Beehive Emission Reduction Plan: Priority Plan

Utah Department of Environmental Quality

PREPARED BY: The Utah Division of Air Quality

UTAH DEPARTMENT *of*
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Introduction

Governor Cox has identified the Utah Department of Environmental Quality (UDEQ) as the lead agency to receive Inflation Reduction Act (IRA) Climate Pollution Reduction Grant

(CPRG) funding to engage in greenhouse gas (GHG) emission reduction planning in Utah through the Beehive Emission Reduction Plan initiative. In this capacity, UDEQ will play a key role in helping Utah secure broader emissions reduction-related funding under the IRA, the Infrastructure Investment and Jobs Act (IIJA), and other sources. UDEQ has extensive emission reduction planning experience and has worked with stakeholders and partners to help ensure such funding is leveraged to support balanced, state-driven solutions that pave the way for continued growth while maintaining a high quality of life in Utah.

UDEQ has tasked the Utah Division of Air Quality (UDAQ) with leading the Beehive Emission Reduction Plan initiative. In this capacity, the Division has partnered with a wide

array of stakeholders and partner agencies to produce this Priority Plan[1] to support investment in measures, practices, and technologies that reduce emissions, create high-quality jobs, spur economic growth, and enhance the quality of life for all Utahns.

This plan includes several required, encouraged, and optional CPRG program plan elements as depicted in Table 1 below.[2]

Table 1. Required, Encouraged, and Optional Plan Elements Included in this Priority Plan

Plan Element	Required / Encouraged / Optional
GHG Inventory	Required
GHG Emissions Projections	Optional
Quantified GHG Reduction Measures	Required
Benefits Analysis	Encouraged
Low-Income and Disadvantaged Communities Benefits Analysis	Required
Review of Authority to Implement	Required
Intersection with Other Funding Availability	Encouraged
Workforce Planning Analysis	Encouraged

This project has been funded wholly or in part by the United States Environmental Protection Agency (EPA) under assistance agreement 5D-00105400 to the UDEQ. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

The measures and associated example projects contained in this Priority Plan should be construed as broadly available to any entity in the state eligible[3] for seeking funding under the EPA's CPRG Phase II Implementation Grant program and other funding streams, as applicable.

[1] This Priority Plan was developed in fulfillment of EPA's CPRG Priority Climate Action Plan (PCAP) deliverable requirement and includes the required Plan Elements identified in EPA's CPRG Planning Grant guidance:
https://www.epa.gov/system/files/documents/2023-02/EPA%20CPRG%20Planning%20Grants%20Program%20Guidance%20for%20States-Municipalities-Air%20Agencies%2003-01-2023.pdf
[2] See page 49 of the CPRG Planning Grants Program Guidance.
[3] See CPRG Phase II Implementation Grant General Competition Notice of Funding Opportunity (NOFO) for eligibility information:
https://www.epa.gov/system/files/documents/2024-01/cprg-general-competition-correction.pdf

The remainder of this Priority Plan is organized into ten sections:

1. Greenhouse Gas (GHG) Emissions Inventory
2. Emissions Projections
3. Priority Measures (Quantified GHG Reduction Measures)
4. Benefits Analysis
5. Low-Income and Disadvantaged Community (LIDAC) Benefits Analysis
6. Review of Authority to Implement
7. Intersection with Other Funding Availability
8. Workforce Planning Analysis
9. Coordination and Outreach
10. Appendices

Greenhouse Gas Emissions Inventory

The CPRG program requires developing a simplified Greenhouse Gas (GHG) inventory for state priority plans. A GHG inventory is a historical accounting of the amount of GHG emitted to, or removed from, the atmosphere over a specific period from various economic activities. Several GHG inventory resources are available through the EPA. UDAQ has chosen to utilize EPA's State Inventory Tool (SIT) to develop an inventory to fulfill this requirement. The SIT is an interactive spreadsheet model designed to help states develop GHG emissions inventories. It consists of 11 modules that calculate GHG emissions in different sectors and one module that synthesizes estimates across all modules. The SIT offers default data pre-loaded for each state or the ability to use state-specific data as inputs.

While the SIT provides a basic understanding of the GHG sources and sinks in the state, there are potential uncertainties, unspecified data, and unavailable default data that may affect inventories developed using the tool. The degree to which these uncertainties impact the SIT results depends on the sector. For example, the oil and gas module has a high degree of uncertainty and variability. In Utah, this sector includes a large collection of facilities in the Uinta Basin in the northeastern corner of the state. In recent years UDAQ has conducted research and surveys in this area to get a better understanding of the emissions from these facilities. Running the natural gas and oil module of the SIT resulted in emissions estimates that were lower than anticipated based on results from these studies. The SIT uses default emissions factors for natural gas systems (except production) based on a study by the Gas Research Institute and the EPA completed in 1996, which vary by year and region. These default factors only account for methane emissions and result in lower emissions than the results from more recent Uinta Basin-specific emission factors. UDAQ also uses VOC and CO ratios to better estimate methane and carbon dioxide emissions in the basin to give a more accurate emission profile. For Utah's Comprehensive Plan (due in the summer-fall of 2025), UDAQ will utilize ongoing work in the Uinta Basin to develop a more accurate natural gas and oil sector emissions inventory.

These factors do not hinder the SIT's ability to provide a simplified inventory required for the Priority Plan, but further work will need to be done to understand the supplied default data and calculations associated with the SIT tool before submitting a more robust inventory for the Comprehensive Plan. The EPA has created User Guides that include the general methodology of each module, the inputs needed, and brief discussions of the uncertainties associated with each module. These User Guides can be found through the EPA's website if more information is needed.[4]

[4] https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool

Please note, the SIT undergoes regular updating, which also leads to some inconsistencies with its usage. For example, there was an update to the preloaded default data and methodologies in June of 2023, during which the Utah Beehive Emission Reduction Plan was in its initial planning stages. There was also an update to the SIT in February of 2024, that was not utilized for the following results and figures due to time constraints.

The Utah inventory includes GHG emissions from the sectors and gases shown in Table 2 below.

Table 2. GHG Emissions from Utah Inventory per Sector

Sector	GHG
Transportation	CO_2, CH_4, N_2O
Electric Power Generation	CO_2, CH_4, N_2O
Industry	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6, and NF_3
Agriculture	CO_2, CH_4, N_2O
Commercial and Residential Buildings	CO_2, CH_4, N_2O
Waste and Wastewater Management	CO_2, CH_4, N_2O
Land-Use, Land-Use Change, Forestry	CO_2, CH_4, N_2O

The values in this inventory are listed in carbon dioxide equivalent (CO_2e) to account for differences in the Global Warming Potential (GWP) of different GHGs. As EPA notes in the CPRG Phase II Implementation Grant General Competition Notice of Funding Opportunity (NOFO):

> Global Warming Potential (GWP) allows for comparisons of the global warming impacts of different gases. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO_2). The larger the GWP, the more a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs provide a common unit of measure, which allows analysts to add up emissions estimates of different gases (e.g., to compile a national GHG inventory) and allows policymakers to compare emissions reduction opportunities across sectors and gases.[5]

The following tables and figures were made using EPA's SIT using the default emission factors and consumption/population numbers, except for the forestry module which utilized state specific wildfire data inputs. The resulting emission totals from the SIT were categorized and displayed to visualize the GHG inventory for the state of Utah. Table 3

[5]See page 65:
https://www.epa.gov/system/files/documents/2024-01/cprg-general-competition-correction.pdf

details GHG emissions in million metric tons (MMT) of CO_2e categorized by the seven inventory sectors outlined above. Figure 1 shows changes in GHG emissions in the different sectors over the 1990-2020 time period. Table 4 details emissions of the different species of GHGs across all sectors. Figure 2 shows changes in GHG species over the 1990-2020 time period.[6] Tables 3 and 4 also include the 2017 data year for ease of comparison with National Emissions Inventory (NEI) data provided in the Benefits Analysis section of this plan.

As can be seen, the largest source of GHG emissions in Utah is the electric power generation sector, followed by the transportation sector, with the industry sector close behind. This is the case across each year observed from 1990 to 2020. Although electric generation is the largest contributor of GHG emissions in Utah, it is the only sector that has fallen to below 1990 levels by 2020. The forestry sector estimates (Land Use, Land Use Change, and Forestry Module) derive from a unique module in which the resulting emissions can be either positive (a source) or negative (a sink), depending on the forest-related activity for a given year. For this reason, the forestry sector section at the bottom of Figures 1 and 2 fluctuates between negative and positive values. Wildlands and natural forests are a way for carbon to be sequestered from the atmosphere into the environment, leading to a net negative. In contrast, when wildfires occur or organic matter decomposes, this stored carbon is released to the atmosphere and the sector becomes a source.

[6] Note: Differences in values between Tables 3, 4, and 5 are due to rounding.

Table 3. Utah GHG emissions in MMT CO_2e by Sector

Sector/Source	1990	2000	2010	2017	2020
Transportation	11.26	16.71	16.24	18.04	17.52
Fossil Fuel Combustion	10.64	15.81	15.72	17.67	17.20
Mobile Combustion	0.62	0.90	0.52	0.37	0.32
Electric Power Generation	29.89	33.90	35.29	27.60	26.54
Fossil Fuel Combustion	29.76	33.75	35.14	27.49	26.44
Stationary Combustion	0.13	0.15	0.15	0.11	0.10
Industry	9.70	13.34	13.30	12.71	12.08
Fossil Fuel Combustion	6.51	7.96	6.90	7.15	6.43
Stationary Combustion	0.04	0.03	0.02	0.02	0.02
Natural Gas and Oil Systems	0.69	1.50	2.14	2.58	2.38
Coal Mining	2.04	1.71	3.26	0.56	0.64
Iron and Steel Production	-[7]	0.75	0.30	0.30	0.30
Cement Production	0.26	0.36	0.23	0.36	0.35
Substitution of Ozone Depleting Substances	+	0.48	0.88	1.21	1.29
Semiconductor Manufacturing	+	0.04	0.05	0.05	0.05
Lime Production	-	0.41	0.28	0.33	0.31
Electric Power Transmission and Distribution	0.14	0.09	0.04	0.04	0.03
Urea Consumption	+	+	+	+	+
Soda Ash Production	0.02	0.02	0.02	0.02	0.02
Limestone and Dolomite Use	-	0.03	0.05	0.08	0.26
Agriculture	2.68	3.17	3.27	3.32	3.43
Agricultural Soil Management	1.20	1.22	1.35	1.35	1.37
Enteric Fermentation	0.24	0.52	0.48	0.50	0.60
Manure Management	1.23	1.42	1.43	1.45	1.44
Urea Fertilization	-	-	-	-	-
Liming	0.01	0.01	0.01	0.02	0.02
Field Burning of Agricultural Residues	+	+	+	+	+
Buildings	4.51	5.40	6.24	6.59	7.18
Commercial, Fossil Fuel Combustion	1.69	2.10	2.42	2.69	2.90
Commercial, Stationary Combustion	0.01	0.01	0.01	0.01	0.02
Residential, Fossil Fuel Combustion	2.76	3.25	3.79	3.85	4.22
Residential, Stationary Combustion	0.05	0.04	0.02	0.04	0.04
Waste	0.66	1.19	1.08	1.28	1.09
Municipal Solid Waste	0.48	0.95	0.80	0.96	0.75
Wastewater	0.18	0.24	0.28	0.32	0.34
Total Emissions (Sources)	58.70	73.75	76.29	69.54	67.84
Land-Use, Land-Use Change, and Forestry (LULUCF) Sector Net Total	*2.98*	*0.69*	*(1.22)*	*2.98*	*3.44*
Net Emissions (Sources and Sinks)	61.68	74.44	75.07	72.52	71.28

[7] Symbols:
"-" indicates that the value has not be estimated at this time or is not applicable to the State
"+" indicates that the value does not exceed 0.005 MMT CO_2e

Figure 1. Utah GHG emissions in MMT CO_2e by Sector in 1990-2020

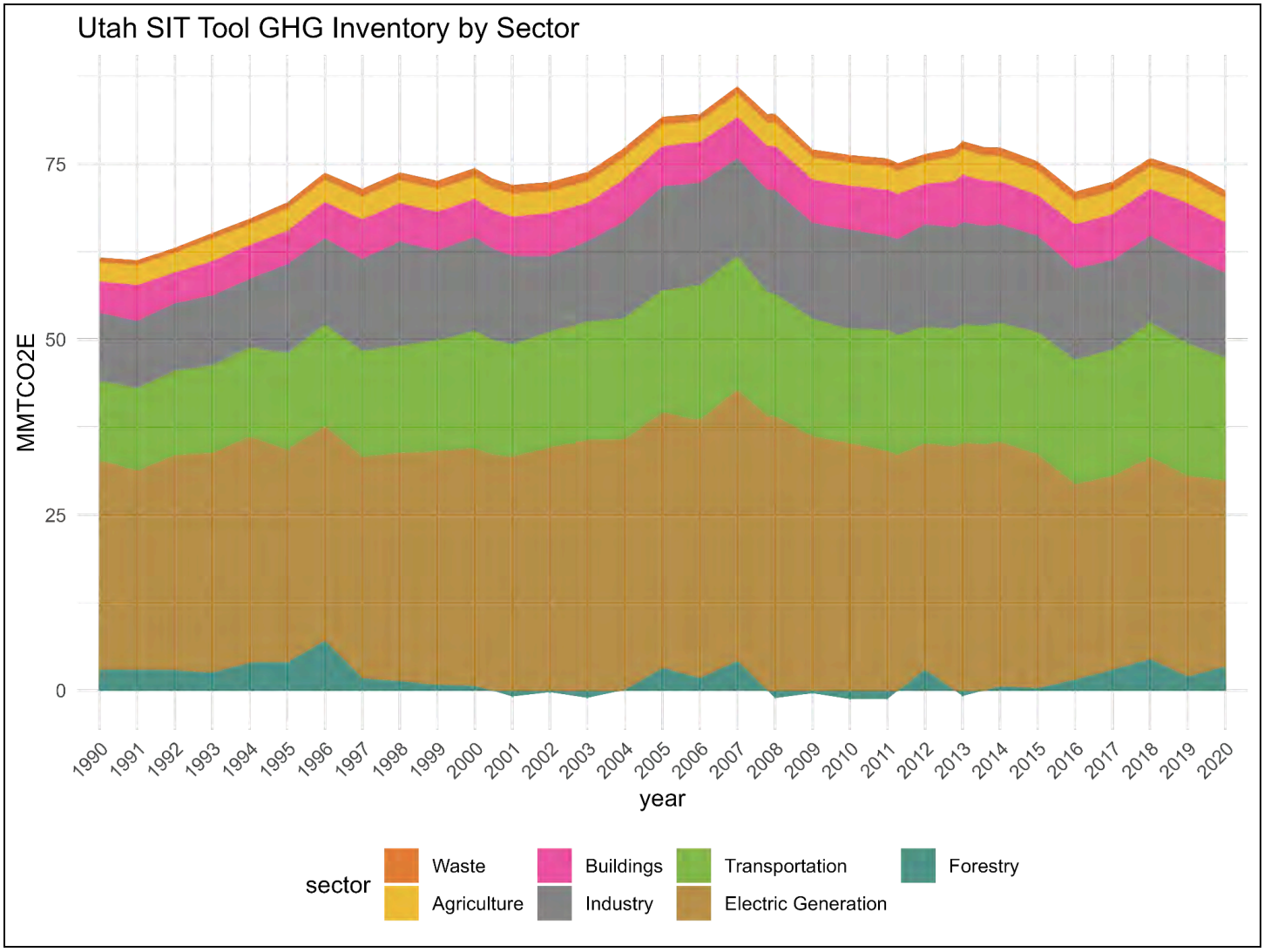


Table 4. Utah GHG emissions in MMT CO_2e by Gas

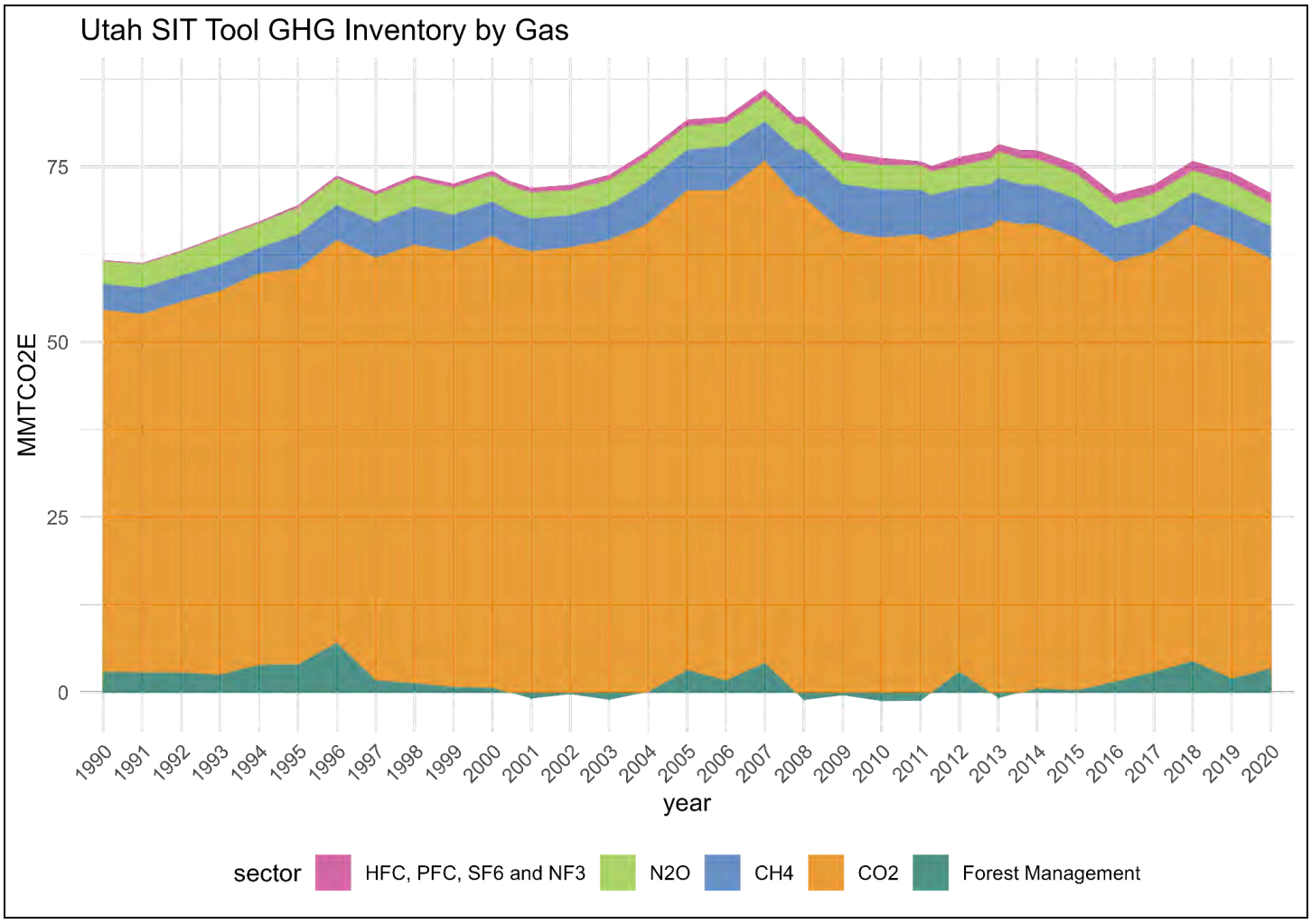
Gas/Source	1990	2000	2010	2017	2020
CO_2	**51.69**	**64.52**	**64.91**	**60.03**	**58.52**
Transportation					
Fossil Fuel Combustion	10.64	15.81	15.72	17.67	17.20
Electric Power Generation					
Fossil Fuel Combustion	29.76	33.75	35.14	27.49	26.44
Industry					
Fossil Fuel Combustion	6.51	7.96	6.90	7.15	6.43
Cement Manufacture	0.26	0.36	0.23	0.36	0.35
Lime Manufacture	-[8]	0.41	0.28	0.33	0.31

[8] Symbols:
"-" indicates that the value has not be estimated at this time or is not applicable to the State
"+" indicates that the value does not exceed 0.005 MMT CO_2E

Gas/Source	1990	2000	2010	2017	2020
Limestone and Dolomite Use	-	0.03	0.05	0.08	0.26
Soda Ash	0.02	0.02	0.02	0.02	0.02
Iron and Steel Production	-	0.75	0.30	0.30	0.30
Urea Consumption	+	+	+	+	+
Agriculture					
Liming	0.01	0.01	0.01	0.02	0.03
Buildings					
Residential, Fossil Fuel Combustion	2.75	3.25	3.79	3.85	4.22
Commercial, Fossil Fuel Combustion	1.69	2.10	2.42	2.69	2.90
Waste					
Municipal Solid Waste	0.05	0.07	0.05	0.06	0.06
CH_4	**3.70**	**4.94**	**6.94**	**4.89**	**4.67**
Transportation					
Mobile Combustion	0.09	0.08	0.05	0.04	0.04
Electric Power Generation					
Stationary Combustion	0.01	0.01	0.01	0.01	0.01
Industry					
Stationary Combustion	0.02	0.01	0.01	0.01	0.01
Coal Mining	2.04	1.71	3.26	0.56	0.64
Natural Gas and Oil	0.69	1.50	2.14	2.58	2.38
Agriculture					
Enteric Fermentation	0.24	0.52	0.48	0.50	0.60
Buildings					
Residential, Stationary Combustion	0.04	0.04	0.02	0.04	0.04
Commercial, Stationary Combustion	0.01	0.01	0.01	0.01	0.01
Waste					
Municipal Solid Waste	0.42	0.88	0.75	0.90	0.69
Wastewater	0.14	0.18	0.21	0.24	0.25
N_2O	**3.17**	**3.69**	**3.47**	**3.34**	**3.30**
Transportation					
Mobile Combustion	0.53	0.82	0.47	0.33	0.28
Electric Power Generation					
Stationary Combustion	0.12	0.14	0.14	0.11	0.10
Industry					
Stationary Combustion	0.03	0.02	0.01	0.01	0.01
Agriculture					
Manure Management	1.23	1.42	1.43	1.45	1.44
Agricultural Soils	1.21	1.22	1.35	1.35	1.37
Buildings					
Residential, Stationary Combustion	+	0.01	+	0.01	0.01
Commercial, Stationary Combustion	+	+	+	+	+
Waste					
Municipal Solid Waste	+	+	+	+	+

Gas/Source	1990	2000	2010	2017	2020
Wastewater	0.05	0.06	0.07	0.08	0.09
HFCs, PFCs, SF_6 and NF_3	**0.14**	**0.60**	**0.98**	**1.30**	**1.37**
Industry					
ODS Substitutes	+	0.48	0.88	1.21	1.29
Semiconductor Manufacturing	+	0.04	0.05	0.05	0.05
Electric Power Transmission and Distribution	0.14	0.09	0.04	0.04	0.03
Total Emissions (Sources)	**58.70**	**73.75**	**76.30**	**69.56**	**67.86**
Land-Use, Land-Use Change, and Forestry (LULUCF) Sector Net Total	**2.98**	**0.69**	**(1.22)**	**2.98**	**3.44**
Net Emissions (Sources and Sinks)	**61.68**	**74.44**	**75.08**	**72.54**	**71.30**

Figure 2. Utah GHG emissions in MMT CO_2e by Gas in 1990-2020



GHG Emissions Projections

The UDAQ has developed near-term (2030) and long-term (2050) projections of GHG emissions that would occur in a "business-as-usual" (BAU) scenario. Detailed methodology and quality assurance procedures for the preparation of these projections are contained in Appendix B.

Utah's GHG emissions projections were established using the EPA Projection Tool (PT). This tool creates a simplified forecast of emissions through 2050. The PT uses historical data as well as projections of future energy consumption, population, and other factors. Unlike the SIT, there were no user guides readily available that detail the methodology for the PT. UDAQ will include a more detailed projection in the Comprehensive Plan in summer-fall 2025.

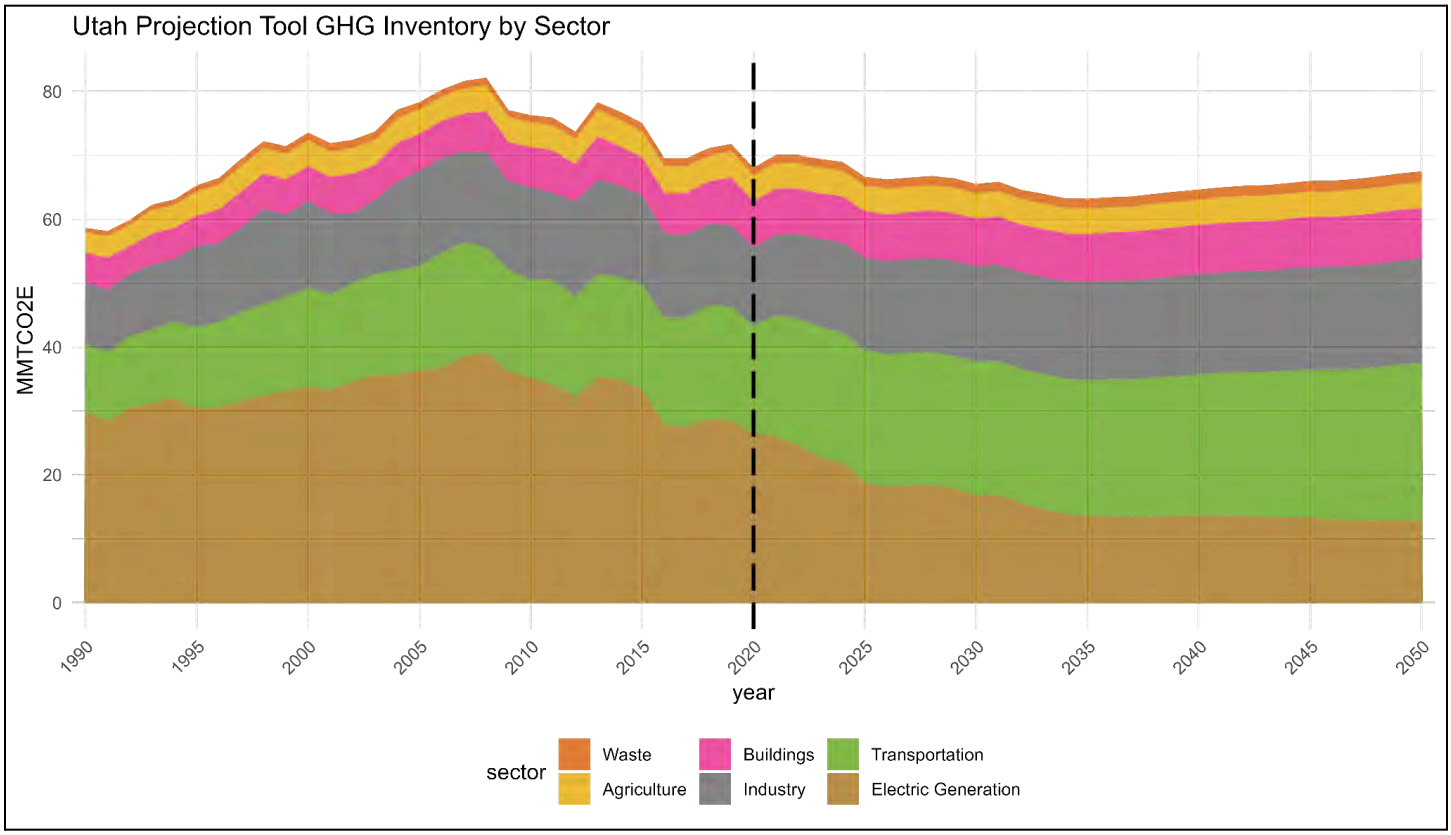
Table 5 lists base year GHG emissions and near-term and long-term GHG emissions projections by sector for Utah under the BAU. Figure 3 shows the changes in GHG emissions for each sector over time from 1990-2050, with the vertical dotted indicating where the projected emissions from the PT begin. Please note that the 'Land-Use, Land-Use Change, and Forestry' sector is not included in the PT and is, therefore, not shown.

The EPA PT anticipates that there will be a slight decrease in GHG emissions from 2017 to 2030, after which emissions will increase slightly through 2050. The PT also forecasts that the majority of emissions reductions will occur in the electric power generation sector, a trend that will continue through 2050, resulting in emission from that sector decreasing by over 53 percent compared to 2017 levels. All other sectors are expected to see increases in emissions by 2050, with the transportation sector in particular projected to increase by over 36 percent.

Table 5. Utah GHG baseline and projected emissions in $MMTCO_2e$ by Sector

Sector/Source	2017	2030	2050
Transportation	18.04	20.87	24.61
Electric Power Generation	27.60	16.86	12.89
Industry	12.71	14.98	16.38
Agriculture	3.31	4.00	4.00
Commercial and Residential Buildings	6.59	7.43	7.96
Waste and Materials Management	1.28	1.40	1.67
Total Emissions (Sources)	**69.53**	**65.54**	**67.51**

Figure 3. Utah GHG baseline and projected emissions in $MMTCO_2e$ by Sector



Priority Measures

The quantified GHG emission reduction strategies included in this section have been identified as "priority measures" for which to pursue funding through the EPA CPRG program implementation grants. This list is not exhaustive of Utah's priorities. Instead, the selected measures included in this Priority Plan meet the following criteria:

- The measure is implementation-ready, meaning that the design work for the policy, program, or project is complete enough that a full scope of work and budget can be included in a CPRG implementation grant application.
- The measure can be completed in the near term, meaning that all funds will be expended, and the project completed, within the five-year performance period for the CPRG implementation grants (approximately October 2024 through October 2029).
- The measure has a broad level of stakeholder support.
- The measure advances or is otherwise consistent with state of Utah priorities as identified in past climate, energy, and natural resource planning efforts[9], including:
    - Any-of-the-above approach
    - Market-based
    - Innovative
    - Cost-effective
    - Reliable and affordable energy
    - Incentives over mandates
    - Involve local leaders/decision-makers

Table 6 below summarizes Utah's list of 14 priority measures from the following sectors: transportation, buildings, industrial, electric power, natural and working lands, and cross-cutting. Each of these measures includes one or more implementation-ready example projects that would help achieve the objectives of the broader measure in question. Example projects were developed based on assumptions regarding the total estimated budget request, incentive or deployment funding levels, projected number of units deployed, and other key parameters in order to estimate emission reductions, facilitate general and LIDAC benefits analyses, and assess other required plan elements.

[9] Examples of such planning initiatives include:

- Source: Utah Office of Energy and Resource Planning (2000) https://geology.utah.gov/docs/statistics/ghg8.0/pdf/ghg_reduction00.pdf
- Source: Blue Ribbon Advisory Council on Climate Change (2007) https://digital.library.unt.edu/ark:/67531/metadc226742/
- Source: Kem C. Gardner Policy Institute (2020) https://gardner.utah.edu/wp-content/uploads/TheUtahRoadmap-Feb2020.pdf?x71849
- Source: Governor Cox (January 19, 2021) https://governor.utah.gov/2021/01/19/gov-spencer-cox-releases-one-utah-roadmap-a-plan-for-the-first-500-days-of-the-cox-henderson-administration/
- Source: Resource Management Planning (January 9, 2023) https://rmp.utah.gov/
- Source: Utah Office of Energy Development (May 10, 2022) https://www.energy.utah.gov/plan/

The example projects identified for each measure are illustrative in nature and non-exhaustive and, as such, entities eligible to pursue CPRG implementation grants for measures that stem from this Priority Plan may develop their own unique projects that would help achieve the objectives of each measure.

