

**Eric Albers**  
Senior Natural Resources  
Policy Analyst

# Driving Towards an Electric Future: Utah's Clean Transportation Workforce

Increased adoption of electric and other alternative-fuel vehicles is changing Utah's transportation sector, requiring a growing workforce trained on clean vehicles.

---

**December 2024**

**REVIEW DRAFT**



**Kem C. Gardner**  
**POLICY INSTITUTE**  
THE UNIVERSITY OF UTAH

411 East South Temple Street  
Salt Lake City, Utah 84111  
801-585-5618 | [gardner.utah.edu](http://gardner.utah.edu)



# Driving Towards an Electric Future: Utah's Clean Transportation Workforce

## Analysis in Brief

Utah is home to a robust clean transportation ecosystem made of vehicle manufacturers, public transportation entities, and workforce training programs that are supporting growth in Utah's "clean transportation workforce." Adoption of alternative-fuel vehicles and federal and state policies are key drivers of this workforce growth. As more personal vehicles and private and corporate fleets convert to electric vehicles, more jobs will be required to build and maintain the vehicles and charging infrastructure.

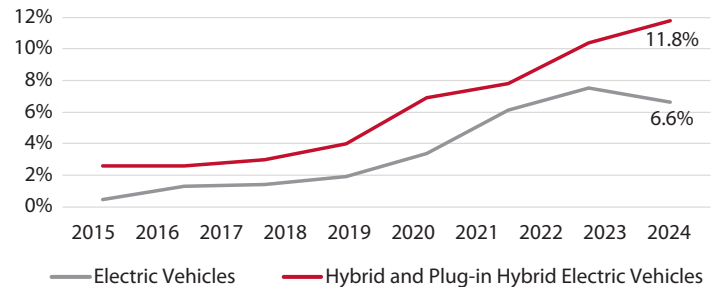
While the clean transportation workforce represents a small segment of overall state employment today, the sector is experiencing strong growth. Clean light-duty vehicles represented 17.9% of all new vehicle registrations in 2023. Bus fleets at Utah Transit Authority, Park City Transit, Zion National Park, and school districts across the state are switching to electric vehicles. Federal and state planning and investment is helping the transportation sector transition to zero- and low-emission vehicles and supporting the expansion of a skilled clean transportation workforce.

As a regional hub for inter-state freight and travel, Utah is known as the "Crossroads of the West." Demand for clean transportation employment is expected to grow as the state's transportation sector continues to convert to electric and other alternative-fuel vehicles.

### Key Findings

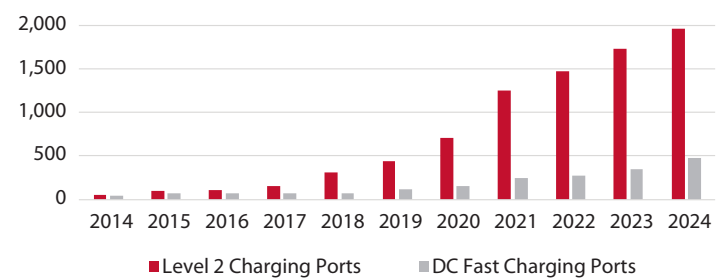
- **Growth in clean vehicle jobs** – Clean vehicle employment in Utah grew 17.9% between 2023 and 2024, mirroring growth in electric and hybrid vehicles. Despite this strong growth, Utah's clean vehicle employment represents a relatively small share of total state employment, totaling an estimated 3,666 jobs in 2024.
- **Fleets converting to electric vehicles (EVs)** – Growth in clean vehicle employment is expected to grow as commercial and private fleets across the state convert to alternative-fuel vehicles. The Utah Transit Authority, Salt Lake City International Airport, Zion National Park, and school districts across the state are converting bus and shuttle fleets to EVs.

### Utah Light-Duty Electric Vehicle Sales as a Percent of Total Motor Vehicle Sales, 2016-2024



Source: Utah State Tax Commission. (2024). *New Motor Vehicle Sales*

### Public Electric Vehicle Charging Ports in Utah, 2010-2024



Source: U.S. Department of Energy, Alternative Fuels Data Center. (2024). *Electric Vehicle Charging Station Locations*. Retrieved on October 7, 2024.

- **Workforce requirements for EV charging infrastructure** – Demand for a range of skilled-trade professionals will increase as Utah's EV charging network expands. Public charging ports increased from 560 in January 2020 to 2,081 in January 2024.
- **Public-sector planning and incentives** – Federal and state policies are helping to facilitate transportation decarbonization, subsidize alternative-fuel vehicles, and will in turn encourage clean transportation workforce growth.
- **Utah's clean transportation ecosystem** – Leaders in Utah's clean transportation sector include private companies, public entities, and academic research initiatives working collaboratively to implement sustainable transportation solutions. These organizations include vehicle manufacturers, transit agencies, training and certification programs, and non-profits.

# Table of Contents

<b>Utah's Clean Transportation Workforce</b> .....	<b>3</b>
What Jobs Constitute Utah's Clean Transportation Workforce?.....	3
Quantifying Employment .....	3
<b>Utah's Clean Transportation Landscape</b> .....	<b>5</b>
Electric Vehicle Charging Infrastructure in Utah .....	6
Public Sector Planning and Support .....	7
<b>Utah's Clean Transportation Leaders</b> .....	<b>8</b>
PacifiCorp WestSmartEV@Scale .....	8
Weber State Automotive EV Boot Camp .....	9
Utah Transit Authority (UTA) .....	9
Salt Lake City International Airport .....	10
Stadler Rail .....	10
Utah Women in Trades .....	10
ASPIRE Engineering Research Center at Utah State University.....	11

## Figures

Figure 1: Utah Clean Energy Employment by Industry, 2024 ..	3
Figure 2: Utah Clean Vehicle Employment Growth Rate by Segment, 2024. ....	3
Figure 3: Utah Clean Vehicle Jobs as Percent of All Vehicle Jobs, 2024 .....	3
Figure 4: Utah Light-Duty Electric Vehicle Sales as a Percent of Total Motor Vehicle Sales, 2016-2024 .....	5
Figure 5: Utah Electric and Hybrid Vehicle Registrations, 2016-2023 .....	5
Figure 6: Public Electric Vehicle Charging Stations in Utah, 2024 .....	7
Figure 7: Public Electric Vehicle Charging Ports in Utah, 2010-2024 .....	7

## Tables

Table 1: Electric Vehicle Supply Equipment Person-Hour Workforce Requirements by Job Type .....	4
Table 2: Estimated Person Hours of Work to Meet Utah's Potential Demand for Electric Vehicle Supply Equipment ...	4
Table 3: Beehive Emissions Reduction Plan - Clean Transportation Investments.....	8

# Utah's Clean Transportation Workforce

## What Jobs Constitute Utah's Clean Transportation Workforce?

The clean transportation workforce includes jobs related to all transportation modes: ground transportation (automotive and rail), air, and water. It includes roles related to vehicles powered by electric, hybrid, plug-in hybrid, and other alternative fuels. It also includes jobs related to the alternative-fuel vehicle infrastructure such as the electric charging infrastructure and hydrogen refueling stations. Employment spans the entire value chain including parts manufacturing, wholesale trade, professional and business services, vehicle repair and maintenance, and infrastructure installation and maintenance.

