

Salt Lake County

Sustainability Assessment

January 2026



GREEN
VISION



This page has been left intentionally blank.

Credits and Acknowledgments

Mayor Jenny Wilson, Salt Lake County

Mayor's Office

Catherine Kanter, Deputy Mayor, Regional Operations
Erin Litvack, Deputy Mayor, County Services
Darrin Casper, Deputy Mayor, Finance & Administration
Lisa Hartman, Associate Deputy Mayor, Regional Operations
Arlyn Bradshaw, Associate Deputy Mayor, Finance & Administration
Katherine Fife, Associate Deputy Mayor, County Services
Jill Miller, Former Associate Deputy Mayor, Finance & Administration
Andrew Roberts, Chief of Staff
Liz Sollis, Communication Director
Madilyn Plowman, Former Council Liaison and Senior Administrator

Department of Administrative Services

Megan Hillyard, Director
Tyson Kyhl, Director, Facilities Management
Aaron Sprague, Energy Manager, Facilities Management
Javaid Lal, Director, Performance & Innovation

Department of Community Services

Robin Chalhoub, Director
Robert Sampson, Associate Director
Christopher Otto, Director, Parks & Recreation
Patrick Leary, Associate Division Director, Parks & Recreation
Joey McNamee, Director, Libraries

Department of Human Services

Kelly Colopy, Director
Beth Graham, Associate Director
Dorothy Adams, Executive Director, Health Department
Paul Leggett, Director, Aging and Adult Services
Carolyn Hansen, Director, Youth Services

Department of Public Works

Scott Baird, Director
Ben Roueche, Director, Fleet Management
Daniel Bittner, Fleet Systems Coordinator, Fleet Management
Kade Moncur, Director, Flood Control Engineering
Robert Thompson, Manager, Flood Control Engineering Watershed Planning & Restoration Section

Solid Waste Management

Patrick Craig, Executive Director, Solid Waste Management

Office of Regional Development

Dina Blaes, Former Director
Lauren Littlefield, Senior Policy Advisor / Special Projects Director
Emily Paskett, Sustainability Director
Chris Firmage, Environmental Program Manager

Table of Contents

Credits and Acknowledgments	i
Executive Summary	1
Key Findings	3
Base Year	3
Energy	4
Emissions	5
Water	7
Salt Lake County's Environment	8
Water	8
Land	9
Air	9
Next Steps	10
Conclusion	10
Appendix: Methodology Details	11
List of Tables	12
List of Figures	12

Executive Summary

This Sustainability Assessment provides estimates of energy use, greenhouse gas emissions, and water consumption from Salt Lake County’s (County) government operations. The Assessment presents baseline data and lays the groundwork for setting measurable goals, developing strategies, and establishing processes to save money and conserve natural resources. It also encourages stakeholder engagement to ensure that current and future sustainability efforts are aligned with the County’s needs and values. Ultimately, this foundational knowledge establishes a vital baseline for future action, providing the insights and direction necessary to guide policy, planning, and investment.



Current & Future Steps:

1. Sustainability Assessment: Energy, emissions, and water use of Salt Lake County operations.
2. Sustainability Action Plan for Government Operations: Identified opportunities for improvement.
3. Implementation: Long-term actions to benefit Salt Lake County’s environment and quality of life.

Energy and emissions are directly linked to government operations, specifically from vehicles, facilities, and waste management. Government services rely on systems that are powered by fuels which contribute to greenhouse gas (GHG) emissions. For example, gasoline and diesel vehicles or equipment release air pollutants into the atmosphere. Likewise, buildings and facilities require electricity to operate which produces emissions at the source of power generation, and the emissions are reported by the user of energy. Salt Lake County recognizes that GHG emissions from human activity are changing the environment, the consequences of which pose substantial risks to the future health, wellbeing, and quality of life of the community.

Similar to energy and emissions, water consumption is deeply intertwined with government operations. Salt Lake County relies on extensive water systems to support essential public services, from maintaining open spaces and to filling swimming pools at recreation centers. Outdoor spaces depend on irrigation systems that draw from local water supplies. Recognizing the growing challenges of water and environmental variability, Salt Lake County is committed to improving efficiency and promoting sustainable water practices to protect this natural resource.

Salt Lake County highlights five core elements that define an environmentally sustainable government, each outlined below. These elements reflect the County’s ongoing sustainability efforts, which are woven throughout its operations, programs, procedures, and policies demonstrating a commitment to environmental stewardship.



Water

Conserving water and improving water quality.



Air

Improving air quality by reducing pollution.



Land

Protecting natural land and resources.



Energy

Promoting alternative energy and efficiencies.



Waste

Reducing, reusing, and recycling waste.

Current initiatives are highlighted throughout the Assessment with a larger list of efforts located in the Appendix. A few initiatives within the core elements are included below. These initiatives serve not only Salt Lake County operations but also impact the public.



Water: Data Tracking & Analysis

Internal water use tracking and analysis across Salt Lake County operations provide staff and decision-makers with a deeper understanding of resource consumption, helping identify opportunities for improvement across all County facilities.



Energy: Building Design Standards & Building Efficiency

Currently, 21 buildings operated by Salt Lake County are LEED certified, with many reaching the “gold” certification level. Salt Lake County’s *Building Design Standards* outline requirements for efficiency, design, materials and more. All these factors contribute to the high performance and longevity of County buildings while continuing to serve the community.



Air: Electric & Hybrid Vehicles

Electric Vehicles (EV) and hybrid vehicles are considered when purchasing new vehicles if appropriate with the use case. EV chargers are available at a variety of Salt Lake County facilities such as libraries, recreation centers, and health department locations. These serve the community and the County’s own vehicle fleet. Both initiatives support clean air by reducing tailpipe emissions.



Land: Open Spaces Management & Preservation

Salt Lake County owns 4,500 acres of open space and holds conservation easements on an additional 4,500 acres for other entities. By prioritizing the preservation of undeveloped areas, the County ensures both conservation and public access. These efforts not only support biodiversity but also provide valuable recreational opportunities for the community.



