

Tooele County Resource Management Plan (2022 Updates)

SB2 was signed into law in 2021, by Governor Cox, which required amendments to the Resource Management Plan to include updated text on **land access, energy resources (including renewable energy), mining and mineral resources (including critical minerals), as well as adding the two new sections on utility corridors, and pipelines and infrastructure.** The Tooele County Resource Management Plan has been updated with the following section updates (and new sections) listed below:

SECTION 12. The Land Access section (Section 12) of the Resource Management Plan Element of the Tooele County General Plan, has been amended as follows:

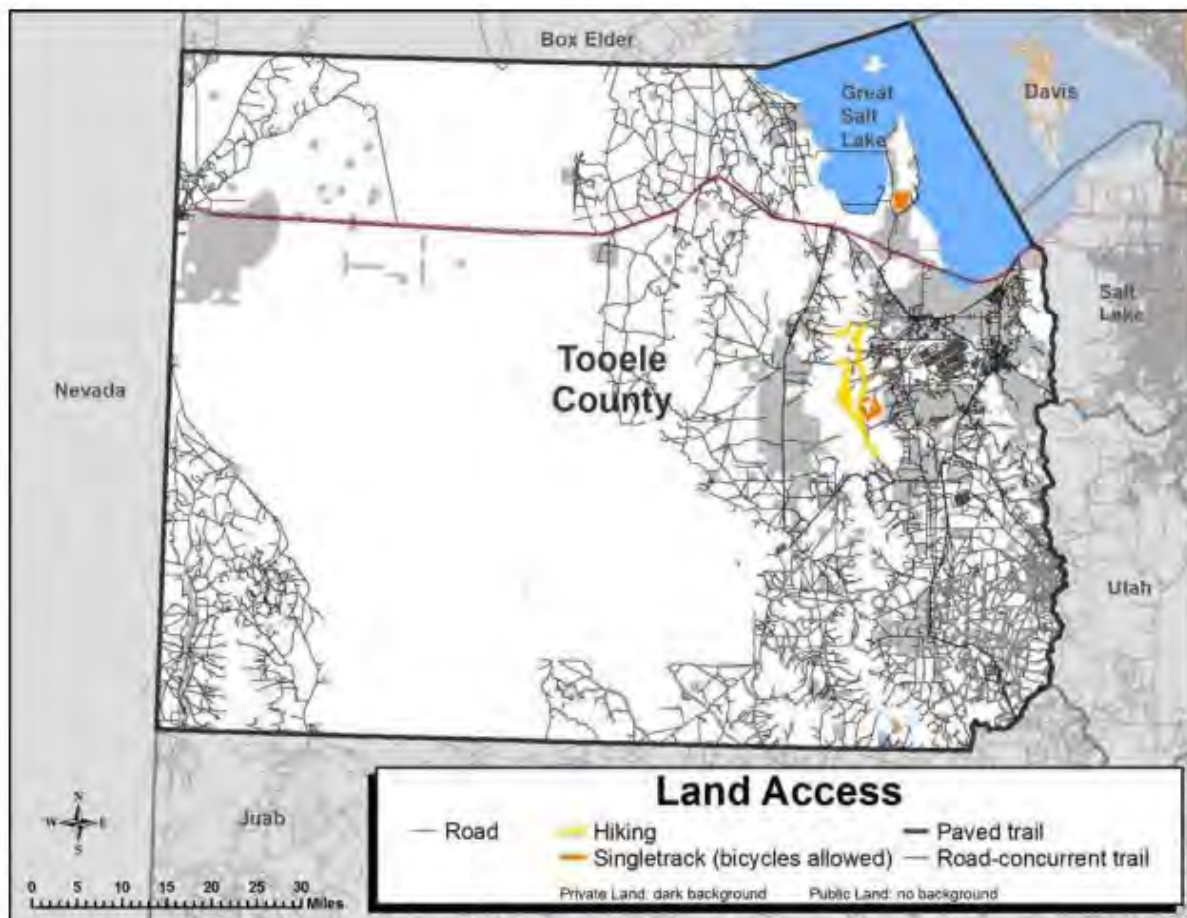
Land Access

Introduction

Land access refers to the ability to physically and legally access a given parcel of land. This typically has to do with roads, rights-of-way (ROWs), and property inholdings. Land access also concerns administrative restrictions on the methods and timing of land access, such as motorized vs. non-motorized access, and access that may be restricted at certain times. Finally, access can also refer to crossing or visiting lands via trails or other non-motorized methods. Common land access issues involve private land surrounded by federal lands, private lands within designated Wilderness areas, state lands within federal lands, and public land accessed by crossing private property.

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Land Access Map



Source: SGID10 TRANSPORTATION Roads, 9 March 2017, Utah Department of Transportation and others, Access via Utah Automated Geographic Reference Center.

Approximately 71 percent of Utah consists of public lands managed by federal or state agencies. These lands and their resources cannot be separated from the cultural fabric, quality of life, historic uses, and economic well-being of the state of Utah. The many industries operating in Utah, including, but not limited to, recreation and tourism, oil and gas, renewable energy, agriculture, mining, and timber industries are vital to the State & Tooele County, and each requires access to public lands. Roads, trails, and other access opportunities are also used by law enforcement and emergency medical services in the protection of residents and visitors.

R.S. 2477 roads are roads created prior to October 21, 1976, across non-reserved federal lands. The rights-of-way for these roads were granted in accordance with the Mining Act of 1866. Roads are a vital part of the infrastructure of the County, providing access to public lands for towns, mines, ranches, natural resources, grazing allotments, water systems, lands held in trust for the benefit of Utah's schoolchildren, hunting, fishing, camping and picnic areas, and sightseeing. Some roads provide access for school buses, emergency vehicles, mail delivery, search and rescue, vegetation management, and other administrative uses. Land access contributes to the preservation of the state's culture and heritage. R.S. 2477 rights-of-way and

other access opportunities may include, but are not limited to, horse paths, cattle trails, maintenance routes for waterways, pipelines or other means of water transmission and their attendant access for maintenance, wagon roads, jeep trails, logging roads, homestead roads, mine to market roads, and all other ways established and held consistent with the law.

The State has undertaken efforts over the past several years to identify and plot the location of all Class B and Class D roads crossing Bureau of Land Management (BLM) land that are legitimately part of the state's transportation system. There are approximately 12,500 roads covering over 35,700 miles in the state that have been identified, reviewed, documented, and inventoried for inclusion in the state road system as qualifying for R.S. 2477 right-of-way claim status. Many additional and important roads exist in the state road system that may, or may not qualify, pursuant to further review and evaluation.

The Public Lands Policy Coordinating Office has prepared an interactive map that can be viewed at www.roads.utah.gov to highlight the current transportation system in areas within the stewardship of the BLM, setting forth all roads claimed by the state and counties as part of their transportation system. The map includes all roads claimed by the state and counties pursuant to R.S. 2477. It is expected that the Bureau of Land Management (BLM) will conform to the transportation provisions of resource management plans to be consistent with this map, as required by FLPMA Section 1712(c)(9).

Thousands of miles of roads and other access opportunities also exist on land managed by the U.S. Forest Service (USFS). These roads also provide critical access for recreation, hunting and fishing, livestock ranching, timber harvesting, and other activities. Roads within National Forests have largely not been identified or documented as qualifying for R.S. 2477 right-of-way claims due to the early establishment of Utah's National Forests and the resulting federal withdrawal from claims under R.S. 2477. Nevertheless, roads within the National Forests continue to provide much-needed access to public lands and private lands within the boundaries of the state's national forests and the State will work to ensure access for current and future generations of Utahns.

Economic Considerations

Land access is critical to the health, safety, and economic viability of the County. The County defends the current and historic right to access both federal and state lands in the pursuit of recreational activities, mining, energy development, ranching, farming, logging, motorized vehicle use, hunting, fishing, and other historic uses.

Utah's recreation industry contributes 83,365 jobs, 3.2 billion dollars in wages and salaries, \$6.4 billion dollars in total outdoor recreation value added to the state economy, and accounts for 3.3% of the State's gross domestic product (GDP) (1). Likewise, as of 2017, the mining and energy industry, directly and indirectly, supported 3.8 percent of the state's employment, 4.2 percent of earnings, and 5.7 percent of the state's GDP (2). In 2019, Utah generated approximately 1.8 billion dollars in cash receipts primarily from cattle, dairy products, and hay, and accounted for 2.3 percent of the GDP when combined with the agricultural processing industry (3). These economic contributions are particularly important and impactful in rural

communities around the state. It is important to note that all of these industries, and countless others, are supported by access to public lands and resources.

Goals and Objectives

Goals

1. Protect current and future access to, and use of lands managed by the Bureau of Land Management, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and all other publicly owned areas of the State of Utah or Tooele County.
2. Work to have federal agencies recognize the County's legal access rights to and across federal lands.

Objectives

- Protect traditional and cultural access to public lands.
- Maintain access to all R.S. 2477, Class B, and Class D roads and pursue judicial recognition of vested interests and rights through the Quiet Title Act and other legal means.
- Strategically expand access to State, School & Institutional Trust Lands Administration (SITLA), and federal lands to increase the value and enjoyment of parcels.
- Promote the transfer of SITLA properties within national monument boundaries for properties with greater access and economic opportunities.
- Encourage regular review of existing roadway infrastructure, planning documents, and policies to address future needs.
- Maintain road systems for safe, convenient, and equitable access for citizens of all ages and physical conditions.
- Provide and protect access for utility and communication providers.
- Oppose new roadless areas and similar designations that limit access.
- Prescriptive easements should be identified by the County and locally protected to maintain access.
- Traditional access roads and trails serving mines and other historical uses, in current and future national monuments, should be preserved and incorporated into travel management plans and land use plans.
- Educate the public about the importance of public land access for multiple-use and sustainable yield purposes and activities.
- Encourage the provision of additional road infrastructure to accommodate safe and enjoyable outdoor recreation practices on public lands.
- Expedite the National Environmental Policy Act (NEPA) and policy process in order to avoid, minimize, or mitigate access limitations on public lands.
- Ensure access to emergency responders for fires, medical incidents, search and rescue and similar efforts.
- Ensure access to forestry, mineral, energy, and other needed resources for state and national security and for economic prosperity.
- Ensure access for forest management and stewardship projects.

Policies

- The County supports the protection of traditional and cultural access to public lands.
- Public rights-of-way established under R.S. 2477 are not negotiable and cannot be subjugated or taken by any state or federal agency. They are vested property rights, held jointly by the state and counties, duly recognized in federal and state law.
- Title V grants to local county governments or the state are in perpetuity. Nothing in Title V gives the Secretary of the Interior, or any other decision-maker, the authority to arbitrarily close a road or a corridor once it is granted except by cooperation and coordination with the government entity holding the grant. In applying for a right-of-way, or other use of lands under Title V of the Federal Land Policy and Management Act of 1976, consistent with Utah Code § 72-3-108, the state or counties do not relinquish their rights to the land, its use or property ownership under R.S. 2477 or any other law, regulation, or act.
- Transportation and access routes to and across federal lands, including all rights-of-way vested under R.S. 2477, are vital to the economy and to the quality of life in the county and must provide, at a minimum, a network of roads, trails, and other necessary infrastructure that provides for the movement of people, goods, and services across public lands; and reasonable access to a broad range of resources and opportunities throughout the resource planning area, including:
 - Livestock operations, trailing, and range improvements;
 - Solid, fluid, and gaseous mineral operations including critical minerals, renewable energy locations, and fuels minerals;
 - Recreational opportunities and operations, including motorized and non-motorized recreation;
 - Including the infrastructure needed to meet visitors' current and future needs (such as trailheads, parking areas, restrooms, information centers, and signage).
 - Public safety needs (including law enforcement, firefighting, search and rescue, and EMS);
 - Safe and comfortable access for people with disabilities and the elderly; and
 - Access to state lands and school and institutional trust lands to accomplish the purposes of those lands.
- The County supports expanding access to State and SITLA lands to increase the economic value of parcels.
- The County encourages regular review of existing access infrastructure and future needs in an effort to maintain transportation systems for safe and convenient access.
- Roads shall remain open for utility and communications companies to ensure reliable delivery of services to citizens of the Tooele County and allow for the maintenance of current and future infrastructure, including but not limited to transmission and distribution lines, pipelines, and communications towers.
- The County opposes any additional evaluation of U.S Forest Service, or other federally managed lands, as "roadless" or "un-roaded" beyond the forest service's second roadless area review evaluation and opposes efforts by agencies to specially manage those areas in a way that:

- Closes or declassifies existing roads without the coordination and consent of the local government;
 - Permanently bars travel on existing roads;
 - Excludes or diminishes traditional multiple-use activities, including grazing, proper forest harvesting, hunting, fishing, and vegetation management;
 - Interferes with the enjoyment and use of valid, existing rights, including water rights, local transportation plan rights, R.S. 2477 rights-of-way, grazing allotment rights, and mineral leasing rights; or,
 - Prohibits development of additional roads reasonably necessary to pursue traditional multiple-use activities.
- The County encourages the U.S. Forest Service to review and amend the roadless rule to allow for additional access, to reduce fuel loads, and to improve water quality and quantity, wildlife habitat, species diversity, and forest ecosystem health.
- Access to and across public lands, including R.S. 2477 rights-of-way shall remain open. The right of the public to have unrestricted access to all roads granted under R.S. 2477, or FLPMA Title V, shall be held inviolate.
- Roads that provide access to and across public lands managed by any land management agency shall remain open unless concurrence on the closure of unnecessary or unsafe roads can be met through cooperation and coordination with the state and County within which the roads are located.
- Access to lands managed by the State shall remain open and new roads established where access to state lands is currently not available.
- The County supports the recognition by the federal government of the public use of R.S. 2477 rights-of-way and urges the federal government to administratively and formally recognize the rights-of-way and their use by the public as expeditiously as possible.
- All necessary action will be taken to protect access. It is the policy of the County to use reasonable administrative and legal measures to protect and preserve valid existing rights-of-way granted by Congress under R.S. 2477 and to support and work in conjunction with counties to redress cases where R.S. 2477 rights-of-way, and other access options, are not recognized or are impaired.
- The County will assist in identifying and inventorying roads and participate with federal land management agencies in the land use planning process including travel and transportation management.
- Access and transportation needs shall be considered, evaluated, and analyzed in the land use planning process. No roads, trails, rights-of-way, easements, or other traditional access for the transportation of people, products, recreation, energy, or livestock may be closed, abandoned, withdrawn, or have a change of use without full public disclosure, analysis, and coordination with state and County plans and personnel.
- Access to all water-related facilities such as reservoirs, delivery systems, monitoring facilities, livestock water, handling facilities, etc., must be maintained. This access must be economically feasible with respect to the method and timing of such access.
- Utah code 72-5-104 dedicates public rights-of-way on certain roads on private land. The County should determine on which roads they have rights-of-way. The County should inventory roads that have been traditionally used for public access to public lands and make needed amendments to local plans to establish authority and enforcement protocols.

Federal agencies should abide by state code and shall respect county decisions on dedicated easements.

- Access provided by Utah code 72-5-104 is essential in many instances for landowners to access the private property and for the public to access and use public lands.
- The County supports and protects private property rights within the confines of Utah & Tooele County Codes.
- State and federal lands and amenities should be accessible by multiple modes of transportation, be inclusive to all persons with disabilities, and follow relevant accessibility guidelines to the maximum extent possible.
- The County reserves the ability to maintain and protect access to approved roads, trails, mines, historic uses, etc., within national monuments, and to add or reroute any access network if needed for the safety, health, economy, and welfare of state citizens.
- The County supports educational campaigns and marketing strategies that educate the public about access to and multiple-use and sustainable yield practices on public lands.
- The County supports and will assist in obtaining and maintaining access to public lands to facilitate vegetation management and wildlife habitat projects being implemented by the Shared Stewardship, Watershed Restoration Initiative, or other similar programs.
- The County will identify individual roads of significant importance and will address associated concerns regarding those roads with federal and county stakeholders during the management planning process; rather than deferring conversations to later dates.
- The County supports administrative access for all valid permit holders.
- The County supports increasing access to, and providing infrastructure for, outdoor recreational activities on public lands.
- The County opposes pauses or moratoriums that limit access to public lands for multiple-use, sustainable yield, historic, cultural, or traditional practices.
- The County supports and encourages an expedited NEPA process and policy decisions.
- The County supports allowing the use of Class 1 and Class 2 electric-assist bicycles wherever mountain bike use is permitted in an effort to provide equity in access to federal lands for citizens of all age groups and physical abilities.

SECTION 31. An amended section (Section 6.A) of the Resource Management Plan Element of the Tooele County General Plan is amended to include the following subsections:

Energy Resources (including Renewable Energy)

Introduction

Affordable, reliable, and diverse energy has been a key component contributing to Utah's economic success. Recognizing the central role that energy plays, and to plan for the future of Utah's energy needs, in 2011, Governor Gary R. Herbert and energy leaders launched a [10-Year Strategic Energy Plan](#) ([1](#)). Under this plan, the State has worked to meet energy demands through a balanced use of Utah's abundant energy resources. Since the launch of the plan, the State has implemented programs and policies that demonstrate a commitment to these resources. Specifically, state energy leaders have worked to:

1. Drive Utah's position as an economic leader. Low energy costs have helped bring world-renowned employers to the State including companies such as Adobe, eBay, Procter & Gamble, and the National Security Administration's data center.
2. Prepare Utah to meet future energy and resource demands. By 2040, the State expects a population growth rate of 67 percent, which will impact energy demand. Planning in the near term will help the state meet future needs at the least possible cost.
3. Deliver substantial benefits to the residents of the State. Energy, minerals and infrastructure programs come with economic and environmental benefits such as monetary savings, increased competitiveness in business and industry, reduced water use and support for air quality improvements. This also supports Utah's Energy Policy goal to provide adequate, reliable, affordable, sustainable and clean energy resources.
4. Continue to support Utah's unparalleled quality of life. Carefully consider the impacts of energy development on human health, environmental impacts and impacts on wildlife habitat. Develop approaches that avoid, minimize, or mitigate these impacts in order to continue to support the State's high-quality of life for its citizens.

Energy is a \$20.9 billion industry in Utah, generating \$656 million in state and local revenues *(including \$77 million directly for education through the Utah School and Institutional Trust Lands Administration in 2013)*. There are more than 10,000 direct energy jobs in the state, a total that expands to almost 40,000 when indirect and induced employment is included. Employment directly related to energy has produced earnings at a rate almost twice that of other jobs in the state. According to a recent study conducted by Pricewaterhouse Coopers for the American Petroleum Institute, the oil and natural gas industry supported over 103,000 direct, indirect and induced jobs, provided over \$6.1 billion in wages and contributed more than \$12.4 billion to the State's economy in 2019 ([2](#)).

Producing crude oil, natural gas, coal, and renewable energy resources, the State of Utah is a net energy supplier to the nation. The state's diversified energy portfolio also includes: geothermal, solar, oil shale, oil sands and wind resources along with hydropower ([3](#)).

Of the 50 states, Utah has the fourth highest number of producing mineral leases on federal lands in the United States ([4](#)). In 2020, coal fueled 61% of the state's electricity, down from 75% just five years earlier. Renewable energy, primarily from solar, accounted for about 97% of the state's new electrical generation since 2015 ([5](#)).

State Agencies

Utah energy resources are managed by multiple agencies, each with specific roles and duties. The three primary state agencies are the Office of Energy Development (OED), the Division of Oil, Gas, and Mining (DOGM), and the Utah Geological Survey (UGS).

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The Office of Energy Development (OED)

OED is dedicated to advancing all forms of responsible energy and minerals, including conventional, unconventional and renewable, as well as fostering innovation in the areas of efficiency, conservation, and alternative transportation. OED is responsible for implementing the state energy policy ([79-6-301](#)) by facilitating the development of Utah's diverse energy and minerals sector. The OED provides industry assistance through the administration of [state and federal tax incentives](#) , fosters education and technological innovation, and collaborates with a variety of stakeholders in government, nonprofit, and the private sector. The office is also dedicated to promoting responsible energy policies, and regularly handles public lands and environmental issues.

Mission

The Utah Office of Energy Development (OED) advances the Governor's energy vision, implements state energy policy, and enhances Utah's energy infrastructure, technology and workforce to provide more affordable, reliable and diverse energy options for Utah households and businesses.

OED supports and encourages innovation and responsible development of all resources, including renewable, conventional, and unconventional, as well as advancements in the areas of efficiency, conservation, and alternative transportation.

Division of Oil, Gas, and Mining (DOGM)

Originally established in 1955 as the Oil and Gas Conservation Commission, the Division of Oil, Gas, and Mining (DOGM) was formed to regulate the exploration and development of coal, oil and gas, and other minerals in a manner which:

- encourages responsible reclamation and development;
- protects correlative rights;
- prevents waste; and
- protects human health and safety, the environment, and the interests of the state and its citizens.

While demand, technology, and pricing have changed dramatically over the past 60 years, the Division's role still focuses on industry regulation to protect the public and Utah's environment. The Division is committed to the future of oil, gas, and mining in Utah. As resource demands have increased, DOGM has continued its support of responsible resource development, public safety protection, and environmental preservation that supports the goal of ensuring access to affordable and reliable energy sources for future generations. DOGM assists Tooele County in regulating numerous sand and quarry excavation pits located within Tooele County.

The Utah Division of Oil, Gas and Mining manages four programs:

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1. Minerals Program

The minerals program regulates non-coal mining operations in the state of Utah with a few exceptions, as noted in [Utah Administrative Code R647](#) .

The minerals program staff works to ensure reclamation standards can be achieved after mining has been completed. The staff oversees the many large mining operations, including the Bingham Canyon copper mine and the unique Topaz beryllium mine, and many small mine and exploration operations.