Many of the jobs in the clean transportation workforce are based in construction and cover a range of skilled-trade positions. These roles require a highly trained workforce that often receives associate's degrees, certifications, apprenticeships, and on-the-job training. Many of these skilled-trade positions do not require bachelor's degrees.

Electrical jobs, including electricians, electrical contractors, utility lineworkers, and other construction and contracting jobs, are essential industries represented within this workforce, particularly for infrastructure installation, repair, and maintenance.

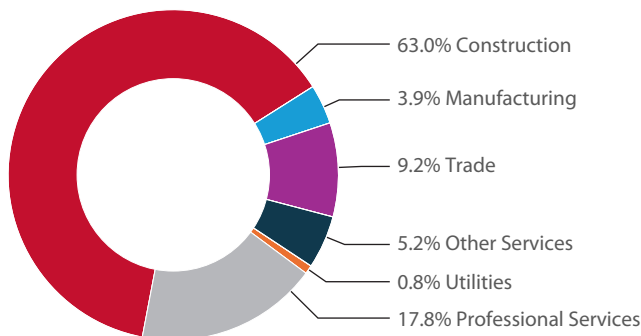
Vehicle manufacturing and maintenance is another industry central to this workforce, and includes manufacturing component parts and vehicle maintenance technicians. Positions range from engineers, mechanics, and technicians to inspectors, managers, and researchers.

Other positions in the clean transportation sector include vehicle operators, fleet managers, and sustainability coordinators.

## Quantifying Employment

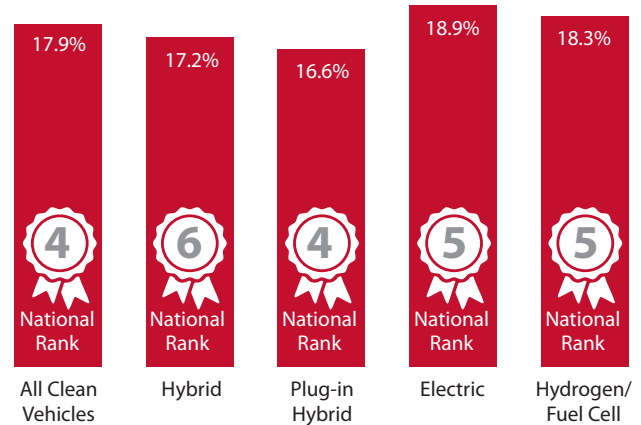
Clean transportation jobs constitute an important part of the larger clean energy sector, which is experiencing strong employment growth due to private demand and government incentives. Employment in the clean energy sector grew more than three times faster than overall U.S. employment in 2024, spurred by the 2021 Infrastructure Investment and Jobs Act and 2022 Inflation Reduction Act.<sup>1,2</sup>

**Figure 1: Utah Clean Energy Employment by Industry, 2024**



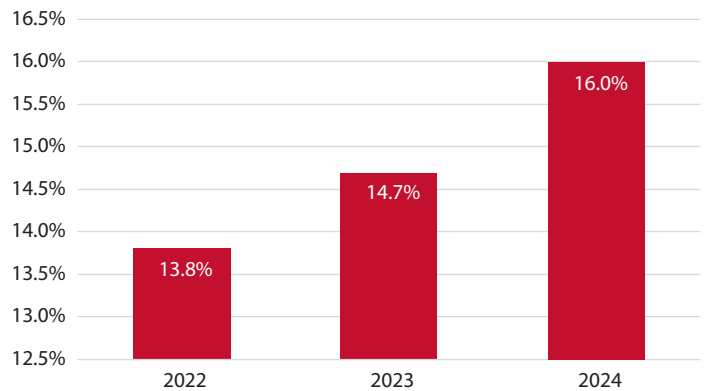
Source: E2. (2024). *Clean Jobs America 2024*

**Figure 2: Utah Clean Vehicle Employment Growth Rate by Segment, 2024**



Source: E2. (2024). *Clean Jobs America 2024*

**Figure 3: Utah Clean Vehicle Jobs as Percent of All Vehicle Jobs, 2024**



Source: E2. (2024). *Clean Jobs America 2024*

## Utah's Clean Energy Sector

Utah ranks 10<sup>th</sup> in the country for fastest-growing employment in the clean energy sector between 2023 and 2024 (5.5%). Utah's clean energy employment reached 47,096 jobs in 2024, representing 2.7% of total state employment. Clean energy employment predominantly consists of construction-related jobs, with other sizeable segments in professional services, trade, and other services (Figure 1). Manufacturing jobs represent 3.9% of clean energy employment in Utah. Men fill nearly three-quarters of clean transportation jobs (72.1%), with women accounting for 27.9%.

## Clean Vehicle Jobs

Clean vehicle jobs include positions in manufacturing, wholesale trade, commodity flows, professional and business services, and repair and maintenance where a majority of an employee's time is spent on clean vehicle tasks. These jobs are considered separately from clean vehicle infrastructure jobs (see "Clean Transportation Infrastructure Jobs" section).

Nationally, clean vehicles represent the fastest-growing subsector in the clean energy sector, with an employment growth rate of 11.0% in 2024. Utah’s clean vehicle employment growth rate ranks 4<sup>th</sup> fastest in the country at 17.9%. Utah’s employment growth ranks in the top five for three of the four clean vehicle segments: (1) plug-in hybrids, (2) electric vehicles, and (3) hydrogen/fuel-cell vehicles (Figure 2). Clean vehicle employment continues to grow as a share of total vehicle employment, accounting for nearly one in six vehicle jobs in 2024 (Figure 3).

Despite this strong growth, Utah’s clean vehicle workforce remains small, totaling an estimated 3,666 jobs in 2024. As electric vehicle (EV) adoption continues, demand for workers in this sector is expected to increase.

### Clean Transportation Infrastructure Jobs

Clean transportation infrastructure employment includes jobs related to installing, maintaining, and repairing the infrastructure for alternative-fuel vehicles. Most jobs in this sector support the EV charging infrastructure, known as electric vehicle supply equipment (EVSE). In contrast to clean vehicle employment, most clean transportation infrastructure employment is temporary and focused on the initial installation of charging stations. Permanent positions also exist to maintain and repair the charging infrastructure.

