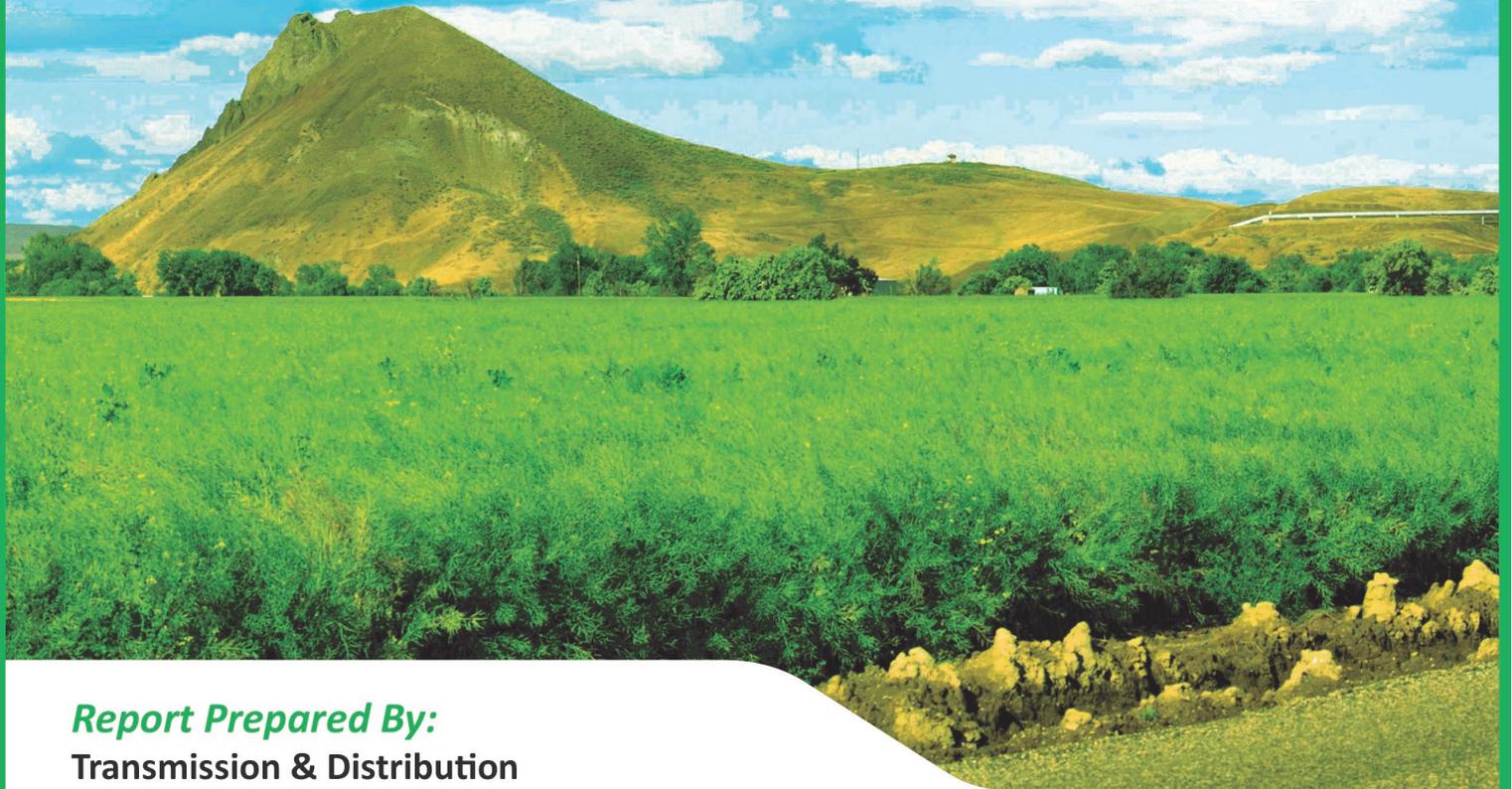


# Western Treasure Valley Electrical Plan

## 2022-23 Update



***Report Prepared By:***

Transmission & Distribution  
Planning Department

***In Cooperation With The:***

2022-23 Western Treasure Valley Electrical  
Plan Community Advisory Committee



Idaho Power thanks the members of the  
2022–2023 Western Treasure Valley Electrical Plan Update Community Advisory Committee.

<b>Brad Heusinkveld</b>	Idaho Conservation League
<b>Brent Ralston</b>	Idaho Bureau of Land Management
<b>Candi Fitch</b>	Idaho-Oregon Fruit & Vegetable Association
<b>Caryn Burri</b>	Oregon Bureau of Land Management
<b>Clancy Flynn</b>	Owyhee Irrigation
<b>Commissioner Bill Butticci</b>	Gem County
<b>Commissioner Jerry Hoagland</b>	Owyhee County
<b>Commissioner Lyndon Haines</b>	Washington County
<b>Commissioner and Mayor Bradley Holton</b>	Canyon County (Commissioner) City of Greenleaf (Mayor)
<b>Dave Dykstra</b>	Windermere Real Estate
<b>David Lincoln</b>	Western Alliance of Economic Development
<b>Jeromy Cross</b>	Snake River Alliance
<b>Judge Dan Joyce</b>	Malheur County
<b>Katie Wright</b>	City of Caldwell
<b>Lee C. Belt</b>	City of Greenleaf
<b>Levi Anderson</b>	Oregon Department of Human Services
<b>Mary Huff</b>	Owyhee County Planning Director Owyhee County
<b>Mayor Craig Jensen</b>	City of Payette
<b>Mayor Gheen Christoffersen</b>	City of Homedale
<b>Mayor Riley Hill</b>	City of Ontario
<b>Mayor Steve Rule</b>	City of Middleton
<b>Rodney Ashby</b>	Director of Planning and Zoning, City of Nampa
<b>Steven Jenkins</b>	Economic Development Director, City of Caldwell
<b>Tatiana Burgess</b>	Planning Department, Malheur County

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## GLOSSARY

**Buildout**—The point at which all available land is developed according to land-use ordinances. Buildout is expected to occur in the distant future, not within a specific timeframe.

**Capacity**—The maximum amount of power an element of the power system can handle or produce. Measured in megawatts (MW).

**Demand**—The amount of energy used at one time. Measured in MW.

**Distribution Circuits (12.5 kilovolts [kV] to 34.5 kV)**—Electrical circuits used to distribute power from distribution substations to homes and businesses throughout the community.

**Distribution Substations**—Substations that serve local loads, such as homes and businesses, throughout the community.

**Double Circuits**—Two transmission circuits sharing the same poles.

**Energy**—Amount of power used over time. Measured in kilowatt-hours (kWh).

**High-voltage Transmission (230 kV to 500 kV)**—Electrical circuits used to transfer large amounts of power long distances.

**In-And-Out**—Two transmission circuits that serve a distribution substation. If one transmission circuit is out of service, the other transmission circuit can serve the substation.

**Junction (Jct.)**—The location at which a transmission circuit is attached to another transmission circuit.

**Kilovolt (kV)**—Unit of measurement of voltage. 1 kV = 1,000 volts.

**Line**—The physical wires and poles that, when connected to other lines and substations, make up an electrical circuit.

**Load**—Cumulative electrical demand from customers in an area.

**Megawatt (MW)**—Unit of measurement of power. 1 MW = 1,000,000 watts.

**Power**—The rate at which work is performed. Measured in MW.

**Regional Electrical Plan**—Together with local jurisdictions and customers, Idaho Power creates regional electrical plans to determine preferred locations for future substations and transmission lines to meet customers' energy needs.

**Reliability**—The degree to which customers can depend on electrical service. Key metrics of reliability include how often power outages occur, how long the outages last, and how many customers are affected.

**Source Substation**—Converts high-voltage transmission lines (230 kV and above) to lower voltages (69 kV to 138 kV). Acts as a power source for distribution substations.

**Substations**—Substations transform one voltage to another and protect and control power lines. Substations include transformers, circuit breakers, switches, support structures and large metallic pipes, called bus, to connect the components.

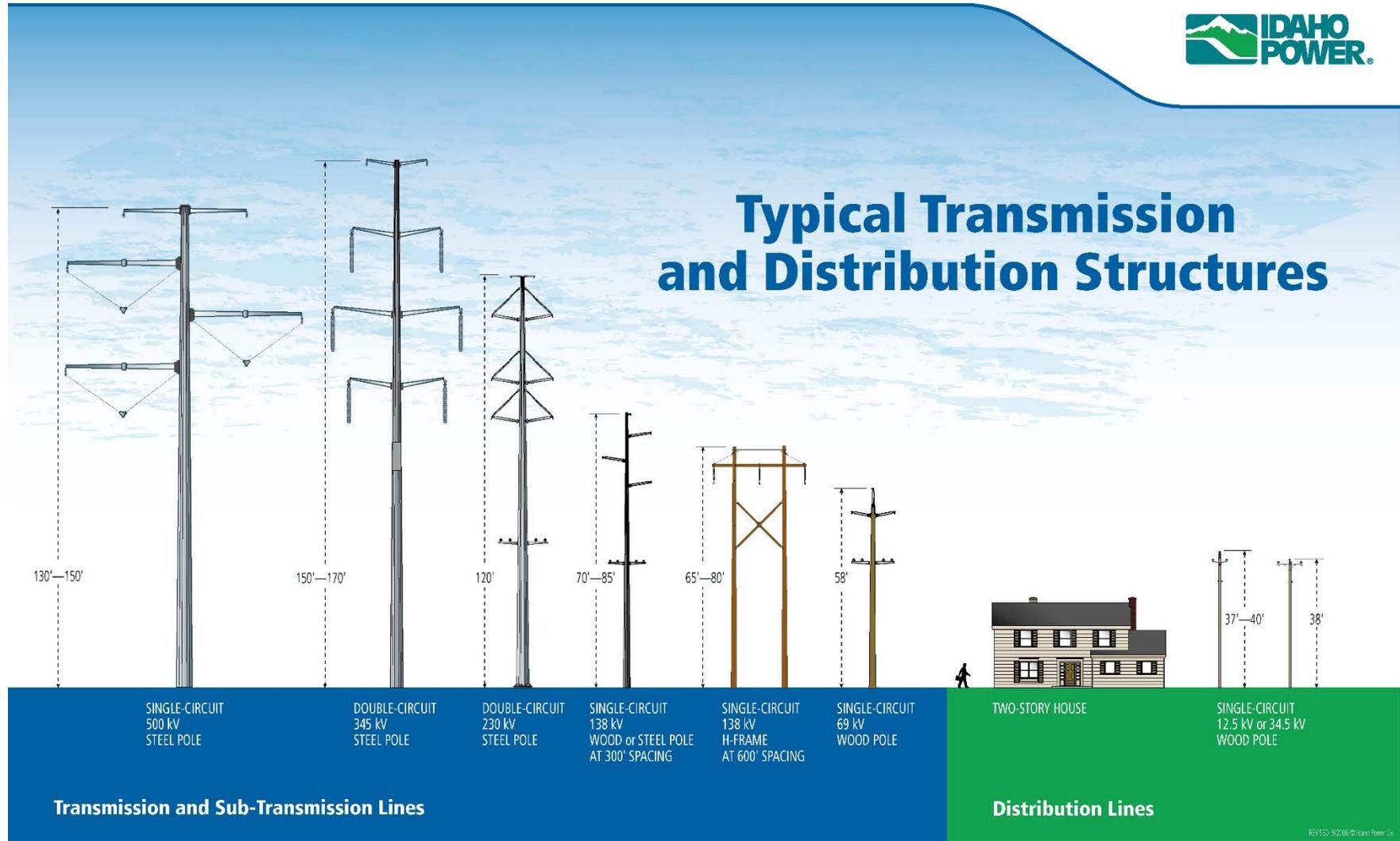
**Transmission (69 kV to 138 kV)**—Electrical circuits used to transfer power from source substations to distribution substations and between distribution substations.

**Voltage**—The pressure that moves a current of electricity. Measured in kV for power lines.  
1 kV = 1,000 volts.

**Western Treasure Valley Electrical Plan (WTVEP)**—The Regional Electrical Plan the Western Treasure Valley, originally completed in 2011 and updated in 2023.



# Typical Transmission and Distribution Structures



**Figure A**  
Typical Transmission and Distribution Structures

## BACKGROUND

In 2011, Idaho Power developed the Western Treasure Valley Electrical Plan (Original Plan) with the help of a community advisory committee (Original Committee) made up of community representatives. The Original Plan identified infrastructure improvements and additions to address anticipated growth and provide reliable power in the future. It provided a strategy to serve the electrical needs of Idaho Power’s customers in a region made up of Idaho’s Canyon, Gem, Owyhee, Payette, and Washington counties, and Oregon’s Malheur County. The Original Plan provided preferred locations for future substations and transmission line routes recommended by the Original Committee.

In 2022, Idaho Power performed a technical analysis of the Western Treasure Valley’s electrical system and determined that 19 new distribution substations, four new source substations, and connecting transmission lines would be needed to serve anticipated buildout loads.

Another community advisory committee (the Committee) was formed. Idaho Power asked community members and representatives from environmental agencies, various government divisions and jurisdictions, and small and large businesses to help update the Original Plan. A complete list of the [committee members](#) can be found following the cover page of this report. The members provided broad and diverse knowledge that added important insight to the electrical planning process.

The Committee started its work on the Western Treasure Valley Electrical Plan Update (the Plan) in September 2022. Meetings were held monthly through April 2023. Through these meetings, the Committee was introduced to electrical power concepts and Idaho Power’s electrical system. The Committee then reviewed and updated the Community Goals and Siting Criteria from the Original Plan. A list of the updated Community Goals and Siting Criteria can be found in [Appendix A](#). The following items were out of the scope for the Plan:

- Distribution circuits
- Transmission lines outside the Plan area
- 500-kilovolt (kV) transmission lines associated with the Boardman to Hemingway project and Gateway West, which have their own process found in the following links:
  - Boardman to Hemingway Project: [idahopower.com/energy-environment/energy/planning-and-electrical-projects/current-projects/boardman-to-hemingway/](https://idahopower.com/energy-environment/energy/planning-and-electrical-projects/current-projects/boardman-to-hemingway/)
  - Gateway West Project: [idahopower.com/energy-environment/energy/planning-and-electrical-projects/current-projects/gateway-west/](https://idahopower.com/energy-environment/energy/planning-and-electrical-projects/current-projects/gateway-west/)

To facilitate the Plan’s development, the study area was divided into the following sub-areas:

- High Voltage Transmission Lines and Source Substations
  - Area 1: Ontario Area

- Area 2: Canyon North Area
- Area 3: Canyon South Area

The Committee broke into three groups to develop recommendations for the location of future transmission lines and substations. The results of each group’s efforts can be found in [Appendix B](#).

The Committee used the recommendations from all three groups to develop a preferred option for each new substation location and transmission line route. These options will be part of Idaho Power’s long-range plan and will be built only as required by growth. The Committee also developed alternative options in case preferred options are not feasible at the time of construction. If the preferred option is not feasible and an alternative is not provided or is not feasible, Idaho Power will use the Community Goals and Siting Criteria to select a location near the preferred location. Details and maps of the preferred and alternative options are located in the [Mapping Results](#) section of this document.

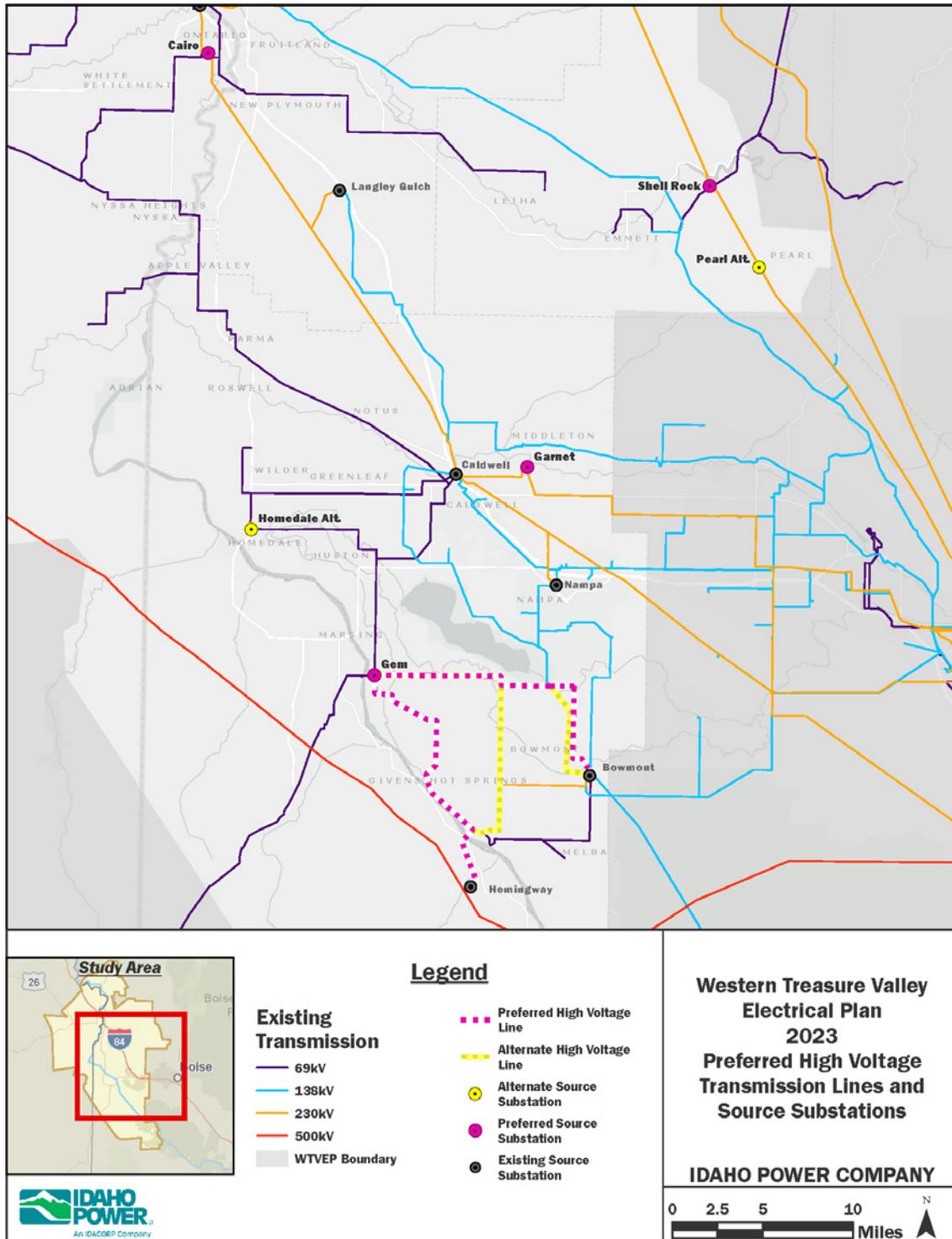
The maps included in the Mapping Results section of this document show proposed new transmission lines and substations. Supplemental maps showing additional features of transmission lines, such as double-circuited routes and proposed routes that follow existing transmission routes, can be found in [Appendix C](#).

For more information on Idaho Power’s process for updating electrical plans, review the Electrical Plan Update Process document on the Idaho Power website or use the following link: [idahopower.com/energy/planning/regional-electric-plans/](https://idahopower.com/energy/planning/regional-electric-plans/).

Questions about the electrical planning process or the results of the Western Treasure Valley Electrical Plan (WTVEP) Update 2023 can be directed to the Canyon Regional Planning engineer at 208-388-5232.

# MAPPING RESULTS

## High Voltage Transmission Lines and Source Substations



**Figure 1**  
Preferred High Voltage Transmission Lines and Source Substations

## ***Preferred Options***

The Committee chose preferred locations for four new source substations and the connecting transmission line routes in eastern Oregon and western Idaho.

### **Preferred Source Substation Locations**

#### ***Cairo Source***

The Committee opted to co-locate the Cairo source substation with the existing Cairo distribution substation, south of the city of Ontario, Oregon.

#### ***Shell Rock Source***

The Committee opted to locate the Shell Rock source substation east of the city of Emmett, south of the Black Canyon Reservoir, and north of Frozen Dog Road on a parcel owned by Idaho Power.

#### ***Garnet Source***

The Committee opted to co-locate the Garnet source substation with the future Garnet distribution substation northeast of the city of Caldwell, south of the Boise River, and east of Middleton Road on a parcel owned by Idaho Power.

#### ***Gem Source***

The Committee opted to co-locate the Gem source substation with the existing Gem distribution substation, at the intersection of Chicken Dinner Road and Lewis Lane, northeast of the city of Marsing.

### **Preferred High-Voltage Transmission Line Routes**

#### ***Bowmont Source to Gem Source 230-kV Transmission Line***

Build a 230-kV transmission line west from the existing Bowmont Substation following the existing 69-kV transmission line running northwest from Bowmont, then west along Ted Lane and turning north on South Powerline Road. The line route turns west on Lake Shore Drive, then north on Rim Road and west on West Lewis Lane to Gem Substation.

#### ***Hemingway Source to Gem Source 230-kV Transmission Line***

Build a 230-kV transmission line heading north from Hemingway Substation, following the existing transmission corridor across the Snake River. The new 230-kV transmission line will then head north and west along Map Rock Road to the intersection with Cozy Basin Trail. The transmission line will then run north along the road and head north and east to the corner of Skyline Road. The transmission line will continue north along Skyline Road, and then head north and west near Nash Lane. The transmission line will then run west along Chicken Dinner Road, and then north along Deer Flat Road until it intersects with Gem Substation.

### **Alternative Source Substation Locations**

#### ***Homedale Source***

The Committee identified an alternative site for the Gem source substation to be co-located with the existing Homedale distribution substation at the intersection of Highway 95 and Ustick Road, northeast of the City of Homedale.

***Pearl Source***

The Committee identified an alternative site for the Shell Rock source substation. This location is located East of the City of Emmett, near of the location at which existing 230-kV transmission line from Boise Bench Substation to Brownlee Dam intersects with Pearl Road.

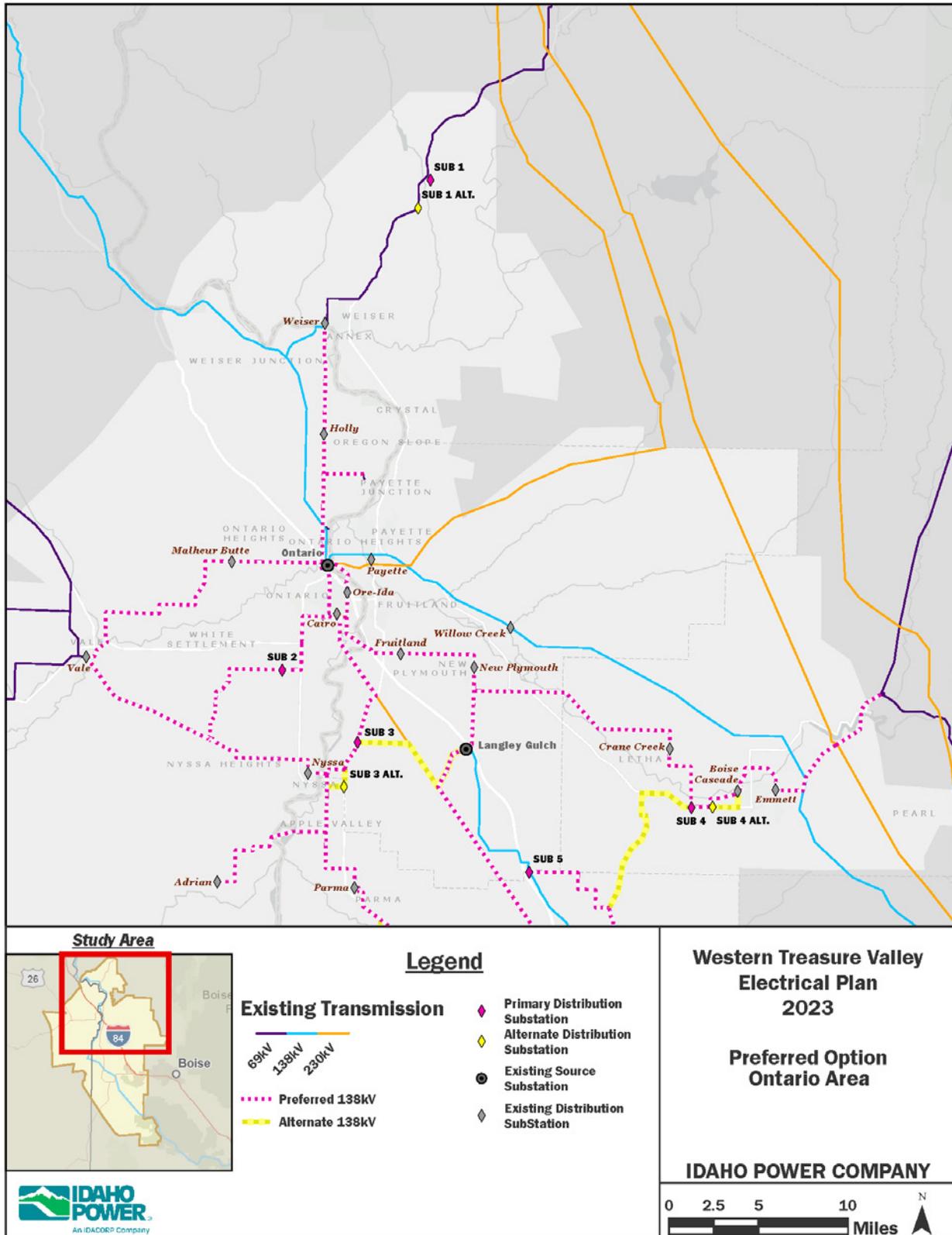
**Alternative High-Voltage Transmission Line Routes*****Alternate Bowmont Source to Gem Source 230-kV Transmission Line***

Follow existing 138-kV transmission line west and then north from Bowmont Substation until the route intersects with the preferred line route at Lake Shore Drive. At the intersection between the existing 69-kV transmission line from Bowmont Substation to Gem Substation, head east and follow the committee's preferred route to Gem Substation.

***Alternate Hemingway Source to Gem Source 230-kV Transmission Line***

Follow the preferred route along the existing 230-kV transmission line corridor north from Hemingway to where it intersects with Rim Road. Head north along Rim Road until intersection with existing 69-kV transmission line from Bowmont Substation to Gem Substation. Follow 69-kV transmission line route west along Lewis Lane to Gem Substation.

# Area 1: Ontario Area



**Figure 2**  
Ontario Area

## ***Preferred Options***

In the Ontario Area, the Committee selected preferred locations for four new substations and the connecting 138-kV line routes.

### **Preferred Substation Locations**

#### ***Distribution Substation 1 (Sub 1):***

To be located southeast at the intersection of Cemetery Road and Mann Creek Road.

#### ***Distribution Substation 2 (Sub 2):***

To be located southwest at the intersection of Morgan Avenue and Clark Boulevard.

#### ***Distribution Substation 3 (Sub 3):***

To be located northeast at the intersection of Highway 95 and Echo Avenue.

#### ***Distribution Substation 4 (Sub 4):***

To be located southeast at the intersection of Highway 52 and Star Lane.

### **Preferred 138-kV Transmission Line Routes**

#### ***Weiser Substation to Ontario Substation***

Upgrade the existing 69-kV transmission line to 138 kV along Hyline Road.

For detailed view of line route see [Figure 23](#)

- *Uses an existing transmission line route for entirety of path.*

#### ***Ontario Substation to Malheur Butte Substation***

Upgrade the existing 69-kV transmission line route west from Ontario Substation along Peterson Road to 138 kV.

For detailed view of line route see [Figure 24](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Malheur Butte Substation to Vale Substation***

Upgrade the existing 69-kV transmission line route south and west from Vale Substation along Hillcrest Drive to 138 kV.

For detailed view of line route see [Figure 25](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Vale Substation to Sub 2 and Nyssa Substation***

Upgrade the existing 69-kV transmission line route south and east from Vale Substation to Sage Junction to 138 kV.

- *Uses an existing transmission line route for entirety of path.*

Upgrade the existing 69-kV transmission line route from Sage Junction to Sub 2 to 138 kV. The route goes north and east from Sage Junction to Butte Drive, then continues north on Butte Drive and turns east along Morgan Avenue to Sub 2.

- *Uses an existing transmission line route for entirety of path.*

Upgrade the existing 69-kV transmission line between Sage Junction and Nyssa Substation to 138 kV. The route leaves southeast from Sage Junction along Victorio Road, then east along Columbia Avenue and south on North 3<sup>rd</sup> Street to Nyssa Substation.

- *Uses an existing transmission line route for entirety of path.*

For detailed view of line routes see [Figure 26](#).

### ***Sub 2 to Cairo Substation***

Upgrade the existing 69-kV transmission line from Sub 2 to Cairo Substation to 138 kV. The route leaves Sub 2 west along Morgan Ave, then north along Highway 20/201 and east along SW 18<sup>th</sup> Avenue to Cairo Substation.

For detailed view of line route see [Figure 27](#).

- *Uses an existing transmission line route for entirety of path.*

### ***Cairo Substation to Sub 3***

Construct a new 138-kV transmission line in path of existing 230-kV transmission line from Cairo Substation to Langley Gulch Substation. At the intersection of the 230-kV transmission line and Highway 95, the 138-kV new transmission line will then run south along Highway 95 to Sub 3.

For detailed view of line route see [Figure 28](#).

- *Uses an existing transmission line route for a portion of path.*

### ***Sub 3 to Nyssa Substation***

Construct a new 138-kV transmission line leaving Sub 3 south along Highway 95. At the intersection of Highway 95 and Clover Way, the 138-kV transmission line will head west along Clover Way. At the bend in Clover Way, the transmission line will run south and intersect with the existing 69-kV transmission line from Nyssa Substation to Parma Substation. The 138-kV new transmission line will be built double circuit to Nyssa Substation with an upgraded 138-kV transmission line from Nyssa Substation to Parma Substation.

For detailed view of line route see [Figure 29](#).