Waste & Recycling: Household Hazardous Waste Disposal

Salt Lake County operates a public drop-off facility for hazardous waste disposal and recycling. The facility accepts a variety of common household items such as batteries, light bulbs, and paint. These items can be toxic to the local environment if not managed properly, as they may leach into surrounding areas and cause contamination. By offering collection services, the County helps reduce environmental risks and protect community health.



Key Findings

Base Year

Salt Lake County utilizes 2017 as the baseline year for energy and emissions data reporting. The year 2017 was selected as the baseline year because comprehensive energy and emissions data was available, ensuring consistent and reliable comparisons for future energy and emission inventories. In 2025, Salt Lake County collected historical water use data for government operations. The base year of 2022 was selected for water data reporting, as it is the most accurate and comprehensive set of data available.

- **2017 Energy & Emissions Baseline:** Selected because it offers a complete, trustworthy dataset for that year, allowing consistent year-to-year inventory comparisons.
- **2022 Water Baseline:** Selected as the most precise and comprehensive historical dataset available, reflecting current conditions, conservation efforts, and demand.
- **Role of baselines:** They establish consistent reference points for tracking progress, evaluating policy effects, and guiding decisions.

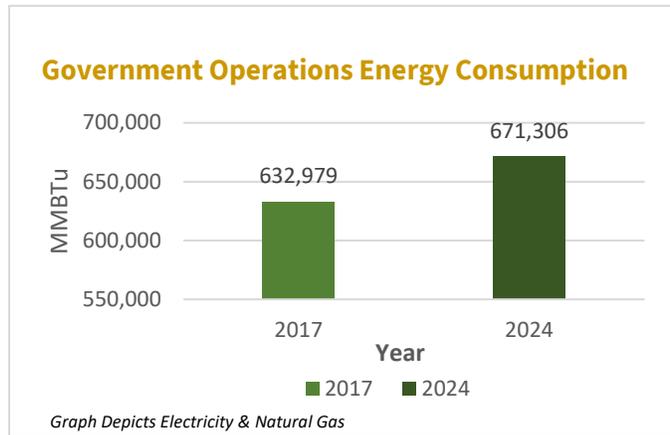


Energy

To understand Salt Lake County’s current and historical energy usage, we’ve compared total consumption from the baseline year (2017) to the most current year data available (2024). Both electricity and natural gas used at facilities are included in these findings. Fuel data (i.e., gasoline, diesel, and other mobile fuels) were not included in these totals but was captured in emissions calculations (see page 5.)

Since 2017, Salt Lake County has expanded public services and energy consumption by constructing new facilities and installing electric vehicle chargers, while aging electrical systems in existing facilities operate less efficiently. The County continues to implement energy efficiency measures to reduce energy use. Additionally, existing natural gas infrastructure continues to be used in County buildings due to its affordability and reliability during peak demand.

Electricity consumption across the County remained steady compared with previous years, while natural gas showed notable shifts. These fluctuations reflect operational demands, seasonal variability, and the addition of new buildings. Additionally, we acknowledge a gap in reporting due to partially incomplete historical natural gas data. This, in addition to the previously listed reasons, explains the rise in total energy use between 2017 and 2024. *More information can be found on page 16 in the Appendix.*



Salt Lake County’s energy management team has prioritized implementing the most economical projects while reducing utility expenses. These efforts have often aligned with projects incentivized by local utilities or supported through grants. Past initiatives include recommissioning, LED retrofits and replacements, HVAC rooftop control upgrades, and installation of solar arrays. Moving forward, the County has approved a more targeted approach to facility performance, prioritizing sites with high energy use intensity (EUI).



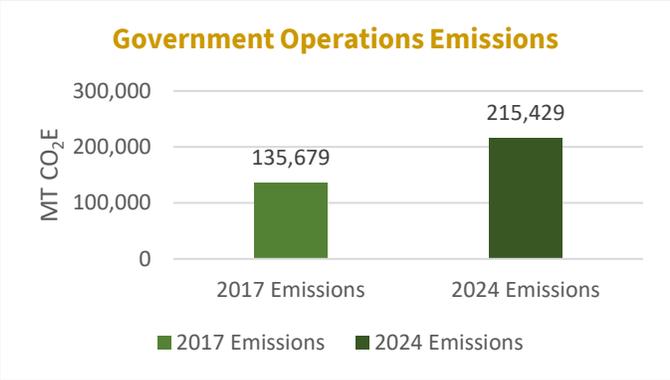
Energy In Action:
In 2024, SLCo Facilities Management conducted energy audits on a few SLCo buildings. The audit was performed by a third party and identified priorities to increase potential for cost-saving and decrease energy consumption. Additionally, the audits identified health and safety risks. Recommended areas of improvement include HVAC, insulation, and roof replacement to support the facility's ongoing operations.



Emissions

Similar to the energy analysis, emissions from 2017 were compared with those from 2024 to evaluate historical and current GHG emissions from Salt Lake County operations.

Emissions are a byproduct of using energy, vehicles, and pieces of equipment. Emissions are measured in Metric Tons of Carbon Dioxide (MTCO₂e) and represents the amount of greenhouse gases (GHG) emissions. Fuel and energy-powered systems release emissions and pollutants into the atmosphere, whether it is from a tail pipe or from power generation. By combining energy efficiency and the use of renewable energy, both on-site and through utility-driven grid improvements, the County will continue to build a resilient system that supports long-term environmental and community goals while reducing pollution. Salt Lake County will also continue to pursue strategies that improve efficiency to help lower operating costs and energy consumption. The increase in emissions from 2017-2024 are driven by several factors, including aging buildings that require more energy, the construction of additional facilities, a growing vehicle fleet, and the rising volume of waste in the landfill that generates more pollution as it decomposes.



Emissions reported in the graph above are representative of the operations at County operated buildings, landfill, transfer station, and vehicle fleet. Emissions are produced from the everyday work of running buildings, keeping a fleet on the road, and maintaining County operations for residents. County facilities require electricity, heating, and cooling, all of which is reflected in the emissions profile.