Table 6. Utah Priority Plan Measures

Priority Measure/Project	Cumulative GHG emission reductions (metric tons CO_2e) 2025–2030	2025–2050	Potential Implementing Agencies	Potential Partners	Geographic Scope
Transportation					
Measure #1: Light-Duty Zero-Emission Vehicle Incentives					
Project #1 - Electric Vehicle Replacement Assistance Program (EVRAP)	8,886.8	26,660.4	UDAQ, Local Health Departments/ counties	Local Health Departments/ counties, dealerships, vehicle recyclers	Salt Lake, Davis, Weber, Cache, Utah counties
Project #2 - Electric Vehicle Incentive	57,842.1	173,526.3	UDAQ	other agencies	State
Project #3 - Electric Fleet Incentive	2,024.5	6,941.1	UDAQ	municipalities and other public/government entities	State
Measure #2: Medium-and-Heavy-Duty Zero-Emission Vehicle Incentives					
Project #1 - Electric Delivery Vehicle Incentive	1,528.0	4,365.7	UDAQ	other private and government entities	State
Project #2 - Electric Refuse Hauler Incentive	670.9	1,341.8	UDAQ	other private and government entities	State
Project #3 - Electric School Bus Ready	701.1	4,006.1	UDAQ	School Districts	State
Project #4 - Electric School Bus Pilot	467.4	2,670.8	UDAQ	School Districts	State
Project #5 - Electric Transit Bus	907.2	2,721.6	Utah Transit Authority (UTA), other transit agencies		Wasatch Front, Park City, Cedar City, Park City, St. George, Zion National Park

Priority Measure/Project	Cumulative GHG emission reductions (metric tons CO_2e) 2025–2030	2025–2050	Potential Implementing Agencies	Potential Partners	Geographic Scope
Measure #3: Zero-Emission Vehicle Charging/Refueling Incentives					
Project #1 - Electric Fleet Chargers	4,000.5	11,429.9	UDAQ, municipalities, Local Health Departments/ counties	other private and government entities	State
Project #2 - Charging Alternatives (Workplace and Multi-Family Dwelling Electric Vehicle Chargers)	8,504.8	24,299.5	UDAQ	Utah Clean Air Partnership (UCAIR), municipalities and/or relevant stakeholders	State
Measure #4: Mode-Shifting/Reducing Vehicle Miles Traveled					
Project #1 - E-Bike Incentive	1,206.7	3,016.6	UDAQ	UCAIR	State
Project #2 -Trail Development for Active Transportation	940.9	10,349.4	UDOT		Washington and Kane counties
Measure #5: Zero-Emission Nonroad Incentives					
Project #1 - Electric Yard Equipment	816.8	1,074.7	UDAQ	equipment operators	State
Project #2 - Electric Locomotives	1,272.4	6,361.9	UDAQ	locomotive operators	Wasatch Front counties
Buildings					
Measure #6: Energy Efficiency and Zero-Emission Technology					
Project #1 - Whole Home Retrofits	6,560.8	37,490.0	Utah Office of Energy Development (UOED)		State
Project #2 - Residential Pre-Weatherization	492.6	2,463.0	Utah Department of Workforce Services (UDWS)		State
Project #3 - Residential Heat Pump	5,059.3	28,910.0	UDWS	RMP	State
Project #4 - K-12 School/Public Building	11,024.1	38,584.4	UDAQ, UOED	School Districts	State
Industrial					
Measure #7: Facility Energy Efficiency					

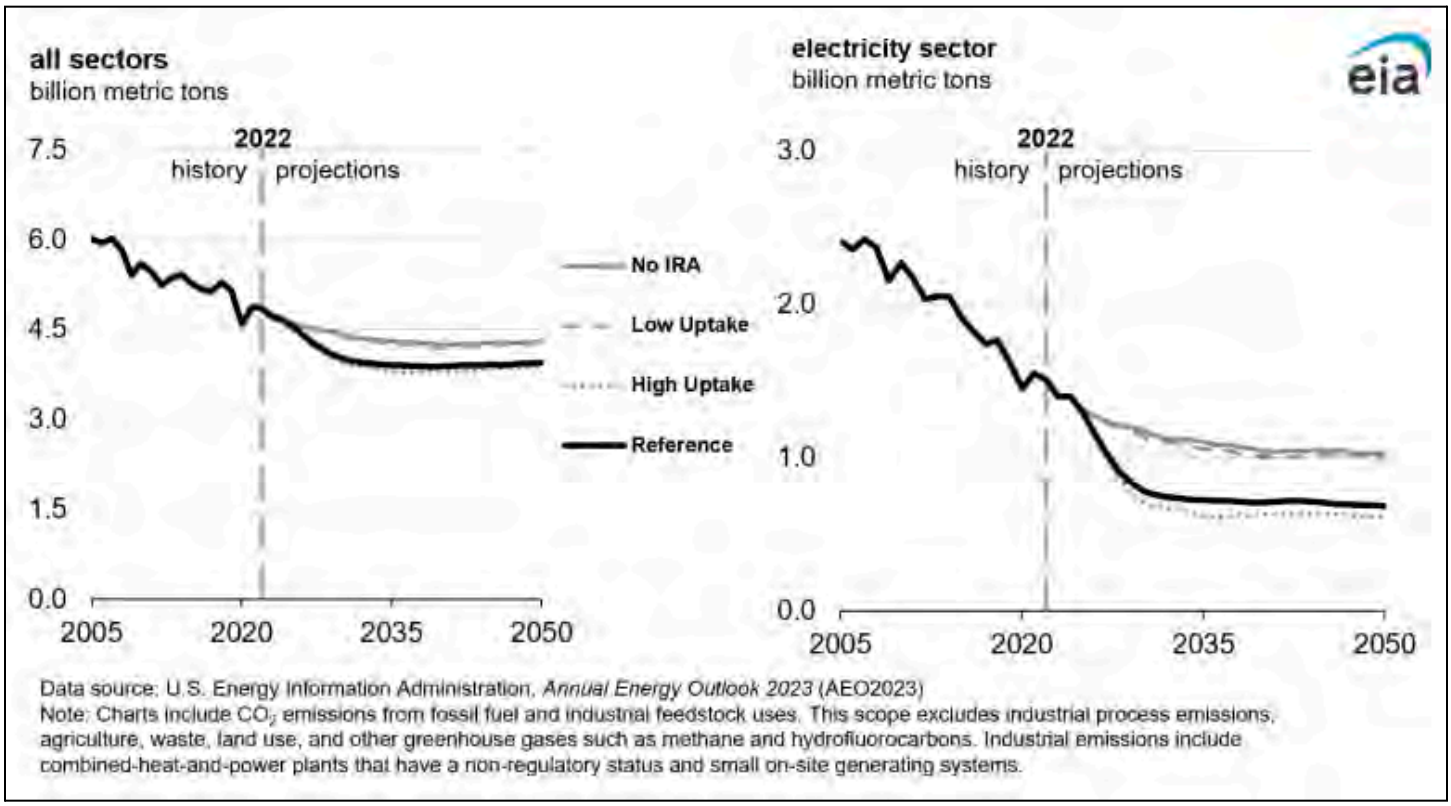
Priority Measure/Project	Cumulative GHG emission reductions (metric tons CO_2e) 2025–2030	2025–2050	Potential Implementing Agencies	Potential Partners	Geographic Scope
Project #1 - StepWise Energy Efficiency Assessment	101,457.0	202,914.0	University of Utah IIAC	Facility owners/ operators	State
Measure #8: Oil/Gas Methane Emission Reductions					
Project #1 - Uinta Basin Energy Recovery and Infrastructure Improvements	13,129 (potential annual)		Energy Geoscience Institute (EG)	Operators	Uinta Basin
Project #2 - Uinta Basin Oil/Gas Thief Hatch Replacement	85,814.4	245,184.0	UDAQ	Tank owners/ operators	Uinta Basin
Measure #9: Industrial Innovation					
Project #1 - Cement Decarbonization	NA	2,500,00	UDAQ	Cement companies	State
Electric Power					
Measure #10: Promote Renewable Energy for Homes and Businesses					
Project #1 - Community Choice Clean Electricity	312,474.0	1,350,603.0	Salt Lake City, Utah Renewable Communities (URC)	RMP, renewable project developers	18 communities throughout Utah
Project #2 - Rooftop Solar Residential Incentive	146,093.1	730,465.4	UOED	homeowners	State
Measure #11: Resilient Local Energy					
Project #1 - Renewables for Public Buildings	8,628.4	43,142.1	UDAQ, UOED	Government agencies	State
Project #2 - Microgrid for UTA Bus Depot	1,796.2	11,974.8	UTA	UDAQ	UTA Depot District bus garage, Salt Lake City
Natural and Working Lands					
Measure #12: Promote Healthy and Resilient Forests and Trees					
Project #1 - Reforestation	Number of Acres: 500		UDAQ, UDFFSL	Other western states	Cache County, potentially statewide and other Western States

Priority Measure/Project	Cumulative GHG emission reductions (metric tons CO_2e) 2025–2030	2025–2050	Potential Implementing Agencies	Potential Partners	Geographic Scope
Project #2 - Forest Health/Fuels	Number of Acres: 66		UDAQ, UDFFSL		Wasatch County, potentially statewide
Project #3 - Urban Forestry/Trees	Number of Acres: 10		UDAQ, UDFFSL		Emery County, potentially statewide
Cross-Cutting					
Measure #13: Outreach, Education, and Workforce Training Related to Emission Reduction Efforts					
Project #1 - Demonstration and Assistance (One-Stop Shop)	518.7	2,782.9	UDAQ, State colleges and universities	third-party organiza-tions	State
Project #2 - Workforce Training	Variable as deployed	Variable as deployed	UDAQ, eligible entities in Utah		State
Measure #14: Carbon Sequestration and Storage					
Project #1 - Utah Carbon Sequestration and Storage Survey	3,500,000 (potential)	38,500,000 (potential)	UDAQ, EGI	Emitting facilities, direct air capture projects	Iron and Beaver counties

Please note that, to the extent possible, estimated emission reductions for measure example projects included in this Priority Plan are net of any increases in emissions that may be associated with a given measure. For example, emission reductions for projects that replace direct fossil fuel combustion with equipment electrification (e.g., electric vehicles, EV chargers, and heat pumps) have been adjusted or "netted" to account for the increase in electricity generation emissions associated with the project in question using recognized quantification tools such as the AVoided Emissions and geneRation Tool (AVERT) or the Emissions & Generation Resource Integrated Database (eGRID). However, because these tools use emissions associated with the recent actual electric generation mix, electrification measure net emissions reduction estimates are inherently conservative, since the electricity grid is slated to become increasingly clean over the Priority Plan planning period (i.e., 2025-2050). This anticipated change in electricity sector CO_2e emissions is reflected in the U.S. Department of Energy, Energy Information Administration (EIA) *AEO2023 Issues in Focus: Inflation Reduction Act Cases in the AEO2023,* [10] which estimates a 57-75% reduction in electricity sector emissions between 2005 and 2050 depending on the level of uptake for IRA provisions, as shown in Figure 4 below.

[10] Source: https://www.eia.gov/outlooks/aeo/IIF_IRA/pdf/IRA_IIF.pdf

Figure 4. CO_2 Emissions From Fossil Fuel and Industrial Feedstock Uses



Data source: U.S. Energy Information Administration, *Annual Energy Outlook 2023* (AEO2023)
Note: Charts include CO_2 emissions from fossil fuel and industrial feedstock uses. This scope excludes industrial process emissions, agriculture, waste, land use, and other greenhouse gases such as methane and hydrofluorocarbons. Industrial emissions include combined-heat-and-power plants that have a non-regulatory status and small on-site generating systems.

Even more dramatic is the projected increase in wind and solar capacity and associated decrease in GHG emissions from PacifiCorp's 2023 Integrated Resource Plan (IRP)[11], as illustrated in Figures 5 and 6 below. Under the IRP, GHG emissions will be reduced by 78% in 2030 and 90% in 2033, compared to a 2005 baseline.

[11] Source: https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2023-irp/2023_IRP_Volume_I.pdf

Figure 5. Wind and Solar Capacity

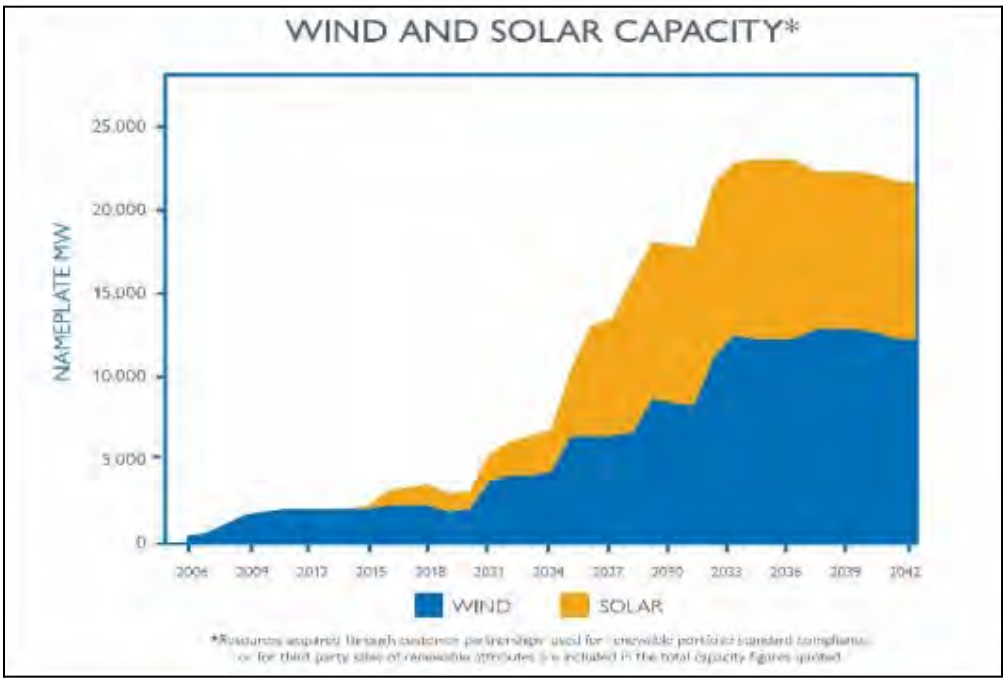
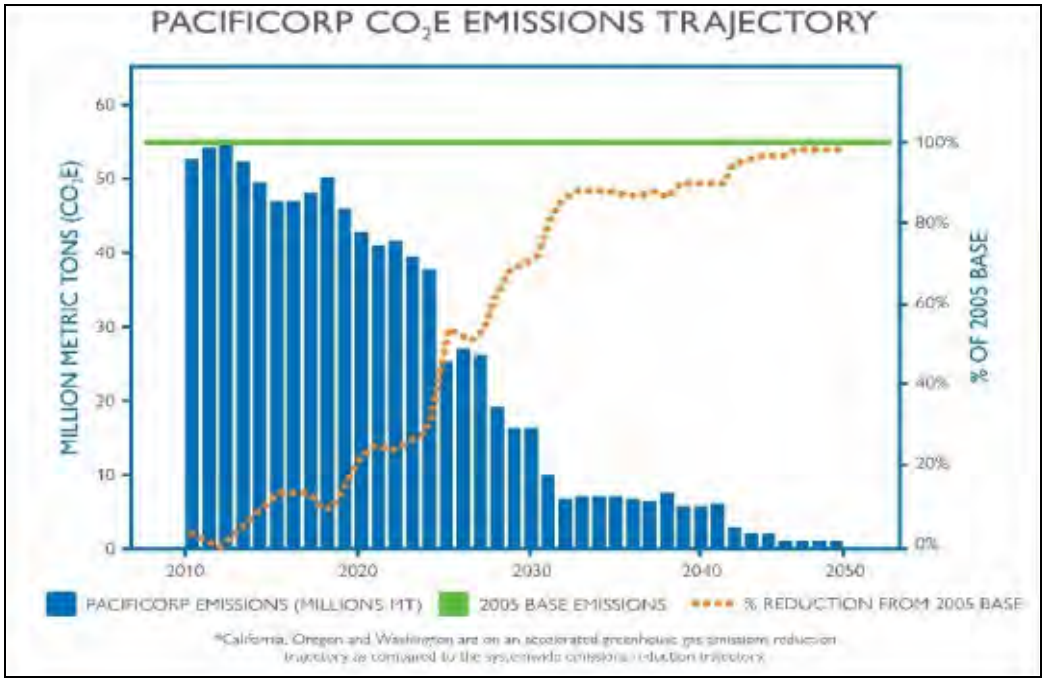


Figure 6. PacifiCorp CO_2e Emissions Trajectory



Actual net emission reductions for electrification measures are, therefore, likely to be larger than the estimates shown in this Priority Plan.

Conversely – and due to the same underlying trend in electric power sector emissions – using the recent actual generation mix to estimate the net emission reduction benefit of measures aimed at increasing the share of renewable generation may potentially lead to overestimation of the net benefits of said measures.[12] Despite these limitations, the use of tools like AVERT and eGRID – which incorporate the recent actual generation mix – to estimate the net emission reduction benefits of the priority measures in this plan provides a reasonable and consistent basis for comparison among measures.

Detailed Measure Write-Ups

Detailed write-ups for each measure and its example projects can be found in Appendix A of this Priority Plan. These write-ups include measure and project descriptions and measure-specific assessments related to several required plan elements, including benefits analysis (i.e., co-pollutant emission reductions), LIDAC benefits analysis, review of authority to implement, and intersection with other funding.

[12] Note: In the case of the Community Choice Clean Energy project, an attempt was made to account for forecasted changes in power grid emissions rates through 2050 using AVERT Desktop Edition, thus mitigating this issue.

Benefits Analysis

The implementation of the measures included in this Priority Plan is anticipated to have a broad range of co-pollutant emission reduction benefits. Such benefits are critical in Utah, which has nonattainment and/or maintenance areas for SO_2, $PM_{2.5}$, and ozone. Importantly, some GHG reduction measures would target pollutants or precursors in specific nonattainment areas. For example, this plan includes measures and projects aimed at reducing methane emissions associated with the oil and gas sector that would have the co-benefit of also reducing VOC emissions that lead to ozone formation in Utah's Uinta Basin Ozone Marginal Nonattainment Area. Another measure includes a project aimed at replacing vehicles that fail an emissions test in counties along the Wasatch Front, an area that includes nonattainment areas for $PM_{2.5}$ and ozone. The geographic scope of each measure project is detailed in Appendix A.

This section includes an inventory of criteria and hazardous air pollutants in Utah and details the anticipated co-pollutant reductions associated with the implementation of the priority measures identified in this Priority Plan.

2017 Inventory for Co-Pollutants

UDAQ obtained emissions data from EPA's 2017 NEI and extracted criteria pollutant/precursor (CAP) and hazardous air pollutant (HAP) emissions data to create a 2017 inventory for the sectors targeted by the measures included in this Priority Plan.[13] Table 7 presents nitrogen oxides (NO_x), direct fine particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxide (SO_2), ammonia (NH_3), volatile organic compounds (VOC), and Hazardous Air Pollutant (HAP) data by sector and source for Utah. The NEI utilizes different sectors to categorize emission inventories than the ones UDAQ has outlined for the Priority Plan. For this reason UDAQ, re-organized the NEI data to more closely match the sectors utilized in the plan. In Table 7 below, emissions are broken out into the main Priority Plan sectors with the corresponding NEI subsectors nested under each. The final three sectors, Solvents, Dust, and Other, are emissions categories in the NEI that did not fit neatly into any of the Priority Plan sectors. This table provides important context for the co-pollutant benefits summarized in the next section.

[13]Source: https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data

Table 7. 2017 Utah Criteria Pollutant and HAP Emissions Inventory by Sector and Pollutant

Sector	Criteria Pollutants/HAPs (Metric Tons)						
	NO_x	PM_{10}	$PM_{2.5}$	SO_2	NH_3	VOC	HAP
Transportation	55,383	3,693	2,262	367	938	24,727	7,190
Aircraft	1,081	71	59	148	0	481	137
Locomotives	7,035	322	269	2	2	335	122
Nonroad Equipment	6,260	658	621	20	10	7,667	2,551
On-Road Heavy Duty Vehicles	19,026	1,236	734	51	108	1,539	358
On-Road Light Duty Vehicles	21,981	1,406	579	146	818	14,705	4,022
Electric Generation	24,385	1,481	1,343	7,961	149	277	103
Fuel Combustion - Electric Generation	24,385	1,481	1,343	7,961	149	277	103
Industry	21,075	8,942	3,654	2,769	172	68,597	11,446
Fuel Combustion - Industrial Boilers, ICE, etc.	5,444	495	407	1,488	32	287	4,700
Cement Manufacturing	2,247	80	64	15	55	85	10
Chemical Manufacturing	163	118	77	30	64	273	96
Ferrous Metals	98	56	32	80	0	17	8
Mining	111	3,803	721	4	2	0	0
Non-Ferrous Metals	90	2,042	1,135	533	3	584	1,262
Oil and Gas	11,920	439	439	68	0	63,681	4,941
Petroleum	479	379	297	533	16	827	100
Storage and Transfer	0	1,255	272	0	0	2,162	185
Industry - Not Elsewhere Classified	523	275	210	18	126	681	144
Agriculture	8	22,199	4,310	1	31,370	1,169	187
Crops and Livestock Dust	0	22,151	4,275	0	0	0	0
Fertilizer Application	0	0	0	0	12,850	0	0
Livestock Waste	0	0	0	0	18,488	1,135	180
Agricultural Field Burning	8	48	35	1	32	34	7
Waste	215	289	177	28	65	1,700	153
Waste Disposal	215	265	156	28	65	1,686	148
Pulp and Paper	0	24	21	0	0	14	5
Buildings	3,688	599	584	29	116	840	99
Fuel Combustion - Commercial	910	43	38	8	4	43	4

Fuel Combustion - Residential	2,778	556	546	21	112	797	95
Forestry	30,770	30,723	26,034	2164	5,010	311,231	67,969
Biogenics - Vegetation and Soil	27,028	0	0	0	0	239,207	50,461
Prescribed Fires	106	29,917	684	58	130	1,872	477
Wildfires	3,636	806	25,350	2,106	4,880	70,152	17,030
Solvents	0	5	3	0	0	21,963	3,206
Consumer and Commercial Solvent	0	0	0	0	0	12,604	1,547
Degreasing	0	0	0	0	0	2,330	786
Dry Cleaning	0	0	0	0	0	4	26
Graphic Arts	0	0	0	0	0	599	41
Industrial Surface Coating and Solvent	0	5	3	0	0	4,628	568
Non-Industrial Surface Coating	0	0	0	0	0	1,799	238
Dust	0	100,984	11,539	0	0	0	0
Construction Dust	0	17,643	1,764	0	0	0	0
Paved Road Dust	0	9,823	2,457	0	0	0	0
Unpaved Road Dust	0	73,518	7,318	0	0	0	0
Other	27	1,230	1,130	1	814	3,281	623
Bulk Gasoline Terminals	0	0	0	0	0	290	13
Commercial Cooking	0	1,054	979	0	0	131	70
Gas Stations	0	0	0	0	0	2,331	427
Non-Industrial, Not Elsewhere Classified	27	176	151	1	814	529	113
Total	135,551	170,145	51,036	13,320	38,634	433,786	90,976

Co-pollutants Emission Changes from Priority Measures

Tables 8 and 9 list anticipated changes in co-pollutants associated with each measure. Additional details about assumptions and methods for quantification of emissions changes are included in Appendix A.

Table 8. Utah Co-Pollutant Emissions Reductions (metric tons) Anticipated from Implementation of Priority Measures from 2025 through 2030

Priority Measure	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3
Transportation					
Measure #1: Light-Duty Zero-Emission Vehicle Incentives					
Project #1 - Electric Vehicle Replacement Assistance Program (EVRAP)	8.0	-0.2	0.1	10.3	1.7
Project #2 - Electric Vehicle Incentive	2.5	-1.8	0.3	23.5	7.0
Project #3 - Electric Fleet Incentive	0.1	-0.1	0.0	0.8	0.2
Measure #2: Medium-and-Heavy-Duty Zero-Emission Vehicle Incentives					
Project #1 - Electric Delivery Vehicle Incentive	0.3	-0.3			
Project #2 - Electric Refuse Hauler Incentive	1.0	-0.3		0.0	
Project #3 - Electric School Bus Ready	2.7	-0.1	0.0	0.2	0.2
Project #4 - Electric School Bus Pilot	1.8	-0.1	0.0	0.1	0.1
Project #5 - Electric Transit Bus	6.0	-1.3	-0.2	1.5	0.3
Measure #3: Zero-Emission Vehicle Charging/Refueling Incentives					
Project #1 - Electric Fleet Chargers	1.4	-0.7	0.0	4.0	
Project #2 - Charging Alternatives (Workplace and Multi-Family Dwelling Electric Vehicle Chargers)	2.9	-1.5	0.1	8.5	
Measure #4: Mode-Shifting/Reducing Vehicle Miles Traveled					
Project #1 - E-Bike Incentive	0.6	-0.01	0.0	0.9	
Project #2 - Trail Development for Active Transportation	0.5		0.0	0.7	
Measure #5: Zero-Emission Nonroad Incentives					
Project #1 - Electric Yard Equipment	0.8	0.0		22.2	
Project #2 - Electric Locomotives	62.7	-0.8		5.1	
Buildings					
Measure #6: Energy Efficiency and Zero-Emission Technology					
Project #1 - Whole Home Retrofits	3.3				
Project #2 - Residential Pre-Weatherization	0.3				
Project #3 - Residential Heat Pump	2.6				
Project #4 - K-12 School/Public Building	9.6	6.0			
Industrial					
Measure #7: Facility Energy Efficiency					

Priority Measure	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3
Project #1 - StepWise Energy Efficiency Assessment	179.4	19.1	5.8	3.6	0.2
Measure #8: Oil/Gas Methane Emission Reductions					
Project #1 - Uinta Basin Energy Recovery and Electrification				18.4*	
Project #2 - Uinta Basin Oil/Gas Thief Hatch Replacement				8,634.5	
Measure #9: Industrial Innovation					
Project #1 - Cement Decarbonization					
Electric Power					
Measure #10: Promote Renewable Energy for Homes and Businesses					
Project #1 - Community Choice Clean Electricity	170.0	95.0	19.0	9.0	
Project #2 - Rooftop Solar Residential Incentive	77.5	42.6	8.3	2.8	2.8
Measure #11: Resilient Local Energy					
Project #1 - Renewables for Public Buildings	8.8	8.8	0.5		
Project #2 - Microgrid for UTA Bus Depot	1.0	0.5	0.1	0.0	0.0
Natural and Working Lands					
Measure #12: Promote Healthy and Resilient Forests and Trees					
Project #1 - Reforestation					
Project #2 - Forest Health/Fuels					
Project #3 - Urban Forestry/Trees					
Cross-Cutting					
Measure #13: Outreach, Education, and Workforce Training Related to Emission Reduction Efforts					
Project #1 - Demonstration and Assistance (One-Stop Shop)	0.3	0.001	0.0004	0.05	
Project #2 - Workforce Training					
Measure #14: Carbon Sequestration and Storage					
Project #1 - Utah Carbon Sequestration and Storage Survey					

* Represents a possible annual reduction and not an accumulated project total.

Table 9. Utah Co-Pollutant Emissions Reductions (metric tons) Anticipated from Implementation of Priority Measures from 2025 through 2050

Priority Measure	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3
Transportation					
Measure #1: Light-Duty Zero-Emission Vehicle Incentives					
Project #1 - Electric Vehicle Replacement Assistance Program (EVRAP)	24.1	-0.5	0.4	30.8	5.2
Project #2 - Electric Vehicle Incentive	7.5	-5.3	0.9	70.5	21.1
Project #3 - Electric Fleet Incentive	0.3	-0.2	0.0	2.8	0.8
Measure #2: Medium-and-Heavy-Duty Zero-Emission Vehicle Incentives					
Project #1 - Electric Delivery Vehicle Incentive	0.8	-0.9			
Project #2 - Electric Refuse Hauler Incentive	2.0	-0.6		0.1	
Project #3 - Electric School Bus Ready	15.2	-0.5	0.0	1.3	1.0
Project #4 - Electric School Bus Pilot	10.1	-0.3	0.0	0.8	0.7
Project #5 - Electric Transit Bus	18.0	-4.0	-0.6	4.4	1.0
Measure #3: Zero-Emission Vehicle Charging/Refueling Incentives					
Project #1 - Electric Fleet Chargers	4.0	-2.0	0.1	11.4	
Project #2 - Charging Alternatives (Workplace and Multi-Family Dwelling Electric Vehicle Chargers)	8.3	-4.4	0.2	24.3	
Measure #4: Mode-Shifting/Reducing Vehicle Miles Traveled					
Project #1 - E-Bike Incentive	1.4	-0.03	0.02	2.3	
Project #2 - Trail Development for Active Transportation	5.0		0.1	7.8	
Measure #5: Zero-Emission Nonroad Incentives					
Project #1 - Electric Yard Equipment	1.0	0.0		29.2	
Project #2 - Electric Locomotives	313.4	-3.8		25.6	
Buildings					
Measure #6: Energy Efficiency and Zero-Emission Technology					
Project #1 - Whole Home Retrofits	18.8				
Project #2 - Residential Pre-Weatherization	1.5				
Project #3 - Residential Heat Pump	14.8				
Project #4 - K-12 School/Public Building	33.6	20.9			
Industrial					
Measure #7: Facility Energy Efficiency					
Project #1 - StepWise Energy Efficiency Assessment	358.8	38.1	11.5	7.3	0.4
Measure #8: Oil/Gas Methane Emission Reductions					

Priority Measure	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3
Project #1 - Uinta Basin Energy Recovery and Electrification				18.4*	
Project #2 - Uinta Basin Oil/Gas Thief Hatch Replacement				24,670.0	
Measure #9: Industrial Innovation					
Project #1 - Cement Decarbonization					
Electric Power					
Measure #10: Promote Renewable Energy for Homes and Businesses					
Project #1 - Community Choice Clean Electricity	736.0	409.0	82.0	41.0	
Project #2 - Rooftop Solar Residential Incentive	387.4	213.1	41.5	13.8	13.8
Measure #11: Resilient Local Energy					
Project #1 - Renewables for Public Buildings	44.2	44.2	2.6		
Project #2 - Microgrid for UTA Bus Depot	6.4	3.4	0.7	0.2	0.2
Natural and Working Lands					
Measure #12: Promote Healthy and Resilient Forests and Trees					
Project #1 - Reforestation					
Project #2 - Forest Health/Fuels					
Project #3 - Urban Forestry/Trees					
Cross-Cutting					
Measure #13: Outreach, Education, and Workforce Training Related to Emission Reduction Efforts					
Project #1 - Demonstration and Assistance (One-Stop Shop)	1.4	0.002	0.001	0.1	
Project #2 - Workforce Training					
Measure #14: Carbon Sequestration and Storage					
Project #1 - Utah Carbon Sequestration and Storage Survey					

* Represents a possible annual reduction and not an accumulated project total.

Low-Income and Disadvantaged Community (LIDAC) Benefits Analysis

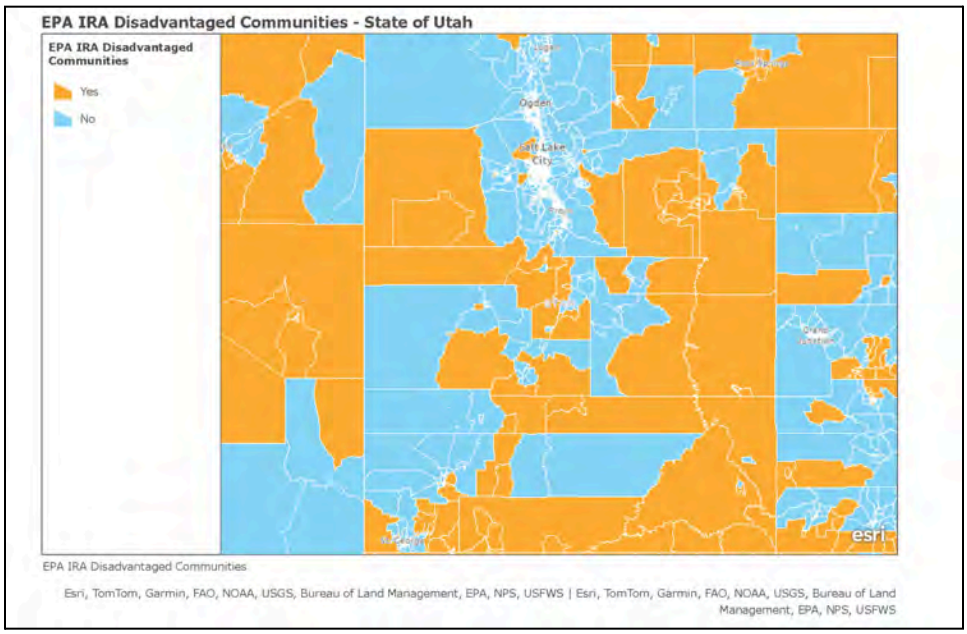
The implementation of the measures included in this Priority Plan are anticipated to provide significant benefits to what the federal government refers to as "Low-Income and Disadvantaged Communities" (hereafter referred to as LIDACs). This section identifies each LIDAC within Utah covered by this Priority Plan, how UDAQ worked to meaningfully engage with LIDACs in the development of this Priority Plan, and how UDAQ will continue to engage LIDACs into the future. A LIDAC Benefits Analysis is a required element of this Priority Plan under the CPRG program.[14]

Identification of and Engagement with LIDACs

As recommended by EPA, UDAQ identified LIDACs using the EPA IRA Disadvantaged Communities mapping tool.[15] This map, shown in Figures 7 and 8, combines multiple datasets (from CEJST and EJScreen) that can be used to determine whether a community is disadvantaged for the purposes of implementing programs under the IRA, including the CPRG program.[16] According to data from the tool, there are 634 total Census Block Groups in the state of Utah that are disadvantaged. A spreadsheet listing all of Utah's disadvantaged Census Block Groups (again, 634 total) can be found on the Beehive Emission Reduction Plan website.[17]

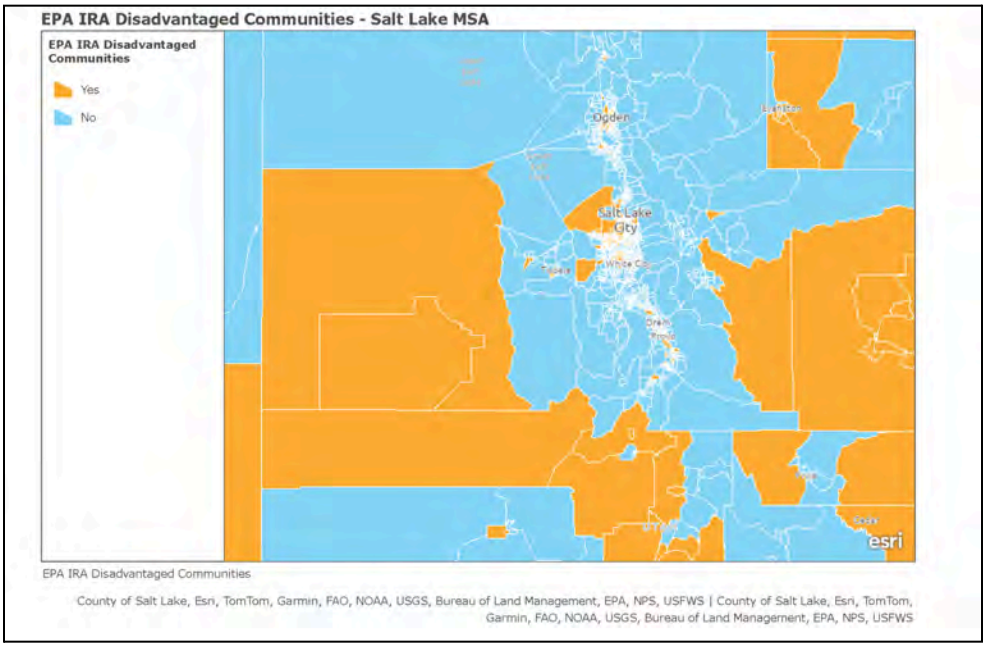
[14] See:
https://www.epa.gov/system/files/documents/2023-05/LIDAC%20Technical%20Guidance%20-%20Final_2.pdf
[15] EPA IRA Disadvantaged Communities mapping tool:
https://epa.maps.arcgis.com/home/item.html?id=f3be939070844eac8a14103ed6f9affd
[16] CEJST: https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5
EJScreen: https://ejscreen.epa.gov/mapper/
[17] Utah's disadvantaged Census Block Groups:
https://docs.google.com/spreadsheets/d/1FaADn81R2gZuEHQJbZjZp0_VTH8og0mDcPUdaHz_PRc/edit?usp=sharing

Figure 7. EPA IRA Disadvantaged Communities Map - State of Utah



Disadvantaged communities in the state of Utah are shown in orange.

Figure 8. EPA IRA Disadvantaged Communities Map - Salt Lake Metropolitan Statistical Area (MSA)



Disadvantaged communities in the Salt Lake Metropolitan Statistical Area (MSA) and surrounding area are shown in orange.

UDAQ created an engagement plan for seeking feedback on community priorities during the development of this Priority Plan. See the Outreach and Coordination section of this Priority Plan for the engagement plan, a record of outreach activities, and a summary of LIDAC input received during the engagement process. UDAQ worked to transparently communicate with LIDACs throughout the Priority Plan process. UDAQ also worked to pursue early, frequent, and meaningful engagement with LIDACs to incorporate community-driven priorities in the Priority Plan. Strategies for engagement with LIDACs are summarized below:

- Online resources:
    - Utah Beehive Emission Reduction Plan webpage[18];
    - Email list;
    - Targeted statewide LIDAC Working Group survey;
- Meetings in the state through in-person and video conference methods, including the following UDAQ-organized public events:
    - Public hybrid kickoff meeting on August 24, 2023;
    - Public virtual Q&A meeting on February 1, 2024.
- Attendance at known community events and meetings to disseminate information about how to provide input;
- Outreach to Federally-Recognized Tribal Nations (Northwestern Band of Shoshone Nation, Confederated Tribes of Goshute, Skull Valley Band of Goshute, Paiute Indian Tribe of Utah, San Juan Southern Paiute Tribe, Ute Indian Tribe of the Uintah and Ouray Reservation, Ute Mountain Ute Tribe, and Navajo Nation) and known LIDAC-focused agencies/community-based organizations, in creation of a statewide LIDAC Working Group;
- Flyers;
- Coordination with Salt Lake MSA's Priority Plan engagement, including receiving and reviewing feedback from their Salt Lake Environmental Justice (EJ) Resident Committee; and
- Formal public comment period on Utah's draft measures during late-January and early-February 2024.

[18] Source: https://deq.utah.gov/air-quality/beehive-emission-reduction-plan

Impact of Priority Plan Implementation on LIDACs

According to the EPA, more and more analysis focuses on the "disproportionate and unequal risks that climate change is projected to have on communities that are least able to anticipate, cope with, and recover" from them.[19] Specifically, Utah's LIDAC areas are vulnerable to projected climate-related impacts and risks. In general, these risks include the following: extreme weather events (like extreme rainfall/flooding), extreme temperatures (like extreme heat), wildfire risk, ozone/smog formation, and more. Cumulatively, in Utah, these risks have the potential to cause transportation issues, lost labor hours, property/economic damage, worsened health outcomes (such as increased asthma rates), and even premature deaths (such as from heart or lung disease) in some cases. Indeed, certain groups of people are especially vulnerable to some of these risks, including children, the elderly, people who have health conditions, and people who are low-income.

