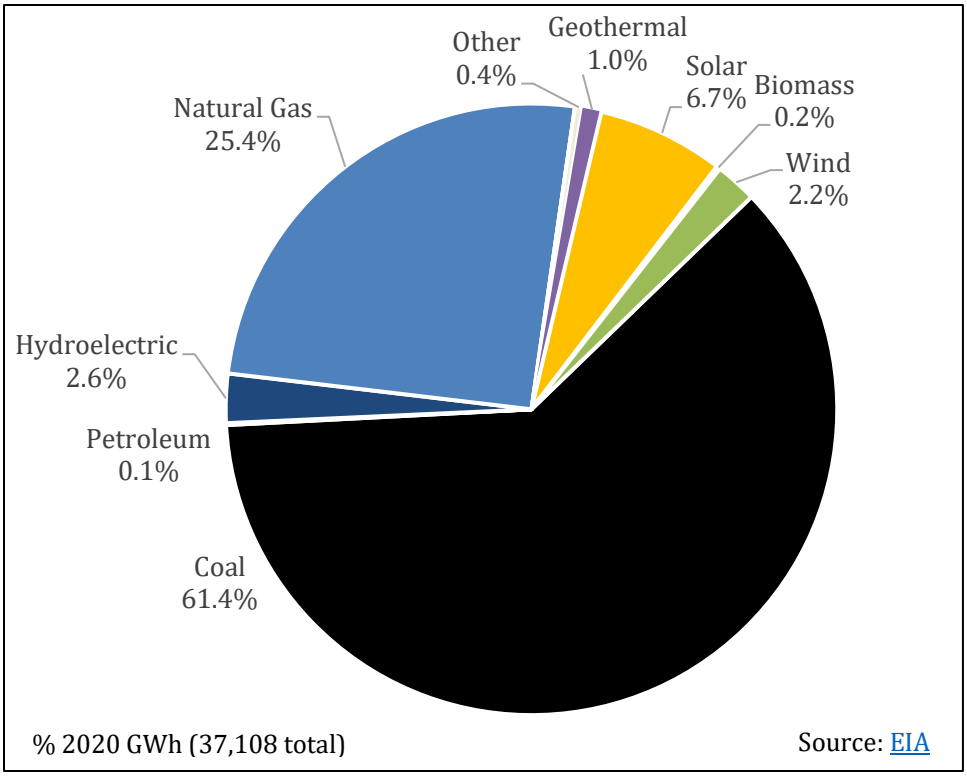
State Brief: Utah

BACKGROUND

While coal remains the dominant resource used for electric generation in Utah, its share has dropped significantly since 2015, when it supplied 75% of the state's energy mix. This reduction has largely been driven by growth in solar and natural gas production. Three-fifths of the coal mined in Utah is consumed in the state. Utah is a net electricity supplier to other western states, and due at least in part to California's emissions rules on purchasing electricity from clean sources, some plants are being converted from coal to natural gas. Royalties from energy development have historically been the largest source of income for the state's public-school trust fund.

Utah's Net Annual Electric Generation, 2020



% 2020 GWh (37,108 total) Source: EIA

Utah's transportation and industrial sectors are its largest consumers of energy, accounting for about 58% of total energy consumption. The state' per capita residential energy consumption is the third lowest in the U.S.

Utah has a voluntary renewable portfolio goal of 20% renewables by 2025. The Community Renewable Energy Act of 2019 enabled at least 24 cities in the state to opt into 100% renewable energy goals working in conjunction with Rocky Mountain Power. Solar energy had not provided a significant amount of electricity until 2016. The Beehive State has since seen a dramatic expansion in solar generation capacity. In 2020, the Solar Energy Industries Association (SEIA) ranked Utah 10th in the U.S. in terms of installed solar capacity (2,336.2 megawatts (MW) as of March 2021) and 20th for five-year industry growth projections (1,498 MW total). There is significant potential for wind energy development in the state, but many in-state utility-scale wind projects are not deemed cost-effective by the regulatory commission. Utah is one of the few states with utility-scale geothermal generating capacity. The state currently has three geothermal power plants that provide 72 MW of energy, and the Utah Governor's office believes that there is the potential for another 2,200 MW of geothermal energy in the state.