Fleet vehicles and equipment add their share as well, from light-duty vehicles to heavy-duty equipment that burns fuel as County employees deliver services, maintain infrastructure, and support operations across the County. As



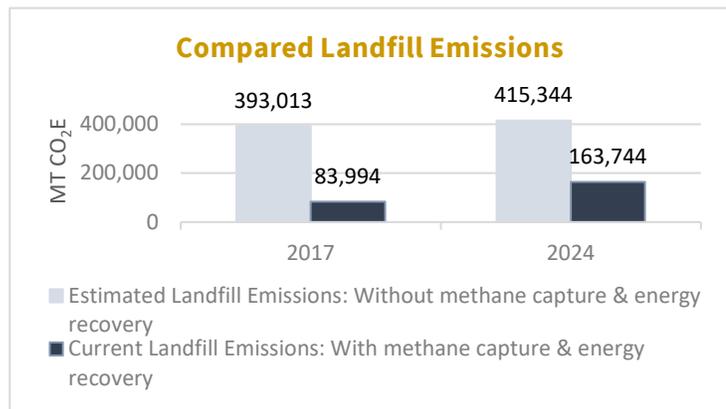
Air In Action:
Electric vehicle charging has enabled Salt Lake County to incorporate electric vehicles into its fleet while also providing a valuable service to the community. Residents and employees can access nearly 40 chargers located at County facilities. In 2024, more than 2,300 different EVs were connected to County-operated chargers, helping avoid 1,044,261 kg of CO₂ emissions since January 2020 due to the County’s charging infrastructure.



service demands grow, energy use and fleet activity naturally increase. These aspects of the County’s work make up a large share of the total emissions footprint, which is why improving building efficiency, upgrading equipment, and using cleaner vehicles are important long-term strategies.

The County-operated regional landfill serves the public and several municipalities for waste disposal. This is a vital service that ensures waste is managed safely and protects the environment, waterways, and nearby communities from contamination. As the population in Salt Lake County grows, more waste enters the system, increasing the amount of gas produced as the waste decomposes. This ‘landfill gas’ is composed mostly of methane, along with significant amounts of carbon dioxide.

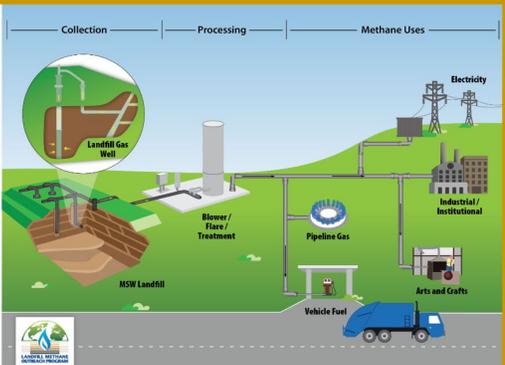
The landfill operates a gas collection system to capture a majority of the landfill gas before it is released into the air or surrounding environment. A network of wells and pipes collects the gas and directs it to one of two destinations: energy production or a flare system. Currently, about two-thirds of the collected landfill gas is clean and consistent enough for energy production. This portion of landfill gas is sent to a vendor who uses



turbines to generate electricity. Energy produced from landfill gas can offset energy from other sources, such as natural gas or coal, while making use of gas generated from decomposing waste. The remaining one-third of the landfill gas is directed to a flare, where it is combusted. The graph above illustrates the emissions that would occur without methane capture compared to emissions with the capture system currently in place. Landfill-related emissions reported by the County appear lower than estimated totals because emissions from the gas-to-energy system are counted under the energy user. Additionally, the landfill’s gas flare efficiently destroys nearly all methane sent to it, preventing it from being released to the atmosphere. As a result, the emissions reported directly for the Salt Lake County Landfill primarily reflect fugitive methane that escape from decomposing waste.



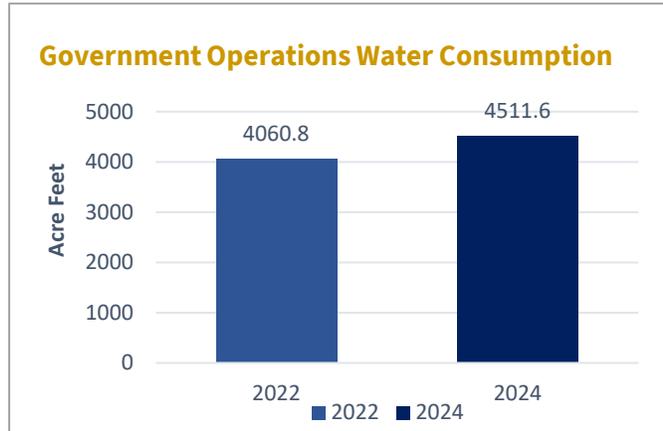
Waste & Recycling In Action:
Salt Lake County owns and operates the Salt Lake Valley Landfill, approximately 445 acres. As the Salt Lake Valley’s population grows, the County is proactively expanding its waste management and recycling initiatives to meet rising demand. The landfill has implemented methane capture systems that extract gas generated during waste decomposition, thereby preventing atmospheric emissions and enabling its use in energy production.



Water

As explained in the “Base Year” section, the total consumption of water uses baseline year (2022) and compares it to the most current year data is available (2024) to understand historical and current water usage associated with Salt Lake County operations.

The increase in water use reported here aligns with the drought conditions over the past decade, which significantly restricted outdoor watering in 2022. These restrictions resulted in noticeable environmental impacts to green spaces, with portions of landscaped areas showing stress, thinning vegetation, and in some cases significant die-off due to insufficient irrigation. In contrast, drought conditions were less extreme in 2024, allowing adequate watering levels to be met.



Recommended levels are based on the evapotranspiration (ET) rate needed for specific regions. If adequate water is not provided for green spaces, additional water may later be required to restore and revive the flora to acceptable conditions. The County has already implemented conservation initiatives like upgrading to modern irrigation systems that track weather and replacing or adapting flora with optimized watering schedules.

