

Budget Narrative

All budget details below are supported by calculations and data sources in the attached “CPRG Budget Spreadsheet – City of Cheyenne”.

Expenditure of Awarded Funds & Reasonableness of Costs

The City will ensure that awarded grant funds are expended in a timely and efficient manner by adhering to the following procedure:

- The City has an established system of controls and procedures in place to meet post-award requirements and ensure compliance with federal regulations. These procedures are detailed in the Accounting, Purchasing, and Grants Management Policy and Procedure Manuals.
- Once a grant is awarded, the agreement is reviewed and approved by the City Attorney prior to the final review and approval by the City’s Governing Body, then recorded by the Clerk’s office.
- The Economic Resource Administrator and designated project manager are responsible for leading the project team, managing contracts, deadlines, and maintaining grant compliance.
- A grant management software is used to manage communications, reporting deadlines, and records. Expenditures are tracked and reconciled monthly by the City’s Budget and Accounting Analyst through the City’s financial accounting software. Departments work together to manage grant funds efficiently and in a timely manner, including the Purchasing Manager, Engineering, Public Works, and Planning & Development Department Directors, Treasurer, and numerous staffers.
- This proposal details a bold timeline that aggregates procurement of the four (4) solar sites across Measures 1-3 to streamline the procurement and development timelines.

General Implementation Costs

Personnel (all measures):

The City will create a new position, a SEP Manager, to oversee the implementation of Measures 1-4 and the energy innovation revolving fund. This position will oversee the procurement, contracting, and construction for the projects, in coordination with existing staff. This position will be essential for achieving the milestones outlined in *Section 1*. Once the grant term ends, the City will keep the position for at least 5 years beyond 2030 to oversee the region’s growing energy projects. This position will be posted at \$90k and will be hired as soon as awards are funded. The costs are split evenly across the budget for **all four measures** to result in a cost of \$5,625 in 2024 and \$22,500 annually for 5 years.

Fringe benefits (all measures):

The City uses a Benefit Calculator formula to calculate annual fringe benefits, which include Medical, Vision, Dental, Life Insurance, Pension, Social Security, and Workers Compensation. Medical, Vision, Dental, and Life Insurance is calculated by taking 24.21% of the annual salary and the remainder are calculated based on the following rates: Pension – 0.1462, Social Security – 0.0765, and Workers Compensation – 0.0254. This is a Benefit Rate of 62.53% and it applies to all full-time employees. These costs are split evenly across the budget for **all four measures** to result in a cost of \$3,517 in 2024 and \$14,069 annually for 5 years.

Base cost of solar (Measures 1-3):

As described in the ‘Measure Specific Activity Data’ for Solar in the GHG Reduction technical appendix, the estimated capacity is based on available acres and a 5.3 acre per MW assumption. To maximize economies of scale and drive down costs, the City intends to contract projects in Measures 1-3 through a single procurement to one developer or development team. The cost of solar can be considered for an aggregated 63.86 MW project rather than smaller individual projects. The cost of solar is thus based on the national average of utility scale solar projects between 50-100 MW plus further assumptions:

- As outlined in the CPRG Budget Spreadsheet -> Solar Cost Estimates tab, we use a \$1.35/Wdc base rate of solar ('Solar Cost Estimates', column H). This is based on a [2023 Lawrence Berkeley National Lab \(LBNL\) \(page 22\)](#) study that found that the median cost of solar for a 50-100 MW solar project was \$1.20/Wdc in 2022.^{xxxv}
- Adjusted for a 3% inflation rate, the cost of solar when the contract with the solar developer will begin in 2026 is projected to be \$1.35/Wdc.
- To meet the requirements of domestic content, Bloomberg NEF estimates that US-made modules will likely cost up to \$0.16, or 11%, more per watt than imported modules from Southeast Asia.^{xxxvi} Factoring in domestic content, we project the cost of a 50-100 MW ground-mounted solar system in 2026 to be \$1.51/Wdc.