The 2020 U.S. Energy and Employment Report found that Utah has 31,468 traditional energy workers (2.1% of total state employment). In 2020, Utah ranked 25th nationwide for clean energy jobs (including jobs in energy efficiency and solar) and the industry employed 41,514 Utahns.[1]

Utah's Public Service Commission (PSC) regulates the state's investor-owned utilities (IOUs), electric cooperatives, and natural gas utilities. The PSC has three republican members appointed by former Governor Gary Herbert. The Republican Party controls large majorities in both legislative chambers, and Governor Spencer Cox is also a republican.

[1] This is in addition to the number of traditional energy jobs in the state.

POLICY STRENGTHS AND OPPORTUNITIES

The National Renewable Energy Laboratory (NREL) developed the notion of "policy stacking,"[2] an important framework for policymakers to consider. The basic idea behind policy stacking is that there is an interdependency and sequencing of state policy that, when done effectively, can yield greater market certainty, private sector investment, and likelihood of achieving stated public policy objectives.

In theory, but not always in practice, clean energy policies can be categorized into one of three tiers of the policy stack. Tier 1, market preparation policies, remove technical, legal, regulatory, and infrastructure-related barriers to clean energy technology adoption. Tier 2, market creation policies, create a market and/or signal state support for clean energy technologies. Tier 3, market expansion policies, create incentives and other programs to expand an existing clean energy market by encouraging or facilitating technology uptake by additional market participants.

For example, before financial incentives for combined heat and power (CHP) will be successful, two key considerations for deployment are having clear interconnection standards and favorable stand-by rates for customers who opt to add CHP. In this example, states should adopt policies to address interconnection and stand-by rates before adopting financial incentive programs.

GRID MODERNIZATION

Digital technologies have enabled utilities to better manage the grid and provide opportunities for consumers to customize their services to fit their priorities. These technologies allow a two-way flow of information between the electric grid and grid operators and between utilities and their customers.

Emerging technologies improve system reliability and resiliency by enabling better tracking and management of resources. These technologies allow grid operators to incorporate central and distributed energy resources, energy storage technologies, electric vehicles, and assist in addressing the challenges associated with planning, congestion, asset utilization, and energy and system efficiency.

On the customer's side of the meter, dynamic pricing, advanced metering infrastructure, and other technologies allow an exchange of information and electricity between a consumer and their electric provider. Grid modernization is associated with greater consumer choice by allowing customers to meet their energy priorities by producing their own energy or through contracting innovative clean energy services from different providers.

Grid modernization will require a suite of state and federal policy changes to support advancements in grid technologies, grid management, and utility regulation.

Utah does not have a grid modernization plan, but Governor Herbert released the 10-Year Strategic Energy Plan in 2011, which created the Governor's Office of Energy Development (OED). A plan update was published by the OED in 2014. The plan does not offer a comprehensive program to modernize the electric grid, but it presents a series of guiding principles and policy goals, one of which is to "modernize the regulatory environment to support sustainable power generation, energy transmission solutions and energy conservation."[3] The OED released Utah's Energy Action Plan in May 2018, outlining specific measures designed to help meet the state's energy policy goals, which include investments in efficiency programs and alternative vehicle infrastructure, but the action plan does not explicitly focus on grid modernization or resiliency. There have been no new Energy Action Plans updates since Governor Cox took office in 2021.

Utah is primed to make significant inroads in updating its electric infrastructure. The state could consider the following actions to advance grid modernization in Utah:

1. Develop a grid modernization strategy through a stakeholder process. States may also decide to require that utilities propose a ten-year grid modernization plan within a specified timeframe. Legislation could require plans to outline a clear set of grid modernization goals and describe methods to measure, report, verify, and enforce

[2] V.A. Krasko and E. Doris, *National Renewable Energy Laboratory*, 2012. Strategic Sequencing for State Distributed PV Policies: A Quantitative Analysis of Policy Impacts and Interactions. http://www.nrel.gov/docs/fy13osti/56428.pdf.

[3] Governor Gary R. Herbert, *Energy Initiatives & Imperatives: Utah's 10-Year Strategic Plan*, Updated Plan, February 2014, pp. 2

progress towards those goals. States might also provide incentives or cost recovery mechanisms for utilities to meet grid modernization goals.