The County seeks to continue strategically reducing consumption. The baseline established here supports ongoing conservation work and lays the foundation for expanded data reporting. A comprehensive water data collection process will provide the County with clear insights into how water is used, including by specific County departments. This tool is under construction and will be rolled out in the future.



Water In Action:
WeatherTRAK smart-irrigation systems are used at Salt Lake County parks and green spaces, which allows for control of over 4,800 sprinkler zones. The WeatherTRAK system accounts for sprinkler type, precipitation rate, soil type, plant type, root depth, slope and more when calculating when and how much to water green spaces. All these factors allow Salt Lake County to continue to provide the green spaces that residents use, while conserving water!

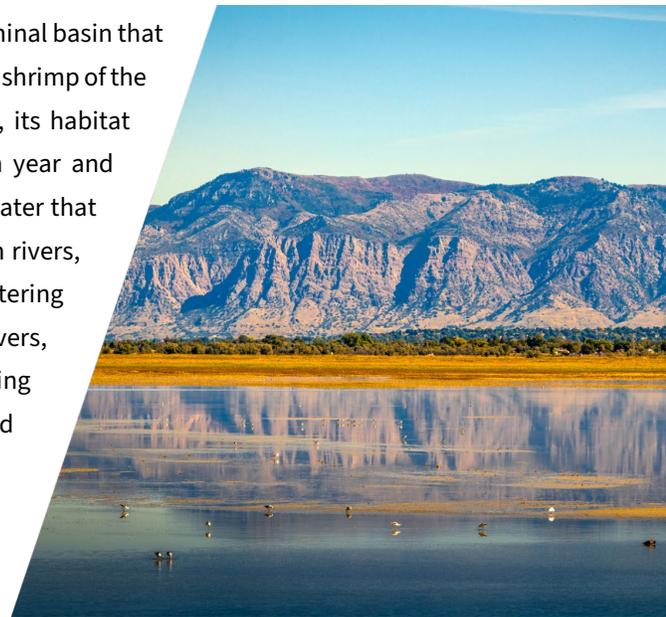


Salt Lake County's Environment

Utah primarily has dry, semi-arid, and desert climates. It is one of the driest states in the country with one of the lowest relative humidity percentages. Salt Lake County has a semi-arid climate with four distinct seasons, including hot, dry summers and cold, snowy winters, and relatively low average precipitation. The County has significant seasonal variability due to being dependent on mountain snowpacks for water supply. Recent decades have seen increased temperatures that elevate evaporation rates, thereby accelerating the degradation of snowpack, particularly in the Wasatch Mountain Range¹. Moreover, rising winter temperatures shift precipitation patterns so that more rain than snow falls, further eroding the state's vital snowpack².

Water

Salt Lake County's water story is inseparable from the 1,700-square-mile Great Salt Lake, the largest saltwater lake in the Western Hemisphere and a terminal basin that sustains a vast natural ecosystem³. Ranging from the neon-pink brine shrimp of the hyper-saline North Arm to the fresher marshes of Farmington Bay, its habitat nourishes more than 7.5 million migratory and nesting birds each year and underpins over a billion dollars in annual industry and recreation. Water that feeds the Great Salt Lake, namely from the Bear, Weber, and Jordan rivers, are heavily used by various parties thus driving down water levels, altering salinity, and endangering critical wetlands of the lake. The rivers, reservoirs, and snowpack that feed the Great Salt Lake are also slowing due to prevalent drought conditions. With increasing water usage and decreasing flow, the water reserves are strained. As a result, the State of Utah has enacted various executive orders in the past several years to decrease water usage⁴. Salt Lake County also stepped up to the challenge and remains a leader in water conservation.



Water is essential to Salt Lake County, and the irrigation of green spaces plays a role in the broader hydrologic cycle. When water is applied to turf and trees, part of it evaporates and is released back into the atmosphere through evapotranspiration (ET)⁵. The remainder infiltrates into the soil, where it supports flora. Excess water that is not absorbed by flora finds its way into groundwater pathways to support rivers and streams. These processes contribute to the regional water system, but they do not mean that irrigation water flows directly back to the Great Salt Lake. Instead, the water becomes part of a complex cycle that includes lakes, ponds, streams,

¹ Natural History Museum of Utah. n.d. Understanding Climate Change in Utah. Retrieved from <https://nhmu.utah.edu/climate-of-hope/climate-change-utah>

² Utah Department of Water Resources. "Climate Change, Water Resources, and Potential Adaptation Strategies in Utah." Utah Department of Water Resources, May 2020, https://water.utah.gov/wp-content/uploads/2020/09/Final-Report_ClimateChangeUtah_May_2020.pdf.

³ Utah Department of Environmental Quality, Division of Water Quality. n.d. Great Salt Lake. Retrieved July 1, 2025, from <https://deq.utah.gov/water-quality/great-salt-lake>

⁴ Utah Drought Center. n.d. Utah Drought Dashboard. Retrieved July 1, 2025, from <https://drought.utah.gov/>

⁵ U.S. Geological Survey. n.d. The Water Cycle. Retrieved from <https://www.usgs.gov/special-topics/water-science-school/science/water-cycle>

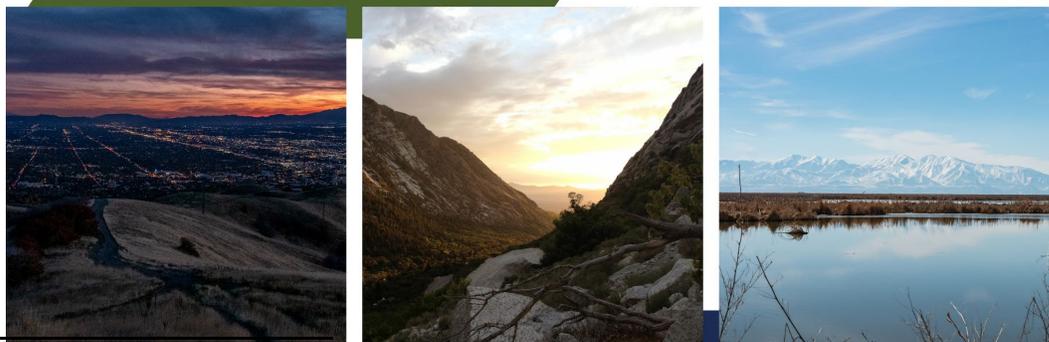
aquifers, and the atmosphere. Water used for green spaces remains part of the system that sustains our community in a dry climate. Still, conservation is vital, as excessive use can strain local supplies and infrastructure. By using water wisely, we help ensure that the system continues to function sustainably for both people and the environment.

