



A Business Vision for Utah's Energy Future

Utah's business community envisions an energy future that places Utah at the center of the nation's energy transition by harmonizing environmental and economic progress to ensure a balanced low-carbon energy future that remains affordable, reliable, and sustainable.



Prepared by the Salt Lake Chamber

October 6, 2022

The Salt Lake Chamber, with assistance from the Kem C. Gardner Policy Institute and R&R Partners, prepared this Business Vision for Utah's Energy Future. The Business Vision is the outcome of 11 focus groups with college and university students, members of the Utah Legislature, and business representatives from the following sectors: agriculture and food, banking, energy and minerals, health care, hospitality and tourism, real estate and construction, technology, and transportation.

Table of Contents

Vision in Brief	1
A Business Vision for Utah's Energy Future	1
Utah Energy Production and Consumption	4
Utah's Energy Transition	4

Note: A Data Compendium that includes additional data, definitions, and focus group summaries supplements this report. This compendium can be accessed on the Salt Lake Chamber or Kem C. Gardner Policy Institute websites.

Vision in Brief

Utah's business community envisions an energy future that places Utah at the center of the nation's energy transition by harmonizing and balancing environmental and economic progress to ensure a low-carbon energy future that remains affordable, reliable, and sustainable. This vision, which will benefit from Utah's diverse energy portfolio including abundant renewable energy, will set Utah apart from other states. Of particular interest will be non-fuel mineral assets because of their importance to energy storage and a world rapidly transitioning to electric vehicles. Six major energy projects, including nuclear and hydrogen, will benefit the Beehive State over the next two decades, even as three coal-fired powerplants close and major refineries produce at capacity. As Utah transitions to this new energy future, business leaders support investment in low and zero-carbon resources, smart grid infrastructure, research and development of transition technologies, economic assistance for communities impacted by the energy transition, and optimal utilization of Uintah Basin's low sulfur waxy crude oils. However, Utah business leaders oppose public and private sector ESG scoring systems and government regulation as catalysts of the energy transition.

A Business Vision for Utah's Energy Future

The business community in Utah envisions a low-carbon energy future that remains affordable, reliable, and sustainable. This vision was developed with input from business and policy leaders who participated in focus group discussions hosted by the Salt Lake Chamber and shed light on how Utah's transitioning energy industry will affect various Utah business sectors. This vision identifies key drivers in Utah's energy transition such as proper incentives, vast mineral wealth, the critical role of natural gas in a clean energy future and the need for technological advances to improve storage capacity of renewable energy sources. These drivers are described in this vision document.

Utah positioned to lead

Utah possesses unique energy advantages that will help the state lead out on environmental, energy, and economic progress. The Beehive State's diversity of supply (oil and gas, coal, wind, solar, geothermal, renewable natural gas, hydrogen, and more), energy storage assets, and built-in energy demand create an environment where Utah can lead the nation's energy transition.

Local leadership and innovation

The Utah business community accepts responsibility for leading the energy transition with state government and Utah's research universities playing an important supportive role – one that favors incentives over regulation and that optimizes ground-breaking research opportunities to catalyze the transition. A few companies are highlighted for their commitments and innovative approaches. PacifiCorp plans to reduce its carbon footprint from 2005 levels by 74% by 2030 across its six-state footprint.¹ Dominion Energy is committed to net-zero carbon and methane emissions from its power generation and natural gas operations by 2050. Two local technology companies,

Carbon Solid Products (CSP) and Sustainable Energy Solutions, are pioneers in sequestering carbon. CSP processes carbon dioxide into carbon black, which is used in Goodyear tires.

rPlus Energies, a Salt Lake-based company, has developed 2,000 megawatts of renewable energy capacity across the U.S., enough to power 500,000 homes. rPlus also develops large-scale "pumped hydro" projects, which shift water between two different elevations to store energy and generate power, to support renewable energy integration and grid reliability, with several in early development in Utah.