According to the state of Utah's Hazard Mitigation Plan (HMP), climate change may amplify the impacts of many of Utah's natural hazards, including avalanches, dam failure, drought, flooding, landslides, severe weather, and wildfires.[20] Industries (and associated workers) that are in danger of being affected by a changing climate in Utah include the ski industry, agricultural industry, and healthcare industry. Some of the potential health impacts identified in Utah's HMP include higher rates of respiratory disease, increased asthma prevalence, and increased heat-related disease, among others.

Potential benefits may accrue across the state as a result of the implementation of measures in this Priority Plan, including in LIDAC areas. These benefits include:

- Reduced emissions of GHGs and associated co-pollutants;
- Improved air quality and public health;
- Increased energy efficiency;
- Increased savings associated with fuel and energy;
- Increased job creation/workforce development opportunities;
- Increased preparedness for natural disasters and extreme weather events;
- Contributions to larger (i.e., regional/national) efforts on climate mitigation.

In general, potential disbenefits (and accompanying mitigation strategies) of the measures include the following:

- Potential Disbenefit: High financial cost of clean vehicles/equipment for individuals and entities

[19] According to an EPA Report: https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf) "Climate change affects all Americans—regardless of socioeconomic status—and many impacts are projected to worsen as temperatures…continue to rise, snow and rainfall patterns shift and some extreme weather events become more common." If unchecked, climate impacts can exacerbate inequalities.
[20] Source: https://hazards.utah.gov/climate-change/

    - Mitigation Strategy: Incentive programs for clean vehicles/equipment targeted to individuals and entities
- Potential Disbenefit: Traditional/existing jobs lost in transition to cleaner technologies/practices
    - Mitigation Strategy: Workforce development/job transition strategies
- Potential Disbenefit: Community member/stakeholder concerns and lack of knowledge about cleaner technologies/practices
    - Mitigation Strategy: Additional education/outreach efforts

Table 10 lists LIDACs (by County and Census Block Group Identification, as applicable) anticipated to be affected by the implementation of each priority measure/project included in this Priority Plan. All of the applicable Census Block Group Identifications (IDs) are listed in a spreadsheet[21] on the Beehive Emission Reduction Plan website. All of the below measures/projects can also be found in Appendix A.

Table 10. LIDACs Affected by Priority Measures/Projects

Priority Measure/Project	Potentially Affected LIDAC Counties	Potentially Affected LIDAC Census Block Group IDs
Sector: Transportation		
Measure #1: Light-Duty Zero-Emission Vehicle Incentives		
Project #1 - Electric Vehicle Replacement Assistance Program (EVRAP)	Salt Lake, Davis, Weber, Cache, Utah counties	Salt Lake: 490351001001 - 490351152113 (261 total); Davis: 490111253013 - 490111270062 (28 total); Weber: 490572001003 - 490572112021 (60 total); Cache: 490050002021 - 490050014022 (25 total); Utah: 490490001024 - 490499805001 (103 total)
Project #2 - Electric Vehicle Incentive	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #3 - Electric Fleet Incentive	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Measure #2 - Medium-and-Heavy-Duty Zero-Emission Vehicle Incentives		
Project #1 - Electric Delivery Vehicle Incentive	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Electric Refuse Hauler Incentive	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #3 - Electric School Bus Ready	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #4 - Electric School Bus Pilot	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)

[21] https://docs.google.com/spreadsheets/d/1FaADn81R2gZuEHQJbZjZp0_VTH8og0mDcPUdaHz_PRc/edit?usp=sharing

Priority Measure/Project	Potentially Affected LIDAC Counties	Potentially Affected LIDAC Census Block Group IDs
Project #5 - Electric Transit Bus	Salt Lake, Davis, Weber counties	Salt Lake: 490351001001 - 490351152113 (261 total); Davis: 490111253013 - 490111270062 (28 total); Weber: 490572001003 - 490572112021 (60 total)
Measure #3 - Zero-Emission Vehicle Charging/Refueling Incentives		
Project #1 - Electric Fleet Chargers	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Charging Alternatives (Workplace and Multi-Family Dwelling Electric Vehicle Chargers)	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Measure #4: Mode-Shifting/Reducing Vehicle Miles Traveled		
Project #1 - E-Bike Incentive	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Trail Development for Active Transportation	Washington and Kane counties	Washington: 490532701011 - 490532718001 (34 total); Kane: 490251301001 - 490251302004 (7 total)
Measure #5: Zero-Emission Nonroad Incentives		
Project #1 - Electric Nonroad Equipment	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Electric Locomotives	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Sector: Buildings		
Measure #6: Energy Efficiency and Zero-Emission Technology		
Project #1 - Whole Home Retrofits	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Residential Pre-Weatherization	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #3 - Residential Heat Pump	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #4 - K-12 School/Public Building	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Sector: Industrial		
Measure #7 - Facility Energy Efficiency		
Project #1 - StepWise Energy Efficiency Assessment	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Measure #8 - Oil/Gas Methane Emission Reductions		
Project #1 - Uinta Basin Energy Recovery and Electrification	Uinta Basin (Duchesne and Uintah counties)	Duchesne County: 490139403001 - 490139406005 (12 total) and Uintah County: 490479402011 - 490479684042 (23 total)

Priority Measure/Project	Potentially Affected LIDAC Counties	Potentially Affected LIDAC Census Block Group IDs
Project #2 - Uinta Basin Oil/Gas Thief Hatch Replacement	Uinta Basin (Duchesne and Uintah counties)	Duchesne County: 490139403001 - 490139406005 (12 total) and Uintah County: 490479402011 - 490479684042 (23 total)
Measure #9 - Industrial Innovation		
Project #1 - Cement Decarbonization	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Sector: Electric Power		
Measure #10 - Promote Renewable Energy for Homes and Businesses		
Project #1 - Community Choice Clean Electricity	18 communities[22] throughout Utah, including Salt Lake County, Grand County, and Summit County	Salt Lake: 490351001001 - 490351152113 (261 total); Grand: 490190002001 - 490190003022(8 total); Summit: 490439641032 (1 total); and more
Project #2 - Rooftop Solar Residential Incentive	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Measure #11 - Resilient Local Energy		
Project #1 - Renewables for Public Buildings	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Microgrid for UTA Bus Depot	Salt Lake County	Salt Lake: 490351001001 - 490351152113 (261 total)
Sector: Natural and Working Lands		
Measure #12 - Promote Healthy and Resilient Forests and Trees		
Project #1 - Reforestation	Cache County, potentially statewide and other Western states	Cache: 490050002021 - 490050014022 (25 total); potentially all LIDAC Census Block Group IDs in Utah (634 total) at a minimum
Project #2 - Forest Health/Fuels	Wasatch County, potentially statewide	Wasatch: 490519405011; potentially all LIDAC Census Block Group IDs in Utah (634 total)
Project #3 - Urban Forestry/Trees	Emery County, potentially statewide	Emery: 490159765003; potentially all LIDAC Census Block Group IDs in Utah (634 total)
Sector: Cross-Cutting		
Measure #13 - Energy Outreach, Education, and Workforce		
Project #1 - Energy Demonstration and Assistance (One-Stop Shop)	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)
Project #2 - Workforce Training	Statewide	All LIDAC Census Block Group IDs in Utah (634 total)

[22] Source: https://www.utahrenewablecommunities.org/communities

Priority Measure/Project	Potentially Affected LIDAC Counties	Potentially Affected LIDAC Census Block Group IDs
Measure #14 - Carbon Sequestration and Storage		
Project #1 - Utah Carbon Sequestration and Storage Survey	Iron and Beaver counties	Iron: 490211104001 - 490211107042 (12 total); Beaver: 0 total

A breakdown of the project-specific LIDAC benefits and disbenefits is provided for each measure in Appendix A, including:

a. Discussion of unique, project-specific LIDAC benefits;
b. Discussion of unique project-specific LIDAC disbenefits and strategies to mitigate them (where applicable).

Continued Engagement with LIDACs

UDAQ will continue to convene meetings with the LIDAC Working Group as long as LIDAC-focused community partner staff and other external participants are willing to participate. Based on feedback from this Working Group, additional outreach and engagement activities to LIDACs in Utah will be pursued by UDAQ.

Review of Authority to Implement

UDAQ has reviewed existing statutory and regulatory authority to implement each priority measure included in this Priority Plan. As a result of this review, UDAQ has confirmed that the entities identified as lead agencies and partners for each measure have the necessary authority to implement the measure/project in question. That said, UDAQ will continue to work with agency partners to ensure that each implementing entity has the existing statutory or regulatory authority to implement measures. For each measure, UDAQ has documented the lead agency and its authority to implement in Appendix A.

Intersection with Other Funding Availability

UDAQ has created and published a Funding Resource Guide (FRG)[23] to assist with the tracking of all GHG-related IRA, IIJA, and other funding sources. The FRG is being used both internally and externally to assist with coordination between various entities regarding funding opportunities to support GHG emission reduction. For each funding opportunity, the FRG provides the Law/Section Number, Title, Description, Sector, Funding Amount, Funding Agency, Funding Type, Eligible Recipients, Leading Utah Agency (if applicable), and Web Link. Data Sources include Governor's Office of Planning and Budget IIJA Opportunity Tracker, Atlas Public Policy's Climate Program Portal, the IRA Guidebook, and more. The FRG has been shared with stakeholders, and has been made available on the Beehive Emission Reduction Plan website[24]. Coordination efforts have been outlined in the Coordination and Outreach Section of this document. Additionally, UDAQ plans to continue gathering data on the intersection of funding opportunities beyond the CPRG program and will update the FRG as these efforts continue.

Many of the priority measures included in this Priority Plan expand upon or complement existing programs. For each measure, UDAQ has documented the following in Appendix A: funding needed to implement, complementary funding, funding pursued by the state or secured for implementation, and how additional implementation grant dollars are necessary to fund the measure.

[23] Funding Resource Guide; https://docs.google.com/spreadsheets/d/1Csz-RC9xdEdMG4bbUxAQZRJxMTX-4XTRkws09v-hFG0/edit?usp=sharing

[24] Beehive Emission Reduction Plan website: https://deq.utah.gov/air-quality/beehive-emission-reduction-plan

Workforce Planning Analysis

The measures included in this Priority Plan will help support the creation of high-quality jobs and workforce development opportunities for Utahns. Although a complete Workforce Planning Analysis was not conducted for this Priority Plan, this section details Utah's acknowledgment of the need for a highly skilled workforce for the implementation of the priority measures.

Because of the importance of workforce training to the long-term success of this Priority Plan, UDAQ has identified that each measure may include support for such training as related to specific projects. Additionally, UDAQ has included a separate, standalone measure and associated project that encompasses broader Workforce Training related to emission reduction efforts (including efforts outside of what has been identified in this Priority Plan) in order to be as comprehensive as possible. As we discuss later, many if not all of the emission reduction strategies will not be fully realized without a Utah workforce that is trained with the skills needed to implement the programs and projects.

Indeed, the transition to cleaner technology, equipment, and practices will necessitate additional workforce training/development. As discussed in the LIDAC Benefits Analysis section of this Priority Plan, a potential disbenefit of this transition is traditional/existing jobs lost throughout communities in Utah. The identified mitigation strategy for this disbenefit is workforce development/job transition strategies. For example, the transition to cleaner transportation (like electric vehicles) will require training on new vehicles and equipment so the current workforce is not displaced. Potential jobs impacted by cleaner transportation projects include transportation and fleet managers, administrative services staff, financial office staff, drivers, mechanics, electricians, and other essential personnel. UDAQ may engage with these groups when undertaking a full Workforce Planning Analysis. Such an analysis will necessitate a phased approach that may include the following:

- Phase 1: Study and report current state workforce trends, projections, and gaps, especially those tied to relevant Priority Plan measures/project.
- Phase 2: Build system to track key workforce trends during the CPRG time period.
- Phase 3: Set and publish state workforce development targets tied to key job gaps, if projected.
- Phase 4: Partner with industry, agencies, educational entities, community-based organizations, etc. to design career paths and launch a holistic workforce development and training strategy targeting job gaps that represent the biggest risk to implementation of measures identified in the Priority Plan.

UDAQ will conduct a more robust Workforce Planning Analysis and coordinate further with stakeholders during the Comprehensive Plan development process.

Coordination and Outreach

UDAQ conducted extensive stakeholder and intergovernmental coordination and outreach in the development of this Priority Plan. This section describes the plan and framework UDAQ used to support robust and meaningful engagement strategies to ensure comprehensive stakeholder representation and overcome obstacles to engagement, including linguistic, cultural, institutional, geographic, and other barriers.

Identification of Stakeholders

UDAQ identified stakeholders representative of the entities, groups, and individuals who may be impacted by implementation of this Priority Plan. Stakeholders were located in the state of Utah unless otherwise specified. Stakeholders that were invited and included without limitation:

- Residents and community members;
- Local/municipal governments;
- Local Health Departments;
- Academia/higher education;
- Metropolitan Planning Organizations;
- Economic development-focused organizations;
- Environmental advocacy organizations;
- Industrial associations;
- Companies;
- Utilities;
- Local elected officials;
- Community-based organizations;
- Other interested organizations;
- Other state of Utah agencies;
- Staff/agencies from other states; and
- Federally-Recognized Tribal Nations.

To identify stakeholders, UDAQ contacted local elected officials, industry and energy company representatives, community-based organizations, and other organizations known to be interested in clean energy infrastructure and practices.

Interagency and Intergovernmental Coordination

UDAQ engaged in several ways to coordinate with other agencies and offices within the state of Utah government as well as involve municipalities, Federally Recognized Tribes, and other organizations in plan development.

UDAQ created a webpage for Utah's Beehive Emission Reduction Plan to streamline resources for interested parties. This webpage includes an overview, contact information, key dates, Phase I: Planning Grants- and Phase II: Implementation Grants-specific details and documents, UDAQ-developed resources, UDAQ-submitted grant documents (NOIP, Workplan, timeline, etc), and meeting recordings/materials.

UDAQ created, published, and frequently updated a Funding Resource Guide (FRG) to assist with the tracking of all GHG-related IRA, IIJA, and other funding sources. The FRG is being used both internally and externally to assist with coordination between various entities regarding funding opportunities to support GHG emission reduction. For each funding opportunity, the FRG provides the Law/Section Number, Title, Description, Sector, Funding Amount, Funding Agency, Funding Type, Eligible Recipients, Leading Utah Agency (if applicable) and Web Link.

UDAQ hosted multiple meetings to coordinate with other entities. For the public Kickoff Meeting, email invites were sent to all relevant stakeholders and information about the meeting was publicly available on UDAQ's website. During this August 24, 2023 Beehive Emission Reduction Plan Kickoff Meeting, UDAQ provided an overview of the initiative, and began the process of soliciting stakeholder feedback via a "Homework Assignment" form created to identify emission reduction measures, parties interested in pursuing climate- or energy-related funding opportunities, and information on other funding sources that have not yet been identified by UDAQ.

On October 5, 2023, UDAQ hosted various entities identified as potentially eligible partners at the Beehive Emission Reduction Plan Coordination Meeting. Attendees at this meeting were part of a Coordinating Entities Working Group. These entities were identified from the list of eligible applicants for CPRG implementation grants as identified in the NOFO and/or based on UDAQ's need for assistance and the possibility of partnering on one or more measures as the Priority Plan was developed. During the meeting, UDAQ provided an introduction to the Beehive Emission Reduction Plan initiative, provided an overview of funding sources and related program deliverables and requirements, shared a Climate- and Energy-Related Funding - Agency Interest Tracking Sheet to identify which funding sources the various entities may be interested in applying for and/or participating on, gauged interest in partnering with UDAQ in seeking CPRG Phase II grant funding to

implement quantifiable GHG emission reduction measures, and laid the groundwork for ongoing coordination throughout UDAQ's longer-term planning process.

From October 2023 through mid-January 2024 (and beyond), several other meetings were held with individual agencies and entities in order to coordinate further on Priority Plan development. See Table 11, Outreach and Coordination Log, for a comprehensive list of all meetings held.

On January 23, 2024, UDAQ released a list of Draft Priority Measures for public review and comment. On February 1, 2024, UDAQ hosted a public virtual Q&A meeting providing an overview of the Draft Priority Measures and answering questions from stakeholders.

UDAQ will continue to refine and utilize the FRG and materials developed during the Priority Plan planning process and will engage in outreach and coordination with key state and local agency leads for IRA, IIJA, and other energy- and climate-related funding. This engagement will take the form of ongoing interagency coordination meetings backed by a shared electronic repository for background material, working drafts, meeting schedules, and agendas. The goals of this process are to ensure that the state of Utah and its political subdivisions maximize the climate-related implementation funding opportunities established by the IRA, IIJA, and other programs and to quantify the emissions reductions that result from utilizing these funding opportunities in the Comprehensive Plan.

Outreach Plan and Summary of LIDAC Input Received

Stakeholder and LIDAC-focused engagement were central to Utah's Priority Plan development. UDAQ had a broader public engagement and outreach strategy as well as two stakeholder working groups (the previously mentioned Coordinating Entities Working Group and a LIDAC Working Group) to assist in identifying and prioritizing GHG emissions reduction measures for the Priority Plan. Broad public engagement and outreach was conducted through hybrid (in-person and virtual) meetings that varied in content depending on the audience. Efforts were made to include a diverse array of stakeholders, including representatives from clean energy and environmental advocates, elected officials, local and state government agencies, academia, industry, energy providers, Federally Recognized Tribes, LIDACs, and other constituencies/community members who sought to participate. Public meetings and related materials were publicly noticed and accessible, and deliverables were made available for public review.

Summary of intergovernmental coordination efforts/stakeholder engagement:

- Online and physical resources:

    - Utah Beehive Emission Reduction Plan webpage[25];
        - Form for submitting ideas;
        - Funding Resource Guide[26];
    - Email list;
    - Flyers.
- Virtual, in-person, and hybrid coordination/engagement meetings

See *Identification of and Engagement with LIDACs* section of this Priority Plan for more information, but here again is the Summary of Meaningful Engagement with LIDACs:

- Online resources:
    - Utah Beehive Emission Reduction Plan webpage[27];
    - Email list;
    - Targeted statewide LIDAC Working Group survey;
- Meetings in the state through in-person and video conference methods, including the following UDAQ-organized public events:
    - Public hybrid kickoff meeting on August 24, 2023;
    - Public virtual Q&A meeting on February 1, 2024.
- Attendance at known community events and meetings to disseminate information about how to provide input;
- Outreach to Federally-Recognized Tribal Nations (Northwestern Band of Shoshone Nation, Confederated Tribes of Goshute, Skull Valley Band of Goshute, Paiute Indian Tribe of Utah, San Juan Southern Paiute Tribe, Ute Indian Tribe of the Uintah and Ouray Reservation, Ute Mountain Ute Tribe, and Navajo Nation) and known LIDAC-focused agencies/community-based organizations and entities, in creation of a statewide LIDAC Working Group;
- Flyers; and
- Coordination with Salt Lake MSA's Priority Plan engagement, including receiving and reviewing feedback from their Salt Lake EJ Resident Committee;
- Formal public comment period on Utah's draft measures during January and February 2024.

A summary of LIDAC-specific input received during the Priority Plan process is included below:

- Utah LIDAC Working Group survey results:

[25] State Beehive Emission Reduction Plan webpage: https://DAQ.utah.gov/air-quality/beehive-emission-reduction-plan
[26] Funding Resource Guide: https://docs.google.com/spreadsheets/d/1Csz-RC9xdEdMG4bbUxAQZRJxMTX-4XTRkws09v-hFG0/edit#gid=0
[27] State Beehive Emission Reduction Plan webpage: https://DAQ.utah.gov/air-quality/beehive-emission-reduction-plan

    - Most important benefits of measures/projects:
        - Improving air quality and public health
        - Reducing energy/utility bills tied with Improving transportation options
    - Best types of measures/projects:
        - More energy efficiency
        - More renewable energy
        - More electric transportation tied with Less industrial emissions
    - Recurring comment themes:
        - Want multiple transportation options
        - Support for Pre-Weatherization, Outreach/Education measure/project ideas
        - Desire for more holistic approach in the process
- Other input from Utah LIDAC Working Group meetings:
    - Many potential impacts/risks are facing communities in Utah
    - Other Natural & Working Lands, Transportation measure/project ideas were suggested
    - There is a need for more community engagement/capacity-building
    - There are challenges with figuring out new programs on a short timeline
- Salt Lake EJ Resident Committee Member priorities:
    - Transportation
        - Support public transportation
        - Support carpool strategies
    - Electric Power
        - Support solar alternatives
    - Industrial
        - Mitigate pollution from various sources
    - Natural & Working Lands
        - Support green space
    - Cross-cutting
        - Support green jobs
        - Support education

Strategies to Overcome Linguistic, Cultural, Institutional, Geographic, and Other Barriers to Participation

One of the top goals at the state of Utah is to make websites and applications, across the many different agencies (including for UDAQ), accessible for all people including those with varying impairments. By prioritizing accessibility, the state of Utah demonstrates a commitment to those we serve by fostering a sense of inclusivity, and ultimately enhancing the user experience for everyone.

In an effort to expand accessibility access, we hope to reach those with the following disabilities:

- Limited or no vision
- Motor functionality
- Limited or no auditory perception
- Cognitive abilities

To achieve this goal, the state has adopted the use of a design system that includes an accessibility standards checklist.[28]

Additionally, the state of Utah provides instructions about language accessibility to the public, specifically that Google offers free tools to translate any website (including UDAQ's Beehive Emission Reduction Plan webpage[29]) with one click from a browser's toolbar. More information can be found within the official website of the state of Utah.[30]

The state of Utah strives for accessibility of resources (webpage, email lists, news releases, social media, public meeting recordings, video conferencing options, etc) through online, in-person, and hybrid participatory methods.

Outreach and Coordination Documentation

Table 11 provides a log of the 79 interagency and intergovernmental coordination and stakeholder and public engagement meetings associated with the development of this Priority Plan.

Table 11. Outreach and Coordination Log

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
5/3/2023 (pre-award)	Air Advocates Beehive Emission Reduction Plan Presentation	UDAQ, Utah Air Advocates group	Hybrid (In-person and online)	Multi-Agency State Office Building (MASOB) - Salt Lake City, Utah
5/23/2023 (pre-award)	UDEQ - Utah Local Health Departments	UDEQ, Utah LHDs	Virtual	

[28] Source: https://www.utah.gov/support/accessibility.html
[29] UDAQ's Beehive Emission Reduction Plan webpage: https://deq.utah.gov/air-quality/beehive-emission-reduction-plan
[30] Official website of the state of Utah: https://www.utah.gov/supporhttps://www.utah.gov/support/translate.htmlt/translate.html.

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
	(LHDs) Governance Meeting			
5/30/2023 (pre-award)	"On a break with AWMA" Presentation	UDAQ, Air and Waste Management Association (AWMA) members, including regulators, industry, and consultancy	Virtual	
6/26-6/28, 2023 (pre-award)	Conveners Network Chicago Meeting	UDAQ, Conveners Network, staff from other states	In-person	Chicago, Illinois
7/19/2023	Utah Air Quality Policy Advisory Board (AQPAB) Beehive Emission Reduction Plan Presentation	UDAQ, Utah AQPAB members	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
7/27/2024	Meeting with Rural Utah Project (RUP) about LIDAC Outreach	UDAQ, RUP	In-person	Salt Lake City, Utah
8/2/2023	Utah Air Quality Board Presentation	UDAQ, Utah Air Quality Board	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
8/2/2023	IRA IIJA CHIPS Coordination Meeting with Utah Governor's Office of Planning and Budget (GOPB)	UDAQ, GOPB, other state of Utah agencies	Virtual	
8/8/2023	Clean Air Caucus Beehive Emission Reduction Plan Presentation	UDAQ, Utah Clean Air Caucus members	Hybrid (In-person and online)	Utah Capitol - Salt Lake City, Utah
8/9/2023	GOPB IRA Coordination Meeting	UDAQ, GOPB	Virtual	
8/24/2023	Beehive Emission Reduction Plan Public Kickoff Meeting	UDAQ, stakeholders, public	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
8/29-8/30, 2023	Uinta Basin Energy Summit Tabling	UDAQ, energy companies and	In-person	Vernal, Utah

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
		stakeholders in Uinta Basin		
8/31/2023	Wilkes Center Meeting	UDAQ, Wilkes Center	In-person	MASOB - Salt Lake City, Utah
9/5/2023	CPRG Discussion with Idaho	UDAQ, staff from Idaho	Virtual	
9/6/2023	CPRG Discussion with Utah Coordinator for Resource Stewardship	UDAQ, Utah Coordinator for Resource Stewardship	Virtual	
9/7/2023	Mobile Source GHG Inventory Meeting with Salt Lake City (SLC) Staff	UDAQ, SLC	Virtual	
9/8/2023	2nd Annual Conservative Climate Summit	UDAQ, other Summit attendees	In-person	Utah Valley University - Orem, Utah
9/11/2023	Western State CPRG call with Utah, Montana, and Wyoming	UDAQ, staff from Montana and Wyoming	Virtual	
9/15/2023	Meeting with PacifiCorps	UDAQ, PacifiCorps	Virtual	
9/19/2023	Beehive Emission Reduction Plan Overview at Great Basin Chapter of AWMA Annual Dinner	UDAQ, AWMA	In-person	
9/25/2023	Eastern Utah Economic Summit	UDAQ, UOED, Utah Clean Energy	In-person	Price, Utah
9/28/2023	Meeting with Fervo Energy about Geothermal Well Drilling Electrification	UDAQ, Fervo Energy	Virtual	
10/2/2023	Utah Clean Energy (UCE) Meeting	UDAQ, UCE	Virtual	
10/4/2023	Beehive Emission Reduction Plan LIDAC Presentation to Community Action Partnership (CAP) Utah	UDAQ, CAP Utah network member organizations	Virtual	
10/5/2023	Workforce Development Meeting with Salt	UDAQ, SLC, WRA	Virtual	

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
	Lake City and Western Resource Advocates (WRA) staff			
10/5/2023	Beehive Emission Reduction Plan Agency Coordination Meeting	UDAQ, academia, government agencies across Utah, etc	Virtual	
10/16/2023	CPRG Engagement Discussion	UDAQ, SLC, UCE	Virtual	
10/17/2023	Meeting with Rural Utah Project	UDAQ, RUP	Virtual	
10/24/2023	Utah DEQ-LHD Governance Meeting	UDEQ, Utah LHDs	Virtual	
10/25-10/27, 2023	Conveners Network Santa Fe Meeting	UDAQ, Conveners Network, staff from other states	In-person	Santa Fe, New Mexico
11/1/2023	Air Advocates Beehive Emission Reduction Plan Presentation	UDAQ, Utah Air Advocates group	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
11/6/2023	Meeting with Utah Clean Energy	UDAQ, UCE	Virtual	
11/7/2023	LIDAC Outreach Discussion	UDAQ, Healthy Environment Alliance (HEAL) Utah	Virtual	
11/14/2023	Salt Lake MSA/Utah CPRG Check In Meeting	UDAQ, SLC	Virtual	
11/16/2023	Utah LIDAC Working Group Meeting #1	UDAQ, Beehive Emission Reduction Plan LIDAC Working Group members	Virtual	
11/29/2023	Meeting with Wasatch Front Regional Council (WFRC)	UDAQ, WFRC	Virtual	
11/29/2023	CPRG Discussion: ID, MT, UT, WY	UDAQ, staff from ID, MT, WY	Virtual	
11/30/2023	LIDAC Check In Meeting	UDAQ, Rural Utah Project	Virtual	
11/30/2023	Community Listening Session in Uinta Basin area	UDAQ, HEAL Utah, community members	Hybrid (In-person and online)	Fruitland, Utah

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
12/5/2023	Meeting about Priority Plans and Utah Renewable Communities	UDAQ, SLC	Virtual	
12/6/2023	Meeting about Measures Coordination	UDAQ, MT CPRG Coordinator and local community leader	Virtual	
12/7/2023	Meeting about Beehive Emission Reduction Plan and Carbon Reduction Program	UDAQ, UDOT	Virtual	
12/8/2023	Utah Climate Action Network Meeting	UDAQ, other meeting attendees	In-person	SLC Public Safety Building - Salt Lake City, Utah
12/11/2023	LIDAC Meeting about San Juan County, Utah area	UDAQ, Rural Utah Project, San Juan School District, Utah Navajo Trust Fund	Virtual	
12/12/2023	LIDAC Meeting with UDWS, UOED	UDAQ, UDWS, UOED	Virtual	
12/12/2023	Western Governors' Association Decarbonizing the West Workshop - Day 1	UDAQ, other Workshop attendees	Virtual	
12/13/2023	Western Governors' Association Decarbonizing the West Workshop - Day 2	UDAQ, other Workshop attendees	Virtual	
12/13/2023	Meeting with Utah Clean Energy about Measures	UDAQ, UCE	Virtual	
12/13/2023	Utah Forestry Call	UDAQ, UDNR - Division of Forestry, Fire & State Lands	Virtual	
12/14/2023	Utah Rural Public Transit Town Hall Meeting	United Today Stronger Tomorrow	Virtual	
12/14/2023	Western States Forestry Coalitions Call	UDAQ, states of ID, WY, and MT	Virtual	

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
12/15/2023	SLC CLEAR Planning Call #1	UDAQ, SLC, etc	Virtual	
12/18/2023	SLC CLEAR Planning Call #2	UDAQ, SLC, etc	Virtual	
1/2/2024	Meeting with Weber State University (WSU)	UDAQ, WSU	Virtual	
1/2/2024	Salt Lake MSA/Utah CPRG Check In Meeting	UDAQ, SLC	Virtual	
1/3/2024	Air Advocates Beehive Emission Reduction Plan Update	UDAQ, Utah Air Advocates group	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
1/4/2024	LIDAC Heat Pump Meeting	UDAQ, UDWS, Rocky Mountain Power	Virtual	
1/5/2024	Beehive Emission Reduction Plan Measure Quantification	UDAQ, UCE	Virtual	
1/5/2024	Meeting about Utah Olympic Bid	UDAQ, Park City Sustainability	Virtual	
1/5/2024	Meeting about Oil and Gas Aerial Monitoring	UDAQ, CDPHE	Virtual	
1/5/2024	Meeting about Electric Refuse Haulers	UDAQ, ACE Recycling and Disposal	Virtual	
1/16/2024	Meeting about LIDAC Outreach	UDAQ, DHHS	Virtual	
1/17-1/19, 2024	Conveners Network Austin Meeting	UDAQ, Conveners Network, staff from other states	In-person	Austin, Texas
1/25/2024	Meeting with Utah Department of Health and Human Services (UDHHS) group about Beehive Emission Reduction Plan	UDAQ, UDHHS, other health-focused staff in Utah		
1/31/2024	Utah LIDAC Working Group Meeting #2	UDAQ, Beehive Emission Reduction Plan LIDAC Working Group members	Virtual	

Date	Topic/Event	Organizations Involved	Coordination/ Outreach Method	Location (if applicable)
2/1/2024	Draft Priority Measures Q&A Public Meeting	UDAQ, stakeholders, public	Virtual	
2/5/2024	Conveners Network Forestry Coalition Meeting	UDAQ, staff from other states	Virtual	
2/5/2024	University Neighborhood Partners (UNP) Environmental Institutions Meeting	UDAQ, UNP, other institutions	In-person	UNP Hartland Center - Salt Lake City, Utah
2/6/2024	Meeting about Oil and Gas Electrification	UDAQ, Utah Petroleum Association, Uinta Basin operators	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
2/7/2024	Check In Meeting with SLC about Priority Plans	UDAQ, SLC	Virtual	
2/7/2024	Beehive Emission Reduction Plan Presentation to Air Quality Board	UDAQ, Utah Air Quality Board Members	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
2/8/2024	Beehive Emission Reduction Plan Feedback Meeting with Utah Clean Energy	UDAQ, UCE	Virtual	
2/13/2024	Check In Meeting with UDWS about LIDAC Measures	UDAQ, UDWS	Virtual	
2/14/2024	Meeting with UTA about Transit Measures	UDAQ, UTA	Virtual	
2/15/2024	February UCAIR Meeting Presentation	UDAQ, UCAIR	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah
2/16/2024	Check In Meeting with UOED about Measures	UDAQ, UOED	Virtual	
2/16/2024	Salt Lake CLEAR Planning Meeting	UDAQ, SLC	Virtual	
2/27/2024	“On a break with AWMA” Presentation	AWMA members, including regulators, industry, and consultancy	Virtual	
2/27/2024	UDEQ-LHD Governance Meeting	UDEQ, Utah Local Health Departments	Hybrid (In-person and online)	MASOB - Salt Lake City, Utah

Appendix A - Priority Measures

Transportation

Measure #1: Light-Duty Zero-Emission Vehicle Incentives

This measure aims to voluntarily increase adoption of light-duty zero-emission vehicles in use in Utah. Potential incentives could include point of sale rebates, ongoing grants, and technical assistance navigating incentives and could be scaled and/or otherwise qualified based on income[31]. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects that could advance this measure.

Project #1 - Electric Vehicle Replacement Assistance Program (EVRAP)

1. **Project Description**

Use CPRG funds to create a proposed light-duty income-qualified incentive, EVRAP (Electric Vehicle Replacement Assistance Program), for individuals. The Vehicle Repair and Replacement Assistance Program (VRRAP) is currently administered in the state of Utah through the Utah Department of Environmental Quality (UDEQ), Division of Air Quality (UDAQ) and Local Health Departments to help repair or replace internal combustion engine (ICE) vehicles that fail inspection and maintenance (I/M) program emissions tests.[32] Unlike the existing VRRAP program, the implementation of a new Electric Vehicle Replacement Assistance Program (EVRAP) in Utah would exclusively focus on replacing high-polluting vehicles with new or used electric vehicles for income-qualified Utahns in I/M Counties: Salt Lake, Davis, Weber, Cache, and Utah. Such incentives could potentially be extended to all counties throughout the state through an income-based mechanism similar to that employed by the Vehicle Exchange Colorado (VXC) program.[33]

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 1,000 vehicles. Actual emissions reductions will vary depending on selected program parameters.

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[31] Examples of similar programs include: Texas (https://www.tceq.texas.gov/airquality/terp/ld.html), Colorado (https://energyoffice.colorado.gov/vehicle-exchange-colorado), and California (https://ww2.arb.ca.gov/sites/default/files/movingca/cvrp.html).

[32] The Vehicle Repair and Replacement Assistance Program: https://deq.utah.gov/air-quality/incentive-programs-aq/vehicle-repair-and-replacement-assistance-program

[33] Vehicle Exchange Colorado: https://energyoffice.colorado.gov/vehicle-exchange-colorado

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	8.0	-0.2	0.1	10.3	1.7	8,886.8
By 2050	24.1	-0.5	0.4	30.8	5.2	26,660.4

Quantification tool(s) utilized: AVERT

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and would partner with Local Health Departments, although other eligible entities in Utah could apply for and administer a similar income-qualified program not tied directly to I/M testing. See Vehicle Exchange Colorado (VXC) for an example.[34]

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
200 units	200 units	200 units	200 units	200 units

6. Geographic location

Implementation in Salt Lake, Davis, Weber, Cache, Utah counties.