Land

Salt Lake County features a diverse landscape that includes a developed, urbanized valley floor, surrounded by the steep Wasatch and Oquirrh Mountains, and bordered to the northwest by the Great Salt Lake. This varied terrain, with urban areas up against tree-dense mountain canyons, has been increasingly affected by Utah's evolving climate, which has seen a rise in human-caused wildfires in recent years; mirroring trends observed across the Western United States. Higher temperatures and extended dry periods have lengthened fire seasons and heightened the severity of burns, creating risks that extend beyond immediate threats to property and public health. Wildfires are particularly concerning in the wildland-urban interface ⁶ (a geographic area where structures or other human development meets undeveloped wildland areas ⁷). Sections of County could experience a significant amount of destruction due to a wildland fire, including the foothills and bench areas on or near the Wasatch Range, Traverse Mountain, and the Oquirrh Mountain Range. Wildfire-induced changes in the landscape disrupt water systems and ecosystem maintenance further compounding the toll of the natural disasters.

Air

Utah's unique topography, with mountain-ranges surrounding the Salt Lake valley that trap air masses, causes pollution to buildup and presents air quality concerns. In the Winter, temperature inversions hover over the Salt Lake Valley, capping cold air (and air pollutants within that air) close to the ground and driving fine particulate matter (PM_{2.5}) concentrations to potentially unhealthy levels. During inversion events that trap pollutants near the ground, typical wintertime PM_{2.5} contributions break down to about 48% from mobile sources, 39% from area sources, and 13% from point sources⁵, underscoring how energy choices drive Utah's most severe pollution episodes. Come Summer, intense sunlight and rising temperatures spur photochemical reactions that convert emissions into ground-level ozone, or "smog," which worsens respiratory and cardiovascular conditions. Shrinking snowpacks and more intense wildfires highlight the state's environmental challenges, and seasonal air quality issues affect public health, outdoor recreation, and economic productivity⁹.



⁶ Salt Lake County Emergency Management. 2023. Salt Lake County Comprehensive Emergency Management Plan Base Plan.

⁷ Utah Division of Emergency Management. 2024. Utah Enhanced State Hazard Mitigation Plan.

Next Steps

This Assessment marks the completion of the first major milestone of Salt Lake County's sustainability efforts. Moving forward, the County will continue to track environmental data to identify long-term trends, specifically energy, emissions, and water. Building on the foundation of this Assessment, Salt Lake County will support growth, improve operations, and promote public health and social well-being by:

1. Forecasting future environmental trends.
2. Establishing internal goals for government operations.
3. Advancing initiatives outlined in the Assessment and the Initiative List (see Appendix).
4. Developing a comprehensive *Sustainability Action Plan for Government Operations*.
5. Implementing initiatives that increase quality of life and preserve the natural environment.

Regular data collection and reporting will allow the County to monitor progress, identify inefficiencies, plan infrastructure upgrades, and integrate innovative technologies. Continuous review and refinement of energy, emissions and water baselines will strengthen strategic decision-making and ensure accurate long-term performance tracking.

Conclusion

Salt Lake County stands among a growing network of local governments, organizations, and private enterprises across the Southwest that are mobilizing to address the challenges of a changing climate. By prioritizing both mitigation and adaptation, the County is taking meaningful steps to reduce energy, emissions, and water use, all of which are essential to conserving Utah's natural resources.

Equally important are the County's efforts to strengthen resilience through improved water management, investment in infrastructure, and support for drought adaptive practices. Together, these initiatives form the backbone of a comprehensive strategy designed to safeguard County operations, protect natural assets, and promote long-term sustainability.

As environmental conditions continue to evolve, Salt Lake County's approach is anchored in rigorous data collection, interagency collaboration, and continuous improvement. Ultimately, these efforts reflect the County's unwavering commitment to building a more resilient, healthy, and sustainable future, one that enhances quality of life for residents, visitors, businesses, and employees while ensuring that Salt Lake County thrives.

Appendix & Methodology



SALT LAKE
COUNTY



GREEN
VISION

List of Tables

Table 1: Sustainability Initiatives for Government Operations.....	13
Table 2: Energy & Emissions Results	18
Table 3: Energy Sources.....	18
Table 4: Emissions Factors for Electricity Consumption	18
Table 4: Emission Factors for Natural Gas	18
Table 5: Transportation Data Sources	19
Table 6: Emissions Factors by Vehicle Type.....	19
Table 7: Solid Waste Data Sources	20
Table 8: Water Baseline	20
Table 9: Water Sources	20

List of Figures

Figure 1: ICLEI Analyze-Act-Accelerate Framework.....	15
Figure 2: Relationship of Community and Government Operations Inventories	16
Figure 3: Energy Savings through Retro Commissioning	17

Government Operations Initiative Inventory

The following table outlines the five core elements of sustainability that Salt Lake County has identified as key sectors of impact, along with associated initiatives that support each element. These initiatives were initially compiled in 2023 and continue to reflect current County operations and priorities. Together, they provide a snapshot of ongoing efforts to reduce environmental impacts, improve efficiency, and advance long-term resilience. Future reporting and planning will expand on this information by providing greater detail on individual initiatives and highlighting high-impact projects currently underway, as well as planned initiatives expected to advance County sustainability goals in the coming years.