Staff verifies that mine operators follow their plans for mining and reclamation, including mining within permit boundaries and protecting public safety and the environment. The Division holds reclamation bonds to ensure the future reclamation of mine sites.

There are over 200 different minerals mined in Utah, which include the base and precious metals of copper, magnesium, gold, silver and beryllium. Utah also produces many industrial minerals, such as potash, crushed stone, salt, lime, phosphate, gilsonite and gypsum, and unconventional fuels including oil shale and oil sand. Currently there are approximately 600 permitted mineral operations statewide ([6](#)).

2. Coal Program

The Coal Program is responsible for providing permits to coal companies, completing site inspections to confirm compliance and overseeing the reclamation and bond release process. Ensuring provisions of the coal rules are followed allows for continued extraction of coal to occur in a way that reduces and/or eliminates long term impacts to the environment. Coal extraction is important to Utah. In 2018, five Utah coal operators produced 13,753-million short tons of coal valued at \$499 million from six underground mines and one surface mine. Communities in Carbon, Garfield, Emery, Kane, Sanpete, and Sevier counties rely on the coal industry to provide jobs and stimulate their local economies ([7](#) & [8](#)). There are no coal mining operations in Tooele County.

3. Abandoned Mine Reclamation Program

Utah has a history rich in mining including copper, silver and uranium. Often, when mines were no longer producing, they were simply abandoned leaving equipment, open shafts, tunnels and piles of waste rock. In 1975, the Utah Mined Reclamation Act was passed making it illegal for mines to be abandoned. Today there are an estimated 17,000 mine openings scattered across Utah, including many in Tooele County. The Environmental Protection Agency (EPA) has worked with Tooele County to complete a reclamation process of numerous abandoned mining operations in Tooele County.

The Abandoned Mine Reclamation Program (AMRP) works to protect the public from dangers associated with old mines by sealing off access to openings and cleaning up waste. Old mining sites can be intriguing to unsuspecting explorers but can contain dangerous gases, unstable structures and explosives. Explorers are encouraged to “Stay out and Stay Alive”! ([9](#))

4. Oil and Gas Program

The Oil and Gas Program of the Utah Division of Oil, Gas and Mining was established in 1955 to prevent the waste of oil and natural gas, encourage conservation and protect correlative rights of oil and natural gas owners. The Oil and Gas Program mission is to ([10](#)):

- Promote the exploration, development and conservation of oil and gas resources.
- Foster a fair economic return to the general public for those resources.
- Maintain sound, regulatory oversight to ensure environmentally acceptable activities.

By [legislative mandate \(11\)](#) , the Oil and Gas Program has oversight responsibility for the following:

- All operations for and related to the production of oil or natural gas including: drilling, testing, equipping, completing, operating, producing, and plugging of wells, and reclamation of sites.
- Spacing and location of wells.
- Operations to increase ultimate recovery, such as: cycling of natural gas, the maintenance of pressure, and the introduction of natural gas, water, or other substances into a reservoir.
- The disposal of salt water and oil-field wastes.
- The underground and surface storage of oil, natural gas, or products.
- The flaring of natural gas from an oil well.

Utah Geological Survey (UGS)

The Utah Geological Survey provides timely scientific information about Utah's geologic environment, resources, and hazards ([12](#)).

Relevant to this section of the Resource Management Plan, the UGS publishes Utah's [Energy Landscape](#) report every few years to summarize energy resources. The most recent report, authored by Michael D. Vanden Berg, was published in 2020 (UGS Circular 127).

The UGS manages six programs:

1. Energy & Minerals Program

The Energy & Minerals Program provides geologic information to government, industry, and individuals to encourage and aid in the prudent development of the state's mineral and energy resources; inventories, documents, and researches Utah's abundant mineral and energy resources; and maintains the [Utah Core Research Center](#) ([13](#)).

Notable recent [publications](#) from this program include, but are not limited to, [Critical Minerals of Utah](#) (2020), [Proven and Hypothetical Helium Resources in Utah](#) (2020), and [Utah's Energy Landscape](#) (2020).

2. Geologic Hazards Program

The Geologic Hazards Program mission is three-fold and is focused on reducing Utah's life-safety, property, and economic risk from geologic hazards.

- Respond to geologic hazard emergencies and provide unbiased, scientific advice to local governments and incident commanders.
- Investigate and map geologic hazards in urban and other areas (to publish and distribute maps and GIS spatial data).
- Provide geologic hazard-related technical and educational outreach and information to inform Utahns about hazards ([14](#)).

3. Geologic Information & Outreach Program

The Geologic Information & Outreach Program answers questions and provides information on Utah's geology to the public, educators, industry, and decision makers; produces non-technical flyers and colorful brochures on a variety of geologic topics; provides geologic resources to teachers; and maintains the [Natural Resources Map & Bookstore](#) and the [UGS Library](#).

4. Geologic Mapping Program

The Geologic Mapping Program maps Utah's geology at scales of 1:24,000 (7.5-minute quadrangle maps) to 1:100,000 (regional maps). These maps and accompanying materials depict and interpret the composition, age, and depositional environment of exposed and subsurface rocks; geologic structures such as faults and folds; Quaternary (surficial) cover; geologic hazards such as landslides and earthquake-producing faults; and economic and groundwater resource features. The maps are used by geologists, government officials, industry representatives, university professors and students, and the public to better understand Utah's geology, delineate and interpret the economic value and potential of property, assess geologic hazards, and make land management decisions ([15](#)).

5. Groundwater & Wetlands

The Groundwater and Wetlands Program evaluates the quantity and quality of Utah's groundwater resources, and performs wetland mapping and field assessments. The program coordinates with local, county, State, and Federal agencies to perform a wide variety of groundwater and wetland studies and makes the data publicly available through web applications, publications, and external websites. These results help partners make scientifically sound decisions on important growth, natural resources, and environmental issues ([16](#)).

6. Paleontology Program

The Paleontology Section of the Mapping Program maintains and publishes records of Utah's fossil resources and provides paleontological and archaeological recovery services to state and local governments. The UGS' paleontology services are often requested by the Bureau of Land

Management, the National Park Service, the Bureau of Reclamation, and/or the U.S. Forest Service ([17](#)).

Utah Energy Quick Facts

- Utah accounts for 1 in every 10 barrels of crude oil produced in the Rocky Mountain region. The state's five oil refineries, all located in the Salt Lake City area, can process 203,494 barrels of crude oil per calendar day.
- In 2020, 61% of Utah's electricity net generation came from coal-fired power plants, down from 75% five years earlier, while natural gas-fired and solar power generation increased.
- Utah's per capita energy consumption in the residential sector is the third-lowest among the states, after Hawaii and California.
- Utah has the nation's only operating uranium ore mill, which processes uranium ore from mines in other states, as there has been no active uranium mine production in Utah since late 2012.
- In 2019, Utah consumed more natural gas than it produced in dry natural gas for the first time since 1991 (**Error! Hyperlink reference not valid.**).

Energy Resources (including Renewable Energy) in Utah

Petroleum

Utah's general policy on energy production is that it supports all forms of energy. Utah is an "all-of-the-above" state and believes there is room in its energy portfolio for all forms of energy. Utah's rich history as a major oil producer dates back to 1955, with the discovery of the Bluebell field in Duchesne County. More than six decades later, the state still ranks as a major oil producer in the United States. The majority of Utah's oil production is concentrated in Duchesne, Uintah and San Juan counties. The oil is commonly referred to as "waxy crude" because of its relatively high paraffin content. Utah's two types of petroleum, black and yellow, flow like a liquid at high-temperature, but thicken at room temperature, creating long-distance transportation challenges. However, Utah waxy crude has low levels of acid, sulfur and metals, which makes it desirable in the refining process ([19](#)). A portion of the UNEV Petroleum Products Pipeline is located in Tooele County, which extends from North Salt Lake through Tooele County and Southwestern Utah to Nevada.

Findings

Utah ranks 10th in the nation for crude oil production. Utah's crude oil and petroleum resources are predominantly found in the Uinta Basin (Duchesne and Uintah Counties) and the Paradox Basin (San Juan County). Oil production from early 2003 to 2014 in Utah boomed, with an increase in exploration and development activity. This activity was fueled by increases in the demand for oil and advances in horizontal drilling technology, reducing the overall operating costs and allowing operators to target isolated petroleum reserves ([20](#)).

In 2014, Utah crude oil production peaked at 40.9 million barrels. Prices have fallen from the 2014 high of approximately \$106/barrel, and production dropped to 30.5 million barrels (18%) in 2016. From 2017 to 2018, the industry experienced a resurgence in crude oil production, reaching 37.1 million barrels in 2018. However, in 2019, production fell again. It reached an all-time low in April of 2020 due to overproduction from OPEC nations and the COVID-19 Pandemic ([21](#)).

In 2018, Utah's petroleum industry accounted for 213 trillion Btu's, or 24% of the total energy produced ([22](#)). Located in the Salt Lake City area, Utah's five oil refineries can process 203,494 barrels of crude oil per day. Oil reaches the refineries via pipeline and truck from the Uinta Basin, Colorado, Wyoming, and Canada. Utah's refineries account for approximately 30% of the refining capacity in the Rocky Mountain region (UT, CO, WY, ID, and MT) ([23](#)). These refineries produce motor gasoline, diesel fuel, and jet fuel. Utah's petroleum products are sold to markets in Utah, Idaho, Nevada, Wyoming, Washington, and Oregon ([24](#)). In December 2011, a pipeline (UNEV, located partially in Tooele County) was opened between the Salt Lake City refineries and Las Vegas, providing Nevada with an alternative to California refineries for petroleum products ([25](#)).

Utah's proven crude oil reserves account for less than 1 percent of the U.S. total. The Uinta Basin of eastern Utah overlays part of the Green River oil shale, a kerogen-rich formation that represents one of the world's largest oil resources. Kerogen is a fossilized organic material, found in sedimentary rock, which can be heated to extract crude oil. Pilot oil shale projects have been undertaken in the area. Eastern Utah also hosts the largest U.S. resources of bitumen in oil sands ([26](#)).

The [Governor's Office of Energy Development](#) (OED) tracks all energy-related matters in the state. In 2021, the OED released a [story map](#) for each energy resource in the State with links to authoritative sources and reports.

Economic Considerations

The state of Utah ranked 10th in the country in crude oil production during 2020 and 13th in natural gas gross production ([27](#)). Utah's oil industry has played a significant role in the state's economic prosperity. Utah School and Institutional Trust Lands Administration revenues come primarily from natural gas, coal, oil, real estate development and other surface uses such as grazing.

From high-paying jobs, to tax revenues to federal, state and local governments, and royalty revenue to Utah citizens and its Permanent School Trust Fund, Utah's petroleum industry has helped support the state's continued financial stability. Utah petroleum fuels a wide-range of vehicles and provides the petrochemical building blocks that go into the production of clothes, cell phones, computers, recreational equipment and thousands of other everyday items that society consumes.

Utah's crude oil and petroleum resources add tremendous value to Utah's energy economy. In 2017, Utah's petroleum industry provided over 19,000 refining jobs and 32,000 oil and natural

gas production and development jobs, over \$3 billion in earnings (refining and production/development combined), and an estimated \$7.2 billion in state GDP (refining and production/development combined). Utah's crude oil and petroleum average annual salaries pay more than two times the statewide average ([28](#)).

Natural Gas

Natural gas is mostly used for home heating (residential, 28%), but starting in mid-2004, over 2300 MW of new natural-gas-fired electric generating capacity has come online, greatly increasing the amount used by the electric utility sector (from 8% in 2005 to 25% in 2018). Consumption of natural gas in Utah peaked in 2013 at 247 billion cubic feet and after declining for a few years, increased again to 244 billion cubic feet in 2018 ([29](#)). Natural Gas production is not currently active in Tooele County, but the County does benefit from this resource that is extracted in other counties within the state.

Findings

Utah ranks 13th in the nation in natural gas production. Natural gas has become one of the primary sources for generating base-load utility-scale electricity ([30](#)). Natural gas is one of the many vital resources in the energy mix, supporting Utah's energy economy with nearly 8,000 direct jobs in oil and gas development and production in 2017 ([31](#)).

The majority of Utah's natural gas comes from conventional reservoirs located in the Uinta Basin (Duchesne and Uintah Counties) and the Paradox Basin (San Juan County) ([32](#)). Natural gas production concentrated in the Uinta Basin accounted for about 1 percent of U.S. output in 2015. Carbon County produces about 14% of Utah's natural gas in the form of Coalbed methane—natural gas produced from coal seams. This form of production has provided as much as one-third of Utah's natural gas output but has been gradually declining from its 2002 peak. It is estimated that about 2 percent of U.S. proven natural gas reserves are located in Utah. Utah only consumes about half of the natural gas it produces. The industrial sector is Utah's largest consumer of natural gas followed by the residential sector. Six in seven households in the state use natural gas for home heating. Natural gas is an essential raw material for many products, such as: paints, fertilizer, plastics, antifreeze, dyes, photographic film, medicines, and explosives ([33](#)).

Initially used primarily for heating, natural gas resources have been adapted as a fuel source for vehicle fleets and more recently selected as one of the preferred fuel sources for base-load, utility-scale electricity generation. Due to low prices and a reduced emission profile compared to other conventional fuel sources, the number of natural gas-fired power plants has increased in recent years. Many natural gas-fired power plants maintain grid stability and account for over-generation from intermittent renewable resources, also known as managing [the “California Duck Curve”](#) ([34](#)).

Utah is crossed by a major transportation corridor for shipping natural gas from the Opal Hub in Wyoming and the Piceance Basin in western Colorado to markets in Nevada, Wyoming, Idaho, and beyond. The Clay Basin facility, on the Utah-Wyoming border in Daggett County, is one of the region's largest underground natural gas storage facilities ([35](#)).

Renewable natural gas (RNG) is a pipeline-quality gas derived from the decomposition of organic matter. RNG is interchangeable with conventional natural gas as a heating source, transportation fuel, and power generating resource, often as compressed natural gas (CNG) or liquefied natural gas (LNG). Being derived from a cellulosic or advanced feedstock (usually from pig or food waste). RNG qualifies as biofuel under the [Renewable Fuel Standard](#) ([36](#)). In Utah, biogas facilities are currently producing RNG. A few active projects include:

- Smithfield's hog farms located in Central Utah (Beaver and Millard Counties) and providing RNG for the Kern River Gas Pipeline.
- Houweling Tomatoes in Mona, UT which uses waste heat and CO2 from a nearby natural gas power plant to grow tomatoes.
- Wasatch Resource Recovery, located at the South Davis Sewer District, is an anaerobic digester dedicated to food waste diversion that provides RNG in a partnership with Dominion Energy.

Economic Considerations

Despite the increase in the number of natural gas-fired power plants, an oversupply nationally drove average wellhead prices for natural gas in Utah down 39% between 2014 and fall 2020 (\$4.35 per thousand cubic feet [Mcf] to \$2.63 per Mcf). Unfortunately, natural gas prices in the \$2 per Mcf range do not provide economic justification for new natural gas exploration or development. The lower overall production of natural gas and natural gas liquids, coupled with the steady low prices, resulted in a 2019 value of natural gas production of \$784 million, the lowest since 2002 ([37](#)).

Objectives

Energy development is of particular importance to the state because of the associated capital investment, job creation and revenue. A strong natural gas industry contributes to Utah's historically low energy costs and provides a foundation for success across all industrial sectors statewide.

Policies

Support for continued natural gas development within the State of Utah is a major component of the state's energy plan. The benefits of developing this abundant and clean resource will continue to play a key role in Utah's economic future and the nation's energy independence. Technologies continue to emerge that are allowing energy producers to access significant and growing supplies of domestic natural gas from shale formations and other unconventional reservoirs.

Coal

Mined throughout Utah for more than 100 years, the majority of Utah coal is consumed in-state for electric power generation. Valued at over \$800 million, Utah's coal economy is especially important to rural Utah, providing roughly 2,000 high-paying jobs and a significant portion of

county tax bases. Due largely to coal's contribution, the State has benefited from some of the most affordable electricity prices in the nation.

Utah's coal-fired power plants have provided the electric energy that has historically-powered homes, businesses, and industry throughout Utah. Utah ranks 12th in the nation for coal production, with most of its economic coal deposits located in three coalfields found in Sevier, Emery, and Carbon counties. Utah's coal is bituminous with a high Btu, low sulfur and ash contents, and high reactivity, making it ideal for power generation due to its high combustion efficiency ([38](#)). Tooele County has not been identified as a source for coal.

Findings

In 2019, Utah's coal industry accounted for the production of 13,753 thousand tons of coal. Four mines from three counties (Emery, Sevier, and Carbon counties) accounted for nearly 90% of the total production (Figure 1). In the same year, Utah consumed approximately 12,300 thousand tons of coal for utility-scale electricity generation, accounting for 305 trillion Btu or 35% of the total energy produced in 2018 ([39](#)).

After a 17% decline in coal production between 2015 and 2016, the demand for coal in Utah has remained steady, with the majority of coal produced, 64% in 2018, being used in-state. In the past, Utah has been a significant net exporter of coal, exporting over 27 million tons in 2000 to local, domestic, and foreign markets. However, in recent years as the energy mix has shifted, out-of-state domestic demand has decreased to only 1.9 million tons in 2018. Utah's foreign exports peaked in the mid-1990s at about 5 million tons, then dropped to near zero in the mid-2000s. However, the foreign export market has seen a resurgence in the past few years, increasing to 3.1 million tons in 2018 ([40](#)).

Economic Considerations

Most of Utah's economic coal deposits are located in three coalfields found in Sevier, Emery, and Carbon Counties ([41](#)). Prospective coal reserves, some of which are constrained by land-use restrictions, are also found in Uintah, Grand, Wayne, Garfield, Iron, and Kane Counties. The Kaiparowits coalfield located in Garfield and Kane County holds the most significant potential for recoverable coal with an estimated 59% or 9,096 million tons recoverable coal reserves ([42](#) & [43](#)). However, that coalfield is located within the original boundaries of the Grand Staircase-Escalante National Monument, and may not be available for mining.

In 2017, Utah's coal industry provided over 5,000 jobs, \$343 million in earnings, and an estimated \$612 million in state GDP. Of the 5,000 jobs provided, the average annual salaries were double the statewide average, totaling approximately \$105,000 ([44](#)).

***Continued on the next page.**

Renewable Energy Section

Geothermal

Utah is one of seven states with utility-scale electricity generation from geothermal sources, ranking third in the nation in geothermal energy ([46](#)). Utah has a vast number of untapped geothermal resources with the ability to generate renewable baseload electricity, making geothermal energy one of the most valuable resources in Utah's energy mix.

Most of the potential for geothermal electric power generation in the United States lies in the western part of the country. Relying on earth's constant temperature, geothermal energy is a continuously available renewable resource. Since it is a continual resource, geothermal energy is the only renewable resource that offers base-load electricity generation in the absence of energy storage.

The state of Utah is located in an active geothermal zone. There are four known geothermal resource areas in Utah as classified by the Utah Geological Survey and the Bureau of Land Management. Geological studies and well data indicate that several other areas in the state have potential. The areas with the greatest geothermal resource assets are located within the Basin and Range province of western Utah and the Transition Zone of central Utah.

In northern Utah, geothermal resources are associated with the Wasatch fault zone, which defines the eastern edge of the Basin and Range province, separating it from the middle Rocky Mountains (Wasatch Range). These resources have similar characteristics to geothermal resources in Nevada, which have similar geology and are also part of the Basin and Range province. Tooele County could potentially become a valuable source of Geothermal Energy. However, it would probably require hot rocks to be injected with water (method currently used by FORGE). Tooele County would have to acquire additional water resources to expand Geothermal Energy within the County. The Skull Valley area could be a potential resource for Geothermal Energy.

Findings

Geothermal energy represents the fourth-largest share of utility-scale renewable energy generation in Utah. In 2018, Utah's three utility-scale geothermal power plants accounted for approximately 10% of the total utility-scale renewable generation, or 446 gigawatt-hours ([47](#)). Utah's geothermal power plants have the capacity to generate enough power for over 45,000 homes, most of which is purchased for use in California.

The potential to develop more of Utah's geothermal resources exists with an estimated 18 undeveloped geothermal systems, most located close to transmission lines in the Black Rock Desert (Map - Sevier Thermal Area) ([48](#)).

Utah is one of only a few states to produce electricity from geothermal sources. Purchased by Enel in 2007, the Cove Fort geothermal operation located in Millard County underwent a significant efficiency conversion. Enel reopened Cove Fort in 2013, and since then the 25MW plant has powered approximately 13,000 homes.

Blundell is a geothermal facility located near Milford, Utah. The plant was completed in 1984 and became the first geothermal electric plant to operate outside of California. PacifiCorp is the sole owner of the 38-megawatt geothermal plant which consists of two different generating units. The 26.1-megawatt Unit 1 uses “flash” technology and was commissioned in 1984. In 2007, they expanded the plant’s capacity by 12 megawatts by adding an innovative “binary” heat-recovery process to extract more energy from the hot geothermal brine left over from the steam separation cycle.

Economic Considerations

While new plant construction requires significant capital investment, geothermal power offers, over time, a lower cost energy source that diversifies the fuel supply and supports the stability of the power grid. It does not require purchase of fuel, and because it is a baseload resource, geothermal power is reliable, helping to stabilize prices. It is also dispatchable, meaning that it can be ramped up or down quickly to make up for intermittency caused by other renewable energy sources. The average cost of a geothermal plant over its lifetime is dramatically lower than that of many traditional sources of power.

Because geothermal energy is locally produced it can help to reduce foreign oil dependence and boost rural economies through royalties and tax payments. A geothermal power project development will involve hundreds of individuals, employing local people full time as well as stimulating induced jobs.

Since enactment of the 2005 Geothermal Steam Act Amendments, 25 percent of federal geothermal revenues from leasing and production on federal lands have been allotted to state and local governments.