7. Funding sources

a. Funding needed to implement: $8,050,000

[34] Vehicle Exchange Colorado: https://energyoffice.colorado.gov/vehicle-exchange-colorado

b. Complementary Funding:
    - IRA 13401: Qualified Clean Vehicle Credit
    - IRA 13402: Used Clean Vehicle Credit
    - IRA 60103: Greenhouse Gas Reduction Fund - Clean Communities Investment Accelerator
    - IRA 60103: Greenhouse Gas Reduction Fund – National Clean Investment Fund
    - EPA Targeted Airshed Grant (TAG) funding for VRRAP in Cache, Salt Lake, Davis, and Weber counties
c. Funding pursued by state or secured for implementation of this project:
    - EPA TAG funding for VRRAP in Cache, Salt Lake, Davis, and Weber counties
d. How additional implementation grant dollars are necessary to fund the measure:
    - EPA Targeted Airshed Grant funding is completely expended in Cache County, and Utah County did not qualify for TAG VRRAP support; the remaining counties' programs could be extended with CPRG support.
    - Specific criteria of the existing Qualified Clean Vehicle Credit and Used Clean Vehicle Credit may keep individuals from purchasing.
    - EVs are too expensive and tax credits are not as accessible for most low-income households, so this program provides additional support to extend EVs to LIDAC communities.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of vehicles replaced/deployed, vehicle life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 1,000 units at an incentive level of $7,000/unit, for a total incentive budget of $7,000,000, to which 15% in administrative expenses were added, for a total project budget of $8,050,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new EVRAP program would be for low-income residents who live in I/M counties of Utah (Salt Lake, Davis, Weber, Cache, Utah counties). All of these I/M counties include disadvantaged areas according to the IRA Disadvantaged Communities map.[35] As an income-qualified program, EVRAP intends to target the low-income population in Utah that is typically less financially able to purchase EVs.

[35] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure accrue to Utah's I/M counties, including:

- Reduced level of NO_x, $PM_{2.5}$, VOC, NH_3, shown in this project's Section 2 table;
- Increased access to transportation options for LIDAC individuals;
- Lower cost of maintenance and cost of charging (compared to an ICE vehicle's maintenance and cost of gasoline) for LIDAC individuals;
- Reduced noise pollution.

A potential unique disbenefit (identified by LIDAC stakeholders) is the high initial cost of an EV/lack of ability for low-income families to access EVs. This program intends to mitigate this by providing an additional financial incentive and allowing the purchase of both new or used EVs. For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #2 - Electric Vehicle Incentive

1. Project Description

Use CPRG funds to create a general EV incentive program for the public. Potential incentives could include point-of-sale rebates, ongoing grants, and technical assistance navigating incentives. The new general EV incentive program would be open to all state of Utah residents.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 10,000 units. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	2.5	-1.8	0.3	23.5	7.0	57,842.1
By 2050	7.5	-5.3	0.9	70.5	21.1	173,526.3

Quantification tool(s) utilized: AVERT

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and could partner with other agencies to administer the program, although other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ]

executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
2,000 units	2,000 units	2,000 units	2,000 units	2,000 units

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $11,500,000
b. Complementary Funding:
   - IRA 13401: Qualified Clean Vehicle Credit
   - IRA 13402: Qualified Used Clean Vehicle Credit
   - IRA 60103 - Greenhouse Gas Reduction Fund - Clean Communities Investment Accelerator
   - IRA 60103 - Greenhouse Gas Reduction Fund – National Clean Investment Fund
c. Funding pursued by state or secured for implementation of this project:
   - None.
d. How additional implementation grant dollars are necessary to fund the measure:
   - There is no existing state-specific funding for this project.
   - Specific criteria of existing Qualified Clean Vehicle Credit and Used Clean Vehicle Credit may keep individuals from purchasing.
   - EVs are too expensive for most individuals, and this program may lighten the burden for individuals otherwise unable to purchase an EV.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of vehicles deployed, vehicle life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 10,000 units at an incentive level of $1,000/unit, for a total incentive budget of $10,000,000, to which 15% in administrative expenses were added, for a total project budget of $11,500,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new general EV incentive program would be open to all Utah residents. Funding could be prioritized to moderate-income households, who may not be eligible for the proposed EVRAP program. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[36]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, $PM_{2.5}$, VOC, NH_3, shown in this project's Section 2 table;
- Increased access to transportation options for Utah residents;
- Lower cost of maintenance and cost of charging, compared to an ICE vehicle's maintenance and cost of gasoline, for individuals;
- Reduced noise pollution.

Potential unique disbenefits (identified by LIDAC stakeholders) include the high initial cost of an EV and the lack of practical vehicle alternatives for rural applications, i.e., the need for larger trucks/vehicles for agricultural activities in those areas. This program intends to mitigate the former, by providing an additional financial incentive for EVs. For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #3 - Electric Fleet Incentive

1. Project Description

Use CPRG funds to create a proposed EV incentive program for incremental cost incentives for commercial and government light-duty fleets. Potential incentives could include ongoing grants and technical assistance navigating incentives.

This could be developed as a new program or could build upon/scale up the existing Clean Fuels and Emission Reduction Technology Program (CFERT), which among other provisions provides incentives for clean vehicles and vehicle refueling/charging

[36] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

infrastructure for commercial and government fleets.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 400 vehicles. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.1	-0.1	0.0	0.8	0.2	2,024.5
By 2050	0.3	-0.2	0.0	2.8	0.8	6,941.1

Quantification tool(s) utilized: AVERT

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and would subcontract/partner with municipalities and other public/government entities in the state, although other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Project development	100 units	100 units	100 units	100 units

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $2,300,000
    b. Complementary Funding:
        - IIJA 40109 - State Energy Program
        - IRA 70002 - U.S. Postal Service Clean Fleets
        - IRA 13403: Qualified Commercial Clean Vehicle Credit
    c. Funding pursued by state or secured for implementation of this project:
        - UDAQ Conversion to Alternative Fuel Grant Program
        - IRA 13403: Qualified Commercial Clean Vehicle Credit
    d. How additional implementation grant dollars are necessary to fund the measure:
        - The CFERT program's Conversion to Alternative Fuel Grant Program Fund has been expended, but the program could be extended and potentially augmented through CPRG funding.
        - Specific criteria of existing Qualified Commercial Clean Vehicle Credit may keep individuals from purchasing.

8. **Metrics for tracking progress**

For this measure, we use the following metrics to track progress: number of government fleet electric vehicles deployed, vehicle life, and number of performance years for implementation in order to quantify emissions reductions.

9. **Quantitative cost estimates**

UDAQ assumed total deployment of 400 units at an incentive level of $5,000/unit, for a total incentive budget of $2,000,000, to which 15% in administrative expenses were added, for a total project budget of $2,300,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. **LIDAC Benefits/Analysis**

This new EV incentive program would be for government fleets within Utah, including those of municipalities. Many municipalities in Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[37]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, VOC, NH_3, shown in this project's Section 2 table;
- Lower cost of maintenance and cost of charging, compared to an ICE vehicle's maintenance and cost of gasoline, for government fleets;
- Reduced noise pollution.

[37] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Measure #2: Medium-and-Heavy-Duty Zero-Emission Vehicle Incentives

This measure intends to voluntarily increase fleet adoption of medium-duty and heavy-duty zero-emission vehicles in Utah. Potential formats of the program include vouchers, grants, and technical assistance navigating incentives. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - Electric Delivery Vehicle Incentive

1. **Project Description**

Use CPRG funds to create an incentive program for electric Class 5 delivery vehicles for commercial and government fleets. Potential formats of the program include vouchers, grants, and technical assistance for navigating incentives.

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 40 Medium-Duty vehicles. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.3	-0.3				1,528.0
By 2050	0.8	-0.9				4,365.7

Quantification tool(s) utilized: Diesel Emission Quantifier, eGRID

3. **Implementing agency or agencies**

As envisioned, UDAQ would be the lead agency and would establish an incentive program for commercial and government entities in the state, although other eligible entities in Utah could apply for and administer this or a similar program.

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed

by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	10 units	10 units	10 units	10 units

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $2,300,000
b. Complementary Funding:
   - IRA 60101 - Clean Heavy-Duty Vehicle Program[38]
   - IIJA 21202 - Local and Regional Project Assistance Grants (RAISE)[39]
   - IRA 13403 - Commercial Clean Vehicle Tax Credit (45W)
   - IIJA 40552 - Energy Efficiency and Conservation Block Grant Program (EECBG)
   - IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[40]
   - IIJA 40109 - State Energy Program
   - IIJA 40401 - Department of Energy Loan Programs
   - IIJA Division J Title VIII - Port Infrastructure Development Program Grants
   - IRA 70002 - U.S. Postal Service Clean Fleets
   - IRA 60104 - EPA Diesel Emissions Reduction Act (DERA) funding
   - EPA Targeted Airshed Grants (TAG)
c. Funding pursued by state or secured for implementation of this project:
   - IRA 60104 - EPA Diesel Emissions Reduction Act (DERA) funding

[38] IRA 60101: https://www.epa.gov/inflation-reduction-act/clean-heavy-duty-vehicle-program
[39] IIJA 21202: https://www.transportation.gov/RAISEgrants
[40] IRA 60201: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

- EPA Targeted Airshed Grants
- Alternative Fuel Heavy-Duty Vehicle Tax Credit

d. How additional implementation grant dollars are necessary to fund the measure:
   - Over saturation
   - Scrappage requirements deter
   - EMY/other eligibility requirements deter
   - Extend existing programs (Clean Fuels)

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of Class 5 vehicles deployed, vehicle life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 40 units at an incentive level of $50,000/unit, for a total incentive budget of $2,000,000, to which 15% in administrative expenses were added, for a total project budget of $2,300,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[41] This medium-duty electric vehicle incentive program could prioritize funding in LIDAC areas of Utah, which are often also non-attainment areas.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x shown in this project's Section 2 table;
- Lower cost of maintenance and cost of charging, compared to an ICE vehicle's maintenance and cost of gasoline, for fleets;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #2 - Electric Refuse Hauler Incentive

1. Project Description

Use CPRG funds to create an incentive program for Class 8 refuse haulers for commercial and government fleets. Potential formats of the program include vouchers, grants, and technical assistance for navigating incentives.

[41] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy six Class 8 EV refuse haulers. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	1.0	-0.3		0.0		670.9
By 2050	2.0	-0.6		0.1		1,341.8

Quantification tool(s) utilized: Diesel Emission Quantifier, eGRID, Oregon Clean Fuels

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and would partner with municipalities and fleet operators, although other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	6 units	Program assessment	Program closed	Program closed

6. Geographic location

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $1,725,000
    b. Complementary Funding:
        - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[42]
        - IRA 60101 - Clean Heavy-Duty Vehicle Program[43]
        - IIJA 21202 - Local and Regional Project Assistance Grants (RAISE)[44]
        - IRA 13403 - Commercial Clean Vehicle Tax Credit (45W)
        - IRA 60201 - Environmental and Climate Justice Block Grants (EECBG) - Change Grants[45]
        - IIJA 40109 - State Energy Program
        - IIJA 40401 - Department of Energy Loan Programs
        - IIJA Division J Title VIII - Port Infrastructure Development Program Grants
        - IRA 60104 - EPA Diesel Emissions Reduction Act (DERA) funding
        - EPA Targeted Airshed Grants
    c. Funding pursued by state or secured for implementation of this project:
        - IRA 60104 - EPA Diesel Emissions Reduction Act (DERA) funding
        - EPA Targeted Airshed Grants
        - Alternative Fuel Heavy-Duty Vehicle Tax Credit
    d. How additional implementation grant dollars are necessary to fund the measure:
        - This would be a new state program but would complement or replenish funding for the state's existing Heavy-Duty tax credit, Clean Fuels and Emission Reduction Technology Program (CFERT), and CARROT Program.

8. **Metrics for tracking progress**

For this measure, we use the following metrics to track progress: number of electric Class 8 refuse haulers deployed, vehicle life, and number of performance years for implementation in order to quantify emissions reductions.

9. **Quantitative cost estimates**

UDAQ assumed total deployment of six units at an incentive level of $250,000/unit, for a total incentive budget of $1,500,000, to which 15% in administrative expenses were added, for a total project budget of $1,725,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

[42] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[43] IRA 60101: https://www.epa.gov/inflation-reduction-act/clean-heavy-duty-vehicle-program
[44] IIJA 21202: https://www.transportation.gov/RAISEgrants
[45] IRA 60201:
https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

10. LIDAC Benefits/Analysis

Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[46] This heavy-duty electric vehicle incentive program could prioritize funding in LIDAC areas of Utah, which are often also non-attainment areas.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x shown in this project's Section 2 table;
- Lower cost of maintenance and cost of charging, compared to an ICE vehicle's maintenance and cost of gasoline, for fleets;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #3 - Electric School Bus Ready

1. Project Description

Use CPRG funds to create a proposed voluntary School Bus Ready Program. This program would not fund school buses, but would instead provide gap funding for complementary items like electrical/utility work, site preparation, and other supporting costs that may not be directly eligible for other funding sources (e.g., EPA's Clean School Bus Program, DERA, and TAG). This program would help school districts across the state, enabling more schools to acquire electric school buses.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 60 units. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	2.7	-0.1	-0.001	0.2	0.2	701.1
By 2050	15.2	-0.5	-0.005	1.3	1.0	4,006.1

Quantification tool(s) utilized: AVERT, Uinta Basin School Bus Program

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and would partner with school districts, although other eligible entities in Utah could apply for and administer this or a similar program.

[46] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	15	15	15	15

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $4,140,000
    b. Complementary Funding:
        - IIJA 40552- Energy Efficiency and Conservation Block Grant (EECBG) Program[47]
        - IIJA 40431 - Consideration of Measures to Promote Greater Electrification of the Transportation Sector
        - IRA 40541 - Grants for Energy Efficiency and Renewable Energy Improvements at Public Schools (Renew America's Schools)[48]
        - IRA 60103 - Greenhouse Gas Reduction Fund - Clean Communities Investment Accelerator[49]

[47] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[48] IRA 40541: https://www.energy.gov/scep/renew-americas-schools
[49] IRA 60103:
https://www.epa.gov/greenhouse-gas-reduction-fund/clean-communities-investment-accelerator

- IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[50]
- IIJA 40109 - State Energy Program
- IIJA 40401 - Department of Energy Loan Programs
- IIJA 71101 - Clean School Bus Program
- Diesel Emission Reduction Act (DERA)
- EPA Targeted Airshed Grants (TAG)

c. Funding pursued by state or secured for implementation of this project:
   - IIJA 71101 - Clean School Bus Program

d. How additional implementation grant dollars are necessary to fund the measure:
   - Schools don't have the budget to purchase EV and infrastructure
   - EPA Clean School Bus program, DERA, and TAG do not account for some infrastructure requirements (e.g., front-of-meter expenses).
   - Requirements for eligibility/criteria of other programs make it difficult for some districts to apply. For example, the absence of school districts from EPA's Clean School Bus program priority list has deterred participation. Districts have opted not to reapply for the 2023 rebates because they did not meet the prioritization criteria. This funding could address these gaps, and broaden engagement for electric school bus deployment in our state.
   - Many K-12 schools in Utah are interested in electric school buses, but not all of them have the resources to secure enough funding to acquire them. School districts have identified their need for additional capacity to be able to identify and apply for the numerous federal programs available via IRA and IIJA .

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of school buses deployed, school bus life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 60 units at an incentive level of $60,000/unit, for a total incentive budget of $3,600,000, to which 15% in administrative expenses were added, for a total project budget of $4,140,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

[50] IRA 60201:
https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

10. LIDAC Benefits/Analysis

Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[51] UDAQ could prioritize funding for school districts in the state's LIDAC areas that do not yet have an electric school bus.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, VOC, NH_3, shown in this project's Section 2 table;
- Lower cost of maintenance and cost of charging, compared to maintenance and cost of fuel for diesel/gasoline school buses;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #4 - Electric School Bus Pilot

1. Project Description

Use CPRG funds to create a new Electric School Bus (ESB) program, which would be a new, voluntary pilot program for school districts across the state.

While a few school districts in Utah have accessed federal funding for electric school buses, the majority have experienced barriers in accessing funding for this new technology. There would be no minimum unit requirement and no scrappage requirement.

Various ESB measures could be implemented by multiple states in a coalition. For instance, a technical assistance center and a workforce development program could be scaled up and made regional rather than state-specific. Many of the measures could be bid out to a third-party administrator (or at least major portions of work). For instance, a technical assistance center or workforce development program could be almost entirely implemented by a third-party administrator via contractors.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 40 electric school buses. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	1.8	-0.1	-0.001	0.1	0.1	467.4
By 2050	10.1	-0.3	-0.004	0.8	0.7	2,670.8

Quantification tool(s) utilized: AVERT

[51] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

3. **Implementing agency or agencies**

As envisioned, UDAQ would be the lead agency and would partner with school districts, although other eligible entities in Utah could apply for and administer this or a similar program.

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered clean vehicle and equipment incentive programs for over two decades.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	10 units	10 units	10 units	10 units

6. **Geographic location**

Statewide implementation.

7. **Funding sources**

a. Funding needed to implement: $15,870,000

b. Complementary Funding:

- IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[52]
- IIJA 40431 - Consideration of Measures to Promote Greater Electrification of the Transportation Sector
- IRA 40541 - Grants for Energy Efficiency and Renewable Energy Improvements at Public Schools (Renew America's Schools)[53]

[52] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[53] IRA 40541: https://www.energy.gov/scep/renew-americas-schools

- IRA 60101 - Clean Heavy-Duty Vehicle Program[54]
- IRA 60103 - Greenhouse Gas Reduction Fund - Clean Communities Investment Accelerator[55]
- IIJA 40109 - State Energy Program
- IRA 60104 - EPA Diesel Emissions Reduction Act (DERA) funding
- EPA Targeted Airshed Grants
- The EPA Clean School Bus (CSB) program[56]

c. Funding pursued by state or secured for implementation of this project:
   - IRA 60104 - EPA DERA funding
   - EPA Targeted Airshed Grants
   - The EPA CSB program

d. How additional implementation grant dollars are necessary to fund the measure:
   - UDAQ has been told that the application process and requirements of this program often make it difficult for other Utah school districts to access. Requirements for eligibility/ criteria of other programs (EPA Clean School Bus) make it difficult for some districts to apply.
   - The logistical challenge with adopting new technology (ie electric school buses) often is a hurdle in itself.
   - Increase adoption among the School Districts that do not yet have one.
   - DERA program scrappage requirements.
   - Schools don't have the budget to purchase EV and infrastructure
   - EPA clean school bus, DERA, and TAG don't account for utilities

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of electric school buses deployed, vehicle life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 40 units at an incentive level of $345,000/unit (approximate incremental cost), for a total incentive budget of $13,800,000, to which 15% in administrative expenses were added, for a total project budget of $15,870,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

[54] IRA 60101: https://www.epa.gov/inflation-reduction-act/clean-heavy-duty-vehicle-program
[55] IRA 60103:
https://www.epa.gov/greenhouse-gas-reduction-fund/clean-communities-investment-accelerator
[56] EPA CSB:
https://www.epa.gov/cleanschoolbus

Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[57] UDAQ could prioritize, but not limit, funding for school districts in the state's LIDAC areas that do not yet have an electric school bus.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, VOC, NH_3, shown in this project's Section 2 table;
- Lower cost of maintenance and cost of charging, compared to maintenance and cost of fuel for diesel/gasoline school buses;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #5 - Electric Transit Bus

1. Project Description

Many transit agencies throughout Utah have either started electric transit bus fleet deployments or are planning to do so. Any of those agencies could participate in a vehicle application. One of those agencies, the Utah Transit Authority, will apply to use CPRG funds to procure 15 zero-emission electric buses. These buses will operate in Salt Lake County. This will support the growth of UTAs electric bus fleet in line with bus fleet strategy. The buses will serve on routes which serve disadvantaged communities.

UTA aims to cut its carbon footprint by 25% by 2030. To achieve this, UTA is switching to cleaner buses. Prior to the development of this Beehive Plan, UTA has acquired and deployed 34 electric buses. Fifty percent of the fleet will be alternative fuels like natural gas and electric over the next 20 years, including over 200 electric buses. This shift is crucial for both sustainability and improving air quality.

2. Estimate of GHG and criteria pollutant emissions reductions

The estimated emission reductions resulting from replacing 15 diesel buses with 15 electric ones are detailed in the table below. These calculations, however, do not encompass the additional emission savings derived from passengers opting for public transit over personal vehicles. For 15 buses, according to UTA's 2023 data, passengers choosing public over their gasoline-powered cars contribute to an annual displacement of 246 metric tons of CO_2.

[57] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	6.0	-1.3	-0.2	1.5	0.3	907.2
By 2050	18.0	-4.0	-0.6	4.4	1.0	2,721.6

Quantification tool(s) utilized: AVERT

3. Implementing agency or agencies

Individual transit agencies around the state, such as Utah Transit Authority, Cache Valley Transit, High Valley Transit, Park City Transit, and SunTran are most familiar with their own bus procurement procedures and federal tracking requirements. It is envisioned that individual transit agencies could lead application efforts for CPRG funds, though these agencies could also partner with UDAQ on their statewide application.

4. Review of authority to implement

Transit agencies in Utah are either authorized by the legislature as special districts to operate in their area of service, or are a department in a city or county that provides service within the boundaries of that city/county. The authority to administer federal grant funding is included in the authorization that created the special district or local government.

For example, Utah Transit Authority is a special district, a local government entity, a public transit district, and a political subdivision of the State.

- UTA is a Public Transit District pursuant to the Utah Public Transit District Act, Utah Code §17B-2a-801 et seq.[58]
- Each public transit district is a Special District, "a limited purpose special government entity" with certain specific powers and authority under the Public Transit District Act. Utah Code §17B-1-102(13), (22).[59]
- Utah Transit Authority is a "political subdivision", a "county, city, town, special district under this title … or any other governmental entity designated in statute as a political subdivision of the state." Utah Code §17B-1-102(19).[60]
- The Governor of the state of Utah has also named UTA as the designated recipient of certain specific US Department of Transportation grant funding sources.

Links to the cited statutes are included, or are available upon request.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Procurement of buses through expedited process	15 Buses Delivered	Vehicles continue to operate		

[58] http://le.utah.gov/xcode/Title17B/Chapter2A/17B-2a-P8.html
[59] http://le.utah.gov/xcode/Title17B/Chapter1/17B-1-S102.html?v=C17B-1-S102_2016051020160510
[60] http://le.utah.gov/xcode/Title17B/Chapter1/17B-1-S102.html?v=C17B-1-S102_2016051020160510

6. **Geographic location**

Electric buses will eventually be deployed throughout UTA's service area. For now, these 15 will operate out of the UTA Mt. Ogden or Depot District bus garages, servicing Weber, Davis and Salt Lake counties.

7. **Funding sources**
    a. Funding needed to implement: $9,457,500
    b. Complementary Funding:
        - Federal Transit Administration (FTA) Section 5307 and 5339 formula funding – UTA currently uses most of these funds for preventive maintenance and some remainder for major capital projects. It is possible that some of those funds could help support this project.
        - FTA section 5339 competitive funding (Low and No Emissions and Bus and Bus Facilities programs)
        - FTA section 5309 Capital Improvement Grant (CIG) program funds can pay for electric buses when they are part of a fixed-guideway bus system (i.e. Bus Rapid Transit lines)
        - WFRC Programed Federal Highways Administration (FHWA) flex funds (CMAQ, STBG, CRP)
    c. Funding pursued by state or secured for implementation of this project:
        - FTA 5339 Low and Now emissions funding has paid for electric buses at UTA (3), University of Utah (2), and Park City Transit (4+)
            - UTA will continue to seek this funding source for future electric vehicles, though it is highly competitive and not guaranteed.
        - Volkswagen Settlement funding helped pay for 20+ electric buses that UTA has received and deployed in UTA's service area.
        - FTA 5309 CIG funding helped pay for buses on the OGX Bus Rapid Transit line in Ogden, and for hybrid buses on the UVX line in Provo/Orem
        - WFRC programmed CMAQ and CRP funding has and is being used to install high power on-route chargers that allow electric buses to complete a full-day's duty cycle, which would otherwise not be possible on a single full charge
        - UTA has funding for base diesel bus replacements for these fifteen electric buses in approximately the amount of $10,042,500. CRPG funds are being requested for the incremental difference in the cost of a diesel bus as compared to an electric bus.
    d. How additional implementation grant dollars are necessary to fund the measure:
        - CRPG funds will leverage the UTA funding already programmed for diesel buses, and enable them to be electric buses instead.

8. Metrics for tracking progress

Metrics for tracking the progress of any electric transit bus implementations will measure projected and actual milestones for procurement, delivery, and deployment; as well as planned budget amounts and final cost for the buses. Metrics for carbon reduction can be measured by the average miles the electric buses operate each year multiplied by the emissions reduction compared to a standard diesel bus operation per mile.

9. Quantitative cost estimates

Diesel buses are projected to cost around $669,500 in 2026, and electric buses around $1,300,000. The incremental cost difference between these two bus types is $630,500. This incremental amount multiplied by the 15 buses UTA is seeking equates to the $9,457,500 anticipated CRPG request.

10. LIDAC Benefits/Analysis

Public transportation plays a significant role in life along the Wasatch Front, providing over 35 million rides a year. Given the opportunity to promote UTA's zero to low emission bus transition, each ride provided by UTA would make far less of an impact on air quality than the current diesel or natural gas buses. UTA serves a large demographic of individuals including those of minority populations and low-income status. Per UTA's most current rider survey conducted in 2019, 33.7% of the system ridership are low-income and 25.9% are from minority populations. Electric buses present a valuable opportunity for UTA to promote equitable mobility and improve the quality of life for all passengers. Deploying an additional 15 electric buses would directly impact UTA passengers and surrounding community members.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced levels of $PM_{2.5}$, NO_x, VOC, and NH_3, shown in this project's Section 2 table;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Measure #3: Zero-Emission Vehicle Charging/Refueling Incentives

This measure intends to voluntarily increase adoption/use of zero-emission vehicles in Utah through enabling more vehicle charging/refueling. Potential incentives could include ongoing grants, technical assistance navigating incentives, and related support costs. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - Electric Fleet Chargers

1. Project Description

Use CPRG funds to create a proposed Electric Fleet Charger incentive program for the cost of chargers for government and commercial fleets. Potential incentives could include ongoing grants and technical assistance navigating incentives. UDAQ would be the lead agency and would partner with municipalities and other public/government entities in the state.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 400 EV chargers. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	1.4	-0.7	0.0	4.0		4,000.5
By 2050	4.0	-2.0	0.1	11.4		11,429.9

Quantification tool(s) utilized: BTS MOVES emission factors, eGRID, SLC fleet charger data

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and would partner with municipalities and other public/government entities in the state, although other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed

by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	100 units	100 units	100 units	100 units

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $3,220,000
b. Complementary Funding:
   - IRA 13404 - Alternative Fuel Refueling Property Credit (30C)
   - IIJA 11129 - Grants for Charging and Fueling Infrastructure
   - IRA 60101 - Clean Heavy Duty Vehicles
   - IIJA 11401 - Charging and Fueling Infrastructure Grants (Community Charging/Corridor Charging)
   - IIJA 40431 - Consideration of Measures to Promote Greater Electrification of the Transportation Sector
   - IIJA Division J - Title VIII - NEVI Program
   - IIJA 40103 - Program Upgrading Our Electric Grid and Ensuring Reliability and Resiliency
   - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[61]
c. Funding pursued by state or secured for implementation of this project:
   - IIJA Division J - Title VIII - NEVI Program
   - Utah's Workplace Electric Vehicle Charging Funding Assistance (EVSE) Program[62]
d. How additional implementation grant dollars are necessary to fund the measure:
   - Many fleet owners and operators often do not have the resources to navigate and/or pursue federal funding directly. This funding would

[61] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[62] EVSE Program: https://deq.utah.gov/air-quality/workplace-electric-vehicle-charging-funding-assistance-program

provide a state-run program to incentivize and ease the burden of accessing funding for these fleet owners and operators.
- Beginning in 2019, there was a state fleet charging fund ($2 million) that has now been expended. This funding would replenish those funds and allow the program, or similar, to continue.
- A number of these chargers may be made available for public use.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of government and/or commercial EV Chargers deployed, EV charger life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 400 Level 2 chargers at an incentive level of $7,000/unit, for a total incentive budget of $2,800,000, to which 15% in administrative expenses were added, for a total project budget of $3,220,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new EV charger incentive program would be available to government and commercial fleets within Utah, including fleets of municipalities. Many municipalities in Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[63]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure (enabling greater use of EVs) include:
- Reduced level of NO_x and VOC shown in this project's Section 2 table;
- Lower cost of maintenance and cost of charging, compared to an ICE vehicle's maintenance and cost of gasoline, for government fleets;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Project #2 - Charging Alternatives (Workplace and Multi-Family Dwelling Electric Vehicle Chargers)

1. Project Description

Use CPRG funds to incentivize electric vehicle chargers at multi-family dwellings and workplaces throughout the state. Potential incentives could include one-time grants and technical assistance navigating incentives.

[63] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

This new program would build upon/scale up the success of Utah's existing EVSE Program [64] and Rocky Mountain Power's EV Make-Ready Program[65]. Funding for EVSE was expended in 2023. UDAQ would be the lead agency and could partner with municipalities, other public/government entities, and NGOs in the state.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 400 EV chargers. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	2.9	-1.5	0.1	8.5		8,504.8
By 2050	8.3	-4.4	0.2	24.3		24,299.5

Quantification tool(s) utilized: BTS MOVES emission factors, eGRID, SLC public charger data

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and would partner with UCAIR, municipalities and/or relevant stakeholders like housing providers and multi-family building developers in the state, although other eligible entities in Utah could apply for and administer this a or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

[64] EVSE Program:
https://deq.utah.gov/air-quality/workplace-electric-vehicle-charging-funding-assistance-program
[65] Rocky Mountain Power's EV Make-Ready Program:
https://hub.utahcleanenergy.org/electric-vehicles/electric-vehicle-charging-incentives/

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	100 units	100 units	100 units	100 units

6. **Geographic location**

Statewide implementation.

7. **Funding sources**

a. Funding needed to implement: $3,220,000

b. Complementary Funding:

- IRA 13404 - Alternative fuel refueling property credit (30C)
- IIJA 11129 - Grants for Charging and Fueling Infrastructure
- IRA 60101 - Clean Heavy Duty Vehicles
- IIJA 11401 - Charging and Fueling Infrastructure Grants (Community Charging/Corridor Charging)
- IIJA 40431 - Consideration of Measures to Promote Greater Electrification of the Transportation Sector
- IIJA Division J - Title VIII - NEVI Program
- IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[66]
- Rocky Mountain Power's EV Make-Ready Program[67]

c. Funding pursued by state or secured for implementation of this project:

- IIJA Division J - Title VIII - NEVI Program
- Utah Workplace Electric Vehicle Charging Funding Assistance (EVSE) Program[68]
- Rocky Mountain Power's EV Make-Ready Program

d. How additional implementation grant dollars are necessary to fund the measure:

- Need for greater charging network to incentive people to buy EV
- Utah Workplace Electric Vehicle Charging Funding Assistance Program has been depleted
- The U.S. Department of Energy reports that more than 80 percent of electric vehicle (EV) charging occurs at home.[69] Approximately 30 percent of U.S. households are multi-family dwellings (MFDs) such as apartments and condos and almost 75 percent of MFD households have

[66] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[67] Rocky Mountain Power's EV Make-Ready Program: https://hub.utahcleanenergy.org/electric-vehicles/electric-vehicle-charging-incentives/
[68] EVSE Program: https://deq.utah.gov/air-quality/workplace-electric-vehicle-charging-funding-assistance-program
[69] Source: https://www.energy.gov/eere/electricvehicles/charging-home.

at least one vehicle. For the EV market to reach the entire driving population, EV charging must be made available to MFD residents.[70]
- The US Department of Energy reports that around 80% of EV charging happens at home. Unfortunately, that means that renters and those who don't live in single-family homes are unlikely to be able to charge at home, presenting a significant barrier to EV adoption.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of EV chargers deployed, EV charger life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 400 Level 2 chargers at an incentive level of $7,000/unit, for a total incentive budget of $2,800,000, to which 15% in administrative expenses were added, for a total project budget of $3,220,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

According to the U.S. Department of Energy, low-income households (earning 80% or less of the area median income) reside in approximately 60% of MFD housing units.[71] A new EV charger incentive program would be for MFDs located in Utah. Many parts in Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[72]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure (enabling greater use of EVs) include:

- Reduced level of NO_x and VOC shown in this project's Section 2 table;
- Greater access to EV charging for residents of MFDs;
- Lower cost of maintenance and cost of charging, compared to an ICE vehicle's maintenance and cost of gasoline, for residents of MFDs;
- Reduced noise pollution.

A potential unique disbenefit (identified by LIDAC stakeholders) is lack of interest/need for EV chargers since many LIDAC members/MFD residents do not currently own EVs; this can be mitigated through incentive programs to increase ownership of EVs among LIDAC

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[70] Source: https://www.nmhc.org/research-insight/quick-facts-figures/quick-facts-resident-demographics/rentersand-owners/.

[71] Source: https://www.energy.gov/eere/solar/articles/multifamily-affordable-housing-collaborative-fact-sheet

[72] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

members/MFD residents. For detailed information about UDAQ LIDAC engagement, see the Outreach and Coordination section of this Priority Plan.

Measure #4: Mode-Shifting/Reducing Vehicle Miles Traveled

This measure intends to voluntarily increase mode-shifting and reduce vehicle miles traveled or VMT (i.e., individuals adopting modes of transportation other than personal vehicles) in Utah. Mode shifting/reduction of VMT can be achieved through actions like transportation demand management programs (like UDOT's TravelWise program[73]), programs that support/incentivize active transportation (such as biking, walking, and public transit), and, more holistically, by ensuring that land use and transportation planning are considered together. Potential incentives could include ongoing grants and technical assistance navigating incentives. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - E-Bike Incentive

1. **Project Description**

Use CPRG funds to create an additional cost incentive for e-bikes for individuals in Utah, including those in LIDAC households. Potential incentives could include ongoing grants and outreach and technical assistance navigating incentives.

This project could expand an existing statewide e-bike incentive program (currently managed by the Utah Clean Air Partnership or UCAIR), in order to increase adoption of e-bikes among individuals in Utah.[74] Also, several states currently or have previously implemented this type of program, including Colorado.[75] A research study for the Bureau of Transportation Statistics focused on the number of daily trips taken in the United States.[76] In 2021, 52% of all trips, including all modes of transportation, were less than three miles, with 28% of trips less than one mile. E-bikes can provide an accessible alternative mode of transportation for short daily trips (those less than 3 miles).

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 1000 E-bikes. Actual emissions reductions will vary depending on selected program parameters.