- *Uses an existing transmission line route for a portion of path.*

### ***Nyssa Substation to Parma Substation and Adrian Substation***

Upgrade the existing 69-kV transmission line to 138 kV south along Apple Valley Road and east along Klahr Road to Parma Substation. The portion running from Nyssa Substation east across

the Snake River will be constructed double circuit with the transmission line from Sub 3 to Nyssa Substation.

- *Uses an existing transmission line route for entirety of path.*

Upgrade the existing 69-kV transmission line to 138 kV from Apple Valley Junction west across the Snake River, south along Heritage Drive, and west along Owyhee Avenue to Adrian Substation.

- *Uses an existing transmission line route for entirety of path.*

For detailed view of line route see [Figure 30](#).

#### ***Ontario Substation to Fruitland Substation***

Upgrade the existing 69-kV transmission line to 138 kV from Ontario Substation east and then south across the Snake River to the existing Ore-Ida Substation. Continue heading south, crossing the snake river to Morton Island, heading southeast across Interstate 84 (I-84), then and east along Northwest 1<sup>st</sup> Avenue to Fruitland Substation.

For detailed view of line route see [Figure 31](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Ontario Substation to Cairo Substation***

Upgrade the existing 69-kV transmission line to 138 kV from Ontario sub south along Verde Drive, turning east at SW 14<sup>th</sup> Avenue to Cairo substation.

For detailed view of line route see [Figure 32](#).

- *Uses an existing transmission line route for a portion of path.*

#### ***Fruitland Substation to New Plymouth Substation***

Upgrade the existing 69-kV transmission line to 138 kV east along Northwest 1<sup>st</sup> Avenue to New Plymouth Substation.

For detailed view of line route see [Figure 33](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Langley Gulch to Sub 6***

Construct a new 138-kV transmission line leaving South from Langley Gulch, in the same corridor as the existing 230-kV transmission line route to Substation 6.

For detailed view of line route see [Figure 34](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***New Plymouth Substation to Langley Gulch***

Upgrade existing 69-kV transmission line to new double circuit 138-kV transmission line leaving New Plymouth Substation south along Highway 30 to intersection with Highway 72.

Construct new single circuit 138-kV transmission line south along Highway 30 to Crane Creek Junction and continuing south to Langley Gulch Substation.

- *Uses an existing transmission line route for portion of path.*

For detailed view of line route see [Figure 35](#).

#### ***New Plymouth Substation to Crane Creek Substation***

Use the double circuit 138-kV transmission line described in New Plymouth Substation to Langley Gulch Substation. At the intersection of Highway 30 and Highway 72, upgrade the existing 69-kV transmission line to 138 kV east along Highway 72, across the Payette River, southeast to Hillview Road, then east along Hillview Road to Crane Creek Substation.

- *Uses an existing transmission line route for entirety of path.*

For detailed view of line route see [Figure 36](#).

#### ***Crane Creek Substation to Sub 4***

Construct a new 138-kV transmission line to Sub 4 from Crane Creek Substation. Head south out of Crane Creek Substation along Big 4 Avenue, and east along West Idaho Boulevard. Directly north of Star Lane, the transmission line will head south to the preferred site of Sub 4.

For detailed view of line route see [Figure 37](#).

- *Uses an existing transmission line route for a portion of path.*

#### ***Sub 4 to Emmett Substation***

Construct a new 138-kV transmission line from Sub 4 to Emmett Substation. Head east from Sub 4 along Highway 52 to just past the Do It Best hardware store. Head north just past the railroad tracks, and follow along the railroad tracks, and north and east to the existing Boise Cascade Substation. Follow the route of the existing 69-kV transmission line from Boise Cascade Substation, across the Snake River to West Idaho Boulevard. Head east along West Idaho Boulevard, crossing the Payette River, and run south along Substation Road to Emmett Substation.

For detailed view of line route see [Figure 38](#) and [Figure 39](#).

- *Uses an existing transmission line route for a portion of path.*

#### ***Emmett Substation to Shell Rock Substation***

Construct a new 138-kV transmission line from Emmett Substation to Shell Rock Substation. Follow the route of the existing 69-kV transmission line from Emmett Substation to Montour Substation, leaving east along Main Street, then north to Shell Rock Substation.

For detailed view of line route see [Figure 39](#).

- *Uses an existing transmission line route for entirety of path.*

## **Alternative Options**

The Committee selected alternative options for three future substations.

### ***Sub 1 Alternative:***

To be located between Highway 95 and the dirt road directly south of mile marker 92.

### ***Sub 3 Alternative:***

To be located on the northwest intersection of Highway 95 and Highway 20/26.

### ***Sub 4 Alternative:***

To be located in a gravel pit along Highway 52, across the street from the Do It Best hardware store.

The Committee also selected alternative line routes for the following transmission line sections.

### ***Nyssa Substation to Sub 3***

Construct a new 138-kV transmission line following the existing 69-kV transmission line route from Nyssa Substation to Parma Substation. Where the transmission line intersects with highway 20/26, the transmission line will run east. At the intersection of Highway 20/26 and Highway 95, the transmission line will run north along Highway 95 to Sub 3.

For detailed view of line route see [Figure 40](#).

*Uses an existing transmission line route for portion of path.*

### ***Sub 3 to Langley Gulch***

An alternate transmission line route for Sub 3 to Cairo Substation is to construct a new 138-kV transmission line from Sub 3 east along Echo Lane. Continue heading directly east until the intersection with 230-kV transmission line from Cairo Substation to Langley Gulch. Follow the 230-kV transmission line route the remainder of the way to Langley Gulch.

For detailed view of line route see [Figure 41](#).

- *Uses an existing transmission line route for portion of path.*

### ***Sub 4 to Emmett Substation***

Construct a new 138-kV transmission line east out of Emmett Substation along Highway 52 to the intersection with Mill Road. The route heads north along Mill Road across the railroad tracks, following primary route the remainder of the way.

For detailed view of line route see [Figure 42](#).

- *Uses an existing transmission line route for portion of path.*

### ***Sub 4 to Sub 7***

Alternative transmission line option to a line running from Sub 5 to Sub 7. Follow Highway 52 west from Sub 4 to the intersection with Bowman Road. Run south along Bowman Road to the intersection with South Slope Road. Head east along South Slope Road, and south along Little

Freezeout Road. Follow south along Little Freezeout Road, continuing south where the road becomes Emmett Road. Head south along Emmett Road to the intersection with Galloway Road, and then east to Sub 7.

For detailed view of line route see [Figure 43](#).

# Area 2: Canyon North Area

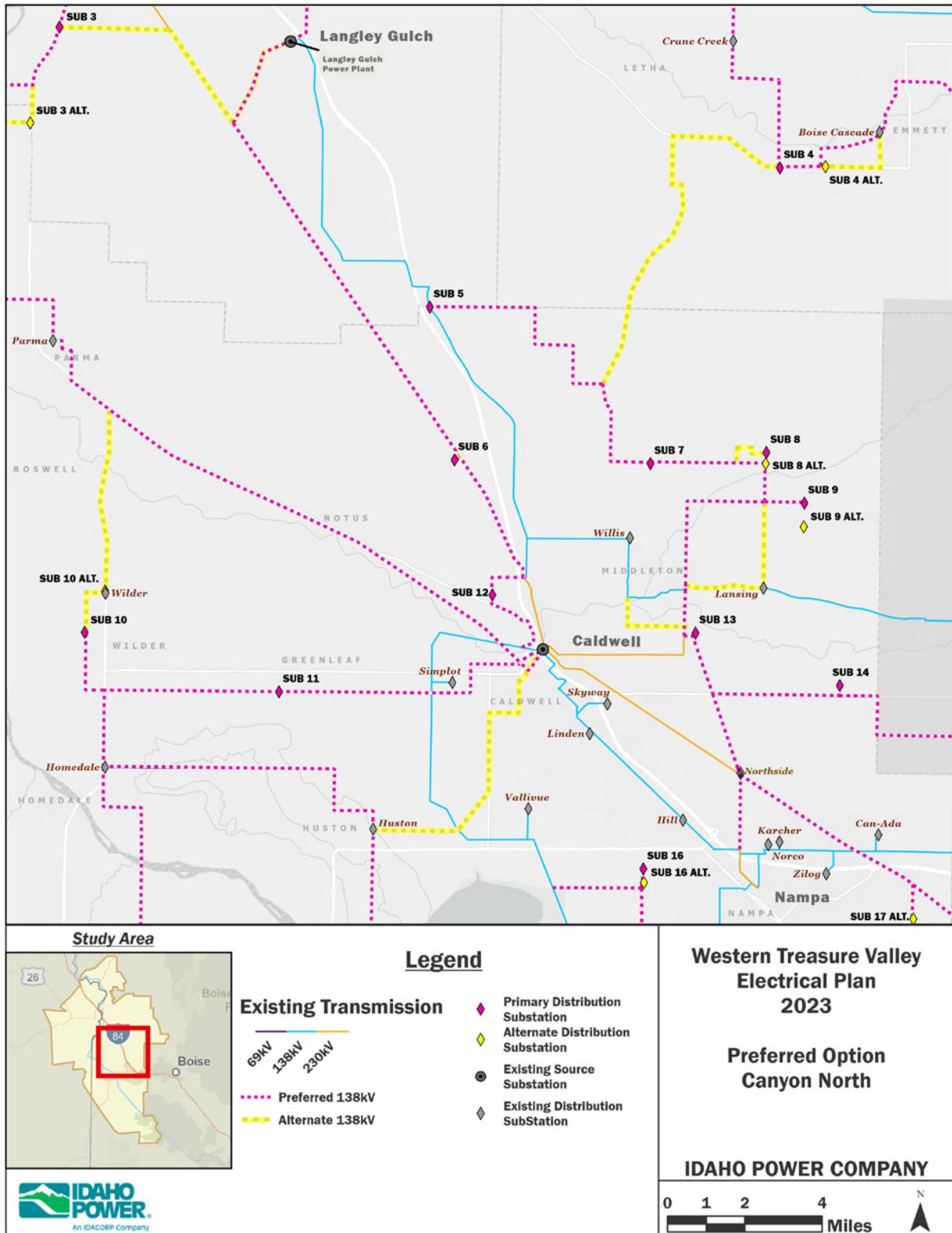


Figure 3  
Canyon North Area

## ***Preferred Options***

In the Canyon North Area, the Committee selected preferred locations for ten new distribution substations and the connecting 138-kV transmission line routes.

### **Preferred Substation Locations**

#### ***Distribution Substation 5 (Sub 5):***

To be located southeast at the intersection of Old Highway 30 and Oasis Road.

#### ***Distribution Substation 6 (Sub 6):***

To be located on the southwest at the intersection of Wagner Road and Galloway Road on a parcel owned by Idaho Power.

#### ***Distribution Substation 7 (Sub 7)***

To be located on the southeast corner of Cemetery Road and Galloway Road.

#### ***Distribution Substation 8 (Sub 8)***

To be located northeast at the intersection of Northview Road and Lansing Lane.

#### ***Distribution Substation 9 (Sub 9)***

To be located southeast at the intersection of Kingsbury Road and Purple Sage Road.

#### ***Distribution Substation 10 (Sub 10)***

To be located southwest at the intersection of Penny Lane and Batt Corner Road.

#### ***Distribution Substation 11 (Sub 11)***

To be located southeast at the intersection of Friends Road and Lower Pleasant Ridge Road.

#### ***Distribution Substation 12 (Sub 12)***

During the community advisory committee process for the WTVEP Update 2023, Idaho Power purchased land on the east side of Farmway road, directly below the West Canyon Canal.

#### ***Distribution Substation 13 (Sub 13)***

To be located east of Middleton Road and north of Lincoln Road on a parcel of land owned by Idaho Power. To be co-located with the Garnet Source Substation.

#### ***Distribution Substation 14 (Sub 14)***

To be located north of Highway 20/26, and northeast at the intersection of 11<sup>th</sup> Avenue extension north and an irrigation canal on a parcel owned by Idaho Power.

### **Preferred 138-kV Transmission Line Routes**

#### ***Parma Substation to Caldwell Substation***

Upgrade the existing 69-kV transmission line running southeast along Highway 20/26 to 138 kV.

For detailed view of line route see [Figure 44](#).

- *Uses an existing transmission line route for entirety of path.*

### **Sub 6 to Sub 12**

Construct a new 138-kV transmission line leaving Sub 6 and heading south and east along the route of the existing 230-kV transmission line from Langley Gulch to Caldwell. Where the 230-kV transmission line crosses Highway 44, the 138-kV transmission line will head west along Highway 44 to the intersection with Farmway Road. Head south along Farmway Road to Sub 12.

For detailed view of line route see [Figure 45](#).

- *Uses an existing transmission line route for portion of path.*

### **Sub 12 to Caldwell Substation**

Construct a new 138-kV transmission line leaving Sub 12 and heading south and east along Highway 20/26 to Interstate 84. Follow Interstate 84 to Chicago Street, following Chicago Street to the intersection with the existing 138-kV transmission line. Tap the existing transmission line from Caldwell Substation to Simplot Substation.

For detailed view of line route see [Figure 46](#).

### **Sub 5 to Sub 7**

Construct a new 138-kV transmission line leaving Sub 5 and heading east along Oasis Road. Head south along El Paso Road to the intersection with Hollow Road, running east to the intersection with Harvey Road. Head south to the intersection with Sand Hollow Road, then east to the intersection with Emmett Road. Follow Emmett Road south to the intersection with Galloway Road, then turn east to the location of Sub 7.

For detailed view of line route see [Figure 47](#).

### **Sub 7 to Sub 8**

Construct a new 138-kV transmission line leaving Sub 7 east along Galloway Road. At the intersection with Lansing Lane, construct double circuit 138-kV transmission line north to the location of Sub 8.

For detailed view of line route see [Figure 48](#).

### **Sub 8 to Sub 9**

Use the double circuit 138-kV transmission line described in Sub 7 to Sub 8 connection, constructing new 138-kV transmission line south along Lansing Lane to the intersection with Purple Sage Road. Construct double circuit 138-kV distribution east along Purple Sage Road to location of Sub 9.

For detailed view of line route see [Figure 49](#).

### **Sub 9 to Sub 13**

Use the double circuit 138-kV transmission line described in Sub 8 to Sub 9 connection, constructing a new 138-kV transmission line west along Purple Sage Road to the intersection with Middleton Road. Construct a new 138-kV transmission line south along Middleton Road,

continuing south along Murphy Avenue and connecting back with Middleton Road before crossing the Boise River. Continue south along Middleton Road to the intersection with the existing 230-kV transmission line from Caldwell Substation to Garnet Substation. Head east into Sub 13.

For detailed view of line route see [Figure 50](#).

### ***Caldwell Substation to Sub 11***

Upgrade the existing 69-kV transmission line from Caldwell Substation to Sub 11 to 138 kV. Transmission line upgrade will follow the existing route southwest out of Caldwell Substation, heading west after crossing the Riverside Canal. Head south to Lower Pleasant Valley Road running directly east of Simplot's facilities, heading west on Simplot Road to the location of Sub 11.

For detailed view of line route see [Figure 51](#).

- *Uses an existing transmission line route for entirety of path.*

### ***Sub 11 to Homedale Substation***

Upgrade existing 69-kV transmission line from Sub 11 to Homedale Substation to 138 kV. Head east along Lower Pleasant Valley Road, continuing south along Highway 95 to Homedale Substation.

For detailed view of line route see [Figure 52](#).

- *Uses an existing transmission line route for entirety of path.*

### ***Sub 10 to Wilder Junction***

Upgrade existing 69-kV transmission line from Wilder Junction to Sub 10 to 138 kV. At the intersection of Highway 95 and Lower Pleasant Valley Road, tap the transmission line described from Sub 11 to Homedale Substation and continue west along Lower Pleasant Ridge Road. Build north along Batt Corner Road to the location of Sub 10.

For detailed view of line route see [Figure 53](#).

### ***Homedale Substation to Huston Substation***

Upgrade existing 69-kV transmission line from Homedale Substation to Huston Substation to 138 kV. Upgrade east from Homedale Substation along Ustick Road, continuing south at Beet Road. Continue to Homedale Road, heading east to the intersection with Chicken Dinner Road. Turn south and continue to Huston Substation.

For detailed view of line route see [Figure 54](#).

- *Uses an existing transmission line route for entirety of path.*

### ***Homedale Substation to Sub 15***

Construct a new 138-kV transmission line from Homedale Substation to Sub 15. Leave Homedale Substation south along Highway 95, continuing south to Homedale Road, turning east and continuing to Quartz Lane. Construct south along Quartz Lane, crossing the Snake River

and continuing south along Hogg Road to the intersection with Highway 95. Follow Highway 95 south, then east to location of Sub 15.

For detailed view of line route see [Figure 55](#).

### ***Huston Substation to Gem Substation***

Upgrade existing 69-kV transmission line from Huston Substation to Homedale Substation along Chicken Dinner Road to 138 kV.

For detailed view of line route see [Figure 56](#).

- *Uses an existing transmission line route for entirety of path.*

## ***Alternative Options***

The Committee selected alternative options for four future substations.

### ***Sub 7 Alternative***

To be located at other corresponding areas of this intersection, for example, the northeast corner.

### ***Sub 8 Alternative***

To be located southeast at the intersection of Mack Attack Lane and Lansing Lane.

### ***Sub 9 Alternative***

To be located northeast at the intersection of Lanktree Lane and Kingsbury Road.

### ***Sub 10 Alternative***

To be located northwest of the intersection of Fern Lane and Highway 95.

The Committee also selected alternative line routes for the following transmission line sections.

### ***Sub 10 to Parma Substation***

Construct a new 138-kV transmission line from Sub, 10 tapping the 138-kV transmission line from Parma to Caldwell. The transmission line would head north along Batt Corner Road, turning east at Fern Lane, and following north along Highway 95 the entire route.

For detailed view of line route see [Figure 57](#).

### ***Sub 7 to Sub 8***

Follow the preferred Sub 7 to Sub 8 route to the intersection of Galloway Road and Merlynn Lane. Continue north, crossing the C Line Canal and then west on Gloria Road. Turn south on Eric Lane, continuing on Northview Road to the location of Sub 8. If this route is used, a new transmission line leaving Sub 8 south to Purple Sage Road would be constructed single circuit instead of double circuit.

For detailed view of line route see [Figure 58](#).

***Sub 9 to Sub 13***

Follow the preferred route to the intersection of Purple Sage Road and Lansing Lane. Construct a new 138-kV transmission line south along Lansing Lane to Lansing Substation. Construct a double circuit transmission along the existing 138-kV transmission line from Lansing Substation to Willis Substation, turning south and following the remainder of the preferred route at the intersection of Highway 44 and Middleton Road.

For detailed view of line route see [Figure 59](#).

***Willis Substation to Sub 13***

Construct a new 138-kV transmission line west from Sub 13 to directly south of Hartley Lane. Construct north, crossing the river, with double circuit transmission from Willis Substation to Lansing Substation.

For detailed view of line route see [Figure 60](#).

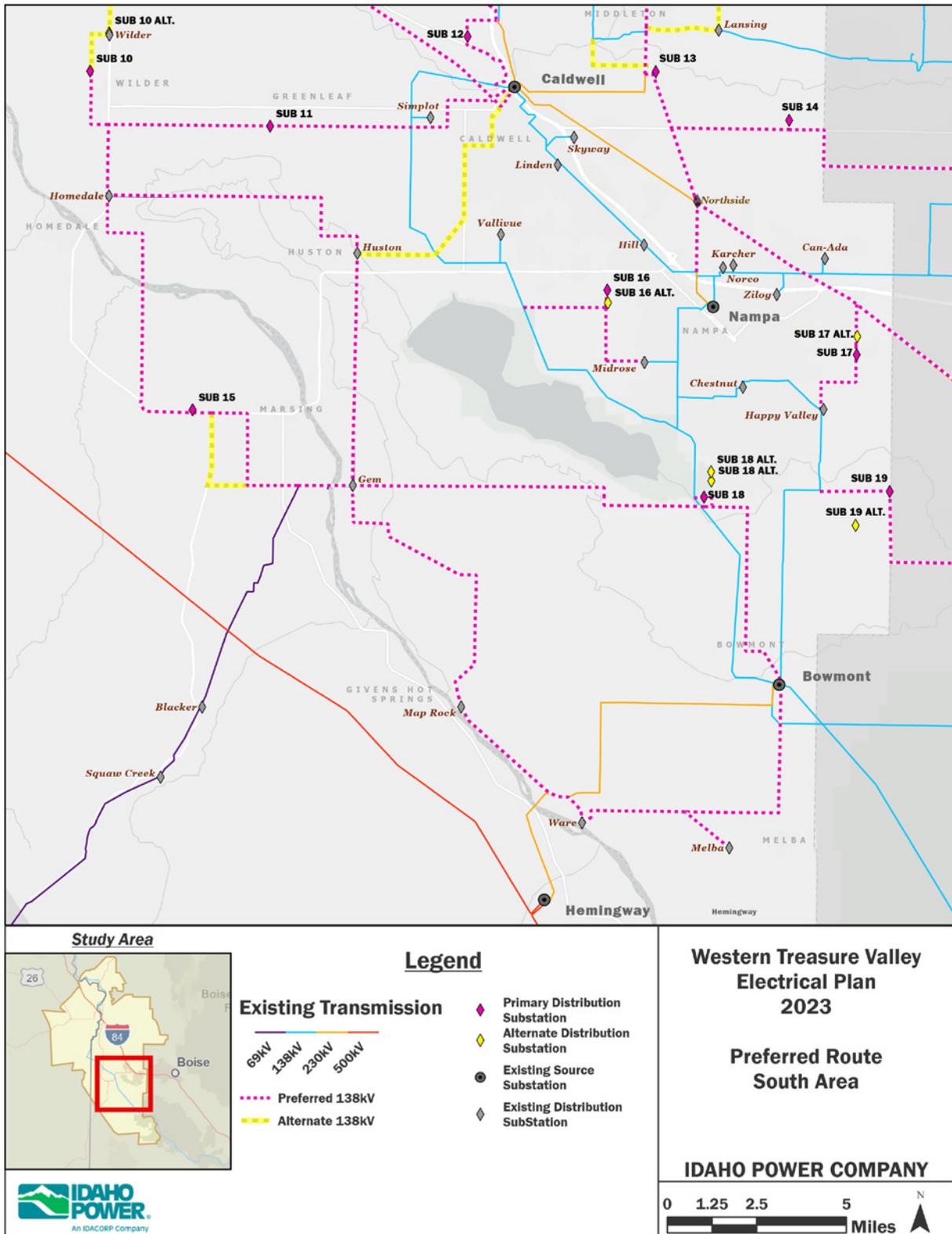
***Huston Substation to Caldwell Substation***

Upgrade the existing 69-kV transmission line east from Huston Substation, heading north along Farmway Road. Continue following the route of the existing 69-kV line east along Logan Street, North along Paynetter avenue, and Northeast along Boise Avenue to Caldwell Substation.

For detailed view of line route see [Figure 61](#).

- *Uses an existing transmission line route for entirety of path.*

# Area 3: Canyon South Area



**Figure 4**  
Canyon South Area

## ***Preferred Options***

In the Canyon South Area, the Committee proposed preferred locations for five new distribution substations and the connecting 138-kV transmission line routes.

### **Preferred Substation Locations**

#### ***Distribution Substation 15 (Sub 15)***

To be located northwest at the intersection of Dobbin Lane of Highway 95.

#### ***Distribution Substation 16 (Sub 16)***

To be located southeast at the intersection of Midway Road and Flamingo Avenue.

#### ***Distribution Substation 17 (Sub 17)***

To be located along Robinson Road south of the Schott lateral.

#### ***Distribution Substation 18 (Sub 18)***

To be located north of Lake Shore Drive, and west of 12<sup>th</sup> Avenue at a parcel of land owned by Idaho Power.

#### ***Distribution Substation 19 (Sub 19)***

To be located southeast at the intersection of McDermott Road and Hubbard Road.

### **Preferred 138-kV Transmission Line Routes**

#### ***Sub 15 to Gem Substation***

Construct a new 138-kV transmission line east from Sub 15 along Highway 95. At the intersection with Edison Road, continue south. At the intersection with Howard Road and Aurora Road, build directly east, across the Snake River, continuing east to Gem Substation.

For detailed view of line route see [Figure 62](#).

#### ***Gem Substation to Sub 18***

Upgrade existing transmission line from Gem Substation to Sub 18 to 138 kV. Upgrade east along Lewis Lane, heading south at the intersection with Rim Road. At the intersection of Rim Road and Emerald Road, continue east to the intersection of Lake Shore Road and Highway 45. Construct a new 138-kV transmission line north along Highway 45 one quarter of mile, turning west to Sub 18.

For detailed view of line route see [Figure 63](#).

- *Uses an existing transmission line route for portion of path.*

#### ***Gem Substation to Map Rock Substation***

Construct a new 138-kV transmission line from Gem Substation to Map Rock Substation. Head south out of Gem Substation along Chicken Dinner Road, turning east at Deer Flat Road. Turn south and follow north of Nash Lane to the intersection with Skyline Road. Head south along Skyline Road, turning south and west at the intersection with Stage Coach Road.

Continue southwest to Cozy Basin Trail, following the trail to Map Rock Road. Head south and east along Map Rock Road to Map Rock Substation.

For detailed view of line route see [Figure 64](#).

#### ***Map Rock Substation to Ware Substation***

Upgrade the existing 69-kV transmission line from Map Rock Substation to Ware Substation along Map Rock Road to 138 kV.

For detailed view of line route see [Figure 65](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Ware Substation to Melba Substation***

Upgrade the existing 69-kV transmission line from Ware Substation to Melba Substation along Notus Road to 138 kV. Upgrade the section heading south and east from Melba Road to Base Line Road to double circuit 138-kV transmission.

For detailed view of line route see [Figure 66](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Melba Substation to Bowmont Substation***

Upgrade the existing 69-kV transmission line from Melba Substation to Bowmont Substation to 138 kV. Route follows Notus Road east to Southside Boulevard, turning north and continuing to Bowmont Substation.

For detailed view of line route see [Figure 67](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Sub 13 to Northside Substation***

Construct a new 138-kV transmission following the Idaho Northern and Pacific Railroad from Sub 13 to Northside Substation. The transmission line will be constructed as double circuit 138 kV to the intersection with Highway 20/26, with the second circuit allocated for a transmission line from Sub 13 to Sub 14.

For detailed view of line route see [Figure 68](#).

#### ***Northside Substation to Sub 17***

Construct a new 138-kV transmission from Northside Substation to Sub 17. Follow the existing 230-kV transmission line from Caldwell Substation to Hubbard Substation to the intersection with Robinson Road. Continue south along Robinson Road, constructing double circuit 138-kV to the location of Sub 17.

For detailed view of line route see [Figure 69](#).

#### ***Sub 13 to Sub 14***

Using the double circuit transmission line described in the Sub 13 to Northside Substation description, continue constructing a new 138-kV transmission line east along Highway 20/26.

At the intersection with 11<sup>th</sup> Avenue North, construct double circuit 138-kV transmission line to the location of Sub 14.

For detailed view of line route see [Figure 70](#).

#### ***Sub 14 to Ten Mile Substation***

Construct a new 138-kV transmission line east along the same route as the 230-kV transmission line from Caldwell Substation to Locust Substation. At the intersection of the 230-kV transmission line and Ten Mile Road, construct a new double circuit 138-kV transmission to Ten Mile Substation.

For detailed view of line route see [Figure 71](#).

#### ***Vallivue Substation to Sub 16***

Tap the 138-kV transmission line from Vallivue to Bowmont at the intersection of Orchard Avenue. Construct a new 138-kV transmission line east along Orchard Avenue to Midway Avenue. Turn north on Midway Avenue, constructing double circuit 138-kV transmission to the location of Sub 16.

For detailed view of line route see [Figure 72](#).

#### ***Sub 16 to Midrose Substation***

Using the double circuit 138-kV transmission described in the Vallivue to Sub 16, construct 138-kV transmission line south along Midway Avenue. At Roosevelt Avenue, turn east and continue to Midrose Substation.

For detailed view of line route see [Figure 73](#).

#### ***Sub 18 to Sub 18 Junction***

Heading west from Sub 18, construct a new 138-kV transmission line and tap the existing 138-kV transmission line from Bowmont to Vallivue (Sub 18 Junction).

For detailed view of line route see [Figure 74](#).

#### ***Sub 18 to Bowmont Substation***

Continuing east from the transmission described in the transmission line route from Gem to Sub 18, upgrade the existing 69-kV transmission line from Gem Substation to Bowmont Substation east on Lake Shore Road and south on Powerline Road. At the intersection with Ted Lane, head east and follow existing 69-kV transmission line route into Bowmont Substation.

For detailed view of line route see [Figure 75](#).

- *Uses an existing transmission line route for entirety of path.*

#### ***Bowmont to Sub 19***

At the intersection of Lewis Lane and Happy Valley Road, tap the existing 138-kV transmission line from Bowmont Substation to Happy Valley Substation. Construct a new 138-kV transmission line east along Lewis Lane to Sub 19.

For detailed view of line route see [Figure 76](#).

### ***Sub 19 to Kuna Substation***

Construct a new 138-kV transmission line south from Sub 19 along McDermott Road. Turn at the intersection with Kuna Road, continuing east to Kuna Substation.

For detailed view of line route see [Figure 77](#).

### ***Happy Valley to Sub 17***

Construct a new 138-kV transmission line north from Happy Valley Substation to Amity Road. Turn east, following Amity Road to the intersection with Robinson Road. Head north to location of Sub 17.

For detailed view of line route see [Figure 78](#).

### ***Sub 17 to Columbia Substation***

Use the double circuit 138-kV transmission line described in Northside to Sub 17 heading north along Robinson Road to the intersection with the existing 230-kV transmission line from Caldwell Substation to Hubbard Substation. Continue following the 230-kV transmission line southeast, constructing a new 138-kV transmission line to Columbia Substation.

For detailed view of line route see [Figure 79](#).

## ***Alternative Options***

The Committee selected alternate locations for three future substation locations.

