

# **Point of the Mountain Visioning Process**

## **Phase One Report Utilities Appendix**

May 2017



STATE OF UTAH

**POINT OF THE MOUNTAIN**  
DEVELOPMENT COMMISSION

# Utilities

This appendix includes the consultant reports for the Point of the Mountain study area on storm water, gas, power, water, telecommunications, and transportation. These reports were prepared by Sherwood Design Engineers, Horrocks Engineers, and Fehr & Peers Transportation Consultants and are meant to provide an overview of existing conditions in the Point of the Mountain region in regards to these key utilities.

This order of the contents of this appendix are as follows:

- Sherwood Design Engineers' Storm Water Report
- Horrocks Engineers' Water, Sewer, Power, and Telecommunications Reports
- Fehr & Peers Transportation Consultants' Transportation Report



## INTRODUCTION

This narrative intends to assess issues with current storm water management practices in the Point of the Mountain area and highlight opportunities for the implementation of best management practices.

## BACKGROUND

### Project Area

The Point of the Mountain region encompasses 150 square miles of communities just south of Salt Lake City, Utah. The valley region is bounded by the Wasatch Mountains to the east, the Oquirrh Mountains to the west, Salt Lake City and Great Salt Lake to the north and Utah Lake to the south.

The region takes its name from the Point of the Mountain, a geographic pinch point between the Wasatch Mountain ridge known as Traverse Mountain and the Oquirrh Mountains. The Point of the Mountain is coincident with a section of the Jordan River known as the Jordan Narrows. The Point of the Mountain divides the project into two counties: Salt Lake County to the north and Utah County to the south. The Point of the Mountain is the only point of connection between The Salt Lake metro region to the north and the Provo/Orem metro region to the south.

The project area is the communities surrounding the Point of the Mountain in both Salt Lake County (South Jordan, Sandy, Herriman, Riverton, Bluffdale and Draper) and in Utah County (Lehi and Saratoga Springs).

### Existing Site

Development is more dense north of the Point of the Mountain with the greatest population density in the central part of the valley, within the Salt Lake City metropolitan area (South Jordan, Riverton and Sandy).

The project area is largely developed, with industrial, commercial and residential land cover and little agriculture. Agricultural sites are more prominent south of the Point of the Mountain (Saratoga Springs and Lehi)<sup>1</sup>. Interstate 15 is a major freeway in the region, extending north-south through the entire project site connecting Provo and Salt Lake City. Commercial and industrial facilities line this corridor, with residential neighborhoods set back from the highway, extending on both the east and west sides.

In contrast to the mostly impervious area that lines Interstate 15, the Jordan River runs on the west side of the project area, parallel to the freeway. The Jordan River is a major regional waterway, collecting water draining from the mountains and storm water runoff from the impervious areas. The river flows 50 miles south to north connecting Utah Lake to Great Salt Lake and is lined by the Jordan River Trail, a park which extends through the entire site adjacent to the river. Other pervious yet water-intensive land uses such as agricultural land and golf courses in the project are mainly located near the Jordan River. Of note is the Dimple Dell Regional Park in Sandy which is a 650-acre park with trails, creeks and ponds.

Geneva Rock is a large sand and gravel pit corporation, extending almost the width of the Point of the Mountain. This open-air quarry is between the Jordan River and the interstate, as well as extending east of the interstate. From aerial images, it appears that this quarry has tailings ponds and there are some environmental buffers between the quarry runoff and the Jordan River; however, there are some non-vegetated areas which could potentially be flowing directly in to the Jordan River.

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<sup>1</sup> According to the Western Regional Climate Center, only four percent of all land cover in Utah is under cultivation but approximately 35 percent of the land area is used for livestock grazing.

## Precipitation and Snowfall

Salt Lake County receives approximately 17 inches of precipitation per year with the communities in the Point of the Mountain Area receiving between 55 to 80 inches of snowfall. Counties closer to the base of the mountain ranges receive more snow. Precipitation is greatest in the winter and spring, with the least precipitation in June to September. South of the Point of the Mountain, Saratoga Springs and Lehi receive slightly less precipitation than Salt Lake County, receiving approximately 14 inches of precipitation and only 40 inches of snow, annually.

## Storm Water Systems

The Point of the Mountain is located in the Great Salt Lake Basin, a sub-region of the Great Basin watershed which drains internally and has no outlet to the sea. Streamflow is highly dependent on the amount of snow that falls in the mountains during the winter, which melts and drains into the valley regions (project area). Within the Great Salt Lake Basin, Salt Lake County and Utah County fall mainly into the Jordan river watershed and the Utah Lake watershed, respectively, as shown in Figure 1 below.

The Jordan River is a main waterway in the area, flowing south to north through the middle of the Point of the Mountain region, as shown in Figure 1. In Utah County, water flows from the Wasatch and Oquirrh Mountains to Utah Lake which subsequently drains through the Jordan River to Great Salt Lake. In Salt Lake County, most waterways drain towards the middle of the region, directly into the Jordan River, as most of the Salt Lake Valley is higher in elevation than the river.

The Jordan River finally flows in to the Great Salt Lake, a major source of economic benefits to the State of Utah through mineral extraction, brine shrimp industries and recreation. Ecological benefits include habitat, mitigating dust storms and contributing to snow accumulations through the lake-effect snow (Draft Recommended State Water Strategy, 2016).