[73] Source: https://www.udot.utah.gov/connect/public/travel-wise/
[74] Source: https://www.ucair.org/ebike/
[75] Source: https://energyoffice.colorado.gov/transportation/e-bikes
[76] Source: https://www.energy.gov/eere/vehicles/articles/fotw-1230-march-21-2022-more-half-all-daily-trips-were-less-three-miles-2021

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.6	-0.01	0.01	0.9		1,206.7
By 2050	1.4	-0.03	0.02	2.3		3,016.6

Quantification tool(s) utilized: BTS MOVES emission factors, eGRID, UDAQ assumptions

3. Implementing agency or agencies

UDAQ would be the lead agency and could partner with Utah Clean Air Partnership (UCAIR) to administer the program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
200 units	200 units	200 units	200 units	200 units

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $690,000
b. Complementary Funding:
   - There is currently no federal or State of Utah funding allocated for e-bike incentives.
   - Magnum + UCAIR E-Bike Incentive Program[77]

[77] Source: https://www.ucair.org/ebike/

c. Funding pursued by state or secured for implementation of this project:
    - There is currently no federal or state of Utah funding allocated for e-bike incentives.
d. How additional implementation grant dollars are necessary to fund the measure:
    - Need for state-specific program
    - More cost-effective than EV for many individuals/families

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of e-bikes deployed, e-bike life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 1,000 units at an incentive level of $600/unit, for a total incentive budget of $600,000, to which 15% in administrative expenses were added, for a total project budget of $690,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new e-bike incentive program could be open to all residents of Utah, and funding could be prioritized or scaled for low-income residents/LIDAC areas. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[78] As a program with an income-qualified component, this incentive intends to target the population that is typically less financially able to purchase e-bikes.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x and VOC shown in this project's Section 2 table;
- Increased access to transportation alternatives/options for Utah residents and LIDAC individuals;
- Lower up-front cost and lower cost of maintenance (compared to a vehicle's up-front cost and cost of maintenance), for LIDAC individuals;
- Increased physical activity/health benefits;
- Reduced traffic;
- Reduced noise pollution.

Potential unique disbenefits include the initial cost of an e-bike and lack of carrying capacity compared to a car. This program intends to mitigate the cost concerns, by providing an additional financial incentive for e-bikes; also, there could be a greater incentive amount for cargo e-bikes with larger carrying capacity. For detailed information

[78] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

Project #2 - Trail Development for Active Transportation

1. Project Description

Use CPRG funds to fund trail development for increased use of active transportation (like walking and biking). This project would support ongoing efforts related to the Utah Trail Network.[79] This is a vision of a network of paved trails throughout the state that connects Utahns of all ages and abilities to their destinations and communities. Specifically, CPRG funding would be utilized to develop one trail project along SR-9 and US-89 in Kane County and another along SR-7 in Washington County.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would complete two trail projects in Kane and Washington counties. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.5		0.0	0.7		940.9
By 2050	5.0		0.1	7.8		10,349.4

Quantification tool(s) utilized: BTS MOVES emission factors, UDOT assumptions

3. Implementing agency or agencies

UDOT would implement this measure.

4. Review of authority to implement

UDOT is a State entity established by Utah Code 17-1-2 which has "the general responsibility for planning, research, design, construction, maintenance, security, and safety of state transportation systems" in the state of Utah. UDOT routinely receives federal funding for transportation investments, including trail development.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Trails to be completed before the end of the performance period.				

6. Geographic location

Kane County and Washington County.

7. Funding sources

[79] Source: https://utahtrailnetwork.udot.utah.gov/

a. Funding needed to implement: $40,000,000
b. Complementary Funding:
    - $90 million of active transportation funding allocated by state of Utah, including:
    - IIJA 21202 - Local and Regional Project Assistance Grants (RAISE)[80]
c. Funding pursued by state or secured for implementation of this project:
    - $90 million of active transportation funding allocated by state of Utah, including:
    - IIJA 21202 - Local and Regional Project Assistance Grants (RAISE)
d. How additional implementation grant dollars are necessary to fund the measure:
    - Utah has embarked on an ambitious statewide program to support trail development and active transportation. The scope and scale of this effort means that state funding and RAISE/other federal funding sources are not enough to meet the need for these projects, which are near one of Utah's most popular attractions, Zion National Park. This area has seen tremendous population and economic growth, and this project would promote mode-shifting (incentivizing the use of active transportation) in an increasingly traffic-congested area.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: completion of trails projects on a timely basis, measurement of trail use via surveys, tracking services, and related metrics.

9. Quantitative cost estimates

Based on assumptions made for an example program that would incentivize two trail projects, UDAQ estimates total project costs of $40,000,000. Future implementation grant proposals from eligible entities may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

Public trails would be open to all residents of Utah, and funding could be prioritized for LIDAC areas. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[81]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, $PM_{2.5}$,VOC, shown in this project's Section 2 table;
- Increased access to transportation alternatives/options for Utah residents and LIDAC individuals;
- Reduced traffic;

[80] IIJA 21202: https://www.transportation.gov/RAISEgrants
[81] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

- Improved physical activity and health;
- Improved bicycle and pedestrian safety;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

Measure #5: Zero-Emission Nonroad Incentives

This measure intends to voluntarily increase adoption of zero-emission nonroad equipment in Utah. Potential formats of the program include vouchers, grants, and technical assistance navigating incentives. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - Electric Yard Equipment

1. **Project Description:**

Use CPRG funds to create an incentive program for electric yard equipment. Potential formats of the program include vouchers, grants, and technical assistance navigating incentives.

UDAQ has successfully administered a variety of yard equipment exchange and incentive programs over the past decade (e.g., lawn mower, snow blower, handheld equipment exchange, Charge Your Yard program, etc.). A critical aspect of an electric yard equipment program is the potential realization of substantial reductions in criteria pollutants including NO_x and VOC in parallel with GHG reductions, as this equipment tends to be outsized sources of air quality pollutants within urban communities, including Utah's nonattainment areas for $PM_{2.5}$ and ozone. Increasing the adoption of electric yard equipment also serves to introduce the use and benefits of electric vehicles and equipment to a broader constituency.

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 5,000 pieces of zero-emission yard equipment. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.8	-0.01		22.2		816,8
By 2050	1.0	-0.02		29.2		1,074.7

Quantification tool(s) utilized: UDAQ R307-314 Whitepaper,[82] and eGRID

3. **Implementing agency or agencies**

As envisioned, UDAQ would be the lead agency.

[82]Source: https://docs.google.com/document/d/19uId6JzImZfvwJa2cpQCUsYoF_cLO48oPHyGVmUSGd0/edit#heading=h.54c33qx2hlrl

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
1,000 units	1,000 units	1,000 units	1,000 units	1,000 units

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $1,150,000
    b. Complementary Funding:
        - General Motors (GM) Ignition Switch Settlement Fund
        - Utah Clean Air Fund
        - Wood Stove Changeout Program (Reallocation)
        - Salt Lake City Green
        - Intermittent or expended sources:
            - Clean Air Retrofit, Replacement, and Off-Road Technology (CARROT) Program[83]
            - Weber State University (WSU)
            - Local Health Departments (HD)
            - Utah Clean Air Partnership (UCAIR)
            - Rocky Mountain Power (RMP)
            - Local small equipment retailer discounts/incentives
    c. Funding pursued by state or secured for implementation of this project:

[83] CARROT Program: https://deq.utah.gov/air-quality/clean-air-retrofit-replacement-and-off-road-technology-voluntary-emissions-reduction-program-carrot

- General Motors (GM) Ignition Switch Settlement Fund
- Utah Clean Air Fund
- Wood Stove Changeout Program (Reallocation)
- Salt Lake City Green

d. How additional implementation grant dollars are necessary to fund the measure:
   - Yard equipment contributes a significant amount of air pollution, but replacing this equipment with cleaner alternatives can be a financial burden to equipment owners.
   - The Utah Air Quality Board is currently considering two-stroke yard equipment usage limitations that would be phased in, impacting different groups over the next three years. This CPRG funding could incentivize and ease the burden of these changes for yard equipment owners.
   - The CARROT Program was enacted in 2014 by the State Legislature for the UDAQ to encourage fleet owners to reduce emissions from heavy-duty engines and non-road equipment. The CARROT Program provides incentives through grants, rebates, exchanges, and low-cost purchase programs. There is no remaining funding in this program. CPRG funding could reinstate this or a similar program.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number and type of pieces of yard equipment deployed, useful life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 5,000 leaf blowers (a representative yard equipment type for this estimate) at an incentive level of $200/unit (approximate unit cost), for a total incentive budget of $1,000,000, to which 15% in administrative expenses were added, for a total project budget of $1,150,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new electric yard equipment program could be open to all residents of Utah, and funding could be prioritized or scaled for low-income residents/LIDAC areas. This program could help low and moderate-income households afford electric yard equipment. Electric yard equipment can be costly compared to gasoline-powered equipment, but it eliminates direct exposure to that source of pollution. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[84]

[84] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x and VOC shown in this project's Section 2 table.
- Lower cost of maintenance (compared to gasoline equipment), for LIDAC individuals;
- Reduced noise pollution.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

Project #2 - Electric Locomotives

1. Project Description:

Use CPRG funds to create a proposed electric switcher locomotive pilot grant program for rail operators to explore electric switcher locomotives that operate inside or outside of the Utah Inland Port Authority (UIPA) jurisdiction.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example pilot program to demonstrate one yard electric yard locomotive along the Wasatch Front. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	62.7	-0.8		5.1		1,272.4
By 2050	313.4	-3.8		25.6		6,361.9

Quantification tool(s) utilized: Diesel Emission Quantifier, eGRID, CARB study

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency and/or could partner with other entities in the state, like UIPA.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	Competitive process	Deploy project	Track performance	

6. Geographic location

Wasatch Front counties (i.e., Utah, Salt Lake, Davis, Weber).

7. Funding sources

a. Funding needed to implement: $5,150,000
b. Complementary Funding:
   - IRA 22002 - Rural Energy for America Program (REAP)
   - IRA 60101 - Grants to Reduce Air Pollution at Ports (Clean Ports Program)
   - IIJA Division J Title VII - Port Infrastructure Development Program Grants
   - IIJA 21201 - National Infrastructure Project Assistance
   - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[85]
   - IRA 60101 - Clean Heavy-Duty Vehicle Program[86]
   - IIJA 21202 - Local and Regional Project Assistance Grants (RAISE)[87]
   - IRA 13403 - Commercial Clean Vehicle Tax Credit (45W)
   - IRA 60103 - Greenhouse Gas Reduction Fund - Clean Communities Investment Accelerator[88]
   - IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[89]
   - IRA 22103 - Consolidated Rail Infrastructure and Safety Improvement Grants (CRISI)[90]

[85] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[86] IRA 60101: https://www.epa.gov/inflation-reduction-act/clean-heavy-duty-vehicle-program
[87] IIJA 21202: https://www.transportation.gov/RAISEgrants
[88] IRA 60103: https://www.epa.gov/greenhouse-gas-reduction-fund/clean-communities-investment-accelerator
[89] IRA 60201: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program
[90] IRA 22103: https://railroads.dot.gov/grants-loans/competitive-discretionary-grant-programs/consolidated-rail-infrastructure-and-safety-2

- IIJA - Rail Vehicle Replacement Grants[91]
- IIJA - National Highway Freight Program (NHFP) through the Fixing America's Surface Transportation (FAST) Act [92]
- IIJA - Transportation Infrastructure Finance & Assistance (TIFIA)[93]
- Railroad Rehabilitation Improvement Finance (RRIF)[94]
- Surface Transportation Block Grant (STBG) Program (previously the Surface Transportation Program)[95]
- Congestion Mitigation Air Quality (CMAQ) Improvement Program through Fixing America's Surface Transportation (FAST) Act[96]
- IIJA 40109 - State Energy Program
- IIJA 40401 - Department of Energy Loan Programs
- IIJA Division J Title VIII - Port Infrastructure Development Program Grants
- IRA 60104 - EPA Diesel Emissions Reduction Act (DERA) funding
- EPA Targeted Airshed Grants

c. Funding pursued by state or secured for implementation of this project:
   - None.

d. How additional implementation grant dollars are necessary to fund the measure:
   - This is too expensive of a commitment for companies to make without a large incentive.
   - It is often too large of a project for our existing funds (Targeted Airshed and DERA) and the scrappage requirement is not likely to work for participants.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: location of deployment, hours of operation, kWh consumed, life of locomotive, and number of performance years for implementation in order to quantify emissions reductions. Performance of the unit would also be logged and evaluated.

9. Quantitative cost estimates

Based on assumptions made for an example program that would incentivize one electric yard locomotive as a pilot project. UDAQ assumed a $5,000,000 incentive, to which 3% in administrative expenses were added for a total project budget of $5,150,000. Future implementation grant proposals from eligible entities may vary depending on selected project parameters.

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[91] Rail Vehicle Replacement Grants: https://www.transit.dot.gov/grant-programs/rail-vehicle-replacement-grants
[92] NHFP: https://ops.fhwa.dot.gov/Freight/pol_plng_finance/policy/fastact/s1116nhfpqa/index.htm
[93] TIFIA: https://www.transportation.gov/buildamerica/financing/tifia/applying
[94] RRIF: https://www.transportation.gov/buildamerica/financing/rrif
[95] STBG: https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/metropolitan-transportation-plan-mtp
[96] CMAQ: https://www.fhwa.dot.gov/bipartisan-infrastructure-law/cmaq.cfm

10. LIDAC Benefits/Analysis

Older diesel locomotives remain a significant source of pollution, often disproportionately impacting the health of community members that are located near railyards and ports. Indeed, rail operations are often concentrated in LIDAC areas. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[97]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x and VOC shown in this project's Section 2 table.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

[97] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Measure #6: Energy Efficiency and Zero-Emission Technology

This measure intends to voluntarily increase efforts related to building energy efficiency and zero-emission technology in Utah. Potential incentives could include point of sale rebates, ongoing grants, and technical assistance navigating incentives. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - Whole Home Retrofits

1. **Project Description:**

Use CPRG funds to extend incentives for whole home energy retrofits and new home upgrades, in order to complement the Home Energy Rebate (HER), High-Efficiency Electric Home Rebate Act (HEEHRA), and related federal funds. Potential incentives could include ongoing grants , support costs, and technical assistance for home energy upgrades.

In addition to serving many more households than using the above funds alone, this proposal can potentially help support more Utah jobs in the home energy improvement market into the future.

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 500 units. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	3.3					6,560.8
By 2050	18.8					37,490.0

Quantification tool(s) utilized: ResStock Detailed Annual Total Savings per Dwelling Unit

3. **Implementing agency or agencies**

The program could potentially be administered by UDAQ and/or UOED.

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution,

disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under Utah Code 79-6-401, by following the procedures and requirements of Title 63J, Chapter 5, Federal Funds Procedures Act, the office [UOED] may seek federal grants or loans, seek to participate in federal programs, and, in accordance with applicable federal program guidelines, administer federally funded state energy programs.

Under this authority UOED administers building efficiency programs in Utah.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	125 units	125 units	125 units	125 units

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $2,875,000
b. Complementary Funding:
   - IIJA Division J Title VII - Home Energy Rebate (HER) program
   - IRA 50121 - Home Energy Performance Based Whole-House Rebates
   - IRA 13301 - Extension, Increase, and Modification of Nonbusiness Energy Property Credit (25C)
   - IRA 50122 - High-Efficiency Electric Home Rebate Program
   - IRA - Clean Energy Tax Credit[98]
   - IRA - Energy Efficiency Home Improvement Credit[99]
   - IRA 60103 – Greenhouse Gas Reduction Funds – Clean Communities Investment Accelerator
   - IRA 60103 – Greenhouse Gas Reduction Funds – National Clean Investment Fund

[98] Clean Energy Tax Credit: https://www.irs.gov/pub/taxpros/fs-2022-40.pdf
[99] Energy Efficiency Home Improvement Credit: https://www.irs.gov/pub/taxpros/fs-2022-40.pdf

- IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[100]
- Rocky Mountain Power's WattSmart Home Programs[101]
- Dominion Energy's ThermWise Programs[102]

c. Funding pursued by state or secured for implementation of this project:
   - IIJA Division J Title VII - Home Energy Rebate (HER) program

d. How additional implementation grant dollars are necessary to fund the measure:
   - HER program: this funding must be spent within 10 years and some experts/stakeholders have stated that Utah funds are likely to be exhausted within only 3 to 5 years.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of homes that received retrofits, life of the houses/units retrofitted, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 500 units at an incentive level of $5,000/unit, for a total incentive budget of $2,500,000, to which 15% in administrative expenses were added, for a total project budget of $2,875,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new whole home retrofits program would be open to all residents of Utah, and funding could be prioritized to low and moderate-income households and/or LIDAC areas in the state. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[103]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x shown in this project's Section 2 table;
- Improved building energy efficiency.

A potential unique disbenefit is the high financial cost of retrofits. This program intends to mitigate the cost concerns, by providing an additional financial incentive for retrofits. For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

[100] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[101] Rocky Mountain Power's WattSmart Home Programs: https://wattsmarthomes.com/
[102] Dominion Energy's ThermWise Programs: https://www.thermwise.com/
[103] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Project #2 - Residential Pre-Weatherization

1. **Project Description:**

Use CPRG funds to create a new Pre-Weatherization (or "Pre-WAP") Program in Utah that addresses severe conditions in low-income homes that would cause a home to be deferred from the Weatherization Assistance Program (WAP). Potential incentives could include ongoing grants and technical assistance navigating incentives.

Pre-WAP can be a part of a *whole house approach*—a comprehensive strategy that bundles electrification and energy efficiency improvements along with health, safety, and other necessary home repairs. Pre-WAP would be a new standalone program for Utah, but it would make existing measures such as Utah's WAP more effective. These repairs will enable otherwise deferred low-income homes to access incentives for weatherization, as well as efficiency, electrification, and renewables. Other states currently or have previously implemented this type of program.[104]

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 75 units. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.3					492.6
By 2050	1.5					2,463.0

Quantification tool(s) utilized: UDWS program data, EIA natural gas consumption data

3. **Implementing agency or agencies**

As envisioned, the Pre-WAP program would be administered by the Utah Department of Workforce Services (UDWS). They could also issue a competitive Request for Proposal (RFP) for a third-party to administer the program in conjunction with the state's WAP program. Other eligible entities in Utah could apply for and administer this or a similar program.

Multiple states could jointly issue an RFP for a single third-party program administrator. A shared third-party administrator could make efficient use of limited capacity and expertise, and there could be economies of scale in the administration of these programs. Multiple states in a coalition could also use separate administrators but share market research, marketing materials and digital strategies to increase buy-in and trust within a

[104] Examples of similar programs include: Connecticut through their Residential Energy Preparation Services (https://portal.ct.gov/DEEP/Energy/Conservation-and-Load-Management/Weatherization-Barrier-Mitigation) and Delaware through their Pre-Weatherization Program. Both Connecticut and Delaware use third-party administrators (https://www.energizedelaware.org/).

region. These states could also share workforce training or standards to increase the pool of labor performing these services.

4. **Review of authority to implement**

Under Utah Code 35A-8-202, the division [UDWS] shall support economic development activities through grants, loans, and direct programs financial assistance.

The division may, by following the procedures and requirements of Title 63J, Chapter 5, Federal Funds Procedures Act, seek federal grants, loans, or participation in federal programs. Additionally, if any federal program requires the expenditure of state funds as a condition to participation by the state in any fund, property, or service, with the governor's approval, [the division may] expend whatever funds are necessary out of the money provided by the Legislature for the use of the department.

Under this authority, UDWS administers Utah's Weatherization Assistance Program.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
15 units	15 units	15 units	15 units	15 units

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $862,500
    b. Complementary Funding:
        - American Rescue Plan Act
        - IIJA 40551 - Weatherization Assistance Program (WAP)
        - IIJA Division J Title VII - Low-Income Home Energy Assistance Program
        - Rocky Mountain Power's WattSmart Home Programs[105]
        - Dominion Energy's ThermWise Programs[106]
    c. Funding pursued by state or secured for implementation of this project:
        - American Rescue Plan Act
        - IIJA 40551 - Weatherization Assistance Program (WAP)
    d. How additional implementation grant dollars are necessary to fund the measure:
        - While Utah currently has used some existing funding sources (ARPA, WAP) for pre-weatherization, the need for Utah's low-income households is much greater than these existing funding sources. CPRG funds could greatly extend the reach of the existing program.

[105] Rocky Mountain Power's WattSmart Home Programs: https://wattsmarthomes.com/
[106] Dominion Energy's ThermWise Programs: https://www.thermwise.com/

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of houses/residential units pre-weatherized, life of the houses/units pre-weatherized, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 75 units at an incentive level of $10,000/unit, for a total incentive budget of $750,000, to which 15% in administrative expenses were added, for a total project budget of $862,500. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

The Pre-WAP program would help low-income families across the state. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[107] As an income-qualified program, Pre-WAP intends to target the population that is typically less financially able to make critical home repairs themselves and less likely to access funding that could help.

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x shown in this project's Section 2 table;
- Directly improved health of residents (e.g., removing issues such as mold, asbestos, vermiculite, and other conditions, which improves air quality, prevents disease and injury, and protects vulnerable individuals such as people with asthma, children, the elderly, and immunocompromised individuals);
- Directly improved housing quality, comfort, and safety;
- Indirect benefits include:
    - Reduced utility bills (reducing energy burden allows individuals to spend more on groceries and medicine);
    - Decreased electricity generation and resulting pollution (improves local air quality and reduces adverse health effects, particularly asthma);
    - Enabled solar generation development on roofs, which reduces electricity generation and utility bills.

Potential disbenefits include the need for additional outreach/staffing for pre-weatherization to LIDAC households; this can be mitigated through allocating funding specifically for outreach/staffing purposes. For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

[107] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Project #3 - Residential Heat Pump Incentive

1. Project Description:

Use CPRG funds to create a new heat pump incentive program in Utah for low-income households. For residents that live in low-income housing and/or meet other income-qualified criteria, the state will buy-down or otherwise augment existing utility program subsidies to reduce the cost of heat pumps.

Heat pumps are efficient two-way electric appliances that heat and cool by moving heat into and out of a building to reduce net fossil fuel consumption. To encourage heat pump adoption, UDWS can create a program (or revise their existing weatherization program) to incentivize residents to replace fully natural gas-fueled heating with primarily electric heat pumps that have natural gas as a backup. There are potential models for this type of program from other states.[108] Additionally, there are programs already in existence such as Rocky Mountain Power's WattSmart Home Programs and Dominion Energy ThermWise Programs.[109]

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 500 units. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	2.6					5,059.3
By 2050	14.8					28,910.0

Quantification tool(s) utilized: ResStock Detailed Annual Total Savings per Dwelling Unit

3. Implementing agency or agencies

As envisioned, the program would be administered by Utah UDWS. They could also issue a competitive Request for Proposal (RFP) for a third-party to administer the program in conjunction with the state's WAP program. Other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 35A-8-202, the division [UDWS] shall support economic development activities through grants, loans, and direct programs financial assistance.

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[108] Examples include:
- Efficiency Trust Maine (https://www.efficiencymaine.com/heat-pumps/)
- Colorado provides tax credit exemptions for heat pumps.
- Rhode Island also delivers heat pump incentives.

[109] Rocky Mountain Power's WattSmart Home Programs: https://wattsmarthomes.com/
Dominion Energy's ThermWise Programs: https://www.thermwise.com/

The division may, by following the procedures and requirements of Title 63J, Chapter 5, Federal Funds Procedures Act, seek federal grants, loans, or participation in federal programs. Additionally, if any federal program requires the expenditure of state funds as a condition to participation by the state in any fund, property, or service, with the governor's approval, [the division may] expend whatever funds are necessary out of the money provided by the Legislature for the use of the department.

Under this authority, UDWS administers Utah's Weatherization Assistance Program.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Program development	125 units	125 units	125 units	125 units

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $2,875,000
b. Complementary Funding:
   - IIJA Division J Title VII - Home Energy Rebate (HER) program
   - IRA 50121 - Home Energy Performance Based Whole-House Rebates
   - IRA 13301 - Extension, Increase, and Modification of Nonbusiness Energy Property Credit (25C)
   - IRA 13302 - Residential Clean Energy Credit (25D)
   - IRA 50122 - High-Efficiency Electric Home Rebate Program
   - IRA - Clean Energy Tax Credit[110]
   - IRA - Energy Efficiency Home Improvement Credit[111]
   - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[112]
   - Rocky Mountain Power's WattSmart Home Programs[113]
   - Dominion Energy's ThermWise Programs[114]
c. Funding pursued by state or secured for implementation of this project:
   - IIJA Division J Title VII - Home Energy Rebate (HER) program
d. How additional implementation grant dollars are necessary to fund the measure:
   - There is other federal funding available for heat pumps; however, existing funding will not be enough for Utah households. UOED is applying for funding under the High Efficiency Electric Home Rebate

[110] Clean Energy Tax Credit: https://www.irs.gov/pub/taxpros/fs-2022-40.pdf
[111] Energy Efficiency Home Improvement Credit: https://www.irs.gov/pub/taxpros/fs-2022-40.pdf
[112] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[113] Rocky Mountain Power's WattSmart Home Programs: https://wattsmarthomes.com/
[114] Dominion Energy's ThermWise Programs: https://www.thermwise.com/

Act (HEEHRA) program, but we believe that the $4.275 billion that will be distributed among several states will not allow us to deploy enough heat pumps to meet demand.
- Additionally, there is currently a lack of adequate funding/resources for heat pumps targeted to low-income households in Utah specifically. UDWS experiences challenges with current federal funding sources from DOE due to requirements related to energy savings ratios and the inability to buy down the cost of equipment. CPRG funding can help fill this gap, in order for more LIDAC households in Utah to access heat pumps.

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of heat pumps deployed, heat pump life, number of performance years for implementation and weatherization program data in order to quantify emissions reductions.

9. Quantitative cost estimates

UDAQ assumed total deployment of 500 units at an incentive level of $5,000/unit, for a total incentive budget of $2,500,000, to which 15% in administrative expenses were added, for a total project budget of $2,875,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

Electric heat pumps are two-way electric appliances that heat and cool by moving heat into and out of a building. Heat pumps are more efficient per unit of energy input than other kinds of heating equipment. The Heat Pump program would help low-income households across the state by producing energy cost savings and improving comfort. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[115]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:
- Reduced level of NO_x shown in this project's Section 2 table;
- Directly improved indoor air quality and reduced criteria pollutants, so heat pumps can have direct health benefits in LIDAC communities that typically have higher rates of asthma and other respiratory illnesses;
- Reduced energy costs/energy burden, since heat pumps are efficient and can help consumers save money every year on their energy bills. A high-energy burden is

[115] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

associated with additional health ailments, and reducing energy costs could have additional health benefits for LIDAC communities.[116]

Potential disbenefits include the need for additional education and training about how to operate/maintain the heat pumps with LIDAC households; this can be mitigated through allocating funding specifically for education/training purposes. For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

Project #4 - K-12 School/Public Building

1. **Project Description:**

Use CPRG funds to create a public building emission reduction program in Utah for K-12 schools and other community buildings such as libraries, community/recreation centers, etc. The program would provide incentives to help public entities overcome the cost premium associated with making energy efficient upgrades to existing buildings. Specifically, the incentives would cover incremental costs/gap funding for new heat pumps, efficient equipment, retrofits, and/or other building upgrades resulting in GHG emission reductions.

This program would be closely aligned with and designed to leverage existing commercial building energy efficiency and heat pump incentive programs to maximize the impact of federal dollars. Existing utility-sponsored programs that could be leveraged include Rocky Mountain Power's Wattsmart Whole Building New Construction and Major Renovation[117] incentive program and Wattsmart Business[118] program.

This project would complement Measure #7 Project #1 which would provide energy efficiency assessments for commercial, industrial, and public facilities.

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 435 energy efficiency and electrification projects in Utah. Actual emissions reductions will vary depending on selected program parameters.

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[116] Source: https://www.nrdc.org/bio/maria-correa/resource-energy-burdened-communities#:~:text=High%20energy%20burden%20has%20been,%2Fsummer%20deaths%3B%20and%20more

[117] Source: https://www.rockymountainpower.net/savings-energy-choices/business/wattsmart-efficiency-incentives-utah/ut-incentive-lists/wbnc.html

[118] Source: https://www.rockymountainpower.net/content/dam/pcorp/documents/en/rockymountainpower/savings-energy-choices/wattsmart-business/utah/UT_wattsmart_Business_Incentive_Lists.pdf

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	9.6	6.0				11,024.1
By 2050	33.6	20.9				38,584.4

Quantification tool(s) utilized: eGRID, Rocky Mountain Power and CADMUS reporting

3. Implementing agency or agencies

As envisioned, the program would be administered by UDEQ. UDEQ could also issue a competitive Request for Proposal (RFP) for a third-party to administer the program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered incentive programs for over two decades.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
87 projects	87 projects	87 projects	87 projects	87 projects

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: $2,876,438
b. Complementary Funding:
   - Rocky Mountain Power Wattsmart Whole Building New Construction and Major Renovation incentive program

- Rocky Mountain Power Wattsmart Business program
- IRA 60106 - Funding to Address Air Pollution at Schools

c. Funding pursued by state or secured for implementation of this project:
   - IIJA - State and Community Energy Programs
     - Renew America's Schools Program
   - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[119]
   - IRA 13303 - Energy Efficient Commercial Buildings Deduction (179D)[120]
   - IRA 60106 - Funding to Address Air Pollution at Schools[121]
   - IIJA 40109 - State Energy Program[122]
   - IIJA 40501 - Grants for Energy Efficiency and Renewable Energy Improvements at Public School Facilities

d. How additional implementation grant dollars are necessary to fund the measure:
   - There is other federal funding available for building upgrades; however, few Utah entities have been successful in accessing existing funding for K-12 schools and public buildings. Barriers to accessing funding include lack of capacity among other reasons.
   - CPRG funding can help fill this gap, in order for more LIDAC students and community members in Utah to access buildings that are safer, healthier, and produce less emissions.

8. Metrics for tracking progress

For this measure, UDAQ would use the following metrics to track progress: number of projects deployed, project life, annual energy savings data, and related metrics.

9. Quantitative cost estimates

UDAQ assumed total deployment of 435 units at an incentive level of $5,750/unit[123], for a total incentive budget of $2,501,250, to which 15% in administrative expenses were added, for a total project budget of $2,876,438. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

The K-12 School/Public Building program would help LIDAC areas across the state by improving indoor air quality and increasing resilience of buildings in these communities.

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[119] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[120] IRA 13303: https://iratracker.org/programs/ira-section-13303-energy-efficient-commercial-buildings-deduction/
[121] IRA 60106: https://www.whitehouse.gov/wp-content/uploads/2022/12/Inflation-Reduction-Act-Guidebook.pdf
[122] IIJA 40109: https://www.energy.gov/bil/state-energy-program
[123] This funding level was developed using data from Rocky Mountain Power's Utah Wattsmart Business Program.

Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[124]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced levels of NO_x and SO_2 shown in this project's Section 2 table;
- Directly improved indoor air quality and reduced criteria pollutants, so public building upgrades can have direct health benefits in LIDAC communities that typically have higher rates of asthma and other respiratory illnesses.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

[124] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Measure #7: Facility Energy Efficiency

This measure intends to voluntarily increase industrial/commercial facility energy efficiency efforts in Utah. This measure may include support for outreach, education, and workforce training related to specific projects. Below is a specific example of a type of project for this measure.

Project #1 - StepWise Energy Efficiency Assessment

1. **Project Description:**

Use CPRG funds to continue the voluntary Intermountain Industrial Assessment Center (IIAC) StepWise Program which currently assists eligible commercial and industrial customers receiving a no-cost energy efficiency assessment that will identify measures for reducing energy usage and emissions. Customers receive a customized report that shows where improvements can be made, approximately how much those improvements will cost, how long it will take for the improvements to pay back, and project ongoing savings.

Several states currently or have previously implemented this type of program through the U.S. Department of Energy (DOE) Industrial Assessment Centers (IAC) Program. This continued Program would build upon/scale up the existing Utah StepWise Program, currently administered by the University of Utah's Intermountain Industrial Assessment Center.[125]

Beyond commercial and industrial entities, an expanded Program would also be able to complete assessments for K-12 schools/public buildings. The DOE IAC program focused primarily on manufacturing facilities, but CPRG funds would allow the IIAC to expand their scope to include other large buildings (including K-12 schools and other public buildings).

In addition to facilitating energy efficiency savings, another critical benefit of this program is the training/workforce development component. Currently, professionals at the University of Utah complete the evaluations while providing opportunities for student involvement and development.

2. **Estimate of GHG and criteria pollutant emissions reductions**

The IIAC utilized both AVERT and eGRID and data collected from the program and only counted emissions reductions from recommended measures that were actually implemented (or under implementation) as determined by a follow up call with each facility after nine months.

[125] StepWise Program: https://www.dominionenergy.com/utah/save-energy/stepwise
Industrial Assessment Center: https://www.energy.utah.edu/

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	179.4	19.1	5.8	3.6	0.2	101,457.0
By 2050	358.8	38.1	11.5	7.3	0.4	202,914.0

Quantification tool(s) utilized: AVERT and eGRID, U of U IIAC program data

3. Implementing agency or agencies

As envisioned, the University of Utah IACC would be the lead agency with student training assistance from Weber State University.

4. Review of authority to implement

Under Utah Code 53B-7-103, the board [Utah Board of Higher Education] is the designated state educational agency authorized to negotiate and contract with the federal government and to accept financial or other assistance from the federal government or any of its agencies in the name of and in behalf of the state of Utah, under terms and conditions as may be prescribed by congressional enactment designed to further higher education.

Subject to policies and procedures established by the board, an institution of higher education and the institution of higher education's employees may apply for and receive grants or research and development contracts within the educational role of the recipient institution. A program [as described above] may be conducted by and through the institution, or by and through any foundation or organization that is established for the purpose of assisting the institution in the accomplishment of the institution's purposes.

An institution or the institution's foundation or organization engaged in a program authorized by the board may enter into contracts with federal, state, or local governments or their subsidiary agencies or departments, with private organizations, companies, firms, or industries, or with individuals for conducting the authorized programs. One may also accept contributions, grants, or gifts from, and enter into contracts and cooperative agreements with, any private organization, company, firm, industry, or individual, or any governmental agency or department, for support of authorized programs within the educational role of the recipient institution, and may agree to provide matching funds with respect to those programs from resources available to the institution.

Under this authority, the University of Utah IIAC currently administers the state of Utah's existing weatherization assistance program for which it receives funding from DOE. The StepWise program ratepayer funding was established through Utah Code 54-20-105, but will no longer be available after February 2024.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Extend existing StepWise Program for five years				

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $2,500,000
    b. Complementary Funding:
        - IIJA 40521 - Industrial Research and Assessment Centers
        - IRA 60107 - Low Emissions Electricity Program
    c. Funding pursued by state or secured for implementation of this project:
        - IIJA 40521 - Industrial Research and Assessment Centers
    d. How additional implementation grant dollars are necessary to fund the measure:
        - Dominion Energy funding for a portion of this existing program is no longer available, significantly limiting the reach and efficacy of the program.

8. **Metrics for tracking progress**

For this measure, we use the following metrics to track progress: number of facilities assessed, energy efficiency savings, and number of performance years for implementation in order to quantify emissions reductions.

9. **Quantitative cost estimates**

UDAQ assumed extending the existing Dominion Energy-funded StepWise program for five years at a cost of $500,000 per year for a total budget of $2,500,000. Future implementation grant proposals from eligible entities, including the University of Utah or UDAQ, may vary depending on selected project parameters.

10. **LIDAC Benefits/Analysis**

The extended energy assessment program would be open to commercial-scale buildings and industrial facilities throughout Utah, including facilities in LIDAC areas. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[126]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, SO_2, $PM_{2.5}$, VOC, NH_3 shown in this project's Section 2 table;

[126] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

- Increased training/workforce development opportunities focused on energy efficiency.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

Measure #8: Oil/Gas Methane Emission Reductions

This measure intends to voluntarily reduce methane emissions related to the Oil/Gas industry. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - Uinta Basin Energy Recovery and Electrification

1. **Project Description:**

This project seeks to develop a transformative approach for reducing GHG emissions by leveraging CPRG funding to accelerate the electrification of oil and gas production sites located within the Uinta Basin by working with technology partners and oil and gas operators to develop and deploy an optimized power grid. This project aims to enable rapid and scalable technologies in remote oil and gas fields, which could result in the realization of huge amounts of future CH_4 emissions both within and beyond the state of Utah.