The workforce requirements for EVSE installation, repair, and maintenance depend on charger type. Single-family residential Level 2 chargers can be installed in a few hours by one electrician, whereas workplace, multi-family residential, and public charging stations require additional time and expertise.

**Table 1: Electric Vehicle Supply Equipment Person-Hour Workforce Requirements by Job Type**

Job	Percent of Total Installation Time		
	Home Chargers (Level 2)	Public and Workplace Chargers (Level 2)	DC Fast Chargers
Planning and Design	0%	11%	9%
General Contracting	0%	23%	24%
Utility Linework	0%	8%	6%
Electrical Contracting	0%	17%	8%
Electrician	100%	23%	32%
Administrative Support	0%	9%	9%
Legal	0%	2%	4%
Other	0%	7%	8%
Number of Person-hours Per Charging Port	0.5	9.9	12.2

Note: Person-hour estimates are for single ports at sites with fewer than 40 ports. Source: Energy and Environmental Research Associates. (2021). *Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure*

## Estimating the labor requirements for Utah’s Future EVSE Network

Demand for EVSE labor will increase as EV adoption grows. In 2021, the Utah Department of Transportation estimated an additional 1,557 Level 2 charging sites and 328 DCFC sites would be needed to support a future with 200,000 plug-in vehicles (note: this is nearly four times greater than the 53,000 plug-in vehicles registered in 2023<sup>4</sup>). Considering the workforce requirements for EVSE installation (Table 1), an estimated 53,943 person-hours of work would be required across multiple job types to build this charging infrastructure (Table 2).

**Table 2: Estimated Person Hours of Work to Meet Utah’s Potential Demand for Electric Vehicle Supply Equipment**

Assuming ~200,000 Plug-In Vehicles

Jobs	Person-hours of Work
Planning and Design	5,721
General Contracting	12,732
Utility Linework	3,918
Electrical Contracting	8,121
Electrician	13,605
Administrative Support	4,883
Legal	1,215
Other	3,748
<b>Total</b>	<b>53,943</b>

Note: Analysis assumes 206,870 plug-in vehicles in Utah and 2.7 chargers per station (national average).

Sources: Kem C. Gardner Policy Institute Analysis (2024); Energy and Environmental Research Associates. (2021). *Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure*; Utah Department of Transportation. (2021). *Utah Statewide EV Charging Plan*; U.S. Department of Energy Alternative Fuels Data Center. (2024). *Electric Vehicle Charging Station Locations*.

For DC fast charging (DCFC) installation, just under half of the work (46%) relates to electrical tasks including utility line work. Approximately one-quarter of the work is completed by general contractors (24%), with the remaining 30% consisting of planning, support, and other services.<sup>3</sup> DCFC ports generally take 12.2 person-hours to install, compared to 9.9 person-hours for Level 2 ports (Table 1).

Growth in the demand for clean transportation infrastructure jobs is closely linked to plug-in vehicle adoption and government planning and investment. As plug-in vehicle adoption increases, more charging infrastructure is needed. In turn, the build-out of the state’s EV charging network will help alleviate “range anxiety” and contribute to greater plug-in vehicle adoption.

### Other Workforce Considerations

While the clean transportation sector consists of newly created clean vehicle and infrastructure jobs, it is also redefining existing skilled-trade positions. Fleet managers, mechanics, electricians, and construction workers are well positioned to work in the clean transportation sector, but often need additional training or certifications, particularly with respect to safety. Electricians installing EVSE must earn a certificate from the Electric Vehicle Infrastructure Training Program (EVITP) to install charging infrastructure. The clean transportation sector also impacts other jobs, like firefighters, who need specific training for dealing with EV fires.

Employment statistics on clean transportation jobs use a narrow definition of employment, requiring workers to spend a majority of their time on clean energy-related tasks. In reality, the full clean transportation workforce is larger, encompassing jobs in which workers may spend less than a majority of their time on clean transportation-related tasks yet comprise a valuable section of the workforce.

## Utah's Clean Transportation Landscape

The clean transportation sector is in the early stages of growth nationwide. The development of the sector—and accompanying growth of its workforce—depends on technological innovation, charging infrastructure, and public sector planning and support.

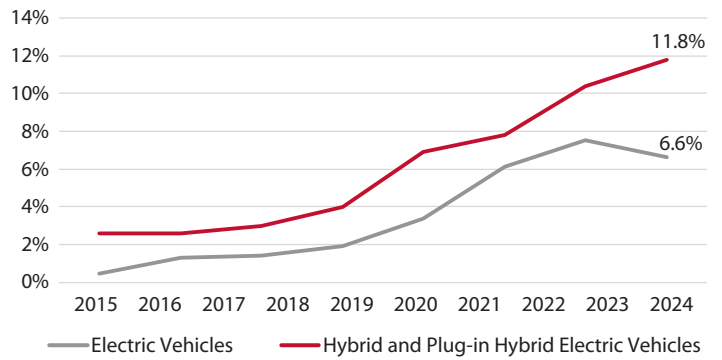
For example, different modes of transportation are expected to decarbonize at different rates. Some segments, like light-duty vehicles, show relatively higher rates of electrification. Medium and heavy-duty vehicles show slower rates of decarbonization, but some vehicles in this class are particularly well-suited to electrification.

### Light-Duty Vehicle Decarbonization

Light-Duty Vehicles (LDV) include most private vehicles and vehicles used by government and corporate fleets. The decarbonization of these vehicles is driven almost exclusively by the adoption of EVs, hybrids (HEV), and plug-in hybrids (PHEV). EVs and PHEVs require distributed charging networks, including Level 2 and DCFC. Innovations in battery technology, a growing charging network, and declining prices are driving electric light-duty vehicle adoption and decarbonization.

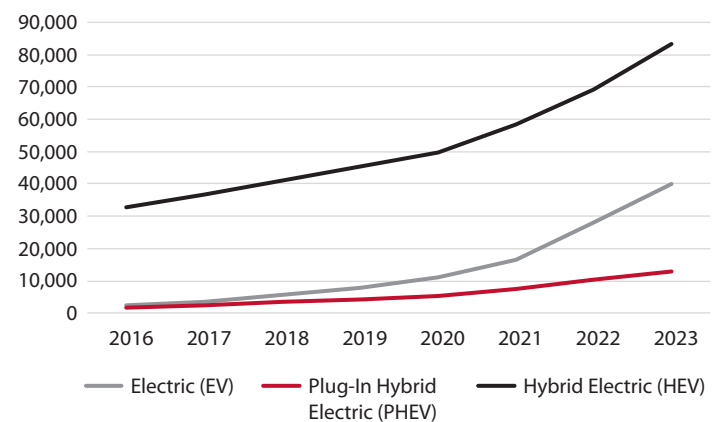
**Transportation decarbonization** refers to the process of reducing or eliminating carbon emissions from the transportation sector. This involves transitioning fossil-fuel-based vehicles and infrastructure to cleaner, low- or zero-emission alternatives, hydrogen vehicles, public transportation, and active transportation.