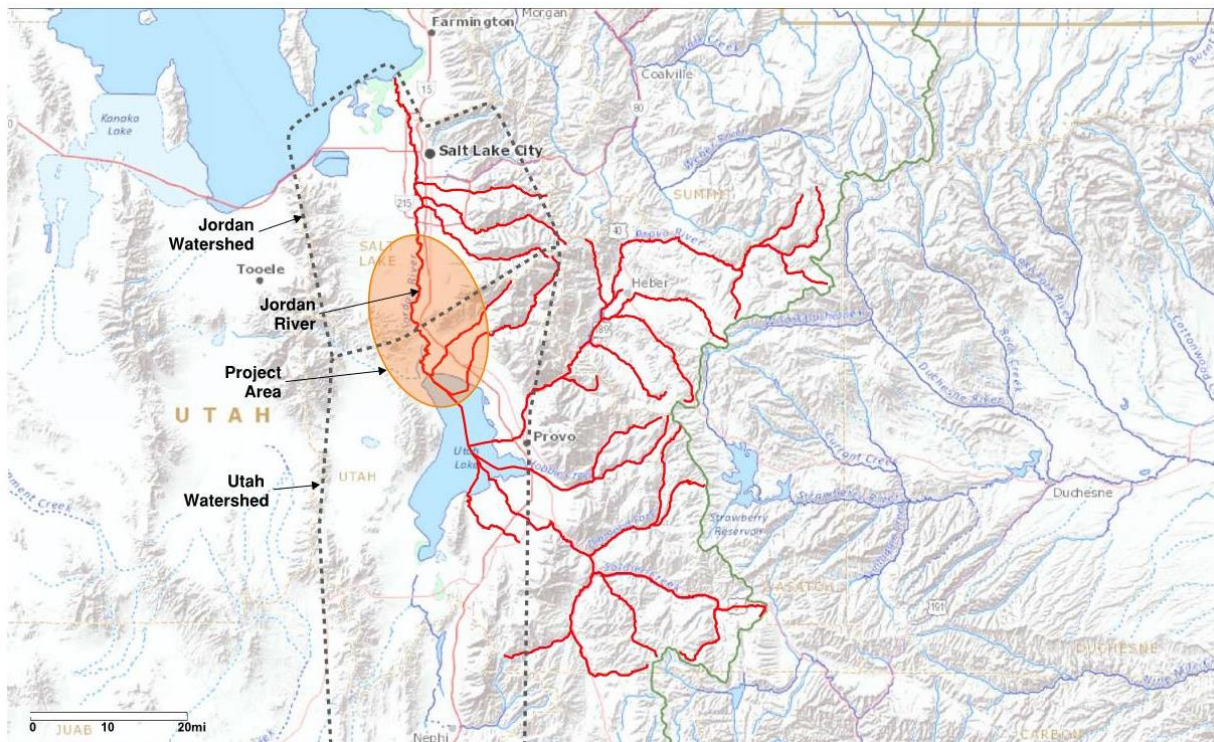


Figure 1: Stream flow in Salt Lake and Utah Lake counties, showing the Jordan River flowing from Utah Lake north to Great Salt Lake, from USGS Streamer.

### Current Storm Drain Infrastructure

Agriculture in the Point of the Mountain area requires irrigation<sup>2</sup>. Canals were built in the late 1800's to transport water from Saratoga Springs (Utah Lake) through the mountain narrows to the north-east part of the valley (Draper and Sandy), allowing expansion of agriculture. Multiple additional canals were built that run south-north, parallel to the Jordan River, still drawing on the Jordan River as an irrigation source.

However, since some agricultural lands have converted from flood irrigation to pressurized irrigation, part of the canals have been maintained for storm water runoff or trails (Eastman, 2016). Typically, storm water in Salt Lake County is conveyed through underground piping to creeks which either outfall into an irrigation canal for irrigation use downstream or into the Jordan River without treatment. According to the Jordan River Commission, the Jordan River is listed as an impaired waterway and is "not meeting the State's water quality standards for its designated beneficial uses (agriculture and fishery)". Main creeks in Salt Lake County that collect storm water are the Bingham Creek, Midas Creek and Rose Creek (Salt Lake County Storm Water Coalition, 2011). From aerial imagery, it also appears that Willow Creek and the waterways that flow through Dimple Dell Regional Park in Sandy would also be receiving creeks for storm water runoff.

In Utah County, storm water is conveyed by natural creeks, open channels/ditches and storm drain pipe systems from Lehi City and Saratoga Springs to outfalls at both Utah Lake and the Jordan River (Saratoga Springs Storm Water Management Program, 2014). In Lehi City, Dry Creek is a major drainage

<sup>2</sup> 82% of the state's water demand is used for agriculture as many parts are located in arid-regions (Draft Recommended State Water Strategy, 2016)

feature which collects storm water runoff through the city towards the Jordan River (Lehi City Storm water Management Program, 2010). Therefore, between Salt Lake County and Utah County, the Great Salt Lake typically receives the bulk of the storm drainage water along the Wasatch Front.

## ANALYSIS

### Flooding

Snow melt from the Wasatch Mountains serves as a primary source for water in the Wasatch Front, but can also lead to serious flash flooding when the receiving areas at the base of the mountains are impervious. In addition, it is predicted that Utah's annual average temperature will increase, resulting in an increase in precipitation in the form of rain rather than snow (Draft Recommended State Water Strategy, 2016). This could potentially lead to an increase in flash flooding as water will runoff the mountains quickly and in large volumes rather than the slow release of the melting snow-pack.

Utah's anticipated population growth (estimated to double by 2060 according to the Draft Recommended State Water Strategy, 2016) could also increase flooding in the region. Traditional urban development typically results in more impervious areas, leading to an increase in storm water runoff, potentially causing destruction of irrigation channels and waterways through erosion.

### Water Quality

Storm water runoff carries any site pollutants with it into the receiving water body. Storm water runoff from agricultural land can bring with it pesticides, fertilizers (nutrients) and bacteria loading. High nutrient loads in the storm water runoff can cause rapid growth of algae in the receiving waters, consuming available oxygen and killing other ecology. Poor water quality is detrimental to downstream ecological habitats, quickly affecting any sensitive plants or endangered species in the region.

Storm water runoff from paved highways and roads is another source of pollutants as the storm water captures oils, hydrocarbons and metal particles that settle on the paved surface after being released from cars. Adding to the pollutant load from roads, snow removal procedures typically use a de-icing chemical to reduce ice formation after clearing the snow which flows with the melting snow into the receiving water body.

### Sedimentation

Along with water quality issues, storm water flowing across agricultural lands and urban development can suspend particles and bring sediment into the receiving water systems. Sediment build up in the receiving water systems ultimately reduces capacity of the waterway and negatively affects local ecology that establish habitats at the base of the waterway.

## CONSTRAINTS

The project site extends across two watersheds, two different counties and many different communities each with their own storm water management plan and objectives. These varying regulations can create barriers to managing storm water. Tributary areas to storm water often ignore these regulated boundaries requiring the involvement of all jurisdictions within a watershed to coordinate amongst each other to make substantial impact. It is imperative that the various agencies and stakeholders regulate and manage storm water in a similar way; an effort which requires coordinated goals and timelines to create considerable change to improve storm water quality and mitigate flooding in this area.

Variable weather patterns and unpredictable storm events in the future make designing storm water infrastructure challenging. Additionally, within the project site there are varying levels of expected storm



water flow (e.g. high storm water flow at the base of the mountain versus in the central valley) where different, climate specific and localized management solutions would have to be applied. The proposed storm water strategies will vary depending on the density, location and the placemaking aspects of the new development.

## OPPORTUNITIES

Per the EPA and the Utah Department of Environmental Quality, each community has been directed to develop a Storm water Management plan to address issues of storm water runoff. It appears that most the communities in the Point of the Mountain region have developed at least a draft of the report with most of the reports focusing on public education and outreach, reducing illicit discharge and pollution, and construction activities. It is not clear how many communities are implementing the best management practices outlined in these plans.

In addition to the city specific storm water management plans, guidelines and initiatives have been developed which are promoting proper storm water management including Salt Lake County Stormwater Coalition and the Utah County Stormwater Coalition. The Jordan River Commission has formed to maintain and protect the Jordan River, using Envision Utah's Blueprint Jordan River as a technical resource for planning, restoration, and responsible development along the Jordan River corridor.

It is recommended that further research in to the level of pollutants entering the creeks, rivers, and lakes in the region through storm water runoff be completed. Additionally, more comprehensive water management plans should be developed at a township and county level.

The following opportunities have been identified as methods that could be implemented concurrently at multiple scales to reduce the volume and improve the quality of the storm water runoff in the project area and should be considered for further study. More region-specific recommendations will be developed once the location, density and development land use types are identified for further analysis.