### ***Sub 17 Alternate***

To be located northeast at the intersection of Joe Lane and Robinson Boulevard.

### ***Sub 18 Alternate***

To be located northeast at the intersection of 12<sup>th</sup> Avenue and Ruth Lane.

### ***Sub 19 Alternate***

To be located northeast at the intersection of Robinson Road and Deer Flat Road.

The Committee also selected an alternative line route for the following transmission line section:

### ***Sub 15 to Gem Substation***

Follow the preferred route for Sub 15 to Gem Substation, but turn south at the bend in Highway 95. Follow Highway 95 south until directly west of Howard Road, turning east and following the remainder of the preferred route to Gem Substation.

For detailed view of line route see [Figure 80](#).

## IMPLEMENTATION PLAN

The Committee recommended infrastructure improvements to the Idaho Power system to serve the anticipated load in eastern Oregon and western Idaho at buildout. Not all the infrastructure improvements proposed by the Committee are needed in the near term. Instead, they will be constructed over time based on load growth, reliability needs, and transmission line/transformer capacity. Based on Idaho Power’s load forecasts in 2023, the following infrastructure improvements are anticipated in the following time period:

### 0–10 Years (2023–2033)

- Add battery energy storage system to Weiser Substation to serve local load.
- Add battery energy storage to Melba substation to serve local load.
- Construct a new Northside Substation to serve local load.
- Construct a new 138-kV transmission line from Nampa Substation to Northside Substation.
- Install a new 138-kV transformer at Weiser Substation to serve local load.
- Convert 69-kV transmission line from Ontario to Cairo to 138 kV.
- Add 138 kV to 69-kV transformer at Cairo Substation.
- Convert the 69-kV transmission line from Bowmont Substation to Gem Substation to 138 kV.
- Install a new 138-kV transformer at Gem Substation to serve local load.
- Construct a new Sub 11 near Greenleaf, Idaho.
- Construct a new 138-kV transmission line near Simplot Substation to Sub 11.
- Convert Vallivue Substation from 138-kV tap to dual-feed service.

The preferred options for future substation locations and transmission line routes identified in the Plan will be the first solutions investigated for implementation when required by growth. Individual projects resulting from the Plan might require jurisdictional approval, which often includes an open, public siting process. Facilities identified in this plan will be preferred but are subject to change due to land availability, community and customer preference, and needs discovered during the development phase. During the development phase, permitting and siting typically takes 12 to 18 months, and depending on the project scale, construction can take an additional 6 to 12 months. The process can include the following steps:

- Pre-application meeting with jurisdiction to identify the project need and location(s).
- Public meetings—outreach and open houses with customers, landowners and stakeholders.
  - If multiple options exist, they can be vetted here to establish a site preference.
- Permit application—development and submission by Idaho Power for consideration and review by jurisdictional planning staff.
- Public Hearing—permit consideration and decision by the jurisdictional hearing body.
  - Idaho Power presents the application, identifying need, location and site improvements.
  - Public opportunity to provide information toward the decision (testimony).
  - Hearing body decision to approve, approve with conditions or deny application.

Idaho Power believes public engagement during the siting and permitting of facilities is an important part of the planning process. We appreciate communities' willingness to participate in developing the best possible solutions to continue serving customers. We encourage the inclusion of details from this Plan in city and county comprehensive plans. This will inform communities about future utility facilities during their planning process.

Idaho Power sincerely thanks members of the Committee for their participation and Idaho Central Credit Union for providing facilities to accommodate the process. The Plan will facilitate the public siting process for improvements to serve customers in eastern Oregon and western Idaho.

## Appendix A

### Community Goals and Siting Criteria

As a first step in determining the feasibility of individual line routes and substation locations, the Community Advisory Committee created community goals and siting criteria to guide their choices for line route and substation location alternatives. The goals and criteria on the following lists are **not** weighted or prioritized.

#### ***Community Goals and Siting Criteria***

**Communication:** Facilitate Idaho Power's communication throughout the process with the public and elected officials with transparent interjurisdictional communication.

**Community/Political Support:** Reflect all interests in electrical system planning and implementation and provide the public with an educational opportunity to provide input.

**Cost and Impact:** Provide affordable and equitable power while minimizing impact on communities and protect private property owners.

**Demand Response:** Use technology to minimize additional energy generation needs while Idaho Power educates the importance of Demand Response and Energy Efficiency through marketing and additional education opportunities with the public.

**Economic Development:** Support economic development while protecting the economic engine of agriculture.

**Energy Efficiency & Conservation:** Incorporate sustainable, cost efficient, renewable energy production that exhibits greater efficiency and reliability with the current facility/system.

**Environment:** Protect important viewsheds while being good stewards of the land; protect cultural and historic resources; protect crucial plant and wildlife habitat; keep water and air clean; and keep the agricultural engine protected.

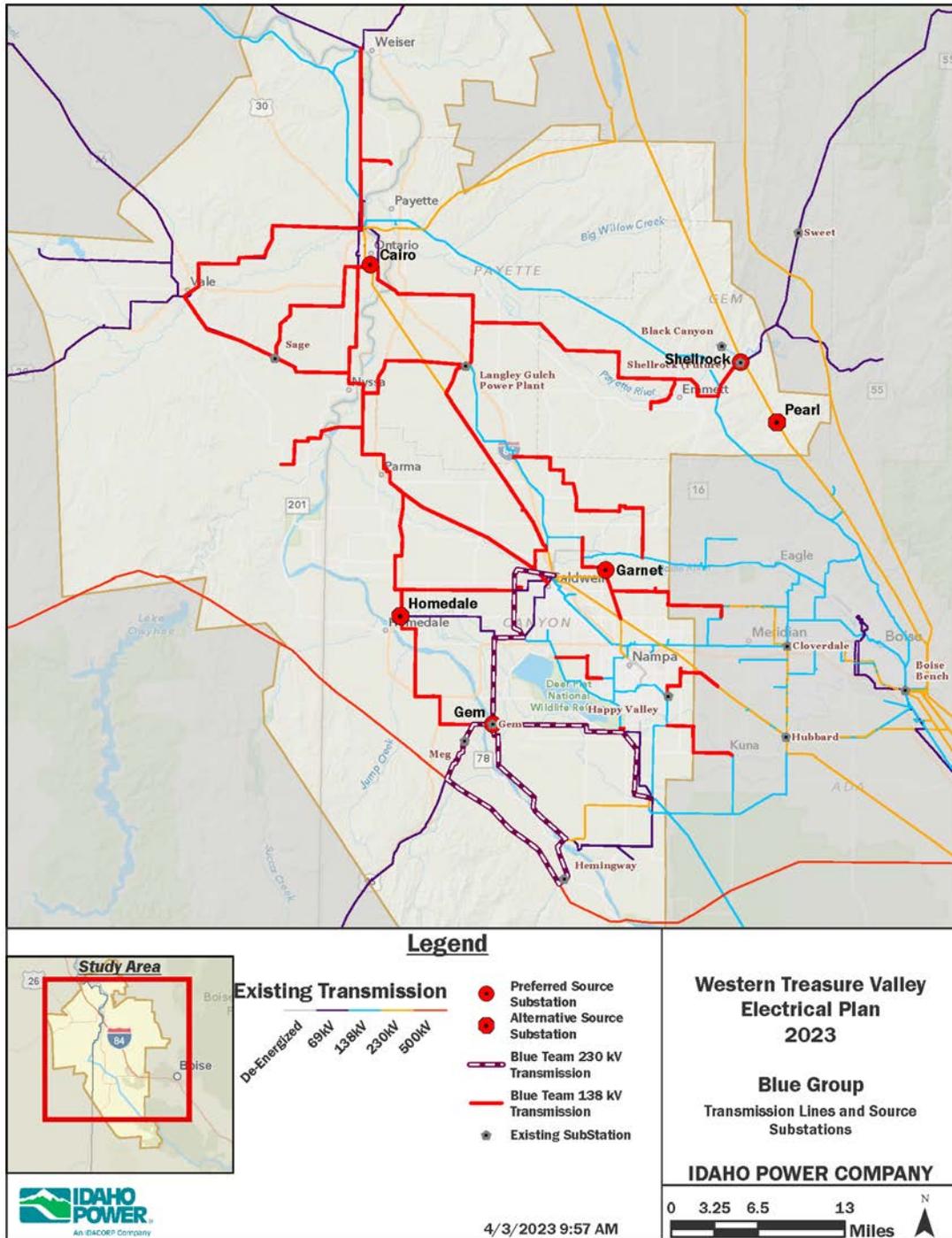
**Planning:** Consistent with local plans and codes and upgrade existing substations and transmission lines to accommodate load before building new facilities.

**Public Health:** Protect public health.

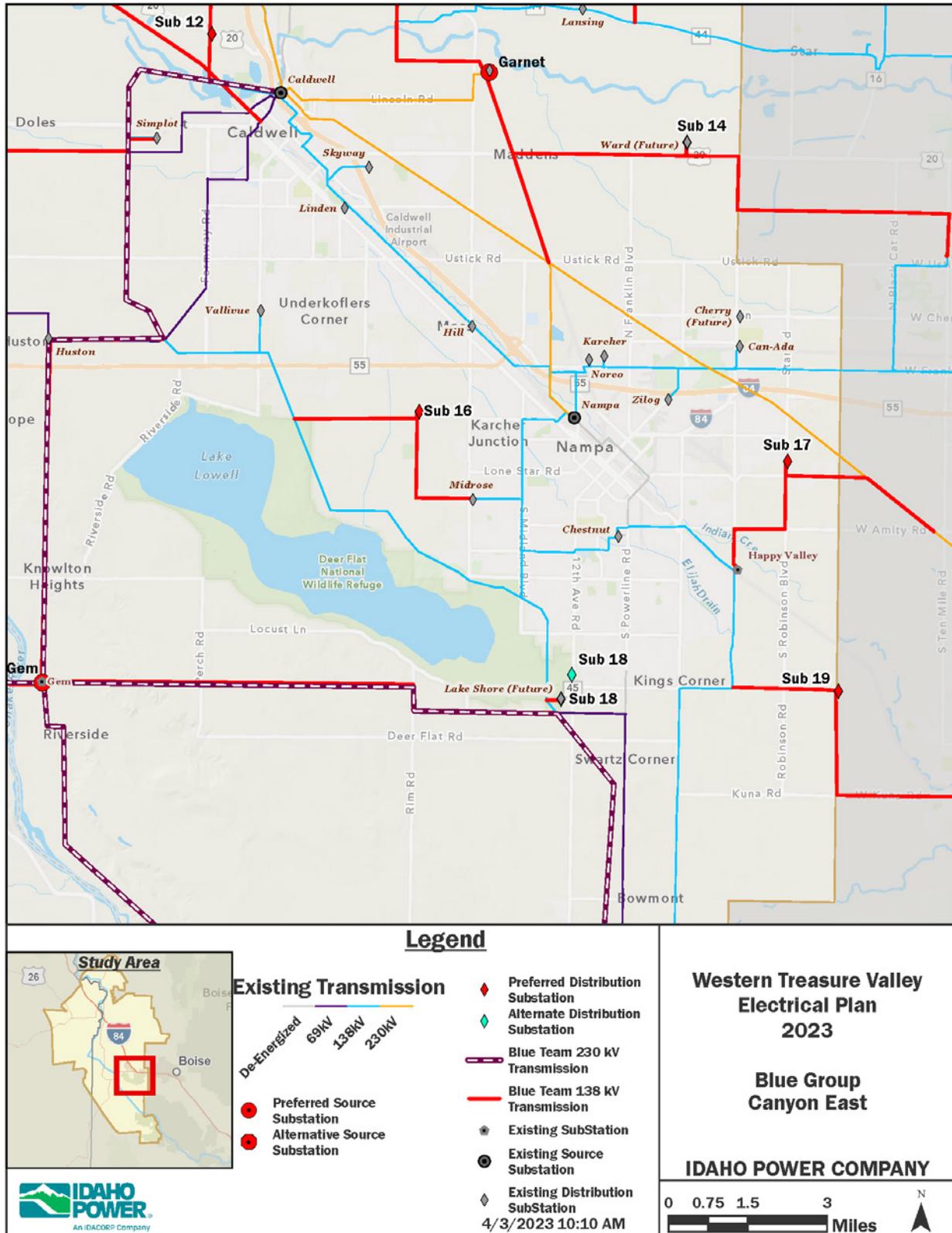
**Reliability/Dependability:** Balanced system that is reliable and resilient.

# Appendix B Group Alternatives

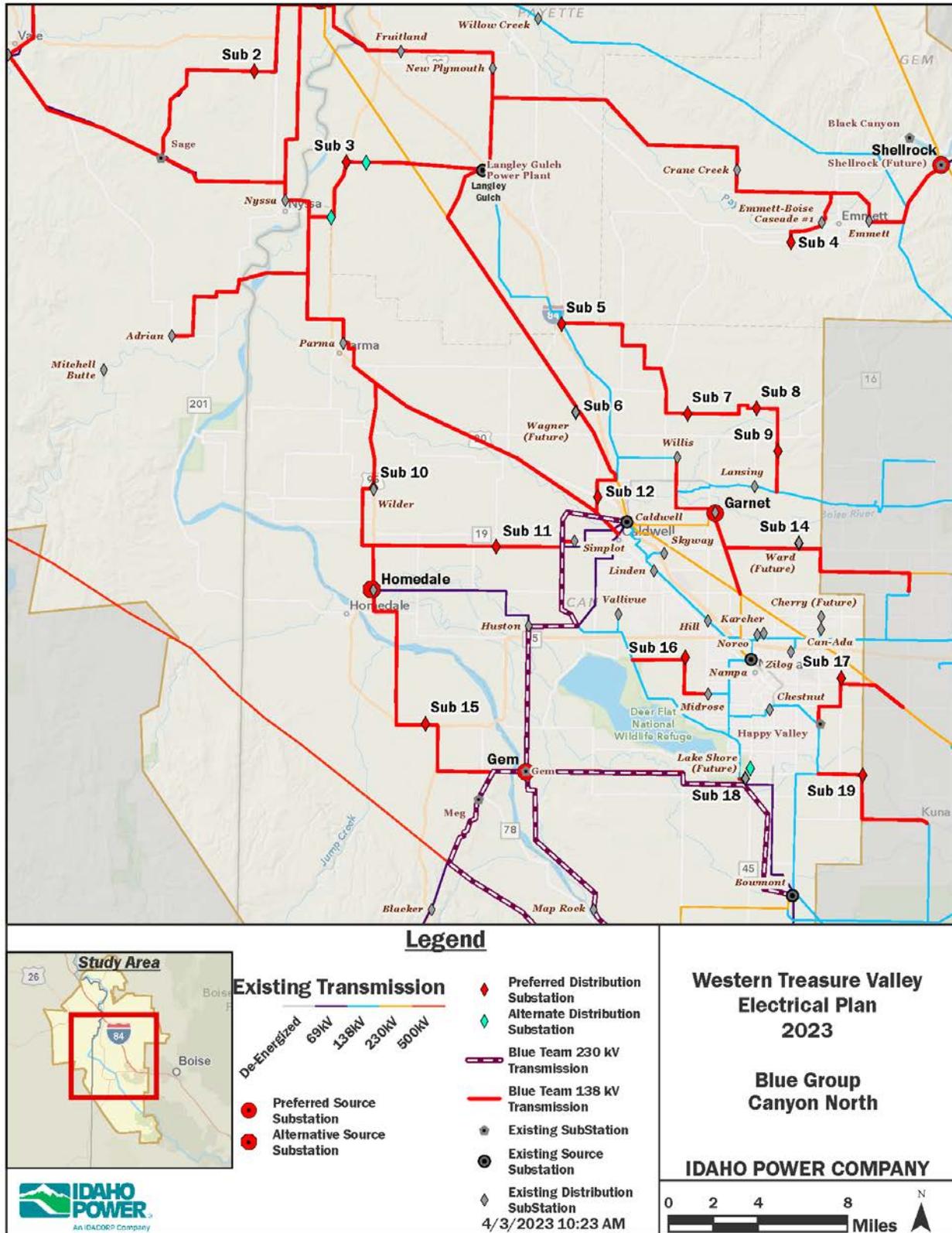
## Blue Group Mapping Results



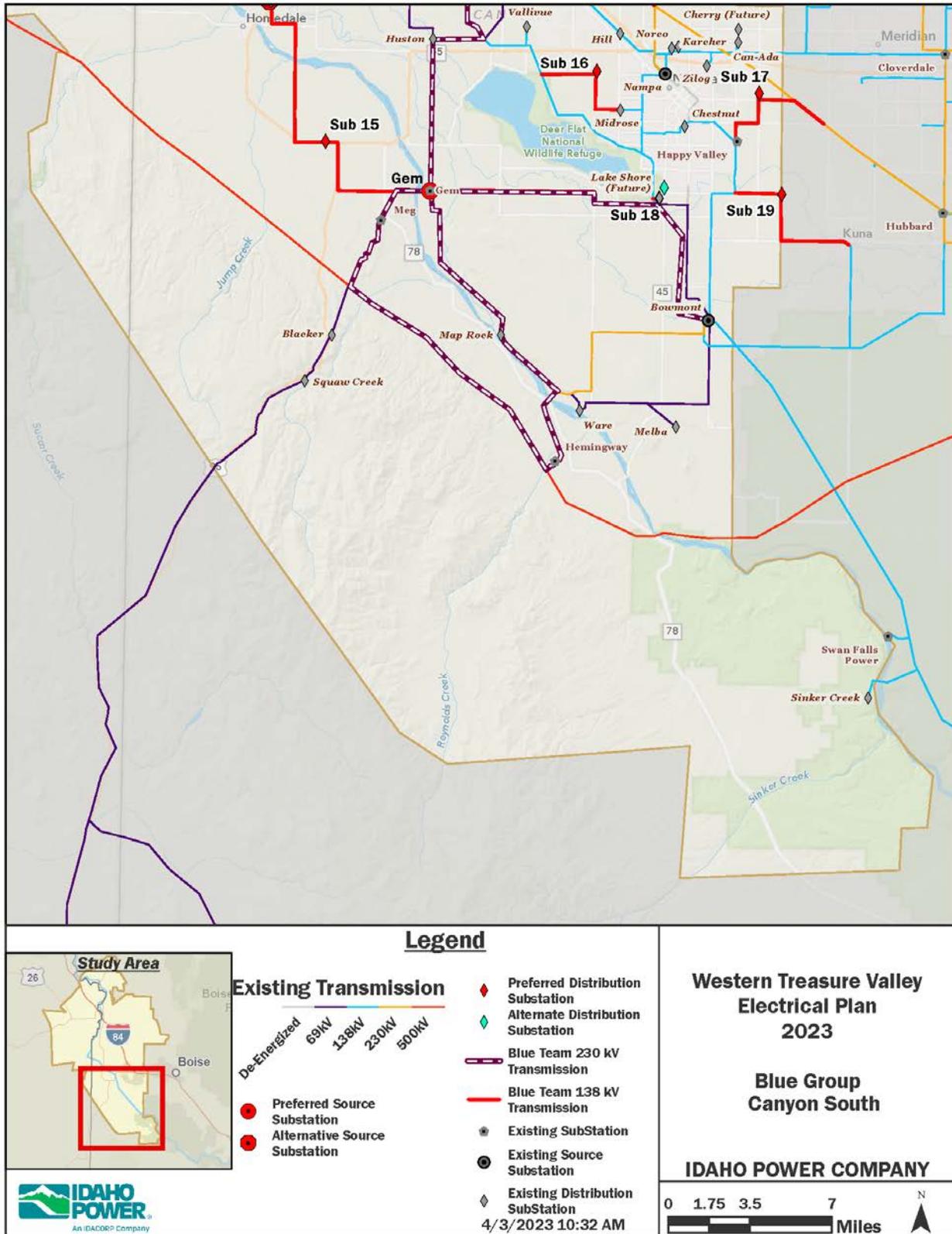
**Figure 5**  
Blue Group Preferred High Voltage Transmission Lines and Source Substations



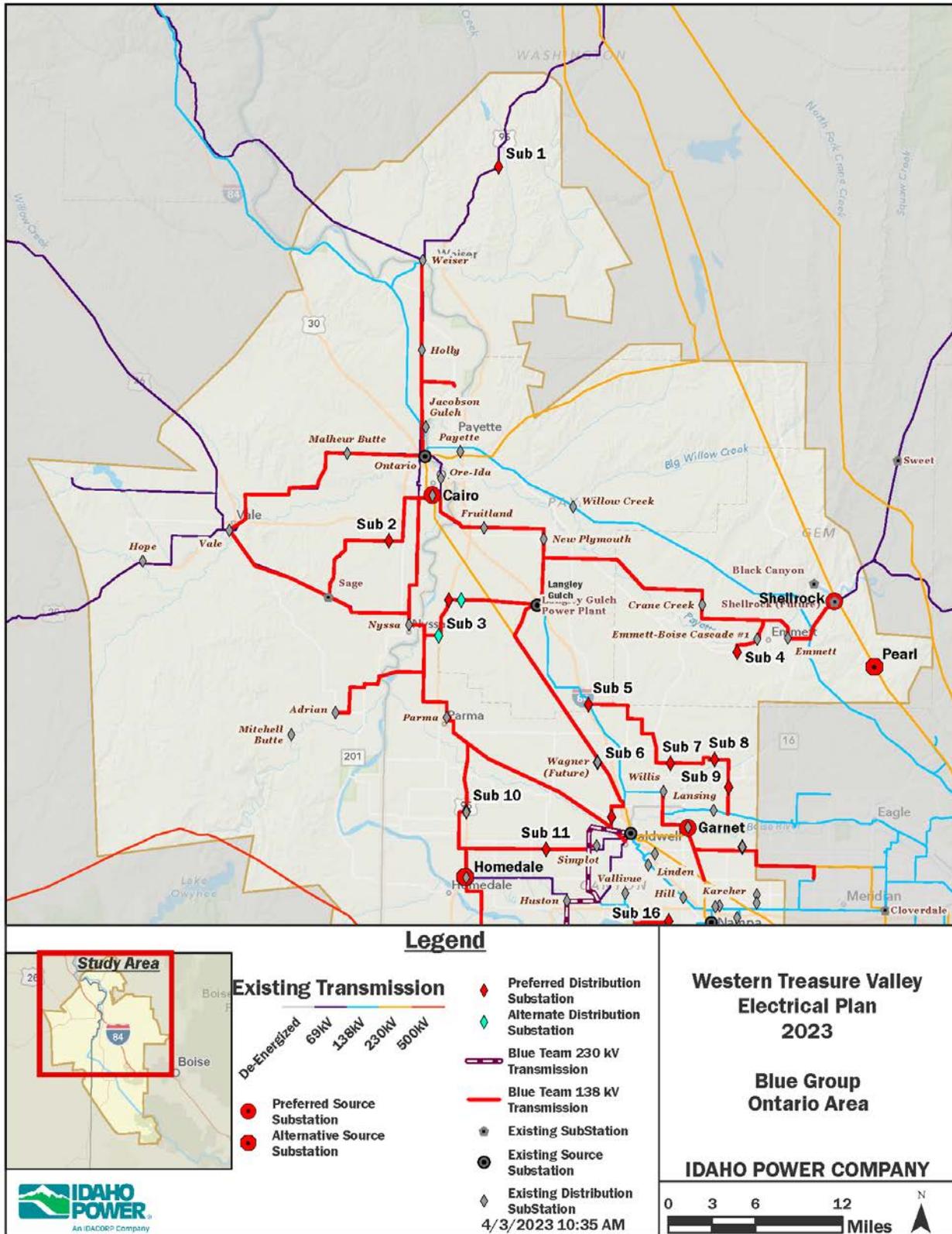
**Figure 6**  
Blue Group Canyon East Area