2. Require that utilities' integrated resource plans (IRPs) include plans to enhance cybersecurity, integrate distributed energy resources (including EVs and energy storage), increase demand response and/or demand-side management (DSM) programs, and measure and report on the results of grid modernization efforts.

3. Utah does not have clear state policies governing customer data access and privacy protections. To address this, policymakers should develop legislation or rules that, at minimum, do the following: clarify who owns the energy data associated with customer energy usage; protect customer privacy; outline the process for allowing direct access to data by third parties; and promote access to the highest resolution of data by third parties. The state could establish customer access to energy data through the Green Button Connect program, for example. While there is no requirement that energy data be made readily available, Rocky Mountain Power (RMP) and Dominion offer customers access to their usage data on their websites.

4. State departments of workforce services or their equivalent can be directed to work with utilities and other stakeholders to develop training programs for grid technicians and engineers. With new grid technology and distributed energy systems coming online, a new generation of workers can be trained to meet evolving needs, which will keep jobs local, and contribute to economic development.[4]

The adoption of incentives for or a requirement to integrate a certain amount of energy storage on the grid alongside enhancing renewable energy and electric vehicle policies can support modernization efforts and improve the chances of successful grid modernization.

ENERGY STORAGE

Energy storage offers a unique opportunity to manage supply and demand dynamically while also maximizing the value of grid resources. By deploying storage to strategic locations, utilities can more effectively manage their energy portfolios. First, storage allows utilities to manage intermittent demand – helping reduce peak demand requirements. Because the generation resources that provide peak power are the system's most expensive, reducing peak demand can save consumers money. Second, the responsiveness of energy storage can allow utilities to implement voltage regulation and other ancillary services, which are useful for improving system efficiency. Third, because storage technologies can both store and dispatch power, storage enables better integration of intermittent power generation resources like renewable energy to the grid. Finally, energy storage can help the commercial sector avoid costly demand charges. As utilities around the country consider implementing or extending demand charges to other sectors, energy storage will become more relevant as a customer cost-saving investment.

The flexibility of battery storage, combined with advanced metering infrastructure, allows customers to control, for instance, how and when they use energy from the grid or from solar panels installed on their home or business. In most cases, this can provide greater cost savings than standalone solar systems. Combined with time-varying rates or real-time pricing programs, state policy can further support customer choice and open a new market for energy services. Prices that better reflect the time-varying and location-dependent costs of producing and delivering electricity can lead to several economic and environmental gains.

Two major trends have enabled increased deployment of energy storage: declining costs and technological advances. State policies can help maximize these benefits by establishing both a framework for easy integration of energy storage resources onto the grid and a marketplace that monetizes the benefits of energy storage for cost-effective investment.

Utah has taken steps to expand the battery storage market. In 2016, the legislature passed Senate Bill 115, or the Sustainable Transportation and Energy Plan Act, which authorized the PSC to approve utility pilot programs for emerging technologies including battery storage. RMP subsequently submitted applications for a smart inverter program, a microgrid program, and an electric vehicle time-of-use pricing program in its 2017 IRP. In 2019, RMP

[4] For a discussion of specific workforce needs that states might explore see: GridWise Alliance and U.S. Department of Energy. 2020. "Grid Modernization Index Insights into a Transformation: Principles for the Next Decade of Progress."

launched a partnership with The Wasatch group to develop an apartment complex with battery storage for each of its 600 units for a combined 12.6 megawatt-hour (MWh) capacity as well as 5.2 MW of solar panels and 150 EV charging stalls. RMP also offers the Wattsmart Battery program which offers incentives to allow the utility to manage enrollees' on-site battery storage systems as part of the utility's smart power grid.

There are several policy opportunities to take advantage of the growing technological advances in and declining costs of energy storage. The recommendations here draw heavily from the Interstate Renewable Energy Council's (IREC) 2017 report, "Charging Ahead – An Energy Storage Guide for Policymakers." Policymakers in Utah could consider the following:

1. Amend existing interconnection policies to ensure that storage can connect to the grid through a transparent and simple process. The Interstate Renewable Energy Council (IREC) has produced a series of interconnection protocols that states can easily adopt. The state could establish best practices for interconnecting storage in statute, or legislation could provide an instruction to the PUC to update existing policy.