### Localized Treatment

Implementing multiple points of storm water storage or treatment across the project site can overall reduce the impact on the receiving water body (Jordan River, Utah Lake and Great Salt Lake). Localized treatment includes low impact developments such as landscape based treatment (e.g. buffer zones adjacent to roads) or detention or retention ponds. Localized treatment should occur for all new and re-development projects to treat the first flush storm event off impervious surfaces from the development.

### Promote Detention and Retention

Infiltration of storm water should be implemented to reduce the volume of storm water runoff and flooding. When available, permeable materials such as permeable pavement should be used for paved pedestrian surfaces. Large areas such as parking lots should consider permeable materials or underground storage basins that can infiltrate stormwater to restore the hydrologic cycle. Other sizeable solutions include utilizing parks and open space as green infrastructure to detain or infiltrate water, which reduces the peak flow and volume directed into nearby creeks and rivers.

### River and Creek Enhancement

Restoration and maintenance of healthy rivers and creeks allows for the systems to receive storm water without causing erosion or affecting the local ecology. Creating wider riparian zones along rivers and creeks can treat and reduce the storm water flow entering the receiving water bodies and can be placed in conjunction with greater open space programs, such as multimodal trails.



## REFERENCES

Eastman, Adam, "[Draper Irrigation Canal](#)" (2016).

[Jordan River Commission](#)

[Salt Lake County Storm water Coalition](#)

[Utah County Storm water Coalition](#)

[Utah Draft Recommended State Water Strategy](#)

Western Regional Climate Center, [Utah Narrative](#)



## **Point of the Mountain Development Study**

### **UTILITIES**

#### **WATER:**

##### **Stake Holder Input:**

The Envision Utah Team solicited stakeholder input regarding water supply to the Point of the Mountain Development Study area. It was the general consensus that water systems throughout the area were planned in anticipation of growth in the area and that there is sufficient water resource in the area to provide both culinary and secondary needs well into the future.

Several areas of caution were identified as well. First, both culinary and secondary water regulations are anticipated to change over time, which often leads to an increase in the cost of supplying water. Until the nature of the changes are known, it is difficult to assess their impact on water supply to the area. Second, municipalities and water agencies in the study area have anticipated growth as projected by their individual agency demographic projections. There have been no extreme scenarios vetted and concerns were raised that certain extreme scenarios could include high volume water use and commercial/industrial uses that could increase water quality challenges. Finally, there is no regional water planning authority that assists in providing a regional view, plan, or funding of projects to the area such as Wasatch Front Regional Council provides the transportation industry. Each municipality and/or agency has planned its water resources to meet its own needs, and opportunities likely exist to obtain efficiencies through a more regional planning approach.

Both Salt Lake and Utah Valleys are closed basins and there are no new water rights that can be developed. However, stakeholders believe that there are sufficient water rights throughout the area to serve future development if utilized wisely. It was discussed that broad water conservation efforts would play a major role in future water availability.

##### **Existing Water Supply Infrastructure:**

Culinary and secondary water are supplied to the area through a number of means and agencies. Culinary water is delivered to end users through public systems that draw water from wells or from local wholesale agencies. Secondary water is delivered through both public and private systems including both pressurized piping systems and open canal systems.

The wholesale agencies supplying the area include the Central Utah Water Conservancy District (CUWCD), Provo River Water Users (PRWU), Jordan Valley Water Conservancy District (JVWCD) and Metropolitan Water District of Sandy and Salt Lake (MWDSSL). Each agency includes a complex system of reservoirs, treatment plants, aqueducts and piping systems. The map attached to the end of this report illustrates some of the major facilities in the area.

### **Analysis of Future Sufficiency:**

The region's facilities are sufficient for its immediate future needs. Upgrades to water systems are made by each system's owner as needs arise. Each agency/municipality has a master plan that guides its future needs.

### **Future Deficiencies:**

Future deficiencies are driven purely by the water demands created by new development. Agencies and municipalities are currently meeting the needs of the area's population and businesses, as well as all State requirements. Future deficiencies will be created by new development and/or changing regulations, requiring expansion and upgrades to existing infrastructure. Deficiencies will occur in all areas including water rights, storage, supply and delivery systems. These deficiencies will be met as projects identified in existing capital facilities plans are constructed to meet area demands, as well as a moderate conservation effort to reduce waste and gain efficiencies.

### **Future Needs to Sustain Growth:**

New sources, storage facilities, and delivery systems will be required to sustain future growth. A closer look at existing capital facilities plans for the area will exactly identify other needs for future facilities in the area.

### **Areas for exploration in the water sector include:**

- Creating a regional water authority/organization
- Development of funding opportunities regional water planning and development
- New methods of conservation
- Exploring extreme scenarios in water planning

## **SEWER:**

### **Stake Holder Input:**

It was the general consensus that sewer systems throughout the area have planned for currently anticipated growth in the area and that there is sufficient capacity in the area to provide both sewer collection and treatment to meet future needs.

Areas of caution identified for the sewer industry include; (1) changing regulations with higher effluent standards, and (2) that there have been no extreme scenarios vetted. Each municipality and/or agency has planned its water resources to meet its own needs, so this patchwork approach lacks regional continuity and unity. Although facilities are being constructed that anticipate reuse, certain extreme scenarios could create additional sewer and/or extreme pollutants that are not currently well planned for, e.g. higher effluent temperatures resulting from cooling processes.

Another concern raised during stakeholder meetings was that even though sewer systems are prepared to expand to meet future growth, future expansion projects could take a long time to develop due to lengthy approval processes of existing regulations. Rising costs of outfall and quality testing could further delay project completion.

### **Existing Sewer Infrastructure:**

Sewer throughout the study area is collected, treated and disposed of in three main ways. The South Valley Sewer District (SVSD) collects sewer from the south end of the Salt Lake Valley. It owns all of the infrastructure including the collection system and the treatment plants. It has recently installed a new treatment plant with the ability to provide reuse water back to the contributing communities. The Timpanogos Special Service District (TSSD) collects wastewater in the north end of Utah County and owns its treatment plant and collection system up to each municipal boundary. Each municipality owns the collection systems within their own city boundaries. Finally, several cities also provide their own collection and treatment facilities.

### **Analysis of Future Sufficiency:**

The region's facilities are sufficient for its needs in the immediate future. Upgrades to sewer systems are made by each system's owner as needs arise. Each agency/municipality has a master plan that guides future needs, and have typically considered a 20 year planning period.

**Future Deficiencies:**

Future deficiencies are driven purely by the sewer needs created as new development occurs. Agencies and municipalities are currently meeting the needs of the area's population and businesses. They are meeting State requirements as well. Similar to the area's water systems, future deficiencies will be created by new development and/or changing regulations. Deficiencies will occur in both the collection systems and treatment facilities. Preparations are already being made to meet future demand—for instance, SVSD has recently constructed a new treatment plant with the ability to easily expand for future growth. Deficiencies will be met as projects that are identified in existing capital facilities plans are constructed to meet the demands.

**Future Needs to Sustain Growth:**

Infrastructure that will be required to sustain growth will include new collection systems and treatment facilities. A closer look at existing capital facilities plans for the area will identify exactly the facilities that are planned for future growth.