**Figure 7**  
Blue Group Canyon North Area

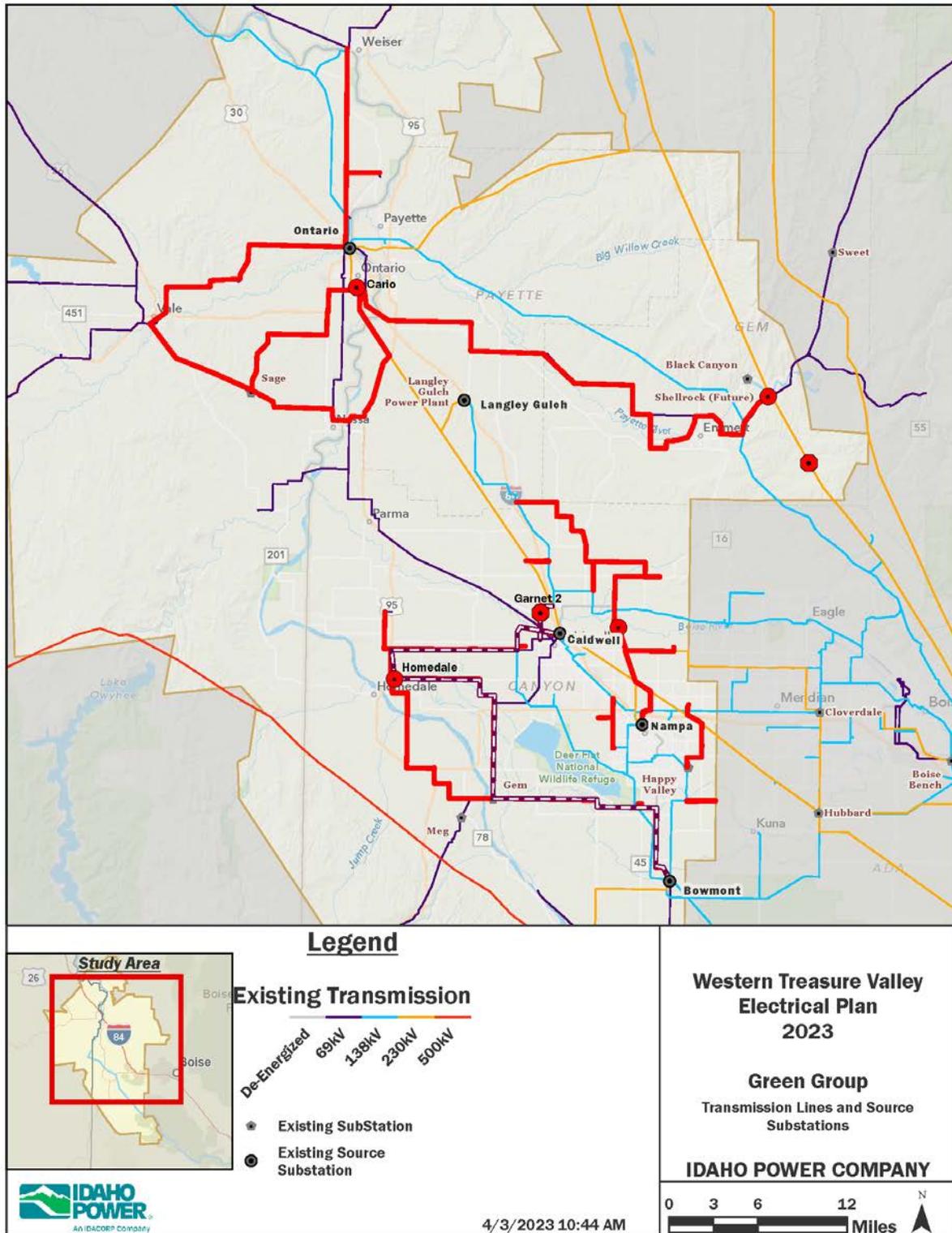


**Figure 8**  
Blue Group Canyon South Area

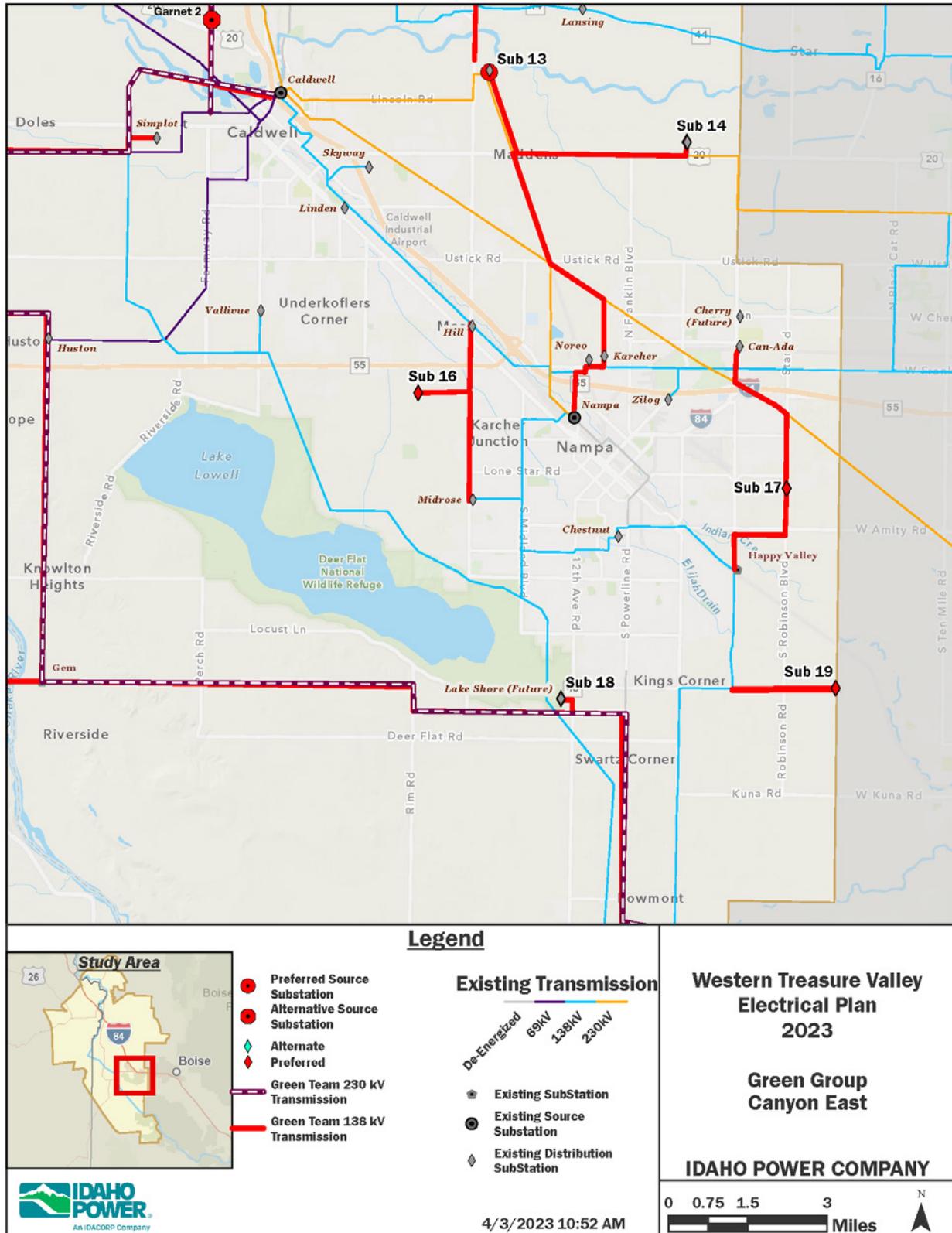


**Figure 9**  
 Blue Group Ontario Area

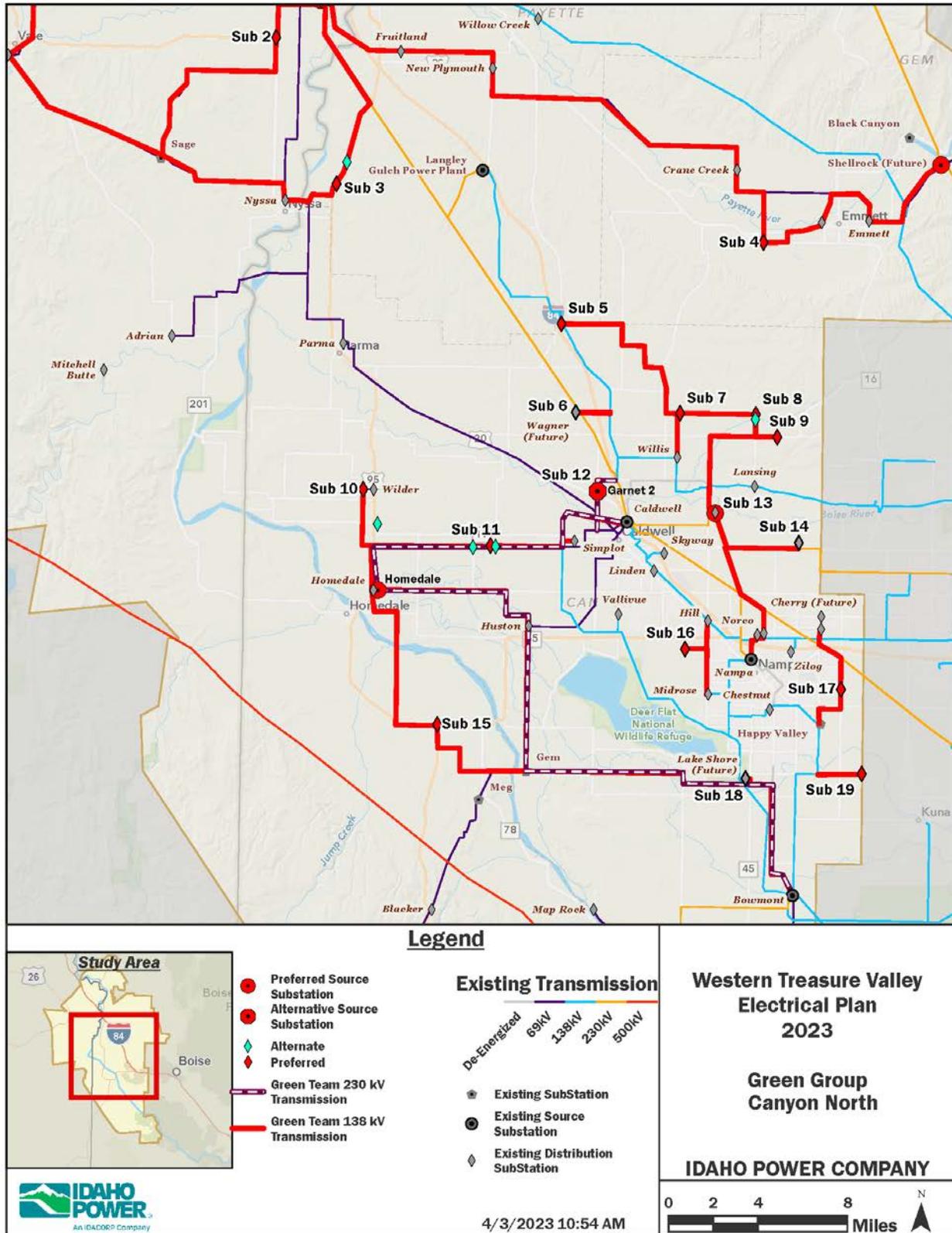
# Green Group Mapping Results



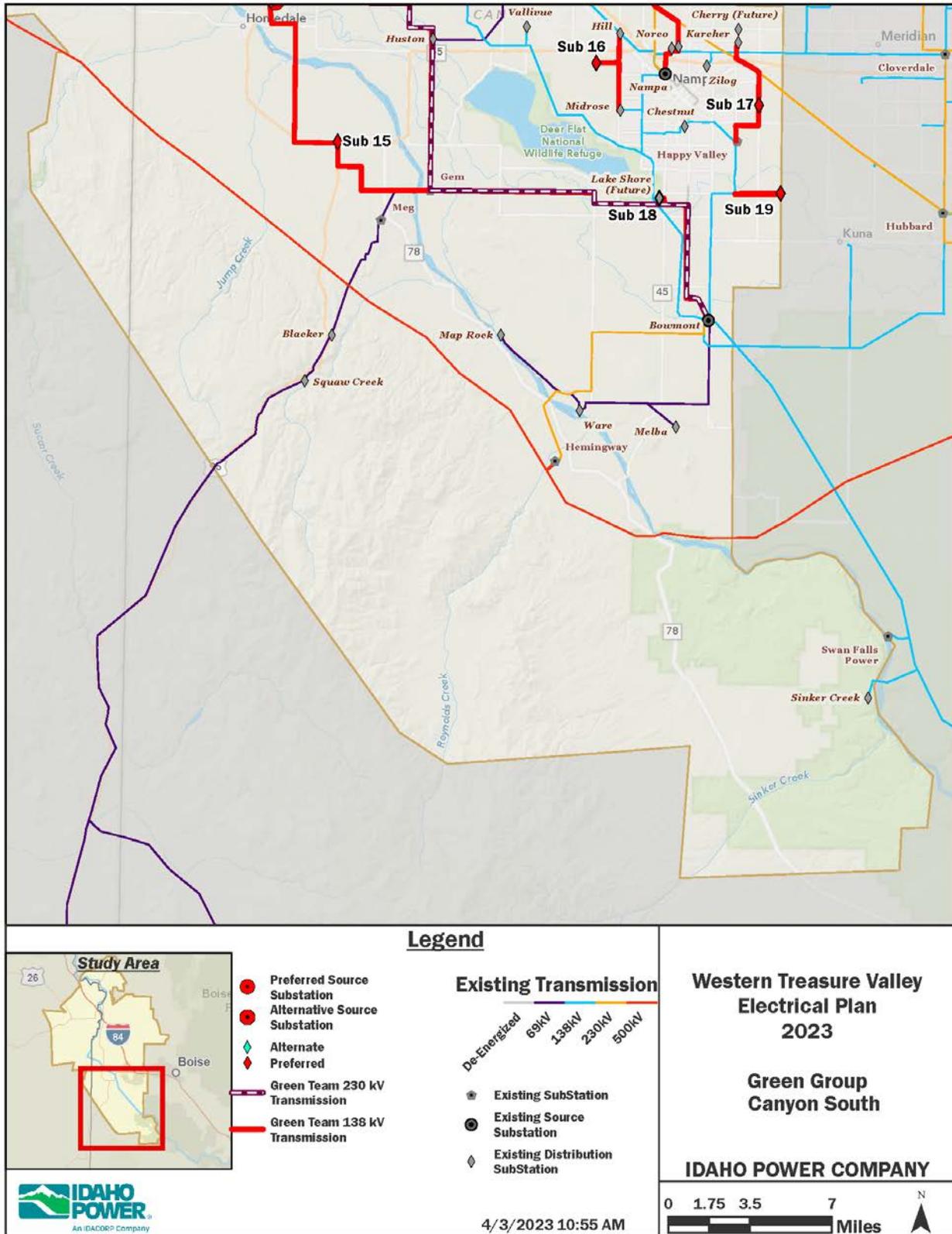
**Figure 10**  
Green Group Preferred High Voltage Transmission Lines and Source Substations



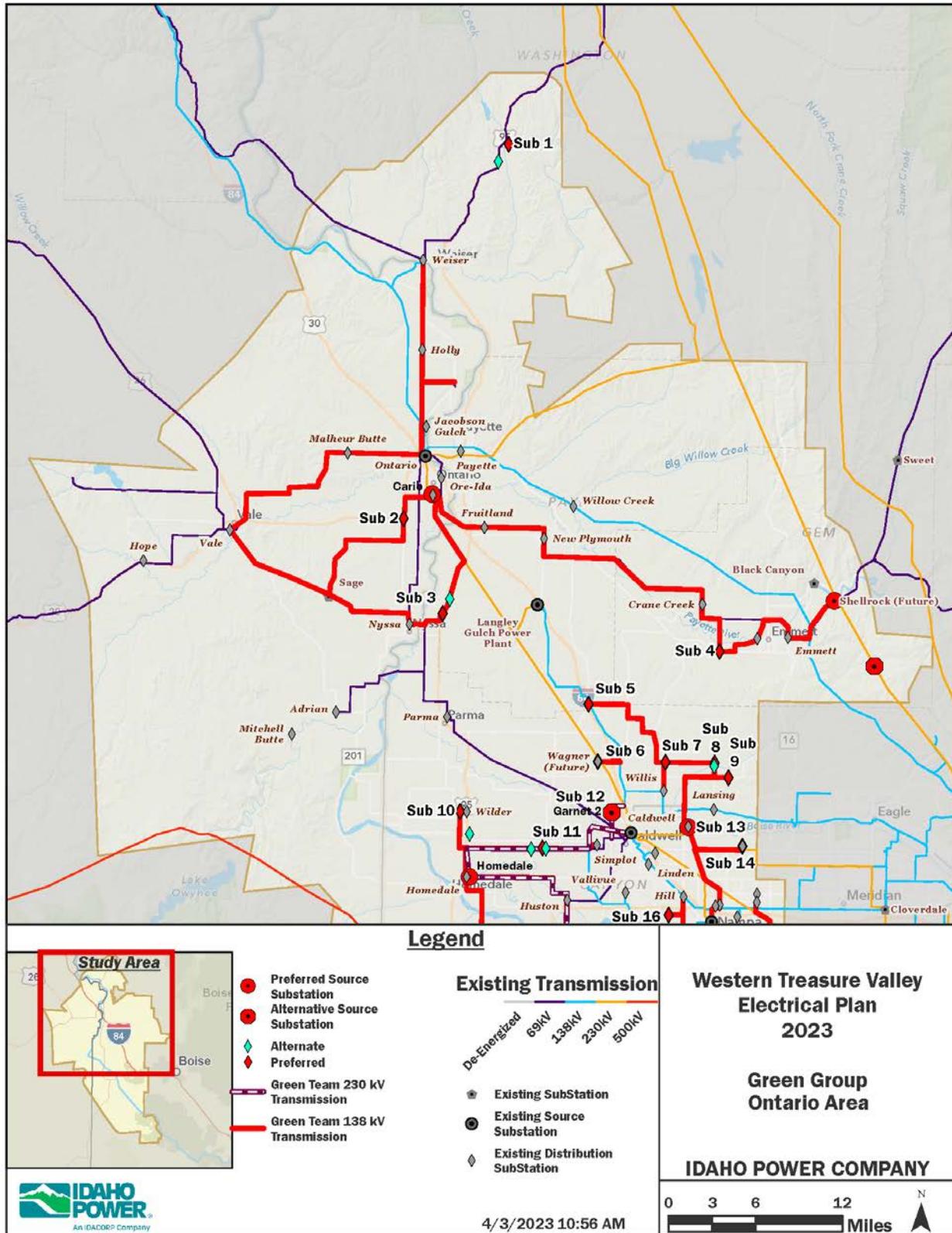
**Figure 11**  
Green Group Canyon East Area



**Figure 12**  
Green Group Canyon North Area

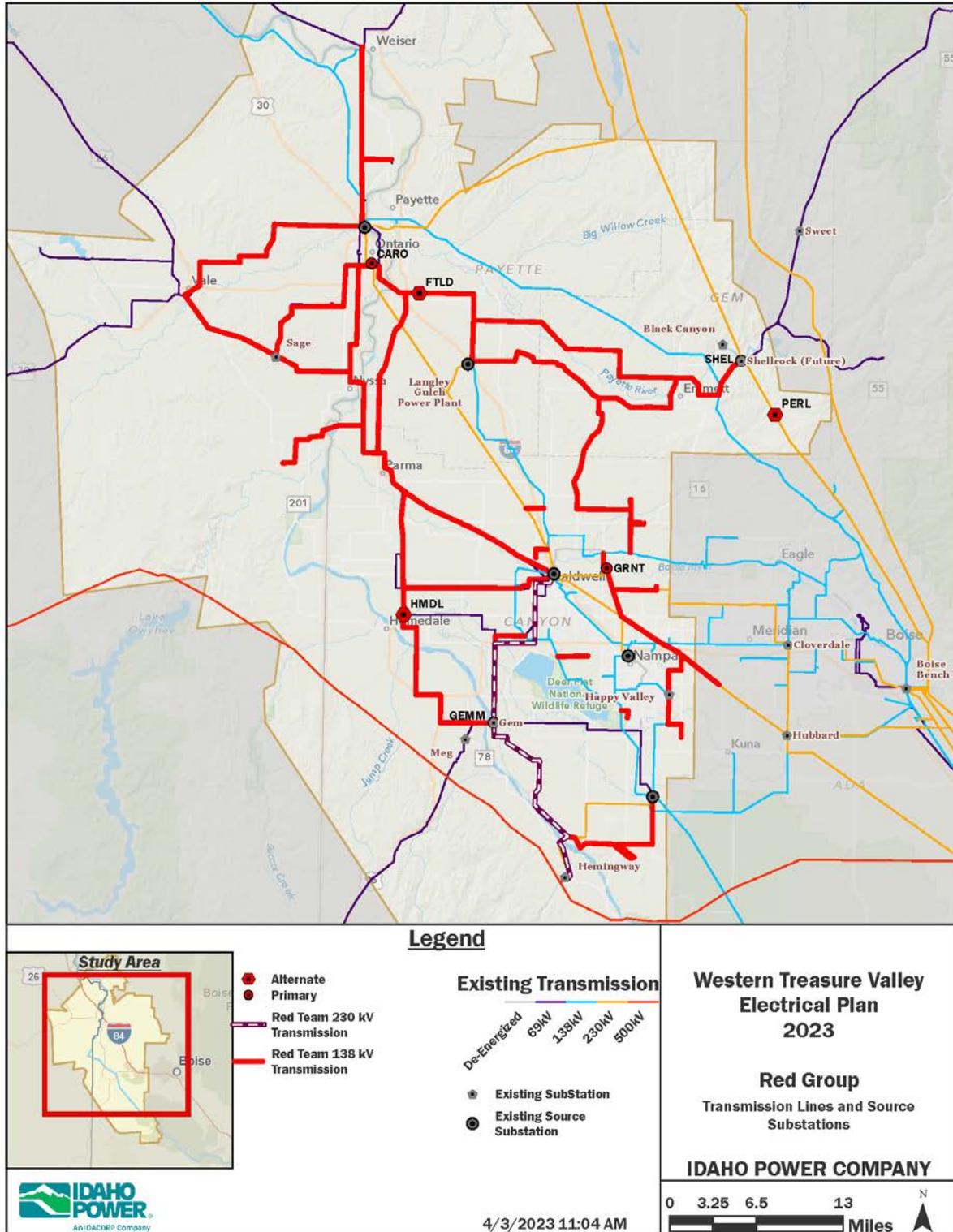


**Figure 13**  
Green Group Canyon South Area



**Figure 14**  
Green Group Ontario Area

# Red Group Mapping Results



**Figure 15**  
Red Group Preferred High Voltage Transmission Lines and Source Substations

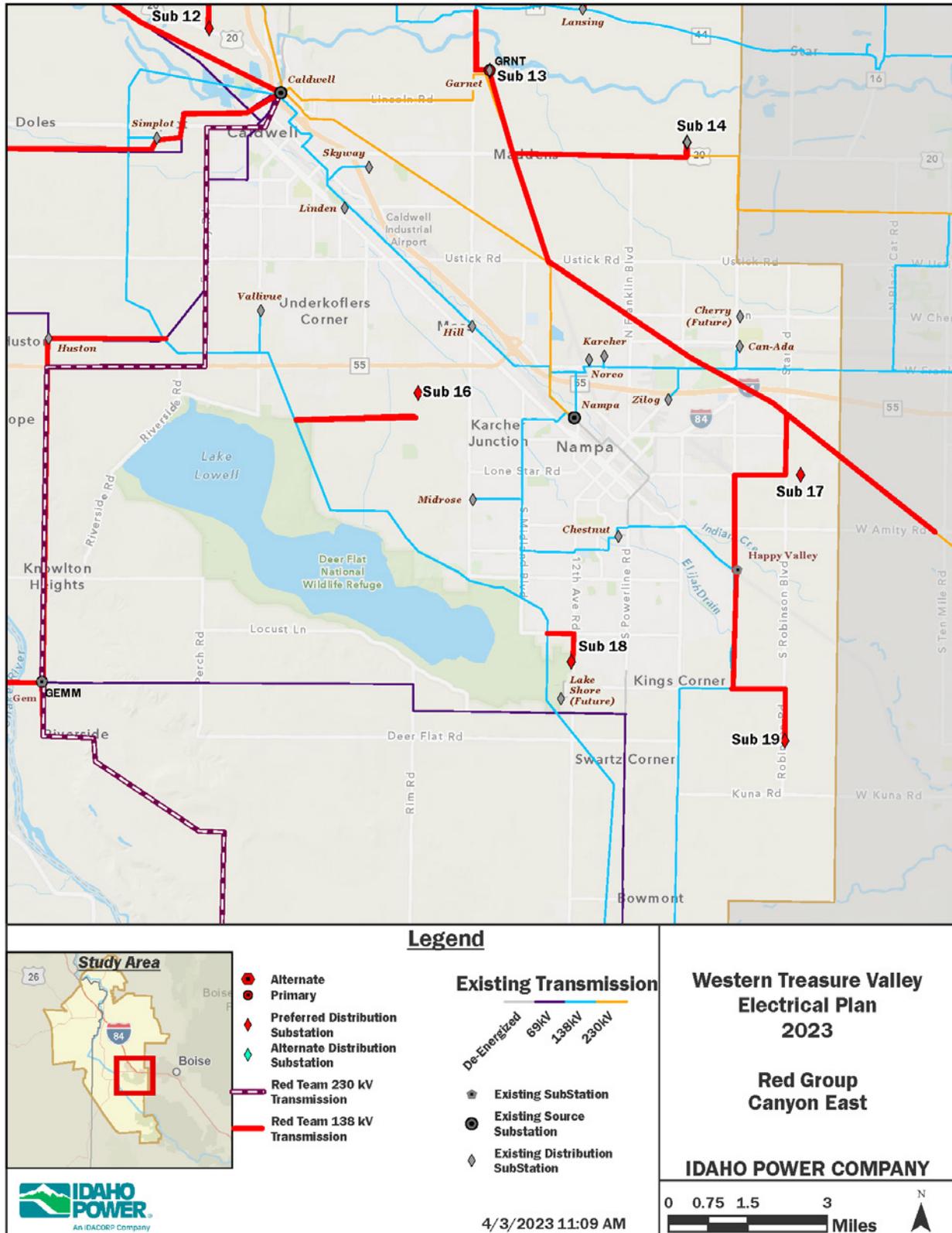


Figure 16  
Red Group Canyon East Area

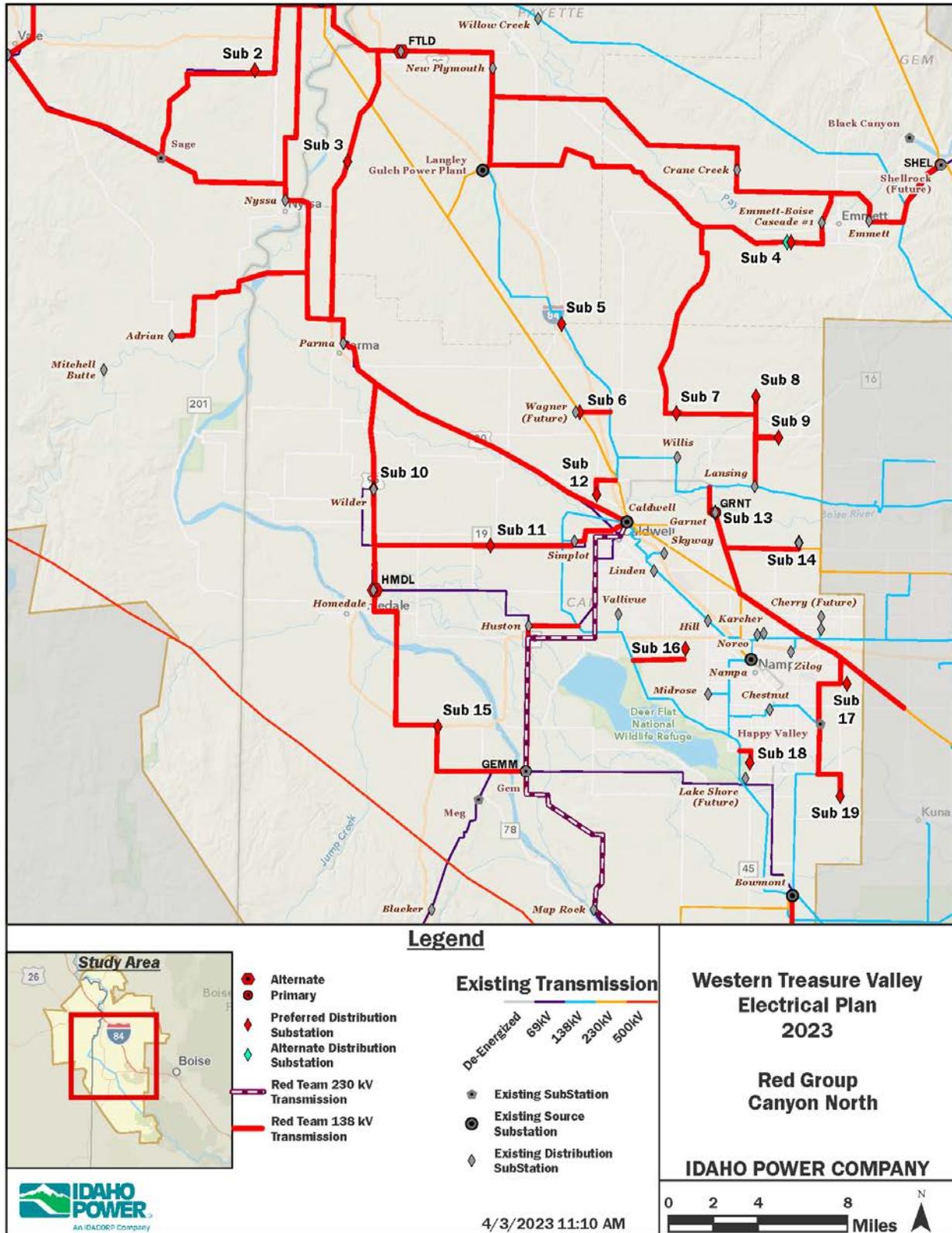
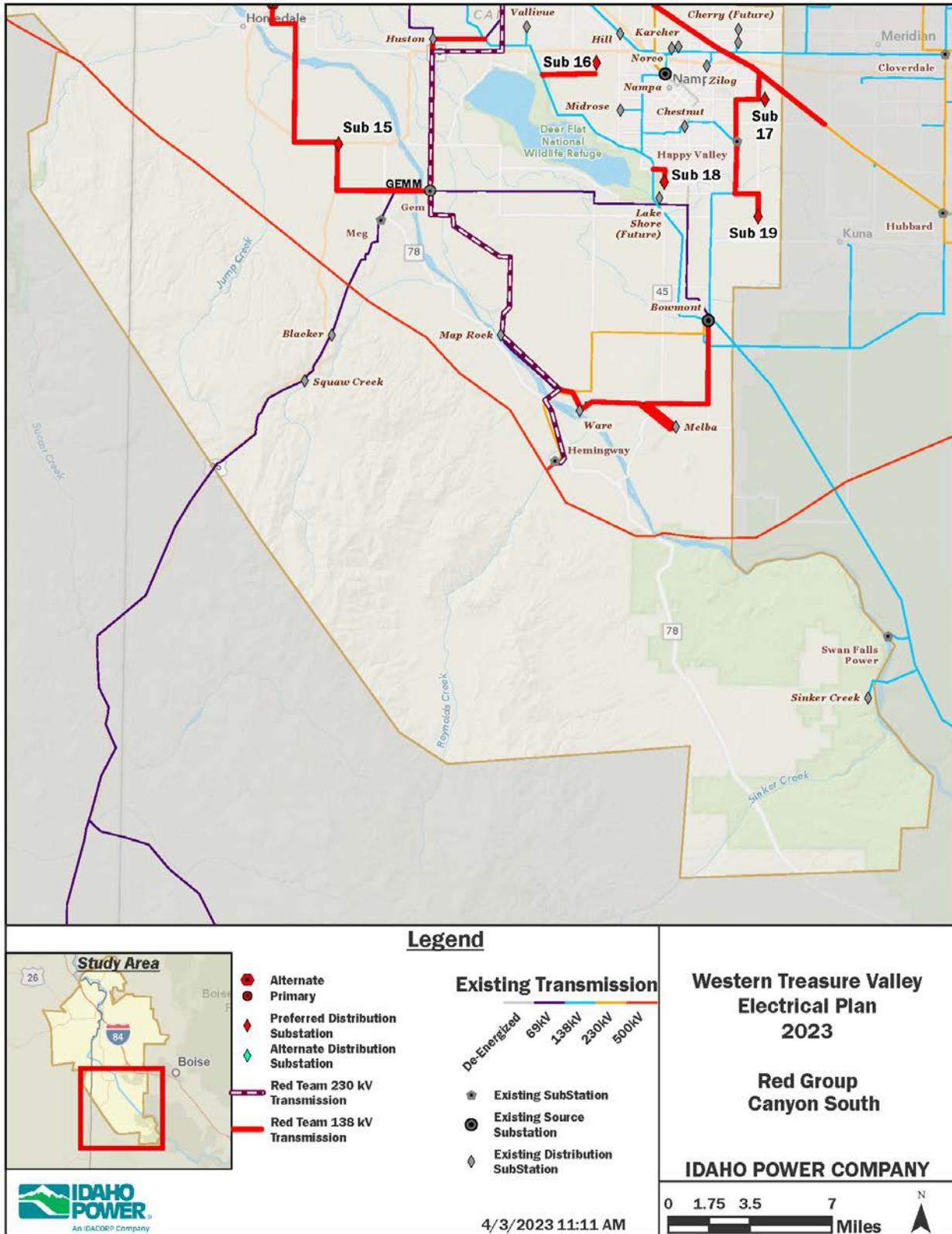
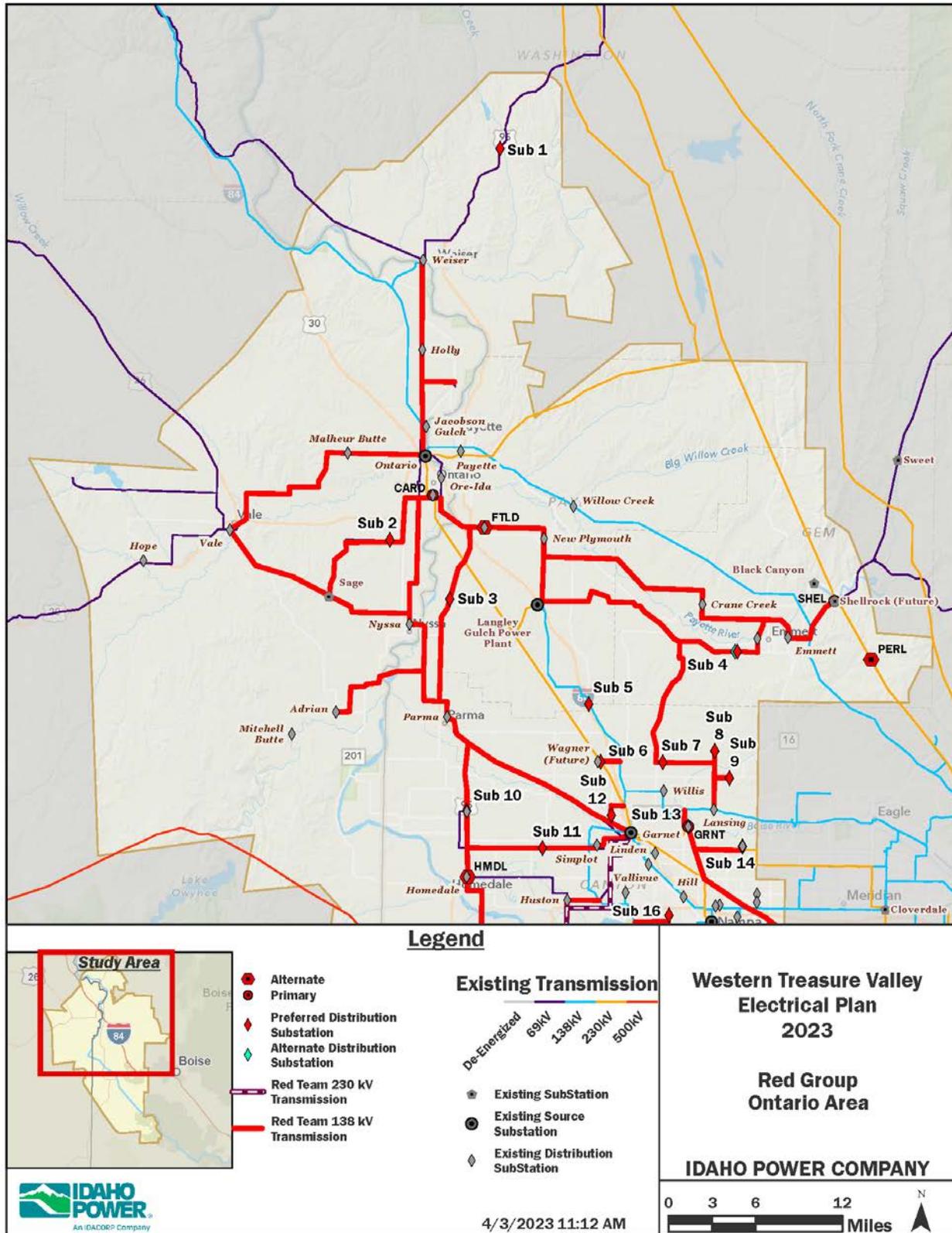