Solar operation and maintenance costs (Measures 1-3):

Beyond the capital costs for solar, operation and maintenance costs for solar are estimated to be \$5-8kWdc/year cleaning and vegetation costs are about \$1/kWdc (see [2020 LBNL report](#)).^{xxxvii} The upper range of the operation and maintenance costs are conservatively used to account for dual land use considerations on the landfill and ranching areas. Total operation and maintenance costs are assumed to be \$9/kWdc and estimated in the CPRG Budget Spreadsheet -> Solar Cost Estimates tab (Column V).

Interconnection study (Measures 1-2):

Through initial planning conversations with BHE, they have already indicated that the proposed landfill solar and cattle-voltaics projects will be able to connect to their existing infrastructure supporting the Corriedale Wind Farm. To confirm that, BHE suggested the City conduct an interconnection study before proceeding, which BHE estimates will cost up to \$150,000.

Battery (Measures 1-2)

According to NREL's [2023 Annual Technology Baseline Data](#), a 4-hr utility-scale battery is expected to cost \$1,390/kWdc under a moderate scenario.^{xxxviii} To meet the domestic content requirement for the ITC, we added an 11% cost premium. This 11% is extrapolated from the solar domestic content increase estimated by [Bloomberg NEF](#).^{xxxvi} With domestic content, we expect the price of a 20 MW battery to be \$30,851,749. With the 30% ITC and the 10% domestic content adder ('Battery Cost Estimates' -> columns K-Q), the remaining battery costs will be \$18,511,050. Battery size and duration were recommended by BHE. Curtailment rate optimization was modeled by BHE and is discussed in *Technical Appendix - Measure-Specific Activity Data*.

Battery O&M (Measures 1-2)

According to NREL's [2023 Annual Technology Baseline Data](#), operation and maintenance costs for a utility-scale battery are expected to be \$34.74/kWdc-year under a moderate scenario.^{xxxviii} For a 20 MW battery, we estimate this will be about \$694,859/year.

Environmental Education Intern (all measures):

An Environmental Education Intern will be hired each year of the grant term to support community engagement for all four measures and to ensure members of the community are learning and gaining work experience from the projects, as described in *Section 5*. \$4,000/year is budgeted as a stipend for the summer or semester, for a cost of \$1,000 per measure.

Energy Innovation Research Intern (all measures):

An Energy Innovation Education Intern will be hired each year of the grant term to support implementing the energy projects and to ensure members of the community are learning and gaining work experience from the projects, as described in *Section 5*. \$4,000/year is budgeted as a stipend for the summer or semester, for a cost of \$1,000 per measure.

Community engagement events (all measures):

As described in *Section 4*, the City will host community engagement forums to ensure there is an understanding of each of the project plans, how community solar or community energy programs work, the other benefits to the City and residents, and other foundational questions about the technologies used. We estimate each forum will need a budget of about \$2,500 to pay for facility rentals, A/V technology, limited refreshments, and limited printing or signage.

Indirect 10% de minimus (all measures):

The City of Cheyenne requires a 10% de minimus fee for all personnel, fringe, travel, and equipment funding. However, because the solar modules, inverters, and other ‘equipment’ is included in contractual, the City is not planning to apply the 10% fee to contractual or other costs. The 10% fee covers overhead and administrative tasks within the City.

Investment Tax Credit (measures 1-3):

We expect the solar and battery projects to be eligible to claim the Investment Tax Credit (ITC) via Elective Pay, since the City of Cheyenne intends to own the systems and claiming the credits, or via a third-party financing arrangement with BHE and the development team, should that be determined to be more optimal. The 40% is based on a 30% base tax credit and the 10% domestic content bonus. Domestic content premiums are accounted for in the cost of the solar and batteries (see CPRG Budget Spreadsheet -> Solar Cost Estimates tab, Columns M-S). The City will meet prevailing wage and apprenticeship requirements to get the 30% base credit, in addition to the domestic content requirements for US-manufactured supplies to meet the 10% domestic content adder. The ITC is reflected in the year the cost occurs to offset the total cost of solar and battery in the budget, even though the City won’t claim the credit until the project is placed in service.