Refineries at capacity

Utah has more refining capacity than any other state in the Intermountain West (see Table 1). Utah's five refineries currently run at 90% of capacity or greater, sending refined products to communities in Utah, Idaho, Nevada, Wyoming, eastern Washington and Oregon. Utah refiners demonstrated leadership in producing Tier 3 motor fuels that reduce vehicle emissions by 80% when used in Tier 3 vehicles. In Utah's energy transition to lower carbon fuels, Utah refiners may consider production of sustainable aviation fuels and renewable diesel. These two fuels merit consideration because Salt Lake City is both an aviation hub and an inland port.

Coal-fired powerplant closures

Utah faces scheduled closures of the Bonanza, Huntington, and Hunter power plants in 2030, 2036, and 2042, respectively. These closures may commence even sooner due to rapidly changing energy markets. PacificCorp and other electric utilities across the West have accelerated retirement dates of various coal plants in recent years because of market forces. Expected closures such as these signal major changes ahead for Utah's energy future.

Table 1: Intermountain West Refining Capacity, 2022

State	Refinery Capacity (barrels per day)	Location*
Utah	206,714	North Salt Lake (5 refineries)
Wyoming	125,850	New Castle, Evansville, Evanston, Sinclair
New Mexico	110,000	Artesia
Colorado	103,000	Commerce City
Nevada	2,000	Ely
Idaho	0	-
Arizona	0	-
Total	547,564	

Source: Energy Information Administration

*One refinery in each location, unless otherwise noted

Renewable and low-carbon energy projects

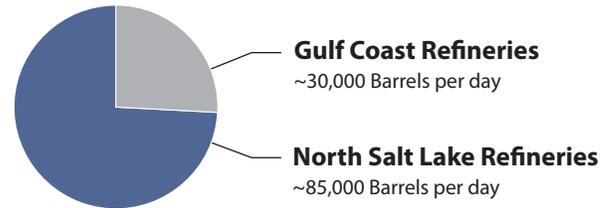
Utah has four major renewable/low-carbon energy projects on the horizon (see Table 2). A Utah Associated Municipal Power Systems (UAMPS) nuclear plant in Idaho and a PacifiCorp nuclear plant in Wyoming will collectively generate over 800 megawatts to serve Utah consumers. The Intermountain Power Plant will fuel switch in 2025 from 100% coal to a 30% green hydrogen/70% natural gas mix generating 840 megawatts. Eventually the plant will undergo a second fuel conversion to run 100% on hydrogen. Advanced Clean Energy Storage (ACES), a consortium of Magnum Development and Mitsubishi Power Americas, will generate green hydrogen which will be stored in a nearby salt cavern. The U.S. Department of Energy (DOE) confirmed a \$505 million loan guarantee for Magnum and Mitsubishi’s green hydrogen project.² The State of Utah is seeking additional funding from the federal government to establish a regional hub for hydrogen power that would include several other states.³

Non-renewable energy

Non-renewable energy resources (coal, natural gas, and crude oil) account for more than 94% of Utah's energy production, a portion of which is exported outside the state (net exports represent about 1.5% of non-renewable energy production in 2019). Two railway projects will provide additional market opportunities for Utah crude oil producers. These include railway construction from South Myton Bench in the Uintah Basin to Helper and terminal construction at South Myton Bench (see Table 3).

Utah waxy crude oils have low sulfur, low metals, and low nitrogen content - making them more environmentally friendly than other crude oil alternatives. Gulf Coast refineries use Uintah Basin waxy crude oil to produce blend stocks for automobile lubricants and low-sulfur marine fuels compliant with international standards. Utah refineries have a combined capacity of about 200,000 barrels of crude oil per day (see Table 1) but their ability to process Utah waxy crude is limited to about 85,000 barrels per day (see Figure 1). Crude oils from other Utah fields, Colorado, Wyoming, and Western Canada fill the balance of Utah's refinery capacity.