Research and development in [enhanced geothermal systems](#) (EGS) offer Utah the opportunity to increase its geothermal resources. EGS utilizes advanced drilling techniques from the oil and gas industry to create a subsurface fracture system in which water can be added through injection wells, allowing energy from within the earth to be captured through an engineered geothermal system.

In 2014, the U.S. Department of Energy (DOE) launched [the Frontier Observatory for Research in Geothermal Energy \(FORGE\)](#) initiative to establish a dedicated site for accelerating breakthroughs in EGS technologies and techniques. Through a series of competitive research grants, the DOE sought to identify the ideal location and research team for advancing EGS. In a multi-agency effort, including preliminary research from the Utah Geological Survey (UGS), and an education campaign and coordinated federal delegation letter of support provided by the Utah Office of Energy Development (OED), the [University of Utah - Energy and Geoscience Institute’s bid was selected by the DOE](#) in 2018 as the recipient of the \$140 million FORGE research grant. One of the largest geothermal research grants of its time, the [Utah FORGE](#) team has received funding for five years to establish and conduct EGS research at a site near Milford, Utah. Funding after that five year period is yet to be determined.

Also called engineered geothermal systems, this approach offers great potential to dramatically expand the use of geothermal energy. Present geothermal power generation relies on hydrothermal reservoirs, and is somewhat limited in geographic application to specific ideal places in the western U.S. EGS offers the chance to extend use of geothermal resources more broadly.

Geothermal energy is a renewable source of electricity that offers important baseload qualities. To expand options for the development of this resource, Federal and state policies are needed that address a range of near, mid- and longer-term challenges faced by the industry. These include:

- Incentive programs,
- Lease opportunities on government-controlled lands, and
- Expansion of access to transmission infrastructure.

Policy makers should prioritize efforts that address risks and obstacles to development, particularly reduction of resource risk. Development of strategic goals and support for long-term Federal programs will help to characterize and identify the overall available geothermal resource base.

Goal

Promote and encourage access opportunities and the development of the County's geothermal resources.

Objectives

- Increase access and the development of geothermal resources for energy, heating, and other economically feasible projects and applications.
- Add to the reliability and sustainability of the state's "all-of-the-above" energy portfolio.

Policies

- The County supports responsible geothermal resource utilization including enhanced geothermal resources (EGR) like the FORGE project, for traditional, residential, and commercial uses.
- The County encourages ongoing federal appropriations to develop geothermal resources in Utah and promote long-term research at the FORGE project.
- The County supports the Bureau of Land Management and the U.S. Forest Service in leasing and selling parcels of land for the development of geothermal industries.

Solar

Solar power is the term most often used to describe the conversion of energy from natural sunlight into electricity, either directly using photovoltaics (PV), indirectly using concentrated solar power, or a combination. Concentrated solar power systems use lenses or mirrors and

tracking systems to focus a large area of sunlight into a small beam. Photovoltaic systems use solar panels, either on rooftops or in ground-mounted solar farms to convert sunlight directly into electric power. Tooele County has been identified as a significant location within the state for solar power infrastructure. Multiple large-scale solar energy projects are already underway in the County. One of these projects is called The Elektron Solar Project and is located in Timpie (near U.S. Magnesium). This project is anticipated to generate 80 megawatts of energy. To the south across I-80, is another solar project that is under construction, which is known as The Horseshoe Solar Project, which is anticipated to generate 75 megawatts of energy. There are additional large-scale solar projects that may come online in the coming years.

Findings

Utah boasts an above-average number of sunny days per year and has numerous cool, dry areas suitable for solar energy generation. With a high ultraviolet (UV) index in the southwestern corner of the state and investment in solar photovoltaic (PV) systems over the past five years, Utah is now ranked 11th in the nation in installed solar energy generating capacity, with 1758 megawatts (MW) ([49](#)).

Utah's solar resources make up the largest share of utility-scale renewable energy generation. In 2018, Utah's 29 utility-scale solar arrays located in Millard, Sevier, Beaver, Iron, and Washington Counties accounted for approximately 50% of the total utility-scale renewable generation, or 2,224 gigawatt-hours. In 2019, solar energy was the largest contributor to utility-scale renewable capacity, accounting for approximately 55% of the total capacity, or 914 megawatts ([50](#)).

In addition to power generation, Utah's solar resources are harnessed for heating applications in solar thermal systems. These solar thermal systems heat water and provide a non-emission source for small and large-scale buildings.

Economic Considerations

Net-Metered installed PV solar capacity (rooftop solar) in Utah has grown over the past ten years. The total capacity increased from 3.4 MW in 2010 to 273 MW in 2018. A combination of decreasing installation and equipment costs and federal and state government incentive programs have supported the growth of rooftop solar in Utah ([51](#)). As a result of the growth over the past ten years, the solar industry now provides over 7,000 jobs for Utah's electric power generation sector ([52](#)).

Utility-scale, net-metered solar, and solar thermal have been supported by the State of Utah through tax incentives. This includes the [Production Tax Credit \(PTC\)](#) for utility-scale systems and the [Renewable Energy Systems Tax Credit \(RESTC\)](#) program for net-metered PV solar systems.

Goal

Promote and encourage the development of the County's solar resources and potential.

Objectives

- Utah has a voluntary goal of obtaining 20 percent of the state's 2025 adjusted retail electric sales from cost-effective renewable energy resources. In 2015, 4.3 percent of utility-scale net electricity generation came from renewable resources. As of 2020, approximately 14 percent of the state's total electricity was generated by renewable resources.
- Encourage the retention or mitigation of the loss of Animal Unit Months (AUMs) for livestock grazing on public lands when solar farms are constructed.
- Encourage the retention of prime agricultural lands in lieu of converting them into solar farms.
- Newly constructed solar farms should consider aesthetic values and environmental impacts during planning and site selection.
- Work with local representatives and federal agencies to discuss and resolve conflicts with pre-existing uses and the creation of solar power moving forward.
- Encourage the utilization of natural gas "peaker" plants to reduce intermittency and increase reliability of solar energy generation and delivery.

Policies

- The County supports the State's policy that Utah has adequate, reliable, affordable, sustainable, and clean energy resources. Under the state's energy policy, development of renewable energy resources including solar, is supported. Utah allows net metering for residential systems and provides tax credit incentives.
- The County supports solar projects that benefit the citizens of Utah in areas with available transmission line capacity.
- The County is committed to complying with federal rules and regulations to the maximum extent possible while avoiding unnecessary expenses for Utah consumers and protecting access to energy resources without infringing on private property rights.
- The County supports county-led policies related to the disposal of construction byproducts related to renewable energy production (pallets/cardboards).

Wind

Wind, like water, has been used for centuries to pump water, grind grain, and power sail boats. According to the Department of Energy, wind generation could provide 20 percent of the nation's electricity needs by 2030 ([53](#)). Wind turbines are modeled after traditional windmills and use propeller-like blades to harness the wind's energy. Usually three, evenly-weighted blades are mounted on a tower over 100 feet high. The turning blades are used to spin a low-speed shaft (30-60 rpm). This low speed shaft is connected to a high-speed shaft in the gearbox to increase the rpm's to about 1000–1800 rpm, which is required for the generator to produce electricity ([54](#)).

Depending on the year, wind energy makes up the second or third largest share of utility-scale renewable energy generation in Utah. In 2018, Utah's five utility-scale wind farms accounted for approximately 18% of the total utility-scale renewable generation, or 795 gigawatt-hours ([55](#)).

Utah's wind farms have the capacity to generate enough power for approximately 85,000 homes, most of which is purchased for use in other states. Tooele County could potentially become a source of wind energy. There are a few small-scale wind energy operations located in the County, but nothing large-scale has been put into operation at this time.

Findings

Nationally, Utah ranks 27th in wind electricity generation capacity. Utah's distinctive topography limits wind generation capacity compared to other states' wind profile potential, such as Iowa, Texas, and Wyoming. However, through the U.S. Department of Energy's State Energy Program, the Utah Department of Natural Resources analyzed the state's wind energy potential in the early 2000s using data collected from 109 anemometer towers stationed throughout the state. The research identified 51 potential wind development zones, covering approximately 1,838 square miles, or 2% of the state's surface area, with a potential of 9,145 MW. Eleven of the sites have an estimated prospective capacity of at least 250 MW each, totaling 2,750 MW ([56](#)).

In 2019, wind energy was the second-largest contributor to utility-scale renewable capacity, accounting for approximately 24% of the total capacity, or 387 megawatts ([57](#)). The Milford Wind Project (306 MW, Beaver and Millard Counties), Latigo Wind Park (62MW, San Juan County), and Spanish Fork Wind Farm (19 MW, Utah County) account for nearly 98% of Utah's wind electricity generating capacity.

Economic Considerations

The price of American wind power has declined more than 90 percent since 1980. The cost of energy from the wind is mostly a function of the wind resource – how fast it blows, how often, and when. Higher-speed winds are more easily and inexpensively captured. The more the wind blows, the more power that will be produced by wind turbines. The term used to describe this is “average capacity,” which is the percentage of power a turbine produces compared to what it could produce if it were always spinning. Overall, wind turbines capture between 20 percent and 40 percent of the energy in the wind. For example, at a site with average wind speeds of 7 m/s, a typical turbine will produce about 1,100 kWh per square meter of area per year. If the turbine's blades are 35 meters long, for a total swept area of 1,000 square meters, the power output will be about 1.1 million kWh for the year ([58](#)).

Wind energy projects are eligible for support through the state's [Renewable Energy Systems Tax Credit \(RESTC\) program](#) and [Production Tax Credit \(PTC\)](#), which are managed by the Utah Office of Energy Development (OED). However, for the PTC, the State of Utah does require that renewable energy projects be cost-effective, resulting in utilities investing in stateside wind projects ([Energy Initiatives and Imperatives: Utah's 10-Year Strategic Energy Plan 2.0](#)).

In addition to strengthening our energy mix with added utility-scale renewable capacity, Utah's wind industry provides over 400 wind electric generation jobs and drives our energy economy through private investment and property tax revenues ([NASEO, US Energy & Employment](#)

[Report 2020](#)) ([59](#)). The Latigo Wind Park included \$125 million in private investment in San Juan County, and Beaver and Millard counties have benefited from increased property tax revenue due to the \$360 million Milford Wind Project ([60](#)).

In order to realize the potential of Utah's wind resources, the following actions should be undertaken:

- Explore the potential pathways for wind power to contribute to the future electricity needs of the nation, including objectives such as reduced carbon emissions, improved air quality, and reduced water use;
- Quantify costs, benefits, and other impacts associated with continued deployment; and
- Identify actions and future achievements that could support continued growth in the use of wind energy.

Wind energy is recognized by State energy policy which supports its development. While studies have identified commercial wind power potential in the Wasatch and Uinta Mountain ranges in Utah's north-central region and on the mesas of the western region, most wind investment approved for Utah utilities to date has involved Wyoming projects.

Goal

Promote and encourage access opportunities and the development of the County's wind energy resources.

Objectives

- The County will support viable wind energy projects when they are cost effective and compatible for land management practices including multiple-use activities, and when impacts to viewsheds are taken into consideration.
- Encourage the utilization of natural gas peaker plants to reduce intermittency and increase reliability of wind energy generation and delivery.

Policies

- The County supports the responsible development of wind energy infrastructure in areas proven by scientific research to provide consistent wind energy production along with the additional consideration of transmission infrastructure and capacity.

Hydropower

Water has been a resource used for centuries; from the water wheel used to grind wheat into flour to today's sophisticated power plants. Utah is home to more than 800 dams. Less than 8 percent of those dams have associated hydroelectric power generation ([61](#)). The U.S. Bureau of Reclamation operates two hydro plants in the State. These include a small facility at Deer Creek Reservoir and the larger 152 MW plant at the Flaming Gorge Reservoir.

In Utah, depending on the year, hydroelectricity typically comes in as the second or third largest share of utility-scale renewable energy generation. In 2018, Utah's 30 utility-scale hydroelectric plants accounted for approximately 21% of the total utility-scale renewable generation, or 927 gigawatt-hours. The 927 gigawatt-hours generated equates to an estimated 92,700 homes being powered by hydroelectricity in 2018. There are no hydropower operations located in Tooele County, and any future operations may be limited due to limited water resources.

Findings

The annual hydroelectric utility-scale capacity fluctuates based on water availability from seasonal rains and melting snow. In 2019, hydroelectricity was the third-largest contributor to utility-scale renewable capacity, accounting for 18% of the total capacity, or 289 megawatts (Vanden Berg, 2020, p.16) (EIA, 2020).

Hydroelectric generators typically supply between one-third and two-thirds of Utah's net renewable electricity generation, with the annual amount depending on water availability. The state's hydroelectric facilities are more than 60 years old on average; the oldest one dates from 1896 ([62](#)). In Utah hydropower is somewhat less significant than in other states as a percentage of net electricity generation. Hydroelectric power accounts for just under 2 percent of the state's generation.

The U.S. Bureau of Reclamation operates two hydroelectric plants in the State, including the small facility at Deer Creek Reservoir, and the much larger 150 MW plant at the Flaming Gorge Reservoir. PacifiCorp operates 10 hydroelectric plants in the State of Utah, 9 of which range in size from 0.16-10.3 MWs in nameplate capacity, and one of which – the Cutler Plant in Box Elder County – is an appreciably larger 30 MWs. Most of the plants were constructed between the very early 1900s and 1930. However, the oldest are Granite (Big Cottonwood Creek) and Pioneer (Ogden River), which went into operation in 1896 and 1897, respectively. Local municipal utilities and irrigation companies operate a few dozen additional smaller facilities throughout the State, the majority of which are 0.5-3 MWs in size ([63](#)).

Economic Considerations

Hydroelectric power offers clean and efficient energy production due to low greenhouse gas emissions and some of the lowest electricity prices in the country. However, other environmental concerns that exist for this energy source exist and have limited its development. These include the costs associated with heavy construction of dams and potential disruptions of plant and animal life.

Hydroelectricity is one of Utah's oldest energy resources, with the first hydroelectric generating units constructed in 1896, and provides over 350 jobs to Utah's energy economy ([64](#)). Although most energy in the United States is produced by fossil-fuel and nuclear power plants, hydroelectricity still plays an important national role. Utah's all-of-the-above energy policy supports continued utilization of the state's hydro-power facilities.

The future of hydroelectric power in the United States is expected to involve increased capacity at current dams and new run-of-the-river projects rather than construction of new, large hydroelectric projects.

Goal

Promote and encourage access opportunities and the development and maintenance of the County's potential hydroelectric energy resources, which are currently limited.

Objectives

- Encourage the addition of in-pipe hydroelectric systems in existing and new pipelines.

Policy

The County will continue to support access to and opportunities for hydroelectric power generation opportunities through, considering the development of new infrastructure, and encouraging the adoption of innovative technologies.

Hydrogen

First and foremost, hydrogen is not an energy source. It is an energy carrier capable of storing and delivering usable energy. Using a [fuel cell](#), hydrogen generates power using a chemical reaction instead of combustion, producing only water and heat as byproducts. This near emission-free technology can be used in cars, houses, portable power, and much more ([65](#)). Recognizing the potential for hydrogen fuel cells to successfully integrate renewable and conventional energy resources into the grid through energy storage, the U.S. Department of Energy (DOE) has established [The Hydrogen and Fuel Cell Technologies Office Multi-Year Research, Development, and Demonstration \(MYRD&D\) Plan](#) ([66](#)) First published in 2003, the MYRD&D is a living document responsible for tracking research and development in hydrogen fuel cell technology.

The DOE's goal is to develop technologies that can produce hydrogen at a target of less than \$4/kg. The [hydrogen production pathways' goal](#) ([67](#)) is to create mid and long-term technologies that will allow hydrogen to be economically produced from resources such as biomass, coal gasification, and solar energy. Currently, [natural gas reforming](#) ([68](#)) is the favored process for achieving large-scale hydrogen production. This process takes natural gas containing methane and produces hydrogen through a series of thermal processes. This approach allows producers to use existing natural gas reserves and natural gas pipeline infrastructure to produce and transport hydrogen ([69](#)). Tooele County is not an active producer of Hydrogen, but could benefit from the addition of hydrogen refueling stations with the County.

Findings

[Hydrogen production and energy storage](#) are quickly advancing in Utah ([70](#)). The [Intermountain Power Agency \(IPA\)](#) ([71](#)) owner of the 1,800-MW coal-fired power plant

in Delta, Utah, is moving forward with a state-of-the-art new generation facility designed to run initially on a mix of natural gas and hydrogen and will ultimately operate on hydrogen alone. In 2025, the project partners plan to use excess renewable energy from across the Western U.S. to generate “green hydrogen.” The hydrogen will be produced via electrolysis and stored in an existing underground salt dome in the county. Hydrogen would then be continuously available for grid-scale electricity generation at the Delta site.

The Los Angeles Department of Water and Power, which is the largest buyer of the plant’s power, intends to use the new plant to help meet California’s 2045 decarbonization target. A mix of 30 percent hydrogen and 70 percent natural gas fuel at start-up in 2025 is expected to reduce carbon emissions by more than 75 percent. Between 2025 and 2045, IPA plans to increase the hydrogen capability to 100 percent renewable hydrogen utilization, enabling baseload carbon-free utility-scale power generation.

Economic Considerations

In 2019, the Utah State Legislature passed [H.B. 109 \(72 \)](#), allowing hydrogen fuel production to be eligible for support by the High Cost Infrastructure Development Tax Credit Act.

The DOE's goal is to develop technologies that can produce hydrogen at a target of less than \$4/kg. The [hydrogen production pathways' goal](#) is to create mid and long-term technologies that will allow hydrogen to be economically produced from resources such as biomass, coal gasification, and solar energy.

Goal

Strategically plan for, facilitate and support potential opportunities for hydrogen production and distribution along the primary transportation arteries within the state of Utah.

Objective

Determine the feasibility and potential future distribution needs of hydrogen in Tooele County and Utah.

Policies

- Support the research and development of hydrogen production and capture infrastructure.
- The County prefers that hydrogen production be accomplished through processes that do not require the excessive consumption of water resources.

Biomass

Biomass is organic material that comes from plants or animals. Biomass generates energy from living things, is a renewable energy resource, and can be used as an alternative fuel ([73](#)). Biomass contains stored energy from the sun. Plants absorb the sun's energy in a process called photosynthesis. When biomass is burned, the chemical energy in biomass is released as heat.

Biomass can be burned directly or converted to liquid biofuels or biogas that can be burned as fuels (74).

Examples of biomass and their uses for energy include:

- [Wood and wood processing wastes](#) (**Error! Hyperlink reference not valid.**) - burned to heat buildings, to produce process heat in industry, and to generate electricity.
- Agricultural crops and waste materials - burned as fuel or converted to liquid biofuels.
- Food, yard, wood, and other [municipal solid waste](#) (76)- burned to generate electricity in power plants or converted to biogas in landfills.
- Animal manure and human sewage - converted to biogas.

Findings

In Utah, biomass accounts for the last 1.8% of utility-scale renewable generation, accounting for 79 gigawatt-hours in 2018. Biomass, primarily in the form of landfill gas at facilities in the metropolitan region on the Wasatch Front in the north-central part of Utah, provided the remaining nearly 2% of the state's renewable electricity generation in 2018 ([77](#)).

Renewable natural gas (RNG) is a pipeline-quality gas derived from the decomposition of organic matter (biomass). RNG is interchangeable with conventional natural gas as a heating source, transportation fuel, and power generating resource, often as compressed natural gas (CNG) or liquefied natural gas (LNG). Being derived from a cellulosic or advanced feedstock (usually from pig or food waste), RNG qualifies as biofuel under the [Renewable Fuel Standard](#). In Utah, biogas facilities are currently producing RNG. A few active projects include:

- Smithfield's hog farms are located in Central Utah (Beaver and Millard Counties) and provide RNG for the Kern River Gas Pipeline.
- Houweling Tomatoes in Mona, UT which uses waste heat and CO2 from a nearby natural gas power plant to grow tomatoes.
- Wasatch Resource Recovery, located at the South Davis Sewer District, is an anaerobic digester dedicated to food waste diversion that provides RNG in a partnership with Dominion Energy.

Goal

Explore and implement a variety of biomass energy production opportunities that may be available in Tooele County.

Objectives

- Convert excess pinyon-junipers and conifers into electricity.
- Explore the feasibility and application of biochar and biofuel opportunities.

***Continued on the next page.**

Policies

- The County supports the advancement of technology to capitalize on biomass energy resources to support the all-of-the-above energy portfolio and further the efforts of associated land management policies and projects.
- The County encourages the capture of methane to be digested into energy and supports federal appropriations to accomplish this process.

Nuclear

Uranium has been mined in Utah for more than 100 years. Uranium was originally a byproduct of radium and vanadium in the early 19th century. It wasn't until the mid-1940s that demand for uranium began to increase because of nuclear weapon manufacturing. From the 1970s through the 1990s uranium was used as fuel for nuclear power electricity generation. During these years, uranium demand and cost fluctuated — the correlation with production is shown in the figure below. More than 500 mines have operated during this time, but due to declining prices, Utah stopped mining altogether in 2014. There are, however, still a number of mines on “stand-by” to reopen if prices rise to a sustainable level again.

White Mesa Uranium Mill is located in southeast Utah and is currently the only fully licensed and operating Uranium Mill in the United States. With 150 employees they have a capped capacity of over eight million pounds of uranium each year. The White Mesa Uranium Mill is also a major contributor to producing high-quality vanadium. There are no Uranium mining operations in Tooele County and Uranium hasn't been identified as a mineral source in the County. However, Tooele County could be a potential location for the development of nuclear power resources in the State.

Goal

Recognizing that the State has ample uranium reserves, the goal must be to preserve access to those fuel mineral resources and continue to explore opportunities for nuclear power generation that will make the state's all-of-the-above energy portfolio more reliable, sustainable, and resilient.