Other than the domestic content adder, no other ITC bonus adder is assumed, as noted in the Solar Cost Estimates tab. The only other bonus adder that could be relevant would be the Low-Income Financial Benefit Adder, but that is not assumed because of current IRS guidance, the competitive process, and because Cheyenne’s project structure for customer participation depends on further discussion with BHE on how the subscription structure will function and determine exact eligibility. Should these projects ultimately be eligible for and receive this bonus, the City would work with US EPA and BHE to discuss whether a larger or longer duration battery would be feasible to pursue with remaining funds (see *Budget Narrative – Battery* above on battery cost assumptions and *Technical Appendix* below for battery sizing and curtailment discussion).

Measure 1: Landfill Solar

Category	Budget Item	Justification
Personnel	Strategic Energy Projects Manager	See Budget Narrative, General Implementation costs, Personnel for detailed breakdown.
Fringe Benefits	Full time employees	See Budget Narrative, General Implementation costs, Fringe Benefits for detailed breakdown.
Contractual	Closed landfill solar 4.23 MWdc capacity at \$1.66/Wdc = \$7,020,075	We project the 32 available acres on the closed landfill to yield 4.23 MWdc of capacity, as described in the ‘Measure-Specific Activity Data’ for Solar in the GHG Reduction <i>Technical Appendix</i> . Installing solar on landfill requires special design considerations such as using ballasted structures to secure the panels, instead of securing them in the ground, to prevent puncturing the landfill cap. These

		special design considerations require additional costs. According to a developer at CS Energy , landfill solar is 10-20% more expensive than normal ground-mounted solar systems. ^{xxxix} The lower end of that range is used to estimate the cost since the topography of the closed landfill is relatively low grade with few on-site obstructions. A 10% increase to the base rate of \$1.51/Wdc is \$1.66/Wdc. These solar panels will yield 31.4% of the GHG reductions in Measure 1. The costs will occur during Milestones E and F in 2026.
Contractual	Landfill buffer solar 9.25 MW capacity at \$1.51/W = \$13,960,377	70 available acres of landfill buffer will yield 9.25 MW of capacity, as described in the 'Measure Specific Activity Data' for Solar in the GHG Reduction <i>Technical Appendix</i> . The buffer areas will not require any special design considerations, so the cost is based on the base cost of \$1.51/Wdc. The solar panels will yield 68.6% of the GHG reductions in Measure 1. The costs will occur during Milestones E and F in 2026.
Contractual	Landfill and buffer solar/electrical O&M = \$121,245 annually for 2 years	At \$9/kWdc, the total operation and maintenance (O&M) costs for the 13.47 MW landfill solar project are \$121,245 annually. O&M will begin one year after the project is put in service in 2028. Cheyenne requests 2 years of O&M costs to cover the expense before savings from the project can cover the cost. The solar O&M is necessary to ensure the panels continue to perform at maximum capacity. The cost will occur after Milestone F in years 2028 and 2029.
Contractual	Interconnection study for measures 1 and 2 (25%) = \$37,500	The landfill solar capacity is approximately 25% of the total capacity that will be connected to the grid at the Corriedale Wind Farm, therefore 25% of the interconnection study is factored into the budget. The cost is described in <i>General Implementation costs</i> . The interconnection study will be commissioned in 2025 and is necessary to achieve the GHG reductions in measure 1. The cost will occur after Milestone B.
Contractual	20 MW 4-hr battery (25%) = \$7,712,937	As described in the previous budget item, 25% of the battery cost is factored in as the landfill is 25% of the total capacity of the solar feeding into the battery. The cost is described in <i>General Implementation costs</i> . The battery is necessary to ensure curtailment is minimized in the hybrid solar and wind interconnection. The cost will occur during Milestones E and F in 2026.
Contractual	Battery O&M (25%) = \$173,715 annually for 2 years	Since the landfill is approximately 25% of the capacity feeding into the battery, 25% of the battery O&M costs are factored in to begin the year after the battery is placed in service. Cheyenne requests 2 years of O&M costs to cover the expense before savings from the project can cover the cost. The cost is described in <i>General Implementation costs</i> .