This project aims to develop optimized electric powered microgrids allowing for the electrification of substantial portions of oil and gas operations through either zero-emission electrical generation or thorough field gas energy recovery, whichever technology proves to be the most beneficial and deployable. This process will allow for significant emission reductions at production sites, eliminating the need for fossil fuel powered infrastructure like pump jacks which have been shown to be a major source of CH_4 and associated VOC emissions. This process would work by either developing deployable renewable energy infrastructure such as microgrids, highline power, solar farms, and site solar, or by converting excess or waste field gas into electricity, resulting in significantly decreased emissions at the well site. As the Uinta Basin is not the only remote oil and gas field where remote electrification could result in large scale emission reductions, this project could scale to other production fields beyond Utah.

2. **Estimate of GHG and criteria pollutant emissions reductions**

While the implementation timeline of the resulting technologies is unknown at this time, the total CO_2e emissions associated with gas equipment at production sites in the Uinta Basin that could be electrified is 13,129 metric tons per year, showing the high potential ceiling of this transformative measure just within the Uinta Basin. When expanded beyond the state of Utah, this potential grows substantially. Given that the priority of this project is to develop the necessary underlying technologies needed to electrify this equipment, emission reductions by 2030 and 2050 are unknown at this time.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030				Up to 18.37 per year		Up to 13,129 per year
By 2050				Up to 18.37 per year		Up to 13,129 per year

3. Implementing agency or agencies

Utah has a number of eligible research institutions with the inhouse expertise to lead and implement this program. The intent of this program is to have one of these state institutions serve as the implementing agency, with the UDEQ providing assistance where appropriate.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under Utah Code 53B-7-103, the board [Utah Board of Higher Education] is the designated state educational agency authorized to negotiate and contract with the federal government and to accept financial or other assistance from the federal government or any of its agencies in the name of and in behalf of the state of Utah, under terms and conditions as may be prescribed by congressional enactment designed to further higher education.

Subject to policies and procedures established by the board, an institution of higher education and the institution of higher education's employees may apply for and receive grants or research and development contracts within the educational role of the recipient institution. A program [as described above] may be conducted by and through the

institution, or by and through any foundation or organization that is established for the purpose of assisting the institution in the accomplishment of the institution's purposes.

An institution or the institution's foundation or organization engaged in a program authorized by the board may enter into contracts with federal, state, or local governments or their subsidiary agencies or departments, with private organizations, companies, firms, or industries, or with individuals for conducting the authorized programs. One may also accept contributions, grants, or gifts from, and enter into contracts and cooperative agreements with, any private organization, company, firm, industry, or individual, or any governmental agency or department, for support of authorized programs within the educational role of the recipient institution, and may agree to provide matching funds with respect to those programs from resources available to the institution.

5. Implementation schedule and milestones

Milestones for this project include seven distinct processes in two distinct phases:
Phase I: Technology and Implementation Study

a. Perform a thorough evaluation of needs and possible solutions including analysis of electrification pathways and identification of possible constraints, including access, regulatory and supply-chain issues.
b. Study the applicability of implementation of promising technology including emission reductions and economic evaluation.
c. Identify auxiliary and/or complementary technologies which further accelerate electrification.
d. Create and execute an implementation plan including working with industry partners.
e. Conduct a detailed analysis on the effectiveness of implementation of technologies and identify other areas of electrification and associated emissions reductions.

Phase II: Pilot Program and Implementation of Identified Solutions

f. Pilot program building and deploying identified solutions at active oil or gas sites electrifying at least one extraction site.
g. Evaluate and expand the program based on successes learned during the pilot program to multiple extraction sites.

Phase I			Phase II	
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Electrification Pathway and Supply Chain Analysis, and Economic and Emission Evaluation	Auxiliary and complementary technologies analysis, and Implementation plan with industry partners	Effectiveness and Implementation analysis and plan	Pilot program building and deploying technologies with industry partner	Evaluation and expansion of pilot program

The end result of these 7 milestones would be a deployable solution capable of delivering electrification solutions to remote oil and gas fields.

6. **Geographic location**

The Uinta Basin oil and gas field is located in Uintah and Duchesne counties, which are located in eastern rural Utah.

7. **Funding sources**
    a. Funding needed to implement: $2,500,000
    b. Complementary Funding:
        - IIJA 40209 - Advanced Energy Manufacturing and Recycling Grants
        - IRA 60113 - Methane Emissions Reduction Program
        - IRA 21001 - Environmental Quality Incentives Program (EQIP)
        - IRA 50144 - Energy Infrastructure Reinvestment Financing
    c. Funding pursued by state or secured for implementation of this project:
        - None.
    d. How additional implementation grant dollars are necessary to fund the measure:
        - The funding requested through CPRG is intended to cover the entirety of the proposed project, therefore additional grant dollars are not being pursued. The implementation of viable electrification or energy recovery and infrastructure improvements resulting from this project would likely need additional funds to implement and could be pursued after the completion of Phase II of this project.

8. **Metrics for tracking progress**

The primary metric for tracking progress would be the milestones completed as identified in section 5 of this project as well as the number of pieces of equipment electrified at oil and/or gas production sites based on the identified electrification or energy recovery technology.

For this project, the following metrics to track progress were utilized: type and number of pieces of equipment electrified, and number of performance years for equipment in order to quantify emissions reductions.

9. Quantitative cost estimates

It is anticipated that to execute the entirety of the proposed program including all 7 milestones would require $2.5M over the 5 year project timeline, with an anticipated cost of $1M to cover milestones under Phase I, and an additional $1.5M to fund the pilot program and expansion milestones included in Phase II. Therefore, the total budget of $2.5M would cover all 7 of the deliverable milestones overviewed in section 5 of this project. Future implementation grant proposals from eligible entities, including the research institution or UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A Uinta Basin Energy Recovery and Infrastructure Improvement project would be conducted in parallel with oil and gas entities operating within the Uinta Basin of Utah. Many parts of Utah's Uinta Basin include disadvantaged areas according to the IRA Disadvantaged Communities map.[127]

In addition to the general benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of VOC shown in this project's Section 2 table;
- By reducing methane, co-pollutants which contribute to ground-level ozone can be reduced. In recent years, concentrations of wintertime ozone in the Uinta Basin have reached or exceeded the NAAQS, raising concerns about the health and environmental impacts of elevated ozone levels in the Basin.[128] Reducing the concentration of methane in the Basin is an important health and environmental goal of this project.

Project #2 - Uinta Basin Oil/Gas Thief Hatch Replacement

1. Project Description:

Use CPRG funds to create a new Uinta Basin program which would fund Thief Hatch Replacements for the Oil/Gas industry. Current state rules require that storage tank thief hatches remain closed unless removing liquids or maintenance or operating activities however the rules do not have an engineering standard specified. Through many years of inspections by compliance staff approximately 80% of identified fugitive emissions via infrared camera observations are located at the thief hatches on storage tanks. This is due to under engineered pieces of equipment that do not wear well with the vapor pressure levels inside of the storage tank, frequent gauging of tank levels, dirt and debris buildup, failed gaskets and also the lack of proper closure after liquid unloading. The program

[127] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

[128] Source: https://deq.utah.gov/air-quality/ozone-in-the-uinta-basin

would encourage the replacement of the current thief hatches with well designed thief hatches that can better withstand the tank vapor pressures, gaskets that will not be damaged by gauging and also be combined with remote tank tilt sensors that can notify operators that the thief hatch has been left open. Operators that have upgraded their thief hatches have seen reductions in mechanical issues and as such reduced emissions. The program would also encourage the combination of better designed thief hatches with remote sensors that can inform the operators if a thief hatch has been left open and can close the thief hatch in a rapid manner. This program would be open to all operators in the Uinta Basin and cover the full cost of the equipment required.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy 150 oil and 50 gas units per year over a four year period. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030				8,634.5		85,814.4
By 2050				24,670.0		245,184.0

Quantification tool(s) utilized: See detailed quantification detail in footnote below[129]

3. Implementing agency or agencies

As envisioned, UDAQ would be the lead agency, although other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or

[129] The emissions reductions are based off of the gap filling line items for the tank control effectiveness adjustment for Utah's 2017 oil and gas inventory. These estimates were made using a monte carlo simulation, and were based on studies showing that about 30% of the time controlled tanks experience emissions not making it to their intended control device. Utah compliance inspections showed that when emissions weren't making it to the combustor that about 58% it was due to an open or leaking thief hatch. We in turn applied 58% of the tank control effectiveness emissions to thief hatch failures. There is also the understanding that thief hatch seals may still fail and that thief hatches may still be left open. To account for that we estimate that the replacement will reduce the existing thief hatch emissions by 50%. The emissions were then apportioned to oil and gas facilities to get a per facility reduction estimate. A CH_4/VOC ratio was developed using Uinta Basin Composition Study data to estimate methane emissions. On oil facilities the 2017 Utah oil and gas emissions inventory showed an average of 3.4 tanks on oil facilities and an average of 2.0 tanks on gas facilities. To effectively mitigate thief hatch emissions on a facility it is recommended to replace all thief hatches at the facility. It is estimated that 49.405 metric tons/yr of CO_2e at an oil facility and 96.96 metric tons/yr of CO_2e at a gas facility could be eliminated. This is under the assumption that replacing old thief hatches with good seals and potential monitors that notify the operators when open would reduce all failed thief hatch emissions. Thief hatch replacement would also have a co-pollutant reduction for VOC of 3.83 metric tons/yr for oil facilities and 0.83 tons/yr for gas facilities.

private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

5. **Implementation schedule and milestones**

Oil Facility - Performance Period				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Program Development	150	150	150	150

Gas Facility - Performance Period				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Program Development	50	50	50	50

6. **Geographic location**

Implementation in the Uinta Basin; potential to expand to other oil and gas producing regions of the state.

7. **Funding sources**
    a. Funding needed to implement: $2,815,200 (oil); $552,000 (gas); $3,367,200 (combined)
    b. Complementary Funding:
        - IRA 21001 - Environmental Quality Incentives Program
        - IRA 60113 - Methane Emissions Reduction Program
        - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG) Program[130]
    c. Funding pursued by state or secured for implementation of this project:
        - IRA 60113 - Methane Emissions Reduction Program
    d. How additional implementation grant dollars are necessary to fund the measure:

[130] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program

- There are no existing funding sources to address this measure which is estimated to cost-effectively reduce large quantities of GHG and VOC emissions in an ozone nonattainment area

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: total number of thief hatches replaced at oil and gas units, number of units per facility, and thief hatch life in years in order to quantify emissions reductions.

9. Quantitative cost estimates

At an oil facility, the cost would be $4,080 to reduce 24.70 metric tons of CO_2e (3.83 metric tons VOC) annually. At a gas facility, the cost would be $2,400 to reduce 48.48 metric tons of CO_2e (0.83 metric tons VOC) annually. UDAQ assumed total deployment of 800 units for a total incentive budget of $2,928,000, to which 15% in administrative expenses were added, for a total project budget of $3,367,200. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A new Uinta Basin Thief Hatch Replacement program would be open to oil/gas entities in that region of Utah. Many parts of Utah's Uinta Basin include disadvantaged areas according to the IRA Disadvantaged Communities map.[131]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of VOC shown in this project's Section 2 table;
- By reducing methane, co-pollutants which contribute to ground-level ozone can be reduced. In recent years, concentrations of wintertime ozone in the Uinta Basin have reached or exceeded the NAAQS, raising concerns about the health and environmental impacts of elevated ozone levels in the Basin.[132] Reducing the concentration of methane in the Basin is an important health and environmental goal of this project.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

[131] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

[132] Source: https://deq.utah.gov/air-quality/ozone-in-the-uinta-basin

Measure #9: Industrial Innovation

This measure intends to voluntarily support innovative projects to reduce GHG emissions in the industrial sector, in particular those projects that are transformative in nature and/or target difficult-to-abate GHG sources. Potential incentives could include competitive grants for pilot or demonstration projects.

Project #1 - Cement Decarbonization

1. **Project Description**

Use CPRG funds for a cement decarbonization incentive program. This program could issue competitive grants to cement manufacturers in Utah for projects that reduce GHG emissions.

While the cement industry has traditionally been difficult to decarbonize, one promising approach to emissions reduction focuses on cement clinker reduction/substitution. A recently proposed project would substitute clinker with limestone and expanded shale (a manufactured pozzolan), which both have significantly lower CO_2 intensities than clinker. The scope of the project would follow the industrial decarbonization roadmaps established by the US Department of Energy, Portland Cement Association, and Global Cement and Concrete Association.

2. **Estimate of GHG and criteria pollutant emissions reductions**

UDAQ estimated GHG reductions based on 100% adoption of cement clinker substitution in Utah at approximately 200,000 MMT per year. Separately, a cement manufacturer in Utah estimates that a proposed clinker substitution project at their facility would result in approximately 2.5 million metric tons of CO_2e reduced by 2050. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030						
By 2050						2,500,000

Quantification tool(s) utilized: RMI Energy Policy Simulator, industry estimates

3. **Implementing agency or agencies**

The program would be administered by UDAQ via a competitive grant process.

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or

private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under this authority, UDAQ has administered incentive programs for over two decades.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Program design	Cement manufacturers apply for and receive funding	Projects started	Projects continue	Projects continue

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $11,500,000
    b. Complementary Funding:
        - IIJA 41008 Industrial Emission Demonstration Projects
    c. Funding pursued by state or secured for implementation of this project:
        - There is currently no state of Utah funding allocated for cement decarbonization.
    d. How additional implementation grant dollars are necessary to fund the measure:
        i. Utah-specific grant funding will accelerate the timing of this project and guarantee that it reduces CO_2 footprint to the lowest practical extent. This is an early-of-a-kind project that faces market and adoption risks. Without funding, the project will face increased levels of scrutiny. Grant funding encourages market acceptance because it signals that change is coming and it is not being done on the whim of the producer as well as easing acceptance by UDOT and other suppliers.

8. **Metrics for tracking progress**

For this measure, we use the following metrics to track progress: number of facilities completing projects, GHG emissions reduced, and number of performance years to quantify lifetime pollution reductions.

9. Quantitative cost estimates

UDAQ assumed a total incentive budget of $10,000,000, to which 15% in administrative expenses were added, for a total project budget of $11,500,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A cement decarbonization program would be open to all communities in the state and funding could be prioritized to LIDAC areas in the state. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[133]

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

[133] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Measure #10: Promote Renewable Energy for Homes and Businesses

This measure intends to voluntarily increase the deployment of renewable energy for homes and businesses in Utah through incentives and/or direct deployment efforts. This measure may include support for outreach, education, and workforce training related to specific projects. Below are specific examples of types of projects for this measure.

Project #1 - Community Choice Clean Electricity

1. **Project Description:**

Use CPRG funds to support a Community Choice Clean Electricity Program in Utah available through the state's largest electricity provider. Utah Renewable Communities (URC) is an interlocal cooperative agency representing 18 Utah local governments who are partnering with Rocky Mountain Power to design a new clean electricity program. This program aims to offer customers a choice to supplement their current energy mix with additional clean electricity – up to a net-100% annual match at a minimal cost increase.

The Utah Community Renewable Energy Act, which was enacted by the Utah Legislature in 2019, allows for the creation of a program to enable eligible Utah communities to acquire renewable energy resources to serve participating customers. All costs of the program must be paid for by the customers within the communities who participate in the program, and customers may elect to leave the Program at any time. The URC program will seek to use an EPA CPRG implementation grant to cover participant support costs (PSC) associated with the launch of the program – (a) utility-scale clean electricity resources sized to meet roughly half of the URC program's net-100% clean electricity target from new resources (modeled as 200 MW of Utah solar) and (b) initial required program administrative costs. Funding will also be requested to support (c) energy navigators for household support to help lower-income and disadvantaged community members understand enrollment in the URC program and available assistance and incentives to reduce energy burden. Clean electricity projects may include integrated storage.

2. **Estimate of GHG and criteria pollutant emissions reductions**

The following emissions reductions reflect an illustrative case in which the URC program acquires roughly half of its estimated 2030 new electricity acquisition target, modeled as ten 20 MW Utah solar (proxy) resources coming online in 2027. Numbers shown reflect estimated emissions reductions attributable to local governments outside of the Salt Lake MSA. Actual emissions reductions will vary depending on program parameters and selected resources. Emissions reductions attributable to local governments inside the Salt Lake MSA will appear in the Salt Lake MSA Priority Climate Action Plan (PCAP).

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	170	95	19	9		312,474
By 2050	736	409	82	41		1,350,603

Quantification tool(s) utilized: AVERT using Cambium SRMER mid-case

3. Implementing agency or agencies

The URC program is being developed by 18 Utah local governments through an interlocal cooperative agency in partnership with Utah's largest electricity provider, Rocky Mountain Power. Once approved, the program will operate subject to the Utah Public Service Commission ("Commission").

4. Review of authority to implement

Utah Code 54-17-9, Utah Community Renewable Energy Act, allows for the creation of a Program to enable eligible Utah communities to acquire renewable energy resources to serve participating customers.[134] Final implementation requires Commission approval and ordinance adoption by participating communities within 90 days. Currently, 18 eligible communities are working with the state's largest electric utility to submit the program application in 2024.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
• Program approval • Participation ordinances adopted • Energy navigators hired • Clean electricity resources identified	• Resource contracting finalized-resource approval	• Initial resource(s) online and generating	• Initial resource(s) online and generating	• Initial resource(s) online and generating

6. Geographic location

The following 18 Utah local governments are members of the URC (also formally known as the Community Renewable Energy Agency) and currently eligible to participate in this program:

[134] Utah Community Renewable Energy Act: https://le.utah.gov/xcode/Title54/Chapter17/54-17-P9.html

- Coalville City
- Cottonwood Heights
- Emigration Canyon Township
- Francis City
- Grand County
- City of Holladay
- Kearns
- Millcreek
- Moab City
- Oakley City
- Ogden City
- Park City
- Salt Lake City
- Salt Lake County
- Summit County
- Town of Alta
- Town of Castle Valley
- Town of Springdale

7. **Funding sources**
    a. Funding needed to implement: $11,645,530 (reflects the portion of estimated cost attributable to municipalities outside of the Salt Lake MSA)
    b. Complementary Funding:
        - IRA 13801 - Elective Payment for Energy Property and Electricity Produced from Certain Renewable Resources, etc.
        - IRA 22001 - Electric Loans for Renewable Energy
        - IRA 22002 - Rural Energy for America Program
        - IIJA - Pumped Storage Hydropower Wind and Solar Integration and System Reliability Initiative
        - IRA 60103 - GHG Reduction Fund Zero-Emission Technologies Grant Program (Solar for All)
        - IRA 60107 - Low Emissions Electricity Program
        - IRA 13301 - Extension, Increase, and Modification of Nonbusiness Energy Property Credit (25C)
        - IRA - Clean Energy Tax Credit
    c. Funding pursued by state or secured for implementation of this project:
        i. Customers in participating URC communities would pay for ongoing administrative costs and the program-assigned share of additional clean electricity resources to meet the net-100% clean energy target by 2030.
    d. How additional implementation grant dollars are necessary to fund the measure:
        - Because Utah law makes customer participation in the URC program optional, it is difficult to demonstrate to the electric utility and third-party clean energy developers that administrative and resource costs will be covered by future program revenues. By allowing the establishment of initial reserve funds for administrative and resource costs, the URC program will be able to demonstrate its ability to pay for these costs independent of program participation and satisfy the legal requirement that nonparticipating customers and the utility will not be subject to program liabilities or costs. With these initial costs covered, the URC program rate can be calibrated to cover ongoing administrative costs and build up an additional resource reserve fund to cover the additional energy resources needed to achieve the program's net100%

clean electricity target by 2030. Grant award dollars held in reserve will be used to pay down actual program-assigned resource costs and administrative costs over the period of performance.

8. **Metrics for tracking progress**

For this measure, we use the following metrics to track progress: number of customers participating in the URC program, size (Megawatts) and type of new clean electricity capacity contracted, clean electricity generated annually (Megawatt-hours) by URC-supported resources, and estimated annual emissions reductions.

9. **Quantitative cost estimates**

The program resource cost is modeled as the excess cost of ten 20 MW UT solar farms:

- Costs reflect PacifiCorp 2023 IRP for 20 MW UT solar (proxy)
- Benefits reflect PacifiCorp's Q2 published avoided cost for solar, extended from 15 to 25 years at a constant rate

The cost of acquiring the remaining roughly half of the program's new clean electricity acquisition target would be covered by revenues generated by participating customers paying an additional program rate on their electric utility bills.

10. **LIDAC Benefits/Analysis**

The URC program would be open to electric customers in participating communities. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[135]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, SO_2, $PM_{2.5}$, VOC, shown in this project's Section 2 table;
- Increased clean energy options for Utahns.

Potential disbenefits include a small additional cost (estimated at between $2 and $7 per month on average for the typical household) on electric utility bills. The URC program proposes to mitigate this disbenefit by employing up to four energy navigators who would educate lower income and disadvantaged community members about: (a) program enrollment, including how to opt-out or exit the program (b) available monthly bill assistance programs, including a URC bill credit designed to offset the average monthly cost, and (c) available incentives and resources to reduce energy burden. For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

Project #2 - Rooftop Solar Residential Incentive

1. **Project Description:**

[135] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Use CPRG funds to provide a general incentive program for onsite residential solar for qualifying residents in Utah. Potential incentives could include point of sale rebates, ongoing grants, and technical assistance navigating incentives. This program could supplement potential funds from Solar for All for low-income households. This incentive will also help continue to support solar since Utah's residential Solar PV Tax Credit ended on December 31, 2023.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program that would incentivize and deploy average-sized residential solar 5,000 systems. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	77.5	42.6	8.3	2.8	2.8	146,093.1
By 2050	387.4	213.1	41.5	13.8	13.8	730,465.4

Quantification tool(s) utilized: AVERT

3. Implementing agency or agencies

The program could potentially be administered by UDAQ and/or UOED.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under Utah Code 79-6-401, by following the procedures and requirements of Title 63J, Chapter 5, Federal Funds Procedures Act, the office [UOED] may seek federal grants or loans, seek to participate in federal programs, and, in accordance with applicable federal program guidelines, administer federally funded state energy programs.

Under this authority, UOED administers the Utah Renewable Energy Systems Tax Credit program which until recently included residential solar tax credits.[136]

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
1,000	1,000	1,000	1,000	1,000

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $5,750,000
    b. Complementary Funding:
        - IRA 60103 Greenhouse Gas Reduction Fund - Zero-Emission Technologies Grant Program (Solar for All)
    c. Funding pursued by state or secured for implementation of this project:
        - IRA 60103 Greenhouse Gas Reduction Fund - Zero-Emission Technologies Grant Program (Solar for All)
    d. How additional implementation grant dollars are necessary to fund the measure:
        - Since Utah's residential Solar PV Tax Credit ended on December 31, 2023, additional funds are needed to incentivize households to pursue residential solar. Even if Utah is awarded Solar for All funds, many households still may not qualify.

8. **Metrics for tracking progress**

For this measure, we use the following metrics to track progress: number of residential solar PV systems deployed, PV system life, and number of performance years for implementation in order to quantify emissions reductions.

9. **Quantitative cost estimates**

UDAQ assumed total deployment of 5,000 units at an incentive level of $1,000/unit, for a total incentive budget of $5,000,000, to which 15% in administrative expenses were added, for a total project budget of $5,750,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. **LIDAC Benefits/Analysis**

A new residential solar incentive program could be open to all Utahns. Funding could be prioritized to low and moderate-income households, depending on the level of potential

[136] Source: https://le.utah.gov/xcode/Title59/Chapter7/59-7-S614.html

funds Utah receives from the Solar for All program. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[137]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, SO_2, $PM_{2.5}$, VOC, NH_3, shown in this project's Section 2 table;
- Increased energy options for residents.

Potential disbenefits include the need for additional education and training about the solar program to Utah residents, including those in LIDACs; this can be mitigated through allocating funding specifically for education/training purposes. For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

[137] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Measure #11: Resilient Local Energy

This measure intends to voluntarily support deployment of renewable energy and storage systems for local government buildings in Utah to reduce energy costs and provide resilience to natural disasters in case of an electric grid outage. This support will include additional incentives to complement newly available "direct pay" options for local governments to receive energy tax credits and technical assistance for such projects. Such support is contingent on securing funding for this measure. Utah could select projects on a competitive, first-come first-served, or other basis. This measure could be utilized by any sub-state government actor, including without limitation cities, counties, and school districts within the state of Utah.

Project #1 - Renewables for Public Buildings

1. Project Description

Use CPRG funds to provide a general incentive program for renewable energy/storage systems on public buildings in Utah.

2. Estimate of GHG and criteria pollutant emissions reductions

UDAQ estimated GHG and criteria pollutant emission reductions based on a case evaluation. For the evaluated case, a 387 kW rooftop solar installation with 60 kW battery power and 153 kWH battery capacity were assumed. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	8.8	8.8	0.5			8,628.4
By 2050	44.2	44.2	2.6			42,142.1

Quantification tool(s) utilized: National Renewable Energy Lab's PVWatts and ReOpt Tools

3. Implementing agency or agencies

The program could potentially be administered by UDAQ and/or UOED with awards made to government entity grant applicants. These agencies would administer the program and/or work with similar entities in other states as part of a coalition.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed

by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under Utah Code 79-6-401, by following the procedures and requirements of Title 63J, Chapter 5, Federal Funds Procedures Act, the office [UOED] may seek federal grants or loans, seek to participate in federal programs, and, in accordance with applicable federal program guidelines, administer federally funded state energy programs.

Under this authority UOED administers energy-related programs in Utah.

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Program design	Local governments apply for and receive funding	Projects installed	Projects placed in service	Projects continue

6. **Geographic location**

Statewide implementation.

7. **Funding sources**
    a. Funding needed to implement: $10,000,000
    b. Complementary Funding:
        - IRA 60103 Greenhouse Gas Reduction Fund
        - IIJA 40552 - Energy Efficiency and Conservation Block Grant (EECBG)[138]
        - IIJA Division J - Title V - Federal Emergency Management Agency Building Resilient Infrastructure and Communities (BRIC)[139]
    c. Funding pursued by state or secured for implementation of this project:
        - IRA 60103 Greenhouse Gas Reduction Fund
    d. How additional implementation grant dollars are necessary to fund the measure:
        i. This program intends to leverage the complementary funding available through elective pay (sometimes called direct pay) of certain clean energy tax credits (§45Y, §48E). As envisioned, these tax credits may only cover up to 30% of the projects, which may be insufficient for some local government buildings to achieve a return on investment through

[138] IIJA 40552: https://www.energy.gov/scep/energy-efficiency-and-conservation-block-grant-program
[139] BRIC: https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

cost-savings from energy bills. However, there is a possibility that these projects will qualify for a 10% "domestic content bonus" in which case these tax credits may cover up to 40% of the projects.

ii. In addition to directly supporting projects through technical assistance and deployment of renewable energy and storage systems, this project will also serve to educate local governments on the available tax credits and provide technical assistance to local governments in designing such systems. As a result, this measure will catalyze widespread adoption of renewable energy and storage systems by local governments.

8. Metrics for tracking progress

For this program, we use the following metrics to track progress: number of facilities installing renewable energy and storage, number of kilowatts of installed renewable energy, number of kilowatts of battery power installed, number of kilowatt hours battery capacity installed, the expected lifespan of projects, and number of performance years to quantify lifetime pollution reductions.

9. Quantitative cost estimates

UDAQ assumed a total incentive budget of $8,500,000, to which 15% in administrative expenses were added, for a total project budget of $10,000,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

A local resilient energy program would be open to all communities in the state and funding could be prioritized to LIDAC areas in the state. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[140]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, SO_2, $PM_{2.5}$, shown in this project's Section 2 table;
- Reduced local government energy costs allowing these agencies to divert funding they were spending on energy to provide additional services to communities.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

Project #2 - Microgrid for UTA Bus Depot

1. Project Description

To support agency sustainability objectives, UTA is exploring the possibility of implementing a microgrid supported by solar power. A microgrid is a collection of local

[140] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

energy sources and loads with control capability, integrating different electricity sources such as solar panels, wind power, battery storage, and generators to ensure reliability. A microgrid is able to operate in conjunction with the traditional electric grid or autonomously. A microgrid not only provides backup for the grid in case of emergencies, but can also be used to cut costs, or connect to a local resource that is too small or unreliable for traditional grid use.

Peak energy use can be costly for both power providers and users. A microgrid can help level those peaks slightly, resulting in cost savings and a lower peak generation need for the provider. A microgrid allows communities to be more energy independent and more environmentally friendly.

This proposed project would include a 500kW PV system, battery storage, and related infrastructure to support the microgrid.

2. Estimate of GHG and criteria pollutant emissions reductions

UTA estimated GHG and criteria pollutant emission reductions based on assumptions made for an example program based on calculations for a 500kh PV solar system. Actual emissions reductions will vary depending on selected program parameters.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	1.0	0.5	0.1	0.0	0.0	1,796.2
By 2050	6.4	3.4	0.7	0.2	0.2	11,974.8

Quantification tool(s) utilized: AVERT.

3. Implementing agency or agencies

The UTA would implement this project. It is envisioned that UTA would lead application efforts for CPRG funds, though it could also partner with UDAQ on their statewide application.

4. Review of authority to implement

UTA is a special district, a local government entity, a public transit district, and a political subdivision of the State authorized by the legislature as a special district to operate in its area of service. The authority to administer federal grant funding is included in the authorization that created the special district.

- UTA is a Public Transit District pursuant to the Utah Public Transit District Act, Utah Code §17B-2a-801 et seq.[141]
- Each public transit district is a Special District, "a limited purpose special government entity" with certain specific powers and authority under the Public Transit District Act. Utah Code §17B-1-102(13), (22).[142]

[141]Source: http://le.utah.gov/xcode/Title17B/Chapter2A/17B-2a-P8.html
[142]Source: http://le.utah.gov/xcode/Title17B/Chapter1/17B-1-S102.html?v=C17B-1-S102_2016051020160510

- UTA is a "political subdivision", a "county, city, town, special district under this title … or any other governmental entity designated in statute as a political subdivision of the state." Utah Code §17B-1-102(19).[143]
- The Governor of the state of Utah has also named UTA as the designated recipient of certain specific US Department of Transportation grant funding sources.

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Project planning and contract execution	Procurement process, progress on design	Construction	Construction complete	Commissioning complete

6. Geographic location

The solar panels and microgrid would be installed at the Depot District bus garage located at 716 West 300 South in Salt Lake City, Salt Lake County, Utah 84104.

7. Funding sources

a. Funding needed to implement: $8,100,000 - $9,100,000
b. Complementary Funding:
    - Federal Transit Administration (FTA) Section 5307 and 5339 formula funding – UTA currently uses most of these funds for preventive maintenance and some remainder for major capital projects. It is possible that some of those funds could help support this project.
    - Wasatch Front Regional Council (WFRC) Programed Federal Highways Administration (FHWA) flex funds (Congestion Mitigation and Air Quality Improvement (CMAQ), Surface Transportation Block Grant program (STBG), Carbon Reduction Program (CRP))
    - IIJA 40101 - Preventing Outages and Enhancing the Resilience of the Electric Grid Formula Grants
c. Funding pursued by state or secured for implementation of this project:
    - FTA 5339 funding helped pay for the Depot District bus facility, but the funding was not enough to complete the solar/microgrid installations.
    - WFRC Programmed Federal Highways Administration (FHWA) flex funds (CMAQ, STBG, CRP) – This funding helped pay for the Depot District bus facility, but the funding was not enough to complete the solar/microgrid installations.
d. How additional implementation grant dollars are necessary to fund the measure:
    i. UTA has planned for solar at the facility with some conduit having been installed and with bus canopies designed structurally to hold the load of solar panel installation. Funding restraints in other federal dollars and local UTA dollars have prevented the installation of the solar/microgrid system. If funded, this project can be installed within 3-4 years.

[143]Source: http://le.utah.gov/xcode/Title17B/Chapter1/17B-1-S102.html?v=C17B-1-S102_2016051020160510

8. Metrics for tracking progress

Metrics for tracking the progress of the solar panel/microgrid installation will measure projected and actual milestones for procurement, delivery, and deployment; as well as planned budget amounts and final cost for the buses.

Metrics for carbon reduction can be measured by the solar power generated each year multiplied by the emissions reduction of that power generation. Cost savings associated with the power generation and the peak shaving can also be calculated.

9. Quantitative cost estimates

Planning Level Cost estimates – To be refined as additional engineering is performed:

- Total – $8,100,000 - $9,100,000
    - 500kW PV system ($3/watt to $5/watt)=$1,500,000 - $2,500,000
    - Small gen set to match voltage/sine wave = $150,000
    - Battery Bank sized to buffer peak demands= $1,000,000
    - Distribution to everything = $500,000
    - Microgrid system = $250,000
    - Inflation to 2027 (4 years at 10 percent per year) = $2,100,000
    - Contingency – $1,800,000
    - Design - $750,000

10. LIDAC Benefits/Analysis

Making the switch to solar panels and a microgrid for the UTA's Depot District garage not only demonstrates a commitment to improving the Salt Lake area's air but also brings tangible benefits to surrounding neighborhoods. According to the IRA Disadvantaged Communities map, as seen below, the UTA Depot District is encircled by disadvantaged neighborhoods (areas in orange).[144] By generating clean energy on-site, UTA reduces its reliance on the local power grid, alleviating strain during peak demand periods and potentially lowering electricity costs for the community in Salt Lake County. This shift to renewable energy contributes to improved air quality and public health outcomes, particularly in the disadvantaged neighborhoods surrounding UTA. Moreover, the investment in solar infrastructure creates job opportunities in public transportation and the renewable energy sector. The transition to solar panels and a microgrid represents a holistic approach to improving air quality and equitable development.

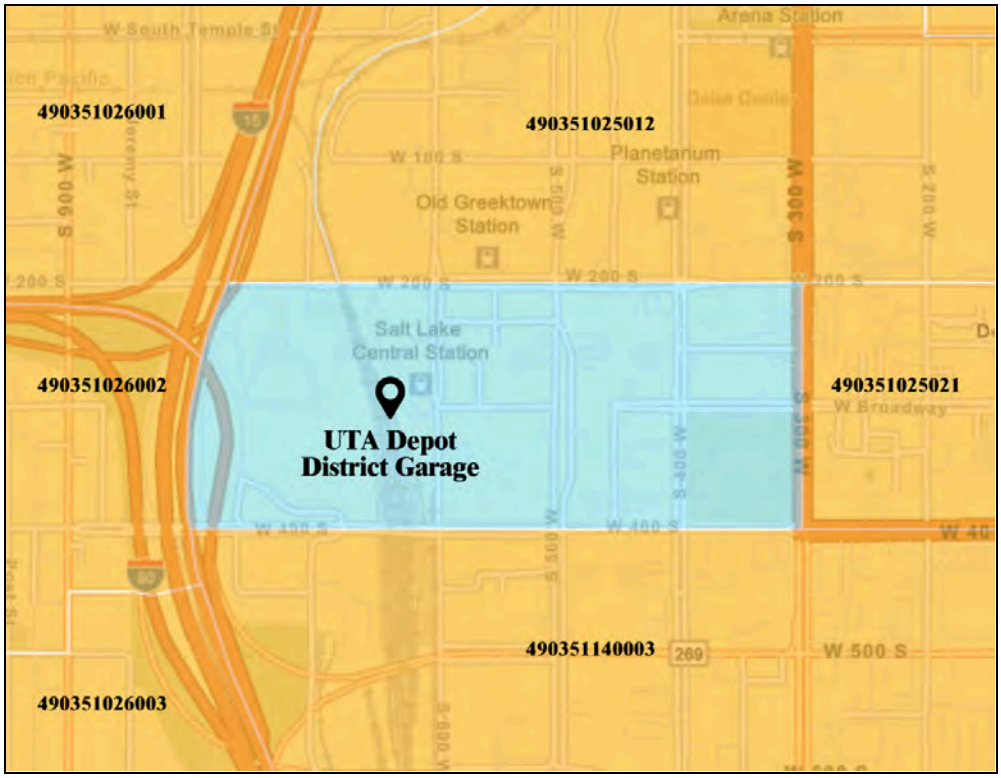
In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, SO_2, $PM_{2.5}$, VOC, NH_3, shown in this project's Section 2 table.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

[144] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Figure 9. EPA IRA Disadvantaged Communities Map locating UTA Depot District Garage



Numbers reference the specified Census Block Groups (from the EPA IRA Disadvantaged Communities map) surrounding the UTA Depot District.