Figure 17  
Red Group Canyon North Area



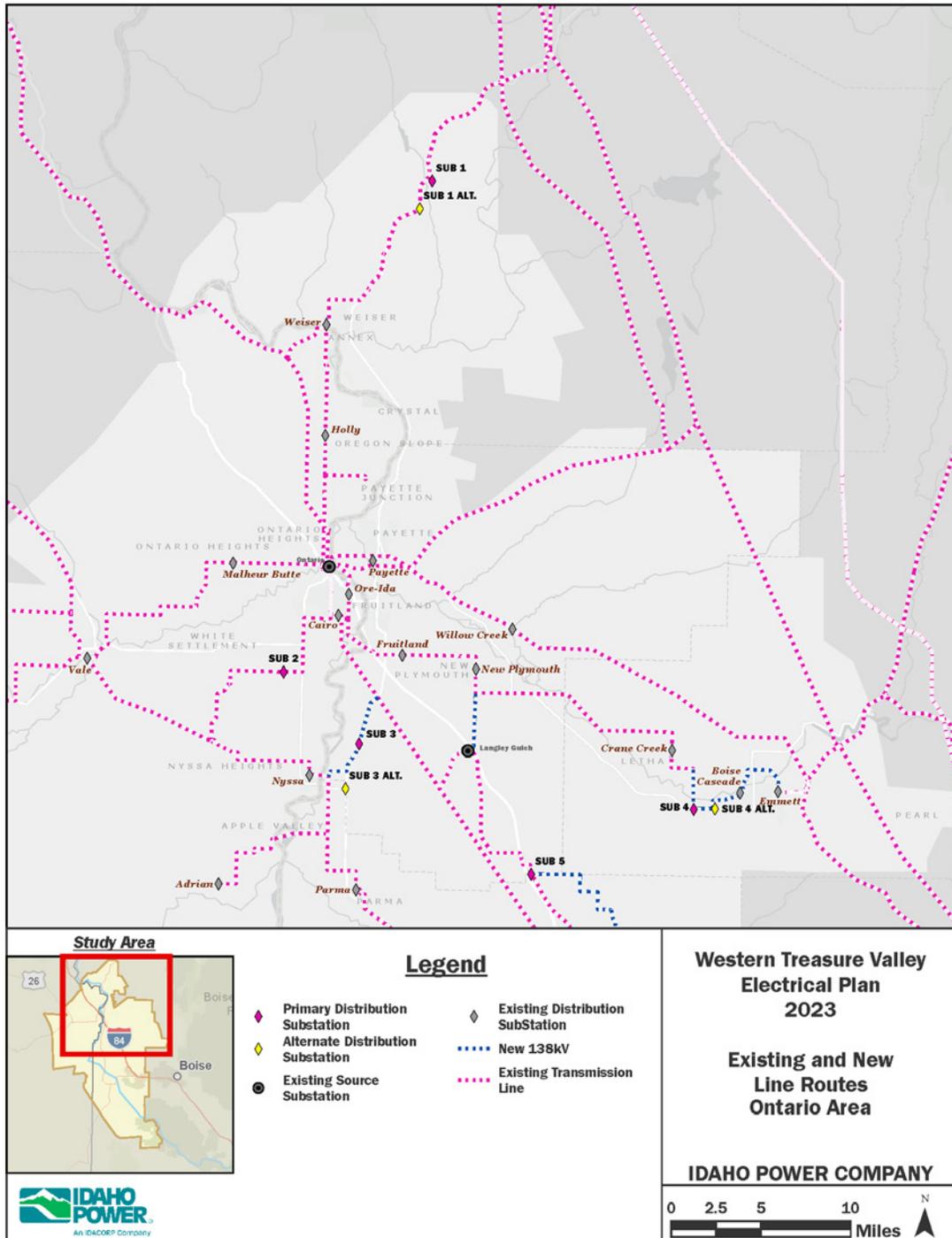
**Figure 18**  
Red Group Canyon South Area



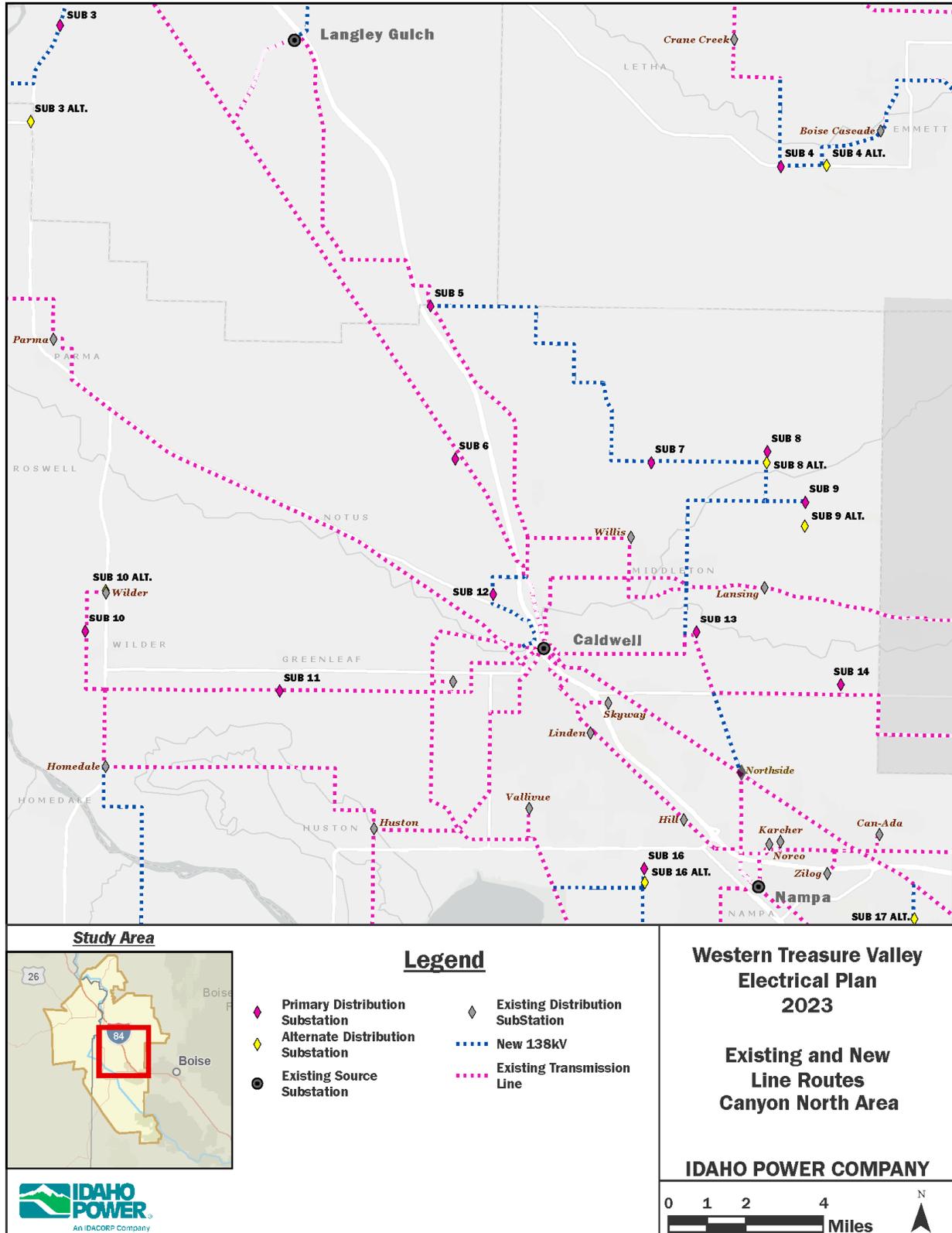
**Figure 19**  
Red Group Ontario Area

# Appendix C Supplemental Maps

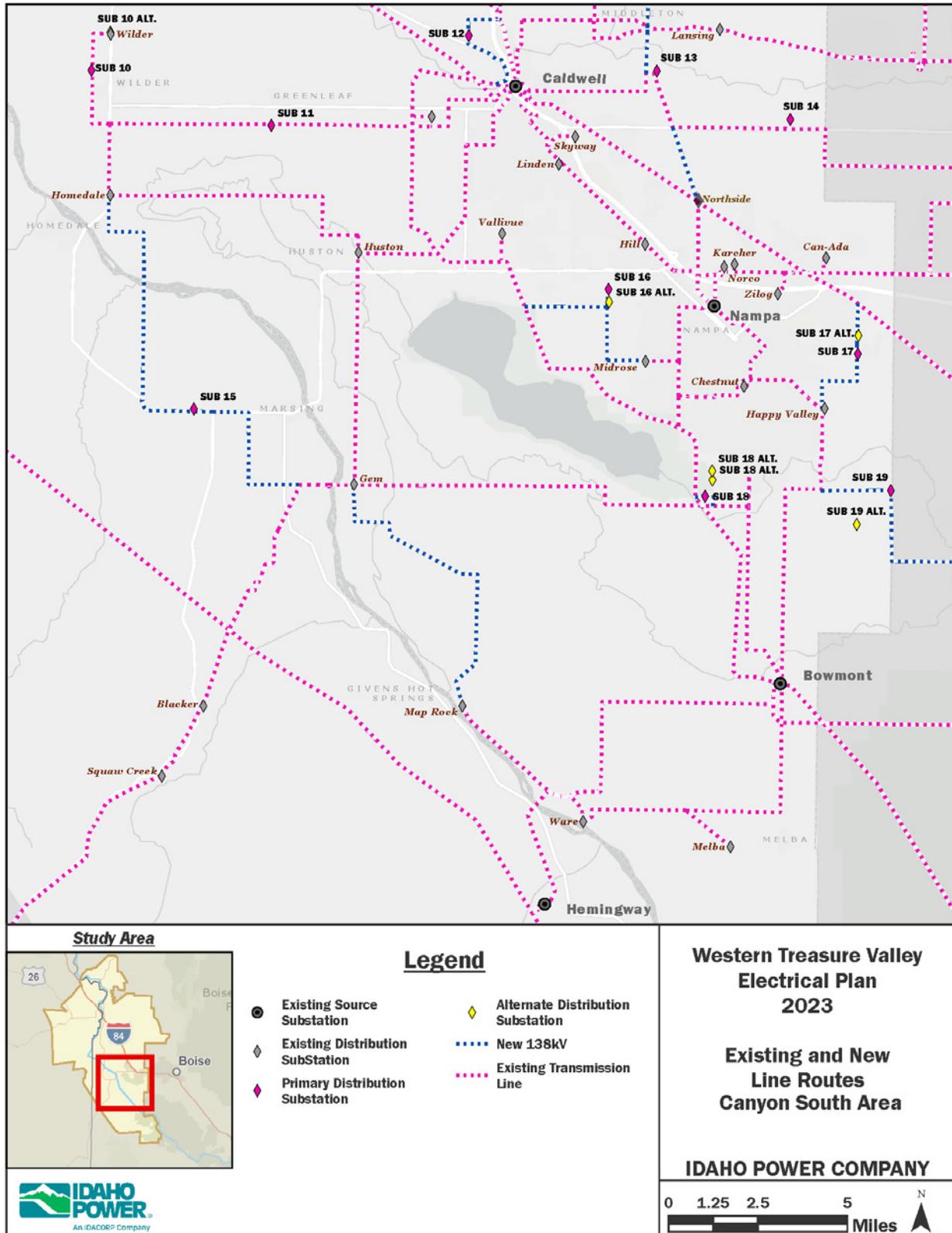
## New and Existing Line Routes



**Figure 20**  
Existing and New Line Routes Ontario Area



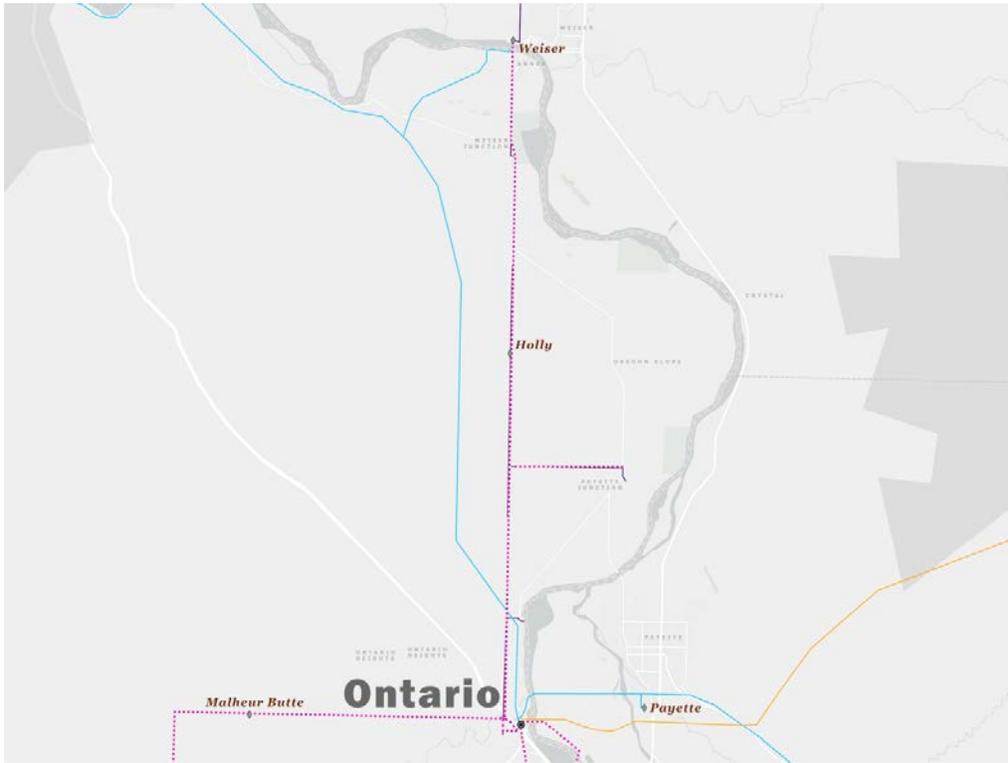
**Figure 21**  
Existing and New Line Routes Canyon North Area



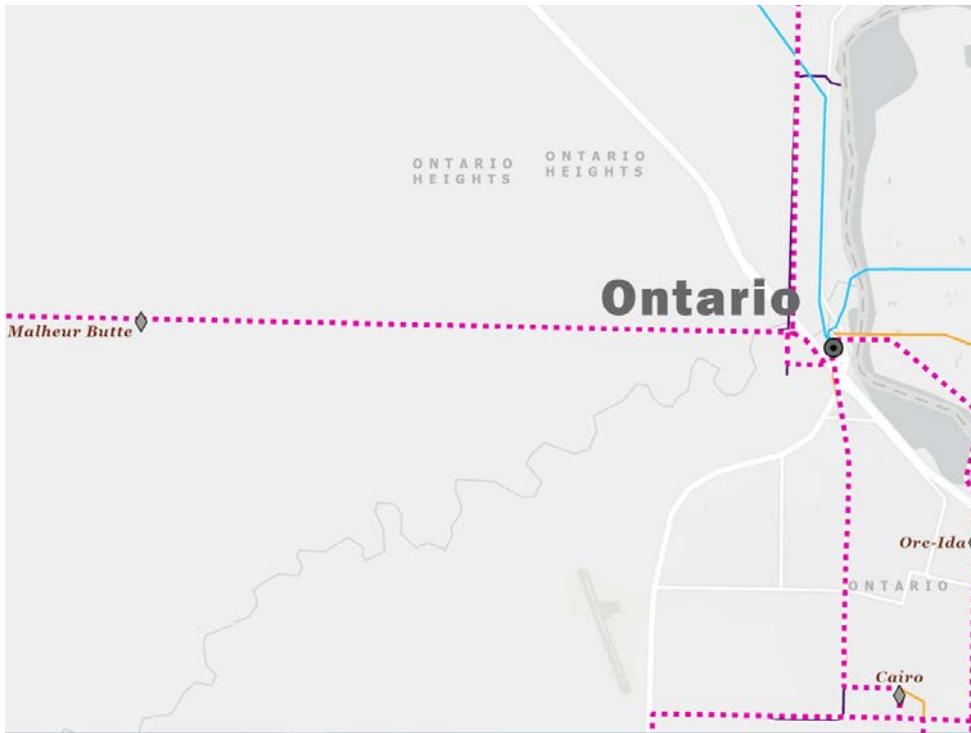
**Figure 22**  
Existing and New Line Routes Canyon South Area

## Appendix D

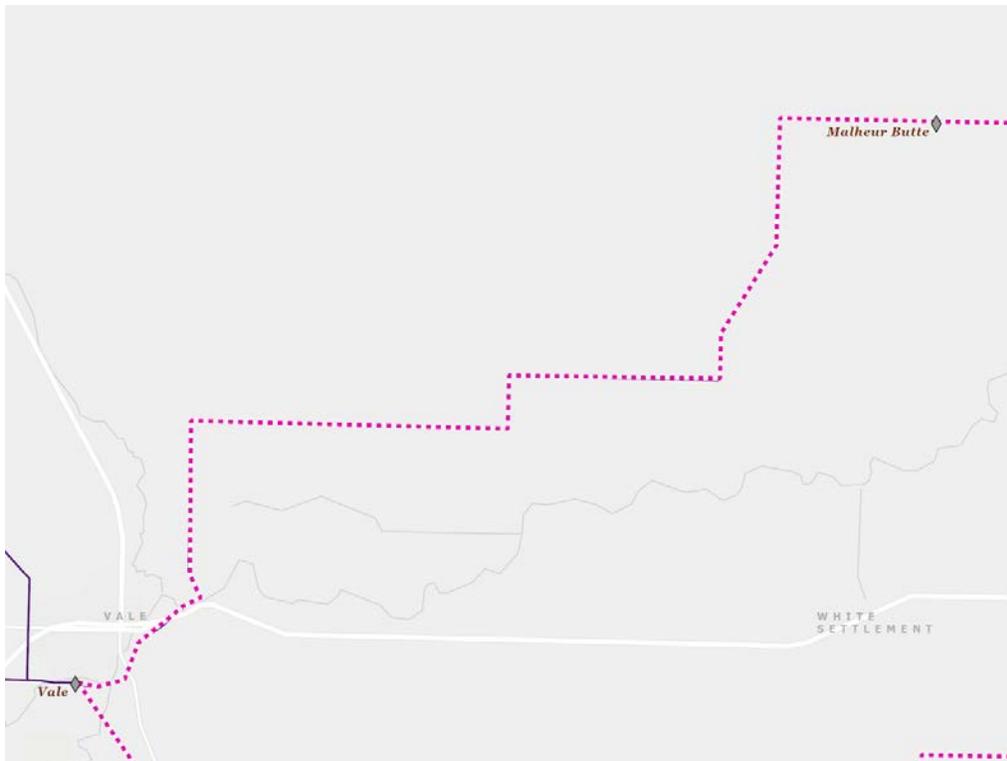
### Line Routes



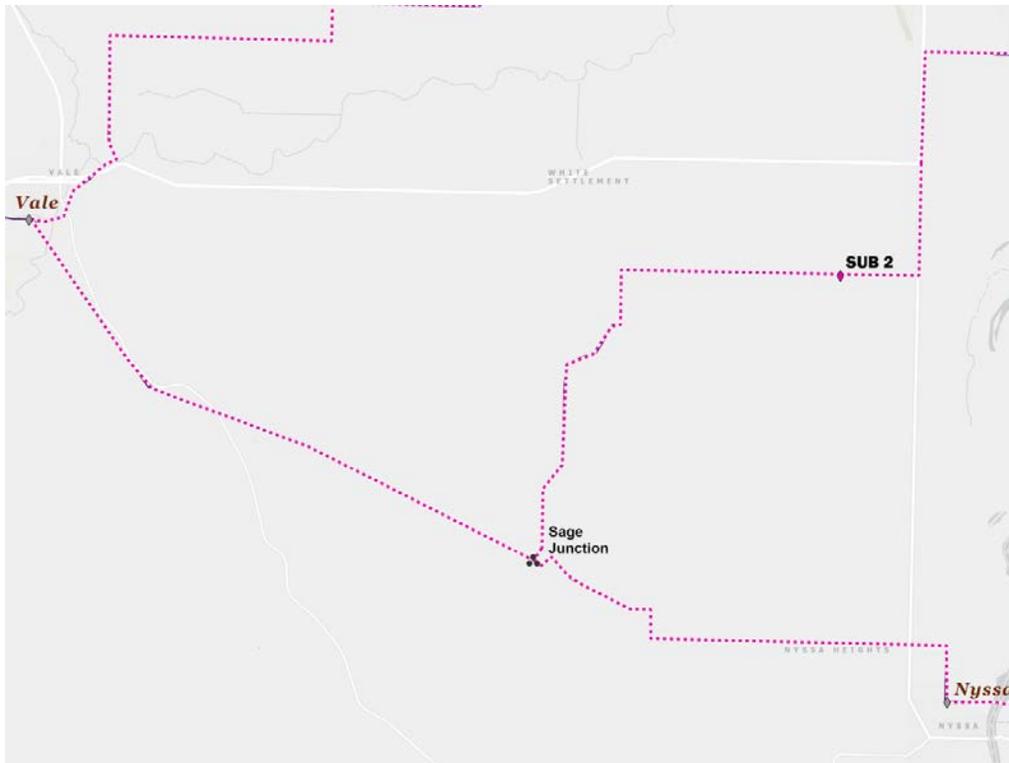
**Figure 23**  
[Weiser Substation to Ontario Substation](#)



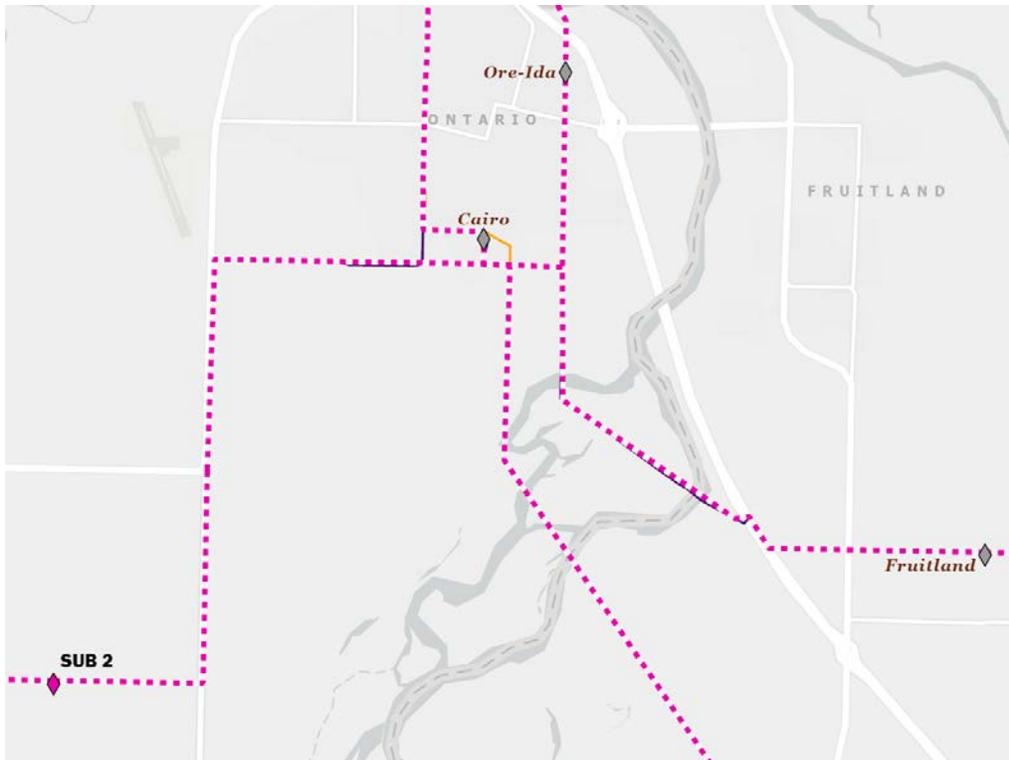
**Figure 24**  
[Ontario Substation to Malheur Butte Substation](#)



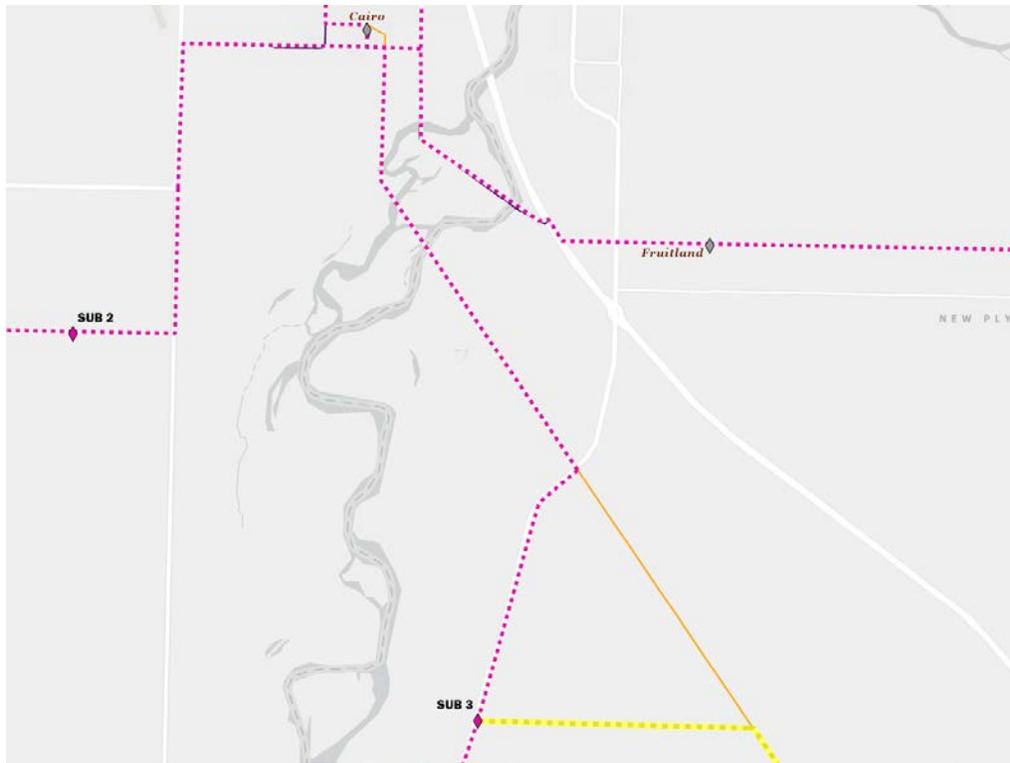
**Figure 25**  
[Malheur Butte Substation to Vale Substation](#)



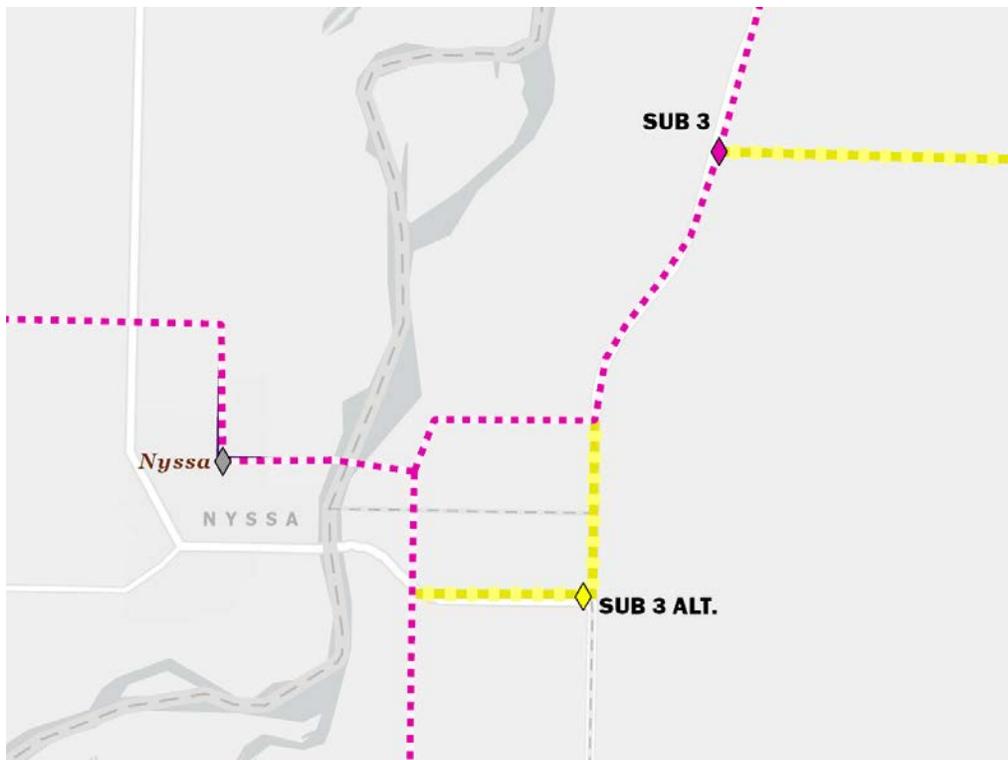
**Figure 26**  
[Vale Substation to Sub 2 and Nyssa Substation](#)