		The battery O&M is necessary to ensure the battery continues to perform properly. The cost will occur after Milestone F in 2028 and 2029.
Other Costs	Environmental Education Intern	See Budget Narrative, General Implementation costs, Environmental Education Intern for detailed breakdown.
Other Costs	Energy Innovation Research Intern	See Budget Narrative, General Implementation costs, Energy Innovation Research Intern for detailed breakdown.
Other Costs	Community Engagement/Education Events = \$15,000 in 2025 and 2027	There will be up to 12 forums for community engagement for the landfill project, 6 before construction and 6 after. The cost is described in <i>General Implementation costs</i> . Community engagement is necessary to ensure the community understands the benefits and implications of the project. The costs will occur in Milestone C and after Milestone G.
Indirect Costs	10% de minimus = \$914 in 2024 and \$3,657 annually for 5 years	10% de minimus is required for personnel, fringe, and travel. The SEP Manager is required to implement the projects. The cost will occur throughout Milestones A-G.
Cost Share	40% ITC tax credit for landfill solar = -\$8,392,181	As described in <i>General Implementation costs</i> , the ITC will be applied to the supplies and labor expenses for the landfill solar. The tax credits make Measure 1 affordable and allow the City to reduce the GHG emissions in Measure 1. The cost will occur during Milestone E and F.
Cost Share	40% ITC tax credit for battery = -\$3,085,175	As described in <i>General Implementation costs</i> , the ITC will be applied to the supplies and labor expenses for the battery. The tax credits make the hybrid wind and solar interconnect possible and make it affordable for the City to reduce the GHG emissions in Measure 1. The cost will occur during Milestone E and F.

Measure 2: Cattle-Voltaics

Category	Budget Item	Justification
Personnel	Strategic Energy Projects Manager	See Budget Narrative, General Implementation costs, Personnel for detailed breakdown.
Fringe Benefits	Full time employees	See Budget Narrative, General Implementation costs, Fringe Benefits for detailed breakdown.
Travel	Colorado Agrivoltaic Learning Center Site Tour Fees = \$200 in 2024 and \$400 in 2025 and 2026	As part of its community engagement efforts, the City of Cheyenne will bring community members to the Agrivoltaic Learning Center to learn about cow-location and understand the benefits, as described in <i>Section 4</i> . Each tour is \$200 for 20 people and the City plans to lead 5 tours between 2024-2026. The tours are important to ensure the community understands the cattle-voltaics project and opens opportunities for further agrivoltaics projects. The cost will occur during Milestone C.
Travel	Charter Bus Minibus Rental = \$1,500 in	The minibus rental will be reasonable costs necessary to provide access for the 5 Agrivoltaic Learning Center Site