Objectives

- Maintain access to uranium resources statewide.
- Explore opportunities for nuclear energy production within the state of Utah.

Goals and Objectives

Policies and Guidelines

Title 63M Chapter 4—Section 301 defines Utah's energy policy. This policy was passed into law in 2007 and is updated as necessary to support the State's energy objectives, including those in Tooele County. The energy policy is succinct and comprehensive, and asserts the State's

responsibility to promote energy resource development, including conventional, unconventional, and renewable energy, as well as energy efficiency, in support of a diverse energy portfolio. To ensure Utah has the ability to responsibly develop its energy resources, the policy defines a proactive role for the state in maintaining pressure on federal land management and regulatory agencies to ensure development proceeds at a reasonable pace that does not stifle investment and expansion.

Specific to energy use, the policy addresses the state's role in maintaining reliable power supplies for Utah homes and businesses, while keeping the cost of power stable and affordable. It further articulates the State's role in promoting the associated infrastructure required to deliver resources to points in the market for refinement or consumption. Finally, the policy provides a clear position on the need for energy initiatives to advance in concert with environmental and energy conservation objectives. As such, the policy recognizes that balanced, diverse energy development can be achieved to retain and enhance the quality of life enjoyed by Utah's residents. Tooele County supports this approach to promote energy resource developments within Tooele County and across the State of Utah.

Rules

The Utah Oil and Gas Conservation General Rules can be found here: <https://oilgas.ogm.utah.gov/Rules/Rules.htm>

The Utah Oil and Gas Conservation Act can be found here: https://oilgas.ogm.utah.gov/Rules/Conservation_act.htm

"It is declared to be in the public interest to foster, encourage, and promote the development, production, and utilization of natural resources of oil and gas in the state of Utah in such a manner as will prevent waste; to authorize and to provide for the operation and development of oil and gas properties in such a manner that a greater ultimate recovery of oil and gas may be obtained and that the correlative rights of all owners may be fully protected; to provide exclusive state authority over oil and gas exploration and development as regulated under the provisions of this chapter; to encourage, authorize, and provide for voluntary agreements for cycling, recycling, pressure maintenance, and secondary recovery operations in order that the greatest possible economic recovery of oil and gas may be obtained within the state to the end that the land owners, the royalty owners, the producers, and the general public may realize and enjoy the greatest possible good from these vital natural resources."

General Energy Policies and Guidelines

- The County supports the responsible development of renewable and nonrenewable energy resources on public lands managed by the Bureau of Land Management and the U.S. Forest Service.
- The County will engage with federal land management agencies on all federal projects related to the development of renewable and nonrenewable energy resources on federal lands in order to promote the responsible development of these resources.

- That County will oppose the withdrawal of public federal lands from energy development unless the withdrawal of such lands has been fully coordinated with the state and the counties within which the lands are located.
- The County particularly supports the development of renewable and nonrenewable energy resources located on public lands inside the state's duly adopted "energy zones," described in Utah State Code Title 63J-8-105.2, the San Juan County Energy Zone; 63J-8-105.5, the Uintah Basin Energy Zone; and 63J-8-105.7, the Green River Energy Zone.

SECTION 16.A. A new section (Section 16.A) of the Resource Management Plan Element of the Tooele County General Plan is amended to include the following subsections:

Critical Minerals and Rare Earth Elements

Critical Minerals

Products from the mining industry are integral to every Utahns' lifestyle and standard of living and mining supports the foundation of the nation's economy. From the sand and gravel used to build roads and lay foundations for homes and buildings, to coal and uranium used to generate more than half of the nation's electricity, to the copper wire that connects billions of computers to a global social and commercial network, this country's economy and way of life depend on the vital resources provided by mining. Because of its importance to society, mineral resource development in Utah is supported by state policy.

The Critical Mineral List (List) was first released by the U.S. Geologic Survey (USGS) in May 2018 and contained 35 critical minerals and rare earth elements (REEs). The basis for the creation of the List was that, "The United States is heavily reliant on imports of certain mineral commodities that are vital to the Nation's security and economic prosperity. This dependency of the United States on foreign sources creates a strategic vulnerability for both its economy and military to adverse foreign government action, natural disaster, and other events that can disrupt supply of these key minerals." Utah had known sources of 28 of the 35 critical minerals and REEs, produced eight critical minerals (helium, lithium, beryllium, magnesium metal, potash, rhenium, platinum, and palladium), and hosted established resources of six more critical minerals (fluorspar, vanadium, uranium, aluminum, and indium).

On February 24, 2022, the USGS published the 2022 Critical Mineral List which removed helium, uranium, potash, rhenium, and strontium, four of which can be mined in Utah and which contribute significantly to the mining industry and the economics of local communities. Nickel and zinc were added to the 2022 List and Utah has historically been the ninth largest zinc producer domestically.

The Critical Minerals of Utah report (<https://ugspub.nr.utah.gov/publications/circular/c-129.pdf>) contains a description of each critical mineral produced in Utah as well as known and hypothetical sources. Tooele County is a known location for Critical Minerals, Potential Critical Minerals & Minor Critical Mineral Occurrences, as listed below:

***Continued on the next page.**

Critical Minerals

- Magnesium (Mg) – Source Location: US Magnesium Mine (Great Salt Lake)
- Lithium (Li) – Source Location: US Magnesium Mine (Great Salt Lake)

Potential Critical Minerals

- Arsenic – Source Location: Gold Hill Mining District
- Barite (Ba (BaSO₄)) – Source Location: Unknown Location(s) in Tooele County
- Bismuth (Bi) – Source Location: Unknown Location(s) in Tooele County
- Manganese (Mn) – Source Location: Unknown Location(s) in Tooele County
- Rare Earth Elements & Scandium (La, Ce, Pr, Nd, Pm, Sm, Eu, Gs, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, Sc – Source Location: Unknown Location(s) in Tooele County
- Tungsten (W) – Source Location: Unknown Location(s) in Tooele County

Minor Critical Mineral Occurrences

- Tin (Sn) – Source Location: Unknown Location(s) in Tooele County

Utah Critical Minerals – Periodic Table Explanation

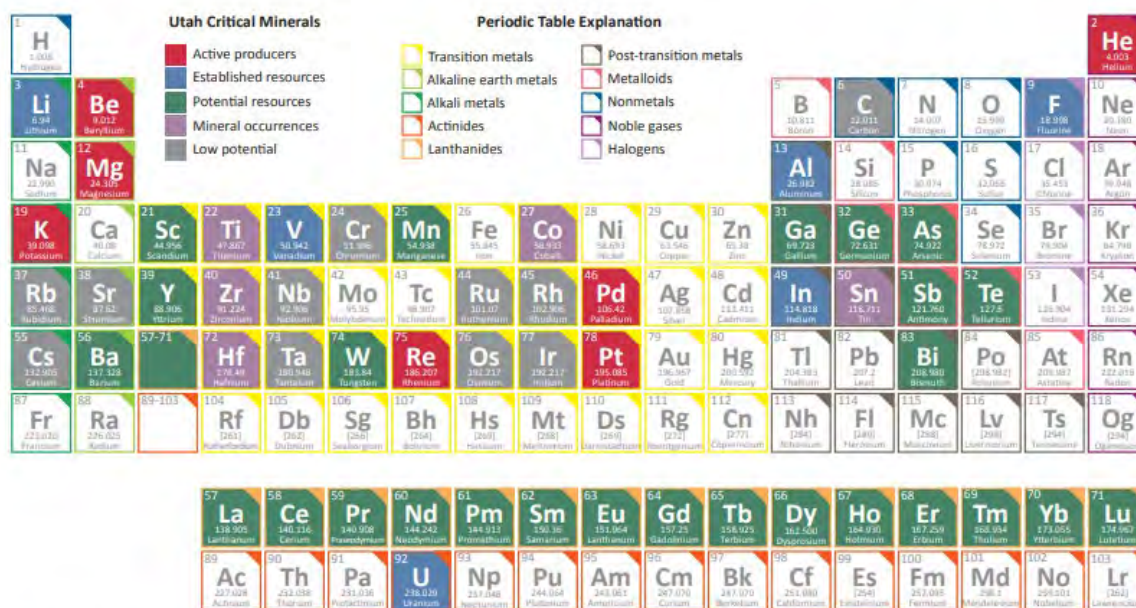
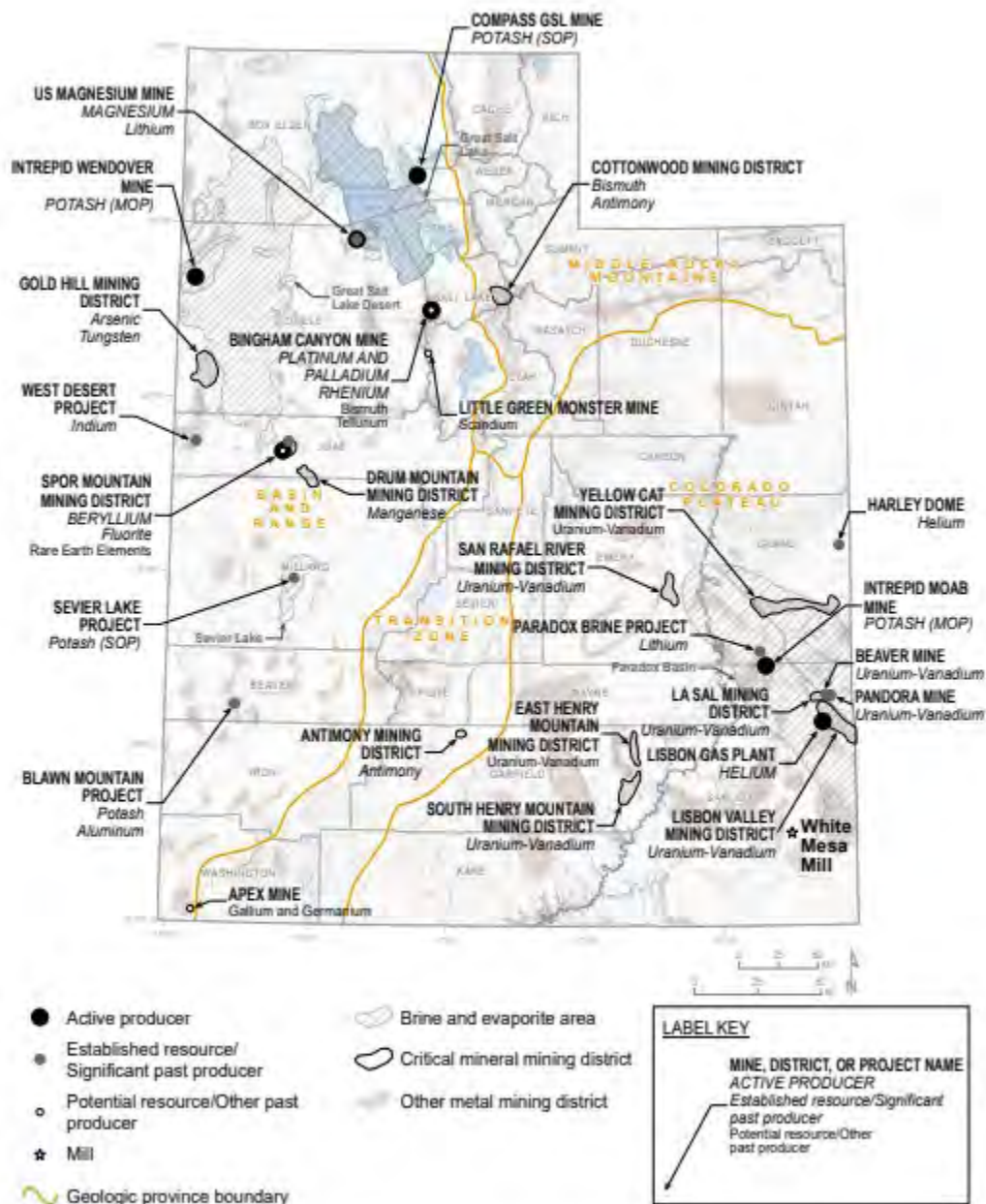


Figure 1. Periodic table showing all 35 critical minerals identified by the U.S. Geological Survey, and those found in Utah highlighted according to their current resource status.

*Continued on the next page.

Critical Minerals in Utah (Map)



Rare Earth Elements (REE)

Utah's geology is not conducive to the formation of significant REE deposits, as confirmed by historical exploration. Minor modern exploration has re-evaluated previously deprioritized targets; however, it is unlikely that Utah has the potential to become a primary REE producer. Byproduct REE production from existing mine tailings, such as the beryllium tailings at Spor

Mountain in Juab County or coal ash stockpiled at coal-fired power plants, may be possible and is the subject of current research. Tooele County is a known source location for the following REE deposits: La, Ce, Pr, Nd, Pm, Sm, Eu, Gs, Tb, Dy, Ho, Er, Tm, Yb, Lu, Y, Sc.

SECTION 23.A. A new section (Section 23.A) of the Resource Management Plan Element of the Tooele County General Plan is included as follows:

Utility Corridors

Introduction

Utility corridors are linear tracts of land set aside for the placement of the above and below-ground infrastructure that transports and conveys raw materials, processed materials, and energy. Utility corridors include the areas necessary for the maintenance and access of utilities infrastructure. Common infrastructure found in utility corridors includes electrical transmission lines, petroleum pipelines, natural gas pipelines, water pipelines, and telecommunications conduit.

A utility corridor (also known as a “right-of-way” or “easement”) may be located on private, state, tribal or federal public lands. The width of a utility corridor depends on the type of utilities within the corridor and the maintenance requirements of its infrastructure. For example, a utility corridor for a small water pipeline may be 20 feet wide, while a corridor with co-located high-voltage transmission lines and high-pressure natural gas pipelines may be hundreds of feet wide.

When utility corridors are constructed on federal land in Tooele County, they are most often on land administered by the US Bureau of Land Management (BLM) or US Forest Service (USFS), because these agencies administer large land tracts and are governed by the most-accommodating land-use regulations. However, utility corridors sometimes must cross federal land, which are governed by more-restrictive regulations. This may include land administered by the National Park Service, US Fish and Wildlife Service (USFWS), US Department of Defense, US Department of Energy, or Bureau of Reclamation (BOR).

Constructing utility corridors on federal land requires compliance with a number of federal laws and regulations, which vary depending on which agency administers the land in question. Laws and regulations also apply when locating utility corridors on state and private lands, but these are typically less complex than those that apply to federal lands, and they are not discussed here.

There are also regulations associated with siting utility corridors across tribal lands that will need to be adhered to when crossing tribal lands in consultation with the tribal government.

Legal context

The primary federal laws regulating utility corridor placement on BLM and USFS lands are the [Federal Land Policy and Management Act of 1976](#) (FLPMA) for BLM and [National Forest Management Act of 1976](#) (NFMA) for the USFS. Both FLPMA and NFMA require the federal agencies to complete resource management plans that list and describe future goals and

objectives for managing lands within their jurisdictions. These documents include any proposed locations for utility corridors.

Federal agency decisions regarding utility corridors must comply with the [National Environmental Policy Act of 1969](#) (NEPA), which stipulates that all projects with the potential to impact the environment must be evaluated via an environmental assessment, environmental impact statement, and other documentation. Regulatory laws that require avoidance, minimization, and possibly mitigation include but are not limited to:

- The Antiquities Protection Act of 1993, which protects significant cultural resources, historic properties, and paleontological resources from negative impacts.
- The [Clean Water Act of 1972](#), which, among other requirements, regulates the discharge of pollutants and fill material into certain jurisdictional waters (also known as “waters of the United States”).
- The [Endangered Species Act](#), which is administered by USFWS, regulates potential project impacts to threatened and endangered species.

Section 368 of the [Energy Policy Act of 2005](#) directs federal agencies to designate energy corridors on federal lands in the western United States. This set of regulations was enacted with the goal to “improve reliability, relieve congestion, and enhance the capability of the national grid to deliver electricity” (Westwide Energy Corridor Guidebook). In compliance with this directive, both the BLM and USFS in Utah have identified utility corridor locations and amended their resource management plans to accommodate the placement and construction of the designated corridors.

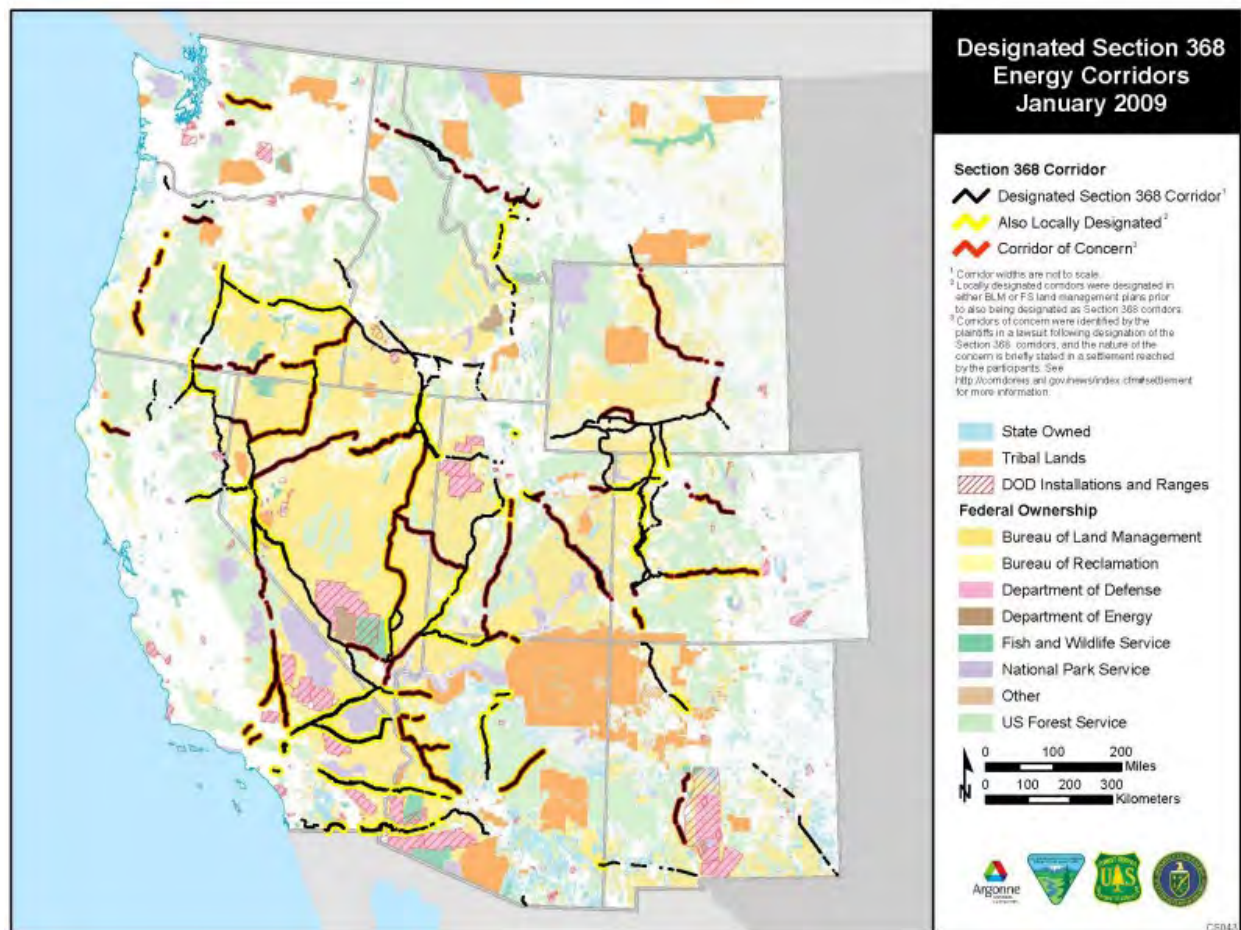
Findings

Corridors for utility infrastructure are commonplace in Tooele County, crossing private, state, tribal, and federal lands. On BLM lands, existing utility corridors are usually identified in land-use plans for each BLM field office (the Salt Lake Field Office for Tooele County). The plans that are pertinent to Tooele County can be found on the BLM’s planning website, which can be accessed [here](#). For Forest Service lands in Tooele County, existing utility corridors are identified in the forest plan for each individual national forest or wilderness area. For lands owned by state entities, such as Utah School and Institutional Trust Lands Administration (SITLA), Utah Division of Wildlife Resources, or private landowners, utility corridors are typically identified as easements on land-title documents. This information can be found at the Tooele County Recorder’s Office.

To establish new utility corridors on state lands, such as those owned by SITLA, the office may issue easements for up to 30-year terms, which can be acquired through the application process outlined [here](#). Utility corridors on tribal lands require compliance with rules administered by the Bureau of Indian Affairs. Utility corridors on private lands require negotiation with individual landowners to establish specific conditions, recordable easement deeds and financial compensation.