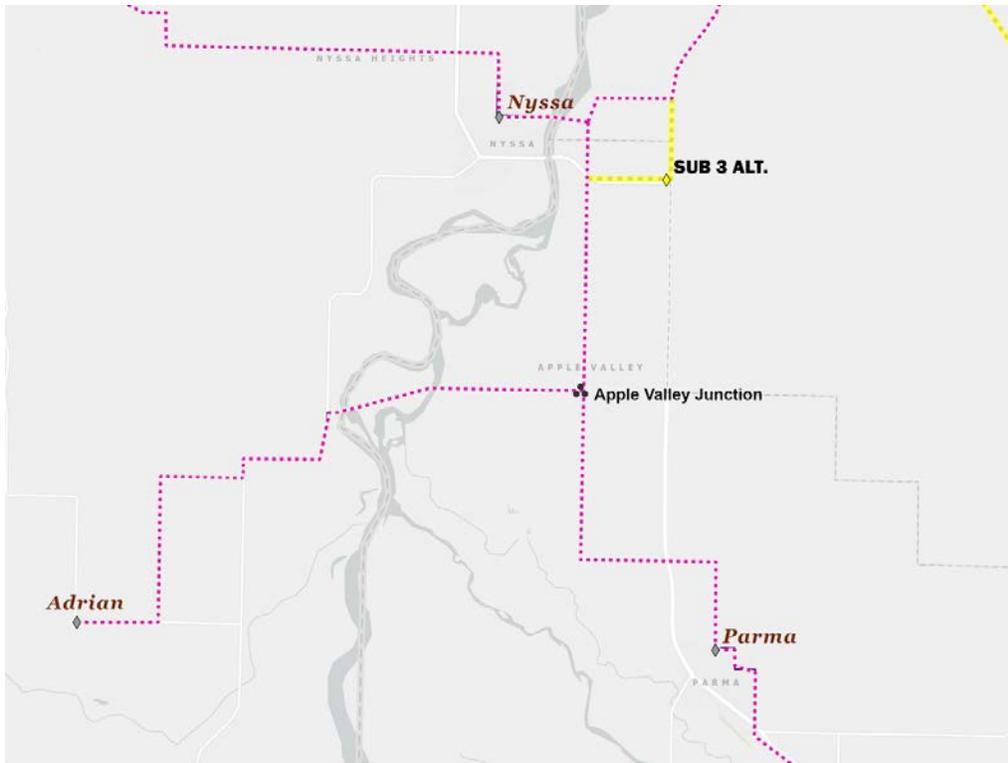
**Figure 27**  
[Sub 2 to Cairo Substation](#)



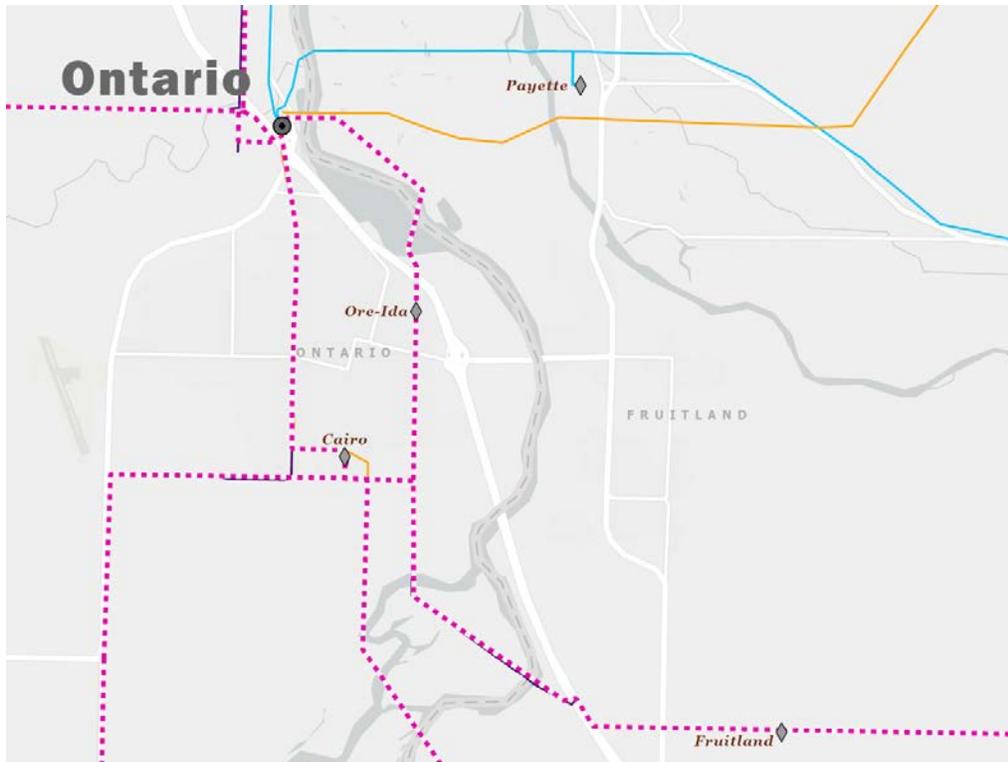
**Figure 28**  
[Cairo Substation to Sub 3](#)



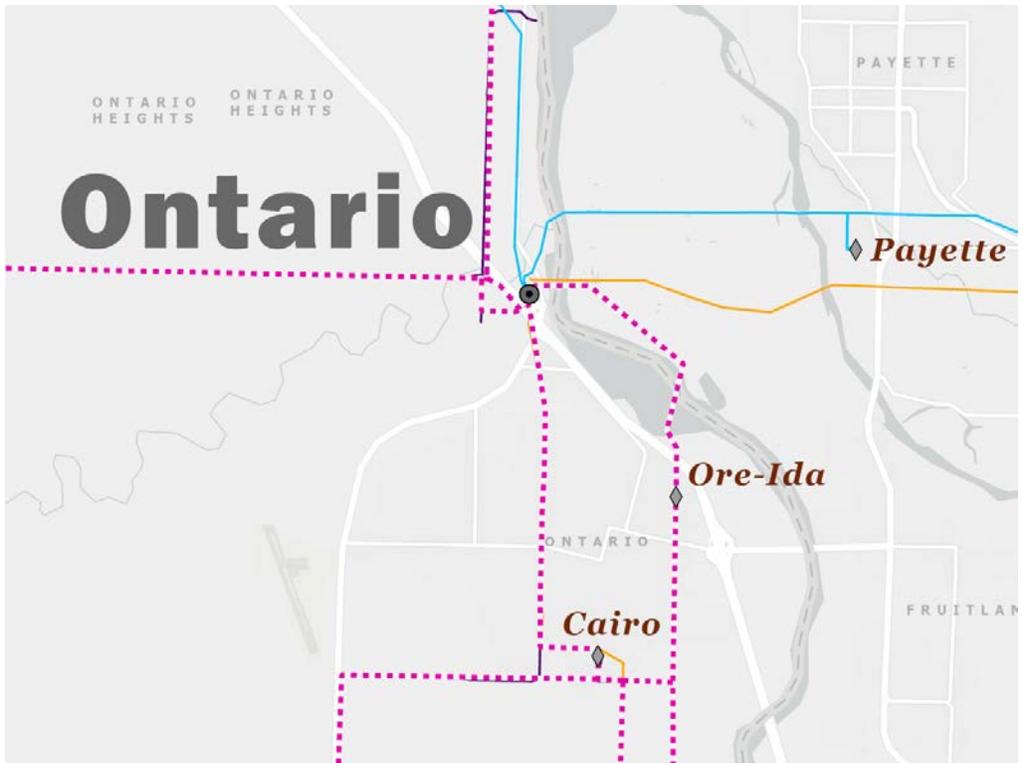
**Figure 29**  
[Sub 3 to Nyssa Substation](#)



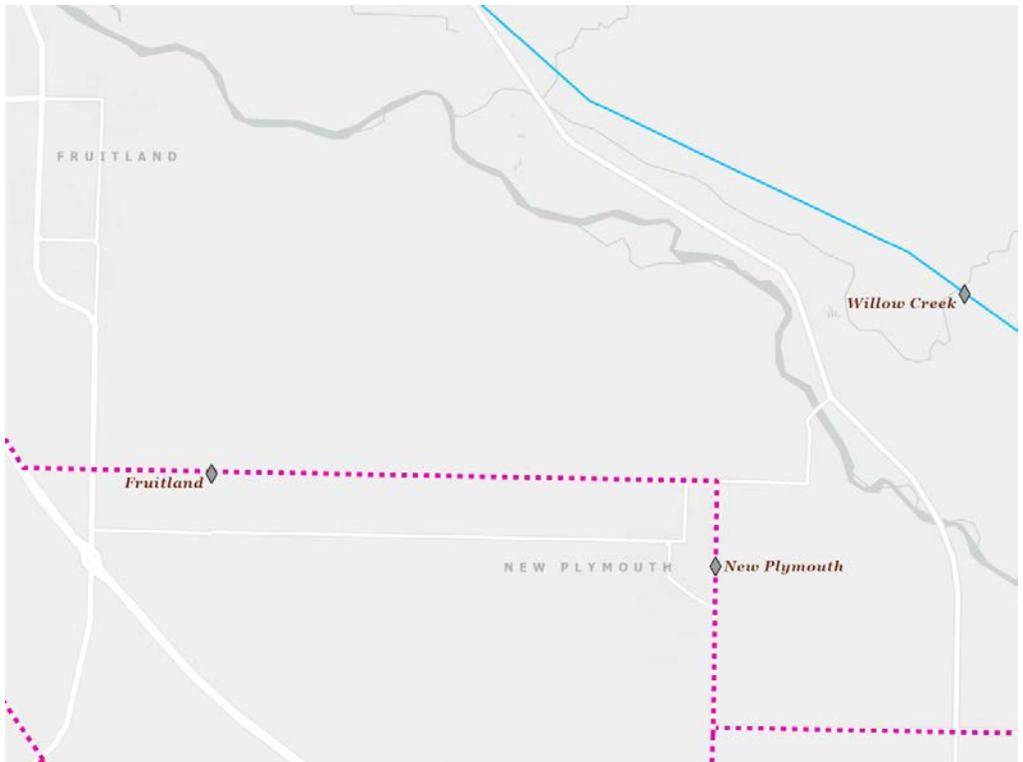
**Figure 30**  
[Nyssa Substation to Parma Substation](#)



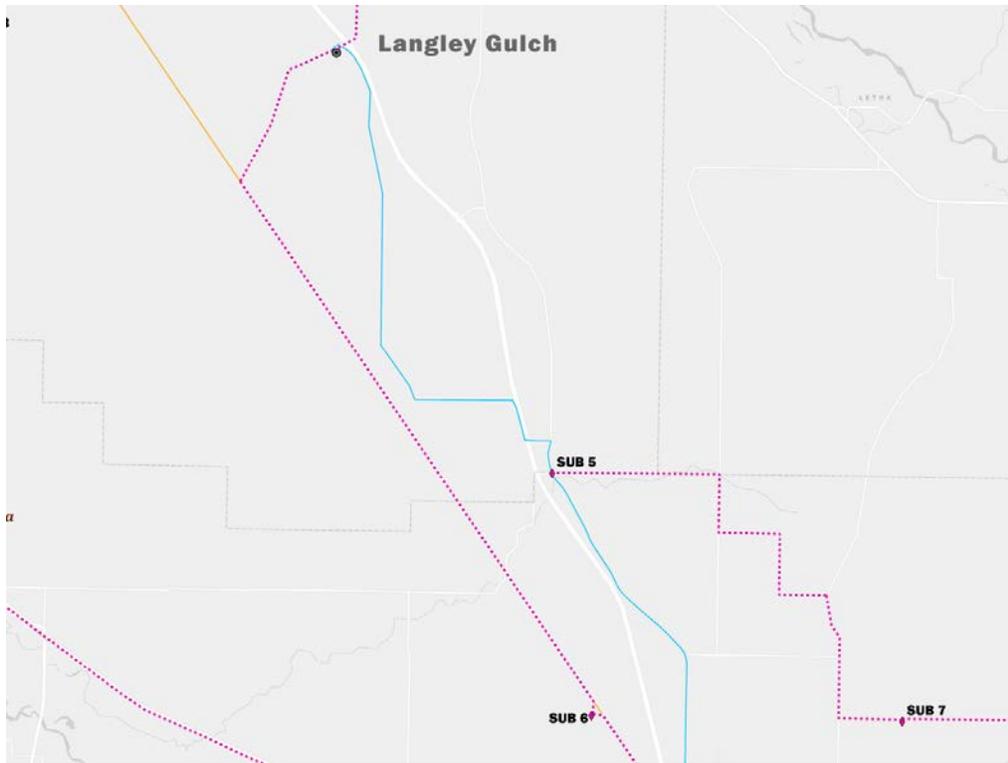
**Figure 31**  
[Ontario Substation to Fruitland Substation](#)



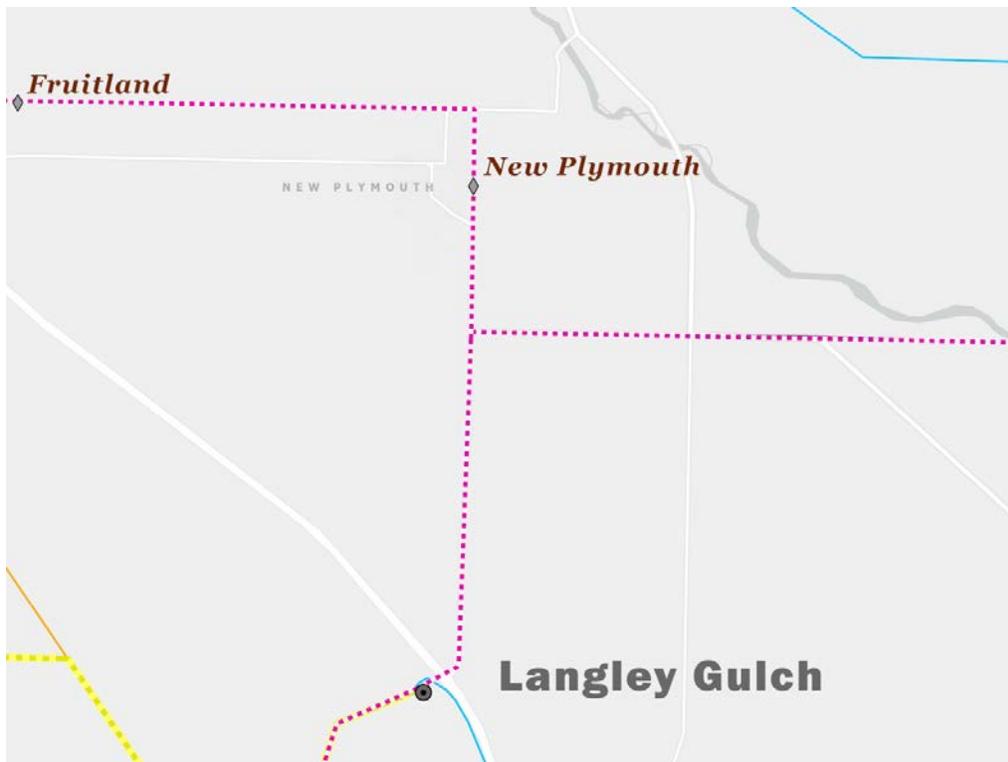
**Figure 32**  
[Ontario Substation to Cairo Substation](#)



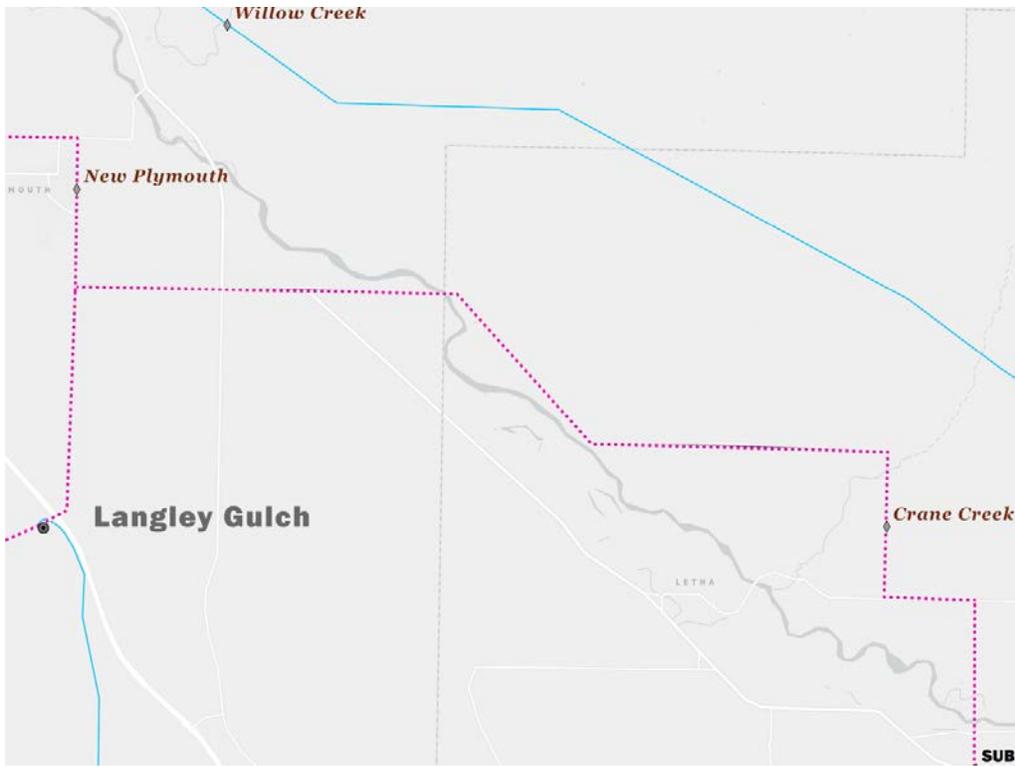
**Figure 33**  
[Fruitland Substation to New Plymouth Substation](#)



**Figure 34**  
[Langley Gulch to Sub 6](#)



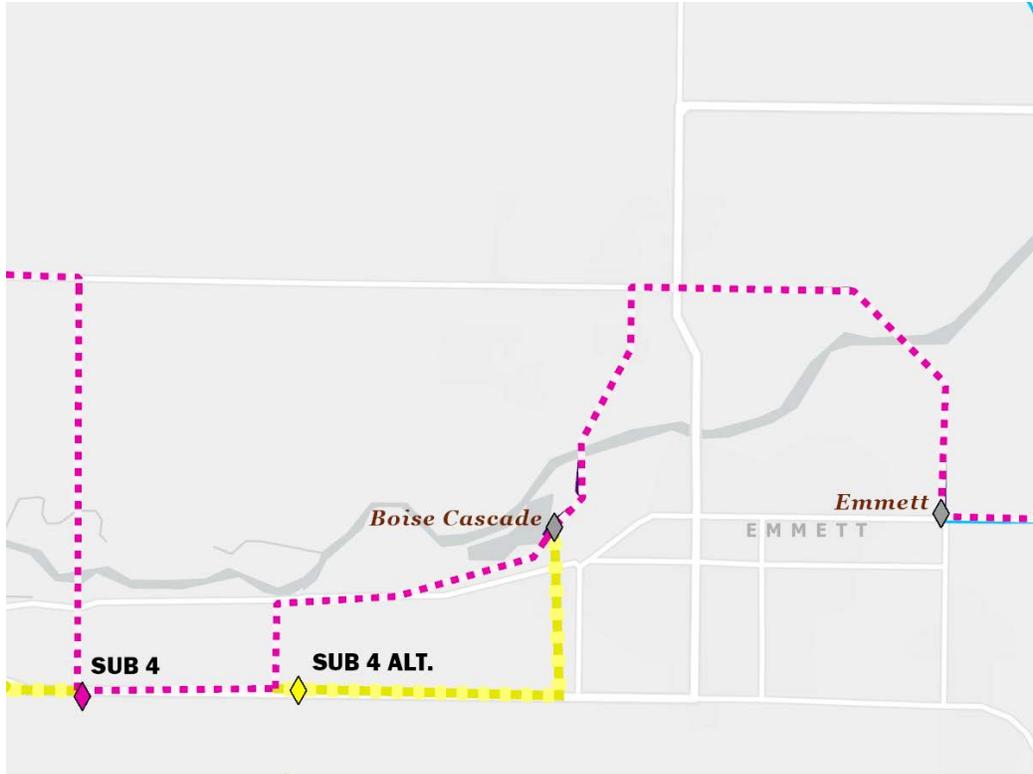
**Figure 35**  
[New Plymouth Substation to Langley Gulch](#)



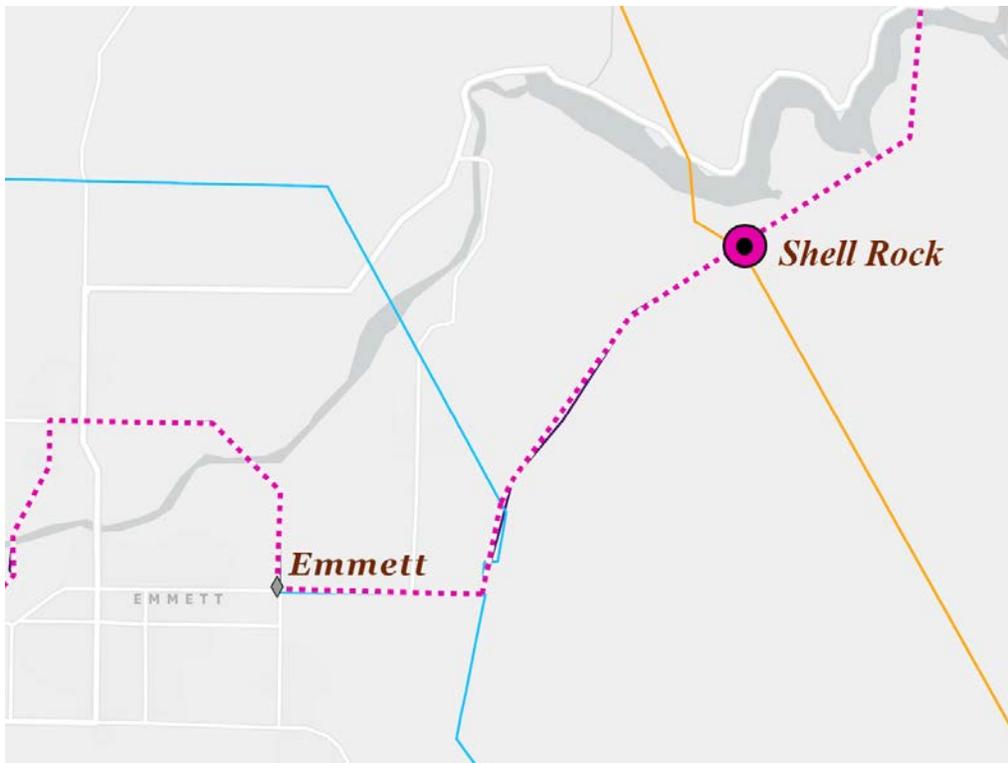
**Figure 36**  
[New Plymouth Substation to Crane Creek Substation](#)



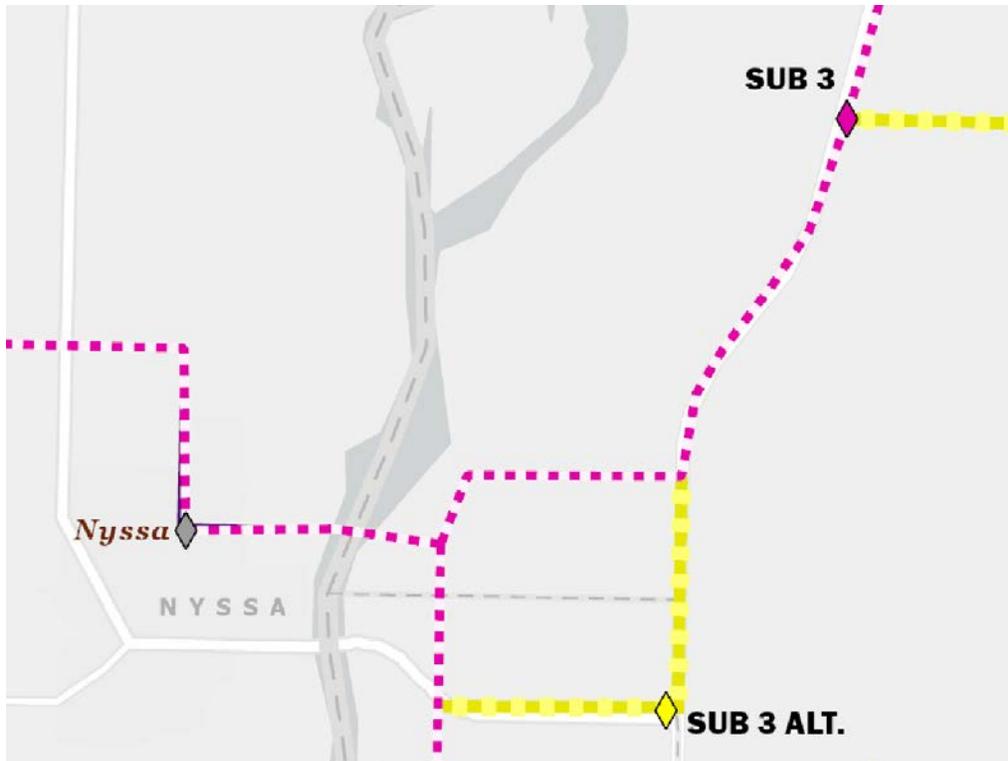
**Figure 37**  
[Crane Creek Substation to Sub 4](#)



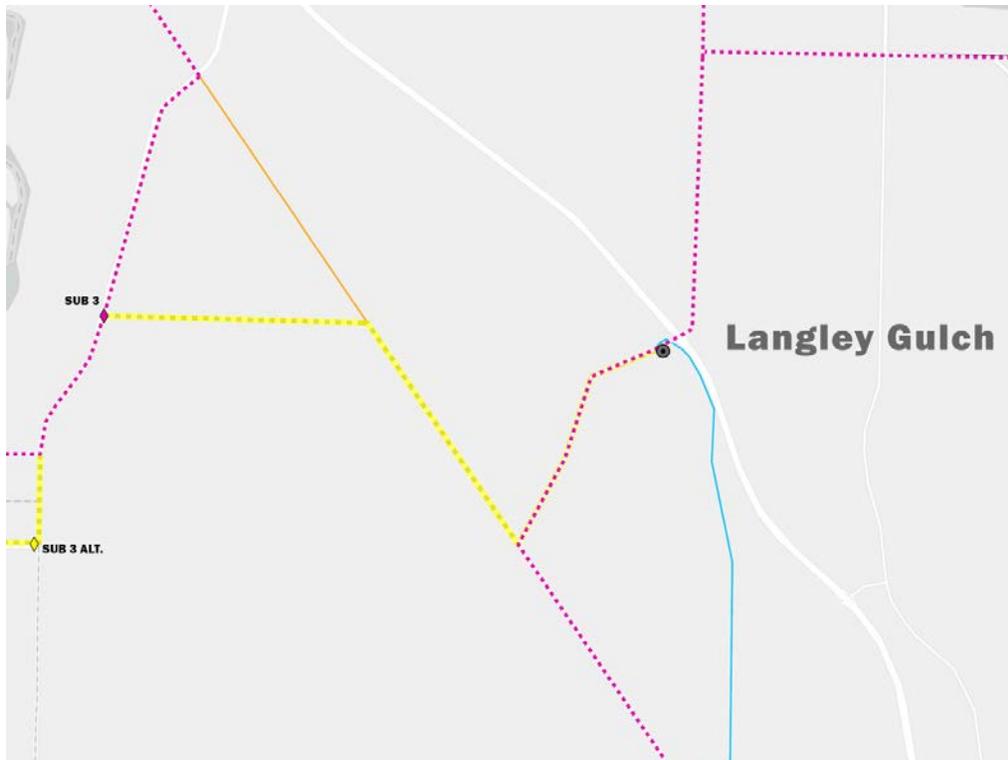
**Figure 38**  
[Sub 4 to Emmett Substation](#)