2. Instruct utilities to evaluate the value of energy storage in multiple strategic locations across the utility system and consider a requirement to deploy storage where it will be cost effective or identify the price point at which it will become cost effective.

3. Require the inclusion of energy storage as a critical piece of the energy system as both a demand and supply management resource. Some states have required that utilities evaluate the cost effectiveness of non-wires alternatives (NWAs) to large transmission and generation investments. Alternatively, states might want to require utilities to develop a distribution investment plan that identifies the locations on the distribution system where energy storage or other distributed resources would offer the greatest value.

4. Finance and incentivize energy storage for customers and utilities. Incentives in the form of rebates, grants, and tax credits could enable customers to use storage to manage their electric load, store locally produced renewable energy, and provide a bridge to scalable deployment for storage. Incentives could be designed to decline as storage values become more readily monetized. Policymakers could allow utilities that provide incentives to customers to recover the costs of installing smart meters. Furthermore, financing energy storage installations for commercial customers could help reduce their demand charges. A good place for policymakers to start is incentivizing solar system owners.

MAINSTREAMING RENEWABLES

As the renewable energy industry matured, technology improved, and global production of generating equipment increased. Renewable energy is increasingly seen as the least cost and lowest risk form of energy (excluding energy efficiency). A 2021 Energy Information Administration report predicts that the share of the United States' electricity generation mix supplied by renewable energy resources will increase from 21% in 2020 to 42% by 2050. With increased deployment, utilities are learning more about how to integrate renewables effectively, investors are becoming more comfortable with the technologies, and building code officials are recognizing common standards and best practices. For these reasons, it is in the interest of policymakers to ensure that their states are well positioned to benefit from the transition to clean and sustainable energy resources.

To reduce barriers to customer and utility participation in the renewable energy market, Utah might consider several policy options.

Customer-Oriented Policies

1. **Interconnection, Net Metering, and Streamlined Permitting –** In general, customers want a clear, streamlined, affordable, and predictable system for connecting renewable energy systems to the grid. The PSC approved a settlement between RMP and solar advocates in 2017, which ended the state's net metering policy that credited customers at the full retail rate. The settlement instated a three-year transition period for new solar installers while RMP conducted a value-of-solar study that was due to the PSC in 2020. In late 2020, the PSC issued an order implementing a compromise avoided costs rate. Aggregated net metering is allowed in Utah, which is especially beneficial to the state's agricultural operations. Other applications for aggregated net metering include commercial properties and public entities like state and local governments, universities,

and schools. The state might also consider establishing either statewide standards for streamlined permitting processes, or resources to support local governments that voluntarily implement a streamlined program. State incentives, such as tax credits, financial incentives, or loans can be tied to systems that are established within a designated streamlined permitting jurisdiction. A few counties in Utah have adopted expedited permitting for solar photovoltaic (PV) systems.

2. **Shared Renewables –** Due to building and property attributes and ownership issues, many customers are unable to install renewable energy technologies where they live or work. Allowing shared, or community, renewable energy projects addresses these barriers. These projects have multiple owners or subscribers who pay for a portion of the generation provided by the system. The University of Utah's U Community Solar program supplies nearly 3.19 MW of solar energy to 598 homes. RMP's Utah Subscriber Solar program offers a total of 20 MW of solar generation for residents to subscribe to in 200 kilowatt-hour (kWh) blocks. Lawmakers could consider offering tax credits to incentivize shared renewable energy projects. To expand program participation, the state might also consider adopting a virtual net metering policy. Virtual net metering allows a customer to receive credits from a shared system as if the generation were on site. Virtual net metering is different from a power purchase agreement (PPA), which pays the customer for the proportion of power they produce. Because it is treated as a credit on the customer's bill, the customer can avoid the tax implications of a PPA payment - which can adversely affect the economics of the system (and may come as a surprise to the participant).

   Low credit ratings often deter participation in renewable energy markets; this can affect low- and moderate-income (LMI) households' adoption of renewable energy solutions. Supportive policies for shared renewables can be designed to encourage participation by LMI households; this can increase adoption of renewable technologies and reduce energy costs. Low-income participation can be ensured either through a percentage mandate for the overall annual contracted capacity, or by offering a higher rate of payment for the portion of shared solar capacity attributed to low-income customers. States that have a shared renewable program may want to coordinate this program with implementation of the federal Weatherization Assistance Program to provide recipients of assistance with participation in a shared renewable system.