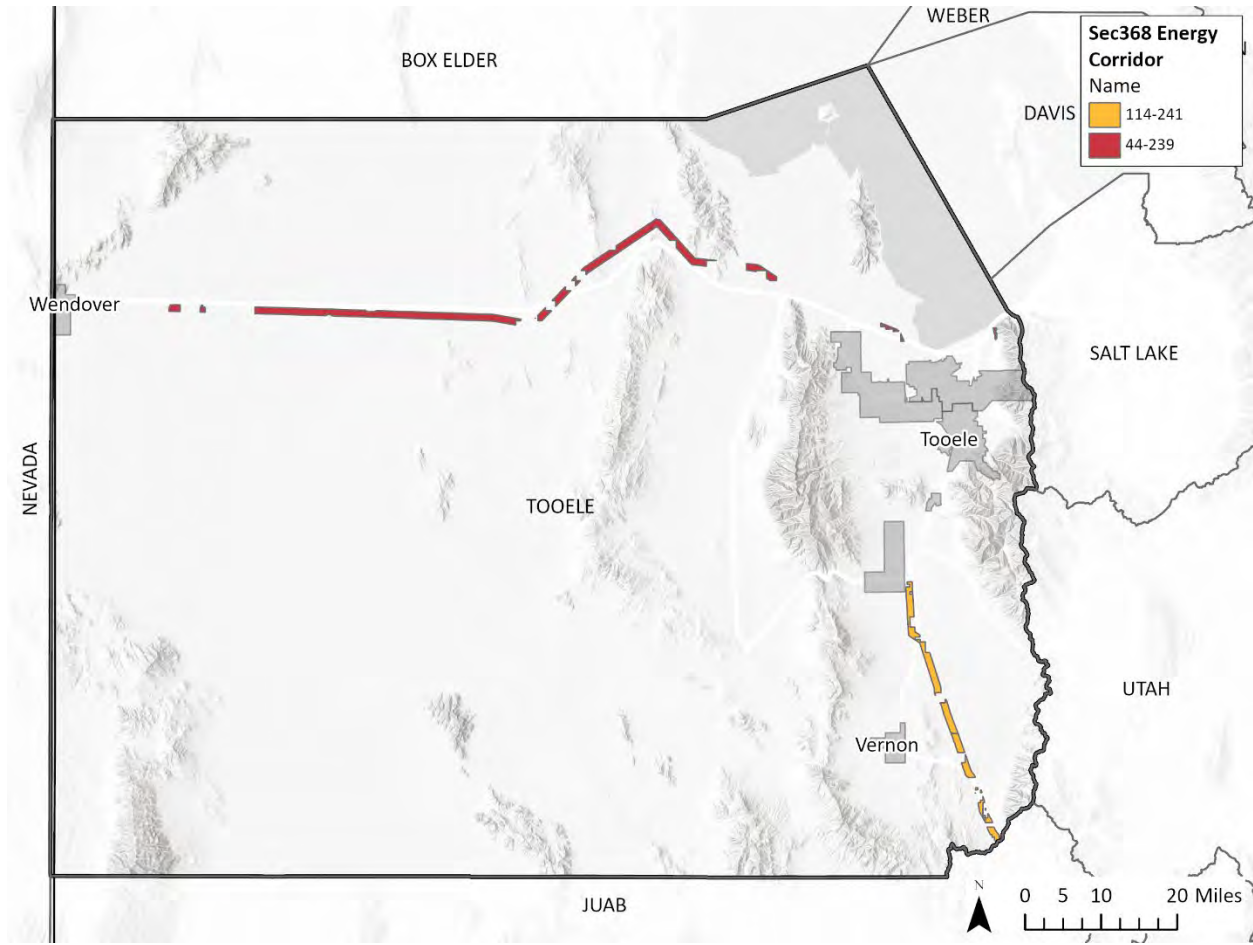
Establishing a new utility corridor on or through federal land for electrical transmission, pipelines, and other utility infrastructure is a major undertaking that may require years to complete. The design, analysis, public involvement, and documentation required by federal regulations are very complicated. Consider also that regulations and compliance can vary between jurisdictions, regions, and even within agencies. Navigating these processes and protocols can be extremely challenging.

Recognizing the complex nature of placing utility corridors on public lands, and in light of the growing need for energy grid improvements, Congress passed the Energy Policy Act of 2005. Section 368 of the act directs federal agencies to: (1) designate energy corridors on federal lands in 11 western states; (2) establish procedures to ensure that additional corridors are identified and designated as necessary; and (3) expedite applications to construct or modify oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities. These corridors are referred to in this document as “[Section 368” energy corridors](#).” The map below identifies Section 368 corridors for the western United States:



*Continued on the next page.

Section 368 Energy Corridors in Tooele County



The Section 368 energy corridor length by designated use and concern in Tooele County is shown on Table 1 below:

Table 1: Section 368 energy corridor length by designated use and concern.

CORRIDOR LENGTH				
Name	Designated Use	Local Designation	Corridor of Concern	Total (miles)
114-241	Multimodal; default 3500' width	No	No	20.1
44-239	Multimodal; default 3500' width	No	No	48.3
Grand Total				68.3

Source: U.S. Department of Interior, Bureau of Land Management, West-Wide Energy Corridor Information Center. (BLM, 2009)

Section 368 energy corridors may facilitate some utility transmission needs in Utah, however, there are other considerations for utility corridor planning. Even though an environmental impact statement was completed for the Section 368 energy corridor designation, standard NEPA

analysis procedures must occur again before any utility infrastructure is permitted for construction. The new round of analyses will use specific information about structure types, placement, and disturbance limits to determine potential impacts from the proposed project.

Other concerns for Section 368 energy corridors include the challenges of siting transmission infrastructure on private and state land inholdings embedded along designated Section 368 energy corridors, as well as where corridors cross out of federal lands (Fisher 2021). Furthermore, designated Section 368 energy corridors traverse only a portion of Utah, leaving the majority of the state too far from the corridors to be useful, especially for smaller transmission and distribution systems.

Utah’s utility corridors and their capacity to accommodate existing and future utility needs was identified as a concern by Utah’s Public Lands Policy Coordination Office and is also a concern of Tooele County. The issue of electrical transmission was examined in the [2021 Utah Transmission Study](#), which concluded that (under scenarios of high renewable energy buildout in southern Utah) transmission needs might exceed transmission capacity (Utah Transmission Study). However, the study did not address the specific placement of new infrastructure or whether Section 368 energy corridors would be used. Another study by the National Renewable Energy Laboratory (NREL) looked at proposed pipeline construction within Section 368 energy corridors and found that new pipeline construction in Utah is unlikely (Energy Futures Synthesis for West-wide Section 368 Energy Corridor). Currently, the only major natural gas transmission pipelines planned for construction in Utah are a 24-mile pipeline from Central Gate Station (on the Kern River pipeline) to St. George and to the Intermountain Power Plant (which will not utilize Section 368 energy corridors) (Dominion Energy 2020), and a new lateral connection from the Kern River Pipeline near Holden, Utah, to the Intermountain Power Plant near Delta (Delta Lateral Project). In Tooele County, there is a Dominion Energy natural gas pipeline that comes up through Middle Canyon and heads northwest through the County towards Aragonite. See Table 2 below and a map of the natural gas pipeline:

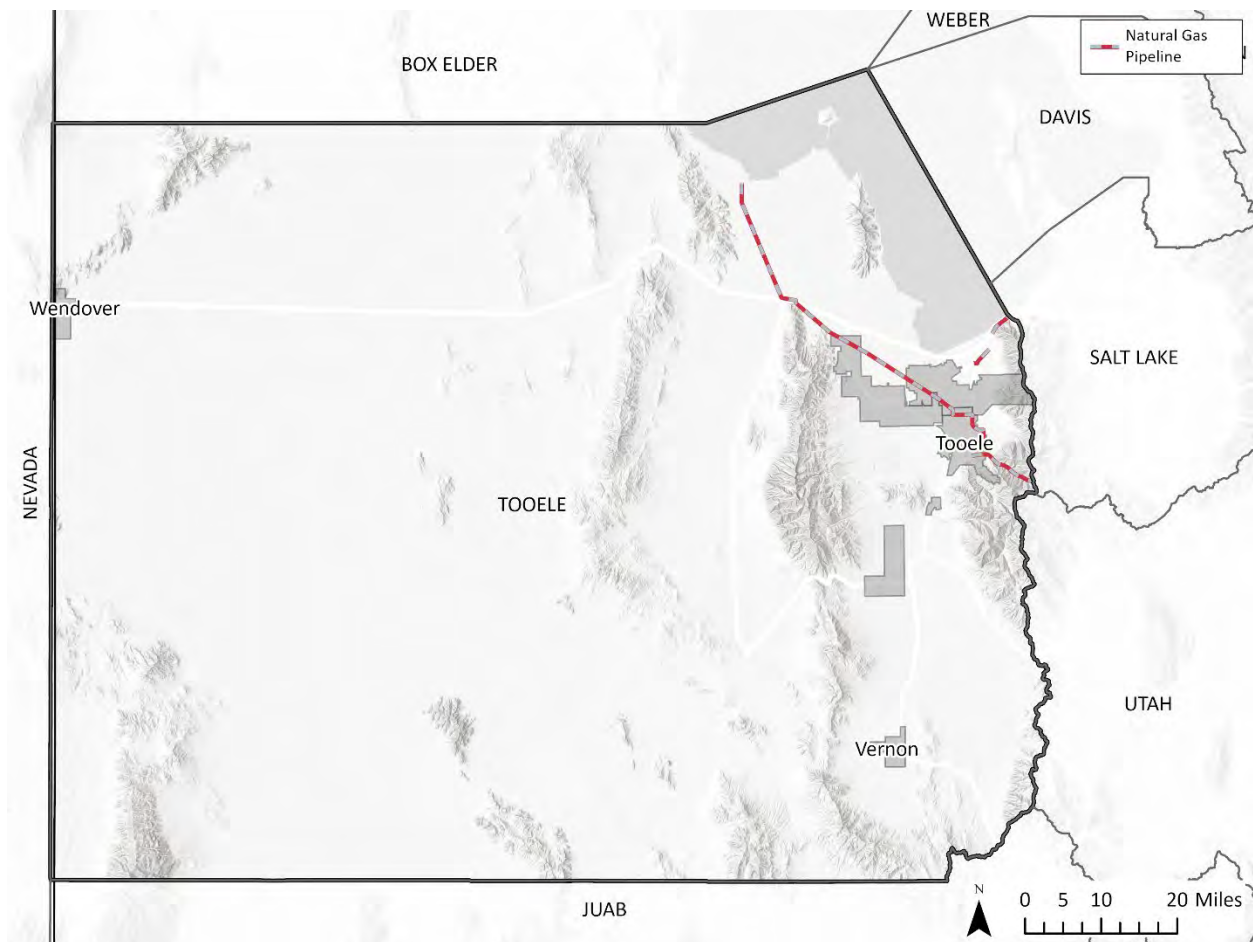
Table 1: Existing natural gas pipeline length by operator.

NATURAL GAS PIPELINE LENGTH	
Operator	Total (miles)
Dominion Energy	51.9
Grand Total	51.9

Source: U.S. Department of Transportation, National Pipeline Mapping System, 2022

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Natural Gas Pipeline in Tooele County



Tooele County is also traversed by the UNEV Petroleum Products Pipeline, which extends from North Salt Lake through Tooele County and Southwestern Utah to Nevada. See Table 3 below:

Table 3: Existing oil pipeline length by product type and operator.

OIL PIPELINE			
Type	Operator	Pipeline	Total (miles)
Petroleum Products Pipeline	UNEV	UNEV PIPELINE	57.3
Grand Total			57.3

Source: U.S. Energy Information Administration, *U.S. Crude Oil Pipelines, HGL Pipelines, and Petroleum Pipelines (EIA 2020b)*.

According to a regional transmission capacity study completed by the NREL, electrical transmission projects under development will largely meet projected future transmission demands according to their most-likely future demand scenario. However, under some scenarios, future need for new electricity transmission in Utah might exceed the capacity of Section 368 energy corridors, especially when considering the future demand for renewable energy

development and transmission (Energy Futures Synthesis for West-wide Section 368 Energy Corridor). Furthermore, when considering co-location within corridors, the issues of siting electric transmission and pipeline projects within the same corridor can require significant separation distances, which may lead to congested corridors with only a few projects. For example, according to NREL, “The location of steel pipelines in the vicinity of AC transmission facilities results in mutual electrical interference problems that can produce damaging effects on both facilities and potentially the public,” (Westwide Energy Corridor Guidebook).

PacifiCorp (Rocky Mountain Power) operates the majority of electricity-transmission capacity in Utah. Their 2021 Integrated Resource Plan (IRP) describes several future transmission projects, including the Energy Gateway South project, which will increase power grid capacity, add resilience to the system, and increase access to renewable power generation in the region (PacifiCorp 2021). Some of these projects may utilize portions of Section 368 corridors. To improve electrical supply resilience, PacifiCorp participates in the Western Energy Imbalance Market (EIM), which provides opportunities to increase efficiency and reliability via shared reliance upon all of its contributors (Energy Strategies). To ensure reliable access to the distributed electrical power sources provided by EIM membership, PacifiCorp has reinforced existing high-voltage transmission lines in Utah Valley, northern Utah, southern Utah, and Yakima, Washington.

A portion of the Mona to Oquirrh (segment C of the Gateway Central expansion) is located in Tooele County, as shown on the map below:

***Continued on the next page.**



This map is for general reference only and reflects current plans.
It may not reflect the final routes, construction sequence or exact line configuration.

(Updated March 2021)

Gateway Central

Segment B – Populus to Terminal

Segment C – Mona to Oquirrh

Segment C – Oquirrh to Terminal

Gateway West

Segment D.1 – Windstar to Aeolus (future segment)

Segment D.2 – Aeolus to Bridger/Anticline

Segment D.3 – Bridger/Anticline to Populus (future segment)

Segment E – Populus to Hemingway (future segment)

Gateway South

Segment F – Aeolus to Mona

Segment G – Sigurd to Red Butte

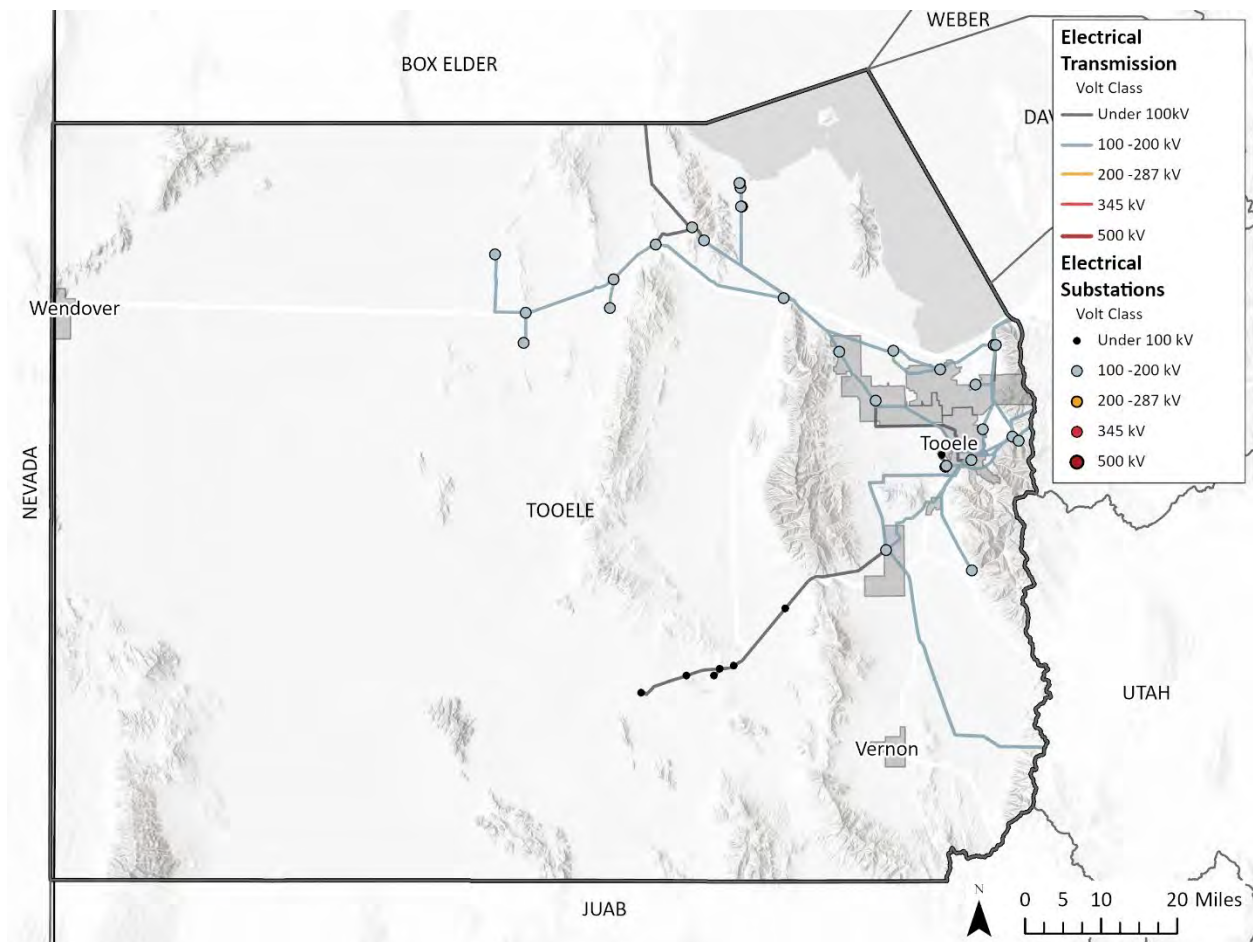
West of Hemingway

Segment A – Wallula to McNary

Segment H – West of Hemingway

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The Electrical Transmission lines within Tooele County is shown on the map below:



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The existing electrical transmission lines by length and voltage class in Tooele County are shown in Table 4 below:

Table 4: Tooele County’s existing electrical transmission line length by type and voltage class.

ALTERNATING CURRENT (AC) TRANSMISSION LINES		SUBSTATIONS
Kilovolt Category (kV)	Total (miles)	Total (count)
Under 100	75.6	8
100-161	310.9	30
220-287	0.0	0
345	0.0	0
Other	0.0	1
Grand Total	386.5	39

Source: Homeland Infrastructure Foundation-Level Data, Electric Power Transmission Lines & Electrical Substations (HIFLD 2021).

Economic Considerations

Power generation in the western United States is transitioning from carbon-based fossil fuels to renewable energy. And while power plants in Utah still use coal and natural gas to supply a significant portion of energy generation, the amount of wind and solar power generated is increasing every year. Additionally, policies to increase the component of renewable energy coming from the federal, state, and local governments as well as consumer demands, are likely to increase the demand of renewable energy over the coming decade.

Utah has abundant potential for renewable energy generation, as identified in the Utah [Renewable Energy Zone](#) study. Tooele County has been identified as a significant location within the state for solar power infrastructure. Multiple large-scale solar energy projects are already underway in the County.

Renewable energy resources are not always near existing transmission infrastructure. As power generators move to develop these resources, there is a need to simultaneously develop the transmission infrastructure required to convey power to the electric grid. PacifiCorp has plans to invest over \$1 billion to build additional transmission lines to strengthen the high-capacity transmission backbone across their service area (Jon Cox, 2021). However, additional corridors for lower-voltage transmission will still be needed to connect local renewable projects to the primary electric grid.

Primary economic consideration for utility corridors is the lengthy time periods and high costs required to navigate the federal permitting and compliance processes to place utilities on federal lands. The recent experience of PacifiCorp’s development of the Gateway South transmission project (which crossed federal lands both within and outside of Section 368 energy corridors)

took over 10 years to complete (Cox 2021). Such long time periods reduce the ability of utility companies to respond to rapidly changing energy policies, such as carbon reduction goals and development of Utah's renewable energy.

The challenging nature of placing utilities across federal lands has economic implications for Utah and local governments. For communities that have only one supply line for utilities (e.g., electricity, natural gas, fiber optic), increasing the capacity within an existing utility corridor to provide for growing communities is problematic. Also, attempts to provide redundant utilities to increase robustness and reliability of a given service can be hampered by the lack of multiple utility corridors to connect infrastructure.

Goals

Maintenance of existing utility corridors and plan for the future development of new utility corridors across federal and state lands to meet projected state and county growth and demand.

Objectives

- Encourage utility companies, cooperatives, the Utah Division of Public Utilities and other applicable state and federal agencies to coordinate efforts with the County related to existing and future utility corridors.
- Protect access for utility companies to maintain and improve infrastructure and utility corridors.
- Expedited federal approval processes and policies for the maintenance of utility corridors and new construction projects.
- Support Bureau of Land Management instruction memorandums (e.g. Utah IM-2021-004) that allows utility companies to have additional flexibility to access infrastructure and utility corridors for maintenance purposes and to reduce the risk of wildfire impacts on the utility.
- Maintain and update wildland fire protection plans to reduce the risk of wildfire in utility corridors.
- Partner with other entities to avoid, minimize, and mitigate challenges that utility corridors may present to cultural resources and threatened, endangered, and sensitive species.
- Encourage redundancy and physical separation for utility facilities needed to serve local and regional consumers.
- Work with federal and state agencies to identify utility corridors needed to access and deliver to foreign or domestic markets, all forms of traditional mineral resources, critical minerals, and renewable energy resources.
- Continue participating in the Section 368 (Westwide) corridor planning process and development.
- Ensure that sufficient utility corridors are available to provide essential utilities to local and regional consumers, including in areas with current or future federal special designations.
- Encourage feasibility studies for different types of utility transmission, distribution, and collection infrastructure.

- Support innovation to make existing and future utility corridor infrastructure more efficient, reliable, safe, climate-resilient, and sustainable.
- Support a network of utility corridors for the distribution of crude and refined petroleum products to foreign and domestic markets.
- Support the development of rail systems where gaps in service exist
- Provide access to fiber optic resources in rural Utah and Tribal communities, or equivalent.
- Encourage the provision of fiber optic resources to underserved areas of the county.
- Ensure that needed water resources are capable of being delivered through existing and future utility corridors in order to meet the needs of the county's citizens.
- Support the provision of a supply of hydrogen to state highway corridors; potentially via natural gas pipelines.