**Figure 39**  
[Emmett Substation to Shell Rock Substation](#)



**Figure 40**  
[Nysa Substation to Sub 3](#)



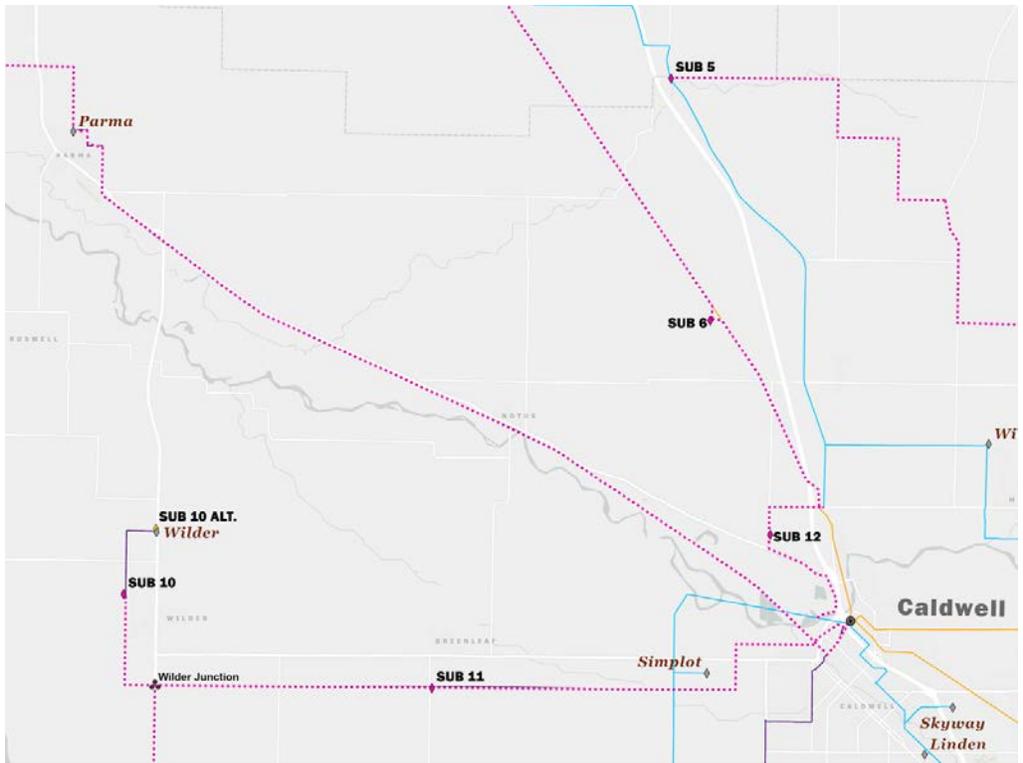
**Figure 41**  
[Sub 3 to Langley Gulch](#)



**Figure 42**  
[Sub 4 to Emmett Substation](#)



**Figure 43**  
[Sub 4 to Sub 7](#)

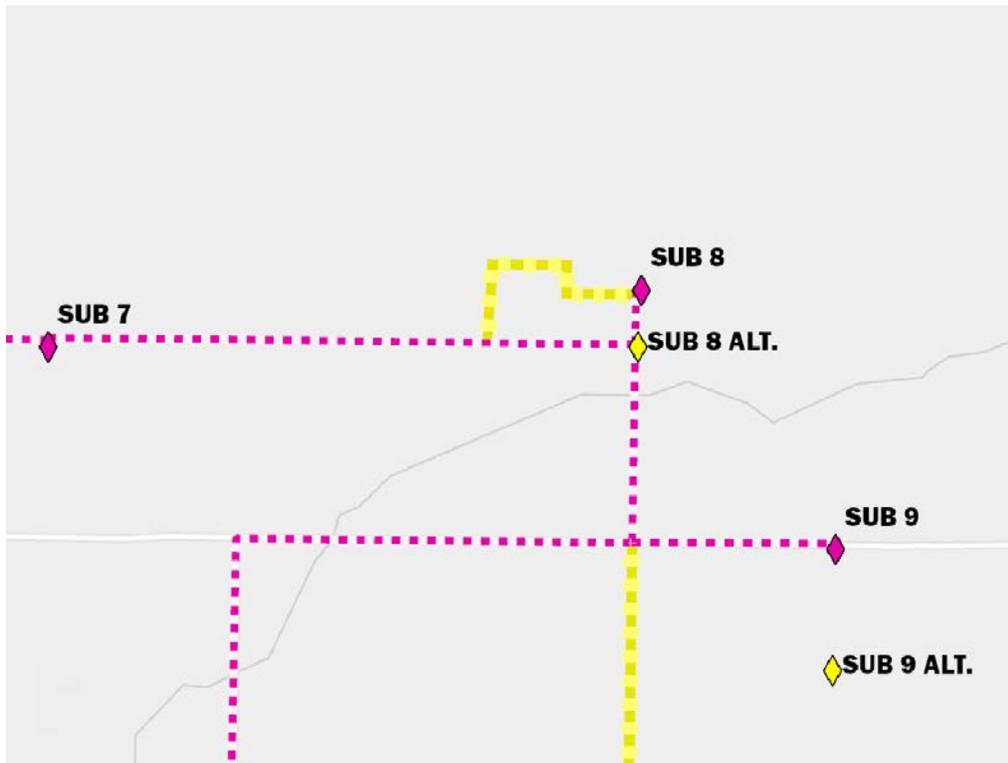


**Figure 44**  
[Parma Substation to Caldwell Substation](#)

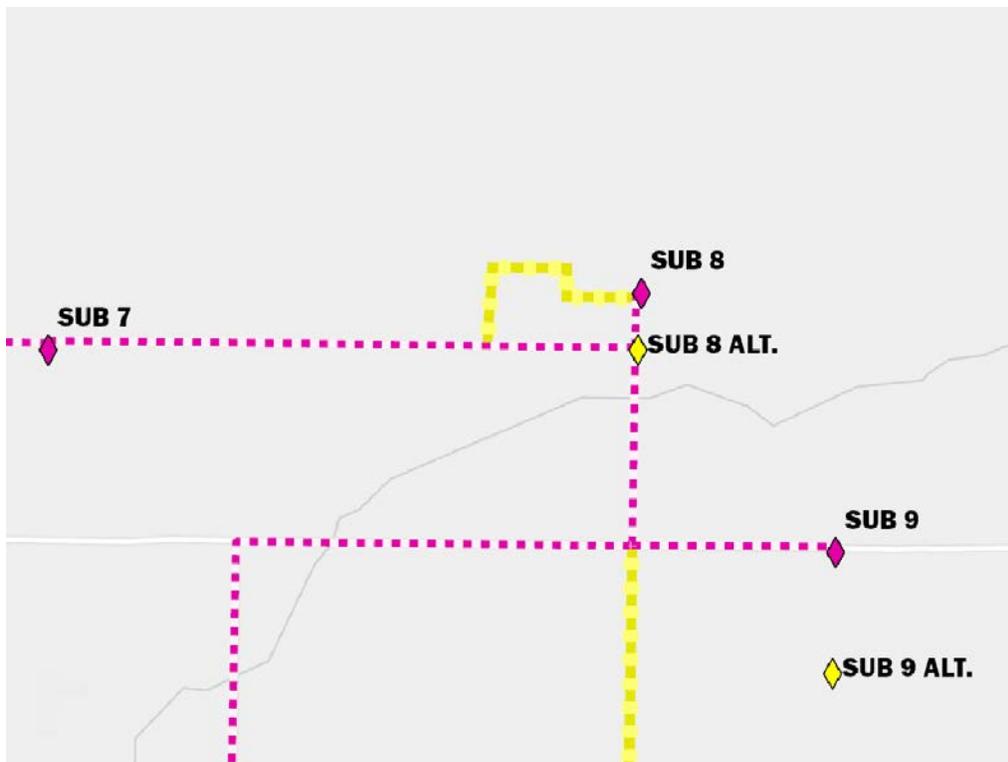


**Figure 45**  
[Sub 6 to Sub 12](#)

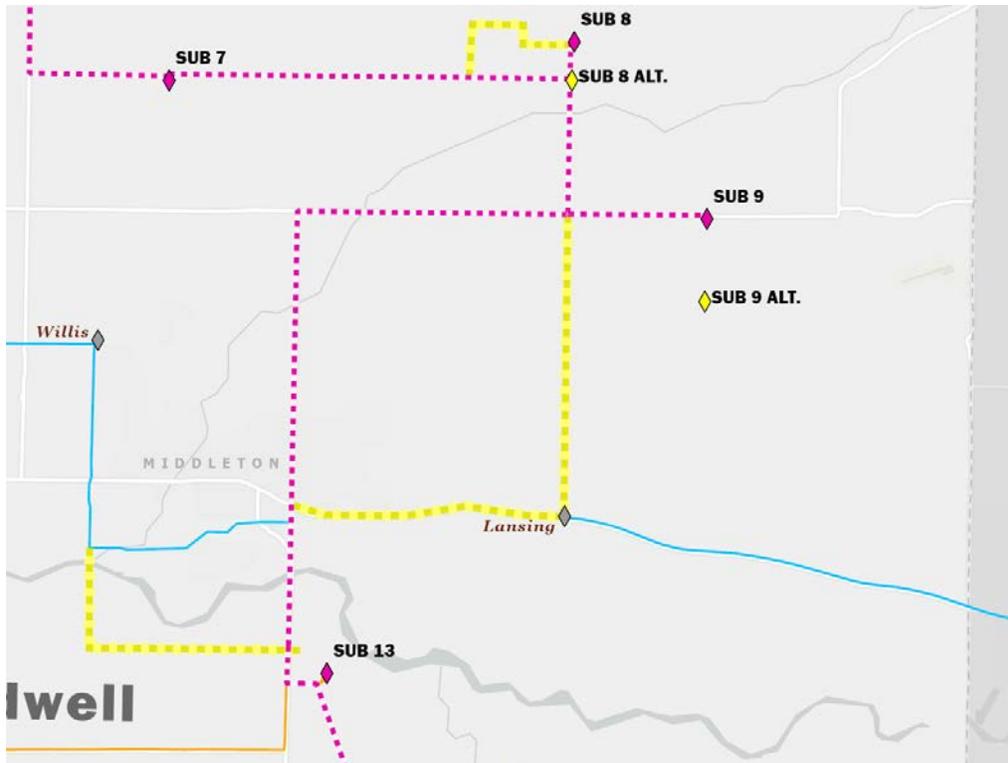




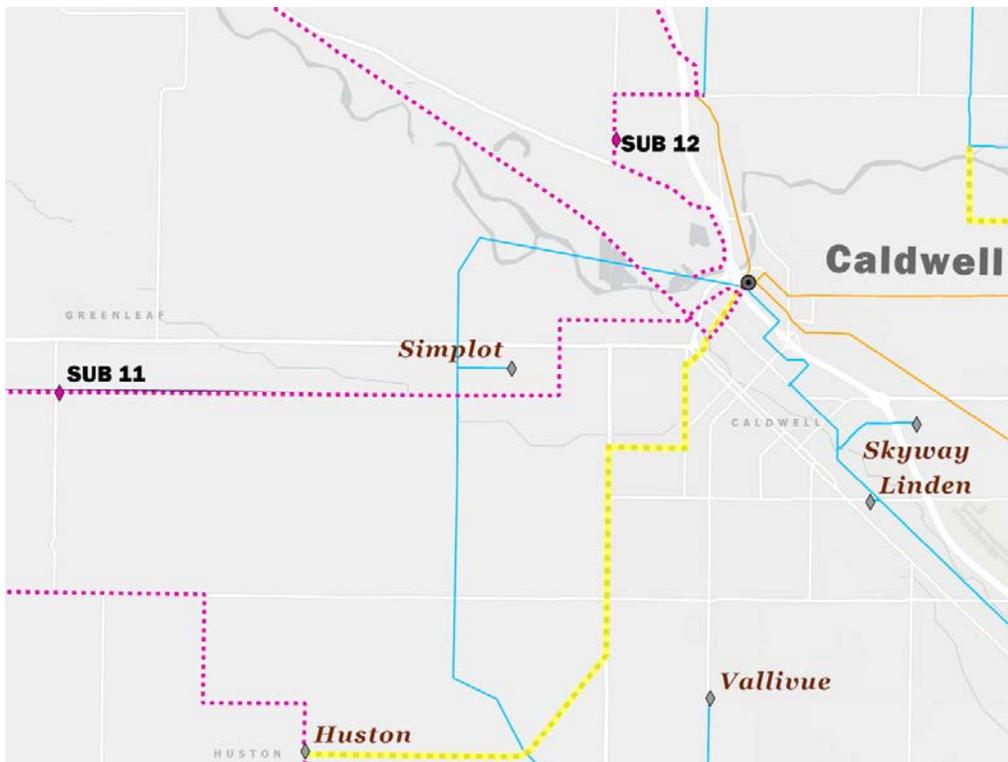
**Figure 48**  
[Sub 7 to Sub 8](#)



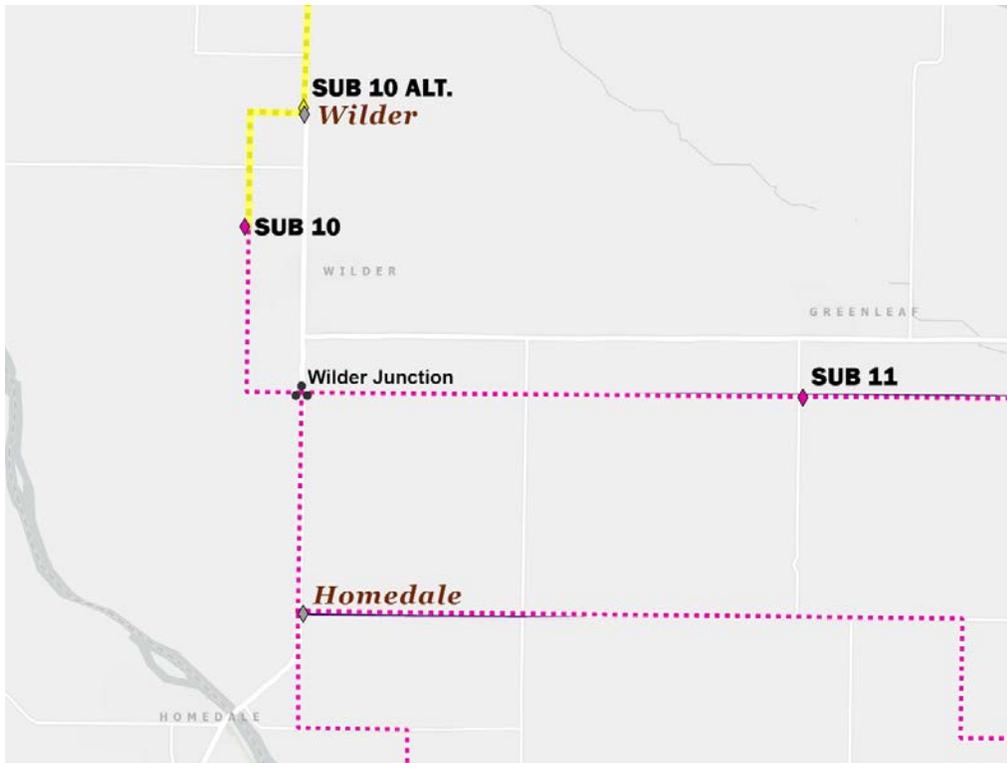
**Figure 49**  
[Sub 8 to Sub 9](#)



**Figure 50**  
[Sub 9 to Sub 13](#)



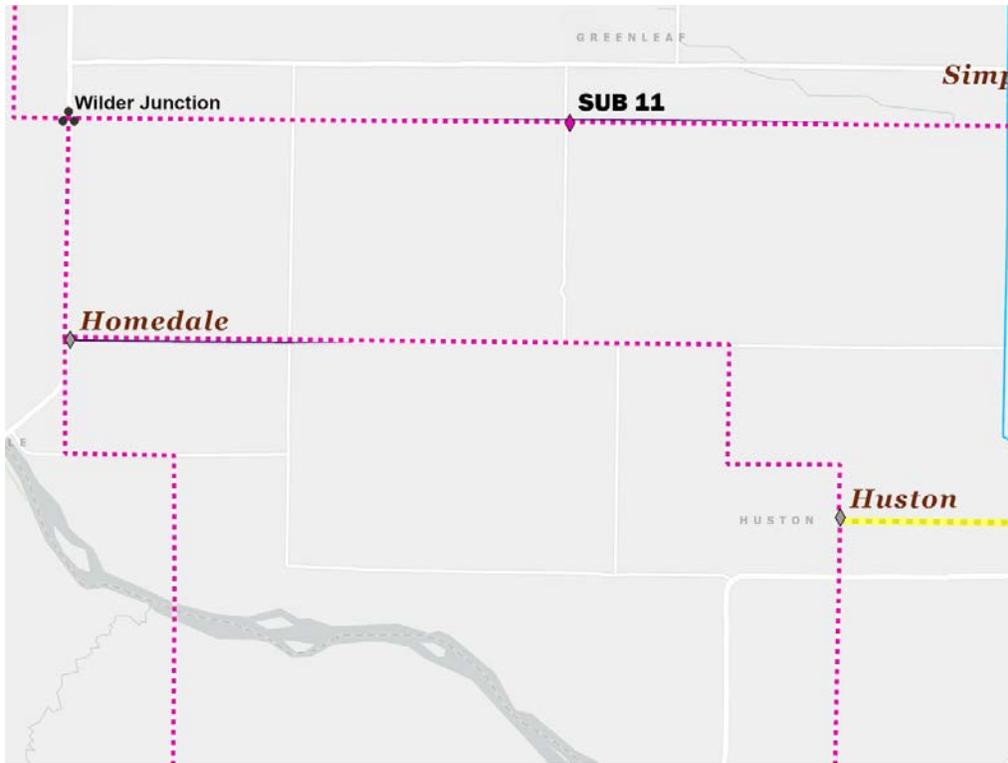
**Figure 51**  
[Caldwell Substation to Sub 11](#)



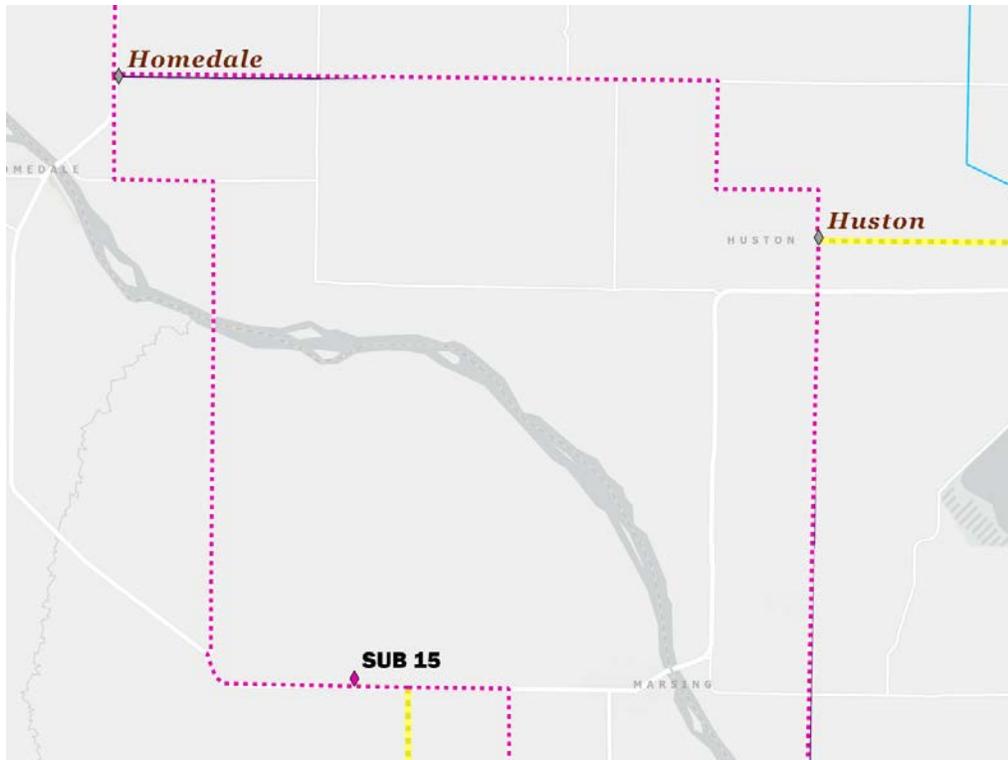
**Figure 52**  
[Sub 11 to Homedale Substation](#)



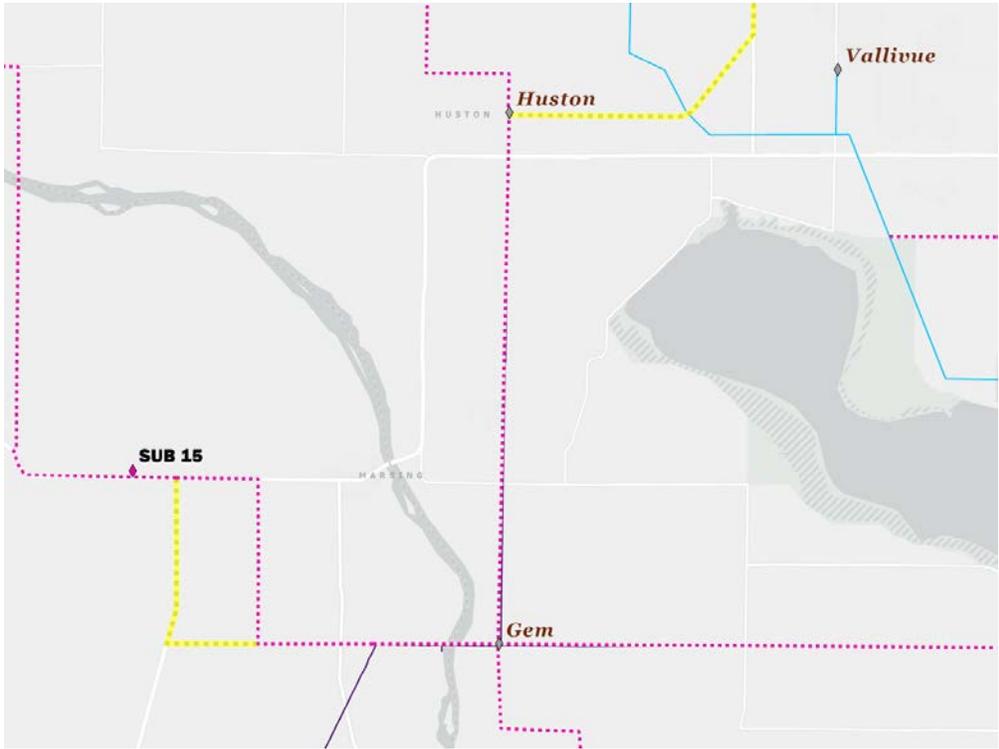
**Figure 53**  
[Sub 10 to Wilder Junction](#)



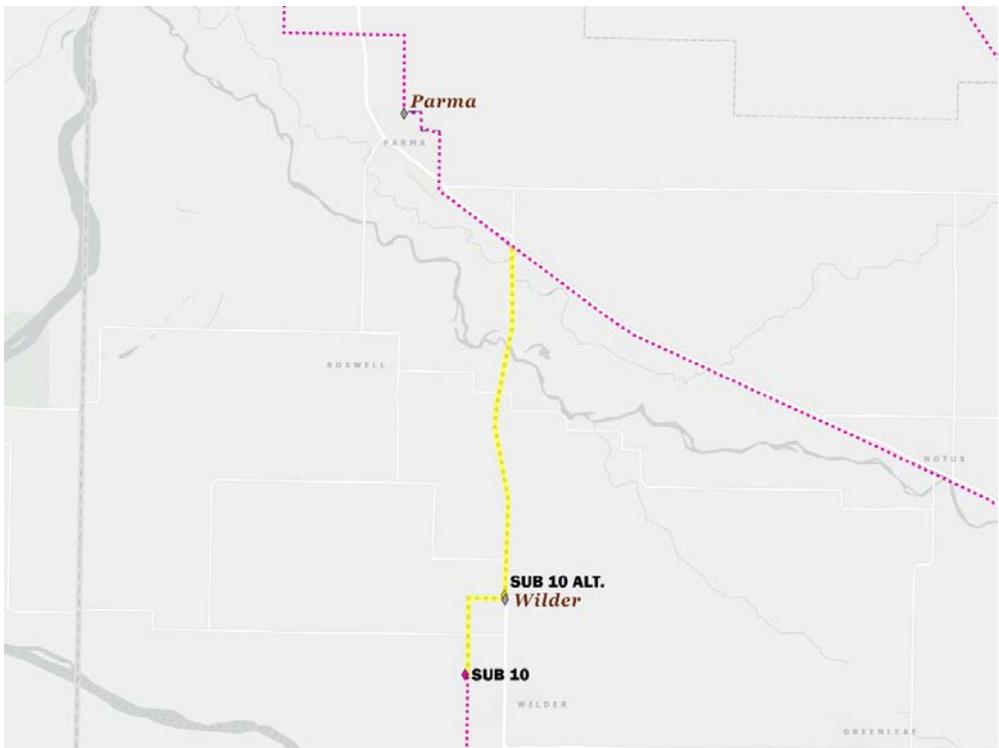
**Figure 54**  
[Homedale Substation to Huston Substation](#)



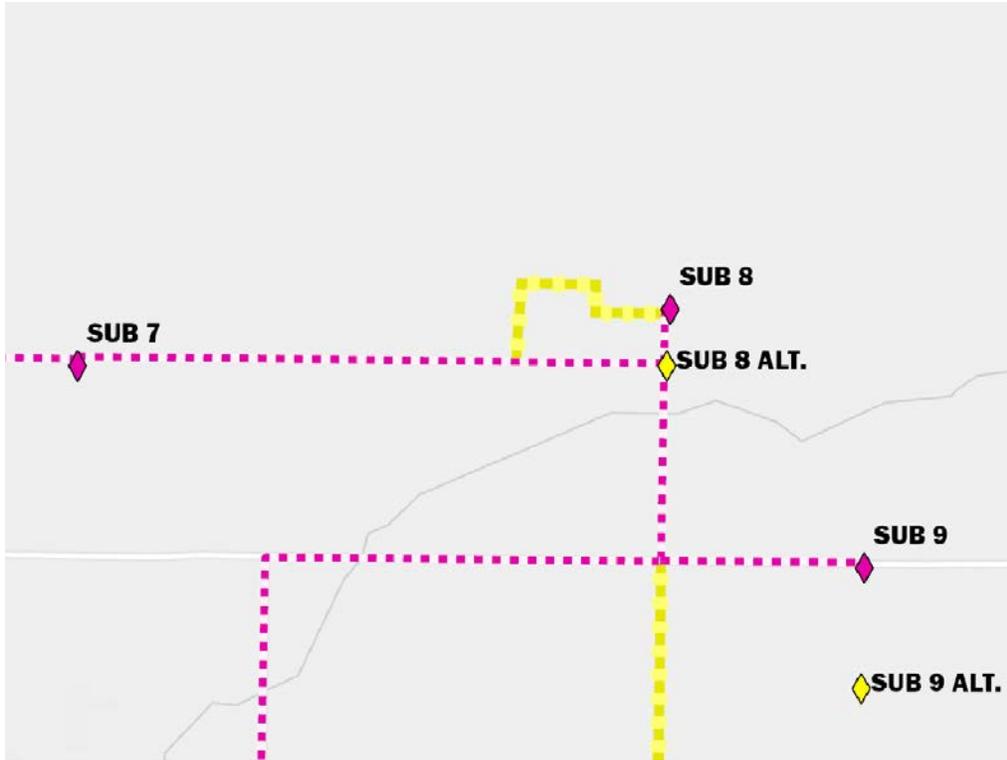
**Figure 55**  
[Homedale Substation to Sub 15](#)



**Figure 56**  
[Huston Substation to Gem Substation](#)



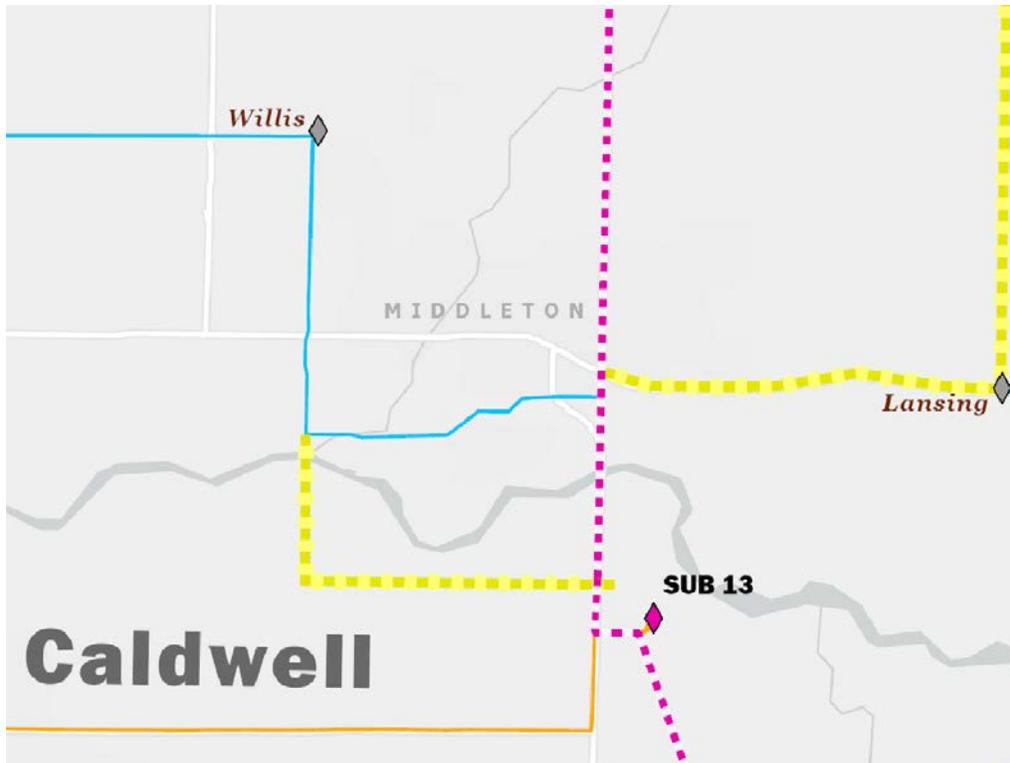
**Figure 57**  
[Sub 10 to Parma Substation](#)