   There are several additional policy options that Utah might consider to promote renewable energy uptake by low- and moderate-income consumers. Generally, successful state policies should be tailored to these customers, be cost-effective and financially sustainable, have measurable performance indicators, and be flexible enough to allow later changes in design.

3. **Corporate Procurement –** Many Fortune 100 and 500 companies have established either climate goals or commitments to purchase renewable energy. Since 2016, nearly 31 gigawatts (GW) of renewable contracts have been announced by corporate entities. In 2020 alone, corporations signed 100 agreements for over 10 GW of renewable energy. This is leading policymakers to provide additional avenues for businesses to procure renewable energy. Utah's policy environment is favorable toward corporate procurement; the state passed legislation in 2016 that authorizes "qualified utilities" to implement a renewable energy tariff. RMP's schedule 34 tariff is a "sleeved PPA" in which contracts are negotiated through the utility. Utah's policy allows companies to purchase RECs or renewable energy through green tariffs, own shares in community renewable energy projects, develop or lease onsite renewable energy projects, and enter into onsite third-party PPAs. The products available in Utah meet all six of the Corporate Renewable Energy Buyers' Principles, and the state was ranked ninth overall in the Retail Industry Leaders Association's 2020 rankings of state corporate procurement policies. In addition, it is prudent to incorporate corporate renewable purchase commitments into the IRPs that utilities submit to regulators to plan for resource needs over multiple decades. By integrating these renewable purchase commitments into the IRP process, regulators can avoid over-building resources and stranding generation assets.

Utility-Oriented Policies

Some states have created programs that aim to reduce greenhouse gas emissions and increase investments in clean energy resources. Utah has a voluntary renewable portfolio goal of 20% of adjusted retail electricity sales by 2025, with no interim targets. The goal applies to IOUs, cooperatives, and municipal utilities, who must only procure renewable energy if it is cost-effective. PacifiCorp has set a goal to reduce GHG emissions by 60% of 2005 levels by 2030. To increase utility adoption of clean energy technologies, Utah's policymakers might consider the following:

1. **Accelerating and Amending Renewable Portfolio Standards –** States can revisit existing RPS policies to increase targets and/or accelerate target dates to continue to spur the development of renewable resources and save ratepayers money. Additionally, states might add one or more carve-outs to further incentivize the development of distributed generation. Embedding an RPS within broader clean electricity or emissions standard can allow technological flexibility.

2. **Emissions Standards –** Emissions standards can take a technology neutral approach that looks at the total emissions of the utility portfolio and drives emissions down with a combination of renewables, traditional fuels, efficiency, and technological advances. Emissions reductions can be achieved through 1) a carbon portfolio standard approach, or 2) a market-based approach. A portfolio emissions standard sets emissions reduction targets to be achieved over time. This can be implemented through the IRP process or by establishing a maximum allowable rate of emissions per unit. Under a market-based approach, a state or a group of states might set a certain emissions reduction target, for example, 50% below 2005 levels by 2025. This reduction is achieved by the distribution of annual emission allowances that decrease to the point that the standard is met in 2025. One of the advantages of a market-based program is that it is designed to reduce emissions in the most economically efficient manner possible. Such a standard can also address other concerns such as pollution, asthma risk, environmental justice, and water use.

3. **Clean Peak Standards (CPS) –** Clean Peak Standards aim to increase the share of clean energy resources used to meet peak demand and decrease energy bills over the long-term by reducing peak demand in the hours when energy costs are highest. These objectives can be met through different policy options, including planning and procurement that focuses on peak demand; a moratorium on the construction of new peaking units or a phase out of existing units; incentives – including carve-outs in states with RPSs – for clean energy resources delivered during peak times; and/or adopting a new clean peak standard that sets a target for clean energy deliveries during peak times.

ELECTRIFICATION OF THE TRANSPORTATION SECTOR

An estimated 58% of new car sales will be electric by 2040. Therefore, a key part of building a modernized grid involves designing infrastructure that will facilitate easy connection of electric vehicles (EVs) to the grid. One of the most important barriers to increased adoption of EVs is the consumer's awareness of the availability of EV charging stations. Ultimately, drivers want to be sure that their car will get them where they need to go. The good news is that both supportive policies for developing charging infrastructure and technological advancements have eased "range anxiety."