Policies

- The State of Utah is an “any-of-the-above” energy state and Tooele County supports that approach. Utility corridors must be preserved and developed to transport the complete range of energy resources.
- Tooele County supports the State Office of Energy Development's recommendations provided in the State Energy Plan, the Utah Transmission Study and other reports.
- Tooele County supports expedited corridor planning and approvals to address critical infrastructure needs (refer to Executive Order 13807, Section 5(g)).
- Tooele County supports development of utility corridors to accommodate pipelines from the natural gas and crude oil producing areas to refineries, export facilities or to other transportation networks.
- Federal agencies shall recognize and aid utilities in implementing wildland fire protection plans required of qualified utilities under Title 54-24-201 of the Utah Code.
- Interstate transmission lines should provide access for utilization of energy by citizens of Tooele County, the state of Utah, or supply significant and continual incentives that benefit the citizens of the county and state.
- Utility corridors are needed in Tooele County and the state of Utah to maintain affordable, reliable, abundant, and dispatchable energy at all times.
- Tooele County will support minimizing impacts to prime and unique soils and irrigable acres to the maximum extent possible when new utility corridors are being considered.
- Tooele County discourages natural gas vent lines (e.g. pig lines) in close proximity to electrical transmission and distribution lines, or other non-compatible operations.
- Every effort should be made to ensure that wildland fires are not caused by utility providers.
- Support the development and maintenance of an effective rail system corridor in Tooele County to support efficient commercial material and energy distribution to markets and diversify the economy.
- Tooele County recognizes the economic and educational importance of internet access.

- Tooele County recognizes that utility infrastructure within established corridors and along major highways is congested, and new areas need to be analyzed and established as corridors to facilitate future growth and demand.

SECTION 23.B. A new section (Section 23.B) of the Resource Management Plan Element of the Tooele County General Plan is included as follows:

Pipelines and Infrastructure

Introduction

Electrical Transmission

Electrical transmission infrastructure is used to convey high-voltage electricity from a generation source to load-center substations, where it's transformed into lower-voltage electricity for distribution to end-users. Major components of electrical transmission infrastructure include transformers, towers, foundation materials, and conductors (transmission lines). High-voltage transmission can be either alternating current (AC) or direct current (DC). Alternating current, the most commonly used form of transmission, has the ability to convert to different voltages using a transformer, whereas DC is not easily converted. Typical voltage for transmission ranges from 69 Kilovolt (kV) up to 500 kV.

Electrical transmission systems from individual utility companies (including those in Tooele County) are interconnected to the entire electrical network of generation facilities and transmission grids across the western United States. The state of Utah is part of the Western Electricity Coordinating Council in the geographic region called the Western Interconnection, one of three major electric interconnections that operate independently of each other within the United States. The Western Interconnection allows load-balancing throughout the network. That is, power generated by utilities with excess generation capacity can be provided to utilities that cannot meet their peak load demand (EIA 2021). The Western Energy Imbalance Market (EIM) is a wholesale energy trading market where bulk power can be purchased and sold (EIM 2021). Because the EIM connects multiple generators in a marketplace, individual utilities can buy electricity to meet peak demand at reasonable rates. Renewable energy generators can also sell excess power capacity through the EIM instead of resorting to curtailment (Larsen 2018).

Section 54-14-201 of the Utah Code provides that; if otherwise authorized by law, a local government may require or condition the construction of an electrical transmission facility in any manner if (1) the requirements or conditions do not impair the ability of the public utility to provide safe, reliable, and adequate service to its customers; and (2) the local government pays for the actual excess cost resulting from the requirements or conditions, except: (a) any actual excess costs that the public utility collects from its customers pursuant to an order, rule, or regulation of the commission; or (b) any portion of the actual excess costs that the state Public Utilities Board requires to be borne by the public utility.

For further information on the process of identifying and permitting the construction of electricity transmission infrastructure on federal land, refer to the Utility Corridor section of this plan.

Legal context

The Federal Powers Act of 1921 ([16 U.S.C. § 12](#)), as amended, provides for federal oversight of the bulk electrical transmission system by the Federal Energy Regulatory Commission (FERC). The [Energy Policy Act of 2005](#) (among other items) enables FERC to facilitate transmission planning to meet the needs of utilities serving retail customers. In 1996, FERC issued [Order No. 888](#), which opened all interstate transmission lines for use by any power generator to transmit power across the bulk transmission grid, provided the power generator pays tariffs to the transmission line utility owners. This is known as the Open Access Transmission Tariff (OATT). The FERC's [Order No. 889](#), sets standards of conduct for power generators utilizing OATT transmissions ([Utah Code § 54-17-901](#)).

Natural Gas Pipelines

Natural gas pipelines are constructed by private utility companies to move natural gas from production areas to end users ([54 Utah Code § 13](#)). Gathering pipelines move extracted raw materials from wellheads to processing plants, where natural gas is separated from other gases, hydrocarbon gas liquids, and water. The refined natural gas is then pressurized and added to the mainline transmission system, which consists of large-diameter, high-pressure pipelines. Compressor stations along the network maintain pressure and move product down the line to storage areas, major industrial consumers, power plants, shipping ports, and distribution companies. From there, distribution transmission systems operate with smaller-diameter lines and lower pressure. Finally, service lines transport natural gas to the end users.

This planning document focuses on pipeline infrastructure located within designated utility corridors (typically major transmission lines), but may also include some gathering and distribution lines. More information on natural-gas production and distribution from the US Energy Information Administration (EIA) can be found [here](#).

For information on the process of identifying and permitting the construction of natural gas pipeline infrastructure on federal land, refer to the Utility Corridor section of this plan.

Legal context

The State of Utah grants local governments the authority to supplement the state and federal laws with its own regulations for oil and gas development. Utah authorizes counties to enact any ordinances necessary to carry out its duties, so long as they are not repugnant to state or federal law (BMP 2021).

The Pipeline and Hazardous Materials Safety Administration (PHMSA) exercises authority under the Pipeline Safety Act ([49 U.S.C. § 60101](#)) to prescribe minimum safety standards governing the location, design, construction, operation, and maintenance of liquefied natural gas

facilities in or affecting interstate and foreign commerce. Whereas FERC serves as the lead federal agency for satisfying compliance with the National Environmental Policy Act (NEPA) ([42 U.S.C. § 4321](#)) for liquefied natural gas facilities subject to its jurisdiction (McIntyre & Elliot, 2018).

The Natural Gas Act ([15 U.S.C 15B § 717](#)) enabled the federal regulation of companies transporting and distributing natural gas both intrastate and interstate. The [Public Law 109–468 \(2006\)](#), an amendment to the 49 U.S.C § 60101, provides enhanced environmental and safety protection in the transportation and handling of national energy products. This includes the construction and demolition of pipelines for the purpose of transporting oil and gas products.

Oil Pipelines

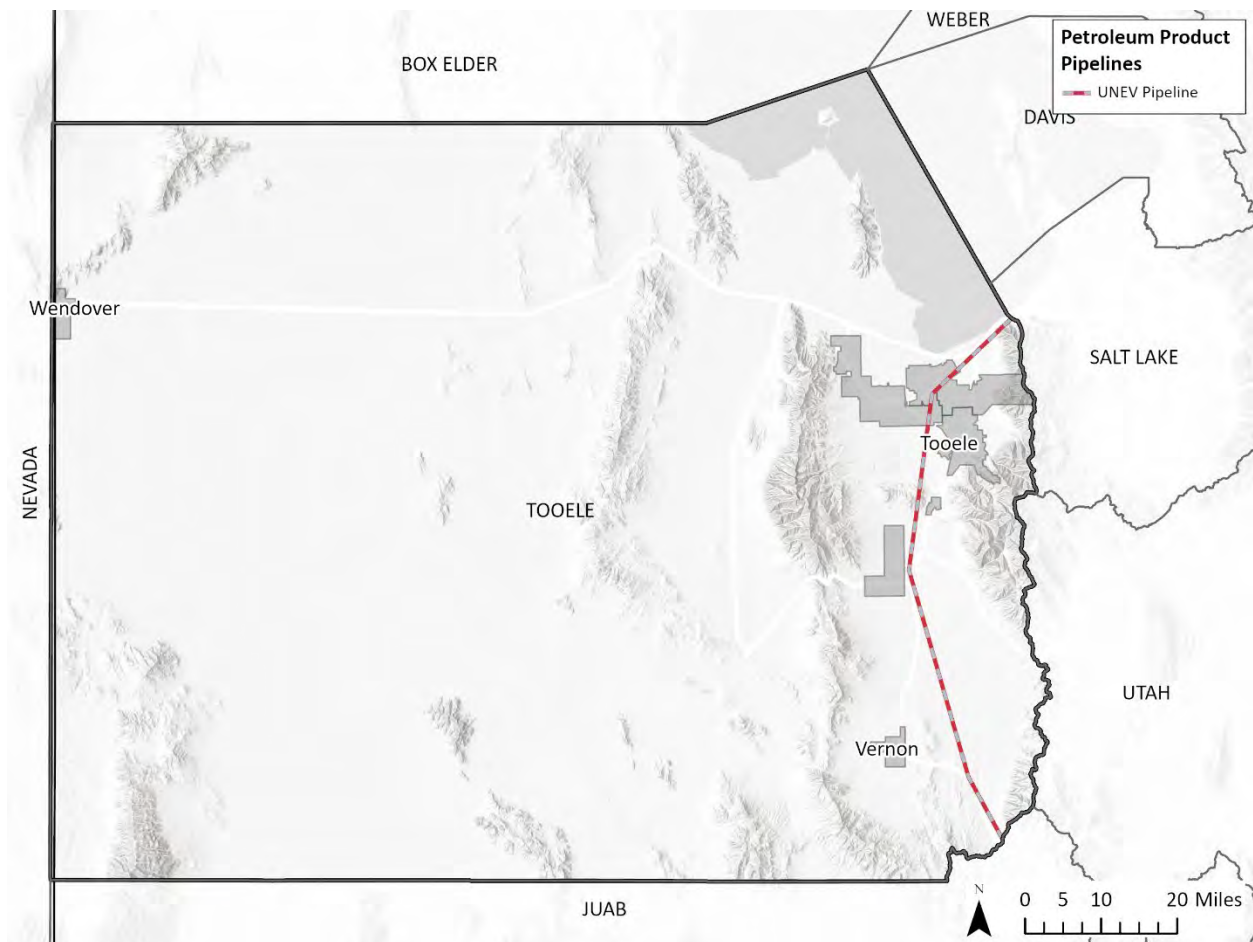
Oil pipelines are very similar to natural gas pipelines in that the products are transported through networks of pipes and pump stations from production areas to consumers. First, the raw material (in this case, crude oil) is gathered from wellheads and moved downstream through trunkline pipelines to refineries, which separate the oil into numerous petroleum products. From the refinery, pipelines are used to transport petroleum products to various destinations for local use or export to other markets. A third product, called hydrocarbon gas liquid (HGL) is a secondary product created during the processing of natural gas. Because HGL is a liquid petroleum product, pumped through pipelines in a manner similar to oil, it is included in this section. More information on oil production and distribution can be found [here](#).

For information on the process of identifying and permitting the construction of oil and gas pipeline infrastructure on federal land, refer to the Utility Corridor section of this plan.

Tooele County is traversed by the UNEV Petroleum Products Pipeline, which extends from North Salt Lake through Tooele County and Southwestern Utah to Nevada, as shown on the map below:

***Continued on the next page.**

UNEV Pipeline



Legal context

Similar to the natural gas pipelines, the State of Utah grants local governments the authority to supplement the state and federal laws with its own regulations for oil and gas development. The State of Utah authorizes counties to enact any ordinances necessary to carry out their duties, so long as they are not repugnant to state or federal law (BMP 2021). The PHMSA exercises authority under the Pipeline Safety Act ([49 U.S.C. § 60101](#)) to prescribe minimum safety standards governing the location, design, construction, operation, and maintenance of liquefied natural gas facilities in or affecting interstate or foreign commerce. Whereas FERC serves as the lead federal agency for satisfying compliance with NEPA ([42 U.S.C. § 4321](#)) for liquefied natural gas facilities subject to its jurisdiction (McIntyre & Elliot, 2018).

Hydrogen Pipelines

In contrast to oil and natural gas, which are extracted from the earth, hydrogen is a manufactured product. Hydrogen gas can be manufactured from fossil fuels such as natural gas (“grey hydrogen”) or coal (“brown hydrogen”), or it can be created from water using electrolysis. When the electricity used in the electrolysis process is derived from a renewable energy source, the

resulting hydrogen is known as “green hydrogen.” Hydrogen can also be produced from biomass.

Pipelines and other infrastructure used to transport hydrogen are similar to those used to transport natural gas. Large-diameter pipes are first used in the transmission of high-pressure hydrogen gas. When blended with natural gas (at up to 15 percent hydrogen), existing natural gas pipelines can be used instead of installing separate hydrogen pipelines.

For information on the process of identifying and permitting the construction of hydrogen gas pipeline infrastructure on federal land, refer to the Utility Corridor section of this plan.

Legal context

The State of Utah grants local governments the authority to supplement the state and federal laws with its own regulations for oil and gas development. Utah authorizes counties to enact any ordinances necessary to carry out its duties, so long as they are not repugnant to state or federal law (BMP 2021). The PHMSA exercises authority under the Pipeline Safety Act ([49 U.S.C. § 60101](#)) to prescribe minimum safety standards governing the location, design, construction, operation, and maintenance of liquefied natural gas facilities in or affecting interstate or foreign commerce. Whereas FERC serves as the lead federal agency for satisfying compliance with NEPA ([42 U.S.C. § 4321](#)) for liquefied natural gas facilities subject to its jurisdiction (McIntyre & Elliot, 2018). The US Department of Transportation (DOT), through PHMSA, has regulated hydrogen pipelines since 1970 via [49 CFR § 192](#). This code of regulation stipulates that a minimal level of safety standard needs to be met when transporting natural and other gasses. Regulations apply to pipeline construction, material standards, operations, and maintenance of pipeline structures.

Water Pipelines

For the purposes of this planning document, water pipelines consist of substantial infrastructure projects used to transport large quantities of water over long distances through varying terrain and elevations from reservoirs and rivers to major population centers and agricultural users.

Legal context

The Colorado River Compact created the Upper and Lower Colorado River Basin. In the Upper Colorado River Basin Compact of 1948, Utah is allocated 23 percent of the upper basin water allotment, which totals 1.73 million acre-feet. The Colorado River Storage Project Act (Public Law 485, 70 Stat. 105) was enacted to authorize the Central Utah Project (CUP) among many other such development projects within the Colorado River Basin. Congress enacted the Central Utah Project Completion Act (CUPCA) (P.L. 102-575) on October 30, 1992, providing policy guidance and direction for completing the CUP, including transferring all construction responsibilities from the BOR to the Central Utah Water Conservancy District, while retaining federal oversight. The Ute Indian Unit was de-authorized by the 1992 CUPCA (DOI 2021a).

All water use within the State of Utah is governed by Utah Code, Title 73.

For information on the process of identifying and permitting the construction of water pipelines on federal land, refer to the Utility Corridor section of this plan.

Telecommunications

Telecommunications refer to the infrastructure used to transmit and distribute electronic information. For this study, the discussion of telecommunications will focus on broadband infrastructure, typically transmitted through fiber optic cable, used by service providers to connect consumers to the Internet, which allows large quantities of digital information to be transmitted at high speeds.

Legal context

Coordination of highway and broadband information is regulated by [Utah Code § 63N-3-501 \(2020\)](#), which dictates the collection and maintenance of broadband data from providers and private or public entities.

For the purposes of telecommunication installation, utility access to the US interstate highway system, including the right-of-way areas, is regulated by [Utah Code § 72-7-108 \(2018\)](#) and [Utah Administrative Rule § 907-64](#). These regulations facilitate longitudinal access to or use of any part of the right-of-way of a highway on the interstate system.

The placement and relocation of utility facilities that conflict with the construction or maintenance of highways (which applies to any and every facility, utility, or other structure not owned by the State of Utah) falls under the Utility Accommodation Rule ([Utah Administrative Rule § 930-7](#)).

For information on the process of identifying and permitting the construction of telecommunication infrastructure on federal land, refer to the Utility Corridor section of this plan.

Other Infrastructure

Other infrastructure includes mechanical wastewater treatment facilities, sewer collection systems, sewage lagoons, and stormwater systems. The vast majority of these systems in Utah are owned and operated by local municipalities and service districts. The use of state or federal lands for such facilities is not common.

Legal context

The Federal Water Pollution Control Act of 1972, commonly referred to as The Clean Water Act [40 CFR § 1, Subchapters D, N, and O \(Parts 100-140, 401-471, and 501-503\)](#), gives the Environmental Protection Agency (EPA) the federal authority to set standards for allowable pollutants for point and nonpoint source discharge into waterways. The [Utah Water Quality Act](#) as amended establishes framework for State oversight of water quality.

Transportation Infrastructure

Transportation infrastructure is the backbone network of major roads, highways, railroads, and other infrastructure used to transport goods and services within and across Utah. For the purposes of this planning document, the roads and highways managed by the Utah Department of Transportation (UDOT) and major railroads are considered.

Legal context

The UDOT was established to have the authority and responsibility for planning, research, design, construction, maintenance, security, and safety of state transportation systems ([Utah Code § 72](#)). This includes the preparation and adoption of standard plans and specifications for the construction and maintenance of state highways.

Findings

Electrical Transmission

The majority of electricity generation and bulk energy transmission capacity in Utah is owned by PacifiCorp (note: Rocky Mountain Power is owned by PacifiCorp). According to company statistics, PacifiCorp serves 948,000 customers in Utah across 26 counties (Cox 2021).

Other power generators and distributors in Utah include the Utah Rural Electric Cooperative Association ([URECA](#)), Utah Municipal Power Agency ([UMPA](#)), and Intermountain Power Agency ([IPA](#)).

The URECA is a collective of nine local power generators and transmission companies from six states. Utah members of the cooperative include Deseret Power Electric Cooperative, Dixie Power, Garkane Energy, and Moon Lake Electric Association. Combined, they service about 70,000 utility meters and 250,000 consumers in Utah (J. Peterson, URECA, personal communication, 10/28/2021).

These power co-ops and associations make use of the OATT, provided by FERC Order numbers 888 and 889, to purchase transmission capacity on PacifiCorp's transmission infrastructure to provide power to their customers without having to install their own transmission lines.

Within and across Utah, PacifiCorp's infrastructure provides the majority of electrical transmission capacity. Other transmission infrastructure owners include the IPP, which owns a 500kC DC transmission line that services its California customers.

The majority of future planned utility transmission infrastructure in Utah will be owned by PacifiCorp. Their 2021 [Integrated Resource Plan](#) describes new transmission projects intended to (1) strengthen the backbone of Utah's energy grid for future energy loads, (2) improve interstate energy market connections through the Western EIM, and (3) change generation sources to include greater renewable contingents. Pacificorp's future projects are listed below:

- Gateway South, 416 miles of 500 kV transmission line from Aeolus, Wyoming to Delta, Utah. Estimated completion date: October 2024.
- Emery to Clover, 75 miles of 345 kV transmission line
- Clover to Sigurd, 70 miles of 345 kV transmission line
- Spanish Fork to Mercer, 50 miles of 345 kV transmission line
- Cross-Tie Transmission Project, 214 miles of 500 kV transmission line from Clover, Utah to Thirty Mile substation in eastern Nevada. 2026.

Transmission projects from other companies include the TransWest Express Transmission Project, a 732-mile 500 kV DC transmission system connecting Sinclair, Wyoming, to Las Vegas, Nevada, with a terminal connection in Delta, Utah. This transmission line, which closely parallels the Bonanza transmission line through Duchesne County, will eventually provide 3,000 megawatts of transmission capacity, which will be generated by wind power in Wyoming (TransWest Express 2021).

The URECA has indicated they have no new transmission projects planned in the near future (Peterson 2021).

When planning for new [utility-scale solar](#) developments, considerations should be made for the inversion of DC power generated from solar array prior to connection to the AC bulk power grid.

Another consideration for the planning of electrical transmission in Utah includes future chokepoints or bottlenecks in transmission-line capacity. This issue has been studied with respect to electrical transmission in the [2021 Utah Transmission Study](#), which determined that (under scenarios of high renewable energy buildout in southern Utah) electrical transmission needs might exceed capacity (Energy Strategies).

Resilience and redundancy of electrical transmission are issues that have been identified by stakeholders. Many rural locations in Utah are served by single transmission lines, referred to as “radial transmission lines.” Radial transmission lines are the least costly option for providing some remote locations with electrical power, but they also leave those areas vulnerable to utility disruptions because of their lack of redundancy. Additional transmission connections are costly not only because of their construction costs, but also due to the expense and time required to place utility corridors on federal lands. Refer to the Utility Corridor section of this plan for more information.

Natural Gas Pipelines

Natural gas production in Utah is located primarily in Uintah, Duchesne, Carbon and Grand counties (Vanden Berg 2020). Multiple interstate pipelines cross through Utah to transport natural gas from principal producing basins in Colorado, Utah, and Wyoming, to consumer markets in other states, and for export to foreign markets around the world.

The majority of local natural gas transmission infrastructure in Utah is provided by Dominion Energy. The company owns 20,189 miles of transmission and distribution lines and has 1,090,000 customers (Dominion Energy 2020). Dominion Energy produces a large portion of the

gas it sells to customers, but it also purchases natural gas from other interstate pipeline companies for delivery to residential, commercial, and industrial customers.

Oil Pipelines

According to the Utah Geologic Survey (UGS), Utah is consistently one of the top 15 oil-producing states in the United States (Chidsey 2021). In their recent circular, [Utah's Energy Landscape](#), the UGS reported the majority of oil production in Utah is occurring in Duchesne, Uintah, and San Juan Counties. Oil produced from wells in the Uinta Basin and further east in Colorado is transported in oil pipelines and trucks to refineries in Salt Lake City. Additional oil pipelines have been proposed to transport crude oil from the Uinta Basin to refineries in Salt Lake City and to the rail line in Carbon County. However, the basin's waxy crude makes pipeline conveyance difficult.

Hydrogen Pipelines

Presently, Utah has no pipelines designated for transporting compressed hydrogen because the demand for hydrogen as a fuel source is limited.