Measure #12: Promote Healthy and Resilient Forests and Trees

This measure intends to voluntarily improve forest management in Utah with the goal of promoting healthy and resilient forests/trees and reducing wildfire risk as essential to addressing GHG emissions through collaboration on landscape-scale forest health and fuels reduction projects. This measure may include support for outreach, education, and workforce training related to specific projects. The Utah Division of Forestry, Fire and State Lands (UDFFSL) would be a key partner in ensuring that projects directly align with the Utah Forest Action Plan and other relevant laws and guidelines.[145]

In general, potential projects can support the following goals:

- Promote forest restoration activities on private lands with forest conservation and stewardship practices that include climate benefits;
- Engage local communities in planning and implementing Urban & Community Forestry projects focused on climate benefits;
- Encourage activities on private forest lands focusing on improving forest health and resilience, reducing the potential for land fragmentation, and addressing wildfire risk reduction;
- Support program integration between UDFFSL programs in forestry and hazardous fuels reduction treatments in the common goal of pre-fire vegetation management;
- Educate landowners, logging contractors, and others on forest stewardship;
- Support the Utah Forest Legacy Program strategies and objectives.[146]

Projects could be implemented within state boundaries only or implemented with neighboring Western states as applicable. Below are specific examples of types of projects for this measure.

Project #1 - Reforestation

1. **Project Description:**

Use CPRG funds for projects that support reforestation on private and/or State-owned lands in Utah.

2. **Estimate of GHG and criteria pollutant emissions reductions**

Quantification of forestry projects is inherently complex. While EPA estimates that an average acre of forest land in the U.S. sequesters 0.86 metric tons per acre per year, reforestation projects typically take several years before carbon sequestration occurs at an

[145] Utah Forest Action Plan: https://ffsl.utah.gov/forestry/about-forestry/forest-action-plan/
[146] Utah Forest Legacy Program: https://ffsl.utah.gov/forestry/private-landowner-forestry-assistance/forest-legacy/

optimal rate. For this reason, UDAQ has chosen to focus on the number of acres impacted by each forestry project in this Plan. The Blacksmith Reforestation Project would encompass 500 acres of land available for tree planting in Utah and would target approximately 400-500 trees per acre. Each site can vary depending on the presence of any naturally regenerating aspen or other species that may occur. Actual emissions reductions will vary depending on selected program parameters.

3. Implementing agency or agencies

As envisioned, funding for this program could be secured through the CPRG implementation grant program by UDAQ with the Utah Division of Forestry, Fire, and State Lands (UDFFSL) as a partner. DFFSL would administer the program and/or work with similar entities in neighboring Western states as part of a coalition. Other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

UDFFSL is established by Utah Code 65A-1-4 and “is the executive authority for the management of sovereign lands, and the state's mineral estates on lands other than school and institutional trust lands, and shall provide for forestry and fire control activities as required in Section 65A-8-101.”

5. Implementation schedule and milestones

Year 1	Year 2	Year 3	Year 4	Year 5
Project planning and 200-300 acres of trees planted	Remainder of acres and trees planted			

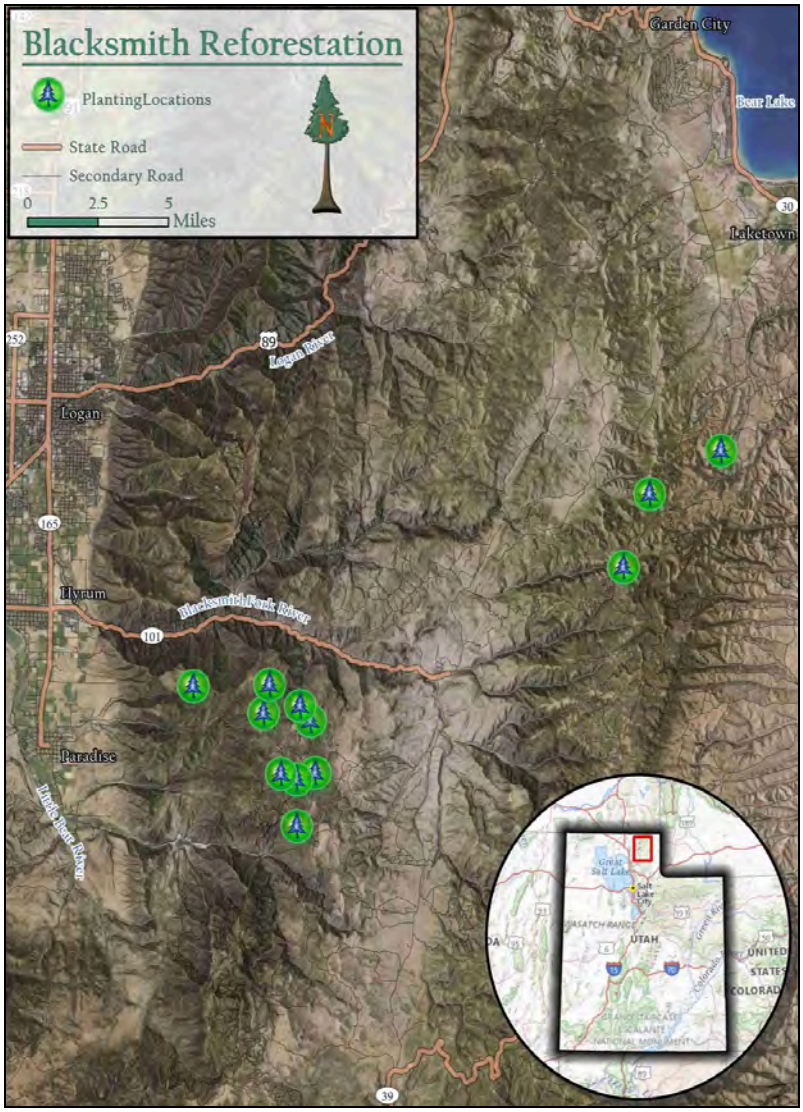
Tree planting in this area is typically most successful in the fall. Some plantings are already scheduled for fall 2024 with ongoing grant funding. Most planting sites will be

available by fall 2025, though it will take up to two years to grow tree seedlings for planting.

6. **Geographic location**

This project is located in the Blacksmith Fork area of the Bear River Range in Cache County in Utah. However, this project could also be implemented in other areas of Utah.

Figure 10. Blacksmith Reforestation Project Area



7. **Funding sources**
    a. Funding needed to implement: $1,000,000
    b. Complementary Funding:
        - IIJA 40806 - Fuel Breaks
        - IRA 23001 - Develop and Implement Activities and Tactics for Old Growth
        - IRA 23003 - Urban and Community Forestry Assistance Program
        - IIJA - Forest Health Management on Federal Lands Programs
        - IIJA - Joint Chiefs Landscape Restoration Partnership Program

- IIJA - Reforestation Trust Fund
- IIJA - State Fire Assistance
- IIJA - State Forest Action Plans
- IIJA 40803 - Collaborative Forest Landscape Restoration Program
- IIJA 40804 - Recreation Sites
- IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[147]
- IIJA - Department of Interior Wildfire Management
- IIJA - State Fire Assistance
- IIJA 40101 - Preventing Outages and Enhancing the Resilience of the Electric Grid Formula Grants
- IIJA Division J Title VI - Wildfire Management

c. Funding pursued by state or secured for implementation of this project:
   i. Balsam Wooly Adelgid (BWA) mortality cleanup and salvage for site preparation as well as some tree planting are being paid for through UDFFSL with partner funding from LSR and WRI.

d. How additional implementation grant dollars are necessary to fund the measure:
   i. More than 500 acres of previously forested private and State lands need reforestation in the Blacksmith Fork area of the Bear River Range in Cache County. Approximately 200 acres were Douglas-fir sites that were over-harvested in the 1980s, which resulted in poor recruitment of tree seedlings. Approximately 300 acres are dense subalpine fir stands that were heavily infested with the invasive species BWA. These locations have been salvaged or contracted for removal efforts with the expectation that they will not naturally regenerate with timber species and will need to be reforested.

8. Metrics for tracking progress

Metrics for tracking the progress of reforestation will include number of trees planted and number of acres of land impacted.

9. Quantitative cost estimates

Planning Level Cost estimates – To be refined as additional analysis is performed:

- Total – $1,000,000

10. LIDAC Benefits/Analysis

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced community wildfire risk and improved water quality;
- Reduced levels of co-pollutants;

[147] IRA 60201: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

- In areas across the state, this measure could result in more resilient communities through green infrastructure, storm buffers, and storm water mitigation. It could also result in more access to open space and the corresponding positive physical and mental health effects.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

Project #2 - Forest Health/Fuels

1. **Project Description:**

Use CPRG funds for projects that support Forest Health/Fuels in Utah. The purpose of this project is to reduce catastrophic fire potential while improving overall forest health and enhancing protection of Utah watersheds.

The project calls for the removal of dead and downed conifers as well as the heavy thinning of live standing trees in areas with an overstocked mixed conifer stand. Reducing fuel loading will help prevent erosion, and sediment delivery into the stream in a post-fire scenario, as well as reduce wildfire smoke if the stand were to burn uncontrollably, limiting negative air quality effects.

2. **Estimate of GHG and criteria pollutant emissions reductions**

Quantification of forestry projects is inherently complex. While EPA estimates that an average acre of forest land in the U.S. sequesters 0.86 metric tons per acre per year, reforestation projects typically take several years before carbon sequestration occurs at an optimal rate. For this reason, UDAQ has chosen to focus on the number of acres impacted by each forestry project in this Plan. The Wolf Creek Ranch project would encompass 66 acres of land in Utah. Selection criteria in this area will focus on the removal of all dead and dying trees, removal of live, damaged, and suppressed trees and the retention of all healthy, viable Douglas Fir. Actual emissions reductions will vary depending on selected program parameters.

3. **Implementing agency or agencies**

As envisioned, funding for this program could be secured through the CPRG implementation grant program by UDAQ with the Utah Division of Forestry, Fire, and State Lands (UDFFSL) as a partner. DFFSL would administer the program and/or work with similar entities in neighboring Western states as part of a coalition. Other eligible entities in Utah could apply for and administer this or a similar program.

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution,

disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

UDFFSL is established by Utah Code 65A-1-4 and "is the executive authority for the management of sovereign lands, and the state's mineral estates on lands other than school and institutional trust lands, and shall provide for forestry and fire control activities as required in Section 65A-8-101."

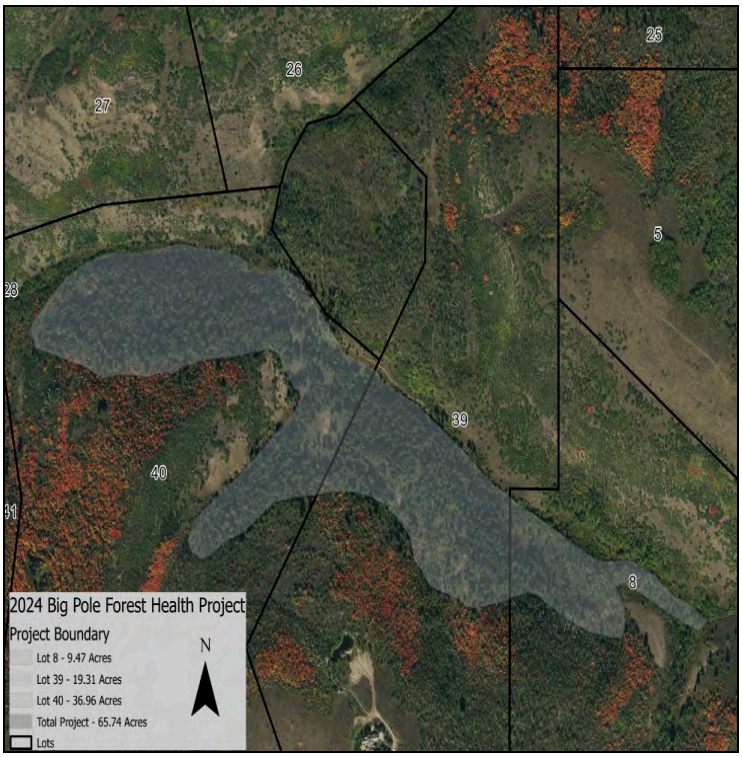
5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Project planning	Project implementation			

6. **Geographic location**

The project is located on Wolf Creek Ranch in Wasatch County near the town of Heber City, Utah. The project lies directly adjacent to Big Pole Creek, a perennial stream that flows into Lake Creek and then eventually finds its way into the Provo River, Jordanelle Reservoir and finally into Great Salt Lake. However, this project could also be implemented in other areas of Utah.

Figure 11. Wolf Creek Ranch Project Area



7. **Funding sources**
    a. Funding needed to implement: $150,000
    b. Complementary Funding:
        - IIJA 40806 - Fuel Breaks
        - IRA 23001 - Develop and Implement Activities and Tactics for Old Growth
        - IRA 23003 - Urban and Community Forestry Assistance Program
        - IIJA - Forest Health Management on Federal Lands Programs
        - IIJA - Joint Chiefs Landscape Restoration Partnership Program
        - IIJA - Reforestation Trust Fund
        - IIJA - State Fire Assistance
        - IIJA - State Forest Action Plans
        - IIJA 40803 - Collaborative Forest Landscape Restoration Program
        - IIJA 40804 - Recreation Sites
        - IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[148]
        - IIJA - Department of Interior Wildfire Management
        - IIJA - State Fire Assistance
        - IIJA 40101 - Preventing Outages and Enhancing the Resilience of the Electric Grid Formula Grants
        - IIJA Division J Title VI - Wildfire Management
    c. Funding pursued by state or secured for implementation of this project:

[148] IRA 60201: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

- Wolf Creek Ranch may be able to provide matching funding and there will be an application for Western Bark Beetle Grant funding submitted.

d. How additional implementation grant dollars are necessary to fund the measure:
   - The funding options listed in part c above are extremely uncertain.

8. Metrics for tracking progress

Metrics for tracking the progress of this project will include the number of acres of land impacted.

9. Quantitative cost estimates

Planning Level Cost estimates – To be refined as additional analysis is performed:

- Total – $150,000

10. LIDAC Benefits/Analysis

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced community wildfire risk and improved water quality;
- Reduced levels of co-pollutants;
- In areas across the state, this measure could result in more resilient communities through green infrastructure, storm buffers, and storm water mitigation. It could also result in more access to open space and the corresponding positive physical and mental health effects.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

Project #3 - Urban Forestry/Trees

1. Project Description:

Use CPRG funds for projects that support urban forestry and tree planting in Utah cities, towns, and communities.

2. Estimate of GHG and criteria pollutant emissions reductions

Quantification of forestry projects is inherently complex. While EPA estimates that an average acre of forest land in the U.S. sequesters 0.86 metric tons per acre per year, reforestation projects typically take several years before carbon sequestration occurs at an optimal rate. For this reason, UDAQ has chosen to focus on the number of acres impacted by each forestry project in this Plan. The Town of Ferron project would encompass 10 acres of land in Utah. Actual emissions reductions will vary depending on selected program parameters.

3. Implementing agency or agencies

As envisioned, funding for this program could be secured through the CPRG implementation grant program by UDAQ with the Utah Division of Forestry, Fire, and State

Lands (UDFFSL) as a partner. DFFSL would administer the program and/or work with similar entities in neighboring Western states as part of a coalition. Other eligible entities in Utah could apply for and administer this or a similar program.

4. **Review of authority to implement**

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

UDFFSL is established by Utah Code 65A-1-4 and "is the executive authority for the management of sovereign lands, and the state's mineral estates on lands other than school and institutional trust lands, and shall provide for forestry and fire control activities as required in Section 65A-8-101."

5. **Implementation schedule and milestones**

Year 1	Year 2	Year 3	Year 4	Year 5
Project planning	Project tree planting and implementation			

6. **Geographic location**

The project is located in the Town of Ferron in Emery County in Utah. However, this project could also be implemented in other areas of Utah.

7. **Funding sources**
    a. Funding needed to implement: $175,000
    b. Complementary Funding:
        - IIJA 40806 - Fuel Breaks
        - IRA 23001 - Develop and Implement Activities and Tactics for Old Growth
        - IRA 23003 - Urban and Community Forestry Assistance Program
        - IIJA - Forest Health Management on Federal Lands Programs
        - IIJA - Joint Chiefs Landscape Restoration Partnership Program

- IIJA - Reforestation Trust Fund
- IIJA - State Fire Assistance
- IIJA - State Forest Action Plans
- IIJA 40803 - Collaborative Forest Landscape Restoration Program
- IIJA 40804 - Recreation Sites
- IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[149]
- IIJA - Department of Interior Wildfire Management
- IIJA - State Fire Assistance
- IIJA 40101 - Preventing Outages and Enhancing the Resilience of the Electric Grid Formula Grants
- IIJA Division J Title VI - Wildfire Management

c. Funding pursued by state or secured for implementation of this project:
   i. The Town of Ferron is hoping to obtain $25,000 of matching funds.
d. How additional implementation grant dollars are necessary to fund the measure:
   i. A community cemetery in the Town of Ferron experienced a significant wind event that damaged and blew down most of the mature trees that occupied the site. The project requires the hiring of an arborist to remove close to 60 damaged spruce trees that are upwards of 180 years old. Depending on the exact size and condition of the tree, this cost could be as high as $3,000/tree. Matching funds from CPRG would significantly help this project be implemented.

8. Metrics for tracking progress

Metrics for tracking the progress of this project will include the number of acres of land impacted.

9. Quantitative cost estimates

Planning Level Cost estimates – To be refined as additional analysis is performed:

- Total – $175,000

10. LIDAC Benefits/Analysis

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- In areas across the state, this measure could result in more resilient communities through green infrastructure, storm buffers, and storm water mitigation. It could also result in more access to open space and the corresponding positive physical and mental health effects.

For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section.

[149] IRA 60201: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

Cross-Cutting

Measure #13: Outreach, Education, and Workforce Training Related to Emission Reduction Efforts

This measure intends to increase outreach, education, and workforce-focused efforts related to emission reductions in Utah. While support for these services has been identified as a critical element within all other measures in this plan, it is also included here as a stand-alone measure to support all GHG reduction activity in Utah, not just those measures enumerated in this Priority Plan. Below are specific examples of types of projects for this measure.

Project #1 - Demonstration and Assistance (One-Stop Shop)

1. **Project Description:**

Use CPRG funds for a Demonstration and Assistance program in Utah. This program could include demonstration facilities and/or staff who would serve as a cost-free "one-stop shop," a trusted resource providing information in various formats about efficiency and clean energy measures (energy efficiency, renewable energy, zero-emission transportation/technology, etc.), financing options (incentives, vouchers, etc.), and resiliency (for wildfire, floods, drought, etc.) for individual residents and entities like small businesses.

This program could issue competitive grants to third-party organizations (such as universities, nonprofits, etc) who would use their staff to oversee customized work in their communities. Program staff would support outreach and education throughout the state. This could include steps like utilizing sustainable living demonstration "show homes." Programming could include tours, workshops, one-to-one assistance (over the phone, in person, etc), and annual community programs aimed at lowering the cost of equipment upgrades for all households, and providing heavily subsidized/free options for moderate-income and LIDAC households. The program would support Utah residents and small entities in making the change to net-zero, resilient living on their timeline and budget.

Other states/municipalities currently or have previously implemented this type of program.[150]

2. **Estimate of GHG and criteria pollutant emissions reductions**

[150] Examples include the I Heart My Home CT program (https://nhsofnewhaven.org/homeownership/i-heart-my-home-ct/) and a City of Ann Arbor pilot program.

UDAQ estimated GHG and criteria pollutant emission reductions based on goals established for a proposed demonstration and assistance project at a State university. These goals serve as an estimate of the additional induced participation in existing state, federal, and utility funded energy efficiency and low-carbon programs anticipated to be derived through the demonstration and assistance project. Supported energy and climate measures include, but are not necessarily limited to, LED lighting, smart thermostats, heat pumps, duct sealing, attic insulation, and e-bikes.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030	0.3	0.001	0.000	0.0		518.7
By 2050	1.4	0.002	0.001	0.1		2,782.9

Quantification tool(s) utilized: BTS MOVES emission factors, eGRID, ResStock Detailed Annual Total Savings per Dwelling Unit

3. Implementing agency or agencies

As envisioned, the program could be administered by UDAQ through a competitive grant process or UDAQ could directly partner with a third party (e.g., a State university). Other eligible entities in Utah could apply for and administer this or a similar program.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

5. Implementation schedule and milestones

Measure	Year 1	Year 2	Year 3	Year 4	Year 5
LED	600	600	600	600	600
Smart Thermostat	50	50	50	50	50
Heat Pumps	5	10	10	10	10
Duct Sealing	20	35	35	35	35
Attic Insulation	20	40	40	40	40
E-Bikes	-	15	15	15	15

6. Geographic location

Statewide implementation.

7. Funding sources

a. Funding needed to implement: Approximately $3,000,000

b. Complementary Funding:
- IIJA 41007 - Wind Energy Technology Program
- IRA 60107 - Low Emissions Electricity Program
- IIJA - Solar Improvement Research and Development
- IIJA - Technology and Innovation Deployment Program
- IRA 60201 - Environmental and Climate Justice Block Grants - Change Grants[151]

c. Funding pursued by state or secured for implementation of this project:
- Existing university funding
- Utility incentive programs

d. How additional implementation grant dollars are necessary to fund the measure:
- CPRG funds will help extend existing funding sources to reach a broader audience and will help optimize the adoption of various state, federal, and utility incentives and other programs

8. Metrics for tracking progress

For this measure, we use the following metrics to track progress: number of individuals and entities receiving assistance, vehicle or equipment life, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

[151] IRA 60201: https://www.epa.gov/inflation-reduction-act/inflation-reduction-act-community-change-grants-program

Based on stakeholder input, UDAQ assumed staffing/programming costs for a total project budget of approximately $3,000,000. Future implementation grant proposals from eligible entities, including UDAQ, may vary depending on selected project parameters.

10. LIDAC Benefits/Analysis

Many if not all of the emission reduction strategies focused on energy efficiency and zero-emission technology will not be fully realized without trusted staff that engage in outreach and education directly with community members and small entities to implement programs and projects. Multiple LIDAC stakeholders expressed support for an Energy Assistance-type program. This program would be open to all communities in the state and funding could be prioritized to LIDAC areas in the state. Many parts of Utah include disadvantaged areas according to the IRA Disadvantaged Communities map.[152]

In addition to the general LIDAC benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include:

- Reduced level of NO_x, SO_2, $PM_{2.5}$, VOC, shown in this project's Section 2 table.

By enabling greater adoption of the other strategies, this program catalyzes the general benefits associated with other projects (see the LIDAC Benefit Analysis section of this Priority Plan). For detailed information about UDAQ LIDAC engagement, see the Coordination and Outreach section of this Priority Plan.

Project #2 - Workforce Training

1. Project Description:

Many if not all of the emission reduction strategies focused on energy efficiency, zero-emission technology, and more will not be fully realized without a Utah workforce that is trained with the skills needed to implement the programs and projects. UDAQ could work with stakeholders like industry, other state agencies, state universities, colleges and technical colleges, businesses, nonprofits, and others to help identify funding to support workforce training and development for lower-carbon industries. Emissions reduction strategies can be job creators, with opportunities in fields like electricians, HVAC work, construction, auto maintenance, forestry, water conservation, and others that can offer career opportunities and may not require a 4-year college degree.

An example of this type of effort is the proposed Workforce Expansion for Electric Vehicles (WeEV) Project. Weber State University (WSU), Utah Clean Air Partnership (UCAIR), Utah Clean Cities Coalition, WSU, UOED, UDOT, Utah Governor's Office of Economic Opportunity (GO Utah), and the Department of Government Operations are developing this project.

[152] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

While we have identified workforce training as a critical aspect within all other measures, it is important to include this stand-alone project to support GHG reduction activity outside of this Priority Plan in a way that complements our measures. We do not include a budget or quantified emission reductions in this project because it will be highly specific to the program. Additionally, UDAQ will engage in a more robust Workforce Planning Analysis during the Comprehensive Plan process. This Analysis will provide critical information in order to design the most effective Workforce Training program(s) for the state of Utah.

Measure #14: Carbon Sequestration and Storage

This measure intends to leverage CPRG funds to develop Carbon Sequestration and Storage (CSS) resources including a CSS resource survey, or a Utah specific characterization, of potential CCS storage resources available within the state. Additionally, this measure intends to leverage available funding for potential CSS projects that utilize these resources. This measure may include support for outreach, education, and workforce training related to specific projects. Below is a specific example of a type of project for this measure.

Project #1 - Utah Carbon Sequestration and Storage Survey

1. **Project Description:**

This project would characterize potential CSS storage resources for the long-term storage and sequestration of CO_2 in deep saline bearing formations like the Navajo Sandstone and Kaibab Limestone that are laterally continuous across the Basin and Range formation, a geographic region which includes Beaver and Iron counties of Utah. With the resources identified through the survey, this project aims to capture and store CO_2 emissions from a Direct Reduced Iron (DRI) processing facility located in the Neck of the Desert area that is currently in the permitting phase of the project, as well as the CO_2 emissions captured as part of the Red Rock Direct Air Capture (DAC) hub, both of which are located in the survey region.

The Energy and Geoscience Institute (EGI) at the University of Utah has identified the need for the cataloging of potential CSS resources within the state of Utah and has further identified several, either ongoing or under construction, sources of CO_2 that could benefit from the utilization of such resources. Therefore, the program represents the development of new, scalable, CSS resources that could result in the direct capture and reduction of emissions from ongoing projects.

Funds received from CPRG would be utilized to develop site assessments and characterization of Class VI injection wells and necessary monitoring wells to ensure success of the CSS project. Funds would also be utilized to assist in the cost assessment, permitting and construction of a stratigraphic well along with analysis of the data collected to adequately characterize the subsurface pursuant with EPA Class VI regulations.

2. **Estimate of GHG and criteria pollutant emissions reductions**

GHG emission reductions estimates at the DRI facility are based on the amount of ore that can be processed by the facility per year using an amine based carbon capture system for the direct reduction of process gasses. This results in an estimated sequestration of 750,000 metric tons of CO_2 per year that would otherwise be vented to the atmosphere by adding compression and a 5-mile pipeline to a Class VI underground injection well. The DAC hub

anticipates capturing over 1 million metric tons of atmospheric CO_2 per year once in full operation and sending it through a x mile pipeline to a potential storage site southwest of Milford, UT. Between the two operations, over 1.75 million tons of CO_2 could be sequestered per year once in full operation. Actual emissions reductions will vary depending on selected program parameters and the start date of operations, the accumulated 2030 and 2050 emissions identified in the table below assuming the beginning of CSS operations from both facilities in the calendar year of 2028.

GHG and Criteria Emissions Reductions (metric tons)						
	NO_x	SO_2	$PM_{2.5}$	VOC	NH_3	CO_2e
By 2030						3,500,000
By 2050						38,500,000

EGI estimates of total indirect emission reduction potential; project is for characterization of storage

3. Implementing agency or agencies

EGI has proposed this project, and therefore the University of Utah in collaboration with EGI would be the implementing agency, with the UDEQ providing assistance where appropriate.

4. Review of authority to implement

Under Utah Code 19-1-201, the department [UDEQ] may perform the administrative functions of the boards established by Section 19-1-106, including the acceptance and administration of grants from the federal government and from other sources, public or private, to carry out the board's functions. Also under Utah Code 19-1-202, the [UDEQ] executive director may, with the approval of the governor, participate in the distribution, disbursement, or administration of any fund or service, advanced, offered, or contributed by the federal government for purposes consistent with the powers and duties of the department.

Utah Code 19-1-105, creates the Utah Division of Air Quality to administer 19-2, Air Conservation Act. Under Utah Code 19-2-107, the [UDAQ] director may accept, receive, and administer grants or other funds or gifts from public and private agencies, including the federal government, for the purpose of carrying out any of the functions of the Air Conservation Act. Furthermore, UDAQ is eligible to apply for assistance under this solicitation, in accordance with 42 U.S.C. 16131 and CFDA 66.039.

Under Utah Code 53B-7-103, the board [Utah Board of Higher Education] is the designated state educational agency authorized to negotiate and contract with the federal government and to accept financial or other assistance from the federal government or any of its agencies in the name of and in behalf of the state of Utah, under terms and conditions as may be prescribed by congressional enactment designed to further higher education.

Subject to policies and procedures established by the board, an institution of higher education and the institution of higher education's employees may apply for and receive grants or research and development contracts within the educational role of the recipient institution. A program [as described above] may be conducted by and through the institution, or by and through any foundation or organization that is established for the purpose of assisting the institution in the accomplishment of the institution's purposes.

An institution or the institution's foundation or organization engaged in a program authorized by the board may enter into contracts with federal, state, or local governments or their subsidiary agencies or departments, with private organizations, companies, firms, or industries, or with individuals for conducting the authorized programs. One may also accept contributions, grants, or gifts from, and enter into contracts and cooperative agreements with, any private organization, company, firm, industry, or individual, or any governmental agency or department, for support of authorized programs within the educational role of the recipient institution, and may agree to provide matching funds with respect to those programs from resources available to the institution.

5. **Implementation schedule and milestones**

The project has three distinct phases with specific deliverables:

- Deliverable #1: CSS survey of the proposed region which will identify any additional current and future sources of CO_2 emissions, potential CO_2 storage sites, and stratigraphic well location.
- Deliverable #2: Permitting, drilling, and coring of a stratigraphic test well to support CCS operations, including detailed storage reservoir characterization.
- Deliverable #3: Class VI injection well permitting for full scale CCS operations.

Year 1	Year 2	Year 3	Year 4	Year 5
CSS source and site survey	Start well location identification and permitting.	Drilling and coring of stratigraphic well and start of laboratory analysis.	Data analysis and site identification for Class VI well location.	Class VI well application.

6. **Geographic location**

The two counties to be included in the initial CSS survey, Beaver, and Iron counties, are located in central western rural Utah. Therefore, the three deliverables that are part of the proposed project would be deployed and developed within these rural counties.

7. **Funding sources**
    a. Funding needed to implement: $10 million in CPRG funding is needed to implement the entirety of this measure. Funds necessary to supplement the implementation of the CSS resources survey would be $2.0 million, with the remaining deliverables, including the construction of necessary infrastructure, costing an additional $8.0 million.
    b. Complementary Funding:

- BIL 40305 – Carbon Storage Assurance Facility Enterprise (CarbonSAFE): Phases II, III, III.5, IV.
- IIJA 40209 - Advanced Energy Manufacturing and Recycling Grants
- IIJA 40303 - Front-End Engineering and Design Program Out Activities Under Carbon Capture Tech Program 962 of EPA (Sec 40303)
- IIJA 40342 - Clean Energy Demonstration on Current and Former Mine Land
- IIJA 41004 - Carbon Capture Demonstration Projects Program
- IIJA 41004 - Carbon Capture Large-Scale Pilot Programs
- IRA 13104 - Extension and Modification of Credit for Carbon Oxide Sequestration (45Q)
- IIJA 41005 b - Commercial Direct Air Capture Hub Technology Prize Competition (41005, b)

c. Funding pursued by state or secured for implementation of this project:
   - EGI and the University of Utah pursuing complementary funds by applying for FOA-0002711 BIL – Storage Validation and Testing (Section 40305): Carbon Storage Assurance Facility Enterprise (CarbonSAFE): Phase II, III, III.5, IV under AOI 4 – CarbonSAFE Phase II: Storage Complex Feasibility. This FOA is due March 20th, 2024.

d. How additional implementation grant dollars are necessary to fund the measure:
   - If awarded, the funding pursued under the Bipartisan Infrastructure Law Section 40305 CarbonSAFE program would cover only a small fraction of the total necessary project funds for this measure to be fully implemented. Further, the funds pursued under BIL Section 40305 would complement this CPRG measure, however could serve broader CSS efforts within the region.

8. Metrics for tracking progress

For this project, the following metrics to track progress could be utilized: number of sources utilizing the CSS resources, lifetime of CSS infrastructure, and number of performance years for implementation in order to quantify emissions reductions.

9. Quantitative cost estimates

EGI reported a need for a total budget of $10 million, of which $2.0 million would be utilized to assist in the development of the CSS survey, and the remaining $8.0 million used to help develop the infrastructure needed for CSS operations at the two participating facilities.

10. LIDAC Benefits/Analysis

A Utah Carbon Sequestration and storage Survey project would be conducted in parallel with, and would benefit, industrial entities operating within the identified counties of Beaver and Iron. Many parts of Utah's central western rural regions include disadvantaged

areas according to the IRA Disadvantaged Communities map including areas within and surrounding the proposed project area.[153]

In addition to the general benefits associated with measures (see the LIDAC Analysis section of this Priority Plan) potential benefits unique to this measure include potential increased economic activities associated with the project development and the resulting job creation.

[153] The IRA Disadvantaged Communities map: https://epa.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=f3be939070844eac8a14103ed6f9affd

Appendix B - Quality Assurance Project Plan for the Utah Beehive Emission Reduction Plan

Climate Pollution Reduction Grants Program:

Utah State Quality Assurance Project Plan

Utah Department of Environmental Quality

Division of Air Quality

12/06/2023

1. Project Management (Group A)

1.1. Title and Approval Page

Quality Assurance Project Plan for
The Utah Beehive Emissions Reduction Plan

Prepared by:
Utah Department of Environmental Quality (UDEQ)
Utah Division of Air Quality (UDAQ)
195 N 1950 W
Salt Lake City, UT
84116

December 6, 2023

APPROVALS:

Bryce Bird, UDAQ Director: Date: 12/06/2023

Eleanor Divver, UDEQ Quality Control Coordinator: Date: 12/04/2023

Glade Sowards, Senior Policy Analyst: Date: 12/04/2023

Glade Sowards (Dec 4, 2023 14:39 MST)

Revision No.	Description	Author	Date
1	Original Version for PCAP	Chelsea Cancino	12/1/2023

1.2. Table of Contents[1]

[1] For grantees who are not familiar with using MS Word's TOC functions, please review the video at https://www.youtube.com/watch?v=0cN-JX6HP7c. Accessed on 6/23/2023.