Figure 1: Estimated Volume of Uintah Basin Waxy Crude, 2022



Source: Estimates based off analysis by staff at the Kem C. Gardner Policy Institute, Utah Petroleum Association, and the Utah Geological Survey

Table 2: Renewable and Low-Carbon Energy Projects Affecting Utah

Project Description	Commission Date	Site	Construction Phase Jobs	Ongoing Operations Jobs
Nuclear Plants				
PacifiCorp	2028	Naughton, Wyoming	2000	250
Utah Association of Municipal Power Systems (UAMPS)	2029	Idaho National Lab	1600	334
Mixed Fuel Power Plant				
IPP (transition from 100% coal to 30% hydrogen/70% natural gas)	2025	Delta	518	120
Green Hydrogen Facilities				
Electrolysis unit & salt cavern storage	2025	Delta	800	290

Source: NuScale Carbon Free Power Project, Wyoming Advanced Energy, IPP Renewed

Table 3: Non-Renewable Energy Projects in Utah

Project Description	Commission Date	Site	Construction Phase Jobs	Ongoing Operations Jobs
Uintah Basin Railway Project				
Railway Construction from South Myton Bench to Helper	2026	Uintah Basin	2000	150
Terminal Construction at South Myton Bench	2026	Uintah Basin	450	100
Coal-fired Power Plant Closures				
Project Description	Projected Closure Date	Site	Estimated Job Reductions	
Bonanza	2030	Uintah County	83	
Huntington	2036	Emery County	139	
Hunter	2042	Emery County	194	

Source: Rio Grande Pacific Railroad, PacifiCorp

Natural gas

As of 2019, natural gas accounts for 33% of total energy production in Utah (see Figure 3). Natural gas will have a critical role in the energy transition since natural gas-fired electric generation is capable of providing low-emitting, low-cost, round-the-clock energy and is vital to the successful integration of intermittent renewable energy resources such as wind and solar. Significant advancement in energy storage technology and supply chains will be required to support an increasingly renewable grid in a reliable and cost-effective manner.

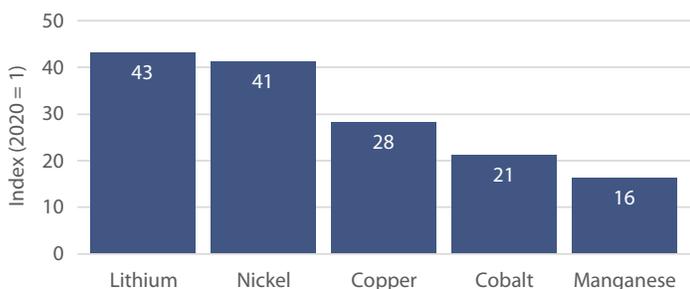
Natural gas distributed to homes and businesses provides efficient, affordable, and environmentally sensitive energy for various home, business, and industrial applications. Natural gas utilized for home heating and power generation can be blended with renewable natural gas, which in certain production forms is carbon negative, or with hydrogen, which can be produced and utilized carbon free.

Mineral wealth

Utah's non-fuel mineral wealth, such as lithium, copper and rare earth elements, may prove as valuable as crude oil, natural gas and coal. These commodities cannot be grown or manufactured; they must be mined. Utah's non-fuel mineral wealth will supply components needed for electric vehicle batteries and renewable energy power plants in the future.

The International Energy Administration (IEA) projected mineral demand growth from 2020 to 2040 assuming a global energy transition to meet the Paris Climate Accord objectives. IEA projects lithium demand increases 43-fold compared to 2020 levels due to

Figure 2: Projected Demand Growth of Selected Minerals, 2040 Relative to 2020



Source: International Energy Administration

Table 4. Utah Mineral Production, 2020

Mineral	Production	Location
Copper	417 million lbs. per annum	Bingham Canyon Mine, Salt Lake County; Lisbon Valley, San Juan County
Lithium	By-product of magnesium recovery in Great Salt Lake brine	Great Salt Lake; Grand County
Nickel	Less than 100 tons per annum	Wells Canyon Nickel and Clay Pits, Utah County
Manganese	Less than 100 tons manganese ore per annum	Manganese King Mine, Kane County
Cobalt	By-product in copper and uranium deposits	Copper Ridge, Grand County

Source: Utah Geological Survey; *Utah Mining 2020*

increased minerals and metals required by the energy transition economy (see Figure 2). Utah may meet future copper demands in the energy transition; however, other minerals require additional development as noted in Table 4.