**Areas for exploration in the sewer sector include:**

- New methods of reuse
- Exploring extreme scenarios in sewer planning

## **ELECTRICAL POWER:**

### **Stake Holder Input:**

Power supply and conservation were discussed with not only power companies, but with entire utility stakeholder groups. The Envision Utah Team determined that power generation and transmission was well planned and posed no problem to future growth in the area. However, local infrastructure becomes difficult as areas become built out. Current legislation does not allow the power companies to well-plan or preserve future corridors. As a result, projects must be designed to fit around existing development which increases that cost of infrastructure and creates delays in design, approval, and installation.

Stakeholders expressed a desire for both power conservation and alternative power sources in the area. They also acknowledge that these elements were largely industry driven (not regulated). As new technology prices decrease, they will become more widely used across the industry in home construction and in commuter's transportation choices. However, there is potential to encourage the use of energy efficient products and technology throughout the study area.

### **Existing Electrical Power Infrastructure:**

Power is supplied to the area through both Rocky Mountain Power (RMP) and Lehi Power (LP). Both agencies have adequate power-generating facilities and transmission grids to serve the area.

### **Analysis of Future Sufficiency:**

The region's facilities are sufficient for its needs in the immediate future. Upgrades to the power infrastructure is made when demand warrants it. Rocky Mountain Power has recently installed new facilities in Orem, Utah, that were designed to serve the area's long-term expansion.

### **Future Deficiencies:**

Future deficiencies are realized as development occurs. Power companies are currently meeting the needs of the area's population and businesses. Deficiencies will occur in power generation and transmission systems, and will be resolved as projects are constructed to meet new demands created by new developments.

**Future Needs to Sustain Growth:**

Only local infrastructure that will be required to meet the needs of future development will be necessary to sustain the area's growth. The power generation and transmission facilities backbone are currently sufficient for future needs. Local energy infrastructure will be constructed as needs are identified. One challenge expressed by power companies is the need to preserve transmission corridors, as well as planned locations for substation development. Both of these types of infrastructure can be sensitive and difficult obstacles in and around residential and commercial developments.

**Areas for exploration in the power sector include:**

- Legislation to allow better corridor planning and preservation in the power industry
- New methods to encourage power conservation
- New methods to encourage alternative power sources

## **BROADBAND/TELECOM:**

### **Introduction**

Broadband Internet is a critical asset for every Utah community. More and more, high-speed Internet becomes a central component of both industry and public services. As the Point of the Mountain Development Commission creates a long-term vision for the area, it is important to consider the role of broadband infrastructure for economic development, education, healthcare, public safety, and general quality of life.

The communities along the Point of the Mountain have incredible power and leverage to encourage broadband investment and ensure the quick deployment of infrastructure. This infrastructure should be deployed with the capacity needed to meet the demand of evolving technologies. By actively collaborating with local broadband providers, public-private partnerships will create more robust and redundant services and invite greater capital investment from private businesses.

### **Broadband Needs at the Point of the Mountain**

The region extending south from Sandy through Lehi and Saratoga Springs will see tremendous residential and commercial growth in the years to come. Broadband demand will exceed current availability, impacting daily life and impeding the needs of local businesses. The area sits between major universities, likely increasing the demand from students and a generally young population that will be more likely to use multiple internet connected devices throughout the day. A growing population also puts greater pressure on public safety. Reliable networks are essential for first responders and healthcare professionals. The technological advancements for these public services become more sophisticated each year, and the bandwidth to effectively use the best technology should be available.

In addition, Utah's Silicon Slopes will also continue to grow into the region, and a booming tech sector cannot exist without reliable and redundant broadband infrastructure. Traditionally, Utah's robust networks in Salt Lake and Provo have been a contributing factor for recruiting tech companies to the State. Such high demand necessitates fiber infrastructure.

The attached map indicates the number of fiber providers in areas along the Point of the Mountain. Most of the prison site will need infrastructure upgrades from multiple providers.

### **Broadband Infrastructure**

Utah has more than 50 broadband providers that offer DSL, cable, fiber, and fixed and mobile wireless offerings to homes across the state. Fiber optic cables are the backbone of all of these technologies and the commission should ensure that sufficient backbone is installed throughout the area to support development of all types of services. Many do not realize that even wireless Internet services rely on

fiber infrastructure in the ground to connect towers and antennas. No matter the technology type, high capacity broadband services depend on fiber.

Luckily, the Point of the Mountain is situated between Utah's largest urban areas and it sits along the I-15 corridor where many providers have infrastructure. This proximity will lower the cost for broadband providers, but their investment will also depend on cooperation and access provided by the cities.

### **Recommended Best Practices for the Point of the Mountain**

Cities in the region can implement best practices that cost little to no money, but create a big benefit for private investors. The following best practices will help providers save time and money. These incentives will lead to greater investment because broadband providers can save on capital expenditures while yielding a faster return on investment.

#### **1. Use broadband coverage data to plan and locate priority needs.**

The Utah Broadband Outreach Center has two online interactive maps that show where communities have broadband and the available speed offerings. These maps, along with custom mapping services offered by the Outreach Center, can be used to see how many providers exist in any given area, and to identify problem areas. The maps are updated every six months.

- Use [broadband.utah.gov/map](https://broadband.utah.gov/map) to display residential broadband availability. This map contains filters to search by speed threshold, technology type, and individual providers.
- Use [locate.utah.gov](https://locate.utah.gov) to display commercial broadband availability and to display data on commercial fiber. This map can also be used to locate utilities, transportation information, workforce data, and lifestyle features.

#### **2. Coordinate infrastructure deployment.**

Ensuring that broadband is considered in the development of the Point of the Mountain will be an important factor for years to come. Coordination is key for effective broadband development. Utah's success in establishing fast and reliable broadband in many areas of the state is due to regular communication between municipalities, state agencies, and broadband providers. Consider the following communication tactics:

- Designate broadband liaisons for each municipality to act as a point person for providers to contact.
- Create a database that tracks infrastructure projects to help governments and private businesses synchronize timelines and save time. Permitting or public works departments can help manage this database.
- Build key relationships with every provider in the area, and maintain open communication about projects and planning.
- Consider forming a Joint Utility Committee that meets weekly or biweekly to review construction plans. Invite broadband providers to these meetings so they can examine plans and mark-up documents for infrastructure installation.

- Maintain communication with state agencies that work to further broadband development like the Utah Department of Transportation, the Utah Education and Telehealth Network, and The Broadband Outreach Center.
- Hold outreach meetings with local leaders and telecommunications companies to discuss ongoing and future projects.
- Include providers in planning and visioning processes to get diverse perspective from the industry.

### **3. Don't forget about residential developments and multiple dwelling units.**

Developments that quickly create dense residential housing will benefit from relationships with multiple providers. Competitive broadband offerings will lower the cost for consumers and encourage upgrades from competing providers. Work with developers on strategies to include multiple providers, like installing empty conduit.

### **4. Implement Ongoing Dig-Once policies.**

Once the area is developed and as a part of ongoing road maintenance or utility work, cities can invite simultaneous broadband deployment along the already disturbed road. Broadband providers see significant cost savings when they are not required to break ground along the road. Communities are also spared the burden of multiple construction projects disturbing commutes or general quality of life.