Broader use of hydrogen, such as for motor vehicles and freight transport, is uncertain at this time. Wide-spread adoption of hydrogen as a transportation fuel would require a distribution network, either through pipelines or by tanker trucks, to fueling stations throughout the state to alleviate drivers' "range anxiety."

Water Pipelines

Two primary water pipelines and water development projects utilize (or plan to utilize) water allocated to Utah from the Colorado River Compact, CUP, and the Lake Powell Pipeline.

The CUP is a complex, trans-basin water development and delivery infrastructure project that provides water storage and conveyance from the Uintah Basin to the Wasatch Front. The CUP consists of four units--water projects that, when combined, comprise the entirety of the CUP. The Bonneville Unit is the primary unit. It enables transport of water from the Uinta Basin to the Wasatch Front. Within the Bonneville Unit is the Diamond Fork system. This system comprises the Diamond Fork Pipeline, which delivers 101,900 acre-feet of water to the Wasatch Front (DOI 2021b). None of these projects are located in Tooele County.

Telecommunications

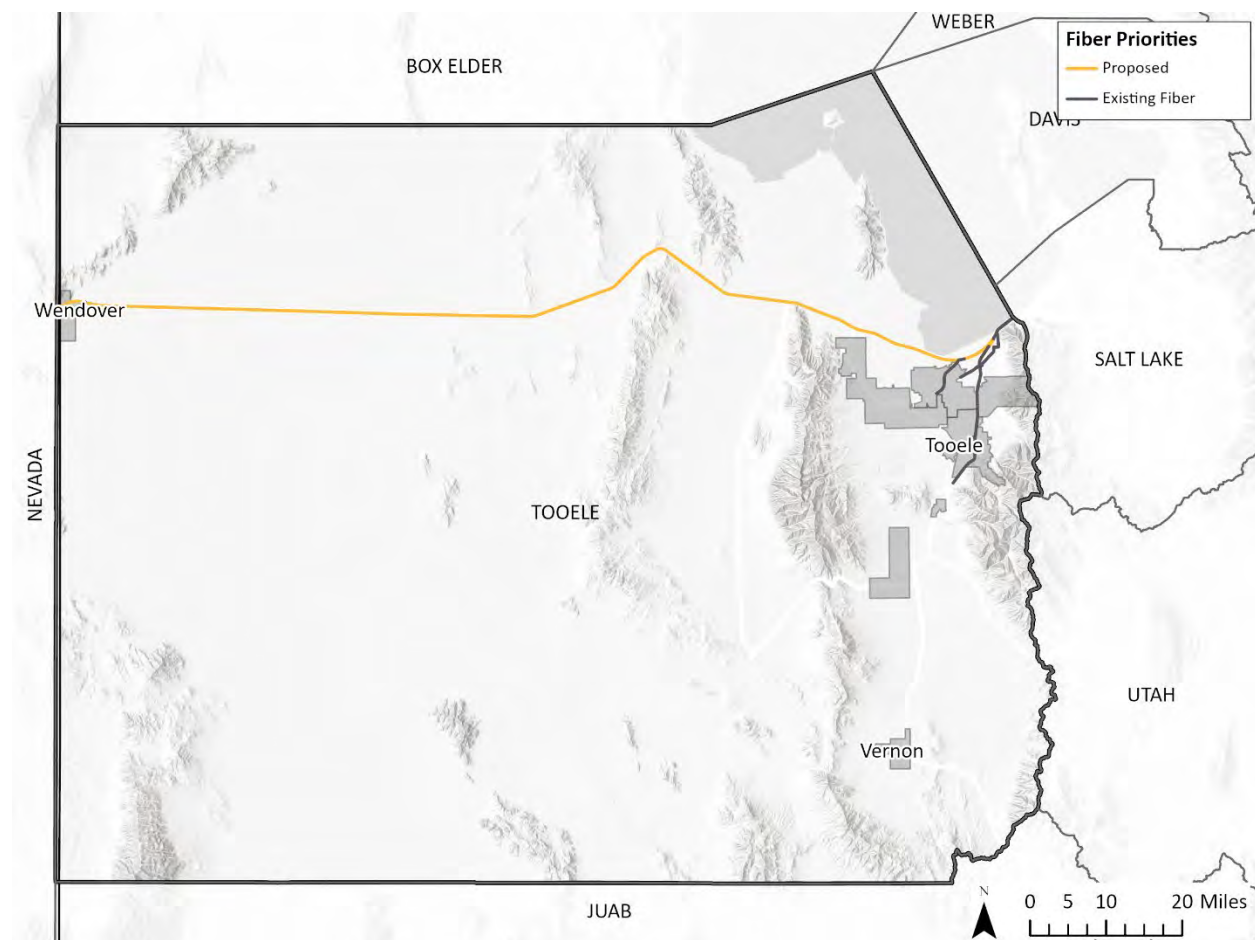
Tooele County supports the state of Utah's commitment to deploying and expanding broadband and making it accessible across the entire state. To this end, the [2020 Utah Broadband Plan](#) identifies a series of goals to meet that goal. As of June 2021, 94 percent of Utah has access to broadband Internet service with speeds of 100 mbps or faster.

Approximately 68 percent of Utahns have access to fiber-optic services with a State Broadband Access Ranking of 29th in the United States (BroadbandNow 2021).

The widespread access to high-speed Internet service across rural Utah is due in large part to the UDOT Fiber Program. For the last 20 years, UDOT has been working to install a robust fiber optic network along state highways to connect traffic cameras, digital road signs, weather stations, and other sensors to provide real-time traffic updates (UDOT Fiber Program). This fiber-optic backbone also provides access for private companies to connect to broadband Internet networks and provide high-speed Internet to their customers. UDOT established a Public Private Partnership with private telecom companies to connect communities while expanding UDOT's Intelligent Transportation System.

Utah's current fiber-optic network consists of approximately 2,564 miles of single mode fiber (SMF or SMFO), 1.6 miles of multimode fiber (MMF or MMFO), and 24 miles of SMF and MMF (UDOT 2021a). A fiber-optic priority assessment revealed that 309 miles of fiber-optic network has been proposed with an additional 317 miles to meet existing needs (UDOT 2021b). Approximately 105 miles of fiber-optic network is in progress, with another 146 miles scheduled for installation (as of November 2021).

Fiber-optic networks are provided in Tooele County by Beehive Broadband. For additional information regarding this network, see the Utility Corridor section of this plan. For additional information regarding the importance of fiber optic facilities, see the Economic Considerations section of this plan. Below is a map of the Fiber-optic Priorities for Tooele County:



The existing and proposed fiber optic cable lengths in Tooele County is shown on Table 5 below:

Table 5: Existing and proposed fiber optic cable length.

APPROXIMATE COST AND LENGTH		
Status	Title	Total (miles)
Proposed	I-80; Wendover to SR-201	101.9
Proposed	Conduit and fiber gap built in Tooele/Lakepoint on SR-36	11.3
Existing	Multiple	48.0
Grand Total		161.2

Source: Utah Department of Transportation fiber program features services (UDOT 2021a, 2021b)

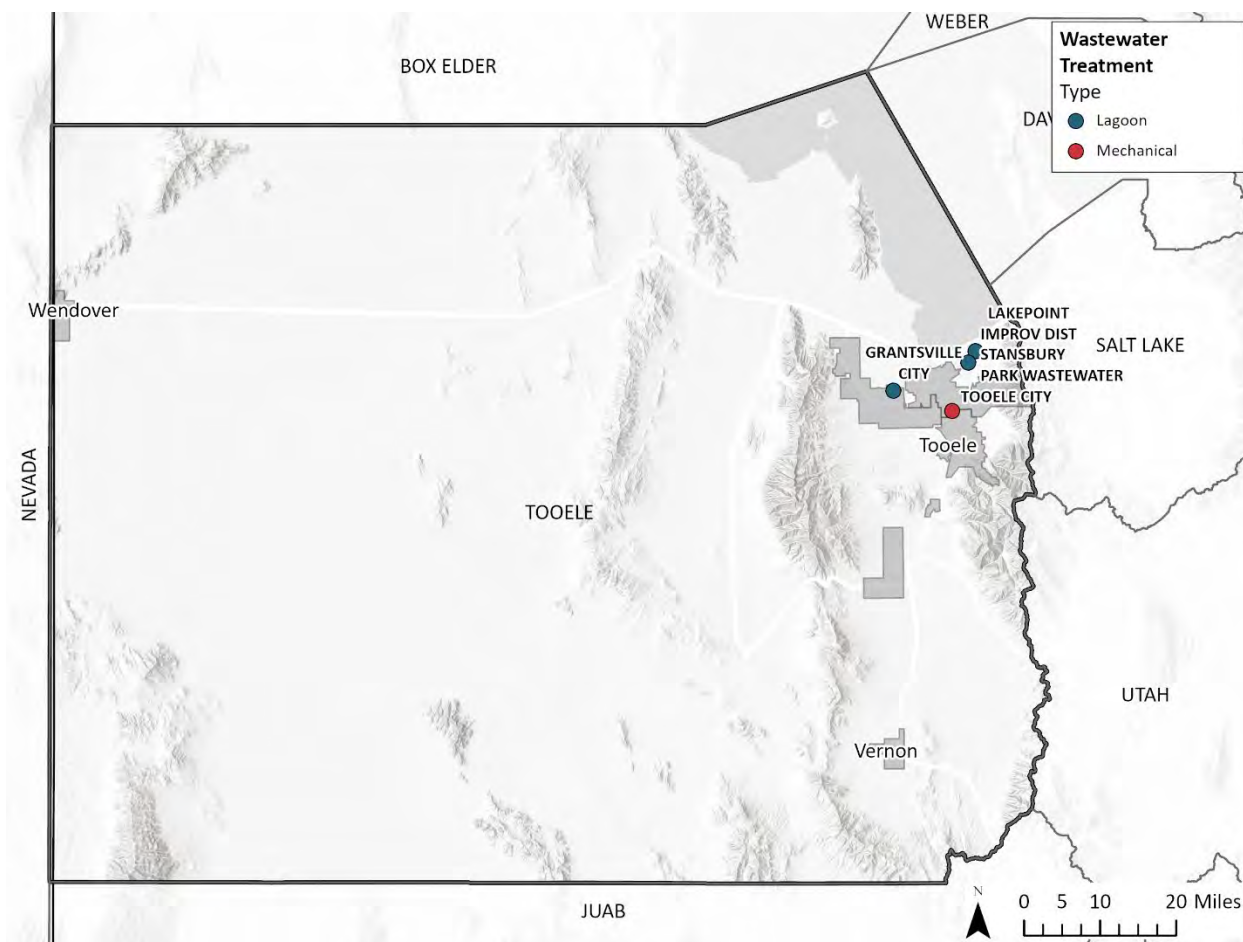
Other Infrastructure

There are 41 mechanical water-treatment plants in Utah. These range in capacity from 0.25 million gallons per day (mgd) in Oakley City to 75 mgd at the Central Valley Water Reclamation Facility in Salt Lake City. Statewide, wastewater treatment plants are operating at 65 percent of capacity (WFWQC 2019). Tooele City utilizes a mechanical water-treatment facility.

A total of 24 sewer lagoons, which discharge treated effluent into waters of the State of Utah, serve a population of 73,500 people. Another 49 sewer lagoons are non-discharging treatment facilities that use evaporation and percolation to handle wastewater and serve a population of 132,500 people (Krauth 2019). In Tooele County, sewer lagoons are utilized by Lake Point Improvement District, Stansbury Park Improvement District and Grantsville City.

***Continued on the next page.**

The map below shows the existing Wastewater Treatment types in Tooele County:



The active municipal sewer wastewater treatment facilities in Tooele County by type are shown on Table 6 below:

Table 6: Active municipal sewer wastewater treatment facilities.

FACILITIES			
Facility Name	NPDES Permit	Type	Discharge Location
LAKEPOINT IMPROV DIST	UT0020231	Lagoon	DITCH TO GREAT SALT LAKE
GRANTSVILLE CITY	UT0021130	Lagoon	BLUE LAKES TO GREAT SALT LAKE
STANSBURY PARK WASTEWATER	UT0025241	Lagoon	UNNAMED IRR DITCH TO GREAT SL
TOOELE CITY	UT0025445	Mechanical	UNAMED DITCH

Source: Utah Department of Environmental Quality, Division Water Quality, UPDES Dischargers, public-owned wastewater treatment facility discharge. (DWQ, 2021)

A 2019 [study](#) of existing sewer pipelines across Utah estimated there are 12,202 miles of sewer pipeline in the state with an average age of 35 years. The same study estimates that 7,320 miles

of pipeline will need to be relined or replaced by 2060, and an additional 2,567 miles of new pipeline will need to be installed in the same timeframe (Forsgren 2019). In Tooele County, most wastewater is still treating using septic systems, rather than extensive sewer pipelines. Increased nitrates have been identified as an issue of concern in Tooele County. New developments with Tooele County should prioritize the usage of sewer infrastructure where possible.

A 2019 [study](#) of stormwater pipes across Utah estimated there are 4,673 miles of existing stormwater pipes in the state with an average age of 29 years. The study estimates that 2,395 miles of this pipeline will need to be replaced by 2060, and another 956 miles will need to be installed in the same time period to accommodate new population growth (Forsgren 2019).

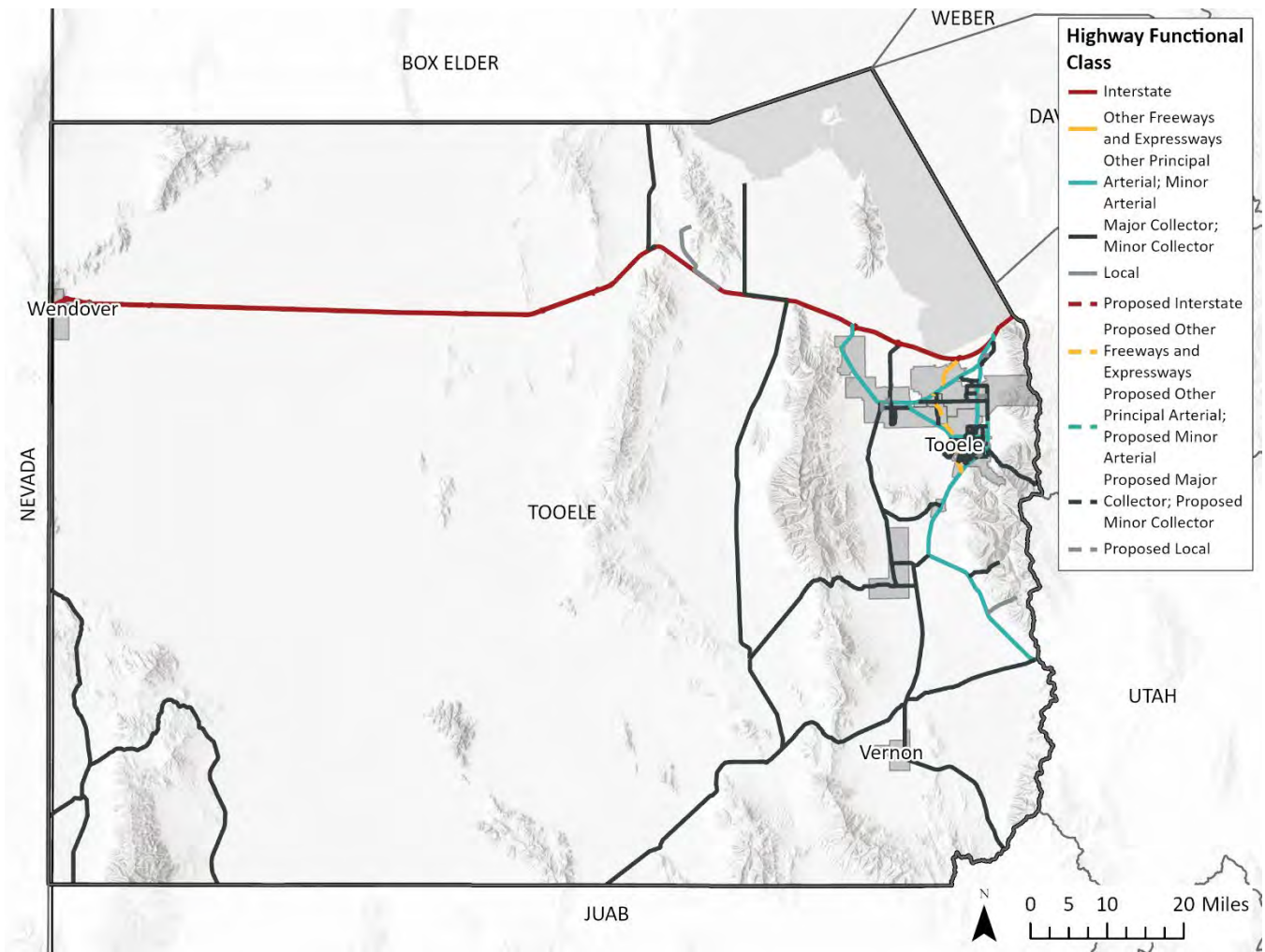
Water discharged into state waterways from mechanical wastewater treatment plants, sewage lagoons, and stormwater systems are subject to clean-water standards established by the EPA and the Utah Division of Water Quality. Those standards are defined [here](#).

Transportation Infrastructure

The planning, construction, and maintenance of US interstate highways, state highways, and some local roads in Utah are completed through collaboration with UDOT. Roadway planning occurs during the compilation of the [Unified Transportation Plan](#). The planning process is a unification of multiple transportation plans across the state including local governments, rural planning organizations metropolitan planning organizations, transit districts/authorities, and UDOT. Construction of new federal and state roadways and bridges as well as upgrades to existing infrastructure is prioritized during the planning process and ultimately approved by the Utah Transportation Commission appointed by the Governor. Maintenance of roadways within UDOT's jurisdiction is carried out through a system of maintenance facilities placed strategically across the state. Federal oversight of Utah's highway infrastructure is provided by the Federal Highway Administration.

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The established functional classification of existing and future roads needed to serve the county is shown on the map below:



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Existing and planned roadways length by functional class for Tooele County is shown on Table 7 below:

Table 7: Existing and planned roadways length by functional class in Tooele County.

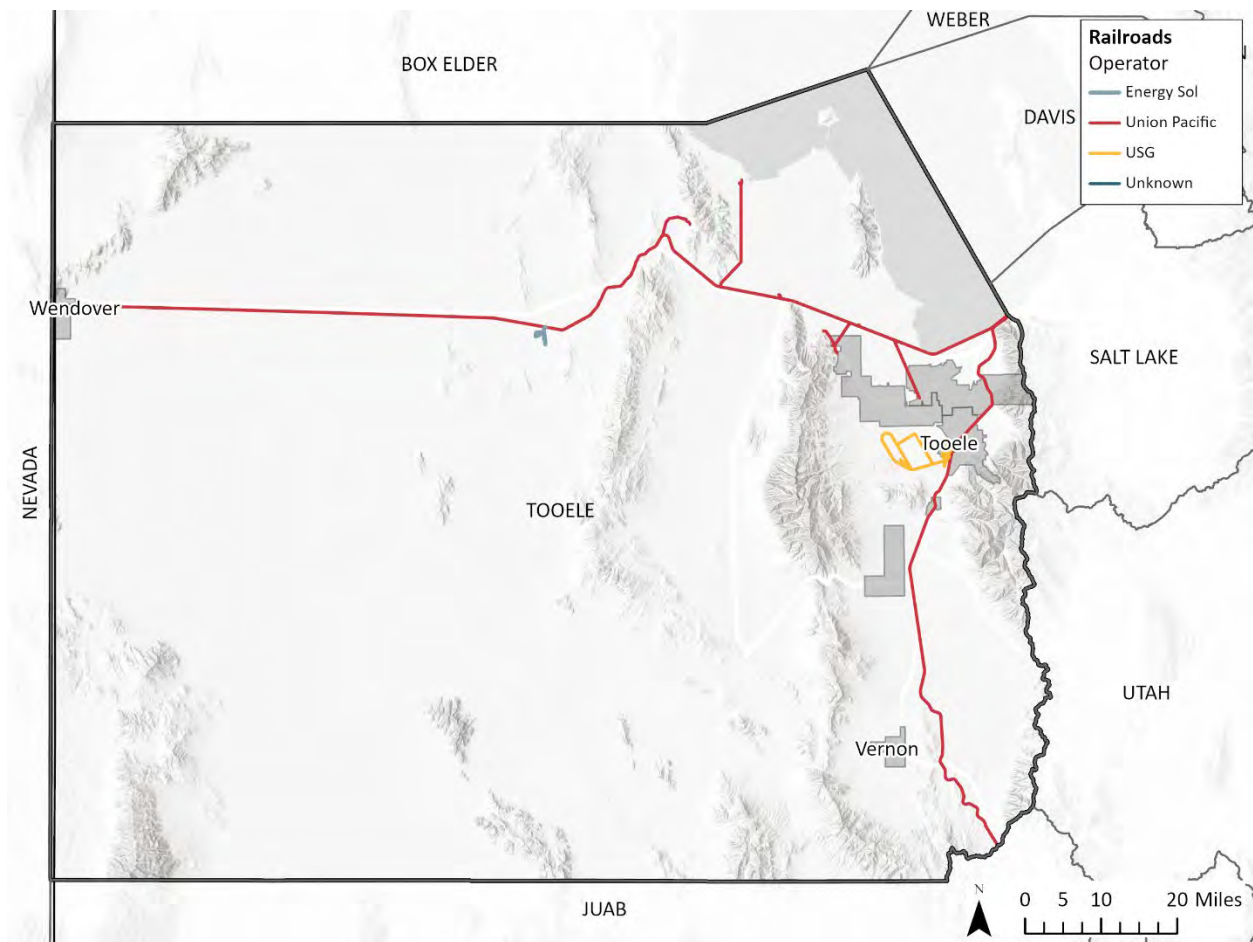
ROADWAY LENGTH		
Functional Class	Existing Total (Miles)	Planned Total (Miles)
Interstate	231.0	0.0
Other Freeway and Expressway	3.1	8.8
Other Principal Arterials & Minor Arterial	78.5	0.0
Major Collector & Minor Collector	367.7	3.4
Local (UDOT only)	21.4	0.0
Grand Total	701.7	12.2

Source: Utah Department of Transportation, roadway functional class (UDOT 2022)

The [Utah Freight Plan](#) addresses issues and needs specific to the statewide highway and multimodal freight networks. The UDOT, in conjunction with the Utah Transit Authority, also compiled the Utah State Rail Plan, a plan for freight and passenger rail transportation in Utah. Finally, Utah is in the planning process to site and construct a new rail connection between the Uinta Basin and the existing interstate railroad network. The preferred route would travel from Kyune, Utah, to Myton, Utah, passing south of Duchesne along US Highway 191 through Indian Canyon. About 12 miles of the route would be through USFS land, which required preparation of an environmental impact statement. The USFS issued a draft [Record of Decision](#) on October 26, 2021, to allow the project to proceed on forest land. A decision to approve the project was made by the federal Surface Transportation Board (STB) on December 15, 2021. However, the STB decision was appealed and is pending in a Washington, D.C. court.