Storage and technology

Technology advances such as storage of electricity generated by renewable energies will be at the forefront of Utah's energy transition. The recently begun and aforementioned ACES project exemplifies storage innovation in Utah. ACES will generate green hydrogen for storage in a nearby salt dome. The stored hydrogen will generate up to 300 gigawatt hours of electricity.⁴ The environmental impact of battery production and storage remain areas of needed innovation. Utah companies are already and will continue to be part of the solution.

Incentives and regulations

The business community favors energy transition that is market-driven and pragmatic, spurred by incentives and not by government regulation. Utah offers a tax credit for renewable energy generating systems for residential and commercial installations. This is an example of efforts underway to spur the energy transition via incentives as opposed to regulation. From 2015 to 2019, more than 25,000 residential tax credits for solar photovoltaic systems were issued.⁵ Rooftop solar incentives for Utah homeowners include a 26% federal solar investment tax credit plus a 25% Utah solar tax credit capped at \$800. The *Environment America Research & Policy Center* honored Salt Lake City as a "Solar Star" city based on per capita solar capacity and total solar capacity.

Housing affordability is an acute problem along the Wasatch Front. Focus group participants noted that building code changes requiring "electric ready" construction would increase housing costs for buyers. Existing energy efficiency programs offer rebates to encourage the use of equipment and building investments that reduce energy use and emissions.

Environmental, Social, and Governance (ESG)

ESG standards assess a company's governance mechanisms and ability to manage its environmental and social impacts. The U.S. Securities and Exchange Commission (SEC) currently considers standardization of decision-useful, climate-related disclosures for investors. Utah business leaders share the governor, Legislature, and Utah congressional delegation's opposition to ESG credit indicators, both in government and business. These scores have the potential to impact credit ratings without regard to creditworthiness. Existing credit ratings already incorporate materially relevant ESG factors. In addition, state ESG scores mix objective financial metrics with subjective ESG metrics and politicize what is best left to rigorous measurement.

Air quality and changing climate

Utah business leaders support research and technology that help Utah achieve a low-carbon future to address both air quality and the changing climate and economic transition assistance to energy-dependent communities.

As of 2019, traditional energy resources (coal, natural gas, crude oil) make up more than 94% of Utah's total energy production.

Utah Energy Production and Consumption

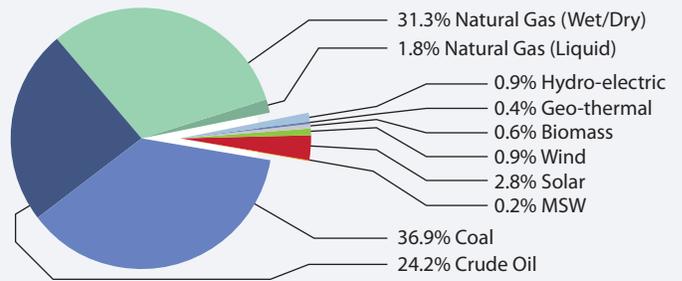
Renewable sources (solar, hydroelectric, wind, biomass, and geothermal) account for just under 6% of the state’s energy portfolio. While non-renewable energy sources account for the majority of the state’s energy portfolio, the renewable energy share of Utah’s total energy production increased from just 1% in 2009 to nearly 6% a decade later.

Since 1980, Utah has been a net energy exporter. Utah energy consumption by source breaks down similarly between non-renewable (about 94%) and renewable energy (about 6%).⁶

Declining coal (-37%) and natural gas (-40%) production levels between 2009 and 2019 and increased energy consumption (15%) over that decade reduced the surplus between Utah’s energy supply and consumption levels from 387 trillion British Thermal Units (BTUs) to 12 trillion BTUs.