Dig-Once policies can exist in code or in practice. Dig-Once can also be practiced with or without an interested broadband provider. Many cities adopt dig-once policies to install empty telecommunications conduit so broadband can be installed or upgraded at a later date. Ideally, empty telecommunications conduit should be managed with a shared leasing approach so multiple providers can deploy infrastructure.

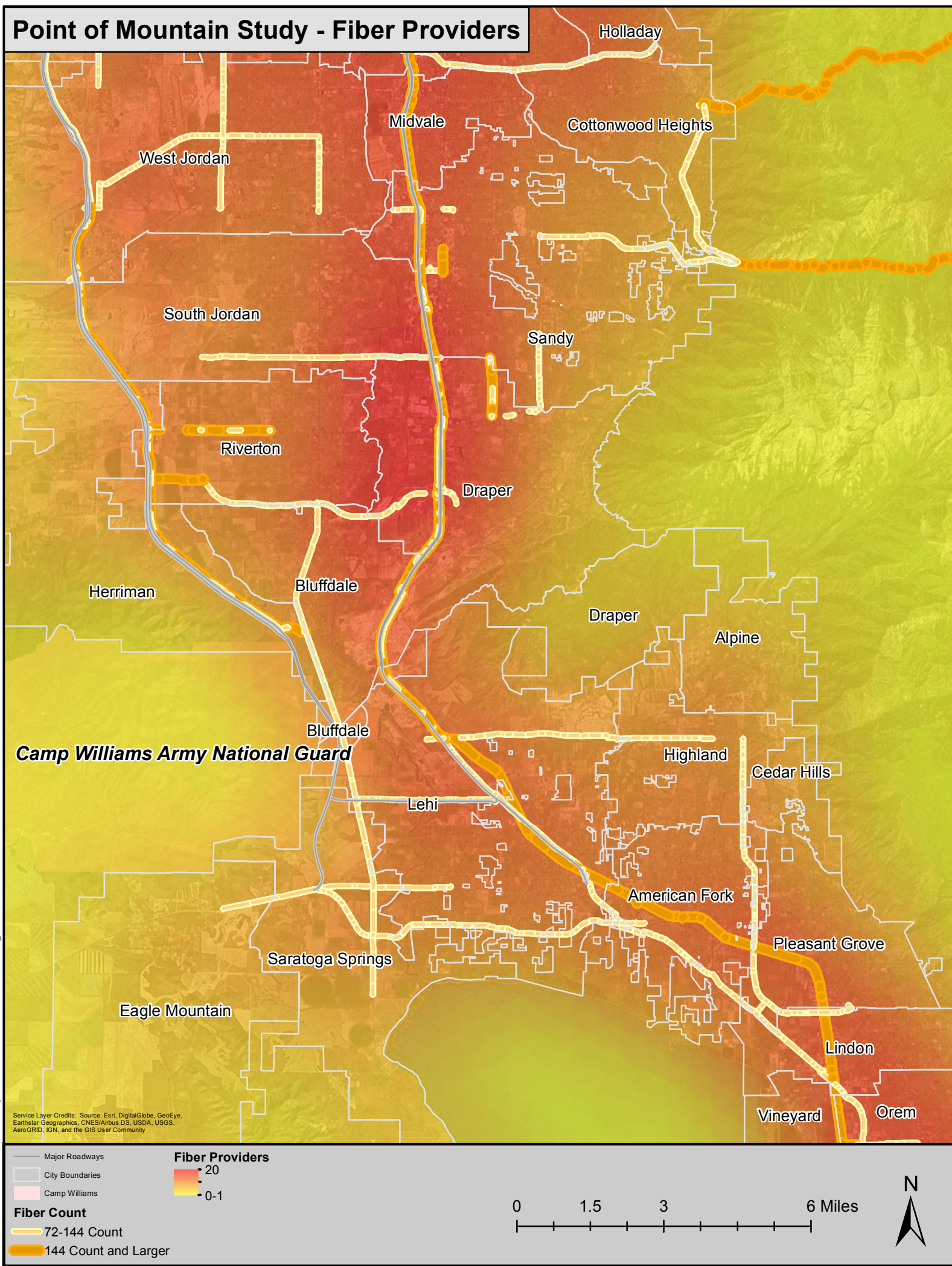
### **5. Create broadband friendly planning documents, policies, and permitting processes.**

Adding broadband-related infrastructure goals into comprehensive planning documents will institutionalize best practices for development. Once a community starts to focus their attention on broadband, broadband-friendly policies start to take root.

Municipalities in the Point of the Mountain region should examine zoning ordinances, review rights-of-way standards, and consider how changes could better facilitate infrastructure development. Zoning for cell towers, antennas, and pole attachments have a significant impact on wireless deployment. Newer small-cell technologies are less intrusive and unattractive to landscapes, but they also need to be deployed at closer intervals. Consult with wireless providers and align policy changes with their planned deployments.

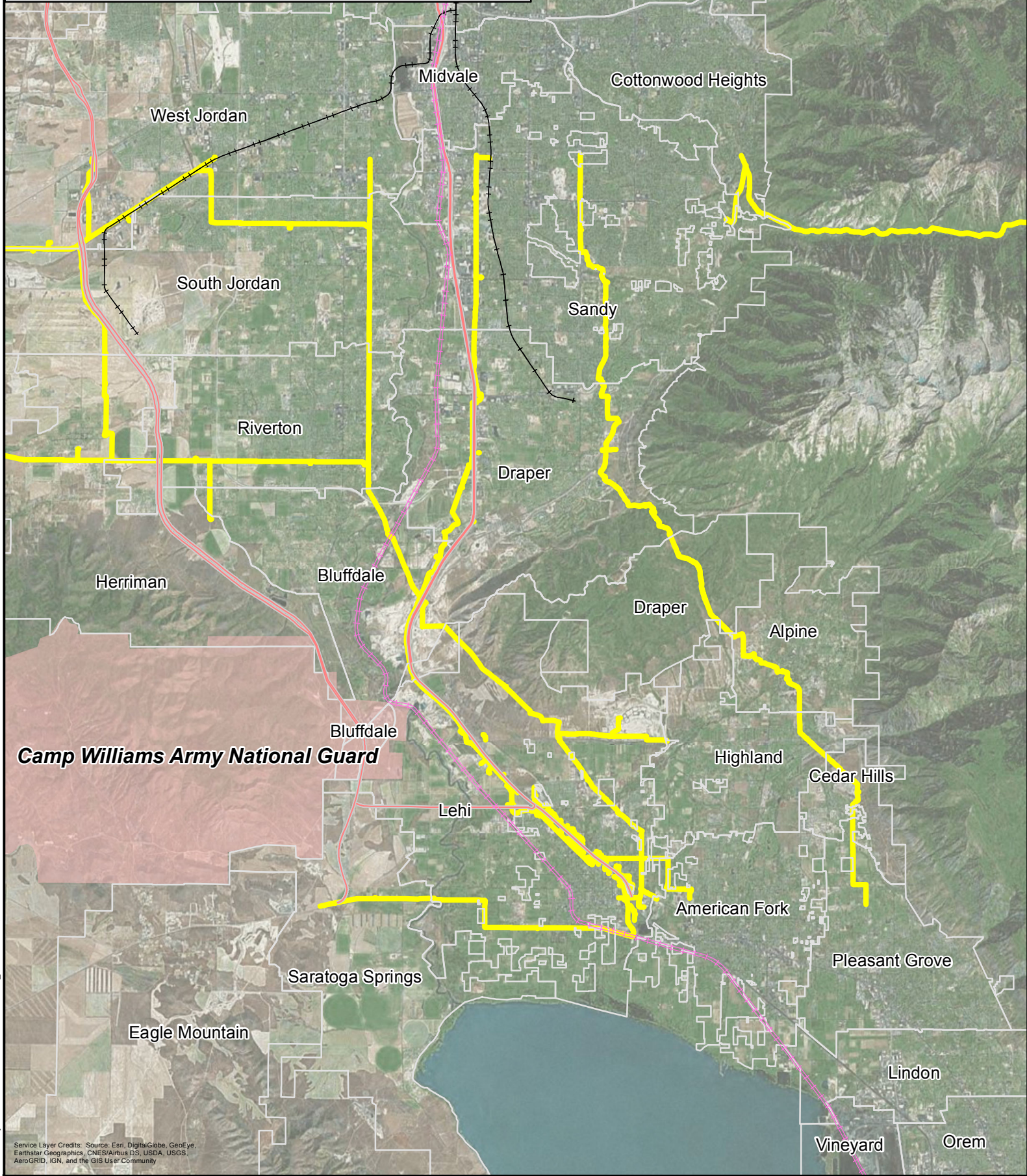
Broadband providers find great benefit in reliable timelines. Streamlining permitting processes and providing reasonable review times will help build good relationships with providers. Permitting should be as transparent as possible.