***Continued on the next page.**

Existing Railroads and Operators within Tooele County, are identified on the map below:



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The existing railroad track length by Operator and Division in Tooele County is shown on Table 8 below:

Table 8: Existing railroad track length by Operator and Division.

TRACK LENGTH		
Operator	Division	Total (miles)
Union Pacific	Caliente	0.1
Union Pacific	Ellerbeck Ind Lead	5.1
Union Pacific	Lyndll	80.0
Union Pacific	Marblehead Ind Lead	4.5
Union Pacific	Rowley Ind Lead	11
Union Pacific	Shafter	132.9
Union Pacific	Other	13.2
USG	Other	56.4
Energy SOI	Other	9.4
Grand Total		312.6

Source: Utah Geospatial Resource Center data portal, railroads (UGIC 2017).

Economic Considerations

Electrical Transmission

Tooele County is served by Rocky Mountain Power and its parent company PacifiCorp, which employs more than 1,800 people in Utah.

Lack of sufficient generation resources during peak demand puts utilities and customers at risk of high prices from the energy market during emergencies. This happened in Texas during February 2021, during which a winter storm and freezing temperatures disrupted one third of Texas's power generation capacity, resulting in astronomical power costs over just two days (Hersher 2021). A robust transmission system can reduce the potential for this kind of problem because transmission connects multiple generation sources across large regions.

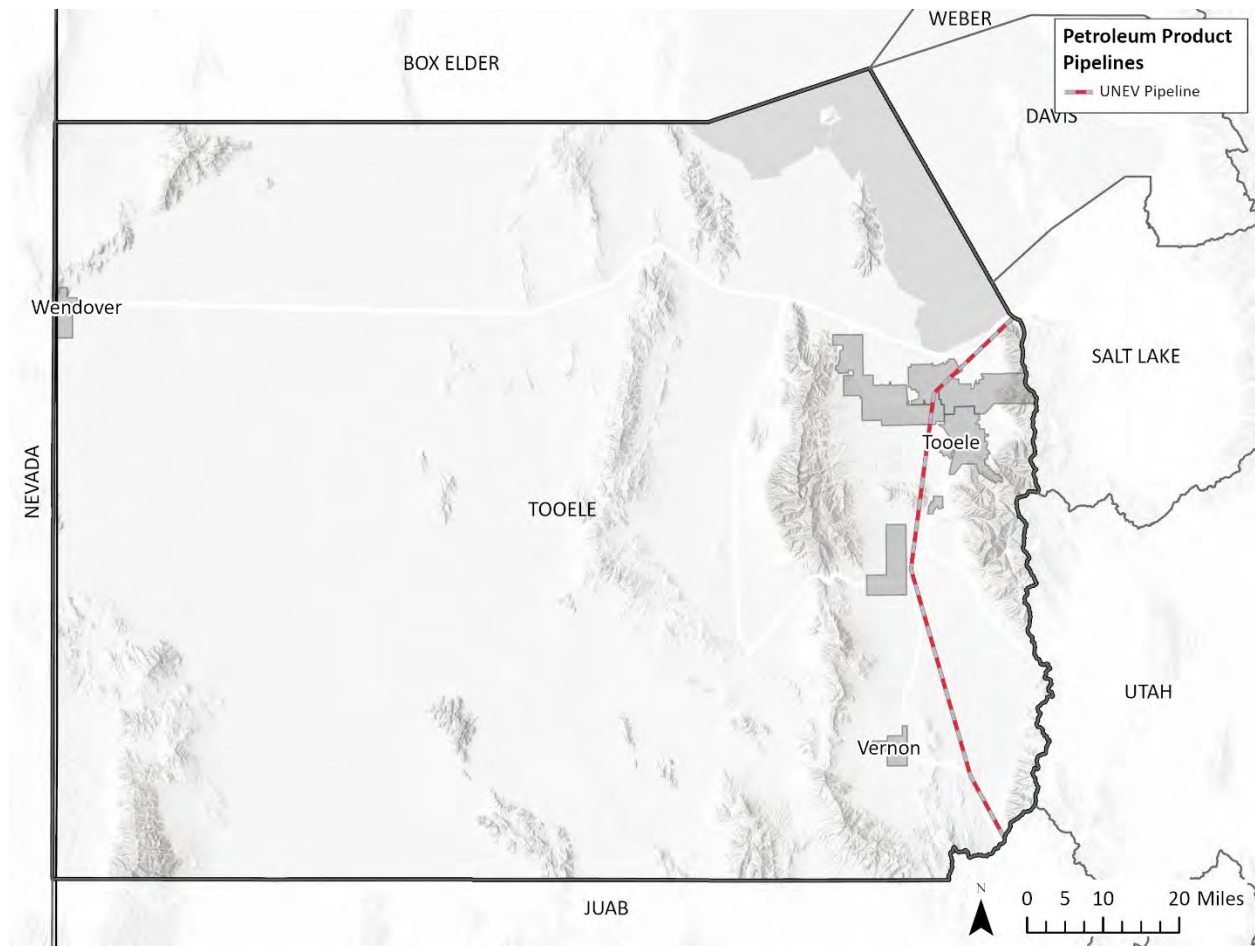
Natural Gas Pipelines

Natural-gas distribution companies employ as many as 700 employees in Utah (DWS 2021) with Questar Gas (now Dominion Energy) being the largest natural gas company in the state.

***Continued on the next page.**

Oil Pipelines

Tooele County is traversed by the UNEV Petroleum Products Pipeline, which extends from North Salt Lake through Tooele County and Southwestern Utah to Nevada, as shown on the map below:



Hydrogen Pipelines

Hydrogen has only limited use within Utah. This may change in the future if hydrogen is adopted as a transportation fuel or as a large-scale component of utility-scale electricity generation.

Water Pipelines

According to the 2020 [Statewide Water Infrastructure Plan](#), over the next 50 years, the State of Utah and municipal water providers will need to spend \$20.6 billion to repair and replace existing infrastructure and another \$17.6 billion for new infrastructure and to develop new water supplies for future growth (BRWCD et al. 2020). The five river basins with the highest estimated costs are Bear River Basin, Kanab Creek/Virgin River Basin, Weber River Basin, Utah Lake Basin, and the Jordan River Basin.

Telecommunications

The Utah Broadband Advisory Council considers broadband essential to economic success (UBAC 2020). Broadband is essential for Utah businesses because it allows them to be nationally and internationally competitive. The technology also promotes entrepreneurship, attracts investments, and supports state and municipal governments. The partnerships developed through the UDOT Fiber Program have saved the state an estimated \$105.8 million while connecting many parts of Utah to high-speed Internet service. For additional information regarding the economic impacts of broadband facilities, see the Economic Considerations section of this plan.

Other Infrastructure

According to a [recent study](#) by the Utah Department of Environmental Quality, the present value of existing wastewater treatment facilities in Utah is estimated to be \$4 billion (Reclaim 60). However, wastewater conveyance and treatment facilities must be maintained to operate effectively. Utah faces an additional cost of \$5.3 billion for infrastructure renewal and replacement, and another \$1.3 billion for upgrades to meet future regulatory requirements. New infrastructure required to meet the needs of population growth across Utah is expected to cost \$2.1 billion. Over the next 40 years, the total cost for wastewater treatment has been estimated to be \$8.7 billion (Reclaim 60).

In addition to wastewater treatment facility costs, other infrastructure must be replaced or upgraded over the next 40 years. Wastewater pipelines represent a cost of \$4.3 billion, sewer lagoons are expected to cost \$432 million, and stormwater-collection systems are estimated to cost \$1.3 billion (Reclaim 60).

Transportation Infrastructure

The Unified Plan determined a total of \$108.5 billion would be needed between 2019 and 2050 to fund the maintenance of current infrastructure, to expand capacity of existing roads, and to build new roads. This estimate also includes funds for upgrading transit and railway infrastructure (UDOT et al. 2021). Funding for the construction and maintenance of major highway infrastructure is provided by federal and state funds, which are generated from fuel taxes, vehicle registrations, and general funds.

Goals, Objectives, and Policies

Goals

In light of Utah's arid environment and the world's changing climate conditions, the need for sufficient and reliable water, energy, and critical resources, the need for storage and related infrastructure is ever increasing. Therefore, to ensure Utah's ongoing drought resilience, energy security, and to provide for current and future needs, Tooele County supports the state's efforts to build and invest in necessary infrastructure, including additional pipelines, dams, reservoirs, above and below- ground storage facilities, and other feasible infrastructure.

Objectives

- Support statewide economic opportunities and resilience for Utah communities through the provision of adequate pipelines and other infrastructure.
- Assist in the development of pipelines and sufficient infrastructure to meet Tooele County's current and future needs.
- Work with land managers in an attempt to ensure that project continuity issues on public lands do not inhibit project implementation.
- Explore opportunities with special service districts for above and below-ground water storage countywide at different scales.
- Conduct feasibility studies to prioritize water storage and pipeline projects and become proactive in order to capitalize on high water flows during flood years.
- Improve techniques and the utilization of aquifer storage and recovery.
- Efficient and timely delivery of water and energy resources without damaging infrastructure.
- Support innovative and proven technologies to line earthen and concrete canals in order to reduce water loss and increase transportation efficiency.
- Form partnerships with stakeholders and obtain funding from the Bureau of Reclamation to form partnerships that benefit communities.
- Support water conservancy districts in applying for grants to improve water delivery systems.
- There may be a future need to supply hydrogen along major highway arteries. There are several different methods of utilizing hydrogen opportunities that need to be further studied and strategically implemented. Avoid hydrogen production that requires excessive water consumption.
- Investigate and strategically support and implement hydroelectric production by using new technology such as in-pipe hydro systems within existing and future pipelines.
- When economically and technically feasible, and in the best interest of local communities and operators, encourage efforts to avoid decommissioning hydroelectric power facilities.
- Encourage the development of infrastructure projects aimed at recharging depleted aquifers.
- Encourage xeriscaping policies, incentive programs, and educational campaigns to reduce water usage and reliance.
- Increase watershed yields through active management of forests and other vegetated areas.
- Support programs like Shared Stewardship and the Watershed Restoration Initiative to enhance water yields.
- Support the implementation of the Utah State Water Plan.
- Strategically promote watershed restoration and flood abatements after wildfires to improve soil retention, improve water quality, and reduce downstream impacts caused by flooding, siltation and debris flows.
- Incorporate silt traps and other mechanisms to trap silt upstream and keep it from entering water treatment plants and downstream reservoirs that will ultimately need to be dredged when their storage capacity is reduced.

- Support innovation to make existing and future water storage and delivery systems more efficient, reliable, safe and sustainable.
- Support a network for the distribution of natural gas, crude oil, and refined petroleum products to domestic and foreign markets.
- Develop agreements with federal agencies to make it possible to maintain and improve dams, impoundments, and other facilities on federal lands with limited access in a timely and economically feasible manner. It is not economically feasible to transport equipment and supplies by helicopter.
- Encourage the use of Advanced Metering Infrastructure (AMI) to quickly identify water leaks reducing wasted water. The technology also allows remote monitoring and manipulation (valves, flow rates, pressure, etc.) of water conveyance infrastructure.

Policies

- Tooele County supports coordinated efforts across all agencies, governments, tribal nations, and other land ownerships on infrastructure projects to minimize delays.
- Tooele County encourages and requests federal appropriations for water infrastructure, including pipelines, water storage, and aquifer recharge.
- Tooele County supports active forest management to increase water yields and water quality.
- Tooele County supports active forest management to decrease water quality issues from wildfire, flooding, etc., which impacts water storage, water treatment, and water delivery systems.
- Tooele County supports the plans and strategies presented by the Shared Stewardship Program, Watershed Restoration Initiative, and the Utah Division of Water Resources.
- Tooele County supports the Utah Watershed Council Act.
- Tooele County encourages water conservation measures, education, and incentives.
- Tooele County supports maintaining access to water in the Colorado River and its access to state and county owned shares that have not been fully exercised as a result of access and transportation limitations.
- Tooele County supports the development of pipelines from the natural gas and crude oil producing areas to refineries, export terminals, or to other associated transportation systems.
- Tooele County discourages natural gas vent pipes (e.g. pig lines) in close proximity to electrical transmission and distribution lines, or any other non-compatible operations.
- Tooele County supports the effort to conserve water by creating hydrogen through natural gas, coal, and other sources.
- Tooele County supports creating a strategy to provide consumers with hydrogen access along major transportation arteries, if or when, markets support this energy transference option in the future.
- Tooele County supports and encourages the maintenance and development of pipelines and infrastructure that improve the state's market share and improve the quality of life for Utahns, provided such can be maintained and developed in a sustainable manner.

- Tooele County opposes the creation of pipelines and infrastructure to remove water resources from the state of Utah in order to transport it to other states.
- Tooele County expects pass-through pipelines and associated infrastructure to continually benefit the citizens of Utah and local communities.
- Tooele County desires unimpeded and timely access to water storage facilities on federal lands to feasibly improve and maintain infrastructure in an effort to address water storage needs.
- Tooele County supports the completion of the Central Utah Project as originally proposed to fulfill all promises made to Uintah Basin counties to mitigate for the transfer of water to the Wasatch Front.
- Tooele County supports projects that conserve water by the lining of ditches and canals.
- Tooele County supports the preservation of existing hydroelectric facilities and construction of new facilities, including in-pipe hydro systems and other innovative technologies, when such is cost-effective for the operator(s).
- Tooele County supports the construction and operation of pipelines and other infrastructure to enable the production and transportation of mineral resources from federal lands.

SECTION 30. This section includes a Reference section (Section 30) for the 2022 Resource Management Plan Updates of the Resource Management Plan Element of the Tooele County General Plan, including the follows:

“Critical Minerals of Utah,” Utah Department of Natural Resources, Utah Geological Survey, Circular 129, 2020, by Stephanie E. Mills and Andrew Rupke, (<https://ugspub.nr.utah.gov/publications/circular/c-129.pdf>).

“West-Wide Energy Corridor Guidebook.” [BLM] Bureau of Land Management. ND. HDR, National Renewable Energy Laboratory. 64pg.

“Presentation to the Utah Public Utilities, Energy and Technology Interim Committee. Rocky Mountain Power,” Cox, Jon. 2021 PowerPoint Presentation, 14pg.

“Dominion Energy Utah/Wyoming Integrated Resource Plan, Docket 20-057-02.” Dominion Energy, 2020. Salt Lake City, UT. 233pg.

“Utah Transmission Study: A Study of the Options and Benefits to Unlocking Utah’s Resource Potential,” Energy Strategies, 2021.

Fisher, Rod. 11/1/2021. PacifiCorp. Personal communication.

Delta Lateral Project, Kern River Gas. 2020. Salt Lake City, UT. Brochure, 2 pg.

“Energy Futures Synthesis for West-Wide Section 368 Energy Corridor,” O’Neill, Barbara, D. Gagne, J. Cook, & T. Greco. 2018. US Department of Energy Office of

Energy Efficiency & Renewable Energy, National Renewable Energy Laboratory. Golden, Colorado. Technical Report NREL/TP-5D00-71464, 25pg.
“Energy Strategies for the Utah Office of Energy Development,” Salt Lake City, Utah. Technical Report, 84pg.

[BMP] Intermountain Oil and Gas BMP Project. 11/4/2021. Utah County and Municipal Law. Boulder, CO. **Error! Hyperlink reference not valid..**

BroadbandNow. 11/4/2021. Utah Internet Coverage and Availability. Los Angeles, CA.
<https://broadbandnow.com/Utah>.

[BRWCD] Bear River Water Conservancy District, Cache Water District, Central Iron County Water Conservancy District, Central Utah Water Conservancy District, Jordan Valley Water Conservancy District, Utah Division of Water Resources, Washington County Water Conservancy District, & Weber Basin Water Conservancy District. 2020. Statewide Water Infrastructure Plan. Prepare 60. Technical Report, 16pg.

Chidsey Jr., Thomas., & Wakefield S. 11/4/2021. New Oil and Gas Fields Map of Utah - Just the Facts! Utah Geological Survey. Salt Lake City, UT. <https://geology.utah.gov/map-pub/survey-notes/new-oil-and-gas-fields-map-of-utah/>.

Cox, Jon. 2021. Presentation to the Utah Public Utilities, Energy and Technology Interim Committee. Rocky Mountain Power. PowerPoint Presentation, 14pg.

[DOI] U.S. Department of the Interior. 11/4/2021a. Central Utah Project Completion Act Office. Washington, DC. <https://www.doi.gov/cupcao>.

[DOI] U.S. Department of the Interior. 11/4/2021b. Diamond Fork System. Central Utah Project Completion Act Office Washington, DC. <https://www.doi.gov/cupcao/diamond-fork-system>.

Dominion Energy. 2020. Dominion Energy Utah/Wyoming Integrated Resource Plan, Docket 20-057-02. Salt Lake City, UT. 233pg.

[EIA] U.S. Energy Information Administration. 2020a. Natural Gas Pipelines. GIS Data. https://www.eia.gov/maps/layer_info-m.php

[EIA] U.S. Energy Information Administration. 2020b. Crude Oil Pipelines, HGL Pipelines, Petroleum Pipelines. GIS Data. https://www.eia.gov/maps/layer_info-m.php

[EIM] Western Energy Imbalance Market. 2021. Website. California Independent System Operator. [Western EIM - HowItWorks](#)

Energy Strategies. 2021. Utah Transmission Study: A Study of the Options and Benefits to Unlocking Utah’s Resource Potential. Energy Strategies for the Utah Office of Energy Development. Salt Lake City, Utah. Technical Report, 84pg.

Forsgren Associates, Inc. 2019. Sewer Pipe Calculations. Wasatch Front Water Quality Council. Technical Report, 5pg with Appendices.

- HDR & National Renewable Energy Laboratory. ND. Bureau of Land Management West-Wide Energy Corridor Guidebook. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. https://www.blm.gov/sites/blm.gov/files/docs/202012/BLM_WestWideEnergyCorridor_Guidebook.pdf
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- Krauth, Paul. 2019. Municipal Wastewater Lagoons Projected Need Through 2060. Statepoint Engineering. Technical Memorandum, 23pg.
- Larsen, Aaron. 2018. How Does the Western Energy Imbalance Market Work? Power. <https://www.powermag.com/how-does-the-western-energy-imbalance-market-work/>.
- McIntyre, Keven & H. Elliott. 2018. Memorandum of Understanding Between the Department of Transportation and the Federal Energy Regulatory Commission Regarding Liquefied Natural Gas Transportation Facilities. Memorandum, 4 pg.
- Peterson, Jeff. 10/28/2021. Utah Rural Electric Cooperative Association. Personal Communication.
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- [UBAC] Utah Broadband Advisory Council. 2020. Utah Broadband Plan. Salt Lake City, UT. Technical Report, 12pg.
- [UDOT] Utah Department of Transportation, Cache Metropolitan Planning Organization, Dixie Metropolitan Planning Organization, Mountainland Association of Governments, Utah Transit Authority, & Wasatch Front Regional Council. 11/4/21. Funding our Transportation Future. Utah's Unified Transportation Plan. <https://unifiedplan.org/funding-our-transportation-future/>.
- [UDOT] Utah Department of Transportation. 11/4/2021a. Existing Inventory - Fiber. ArcGIS REST Services Directory. https://services.arcgis.com/pA2nEVnB6tquxgOW/ArcGIS/rest/services/Existing_Inventory/FeatureServer/12
- [UDOT] Utah Department of Transportation. 11/4/2021b. UDOT Fiber Priorities. UPlan. <https://uplan.maps.arcgis.com/home/webmap/viewer.html?layers=bd2b65eb1c5c436cb75df223864eeb17>.
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Vanden Berg, Michael D. 2020. Utah's Energy Landscape. Utah Department of Natural Resource, Division of Natural Resources, Utah Geological Survey, Circular 127. Report, 45pg.

[WFWQC] Wasatch Front Water Quality Council & Utah Division of Water Quality. 2019. Estimating Project Mechanical Treatment Plants Summary. Costing Data Summary. PDF, 1pg.

[BLM] Bureau of Land Management. 2020. West-Wide Energy Corridor Guidebook. 6pg.

[PacifiCorp] Rocky Mountain Power (PacifiCorp). 2007. Energy Gateway transmission expansion map.

SECTION 32. If any provision of the Tooele County General Plan and Resource Management Plan, as amended, is held to be invalid, void, or unenforceable, the remainder of the General Plan and Resource Management Plan will remain in full force and effect. The County will use its best efforts to find a lawful, alternate way to achieve the result sought by the provision held to be invalid, void, or unenforceable.