester tank | $1,500,000 | $450,000 |

Installation of the new welded stainless 150,000 gallon tank will be overseen and managed by our in-house UC Davis, Design and Construction Management department. Their standard service rate for

Capital Project Delivery is 30% of the equipment cost. Tank will be purchased and installed in Year 1 of the project. The 30% service rate includes project management, construction management, inspections, construction administration, contract services, overhead, and contingency.

**Other**

|  |  |  |
| --- | --- | --- |
|  | Cost Year 1 | Total Project Cost |
| 150,000 gallon welded stainless steel anaerobic digester tank | $1,500,000 | $1,500,000 |

Tank 1 at the READ Facility is 150,000 gallons, made of carbon steel and has developed a leak which can no longer be repaired. We received a quote from Chicago Bridge and Iron to replace and upgrade the tank with a 150,000 welded stainless steel tank for $1,500,000, installed.

**Indirect Charges**

|  |  |  |
| --- | --- | --- |
|  | Year 1 | Total Project |
| TOTAL DIRECT COSTS | $2,061,154 | $2,565,120 |
| Modified Total Direct Costs (MTDC) | $111,154 | $615,120 |
| TOTAL INDIRECT COSTS  (42.5% of MTDC) | $47,240 | $261,425 |

Indirect costs are calculated using the federally negotiated rate for On-Campus, Non-Research, Sponsored Activities at UC Davis. For the project period the Facilities & Administrative Rate is 42.5%, applied to Modified Total Direct Costs (MTDC). MTDC includes all salaries and wages, fringe benefits, materials, supplies, services, travel and subgrants and subcontracts. MTDC excludes equipment and capital expenditures.

**Funds Under Review**

A total of $7,595,869 is needed to make upgrades and necessary repairs to the READ Facility. The READ Facility team has an award under review with CalRecycle that would support the upgrades needed for the feedstock processing equipment and to purchase a gas engine generator. This award along with this request from the EPA for $2,826,545 to replace Tank 1 at the facility will achieve the GHG reductions estimated at 12,096 MTCO2e from 2025-2030, and 52,416 MTCO2e from 2025 to 2050.

1. https://www.airquality.org/residents/climate-change/climate-pollution-reduction-grants [↑](#footnote-ref-1)
2. https://ww2.arb.ca.gov/sites/default/files/auction-proceeds/calrecycle\_organics\_finalqm\_6-15-20.pdf [↑](#footnote-ref-2)
3. <https://sustainability.ucdavis.edu/resources> (see Zero Waste Reports section) [↑](#footnote-ref-3)
4. https://sustainability.ucdavis.edu/resources (see Zero Waste Reports section) [↑](#footnote-ref-4)