**Figure 4: Utah Light-Duty Electric Vehicle Sales as a Percent of Total Motor Vehicle Sales, 2016-2024**



Source: Utah State Tax Commission. (2024). *New Motor Vehicle Sales*

**Figure 5: Utah Electric and Hybrid Vehicle Registrations, 2016-2023**



Source: U.S. Department of Energy, Alternative Fuels Data Center. (2024). *Vehicle Registration Counts by State*

Utah's share of registered light-duty EVs and hybrids (HEVs and PHEVs) grew from 1.5% in 2016 to 4.4% in 2023, at which point the state ranked 13<sup>th</sup> highest for EV ownership.<sup>3</sup> While this share is a small fraction of total vehicles on Utah's roads, these clean vehicles represent an increasing share of total vehicle sales. In 2016, 0.5% of new motor vehicle sales were EVs, which increased to a high of 7.5% in 2022. HEVs and PHEVs accounted for 11.8% of total vehicle sales in 2023 (Figure 4). EVs, PEVs, and PHEVs collectively added 144,596 clean vehicles to Utah's roads in 2023 (Figure 5). The year-over-year growth rate in clean vehicle sales is also increasing, peaking at 12.2% in 2023.

### Medium and Heavy-Duty Vehicle Decarbonization

Medium and heavy-duty vehicle (MHDV) classes cover a range of vehicles that differ in size and use. They are generally characterized by heavier vehicle weights and longer-duration trips that are currently barriers to MHDV decarbonization, leading to lower adoption rates of alternative-fuel vehicles. However, a suite of zero-emission technologies are being implemented for these vehicle classes that could increase adoption rates over time.

## Leaders in Utah's EV Bus Fleet Conversion

- **Utah Transit Authority (UTA)** expanded its fleet to include 34 electric buses in 2024 and plans to include over 200 by 2034.<sup>5</sup>
- **Park City Transit** spearheaded electric bus adoption in Utah, buying six buses in 2017 and expanding to 20 in 2024 (40% of the fleet).<sup>6</sup>
- **Uintah County School District** joined Salt Lake City and Granite districts in electrifying school buses, adding 10 new EV buses in 2023 (17% of the fleet).<sup>7</sup>
- **Zion National Park** became the first national park to fully convert its 30-vehicle shuttle fleet to EVs in 2024.<sup>8</sup>

School bus fleets are particularly well positioned to transition to EVs due to having lower weight-bearing requirements, shorter traveling distances, defined routes, and the ability to charge throughout the day. Federal and state incentives make electric buses cost-competitive, particularly when comparing the lower fuel costs to diesel buses.

The charging infrastructure for these electric buses mirrors electric LDV charging in that a large portion of the charging occurs at hubs overnight and when vehicles are not in use. Many of these vehicles can also use standard EV charging equipment. Some fleets, like UTA's, also utilize fast overhead charging equipment placed at strategic transit centers for non-depot charging.

Increased adoption of alternative-fuel fleet vehicles will lead to changes in fleet management and maintenance. Additional on-the-job training and certifications are needed to support employees working on these fleets. Fleet managers and maintenance technicians increasingly depend on technology for strategic fleet deployment, charging infrastructure citing, and the diagnostics and maintenance of fleet vehicles. Training programs like Weber State's Advanced Hybrid and Electric Vehicle Certificate helps these technicians transition to alternative-fuel vehicles.

Other MHDV market segments are more difficult to decarbonize given limits with current technologies and infrastructure. For example, freight trucking represents a significant share of MHDVs but is more challenging to decarbonize given heavier vehicle weights and longer travel distances.

That said, two paths to long-haul freight decarbonization exist: electric and hydrogen vehicles. Electric trucking would require significantly improved battery technology and expanded charging infrastructure tailored to long-haul freight needs. Hydrogen fuel-cell trucks are appealing for their higher fuel energy density, fast refueling times, lighter weight, and extended range compared to the electric counterparts.

## Heavy-Duty Freight's Outsized Role in Utah

Freight represents 23% of traffic on Utah's highways, compared to the national average of 12%. Several major highways and rail lines pass through the state, leading to the monicker "Freight Crossroads of the West."<sup>9</sup> The freight transportation industry employed over 40,000 people in Utah in 2021.<sup>10</sup>

The build-out of the Utah Inland Port will solidify Utah as the "Freight Crossroads of the West" by facilitating freight logistics and infrastructure development. In response to concerns about increased freight emissions, the Utah Division of Air Quality created the Utah Diesel Emissions Reduction Framework. This study recommends maintaining and expanding MHDV incentive programs that help fleets transition to alternative-fuel vehicles.<sup>11</sup> The expansion of the port and government incentives should create additional clean transportation jobs in fleet management, maintenance, and infrastructure installation.

However, the infrastructure for hydrogen trucks is effectively non-existent, with only one refueling station in California currently serving 30 vehicles.<sup>12</sup>

### *Impacts of Technological Advancements*

Rates of vehicle decarbonization depend on vehicle type and are primarily determined by vehicle use and limited by current technology. However, several new battery technologies are in the process of development (e.g., solid-state, sodium-ion, lithium-oxygen, and enhanced lithium-ion batteries) that could lower the price of EVs, increase range, improve reliability and safety, and help decarbonize segments of the transportation sector currently unable to adopt EV technology.<sup>13</sup>