List of Tables

List of Exhibits

Abbreviations

CAA	Clean Air Act
CFR	Code of Federal Regulations
CCAP	Comprehensive Climate Action Plan
CPRG	Climate Pollution Reduction Grant
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse Gas
GHGRP	Greenhouse Gas Reporting Program (40 CFR Part 98)
ICR	Information Collection Request
OAR	EPA Office of Air and Radiation
PM	Project Manager
PO	EPA Project Officer for Grant
POP	Period of Performance
POR	EPA Project Officer's Representative
PWP	Project Work Plan
PCAP	Priority Climate Action Plan
QA	Quality Assurance
QAM	Quality Assurance Manager
QAMD	Quality Assurance Manager Delegate
QAPP	Quality Assurance Project Plan
QC	Quality Control
SIT	State Inventory Tool (provided by the EPA)
TL	Task Leader
UDAQ	Utah Division of Air Quality

1.3. Distribution List

This section presents the primary staff who will be working on the project. This section presents specific staff members who will be identifying existing[2] data resources for evaluation and potential use under the project. This section also includes all other staff who will be serving in project-specific roles for implementing the Quality Assurance Project Plan. The listing in **Table 1.1** includes staff responsible for implementing independent internal quality management steps and staff serving in external oversight roles.

This QAPP and, as applicable, all major deliverables relying on existing data will be distributed to the staff presented in **Table 1.1.** Additionally, this QAPP will be provided to any unlisted staff who are assigned to perform work under this project. A secured copy of this QAPP will be maintained in the project files under the <*//server/project_root_dir/Quality_Management/QAPP* directory>.

Table 1.1 QAPP Distribution List *(Example)*

Name	**Organization**	**Role**
Emily Betram	US EPA, Region 8	EPA Project Officer (PO) or PO Representative (POR)
Linda Himmelbauer	US EPA, Region 8	EPA Quality Assurance Manager or Delegate
Bryce Bird	UDAQ	Grantee Sr. Approver, UDAQ Director
Glade Sowards	UDAQ	Grantee Project Manager, Senior Policy Analyst
Elizabeth Slade	UDAQ	Grantee Task Leader and Technical Staff, Environmental Scientist
Joel Karmazyn	UDAQ	Grantee Quality Assurance Manager
Eleanor Divver	UDEQ	Grantee Quality Control Coordinator

[2] The term “existing data” is defined by the EPA’s *Environmental Information Quality Policy* (CIO 2105.3) as “… data that have been collected, derived, stored, or reported in the past or by other parties (for a different purpose and/or using different methods and quality criteria). Sometimes referred to as data from other sources.” The term “secondary data” may also be used to describe “existing data” in historical EPA quality-related documents.

1.4. Project/Task Organization

The primary personnel responsible for implementation of this project are the UDAQ Project Manager (PM), Quality Assurance Manager (QAM), Quality Control Coordinator (QC Coordinator or QCC), and Task Leaders (TLs). Their duties are outlined briefly in this section. The project QAM is independent of the unit generating the data.

Glade Sowards is the UDAQ PM and will provide senior-level oversight as needed. The PM is responsible for UDAQ's technical and financial performance as well as maintaining communications with the EPA to ensure mutual understanding of grant requirements, EPA expectations, and conformity with EPA quality procedures; managing oversight and conduct of project activities including allocation of resources to specific tasks; ensuring that quality procedures are incorporated into all aspects of the project; developing, conducting, and/or overseeing QA plans as necessary; ensuring that any corrective actions are implemented; operating project activities within the documented and approved Quality Assurance Project Plan; and ensuring that all products delivered to the EPA are of specified type, quantity, and quality.

The UDAQ PM will assign a TL for each technical task with instructions to complete a baseline emissions inventory for the sector(s) under the task and to develop sector-specific options for potential emissions reduction projects including estimates of the potential reductions under each option and estimates of uncertainties for each reduction option. **Table 1.1** presents the TL for all technical tasks who will be responsible for day-to-day task-level activities, including planning, reporting, and controlling of technical and financial resources allocated to the task by the PM. Accordingly, the TL is primarily responsible for implementing the Quality Program and this Quality Assurance Project Plan on task-level assignments.

Task-level management system. For each of the major deliverables under each task, the assigned TL will review all QA-related plans and reports and is responsible for transmitting them to the QC Coordinator and the QA Manager for review and approval. Each TL is responsible for ensuring that quality procedures are implemented at the task level and for maintaining the official, approved, task-level QAPP content. Each TL will discuss any concerns about quality or any proposed revisions to task-level QAPP content with the QC Coordinator to identify, resolve, or preclude problems or to amend task-level plans, if necessary. In addition, each TL will work with the UDAQ PM and the QA Manager to identify and implement quality improvements. The UDAQ PM is responsible for ensuring the consistency of similar or related QA measures across tasks, and the TLs are responsible for overseeing task-level work performed by technical staff and providing assurance that all required QA/QC procedures are being implemented.

Project-level management system. Tasks are expected to proceed concurrently, in parallel. The PM will maintain close communications with each TLs and ensure any difficulties encountered or proposed changes at the task level are reviewed for implications on other similar or related tasks. The PM is also responsible for communicating progress or difficulties encountered (across all tasks) to the EPA PO or POR, who provides EPA's oversight function for this project at EPA OAR/ Region 8 and is responsible for review of this QAPP and any future revisions. The PM (with support from TLs and assigned UDAQ technical staff) will be responsible for consulting with the EPA PO or POR, on planning, scheduling, and implementing the QA/QC for all project deliverables and obtaining required EPA approvals that fall outside Utah's QAPP approval authority.

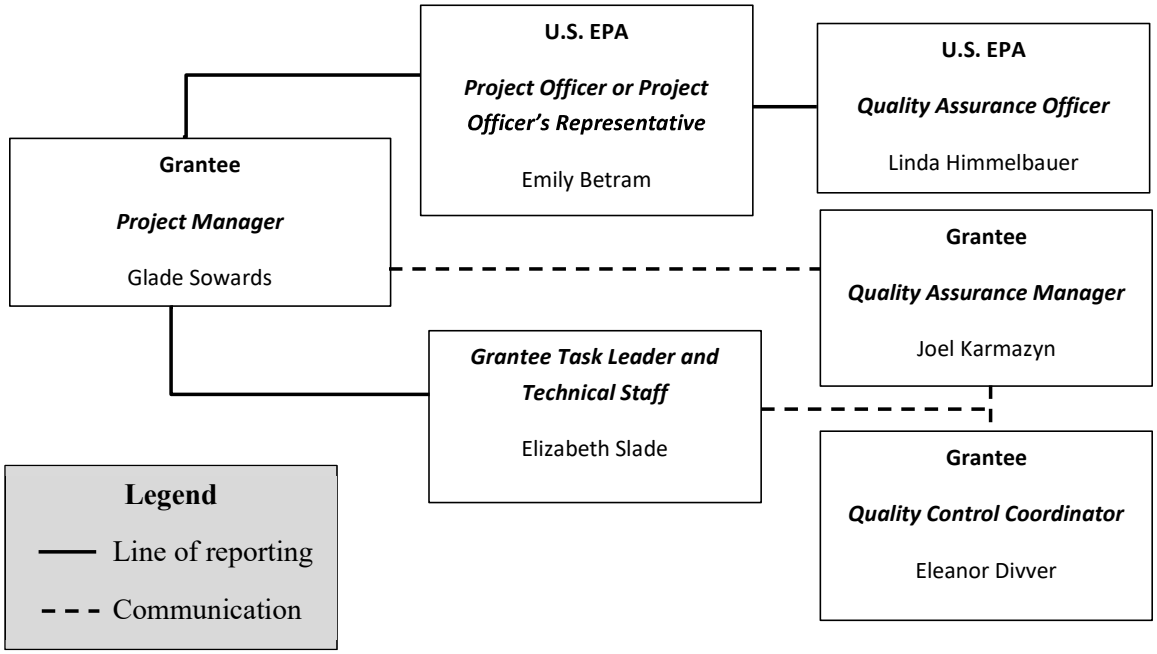
The QA Manager (QAM), Joel Karmazyn, is responsible for overseeing the program quality system, monitoring, and facilitating QA activities on tasks, and generally helping the UDAQ PM and TLs understand and comply with EPA QA requirements. Joel is employed by UDAQ's Policy group. For each task under this project, Joel is supported by the QC Coordinator, who will assist in the implementation of

the quality system. At the request of the UDAQ PM, Joel is responsible for conducting periodic independent audits of this project's QA program, Joel will produce written documentation of the audit results and recommendations. he will work closely with the PM and QC Coordinator to improve any deficiencies noted during these audits.

The QC Coordinator (QCC), Eleanor Divver, is responsible for assisting the PM and TLs in planning, documenting, and implementing the QA requirements for this project. Working with the PM, and in consultation with the QA Manager, she will ensure that process- and project-specific QA documents are developed; that required or recommended protocols are followed; that data are reduced, validated, and reported according to specific criteria; and that QC assessments are performed. The QCC will report to the PM and the QAM, as needed, on quality issues. If there is no QCC on the project, the QAM will assume the responsibilities of the QCC.

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

Exhibit 1.1 Project Organization[3]



[3] Under CIO 2105-S-02.0, section 3, the organization chart must also identify any contractor relationships relevant to environmental information operations.

1.5. Problem Definition / Background

Under this project, UDAQ will identify, evaluate, and utilize existing data resources[4] to develop a statewide inventory of the major sources of greenhouse gas (GHG) emissions within Utah and use that inventory data to develop a climate action plan. This QAPP focuses on the handling of environmental information under sector-specific tasks by technical staff charged with completing the following subtasks in a future planning project implemented in accordance with this QAPP:

1. Develop a sector-based GHG inventory for Utah,
2. For identified potential measures, develop estimates or ranges of estimates for the reductions achievable under each measure; and ,
3. Present the inventory, measures, and associated analyses in a draft PCAP for consideration by state policymakers with the authority to approve the deliverables under the CPRG planning grants.

The GHG inventory will utilize the EPA's State Inventory Tool (SIT).[5] The statewide inventory will include the following sectors and gases:

Sectors	***Greenhouse Gases (across all sectors)***
1. Transportation 2. Electricity generation and/or use 3. Natural and working lands 4. Industry 5. Agriculture 6. Commercial and residential buildings 7. Waste and materials management	carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorinated gases (F-gases) including hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3)

1.5.1. Rationale for Selection of Sectors

For each sector included in the statewide inventory **Table 1.2** briefly describes why the sector was included in the inventory and the relative significance of the sector in terms of the magnitude of air emissions from existing inventories, the associated geographic distribution of the sources, and recent trends in readily available activity data for the source category.

Table 1.2 Rationale for Sector Selection

Sectors Included in Inventory	**Rationale for Including in GHG Inventory**
Transportation	Transportation activities were the largest source (29 percent) of total U.S. greenhouse gas emissions in 2021. From 1990 to 2021, transportation CO_2 emissions from fossil fuel combustion increased by 19 percent. Transportation activities occur across all states.
Electric power generation	The electric power sector accounted for 25 percent of total U.S. greenhouse gas emissions in 2021. Power generation and/or consumption occurs across all states.

[4] EPA, *Environmental Information Quality Policy*, CIO 2105.3, 03/07/2023 (p. 8) provides common examples of environmental information used to support the EPA's mission at https://www.epa.gov/system/files/documents/2023-04/environmental_information_quality_policy.pdf.

[5] https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool

Table 1.2 Rationale for Sector Selection

Sectors Included in Inventory	**Rationale for Including in GHG Inventory**
Industry	The industrial sector accounted for 24 percent of U.S. greenhouse gas emissions in 2021. Since 1990, industrial sector emissions have declined by 11 percent. In 2021, total energy use in the industrial sector increased by 2 percent due to an increase in total industrial production and manufacturing output. EPA's GHGRP data provide additional insights into underlying trends in the industrial sector.
Natural and working lands[6]	Natural and working lands include fluxes of carbon from activities such as converting forests to agricultural use and practices that remove CO_2 from the atmosphere and store it in long-term carbon sinks like forests. In 2021, the net CO_2 removed from the atmosphere by natural and working lands was 12% of total U.S. greenhouse gas emissions. Between 1990 and 2021, total carbon sequestration in this sector decreased by 14%, primarily due to a decrease in the rate of net carbon accumulation in forests, as well as an increase in CO_2 emissions from urbanization.
Agriculture	Agriculture accounted for about 10 percent of U.S. greenhouse gas emissions in 2021, and agricultural soil management was the largest source of N_2O emissions. Enteric fermentation was the largest source of CH_4 emissions.
Commercial and residential buildings	In 2021, the commercial and residential sectors accounted for 7 and 6 percent of total U.S. greenhouse gas emissions, respectively. Emissions from the commercial and residential sectors have increased since 1990. Total residential and commercial greenhouse gas emissions, including direct and indirect emissions, in 2021 have increased by 2% since 1990. In 2021, an increase in heating degree days (0.5 percent) increased energy demand for heating in the residential and commercial sectors, however, a 1.8 percent decrease in cooling degree days compared to 2020 reduced demand for air conditioning in the residential and commercial sectors.
Waste and materials management	This sector includes landfills, composting, and anaerobic digestion. Landfills were the third largest source of anthropogenic methane emissions in 2021, and landfills accounted for 1.9 percent of total U.S. greenhouse gas emissions. This sector is to be combined with the wastewater sector (per the designated task list) due to their relation to waste
Wastewater	Wastewater treatment, both domestic and industrial, was the third largest anthropogenic source of N_2O emissions in 2021, accounting for 5.2 percent of national N_2O emissions and 0.3 percent of total U.S. greenhouse gas emissions. Emissions from wastewater treatment increased by 6.1 MMT CO_2e (41.6 percent) since 1990 as a result of growing U.S. population and protein consumption. This sector is to be combined with the waste and materials management sector (per the designated task list) due to their relation to waste

1.5.2. Decisions to be Made

Existing EPA datasets and the SIT cover categories of GHG emissions by sector and by activity or segment (e.g., electric utility combustion of natural gas). The SIT provides many default values to

[6] Under international GHG inventory protocols this category is called "Land use, land-use change, and forestry."

facilitate developing statewide estimates that are consistent with the National Inventory of GHG Emissions.[7] The Task leader will be charged with two primary decisions under each task of this project:

1. Determine (for each major activity estimate) if existing EPA data or the SIT default estimate for the sector/activity should be used for the statewide, baseline estimate.
2. Assist the Project Manager in developing an estimate (or range) of reductions that could be achieved under each potential GHG reduction measure.

1.5.3. Actions to be Taken, Action Limits, and Expected Outcomes

Existing state-level estimates prepared by the EPA or the SIT tool will be utilized with federal default values for each sector/activity relevant to GHG-emitting activities within the state.

1.5.4. Reason for Project

The baseline GHG inventory and options analyses developed under this project will be utilized by UDAQ for planning purposes to support Utah's development of its Priority Climate Action Plan (PCAP), which is due on March 1, 2024. This plan will include near-term, implementation-ready, priority GHG reduction measures and is a prerequisite for any implementation grant.

This QAPP describes in detail the necessary QA and QC requirements and technical activities that will be implemented to ensure the baseline GHG inventory and the sector-specific emissions reduction options are reliable for the PCAP and CCAP. As necessary, revisions to the QA and QC requirements defined in this QAPP will be updated in the 2027 Status Report.

1.5.5. Relevant Clean Air Act Mandates and Authorizations

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

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

[7] https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021

(1) collect and make available, through publications and other appropriate means, the results of and other information, including appropriate recommendations by him in connection therewith, pertaining to such research and other activities;….
(2) make grants to air pollution control agencies … for purposes … in subsection (a)(1) ….

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

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

1.5.6. Information Provided by the EPA under § 7403(b)(1)

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

- Agency-wide Quality Program Documents
- Quality Assurance-specific Directives
  - CIO 2105.3 – *Environmental Information Quality Policy*, April 10, 2023
  - CIO 2105-P-01.3 – *Environmental Information Quality Procedure*, March 7, 2023
  - CIO 2105-S-02.0 – EPA's Environmental Information QA Project Plan (QAPP) Standard
  - EPA Regional Sites for Quality Management Plans and Guidance:
    - Region 1
    - Region 2
    - Region 3
    - Region 4
    - Region 5
    - Region 6
    - Region 7
    - Region 8
    - Region 9
    - Region 10
- QA Guidance
  - EPA QA/G-4 – *Guidance on Systematic Planning Using Data Quality Objectives Process*

- EPA QA/G-5 – *Guidance for Quality Assurance Project Plans*

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

1.6. Project / Task Description

An example schedule of deliverables for the technical tasks (Tasks 1-14) for GHG inventory QAPPs is presented in **Tables 2.1** through **2.14** The work to be performed under this project by UDAQ involves preparing a statewide GHG emissions inventory for Utah. The organization of the work is based on the use of the EPA's SIT[8] under the following sector-specific tasks:

Task 1 – State inventory of CO2 from Fossil Fuel Combustion

Task 2 – State inventory of CO2 from Electricity Consumption

Task 3 – State inventory of GHG emissions from Stationary Combustion

Task 4 - State inventory of GHG emissions from Mobile Combustion

Task 5 – State inventory of GHG emissions from Coal Mining

Task 6 – State inventory of GHG emissions from Natural Gas and Oil System

Task 7 – State inventory of GHG emissions from Industrial Processes

Task 8 – State inventory of GHG emissions from Agriculture

Task 9 – State inventory of GHG emissions and sinks from Land Use, Land-Use Change, and Forestry

Task 10 – State inventory of GHG emissions from Municipal Solid Waste

Task 11 - State inventory of GHG emissions from Wastewater

Task 12 – Synthesis of GHG emissions

Task 13 – Projections of State GHG emissions

Task 14 - Organization and configuration of state inventory of GHG emissions

For each sector-specific task, **Tables 2.1–2.14** provide planned activities and a schedule of deliverables for use by states preparing GHG inventories. The EPA's SIT, other resources, and answers to frequently asked questions are also located on the State and Tribal Greenhouse Gas Data and Resources webpage.[9]

Table 2.1 Technical Task Descriptions for Task 1.

Tasks and Deliverables	Schedule
Task 1. CO2 from Fossil Fuel Combustion	
1. Produce a profile of CO2 emissions from Fossil Fuel Combustion using the EPA's State Inventory Tool (SIT): a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [co2ffc-module.xlsm]. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used	By December 22nd, 2023 assuming UDEQ QAPP approval is

[8] https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool.
[9] https://www.epa.gov/ghgemissions/state-and-tribal-greenhouse-gas-data-and-resources.

Tasks and Deliverables	Schedule
Task 1. CO2 from Fossil Fuel Combustion	
Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	completed by December 8th, 2023

Table 2.2 Technical Task Descriptions for Task 2.

Tasks and Deliverables	Schedule
Task 2. CO2 from Electricity Consumption	
1. Produce a profile of CO2 emissions from Electricity Consumption using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [electricity-consumption-module.xlsm] for CO2 emissions from electricity consumption. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.3 Technical Task Descriptions for Task 3.

Tasks and Deliverables	Schedule
Task 3. Stationary Combustion	
1. Produce a profile of GHG emissions from Stationary Combustion using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [stationary-combustion.xlsm] for GHG emissions from stationary combustion.	By December 22nd, 2023 assuming UDEQ QAPP

Tasks and Deliverables	Schedule
Task 3. Stationary Combustion	
b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	approval is completed by December 8th, 2023

Table 2.4 Technical Task Descriptions for Task 4.

Tasks and Deliverables	Schedule
Task 4. Mobile Combustion	
1. Produce a profile of GHG emissions from Mobile Combustion using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [mobile-combustion-module.xlsm] for GHG emissions from mobile combustion. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.5 Technical Task Descriptions for Task 5.

Tasks and Deliverables	Schedule
Task 5. Coal Mining	
1. Produce a profile of GHG emissions from Coal Mining using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [coal-module.xlsm] for GHG emissions from coal mining.	By December 22nd, 2023

Tasks and Deliverables	Schedule
Task 5. Coal Mining	
b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.6 Technical Task Descriptions for Task 6.

Tasks and Deliverables	Schedule
Task 6. Natural Gas and Oil Systems	
1. Produce a profile of GHG emissions from Natural Gas and Oil Systems using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [natural-gas-and-oil-module.xlsm] for GHG emissions from natural gas and oil systems. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.7 Technical Task Descriptions for Task 7.

Tasks and Deliverables	Schedule
Task 7. Industrial Processes	
1. Produce a profile of GHG emissions from Industrial Processes using the EPA's SIT:	By December 22nd,

Tasks and Deliverables	Schedule
Task 7. Industrial Processes	
a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [ip-module.xlsm] for GHG emissions from industrial processes. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.8 Technical Task Descriptions for Task 8.

Tasks and Deliverables	Schedule
Task 8. Agriculture	
1. Produce a profile of GHG emissions from Agriculture using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [agriculture-module.xlsm] for GHG emissions from agriculture. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.9 Technical Task Descriptions for Task 9.

Tasks and Deliverables	Schedule
Task 9. Land Use, Land-Use Change, and Forestry	
a. Produce a profile of GHG emissions from Agriculture using the EPA's SIT:	By December

Tasks and Deliverables	Schedule
Task 9. Land Use, Land-Use Change, and Forestry	
b. Default values in the EPA's State Inventory and Projection Tool (SIT) at https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use the module entitled [land-use-land-use-change-and-forestry-module.xlsm]. Review the user's manual available using the "Consult User's Guide" button on the [Control] sheet. This tool calculates carbon emissions and storage from forest carbon using USDA Forest Service estimates of each state through 2020. After selecting the state and specifying use of defaults on the [Control] sheet, obtain the default estimates for Utah using the following sheets: i. [Forest Land Remaining Forest] ii. [Land Converted to Forest Land] iii. [Forest Land Converted to Land] iv. [Urban Trees] v. [Settlement Soils] vi. [Burning CH4] – No default data on area burned are provided in the SIT. The acreage of fires was obtained from https://www.sciencebase.gov/catalog/item/61aa537dd34eb622f699df81. vii. [Burning N2O] viii. [Yard Trimmings] ix. [Ag Soil C Flux Default] x. [Summary] c. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.10 Technical Task Descriptions for Task 10.

Tasks and Deliverables	Schedule
Task 10. Municipal Solid Waste	
1. Produce a profile of GHG emissions from Municipal Solid Waste using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [solid-waste-module.xlsm] for GHG emissions from solid waste. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by

Tasks and Deliverables	Schedule
Task 10. Municipal Solid Waste	
available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	December 8th, 2023

Table 2.11 Technical Task Descriptions for Task 11.

Tasks and Deliverables	Schedule
Task 11. Wastewater	
1. Produce a profile of GHG emissions from Wastewater using the EPA's SIT: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [wastewater-module.xlsm] for GHG emissions from wastewater. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah, specify the use of defaults, and update the Global Warming Potential (GWP) in the "Constant and/or Factors Used Throughout the Module" to Fifth Assessment Report (AR5) from the GHG Protocol. On the other sheets, select the default options. If defaults are not available for a certain portion of the SIT module, the missing default data will be assessed as part of any associated uncertainty analysis. d. After all data has been entered, export the results for use in the Synthesis Tool using the "Export Data" button at the bottom of the [Control] sheet. This will prompt to save a summary file of the module.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.12 Technical Task Descriptions for Task 12.

Tasks and Deliverables	Schedule
Task 12. Synthesis of emissions	
1. Produce a profile of GHG emissions from all EPA's SIT modules: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [synthesis-tool.xlsm] to aggregate emissions from all SIT modules. b. Review the user's manual available using "Consult User's Guide" on the [Control] sheet. c. On the [Control] Sheet, select Utah. The synthesis tool will import the summary files containing emission estimates from the individual modules by clicking on the "Get Data" option next to each module. d. Utilizing the [Summary by Gas] Sheet and the [Summary by Sector] Sheet, obtain the SIT default estimates for GHG emissions in Utah.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by

Tasks and Deliverables	Schedule
Task 12. Synthesis of emissions	
	December 8th, 2023

Table 2.13 Technical Task Descriptions for Task 13.

Tasks and Deliverables	Schedule
Task 13. Projection of emissions	
1. Produce a profile of future projections of GHG emissions from all EPA's SIT modules: a. Download the EPA's State Inventory and Projection Tool (SIT) from https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool. Use [Projection Tool from 2020 to 2050l.xlsm] to develop emissions projections out to 2050. b. Review the user's manual available using "Consult User's Guide" found at the website indicated in step (a) above. c. On the [Control] Sheet, select Utah. Then go to the "Energy Consumption Sheet", "Population Sheet", and the "Livestock Sheet" to select the use of default data. d. Navigate to each module's sheet and select to use "Default Emission Projections" and to "Import Historic Emissions". This will combine the summary sheets for each module and the default estimated projections. e. Utilizing the [Summary by Gas] Sheet and the [Summary by Sector] Sheet, obtain the SIT default estimate projections for GHG emissions in Utah.	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by December 8th, 2023

Table 2.14 Technical Task Descriptions for Task 14.

Tasks and Deliverables	Schedule
Task 14 - Organization and configuration of state inventory of GHG emissions	
1. Produce tables and charts to display emission inventory and projections of GHG emissions: a. Taking the [Summary] Sheets from both the Synthesis tool and the Projection tool, copy and paste the emission summaries to a new excel sheet. b. Categorize the SIT modules into different Sector categories: i. Electric Power Generation ii. Transportation iii. Buildings iv. Industry v. Agriculture vi. Waste vii. Forestry	By December 22nd, 2023 assuming UDEQ QAPP approval is completed by

Tasks and Deliverables	Schedule
Task 14 - Organization and configuration of state inventory of GHG emissions	
c. Develop graphs and charts to display the emissions of newly categorized sectors.	December 8th, 2023

1.7. Quality Objectives / Criteria

The primary objectives for this project are to develop reliable inventories for each of the primary GHG-emitting sectors in Utah and to identify options for reducing emissions from those sectors. Accordingly, all quality objectives and criteria are aligned with these primary objectives. The quality system used for this project is the joint responsibility of the UDAQ PM, Task Leader, and QC Coordinator. As discussed in Section 1.4, an organizationally independent QA Manager will maintain oversight of all required measures in this QAPP. QC functions will be carried out by technical staff and will be carefully monitored by the responsible Task Leader, who will work with the QA Manager and QC Coordinator to identify and implement quality improvements. All activities performed under this project will conform to this QAPP.

1.7.1. Data Quality, Management, and Analyses

For this project, UDAQ will use a variety of QC techniques and criteria to ensure the quality of data and analyses. Data of known and documented quality are essential components for the success of the project, as these data will be used to inform the decision-making process for Utah's PCAP as discussed in Section 1.5.4 of this QAPP. The inventory prepared for the PCAP will utilize EPA's SIT tool with default inputs.

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

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

For the PCAP, UDAQ will utilize EPA's SIT tool with default inputs, which is preferred, recommended, and considered to be of acceptable quality.

The draft inventory will be evaluated for GHG-emitting-sector and geographic completeness. UDAQ will utilize the framework of sectors in the EPA's SIT tool.

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

1.7.2. Document Preparation

All documents produced under this project will undergo internal QC review, as well as technical review and an editorial review, prior to submission to the EPA PO. QC will be performed by an engineer, scientist, or economist, as appropriate, with sufficient knowledge. The technical reviewer will review the document for accuracy and integrity of the technical methodologies, analyses, and conclusions.

1.8. Special Training / Certifications

All UDAQ staff assigned to work on this project shall have appropriate technical and QA training to properly perform their assignments. UDAQ staff serving in QAM or QCC roles under this project will have completed a training course on QA/QC activities similar to the course available at https://www.epa.gov/quality/training-courses-quality-assurance-and-quality-control-activities. The PM and all TLs under this project will have completed an online training course on air emissions inventory on the Air Knowledge website at https://airknowledge.gov/EMIS-SI.html. All technical staff assigned to work on the GHG inventory shall read and understand any available or future SIT Tool manual or guidance and the latest version of the UDEQ Quality Management Plan.

If training is required for new staff or for particular segments of the GHG inventory, the PM in coordination with the associated TL will identify available training resources for the inventory segment and incorporate the required training into the project schedule.

1.9. Documents and Records

UDAQ will document in electronic form (and/or hard copy) QC activities for this project. The TL is responsible for ensuring that copies of all completed QC forms, along with other QA records (including this QAPP), will be maintained in the project files. Project files will be retained by UDAQ in accordance with Utah statutory and DEQ requirements upon UDEQ approval of QAPP. The types of documentation that will be prepared for this project include:

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

Preliminary QC activities for a specific task or subtask are outlined in **Appendix A** and documentation of these tasks will be maintained by the Task Leader and frequently communicated with the QCC and QAM. A signed and dated memo certifying that all QC requirements have been conducted on project deliverables according to the QAPP will be provided to the PM, QCCs, and QAM.

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

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

2. Existing Data Acquisition and Management Protocols (Group B)

2.1. Sampling Process Design

2.1.1. Need and Intended Use of Data Used

Utah does not have a state-wide GHG inventory. Utah will utilize EPA's SIT tool using default inputs, which is preferred, recommended, and considered to be of acceptable quality. For the PCAP, TDEC will not use independent estimates for specific sectors. The SIT allows for expedited estimates for many sectors with default entries included in the tool.

2.2. Quality Control

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

Where calculations are required to assess the data/datasets, calculations will be performed using computer spreadsheets and calculators to reduce typographical or translation errors–mathematical/ statistical calculations are performed using spreadsheets or software programs with predefined formulas and functions. UDAQ will ensure that any manipulations performed on the data/dataset were done correctly. Such calculations could involve statistical checks to look for data outliers. The methods used will be driven by the scale and type of data. UDAQ will determine outlier detection methods to be used based on the initial review of the data. Identified outliers will be highlighted to the EPA PO or delegate with options for treatment.

2.3. Non-direct Measurements

For the PCAP, UDAQ will utilize EPA's SIT tool with default inputs, which represents the highest quality rank of data as a federal government agency database as indicated in Table 3.1. **Table 3.1** presents an example hierarchy for data quality when identifying and reviewing available sources of data and information.

UDAQ will document data sources used and any significant limitations of utilized data or information to ensure that the data are appropriate for their intended use.

Table 3.1 Existing Data Quality Ranking Hierarchy

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

2.3.1. Criteria for Accepting Existing Data for Intended Use

For the PCAP, UDAQ will utilize EPA's SIT tool with default inputs, which represents the highest quality rank of data as a federal government agency database as indicated in Table 3.1

2.3.2. Criteria for Options Identification in Planning Phase

For the PCAP, the criteria for reviewing all activities under each task and identifying the best options for emissions reductions will be based on the following criteria[10] in the EPA's CPRG program guidance:

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

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

2.4. Data Management

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

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

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

Note that changes made to deliverables will be done using the software's *track changes* feature, which allows a user to track and view all changes that are made to the document version.

For this project, it is not anticipated that any special hardware or software will be used. General software available through the Microsoft Suite including Excel, PowerPoint, Access, and Word will be sufficient to perform the work (described in **Tables 2.1–2.5)** for this project.

3. Assessment and Oversight (Group C)

3.1. Assessments and Response Actions

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

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

The TL will provide day-to-day oversight of the quality system. Periodic project file reviews will be carried out by the QC Coordinator, at least once per year to verify that required records, documentation, and technical review information are maintained in the files. The QC Coordinator will ensure that problems found during the review are brought to the attention of the Task Leader and are corrected immediately. All nonconforming data will be noted, and corrective measures to bring nonconforming data into conformance will be recorded.

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

3.2. Reports to Management

The periodic progress reports (to the EPA PO) required in the grant agreement will be reviewed by the PM and the PM's manager (Becky Close, Environmental Program Manager) to ensure the project is meeting milestones and that the resources committed to the project are sufficient to meet project objectives. These periodic progress reports will describe the status of the project, accomplishments during the reporting period, activities planned for the next period, and any special problems or events including any QA/QC issues. Reports to the EPA will be drafted by the TL or other project staff familiar with project activities during the reporting period.

Any QC issues impacting the quality of a deliverable, the project budget, or schedule will be identified and promptly discussed with the assigned TL and the PM or QCC as appropriate. All significant findings will be included in monthly reports with the methods used to resolve the specific QC issue or the recommendations for resolution for consideration by the EPA's PO or designee.

Based on the technical work completed during the reporting period, progress reports will be reviewed internally by an independent, qualified technical person (equivalent or senior to the TL), prior to submitting to the PM. The PM will conduct a final review of the report before transmitting the progress report to the EPA PO and the PM's manager will be cc'd on all progress reports.

4. Data Validation and Usability (Group D)

4.1. Data Review, Verification, Validation

For the PCAP, UDAQ will utilize EPA's SIT tool with default inputs, which represents the highest quality rank of data as a federal government agency database.

4.2. Verification and Validation Methods

As discussed in sections 2 and 3, UDAQ's QC Coordinators and QAM will perform independent QC and QA activities that will ensure verification of EPA SIT tool inputs and emissions estimates. A form of preliminary QC activities for deliverables under this project is outlined in **Appendix A**. Forms for documenting separate QC and QA activities and review of deliverables are included in **Appendices B through G**. Documentation of calculations will be included in spreadsheet work products and in supporting memoranda, as appropriate.

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

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

As discussed in Section 1.7, QC objectives include verification that data in database tables are stored and transferred correctly, algorithms call data correctly, units are internally consistent, and reports pull the required data. These data management issues will be addressed as part of the QC checks of data acquisition and document preparation.

For this project, it is not anticipated that any special data validation software will be required. However, where calculations are required to assess the data/datasets, calculations will be performed using computer spreadsheets (like Excel spreadsheets with predefined functions, or formulas) and calculators to reduce typographical or translation errors. General software available through the Microsoft Suite including Excel, PowerPoint, Access, and Word will be sufficient to perform the work as described in Section 1.6 for this project.

5. References

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

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

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

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

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

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

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

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

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

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

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

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

Appendix A: Check Lists of Quality Control Activities for Preliminary QC Documentation

The TL and associated Technical Staff will apply a written Quality Review Process to the calculations and technical work covered by this QAPP. The TL will ensure the calculation documents are checked/reviewed and that the person(s) checking/reviewing the calculations have the experience and knowledge sufficient to evaluate the appropriateness and correctness of the calculations. A reviewer will assure that:

- The method of calculation is appropriate to the type of data available and the intended use of the calculated result.
- The assumptions are reasonable for the conditions involved.
- The equations were correctly applied, and variables were correctly defined.
- Variables and input data were correctly selected and copied from the data sources.
- Calculations are mathematically correct.
- Conclusions are reasonable and appropriate.

If errors are identified by an independent reviewer, the Technical Staff will review the correction and assure that he/she concurs. If the revision is accepted, the Technical Staff will initial the correction and the reviewer will verify the correction has been completed If there is a disagreement, the Technical Staff and reviewer will meet to resolve the matter with the assistance of the TL, if needed.

Upon completion or work produced and prior to incorporation into other elements, a Review Documentation Form will be completed by the TL to attest that materials have been properly reviewed. The review of each deliverable will be documented with a separate form. Calculation review and approval will demonstrate that four key elements have been reviewed by inserting the TL's initials and date of review:

1. Methods
2. Assumptions
3. Inputs, and
4. Outputs

Each Review Documentation Form will be signed and dated by the TL. The Review Documentation Forms will be retained in accordance with the TL's corporate Records Retention and Archiving policy. A signed and dated memo certifying that all QC requirements have been conducted on project deliverables according to the QAPP will be provided to the PM, QCCs, and QA.

Appendix B: Compliance with Requirements Under the Privacy Act of 1974

Important Note about Personally Identifiable Information (PII)

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

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

Personally identifiable information (PII):

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

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

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