Utah offers a number of alternative fuel vehicle (AFV) incentives including rebates for EV charging equipment, alternative fuel conversion grants, tax credits for heavy-duty AFVs, vehicle inspection exemptions for EVs, and HOV lane restriction exemptions. RMP also offers some EV incentives. The utility offers a credit for participants in their time-of-use charging rate reduction pilot program as well as a rebate for non-residential and multifamily customers for EV charging equipment purchases. The American Council for an Energy-Efficient Economy (ACEEE) published a State Transportation Electrification Scorecard evaluating 29 states' progress in electrifying transportation in six key policy areas. Utah ranked 21st in the 2021 report.

There are additional opportunities to develop policies to support the electrification of Utah's transportation sector:

1. **EV and EV Charging Equipment Financing and Financial Incentives –** Providing additional financial incentives and innovative financing options can help spur greater market penetration of EVs. Sales, property, and income tax credits are some of the simplest methods for addressing high up-front costs of EVs and EV charging equipment. While sales tax credits are typically applied at the time of purchase, property and income tax credits may do less to address upfront cost barriers as the credit is not applied at the time of purchase.[5] States have adopted other financial incentives including low-interest loans and grants. A handful of states qualify EV charging equipment under their property assessed clean energy (PACE) programs. A simple solution is to increase and expand existing tax credits to incentivize commercial, publicly available charging stations.

[5] A study by the Congressional Research Service suggests that tax credits are important tools for ensuring increased adoption of alternative-fueled vehicles.

2. **Charging Infrastructure Plan –** Locating charging infrastructure is different from locating conventional fueling stations. While some drivers will need to charge more quickly, others will refuel when they are parked for longer periods of time, for example when shopping at the mall or going to work. Charging infrastructure plans should attempt to pair the appropriate level of charging (level 2 or direct current fast charging) with a reasonable amount of time a person will be at that location. Enacted in 2020, House Bill 259 directed the Utah Department of Transportation to lead the creation of a statewide EV charging infrastructure plan to increase the availability of charging stations along the state's highways and to align Utah's policy with that of the other REV West states, discussed below. The 2020 plan outlines a comprehensive strategy and best practices for the advancement of EV charging infrastructure across the state.

   Regional collaborations around the U.S. are emerging to coordinate the development of EV infrastructure. Utah is a signatory of the REV West Plan, a collaborative effort among western states to construct a regional EV charging corridor. The memorandum of understanding (MOU) intends to reduce transportation sector carbon emissions, bolster EV adoption, increase consumer awareness about the benefits of EVs, coordinate development of charging infrastructure, and incentivize manufacturing of EVs. Utah is also a member of Drive Electric USA, a coalition of states committed to serving as examples of how to build successful statewide strategies to incentivize the purchase and use of EVs.

   Utah's policymakers have been supportive of utility efforts to build-out EV infrastructure in the state, for instance by enacting the Sustainable Transportation and Energy Act (STEP) of 2016, which established funding for EV pilot programs. Enacted in 2020, House Bill 396 allows RMP to invest up to $50 million in EV charging infrastructure, to be recovered through service charges to users.

3. **Parking Infrastructure Requirements –** In tandem with the development of a statewide plan, legislation could set requirements for EV parking infrastructure. Some states have adopted permitting standards for parking lots, requiring, for instance, that for every 100 parking spaces, there must be at least one EV charging space. Utah's building energy code could also be updated to include requirements for EV charging infrastructure.