### **Electric Vehicle Charging Infrastructure in Utah**

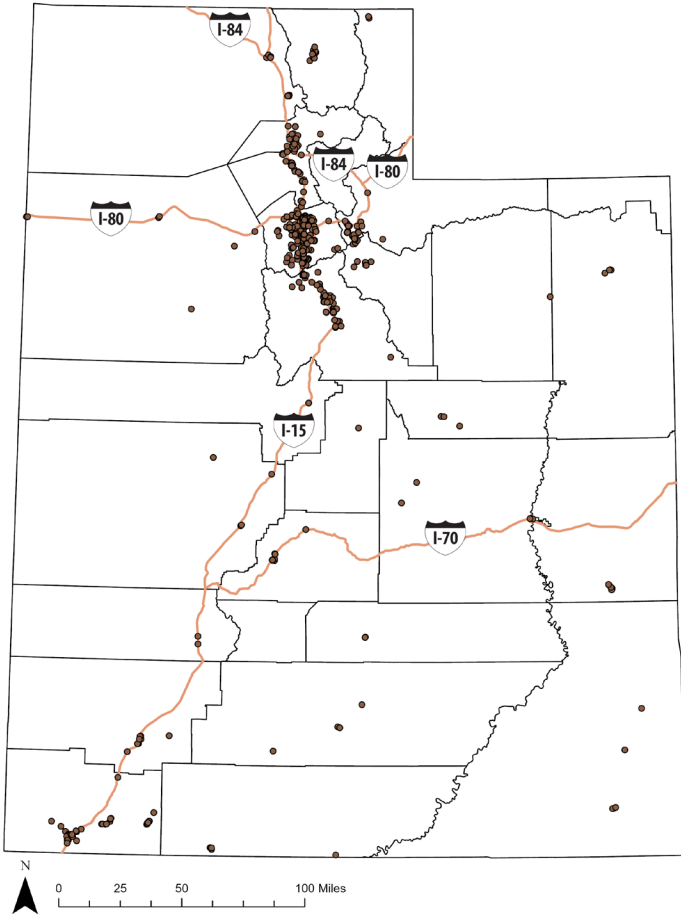
Utah's public EVSE network has grown in the past decade and is primarily located in the state's urban areas and along transportation corridors. In 2024, Utah had 883 public charging stations with 1,962 Level 2 ports and 480 DCFC ports (Figure 7). Nearly half (46%) of all charging ports are in Salt Lake County (1,125). Utah (341), Summit (187), Washington (155), and Weber (104) counties all contain at least 100 public ports. All other counties contain less than 50 public charging ports, and three counties (Piute, Daggett, and Morgan) do not have any public charging infrastructure (Figure 6).<sup>14</sup>

As EV adoption grows in Utah, more charging stations and ports will be required. The Utah Department of Transportation's 2021 Statewide EV Charging Plan identified the goal of having DCFC stations every 50 miles along Utah's interstates and



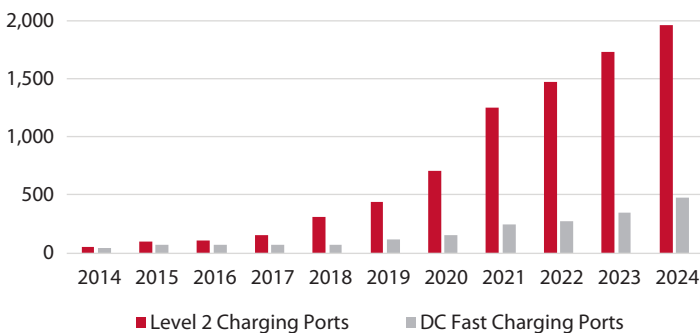
other key highways, creating a need for an additional 37 DCFC stations. The plan also identified the need for an additional 1,557 Level 2 charging stations and 328 DCFC stations in Utah's urban areas.<sup>15</sup> Current efforts to strategically build-out the state's EVSE network focus on electrifying transportation corridors, enhancing inter-state connectivity, and focusing on both urban and rural infrastructure where it is most needed.<sup>16</sup>

**Figure 6: Public Electric Vehicle Charging Stations in Utah, 2024**



Sources: U.S. Department of Energy, Alternative Fuels Data Center. (2024). *Electric Vehicle Charging Station Locations*

**Figure 7: Public Electric Vehicle Charging Ports in Utah, 2010-2024**



Source: U.S. Department of Energy, Alternative Fuels Data Center. (2024). *Electric Vehicle Charging Station Locations*. Retrieved on October 7, 2024.

## Public Sector Planning and Support

Federal, state, and local policy initiatives can also help fuel the rate of transportation decarbonization, and by extension impact growth of the clean transportation workforce. Long-term planning, mandates, infrastructure investments, and incentives can accelerate EV adoption, resulting in job growth across the sector.

### Federal Planning and Policy

Federal planning and policy that supports transportation decarbonization shifts with presidential and congressional priorities. For example, the Biden administration has taken action to support and accelerate transportation decarbonization. To align U.S. policy with international targets, the Biden administration recommitted the United States to the Paris Climate agreement, which required the country to develop a Nationally Determined Contribution plan. This plan identified the need for economy-wide greenhouse gas reductions, including specific policies to aid transportation decarbonization.<sup>17</sup>

To support the Biden administration's emission-reductions goals, multiple federal agencies collaborated to create two blueprints for transportation decarbonization. The U.S. National Clean Hydrogen Strategy identifies approaches for increasing clean hydrogen production and identifies opportunities and challenges for hydrogen use in freight transportation. With funding from the Infrastructure Investment and Jobs Act (IIJA), the Department of Energy is working to create Regional Clean Hydrogen Hubs.<sup>18</sup>

The U.S. National Blueprint for Transportation Decarbonization proposes a range of goals and strategies to reduce emissions in the transportation sector. These goals include: (1) zero-emission vehicles representing 50% of new vehicle sales by 2030; (2) zero-emissions MHDV sales representing 30% of sales by 2030 and 100% by 2040; (3) deploying 500,000 EV chargers by 2030; and (4) achieving 100% federal fleet procurement of zero-emission vehicles by 2027.<sup>19</sup>

Two significant pieces of federal legislation fund the goals and strategies identified by the U.S. Nationally Determined Contribution Plan, Clean Hydrogen Strategy, and Blueprint for Transportation Decarbonization. First, the IIJA provides \$550 billion in new investments for various infrastructure projects, including bridge repair, increased broadband access, and clean transportation infrastructure. The bill provides \$9.5 billion for hydrogen research and infrastructure, in addition to funding public transit, EV charging infrastructure, rail, electric school buses, and more.

Second, the Inflation Reduction Act provides \$370 billion for climate and energy investments. Specific to the clean transportation sector, the bill funds clean vehicle tax credits, manufacturing and supply chain incentives, EV and hydrogen infrastructure, and zero-emission MHDV incentives.

## Other Utah Initiatives Supporting Clean Transportation

- **Committing to ChargeWest** - This initiative brings together eight intermountain states to collaborate on building a regional EV charging network connecting member states. Activities include education, coordination, promotion of minimum charging standards, and identification of funding opportunities.<sup>22</sup>
- **Creation of Statewide EV Master Plan and EV Charging Plan** – These two plans outline a design for Utah’s expanding EV market and identify charging needs statewide.
- **Providing Incentives for EV Adoption and Infrastructure** – Incentive programs include MHDV tax credits, EVSE station rebates, vehicle conversion grants, and hydrogen production incentives.
- **Administering Volkswagen Settlement Funds** – Utah received over \$35 million from a Volkswagen lawsuit settlement for violations of the Clean Air Act. The state will use most of the funds to convert public MHDV fleets to cleaner alternatives.