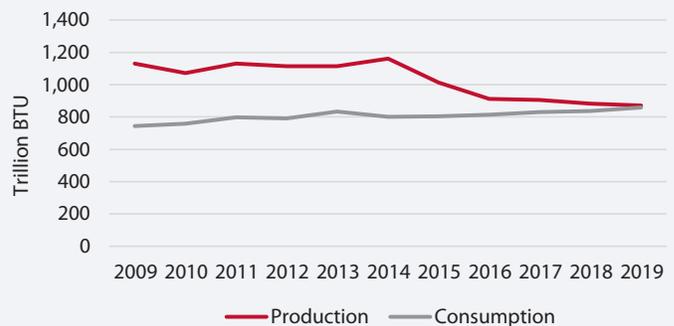
Utah exports coal to the Far East and to neighboring states. Over the last decade, Utah shipped 13% of its coal production to the Far East with 16% moving by rail or truck to neighboring states. California has been the largest domestic importer of Utah coal.

Figure 3: Utah Energy Production by Source, 2019



Source: Utah Geological Survey

Figure 4: Utah Energy Production and Consumption, 2009–2019



Source: Utah Geological Survey

Utah’s Energy Transition

Storage capacity is an obstacle to Utah’s economy becoming more dependent on renewable energy sources. Dispatchability of energy refers to the ability of a given power source to increase or decrease output quickly on demand. Renewable energy sources such as wind power and solar power are not dispatchable due to their fluctuating nature. Solar fluctuates because of the day-night cycle while wind fluctuates due to meteorological conditions. Therefore, renewable energy sources need better storage capacity to contribute meaningfully to Utah’s energy portfolio mix.

Despite the obstacle of storage capacity for intermittent renewable energy sources, four major low-carbon energy projects are on the horizon to spur an energy transition. Some of these projects will boost low-carbon energy production in Utah while others, located out of state, will serve Utah consumers:

- Construction of two nuclear plants collectively generating over 800 megawatts in Idaho and Wyoming, both of which will service Utah consumers.
- Intermountain Power Plant’s fuel switch in 2025 from coal to a natural gas/hydrogen blend will generate 840 megawatts.
- An electrolysis plant in Delta will create hydrogen for the Intermountain Power Plant.

While the nuclear plants won’t generate ongoing jobs in Utah, the other two projects will bring an estimated 410 ongoing jobs to the state.

Two railway projects will provide additional market opportunities for Utah crude oil producers. Three coal-fired power plants plan to close over the next 20 years, eliminating a combined estimated 416 jobs.

The challenges of poor air quality and the changing climate are similar: Both negatively affect health, the state's economy, our environment, and quality of life. By reducing emissions and auto dependency, improving energy efficiency, and advancing innovative energy solutions, Utah can address both challenges simultaneously while preserving conditions that promote strong economic growth.

Transmission

Electrical transmission is the process of delivering generated electricity to distribution grids located in populated areas. A robust transmission system will allow renewable energies to feature in Utah's energy mix. Regional renewable resources such as solar and wind are projected to support up to 5,000 megawatts of Utah's electricity generation by 2030⁷. This increased electricity generation may require building out up to 290 new line-miles to upgrade transmission infrastructure in Utah to avoid grid congestion.

The Western Energy Imbalance Market (WEIM) optimizes electricity resources across the West and integrates renewable energy sources, creating a market for transmitted energy. WEIM benefits accrue when economic transfers displace more expensive electricity generation. Since PacifiCorp joined WEIM in November 2014, estimated accrued benefits total \$453 million through June 2022.⁸

Conclusion

Utah's business community supports an energy future that places the state at the center of the nation's energy transition. Utah possesses many advantages that will help it lead out on energy, environmental, and economic progress including its diverse energy portfolio, wealth of mineral assets, strong state and local leadership, new energy projects already underway, innovative business culture, and proper incentives.

These advantages will help the state make progress towards a low-carbon energy future that will remain affordable, reliable, and sustainable.