# Point of Mountain Study - Fiber Providers



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

# Point of Mountain Study - Questar Gas

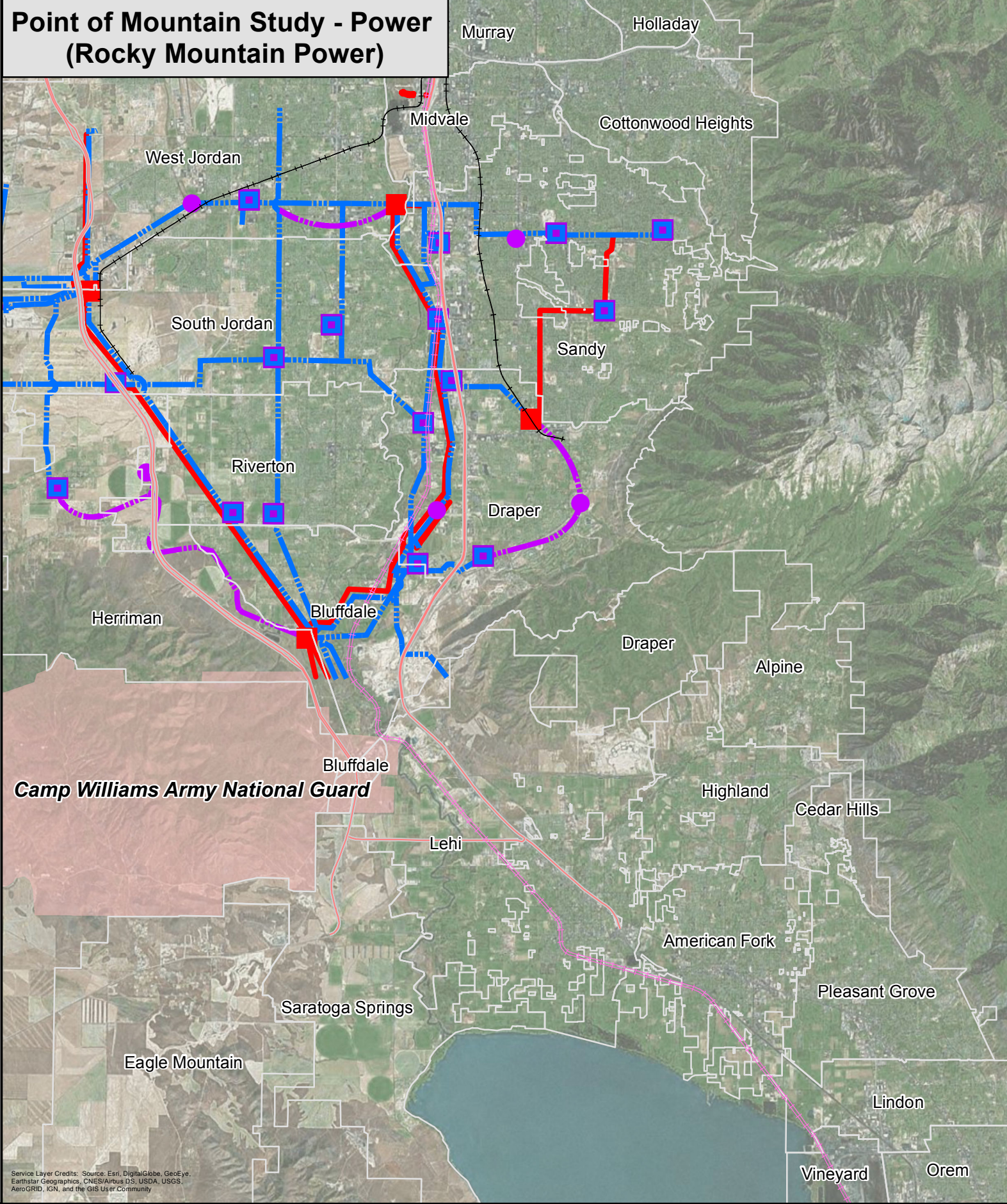


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- Commuter Rail
- Major HP Gas Lines
- Light Rail
- Major Roadways
- Camp Williams
- City Boundaries