### State Planning and Policy

Utah’s efforts to support transportation decarbonization include long-term planning and funding to support the adoption of alternative-fuel vehicles and infrastructure. However, the majority of public clean transportation funding comes from the federal government, with \$182 million coming from just three programs.

The Environmental Protection Agency’s Clean Ports Program, funded by the Inflation Reduction Act, granted the Utah Department of Environmental Quality (DEQ) \$110 million dollars with an additional \$2.4 million dollars for the Utah Inland Port Authority. The DEQ funds will be used for grants for zero-emissions vehicles including short-haul trucks (drayage trucks), locomotives, and cargo handling equipment. The Utah Inland

Port Authority money will fund an emissions inventory, port resiliency plan, and near-port community workforce plan.<sup>20</sup>

Utah’s Beehive Emissions Reduction Plan provides a comprehensive framework for statewide decarbonization and directs much of its funding to transportation decarbonization. The plan was developed for the Environmental Protection Agency’s Climate Pollution Reduction Grant program and funded by the Inflation Reduction Act. Utah received \$74.7 million to implement this plan, with \$50.7 million planned for transportation decarbonization activities (Table 3).

Utah also receives federal funding from the National Electric Vehicle Infrastructure (NEVI) program, through the Infrastructure Investment and Jobs Act. For fiscal years 2022-2024, the state received a total of \$20.8 million dollars, with additional funding expected through 2026. Utah utilizes NEVI funds to develop electric vehicle charging infrastructure throughout the state guided by the Utah Plan for Electric Vehicle Infrastructure Deployment. The Utah Legislature allocated an additional \$4.9 million in 2019 and \$3.0 million in 2022 to support EVSE development.<sup>21</sup>

**Table 3: Beehive Emissions Reduction Plan - Clean Transportation Investments**

Program	Funding
EV School Buses and Supporting Infrastructure	\$20,010,000
EV Incentives	\$11,500,000
EVSE Incentives	\$6,440,000
EV Replacement Assistance Program	\$5,750,000
EV Delivery Vehicles and Refuse Haulers	\$4,025,000
EV Fleet Incentives (Government and Commercial)	\$2,300,000
E-Bike Incentives	\$690,000
<b>Total</b>	<b>\$50,715,000</b>

Source: Utah Department of Environmental Quality. (2024). *Beehive Emissions Reduction Plan: Draft Priority Measures*

## Utah's Clean Transportation Leaders

Utah is home to an integrated clean transportation ecosystem. Leaders in the clean transportation ecosystem frequently collaborate to help train the growing clean transportation workforce, build EV charging infrastructure, and research ways to decarbonize the transportation sector. Leaders in Utah's clean transportation industry include private companies, public entities, and academic research initiatives working to implement sustainable transportation solutions. Together, these leaders are helping support and build Utah's clean transportation workforce.

### PACIFICORP WESTSMARTEV@SCALE

Pacificorp's WestSmartEV@Scale project leverages public and private funding to accelerate the adoption of EVs across the intermountain west. The project covers consumer, business, and freight vehicles with an emphasis on underserved regions and communities. The project funds a diversity of sub-projects including installing and maintaining EV charging infrastructure, funding studies on workplace charging and freight electrification, and implementing EV ride-share programs at affordable housing projects.

#### *WestSmartEV@Scale*

- **Five focus areas** – This project provides funding for a variety of projects with the following focus areas:
  - **Destination highways** – The project installs charging infrastructure along destination highways, connecting the intermountain west's national parks.
  - **Underserved regions** – Rural and underserved communities receive funding for EV workforce training, rural electric bus transit hubs, and EV car-share programs located at affordable housing projects.
  - **Urban mobility** – The project is funding research on the electrification of ride-share vehicles and taxi fleets and is also developing urban intermodal hubs.
  - **Freight and port electrification** – The project supported fleet electrification at Salt Lake City International Airport and funded research to study heavy-duty vehicle electrification at the Utah Inland Port.
  - **Community and work place** – Funding is provided for public charging infrastructure and research into workplace charging.
- **Leveraging Federal Funding** – WestSmartEV@Scale received \$6 million from the Department of Energy and Pacificorp is investing \$11 million into the project.

- **Community partners** – Pacificorp engaged 25 partners including utility providers, universities, private companies, and transportation agencies in this work. The Utah Clean Cities Coalition is one of these partners and contributes to workforce development research efforts.<sup>23</sup>

### WEBER STATE AUTOMOTIVE EV BOOT CAMP

Weber State University's automotive department provides comprehensive training for the diagnostics, repair, and maintenance of hybrid and electric vehicles. This program is training the next generation of mechanics to work on Utah's growing share of clean vehicles.

#### *Training the Next Generation*

- **Preparing the automotive workforce for clean technologies** – Weber State's EV boot camp provides comprehensive training for automotive technicians and mechanics to diagnose, repair, and maintain several types of hybrid and electric vehicles. It consists of online training, theory, and a week-long in-person module. Maintenance technicians from fleets across Utah use this program to gain needed skills for EV maintenance.
- **Prioritizing safety** – The EV boot camp covers laws, regulations, and standards for dealing with the high-voltage and potentially hazardous components of hybrid and electric vehicles.
- **Far-reaching impact** – Beyond training mechanics, the EV boot camp trains instructors of automotive training programs around the state and country. Training high school and college automotive instructors enhances the program's reach, preparing a larger workforce for the maintenance of clean transportation vehicles.<sup>24</sup>

### UTAH TRANSIT AUTHORITY (UTA)

UTA provides diverse public transportation services to Utah, including Front Runner, Trax, bus services (dedicated and flex routes), and micro-mobility services like UTA On Demand. As the agency electrifies its fleet, positions from executives to vehicle operators are redefined as clean transportation jobs.

#### *UTA's Clean Transportation Workforce*

- **Fleet electrification leadership** – UTA plans to convert half of its bus fleet to alternative fuels by 2034, including over 200 electric buses. As a public entity, UTA is committed to transportation electrification, balancing this transition with the need for vehicle reliability.
- **Clean transportation impacts employment across the agency** – From executive staff to bus operators, UTA's employees are engaging in clean transportation at multiple levels. The agency's clean transportation

workforce includes staff working in finance, operations planning, service planning, community engagement, fleet engineering, maintenance, and sustainability. The agency employed 2,795 full-time equivalent staff in 2023.

- **Retraining and retention** – Building a skilled workforce to manage UTA’s electrifying fleet is as important as retaining that workforce in a competitive labor market. UTA’s transition to clean transportation demonstrates how existing positions are being redefined and retrained through on-the-job training and skills building.<sup>25</sup>

### SALT LAKE CITY INTERNATIONAL AIRPORT

The Salt Lake City International Airport is a leader in transitioning ground transportation and support vehicles to alternative fuels. The airport employs a range of alternative-fuel vehicles, including shuttles, ground support equipment, and operations vehicles. By prioritizing clean transportation and leveraging federal incentives, the airport can serve as a model for fleet decarbonization.