Focus Groups and Research Design Process

The Salt Lake Chamber, with assistance from the Kem C. Gardner Policy Institute and R&R Partners, hosted 11 focus groups between September 2021 and May 2022 to seek input on the future of energy in Utah. These focus groups included representatives from college and university students, members of the Utah Legislature, and business representatives from the following sectors: agriculture and food, banking, energy and minerals, health care, hospitality and tourism, real estate and construction, technology, and transportation. R&R Partners facilitated the discussions and staff from the Gardner Institute captured responses. Forty-six individuals participated in these focus groups and provided input on the following questions:

1. How would new energy resources (i.e., renewable energy, hydrogen) affect your business sector?
2. Which national or state energy policies would be either beneficial or detrimental to your business sector?
3. How do your constituents view energy policy goals such as:
 - Energy efficiency
 - Renewable energy development
 - Reduction of greenhouse gas emissions

Following the focus groups, the Salt Lake Chamber sought input from its members to further refine this vision for Utah's energy future.

	Date	Participants
Focus Group 1	Sep. 23, 2021	Energy and Minerals
Focus Group 2	Nov. 18, 2021	Banking
Focus Group 3	Dec. 9, 2021	Real Estate and Const.
Focus Group 4	Jan. 11, 2022	Technology
Focus Group 5	Jan. 12, 2022	Transportation
Focus Group 6	Jan. 28, 2022	Health Care
Focus Group 7	Feb. 16, 2022	Hospitality and Tourism
Focus Group 8	Mar. 24, 2022	Agriculture and Food
Focus Group 9	Mar. 9, 2022	Legislators
Focus Group 10	Mar. 16, 2022	Legislators
Focus Group 11	May 6, 2022	College and Univ. Students

Key Focus Group findings are:

1. Incentives - not government regulations - will drive the energy transition from carbon-intensive fuels to low-carbon fuels.
2. Technologies such as renewable energy battery storage, carbon capture utilization and sequestration (CCUS), and harvesting geothermal energy will facilitate the transition to low-carbon fuels.
3. Base load energies for electricity generation, such as natural gas and nuclear, should remain in Utah's energy mix until battery storage for renewable energies is significantly improved.

Business Vision Research Process



1. <https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/energy/integrated-resource-plan/2021-irp/Volume%201%20-%20209.15.2021%20Final.pdf>. PacifiCorp's Rocky Mountain Power business unit serves customers in Utah, Idaho, and Wyoming. Pacific Power serves customers in Oregon, Washington, and California.
2. <https://www.utilitydive.com/news/doe-loan-guarantee-utah-hydrogen-storage-mitsubishi/625190/>
3. <https://energy.utah.gov/wp-content/uploads/Western-Inter-States-Hydrogen-Hub-MOU.pdf>.
4. <https://www.powermag.com/aces-deltas-giant-utah-salt-cavern-hydrogen-storage-project-gets-504m-conditional-doe-loan-guarantee/>
5. Utah Governor's Office of Energy Development. (2020). Foundations for a Better Energy Future. <https://energy.utah.gov/wp-content/uploads/Foundations-for-a-Better-Energy-Future.pdf>.
6. *ibid.*
7. <https://energy.utah.gov/wp-content/uploads/2021-Utah-Transmission-Study-Technical-Report-FINAL-210121.pdf>.
8. <https://www.westerneim.com/Pages/About/QuarterlyBenefits.aspx>.

Salt Lake Chamber Board of Directors

Dr. Donna L. Milavetz, Chair
Gary Hoogeveen, Vice Chair
Lloyd Allen
Nathan R. Callister
Amanda Covington
John Dahlstrom
Darla Gill
Natalie Gochnour
Kay Hall

Dan Hemmert
Clark D. Ivory
Greg M. Johnson
Marti Lolli
Matt Lyon
Derek Miller
Sterling W. Nielsen
Scott Parson
David A. Petersen

Gaby Poirier
Gary B. Porter
Nico Bamberger Priskos
Taylor Randall
Steven Ridge
Steve Starks
Clayton Walker
Linda Wardell



201 South Main Street #2300
Salt Lake City, UT 84111
Phone: (801) 364-3631
Email: info@slchamber.com