	2024 and \$3,000 in 2025 and 2026	Tours, without being a financial barrier to participants. These transportation costs support the tours to provide innovative, hands-on, and accessible engagement and education on agrivoltaics and cattle-voltaics. The buses will seat up to 35ppl. The buses are estimated to be up to \$1,500/day based on this quote for a Denver-based rental . ^{xi} Should cheaper quotes be available from Cheyenne or in the region at time of rental, the City will pursue those options. ^{xii} The cost will occur during Milestone C.
Travel	Colorado Agrivoltaic Learning Center 2-Day Workshop Tickets = \$2,400 in 2024 and \$3,000 in 2025	The CALC hosts two 2-Day Workshop each year in May and August. Three Cheyenne project team members will plan to attend in August 2024 and 2025, respectively, to inform the cattle-voltaic project planning and develop content expertise in Wyoming. The workshop fees are \$800/person and an up to \$200 fee assumed for the following year. ^{xiii} The workshop is necessary to inform the cattle-voltaic project design and operations and for enhancing regional education and expertise on this emerging practice, as discussed in <i>Section 4 – Community Benefits</i> in Cheyenne as an outcome from the project. The cost will occur in Milestone C.
Travel	Hotel Accommodations for 2-Day Agrivoltaic Learning Center Workshop = \$528 annually for 2 years	As described in the point above, the annual Agrivoltaic workshop will be important for project staff. The 2-day workshop will require an overnight hotel for each participant from Cheyenne. The estimated rate is \$176/night per room, per Boulder/Broomfield GSA rates. The cost will occur in Milestone C.
Contractual	Cattle-Voltaics 46.23 MWdc capacity at \$1.81/Wdc = \$83,669,811	We project the 350 available acres on the cattle grazing ranch will yield 46.23 MW of capacity, as described in the 'Measure Specific Activity Data' for Solar in the GHG Reduction <i>Technical Appendix</i> . Cattle-voltaics require the solar panels to be mounted at least 6 feet off the ground to prevent cows from damaging the panels. Like solar canopies, the poles required to raise up the panels will be made of steel, which will increase the cost per watt. According to a Texas-based developer that specializes in deploying solar parking canopies, the additional steel will increase the price by \$0.30-0.35/Wdc compared to a ground mounted system. We assume only a \$0.30/Wdc increase to the base rate of \$1.51/Wdc is \$1.81/Wdc because the design considerations are shorter in height (likely 6-8 feet) for the proposed cattle-voltaics project compared to vehicles and humans (likely 8-12 feet). The solar panels will yield the GHG reductions in Measure 2 and the costs will occur during Milestones E and F.
Contractual	Cattle-Voltaics solar/electrical operations and maintenance -	At \$9/kWdc, the total O&M costs for the 46.23 MW cattle-voltaics project are \$416,038 annually. O&M will begin one year after the project is put in service in 2028. Cheyenne requests two years of O&M costs to cover the expense

	\$416,038 annually for 2 years	before savings from the project can cover the cost. The solar O&M is necessary to ensure the panels continue to perform at maximum capacity. The cost will occur after Milestone F.
Contractual	Interconnection study for measures 1 and 2 (75%) = \$112,500	The cattle-voltaics capacity is 75% of the total capacity that will be connected to the grid, therefore 75% of the interconnection study is factored into the budget. The cost is described in <i>General Implementation costs</i> . The interconnection study will be commissioned in 2025 and is necessary to achieve the GHG reductions in Measure 2. The cost will occur after Milestone B.
Contractual	20 MW 4-hr battery (75%) = \$23,138,812	As described in the previous budget item, 75% of the battery cost is factored in as the cattle-voltaics which is 75% of the total capacity feeding into the battery. The cost is described in <i>General Implementation costs</i> . The battery is necessary to ensure curtailment is optimized. The cost will occur during Milestones E and F.
Contractual	Battery O&M (75%) - \$521,144 each year annually for 2 years	Since the cattle-voltaics is 75% of the capacity feeding into the battery, 75% of the battery O&M costs are factored in to begin the year after the battery is placed in service. Cheyenne requests two years of O&M costs to cover the expense before savings from the project can cover the cost. The cost is described in <i>General Implementation costs</i> . The battery O&M is necessary to ensure the battery continues to perform properly. The cost will occur after Milestone F.
Other Costs	Environmental Education Intern	See Budget Narrative, General Implementation costs, Environmental Education Intern for detailed breakdown.
Other Costs	Energy Innovation Research Intern	See Budget Narrative, General Implementation costs, Energy Innovation Research Intern for detailed breakdown.
Other Costs	Community Engagement/Education Events = \$15,000 in 2025 and 2027	There will be up to 12 forums for community engagement for the landfill project, 6 before construction and 6 after. The cost is described in <i>General Implementation costs</i> . Community engagement is necessary to ensure the community understands the benefits and implications of the project. The costs will occur in Milestone C and after Milestone G.
Indirect Costs	10% de minimus = \$1,377 in 2024, \$4,350 in 2025, \$3,997 in 2026, and \$3,657 annually for 3 years	10% de minimus is required for personnel, fringe, and travel. The SEP Manager is required to implement the projects and this travel is necessary to engage the community on Measure 2. The cost will occur throughout Milestones A-G.
Cost Share	40% ITC tax credit for cattle-voltaics = -\$33,467,925	As described in <i>General Implementation costs</i> , the ITC will be applied to the supplies and labor expenses for the cattle-voltaics. The tax credits make Measure 2 affordable and allow the City to reduce the GHG emissions in Measure 2. The cost will occur during Milestone E and F.