#### *Fleet Decarbonization Leadership*

- **Decarbonizing shuttles** – SLC International Airport operates a fleet of 61 renewable natural gas shuttles. The shuttle fleet recently added eight new EV shuttles by leveraging federal funding.
- **Electrifying ground support equipment** – Ground support vehicles (GSE), including luggage carriers, aircraft tugs, and container loaders, are essential for airport operations. All GSE vehicles at the SLC International Airport are fully electric despite these vehicles being owned and maintained by the airlines and not the airport.
- **Other fleet considerations** – The airport converted facilities and operations vehicles to EVs and maintains a charging network to service these vehicles. The airport also maintains a large charging network for fleet, employee, and public vehicles.<sup>26</sup>

### STADLER RAIL

Stadler Rail is a Swiss train manufacturer with a North American division headquartered in Salt Lake City. Stadler U.S. produces conventional diesel and zero-emissions vehicles for transportation authorities throughout the United States and has a unique apprenticeship program to train the next generation of advanced manufacturing employees.

#### *Shaping Utah’s Clean Transportation Workforce*

- **Zero-emission vehicle leadership** – Stadler produces a range of zero-emissions trains, from high-speed passenger trains to locomotives, that use electric and hydrogen propulsion.
- **Specialized and nimble workforce** – The company’s workforce is comprised of engineers, mechanics, electricians, welders, designers, and product managers. Employees may work to fill an order for diesel trains for several months, then switch over to electric or hydrogen trains.
- **Bringing the Swiss apprenticeship model to Utah** – In collaboration with Talent Ready Utah and three other manufacturers based in the state, Stadler helped to pioneer the Talent Ready Apprenticeship Connection (TRAC). Apprentices start the program in their high school senior year and spend one year rotating through different departments at Stadler, then specialize in a single focus area. In addition to the hands-on apprenticeship, the TRAC program enrolls students from Salt Lake Community College’s Associate of Applied Science in Advanced Manufacturing program.<sup>27</sup>

### UTAH WOMEN IN TRADES

Utah Women in Trades (UWT) supports women and other underrepresented groups enter skilled-trade careers in the state. UWT offers placement into pre-apprenticeship and apprenticeship programs and provides outreach, retention, and mentorship to support participants. UWT helps the state meet the growing demand for skilled trade professionals across various sectors, including clean transportation.

#### *Workforce Development Support*

- **Supporting underrepresented groups in skilled trades** – Skilled-trade jobs have traditionally been male-dominated. UWT provides pathways and support for other groups considering careers as electricians, pipefitters, or lineworkers.
- **Developing Utah’s future skilled workforce** – Demand for skilled-trade positions continues to rise in Utah and the clean transportation sector will be an important component of this growing demand.

- **Readying the workforce for clean transportation employment** – Many skilled-trade professionals, including electricians, pipefitters, and contractors, are well-positioned to work in clean transportation. While additional training and certification may be necessary (including EVITP, safety, and manufacturer-specific EVSE training), UWT ensures participants receive the training and experience required to work in the clean transportation sector.<sup>28</sup>

## **ASPIRE ENGINEERING RESEARCH CENTER AT UTAH STATE UNIVERSITY**

The Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE) center is a research initiative focused on developing innovative solutions for EV charging infrastructure. The center is pioneering wireless electrified roadways and developing Utah's strategic plan for transportation electrification.

### ***ASPIRE's Electrified Transportation Solutions***

- **Electrified roadways** – ASPIRE is developing dynamic wireless charging that is embedded into roadways. The center's test track demonstrates how this technology can be used for all vehicle classes and provides a potential solution for decarbonizing heavy-duty vehicles.
- **EV infrastructure planning in Utah** – S.B. 125 (2023) designated ASPIRE to develop a strategic plan for transportation electrification. The plan will be a comprehensive action plan with short, medium, and long-term horizons, and will include recommendations on integrating the charging infrastructure into the electrical grid.
- **Other projects** – ASPIRE is working with Stadler Rail to develop solutions for electrifying lightweight trains without access to overhead electric infrastructure.

## Endnotes

1. Data in the “Utah’s Clean Energy Sector” and “Clean Vehicle Jobs” sections come from Clean Jobs America 2024, unless otherwise noted. The report is published by E2 and compiles data from the Department of Energy’s U.S. Energy and Employment Jobs Report.
2. E2. (2024). *Clean Jobs America 2024*.
3. Energy and Environmental Research Associates. (2021). *Workforce Projections to Support Battery Electric Vehicle Charging Infrastructure*.
4. U.S. Department of Energy, Alternative Fuels Data Center. (2024). *Vehicle Registration Counts by State*. Retrieved from <https://afdc.energy.gov/vehicle-registration>
5. Utah Transit Authority. (n.d). *Electrification*. Retrieved from <https://www.rideuta.com/About-UTA/Innovative-Mobility-Solutions/Electrification>
6. Park City Transit. (n.d.). *History*. Retrieved from <https://www.parkcity.org/departments/transit-bus/about-park-city-transit>
7. Uintah County School District. (2023). *USD Adds 10 Electric School Buses to Fleet*. Retrieved from [https://uintah.ss12.sharpschool.com/news/what\\_s\\_new/u\\_s\\_d\\_adds\\_10\\_electric\\_school\\_buses\\_to\\_fleet](https://uintah.ss12.sharpschool.com/news/what_s_new/u_s_d_adds_10_electric_school_buses_to_fleet)
8. Salt Lake Tribune. (2024). *Zion Marks a first among national parks. And it will change the way you get around*. Retrieved from <https://www.sltrib.com/news/2024/09/06/southern-utahs-zion-national-park/>
9. Utah Department of Transportation. (2023). *Utah Freight Plan 2023 Update*.
10. Utah Department of Workforce Services. (2024) *Employment and Wages*. Retrieved from <https://jobs.utah.gov/jsp/utalmis/#/industry/list>
11. Utah Division of Air Quality. (2023). *S.B. 136 Diesel Emissions Reduction Program Study & Utah Diesel Emissions Reduction Framework*.
12. Los Angeles Times. (2024). *The first big-rig hydrogen fuel station in the U.S. opens in California*. Retrieved from <https://www.latimes.com/environment/story/2024-04-24/the-first-big-rig-hydrogen-fuel-station-in-the-u-s-opens-in-california>
13. Rocky Mountain Institute. (2019). *Breakthrough Batteries: Powering the Era of Clean Electrification*.
14. U.S. Department of Energy, Alternative Fuels Data Center. (2024). *Electric Vehicle Charging Station Locations*. Retrieved on October 7, 2024. Retrieved from <https://afdc.energy.gov/fuels/electricity-locations#/find/nearest?fuel=ELEC>
15. These estimates were published in 2021 and have not been updated to include new EVSE stations.
16. Utah Department of Transportation. (2021). *Utah Statewide EV Charging Plan*.
17. United Nations Framework Convention on Climate Change. (2021). *The United States of America Nationally Determined Contribution*.
18. U.S. Department of Energy. (2023). *U.S. National Clean Hydrogen Strategy and Roadmap*.
19. U.S. Department of Energy, U.S. Department of Transportation, U.S. Environmental Protection Agency, & U.S. Department of Housing and Urban Development. (2022). *The U.S. National Blueprint for Transportation Decarbonization*.
20. U.S. Environmental Protection Agency. (2024). *Clean Port Program Selections*. Retrieved from <https://www.epa.gov/ports-initiative/clean-ports-program-selections>
21. Joint Office of Energy and Transportation. (n.d.). *State Plans for Electric Vehicle Charging*. Revived from <https://driveelectric.gov/state-plans>
22. ChargeWest. (n.d.). *What is ChargeWest?* Retrieved from: <https://chargewestev.org/about/>
23. J. Campbell, Pacificorp, personal communication, October 22, 2024.
24. S. Hadzick, Weber State Department of Automotive Technology, personal communication, August 16, 2024.
25. J. Fox, Utah Transit Authority, personal communication, September 27, 2024.
26. K. Staples, Salt Lake City International Airport, personal communication, September 19, 2024.
27. H. Smith, Stadler Rail, personal communication, August 30, 2024.
28. C. Defa, Utah Women in Trades, personal communication, August 29, 2024.