Table 1: Sustainability Initiatives for Government Operations

Department/ Division	Program/Activity	Sustainability Core Elements				
		Air	Water	Energy	Land	Waste & Recycling
Administrative Services	Centralized Energy Tracking			✓		
	Data Dashboard	✓	✓	✓		
	Design & Construction Standards Document	✓	✓	✓		✓
	Electric Vehicle (EV) Charging	✓				
	Electronic Record Keeping					✓
	Environmentally Preferred Purchasing Guidelines					✓
	SOAR Initiative				✓	
	Surplus Market					✓
Aging & Adult Services	Café Model at Senior Centers					✓
	Geothermal Energy (Magna & Millcreek Senior Centers)			✓		
	Reusable To-Go Containers at Senior Centers					✓
	Reuse of Battery Heated Bags					✓
	Trip-Chaining with Software System	✓				
Clark Planetarium	Solar on Facilities			✓		
Countywide	Environmental Impact Preference for Vehicle Selection and Purchasing (Policy 1350)	✓				
	Hybrid Vehicles and Transition to Electric	✓				
	LED and Induction Lighting Upgrade			✓		
	LEED Standard/Energy Efficiency	✓	✓	✓	✓	
	Local scaping		✓		✓	
	Policy on Vehicle Engine Idling (Policy 1360)	✓				
	Priority Parking Spaces for Carpool	✓				
	Secure Bicycle Parking	✓				
	Telework (Policy 2-600)	✓				
	Trip Reduction Program	✓				

Continued...

Department/ Division	Program/Activity	Sustainability Core Elements				
		Air	Water	Energy	Land	Waste & Recycling
Emergency Management	Restricting Fireworks	✓				
Health Department	Electric Fleet	✓				
	Electric Vehicle (EV) Charging	✓				
	Household Hazardous Waste Disposal					✓
Human Resources	Route Maps in County Buildings	✓				
	Subsidized Transit Passes	✓				
	Vanpooling	✓				
Human Services	Electronic Record Keeping					✓
	Solar on Facilities			✓		
Landfill & transfer station	Employee Education Campaign for Metal Recycling					✓
	Household Hazardous Waste Disposal					✓
	Methane Collection			✓		✓
	Tire, Mattress, and Metal Recycling					✓
	US Composting Council (USCC) Certification					✓
Library	Geothermal Energy (Millcreek Community Center)			✓		
	Solar on Facilities			✓		
Parks & Recreation	Artificial Turf Fields		✓			
	Audit Outdoor Water Systems		✓			
	Best Design Practices for Irrigation Systems		✓			
	Electric Vehicle (EV) Charging	✓				
	Geothermal Energy (Millcreek Community Center)			✓		
	Golf Course Management		✓			
	Grass Clippings Mulched					✓
	Natural Space Preservation		✓			
	Open Spaces				✓	
	Smart-Water Management		✓			
	Solar Heated Pool			✓		
	Trails				✓	
	Transitioning Water Recreation		✓			
	Urban Farming Program				✓	
	Weather Track		✓			
Public Works	Fleet Management					✓
	Riparian Restoration		✓		✓	
	Solar on Facilities			✓		
	Water Quality Dashboard		✓			

ICLEI Framework

For this Assessment, Salt Lake County’s process was informed by the Local Governments for Sustainability (ICLEI) Framework. Salt Lake County followed the stepwise approach shown below in Figure 1, which involves collecting and analyzing data, action, implementation, leadership, and collaboration.

The Framework is organized into Analyze, Act, and Accelerate phases for governments. The Framework incorporates greenhouse gas (GHG) emissions reductions, adaptation actions, and equitable, inclusive decision-making. Salt Lake County’s inventory falls under Step C: Analyze and set a baseline.

Over 600 U.S. communities have followed this basic Framework, it is represented through the streamlined Analyze-Act-Accelerate model (see Figure 1). To complete this inventory, Salt Lake County utilized tools and guidelines from Local Governments for Sustainability (ICLEI), which provides authoritative direction for GHG accounting. As a data-driven tool, the inventory supports evidence-based policymaking, strengthening climate resilience and ensuring that future strategies align with both operational needs and broader sustainability goals.



Inventory Calculations

The 2017 emissions inventory was calculated following the Local Government Operations Protocol and ICLEI’s ClearPath software. As discussed in Inventory Methodology, the IPCC 6th Assessment was used for global warming potential (GWP) values to convert methane and nitrous oxide to CO₂ equivalent units. ClearPath’s inventory calculators allow for input of the sector activity (i.e. kWh or VMT) and emission factor to calculate CO₂e emissions. Energy is quantified using a MMBtu as a unit of energy equal to one million British thermal units, commonly used to measure the energy content of natural gas and other fuels. It provides a standardized way to compare energy across different fuel sources and is widely used in energy pricing and industrial applications.

Understanding a GHG Emissions Inventory

The first step toward achieving tangible GHG emission reductions requires identifying baseline emissions levels, sources, and activities generating emission in operations. This report presents emissions from Salt Lake County

government operations. The government operations inventory is a subset of the community inventory, as shown in Figure 2.

As local governments continue to make climate mitigations and adaptations, the need for a standardized approach to quantify GHG emissions has proven essential. This inventory uses the approach and methods provided by the U.S. Local Government Operations Protocol for Accounting and Reporting GHG Emissions (LGO Protocol), which is described in more detail below.

Three GHG are included in this inventory: carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Many of the charts in this report represent emissions in “carbon dioxide equivalent” (CO₂e) values.



Figure 2: Relationship of Community and Government Operations Inventories

Local Government Operations (LGO) Protocol

In 2010, ICLEI, the California Air Resources Board (CARB), and the California Climate Action Registry (CCAR) released Version 1.1 of the LGO Protocol.⁸ The LGO Protocol serves as the national standard for quantifying and reporting GHG emissions from local government operations. The purpose of the LGO Protocol is to provide the principles, approach, methodology, and procedures needed to develop a local government operations GHG emissions inventory.

Quantifying GHG Emissions

Quantifying GHG emissions rely on systematically gathering operational data—vehicles fuel use, electricity purchased, community waste processed—and applying standardized emission factors to translate these activities into metric tons of carbon dioxide equivalent (CO₂e)⁹. This method produces a transparent baseline inventory, enabling Salt Lake County to benchmark its performance, prioritize high-impact reduction strategies, and credibly demonstrate progress in lowering its carbon footprint over time.