NEWS

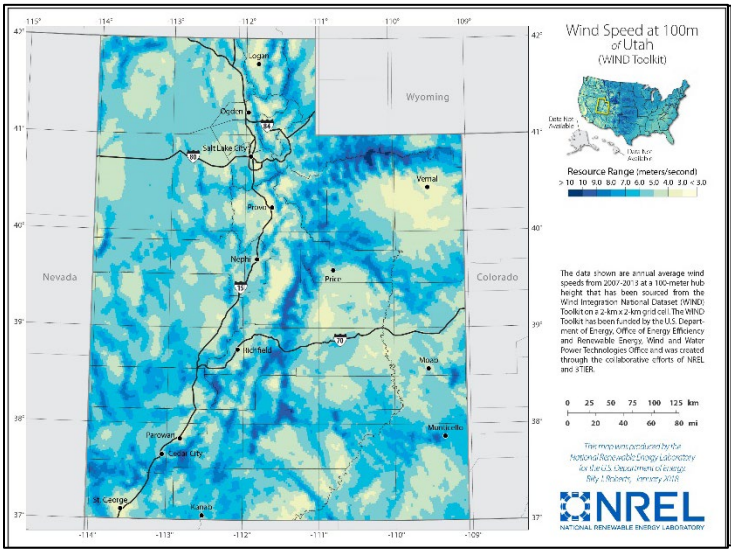
- June 30, 2021: Dominion Energy Planning to Launch Voluntary Program to Reduce Carbon Footprint
- June 29, 2021: Solar Energy Project Coming to Iron County on Behalf of Facebook
- June 14, 2021: Peak Demand Hits Utah's Power Grid During Heat Wave
- June 10, 2021: U.S. Department of Energy Announces $14.5 Million to Accelerate Deployment of Geothermal Electricity
- May 17, 2021: Utah's Largest Coal Plant Converting to Hydrogen Power
- May 12, 2021: Developers of Utah Green Hydrogen Storage Hub Invited to Apply for US Department of Energy Loans
- May 2, 2021: Want to Live in a Net-Zero Energy Home? Here's the Utah House That Bested Designs from Around the World
- April 19, 2021: Navajo Nation Solar Project Will Cement San Juan County's Position as Exporter of Renewable Energy

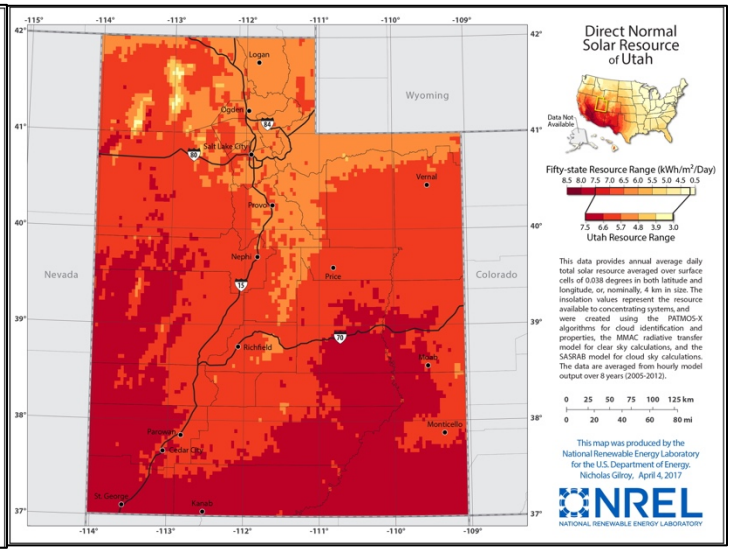
OTHER RESOURCES

- Utah Governor's Office of Energy Development: https://energy.utah.gov/
- Utah Clean Energy: https://utahcleanenergy.org/
- Four Corners Wind Resource Center http://www.fourcornerswind.org/
- American Clean Power Association, Utah State Fact Sheet: https://cleanpower.org/wp-content/uploads/2021/05/Utah_clean_energy_factsheet_Q2-2021.pdf
- The American Council for an Energy-Efficient Economy State and Local Policy Database, Utah: https://database.aceee.org/state/utah
- The Database of State Incentives for Renewables and Efficiency, Utah: http://programs.dsireusa.org/system/program?fromSir=0&state=UT
- U.S. Department of Energy's Alternative Fuels Data Center, Utah: https://afdc.energy.gov/laws/state_summary?state=UT
- U.S. Energy Information Administration, Utah: https://www.eia.gov/state/?sid=UT
- SPOT for Clean Energy, Utah: https://spotforcleanenergy.org/state/utah/

UTAH'S WIND AND SOLAR RESOURCES

WIND https://windexchange.energy.gov/states/ut





Our Resources

CNEE Homepage: https://cnee.colostate.edu/

The SPOT for Clean Energy: https://spotforcleanenergy.org/

The Advanced Energy Legislation (AEL) Tracker: https://www.aeltracker.org/

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