# Point of Mountain Study - Power (Rocky Mountain Power)



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

- Commuter Rail
- Light Rail
- Major Roadways
- City Boundaries
- Camp Williams

## Rocky Mountain Substations

- Existing Substation
- Existing Substation; Subject to Change
- New Substation

## Rocky Mountain Power Transmission Lines

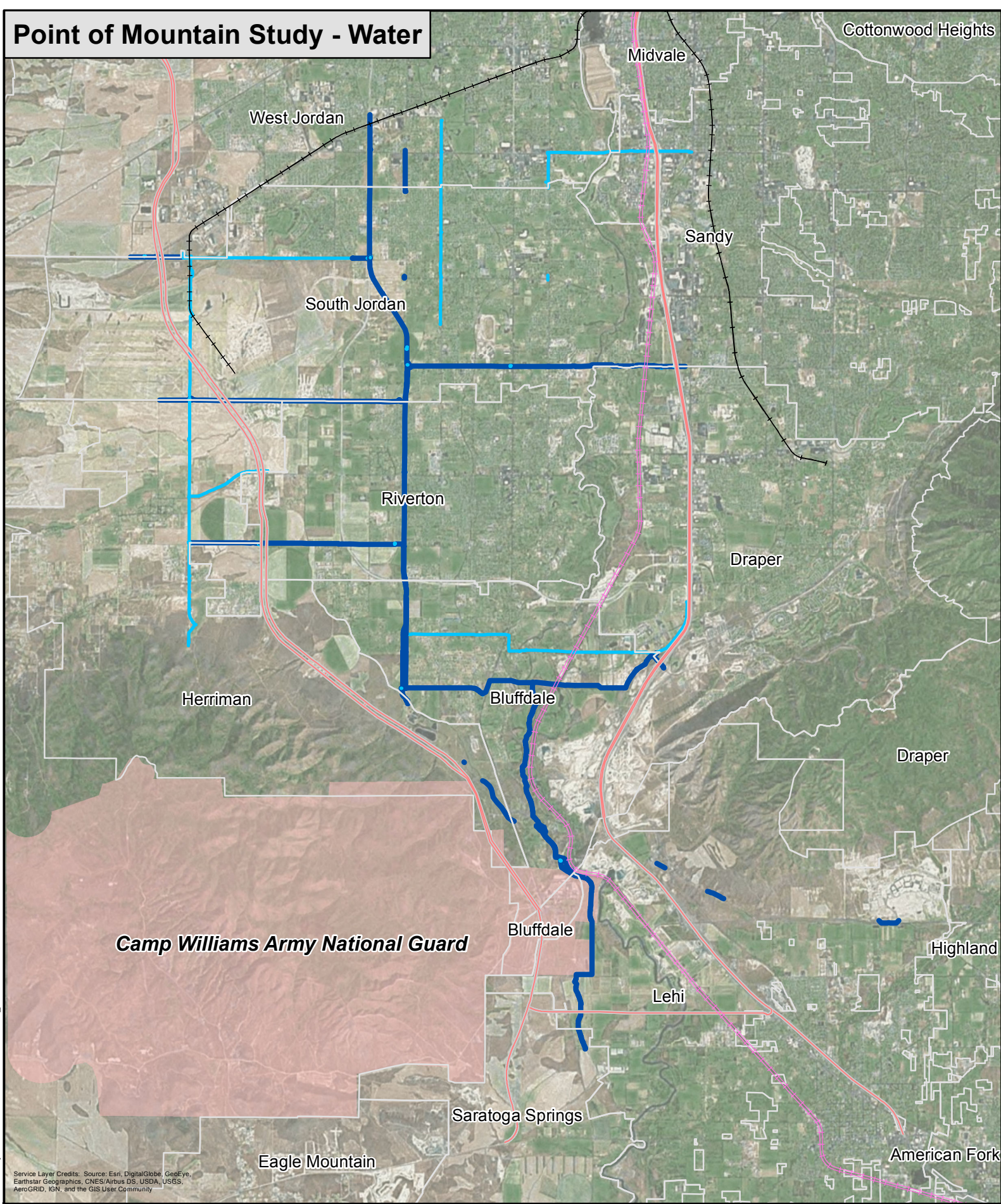
- Existing Line
- Existing Line; Subject to Change
- New Line

1.5 3 6 Miles



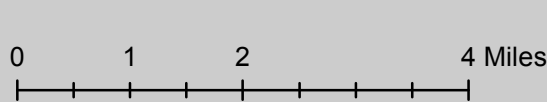
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# Point of Mountain Study - Water



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

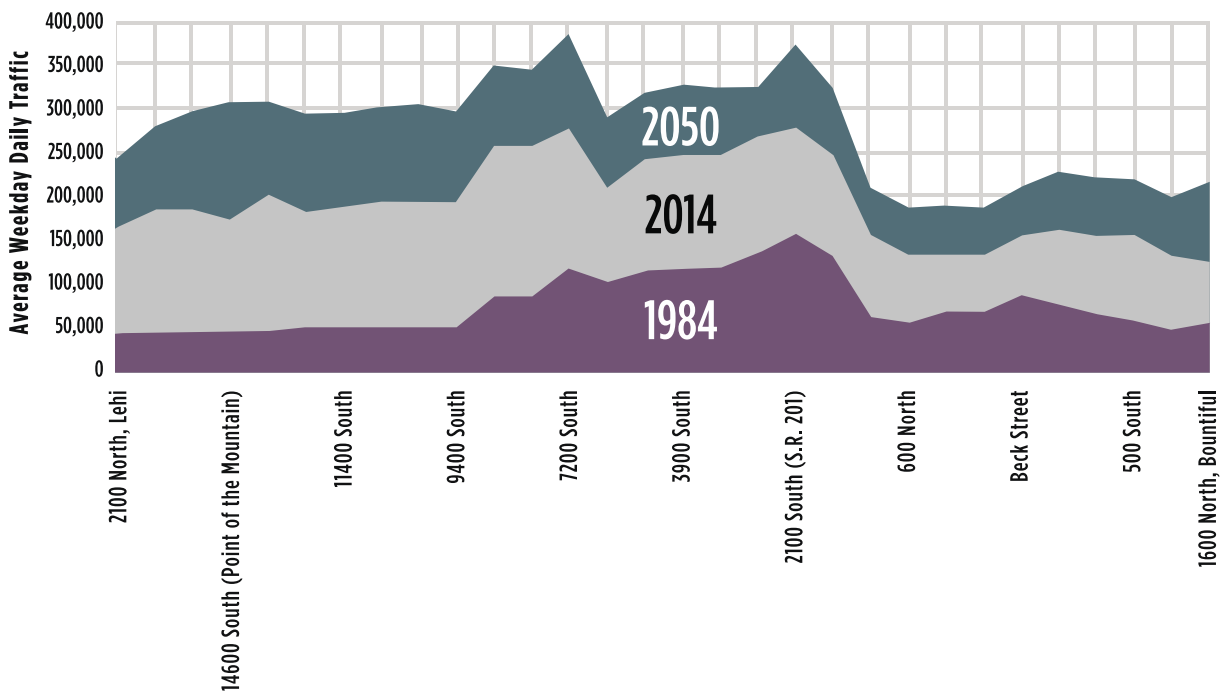
- |                 |                                |
|-----------------|--------------------------------|
| Commuter Rail   | <b>JVWCD Major Water Lines</b> |
| Light Rail      | 24" and Smaller                |
| Major Roadways  | 30" and Larger                 |
| City Boundaries |                                |
| Camp Williams   |                                |