Cost Share	40% ITC tax credit for battery = -\$9,255,525	As described in <i>General Implementation costs</i> , the ITC will be applied to the supplies and labor expenses for battery. The tax credits make the hybrid wind and solar interconnect possible and make it affordable for the City to reduce the GHG emissions in Measure 2. The cost will occur during Milestone E and F.
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Measure 3: Wastewater Treatment Plant Solar

Category	Budget Item	Justification
Personnel	Strategic Energy Projects Manager	See Budget Narrative, General Implementation costs, Personnel for detailed breakdown.
Fringe Benefits	Full time employees	See Budget Narrative, General Implementation costs, Fringe Benefits for detailed breakdown.
Contractual	Solar at Dry Creek WWTP 2.31MW capacity at \$1.51/Wdc = \$3,490,094	We project the 17.5 available acres at Dry Creek facility will yield 2.31 MW of capacity, as described in the 'Measure Specific Activity Data' for Solar in the GHG Reduction <i>Technical Appendix</i> . The solar will be built as normal ground-mounted solar so it does not require extra design considerations and will be priced at \$1.51/Wdc. The solar panels will yield 56% of the GHG reductions in Measure 3 and the costs will occur during Milestones E and F.
Contractual	Solar at Crow Creek WWTP 1.85MW capacity at \$1.51/W = \$2,792,075	The 14 acres of available land at the Crow Creek facility will yield 1.85 MW of capacity, as described in the 'Measure Specific Activity Data' for Solar in the GHG Reduction <i>Technical Appendix</i> . The solar will be built as normal ground-mounted solar so it does not require extra design considerations and will be priced at \$1.51/Wdc. The solar panels will yield 44% of the GHG reductions in Measure 3 and the costs will occur during Milestones E and F.
Contractual	WWTP solar/electrical O&M = \$16,642 annually for 2 years	At \$9/kWdc, the total O&M costs for the 4.16 MW WWTP solar project are \$16,642 annually. O&M will begin one year after the project is put in service in 2027. Cheyenne requests two years of O&M costs to cover the expense before savings from the project can cover the cost. The solar O&M is necessary to ensure the panels continue to perform at maximum capacity. The cost will occur after Milestone F.
Other Costs	Environmental Education Intern	See Budget Narrative, General Implementation costs, Environmental Education Intern for detailed breakdown.
Other Costs	Energy Innovation Research Intern	See Budget Narrative, General Implementation costs, Energy Innovation Research Intern for detailed breakdown.
Other Costs	Community Engagement/Education Events = \$10,000 in 2025 and 2027	There will be up to 8 forums for community engagement for the landfill project, 4 before construction and 4 after. The cost is described in <i>General Implementation costs</i> . Community engagement is necessary to ensure the community understands the benefits and implications of the project. The costs will occur in Milestone C and after Milestone G.

Indirect Costs	10% de minimus = \$914 in 2024 and \$3,657 annually for 5 years	10% de minimus is required for personnel, fringe, and travel. The SEP Manager is required to implement the projects. The cost will occur throughout Milestones A-G.
Cost Share	40% ITC tax credit for WWTP solar = -\$2,512,868	As described in <i>General Implementation costs</i> , the ITC will be applied to the supplies and labor expenses for the landfill solar. The tax credits make Measure 1 affordable and allow the City to reduce the GHG emissions in Measure 1. The cost will occur during Milestone E and F.