Emissions Quantification Methods

GHG emissions can be quantified in two ways:

1. Measurement-based methodologies refer to the direct measurement of emissions (from a monitoring system) emitted from a wastewater treatment plant, landfill, or industrial facility.
2. Calculation-based methodologies calculate emissions using activity data and emission factors. To calculate emissions accordingly, the basic equation below is used:

⁸ ICLEI. 2008. Local Government Operations Protocol for Accounting and Reporting Greenhouse Gas Emissions. Retrieved from <https://icleiusa.org/ghg-protocols/>

⁹ Utah Department of Environmental Quality. (n.d.). *Understanding Utah's air quality*. Utah DEQ. <https://deq.utah.gov/communication/news/understanding-utahs-air-quality>

$$\text{Activity Data} \times \text{Emission Factor} = \text{Emissions}$$

Activity Data	Emissions Factor
The use of energy, materials, and/or services by members of the organization results in the creation of GHG emissions.	A representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant. ¹⁰

This inventory is quantified using calculation-based methodology. Activity data refers to the relevant measurement of energy use or other GHG generating processes such as fuel consumption by fuel type, and annual electricity consumption. Please see appendices for a detailed listing of the activity data used in composing this inventory known emission factors are used to convert energy usage or other activity data into associated quantities of emissions. Emissions factors are usually expressed in terms of emissions per unit of activity data (e.g. lbs CO2/kWh of electricity). For this inventory, calculations were made using the ClearPath tool.

Energy Management

From a facilities management perspective, maintaining consistent oversight and steady backlog of project activities is essential for ensuring long-term operational efficiency and environmental performance. By being active with maintenance and commissioning, from early design coordination to ongoing system verification, the County can maintain the integrity of building performance and ensure that systems continue to operate as intended. This proactive approach not only supports higher efficiency but can lead to cost savings and operational reliability. Currently the County falls into the yellow highlighted section of *Figure 3*, where savings are minimal and load continues to increase¹¹. Showcasing how commissioning must continually be conducted to maintain cost savings and energy savings.

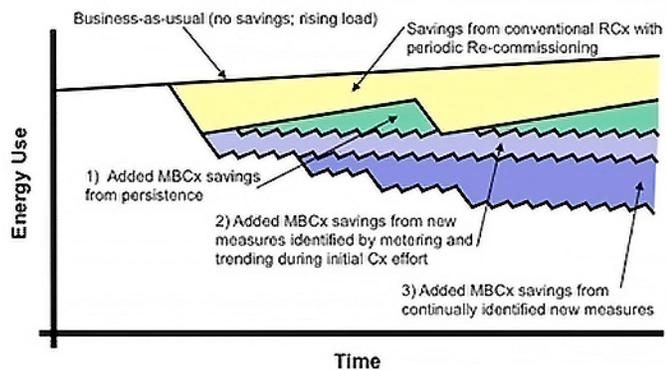


Figure 3: Energy Savings through Retro Commissioning

¹⁰ EPA. 2025 Basic Information of Air Emissions Factors and Quantification

<https://www.epa.gov/air-emissions-factors-and-quantification/basic-information-air-emissions-factors-and-quantification>

¹¹ Terao Asia. (2023, February 14). *New certified building commissioning professional*. <https://teraoasia.com/2023/02/14/new-certified-building-commissioning-professional/>

Energy & Emissions Results

Table 2: Energy & Emissions Results

Sector	Fuel or source	2017 Usage	2024 Usage	Usage unit
Landfill	Waste Generation			
Solid Waste				
Buildings, Facilities, & Lighting	Electricity	80,326,650	77,552,288	kWh
	Natural Gas	358,893	414,914	MMBtu
Buildings & Facilities				
Vehicle Fleet	Gasoline (off-road)	24,267	45,624	Gallons
	Diesel (off-road)	338,672	318,840	Gallons
	CNG (off-road)	6	-	Gallons
	CNG (on-road)	461	-	Gallons
	Gasoline & Ethanol (on-road)	297,486	266,667	Gallons
	Diesel (on-road)	232,061	183,719	Gallons
Vehicle Fleet				
Total government emissions: 2017				135,679 MTCO ₂ e
Total government emissions: 2024				215,429 MTCO ₂ e

Energy Sources

The following tables show each activity, related data sources, and notes on data gaps.

Table 3: Energy Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Electricity consumption	Rocky Mountain Power & Internal Consolidation	Smaller utility sheds, light posts and misc. assets may not be captured in electricity due to lack of energy usage data and or billing for that asset. Buildings and assets are subject to change as Salt Lake County's portfolio changes.
Natural gas consumption	Enbridge Gas & Internal Consolidation	Buildings and assets are subject to change as Salt Lake County's portfolio changes.

Table 4: Emissions Factors for Electricity Consumption

Year	CO ₂ (MT/MMBtu)	CH ₄ (MT/MMBtu)	N ₂ O (MT/MMBtu)
2017	0.086546	8.1071 x10 ⁻⁶	1.1961 x10 ⁻⁶
2024	0.083956	7.1767 x10 ⁻⁶	1.0632 x10 ⁻⁶

Table 5: Emission Factors for Natural Gas

Year	CO ₂ (MT/MMBtu)	CH ₄ (MT/MMBtu)	N ₂ O (MT/MMBtu)
2017	0.053020	5 x10 ⁻⁶	1.0000 x10 ⁻⁷
2024	0.053020	5 x10 ⁻⁶	1.0000 x10 ⁻⁷

Transportation Sources

Table 6: Transportation Data Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Government vehicle fleet	Internal Consolidation	<p>On Road: On road vehicles owned by Salt Lake County vary from small sedans to heavy duty trucks used for maintenance. Data is collected via telematics and/or self-reporting. Not all vehicles are equipped with telematics and are therefore reported manually, which is why a gap is assumed for the vehicle fuels.</p> <p>Off Road: Off road assets have been consolidated as their function varies from a generator to construction equipment. Total consumption values are collected through fuel cards. MPG calculations were omitted because telematics data is not consistently available across the fleet.</p>