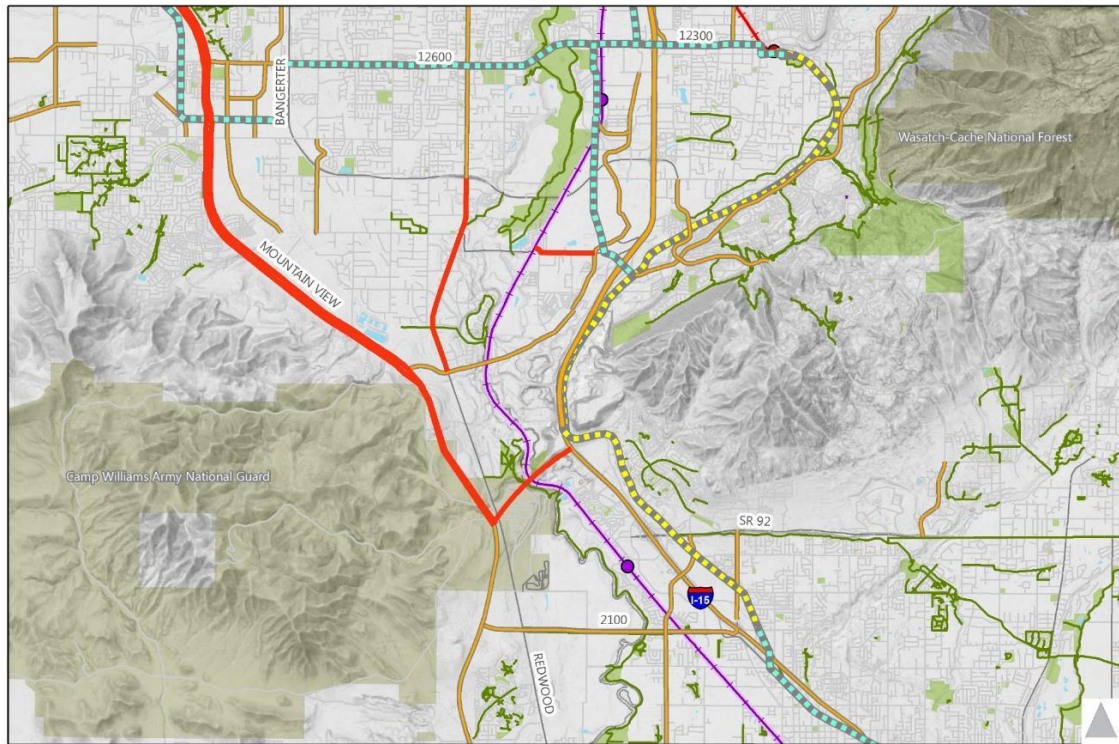
## Point of the Mountain Transportation Summary

### I-15 Corridor:

I-15 is a critical corridor for the Point of the Mountain region. Traffic volumes are increasing and due to the nature of the tight spaces, capacity increasing opportunities are quite limited. Though I-15's traffic volumes near the Point of the Mountain aren't the highest compared to some points in the corridor, current trends forecast significantly increased traffic in the near future. We're expecting 56% more vehicles on I-15 per day by 2040.



Improving I-15 is a complex problem with many facets and many stakeholders. Many of these agencies have recently completed significant and detailed studies of I-15. The Utah Department of Transportation has been working on the I-15 Technology Corridor, a northern Utah County project that will be advertised for construction likely sometime in 2019. Another recently completed study is the Wasatch Front Central Corridor Study, an effort to gather broad ideas, implementation steps, and transportation solutions to implement them into the 2019 update to the existing 2015-2040 Regional Transportation Plan produced by the Wasatch Front Regional Council and Mountainland Association of Governments. These plans all address different aspects of the long range, regional transportation needs based on rigorous technical processes.



- Long Range Plan - Illustrative Highway
- - - Long Range Plan - Illustrative Transit
- Long Range Plan - Highway Project
- - - Long Range Plan - Fixed Guideway Transit Project
- FrontRunner
- + + Light Rail
- Existing Trails and Multi-Use Paths

Point of the Mountain - Existing, Planned, and Illustrative Infrastructure

### Future Connectivity:

There are many plans in place for transportation improvements that alleviate transportation demands on I-15. Mountainview Corridor will continue south through the east edge of Camp Williams, connecting to Lehi's 2100 North. Porter Rockwell Boulevard is planned to expand and become a major east-west connection for communities in southern Salt Lake County. Unfunded ideas for additional east-west connections have surfaced in different forms in many plans between these two funded corridors.

TRAX's Blue Line will extend southwards along existing rail corridors from its current terminus in Draper through downtown Lehi. Unfunded ideas for TRAX see the Blue Line continuing south to Orem and Provo, and the Red Line leading from its terminus in Daybreak through Riverton to Draper or southwards along the existing FrontRunner line.

### Possible Transportation Solutions:

There are many avenues available to explore possible transportation solutions in the Point of the Mountain region. The Envision Utah consultant team suggests exploring the viability of the following:

1. Additional street connections through a grid-like road system
2. Exploring alternative parking solutions and regulations
3. Expand bus and rail line development and increase accessibility to existing lines
4. Creating regional mixed-use transit hubs
5. Broadening biking opportunities for commuters and residents
6. A bikeshare system between commercial and office uses and local transit hubs

The concept of added connectivity through additional street grid connections comes up in nearly every stakeholder meeting, since congestion is such a widely identified issue in the region. Street connectivity provides better overall circulation for all modes of transportation. It provides multiple paths between origins and destinations and provides alternative routing options if one path is congested or slow. More direct paths for pedestrians and cyclists also reduces travel times and distances. Combined with shorter blocks, street connectivity can also reduce automobile speeds, creating a safer environment for all transportation modes. Though there are some plans on the books for added east-west and north-south connections in the area, the underdeveloped nature of the study provides an opportunity to construct a refined street network of arterials and local streets that provides a high degree of connectivity for all transportation modes. This would help establish a more smooth and traversable network like those that exist in most of Utah's cities and towns.

The Point of the Mountain area can also benefit from unique approaches to parking supply management and solutions, particularly in the region's tech hub. By expanding on alternative transportation methods like biking and transit riding, local jurisdictions may opt to set maximum parking requirements for businesses and companies in the area. These parking changes would help to cut back on parking lot sizes to increase the proximity of buildings within the Point of the Mountain's high-tech hubs, creating more walkable 'tech campuses' and making the region more appealing to outside workers and tech companies.

The Point of the Mountain region should also seek to facilitate the development of new light rail and bus lines while increasing the efficiency and accessibility of FrontRunner, the region's heavy rail system. Public transit is an important component of many tech centers, and expanding these opportunities will help attract workers and businesses to the region while having positive benefits on air quality, accessibility, affordability of transportation, and more. Existing transit service in the Point of the Mountain region is limited. While FrontRunner commuter rail is available, it operates with 30 minute headways during peak hours and 60 minutes during off-peak hours. While capital projects are planned to provide TRAX service to the

[illegible]

One idea brought up in many stakeholder meetings is capitalizing on our outdoor opportunities and recreation-focused marketing by broadening biking opportunities for commuters and as an alternate way to make trips throughout the day. While many recreational bike paths currently exist in the study area, there are few bicycle facilities that would appeal to a large population for commute or shopping or other utilitarian trips. Bicycle facilities should be developed that are perceived as safe and convenient by as many potential users as possible. This could include developing on-street bike lanes and cycle tracks and off-street paths.

A bikeshare system may also be a good fit for the Point of the Mountain tech hub, allowing workers to get between their offices, restaurants, transit stations, and more. Implementation of bikeshare in the Point of the Mountain study area would offer a cost-effective transportation choice for both residents and employees, particularly for short-trips between activity centers. This would prove a valuable solution to the first mile/last mile transit hurdle, a

well-identified problem referring to how workers need additional options to make it to and from transit stations as part of their daily commute.

All the above solutions increase the choices workers and residents have in how they get around their workplaces and communities. They naturally lead to more human-scaled and walkable communities that increase the quality of life for all who live in the region while simultaneously attracting workers and companies from other regions to move to the Point of the Mountain.