## Partners in the Community

The following individuals and entities help support the research mission of the Kem C. Gardner Policy Institute.

### Legacy Partners

The Gardner Company  
 Christian and Marie Gardner Family  
 Intermountain Health  
 Clark and Christine Ivory Foundation  
 KSL and Deseret News  
 Larry H. & Gail Miller Family Foundation  
 Mountain America Credit Union  
 Salt Lake City Corporation  
 Salt Lake County  
 University of Utah Health  
 Utah Governor's Office of Economic Opportunity  
 WCF Insurance  
 Zions Bank

### Executive Partners

The Boyer Company  
 Clyde Companies

### Sustaining Partners

Dominion Energy  
 Salt Lake Chamber  
 Staker Parson Materials and Construction  
 Wells Fargo

## Kem C. Gardner Policy Institute Advisory Board

### Conveners

Michael O. Leavitt  
 Mitt Romney

### Board

Scott Anderson, Co-Chair  
 Gail Miller, Co-Chair  
 Doug Anderson  
 Deborah Bayle  
 Roger Boyer  
 Michelle Camacho  
 Sophia M. DiCaro  
 Cameron Diehl

Kurt Dirks  
 Lisa Eccles  
 Spencer P. Eccles  
 Christian Gardner  
 Kem C. Gardner  
 Kimberly Gardner  
 Natalie Gochmour  
 Brandy Grace  
 Jeremy Hafen  
 Clark Ivory  
 Mike S. Leavitt  
 Derek Miller  
 Ann Millner

Sterling Nielsen  
 Jason Perry  
 Ray Pickup  
 Gary B. Porter  
 Taylor Randall  
 Jill Remington Love  
 Brad Rencher  
 Josh Romney  
 Charles W. Sorenson  
 James Lee Sorenson  
 Vicki Varela

### Ex Officio (invited)

Governor Spencer Cox  
 Speaker Mike Schultz  
 Senate President Stuart Adams  
 Representative Angela Romero  
 Senator Luz Escamilla  
 Mayor Jenny Wilson  
 Mayor Erin Mendenhall

## Kem C. Gardner Policy Institute Staff and Advisors

### Leadership Team

Natalie Gochmour, Associate Dean and Director  
 Jennifer Robinson, Chief of Staff  
 Mallory Bateman, Director of Demographic Research  
 Phil Dean, Chief Economist and Senior Research Fellow  
 Shelley Kruger, Director of Accounting and Finance  
 Colleen Larson, Administrative Manager  
 Nate Lloyd, Director of Economic Research  
 Dianne Meppen, Director of Community Research  
 Laura Summers, Director of Industry Research  
 Nicholas Thiriot, Communications Director  
 James A. Wood, Ivory-Boyer Senior Fellow

### Staff

Eric Albers, Senior Natural Resources Policy Analyst  
 Samantha Ball, Senior Research Associate  
 Parker Banta, Public Policy Analyst  
 Melanie Beagley, Public Policy Analyst  
 Kristina Bishop, Research Economist  
 Preston Brightwell, Dignity Index Field Director  
 Andrea Thomas Brandley, Senior Education Analyst  
 Kara Ann Byrne, Senior Research Associate  
 Mike Christensen, Scholar-in-Residence  
 Nate Christensen, Research Economist  
 Moira Dillow, Housing, Construction, and Real Estate Analyst  
 John C. Downen, Senior Research Fellow  
 Dejan Eskic, Senior Research Fellow and Scholar  
 Kate Farr, Monson Center Maintenance Specialist  
 Chance Hansen, Communications Specialist  
 Emily Harris, Senior Demographer

Michael T. Hogue, Senior Research Statistician  
 Mike Hollingshaus, Senior Demographer  
 Madeleine Jones, Dignity Index Field Director  
 Jennifer Leaver, Senior Tourism Analyst  
 Maddy Oritt, Senior Public Finance Economist  
 Levi Pace, Senior Research Economist  
 Praopan Pratoomchat, Senior Research Economist  
 Heidi Prior, Public Policy Analyst  
 Natalie Roney, Research Economist  
 Shannon Simonsen, Research Coordinator  
 Paul Springer, Senior Graphic Designer  
 Gaby Velasquez, Monson Center Special Events Coordinator  
 Cayley Wintch, Monson Center Building Manager

### Faculty Advisors

Matt Burbank, College of Social and Behavioral Science  
 Elena Patel, David Eccles School of Business  
 Nathan Seegert, David Eccles School of Business

### Senior Advisors

Jonathan Ball, Office of the Legislative Fiscal Analyst  
 Silvia Castro, Suazo Business Center  
 Gary Cornia, Marriott School of Business  
 Beth Jarosz, Population Reference Bureau  
 Darin Mellott, CBRE  
 Pamela S. Perlich, University of Utah  
 Chris Redgrave, Community-at-Large  
 Juliette Tennert, Community-at-Large

INFORMED DECISIONS™