Measure 4: Wastewater Treatment Plant RNG Infrastructure

Category	Budget Item	Justification
Personnel	Strategic Energy Projects Manager	See Budget Narrative, General Implementation costs, Personnel for detailed breakdown.
Fringe Benefits	Full time employees	See Budget Narrative, General Implementation costs, Fringe Benefits for detailed breakdown.
Contractual	RNG project development consulting and advisory services = \$210,000 in 2024 and \$150,000 in 2025	The City of Cheyenne will hire a contractor to oversee the RNG infrastructure planning, design, and development. Based on a quote from Eco Engineers, an initial feasibility analysis and pre-project development phase will cost \$210,000. The City will release a competitive solicitation for a contractor as soon as grant award notifications go out to ensure the project can start construction before the end of 2024. In 2025, the contractor will oversee construction, an estimated cost of \$150,000 according to Eco Engineers. The consultant is essential to the implementation of the RNG infrastructure as neither the City nor BHE have RNG technical experts on staff. The consultant will oversee Milestones A-F.
Contractual	WWTP digester retrofit for RNG production efficiency = \$500,000	Modifications to the existing digester are essential to ensure the digester is producing the maximum amount of biogas possible. Digesters can yield 20-800 m³ of biogas per ton of waste. BHE ran cost estimates on the RNG infrastructure and estimated that \$500,000 will be required to upgrade the digester. The digester upgrades are necessary to ensure the WWTP yields the most amount of RNG and reduces the most emissions possible with the new infrastructure. This cost will occur in Milestone E and F.
Contractual	WWTP engineering, design, and construction, including domestic content and prevailing wage = \$400,000 in 2024 and \$3,600,000 in 2025	In their initial cost analysis, BHE estimated \$4,000,000 for the RNG system engineering, design, and construction costs. The project must start construction in 2024 to be eligible for the Investment Tax Credit, if guidance allows. Therefore, 10% of costs are intended to be spent in 2024 while the rest will be spent in 2025. The design and construction of the RNG system is necessary to implement the GHG emissions reduction measure. This will occur during Milestones D-F.
Contractual	WWTP biogas upgrading equipment =	In their cost analysis, BHE estimated that materials for the RNG infrastructure, including inlet filtration and

	\$550,000 in 2024, \$4,950,000 in 2025	compression, H2S removal filtration, glycol gas dehydrator, CO2 removal membranes, compression, and gas quality analytical equipment, would cost \$5,500,000. The project must start construction in 2024 to be eligible for the Investment Tax Credit if guidance allows. Therefore, 10% of costs will be spent in 2024 while the rest will be spent in 2025. The materials for the RNG infrastructure are necessary to implement the GHG emissions reduction measure. This cost will occur in Milestone E and F.
Other Costs	Environmental Education Intern	See Budget Narrative, General Implementation costs, Environmental Education Intern for detailed breakdown.
Other Costs	Energy Innovation Research Intern	See Budget Narrative, General Implementation costs, Energy Innovation Research Intern for detailed breakdown.
Other Costs	Community Engagement/Education Events = \$10,000 in 2025	There will be up to 4 forums for community engagement on the WWTP RNG infrastructure. The cost is described in <i>General Implementation costs</i> . Community engagement is necessary to ensure the community understands the benefits and implications of the project. The costs will occur in Milestone C.
Indirect Costs	10% de minimus = \$914 in 2024 and \$3,657 annually for 5 years	10% de minimus is required for personnel, fringe, and travel. The SEP Manager is required to implement the projects. The cost will occur throughout Milestones A-F.

In addition to the funding requested from US EPA and anticipated federal tax credits, the City plans to invest \$1,500,000 in WWTP infrastructure, as outlined in *Mayor Collins' Letter of Support*. This \$1,500,000 will go towards a new digester lid and mixer at Dry Creek WWTP and is based on a verbal understanding of expected cost from BOPU who oversees and manages the system. While these upgrades do not generate a higher quantity of RNG or result in greater GHG emissions reductions between 2025-2050, they do enhance the longevity of the RNG infrastructure which should extend the GHG emissions reductions. *Because that longevity is projected to be outside of the 2050 period*, we do not count these costs or city investment toward the budget or emissions reductions. That said, the City believes this investment will sustain US EPA's broader assistance into this RNG infrastructure system and is the preferred path forward in the long-term.