Table 7: Emissions Factors by Vehicle Type

Fuel	Vehicle type	CH ₄ MT/mile		N ₂ O MT/mile	
On Road					
		2017	2024	2017	2024
Gasoline	Sedan	2.2074 x10 ⁻⁸	1.069 x10 ⁻⁸	1.8048 x10 ⁻⁸	6.9844 x10 ⁻⁹
	Light truck/SUV/Van				
	Heavy truck				
Diesel	Sedan	-	-	-	-
	Light truck/SUV/Van	4.1406 x10 ⁻⁹	1.4433 x10 ⁻⁸	4.0278 x10 ⁻⁹	3.7610 x10 ⁻⁸
	Heavy truck				
CNG	Sedan	-	-	-	-
	Light truck/SUV/Van	7.37 x10 ⁻⁷	-	5.0000 x10 ⁻⁸	-
	Heavy truck	-	-	-	-
Fuel		CH ₄ MT/MMbtu		N ₂ O MT/mile	
Off Road or Construction					
		2017	2024	2017	2024
Diesel		4.2017 x10 ⁻⁶	4.2017 x10 ⁻⁶	1.8835 x10 ⁻⁶	1.8835 x10 ⁻⁶
Gasoline		1.0084 x10 ⁻⁵	4.0016 x10 ⁻⁶	1.7607 x10 ⁻⁶	1.7607 x10 ⁻⁶
Ethanol		-	5.5000 x10 ⁻⁹	-	6.7000 x10 ⁻⁹

Solid Waste Sources

Table 8: Solid Waste Data Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Waste Disposal	Internal -Solid Waste Management Operations	The Salt Lake County landfill is co-owned with the Salt Lake City Corporation. In guidance with the guiding principles of the LGO protocol, Salt Lake County reports all emissions associated with the landfill. The landfill is under operational control of Salt Lake County. Landfill emissions data would account for all cities, communities, and private parties utilizing the landfill for waste disposal. Emissions would come from three areas, gas to energy, flare, and fugitive emissions. Gas to energy emissions would be allocated to Murray City as they utilize the energy. The flare has such a high destruction rate, that there are no material emissions. Fugitive emissions are the majority of the County’s overall emissions portfolio.

Water Consumption

Table 9: Water Baseline

Sector	2022 Usage	2024 Usage	Usage unit
Water	4060.8 Acre Ft	4511.6 Acre Ft.	Acre Feet (See water Terminology)

Water Sources

Table 10: Water Sources

Activity	Data Source	Data Gaps/Assumptions
Local Government Operations		
Water Utilities	BLUFFDALE CITY	MURRAY CITY
	COPPERTON IMPROVEMENT DISTRICT	RIVERTON CITY
	DRAPER CITY	SALT LAKE CITY
	GRANGER-HUNTER IMPROVEMENT	SANDY CITY
	HERRIMAN CITY	SOUTH JORDAN CITY
	HOLLIDAY WATER COMPANY	SOUTH SALT LAKE CITY
	JORDAN VALLEY WATER CONSERVANCY	TAYLORSVILLE-BENNION
	KEARNS IMPROVEMENT DISTRICT	WATER PRO INC
	MAGNA WATER DISTRICT	WEST JORDAN CITY
	MIDVALE CITY	WHITE CITY WATER IMPROVEMENT
		Water data was provided from utilities in either CCF, gallons, or thousands of gallons. This is dependent on the utility vendors’ preferred unit of measure. There were conversions made to attain a common unit, gallons, and then converted to acre feet. Depending on the vendor, units were measured only to the nearest thousand gallons. As data processes improve and greater visibility into usage continues modification to baseline may occur.

Quantifying Water Consumption

Water Consumption data was collected from over 20 water utilities of County operations. Current processes involved extensive internal engagement with all Salt Lake County agencies to verify data and accounts to accurately discuss with the corresponding water utility. Learnings from this water data collection process will be utilized for streamlining data collection in the future.

Ongoing collection processes will allow us to calculate total water volumes for County operations over distinct time periods, compare trends across different suppliers, discover leaks, and identify data discrepancies on a quick turnaround. Future work will look to close reporting gaps and accurately assess consumption patterns and establish future monitoring and forecasting enhancements with these metrics.

Water Quantification Methods

The 2022 and 2024 water consumption baseline was calculated following a similar process laid out in the Local Government Operations Protocol. At this time, water reporting did not require the use of external values or factors beyond standard unit conversions. Additionally, canal and irrigation companies are not included in the initial baseline as this water data is limited. This is an area that Salt Lake County will continue to explore for increased visibility into water data. Finally, the baseline was set with the best data available, but as Salt Lake County continues to innovate and increase efficiency in data collection, revisions may be made to the baseline in future reporting years.

Water Terminology

In hydrology, the term “water withdrawal” describes the total volume of water removed from a surface or groundwater source, while “water consumption” is the fraction that is not returned, lost through evaporation, transpiration, or incorporation into products and thus permanently removed from the water source¹². Yet for broader audiences, Salt Lake County used “water usage” or “water consumption” interchangeably with withdrawal to simplify discussions about how much water is used¹³. This approach helps consumers and policymakers grasp overall demand without delving into technical distinctions among return flow, conveyance losses, and consumptive use. Nevertheless, detailed water-resource planning continues to distinguish withdrawal from consumption to accurately assess availability, sustainability, and the true impact of human activities on our watersheds.

An acre-foot is a unit of volume that represents the amount of water needed to cover one acre of land to a depth of one foot. This unit is commonly used in the U.S. to measure large-scale water resources.

¹² OECD. n.d. Water withdrawals. Retrieved from <https://www.oecd.org/en/data/indicators/water-withdrawals.html>

¹³ Water Footprint Calculator. n.d. Water Use, Withdrawal and Consumption. Retrieved from <https://watercalculator.org/footprint/water-use-withdrawal-consumption/>