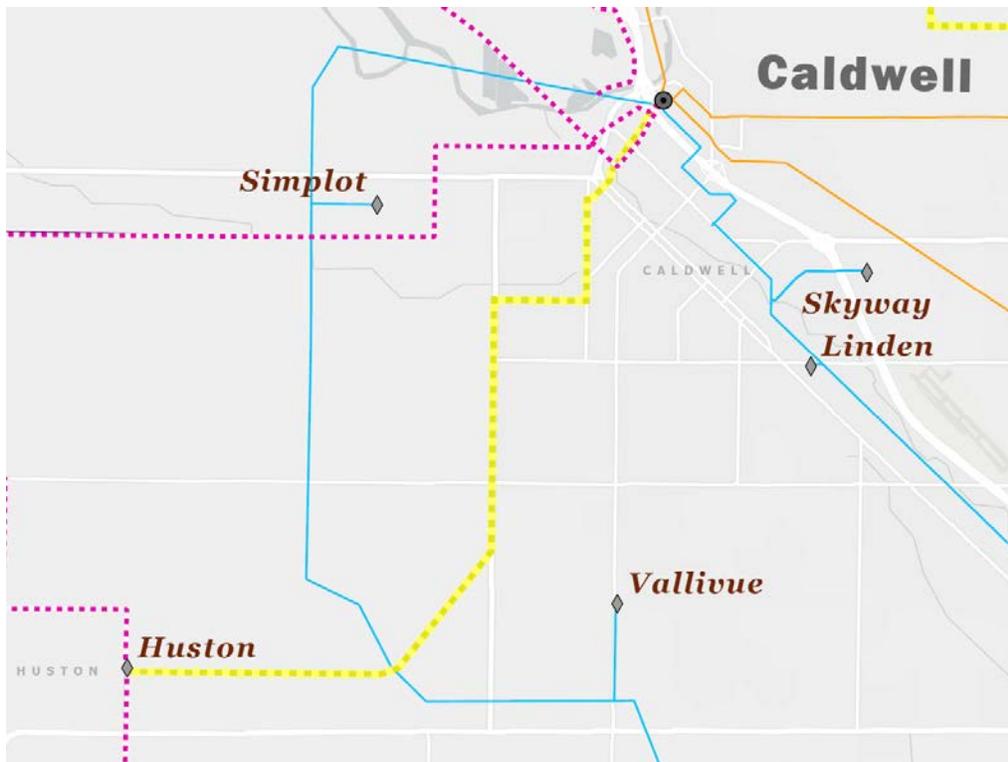
**Figure 58**  
[Sub 7 to Sub 8](#)



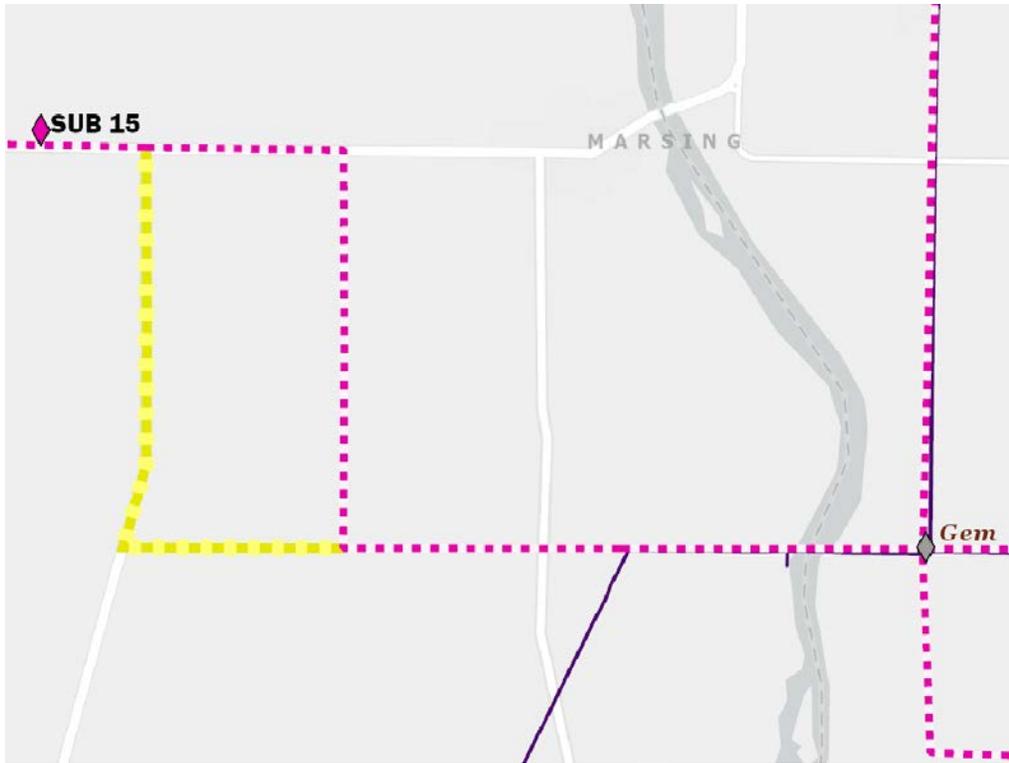
**Figure 59**  
[Sub 9 to Sub 13](#)



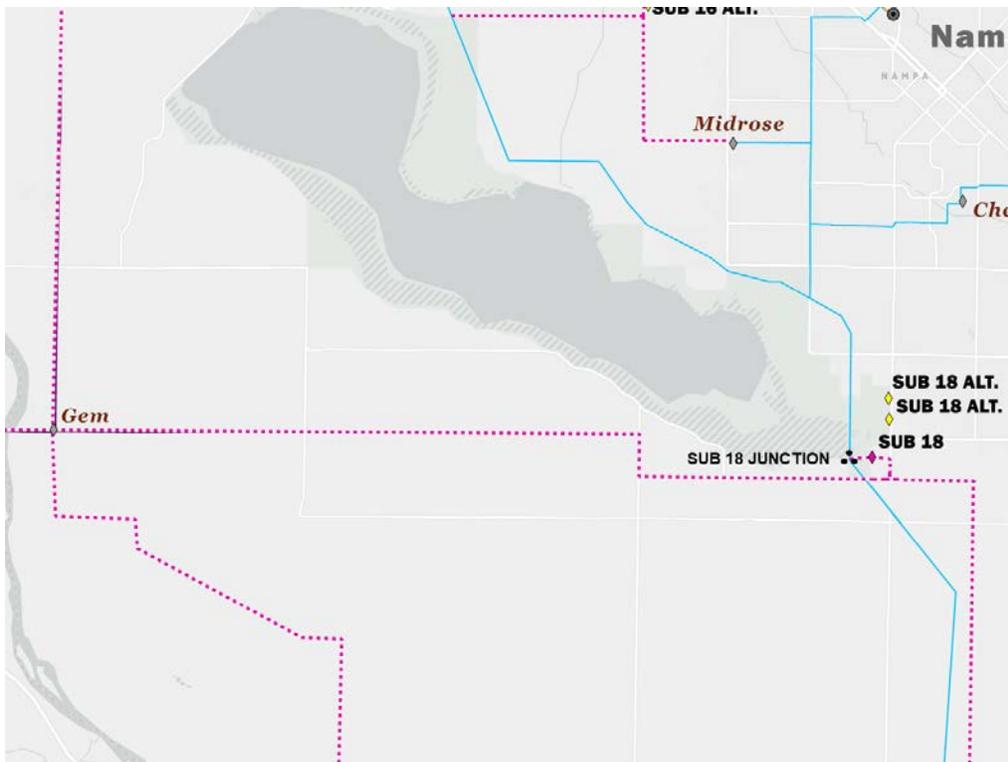
**Figure 60**  
[Willis Substation to Sub 13](#)



**Figure 61**  
[Huston Substation to Caldwell Substation](#)

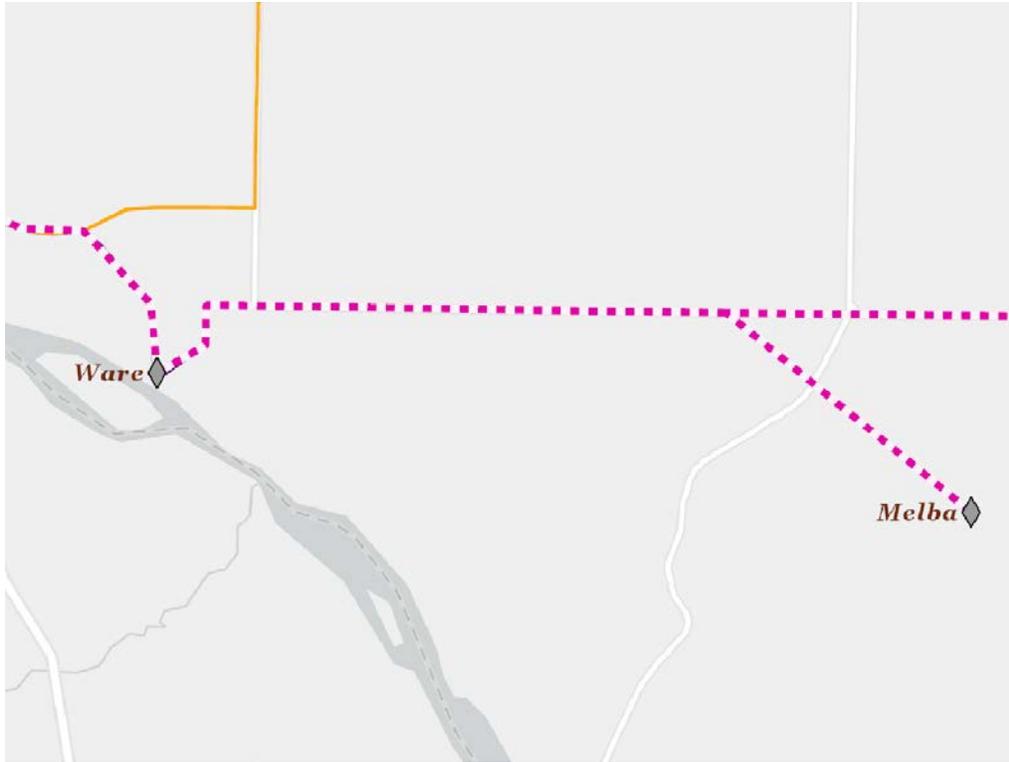


**Figure 622**  
[Sub 15 to Gem Substation](#)

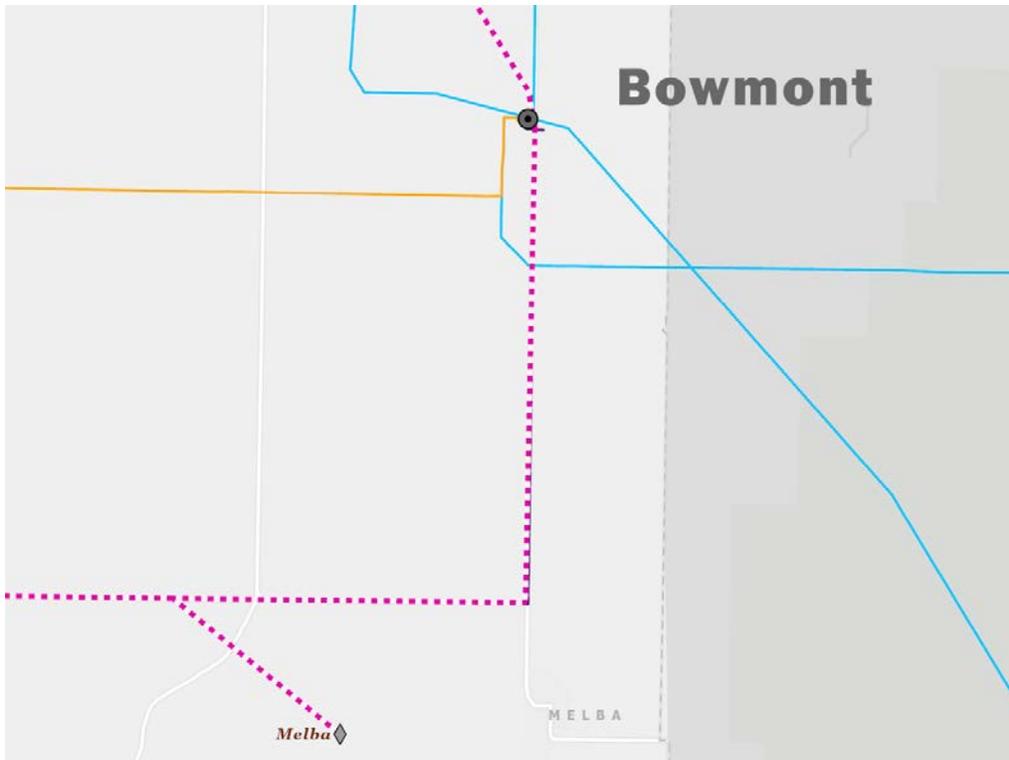


**Figure 63**  
[Gem Substation to Sub 18](#)

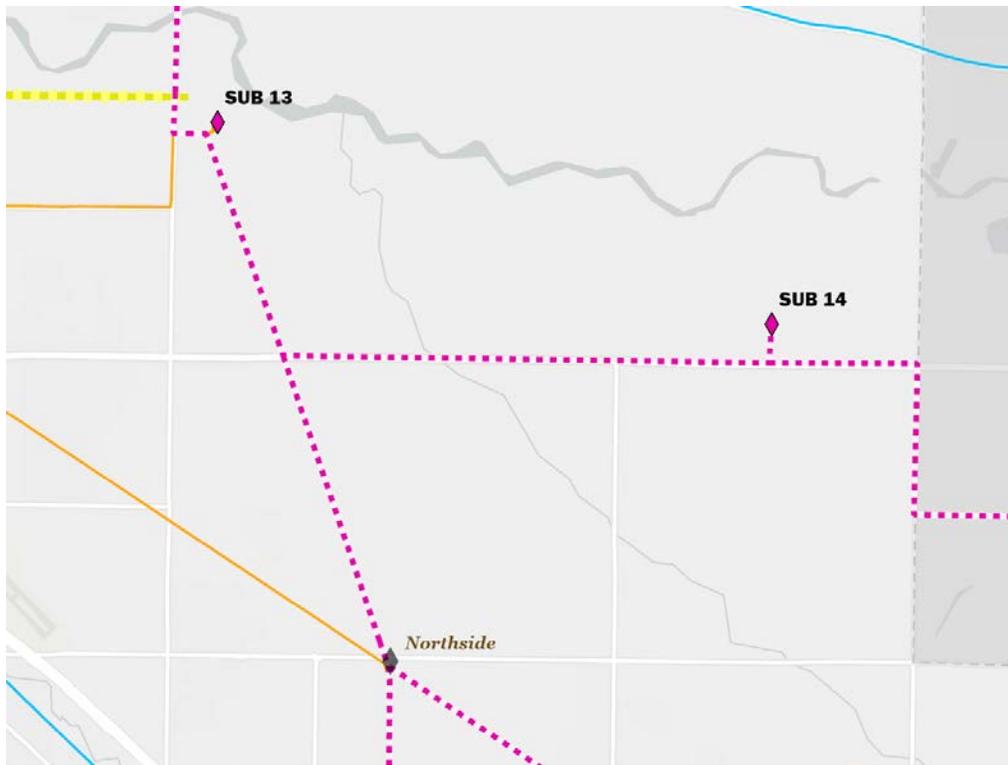




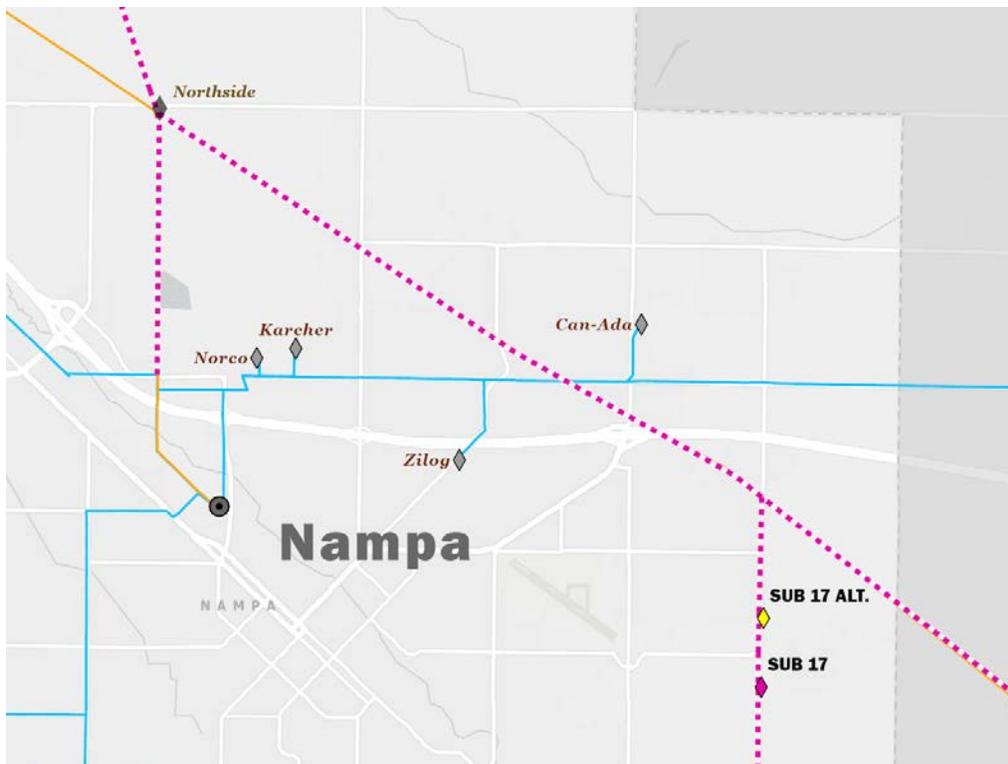
**Figure 66**  
[Ware Substation to Melba Substation](#)



**Figure 67**  
[Melba Substation to Bowmont Substation](#)



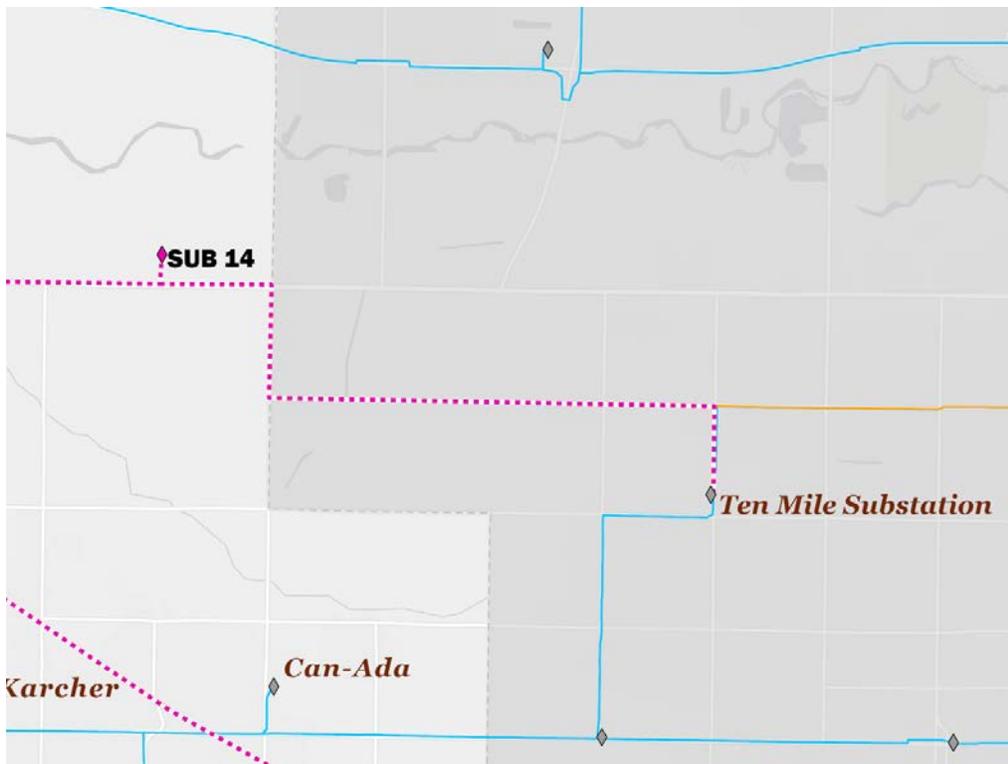
**Figure 68**  
[Sub 13 to Northside Substation](#)



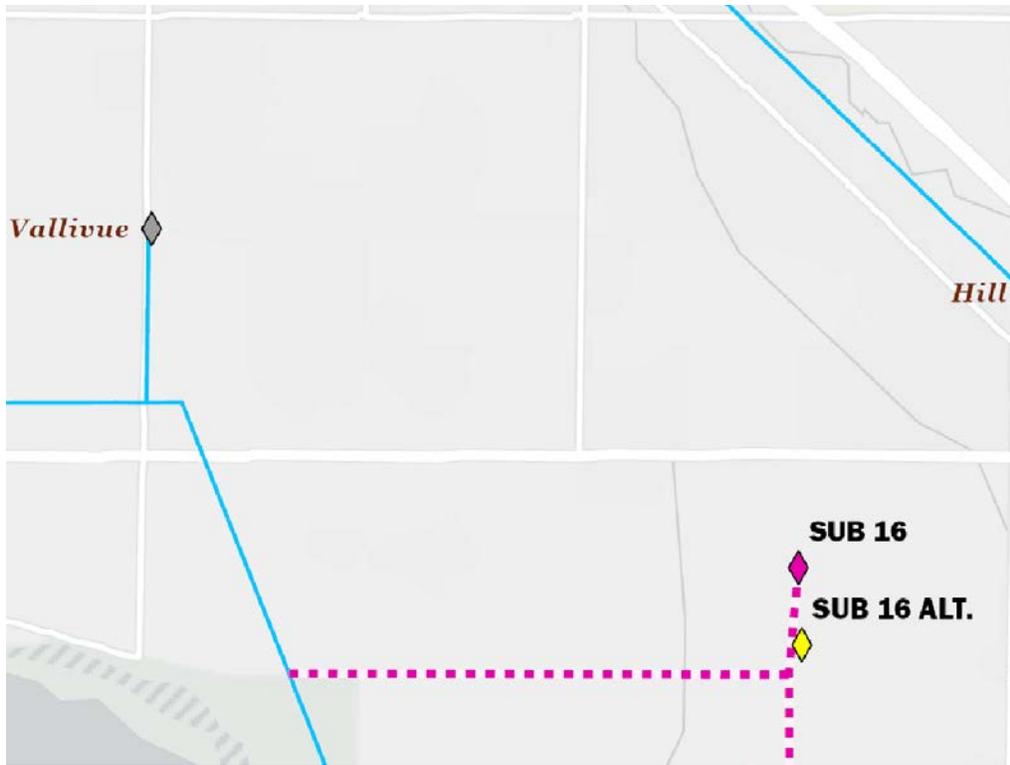
**Figure 69**  
[Northside Substation to Sub 17](#)



**Figure 70**  
[Sub 13 to Sub 14](#)



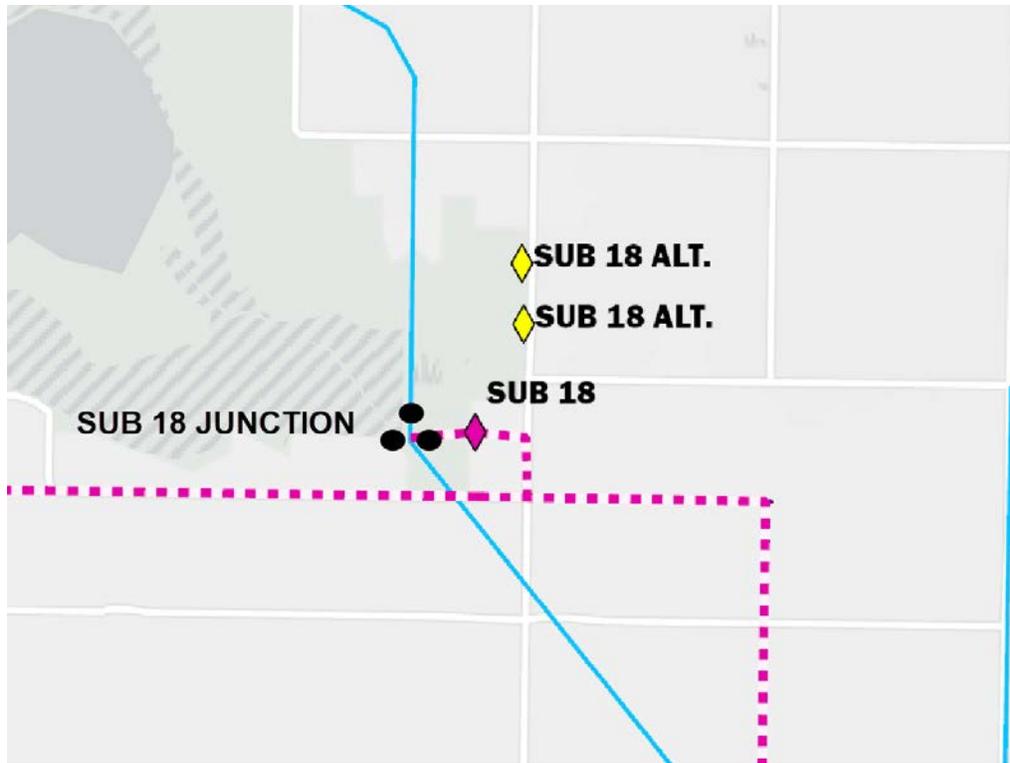
**Figure 71**  
[Sub 14 to Ten Mile Substation](#)



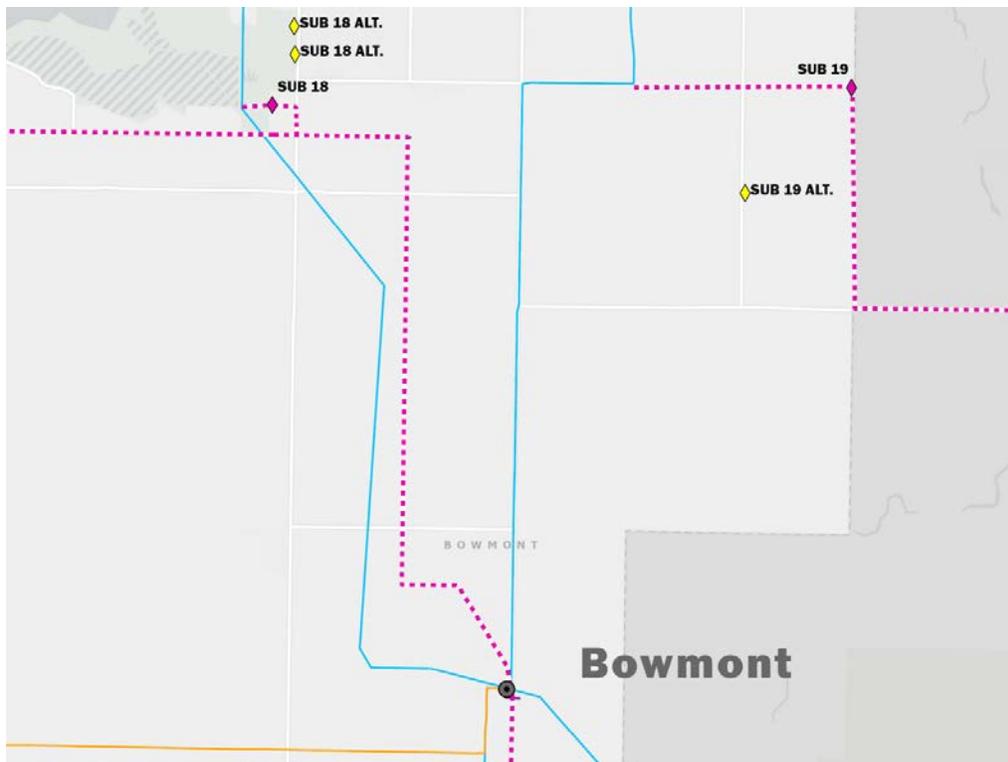
**Figure 72**  
[Vallivue Substation to Sub 16](#)



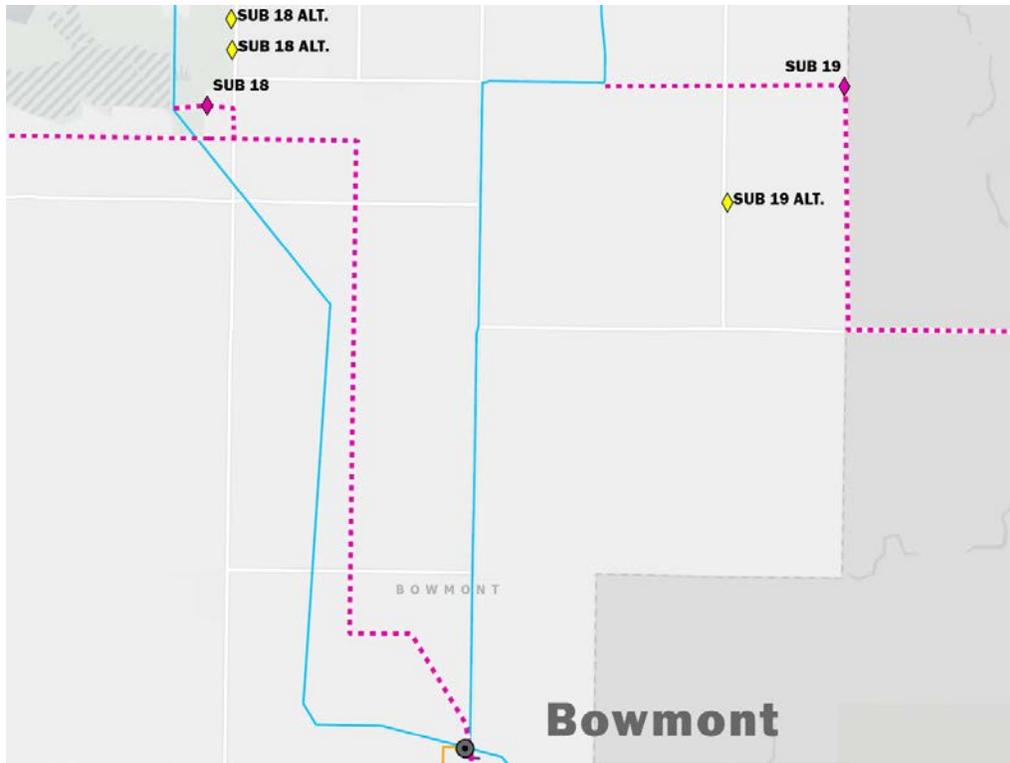
**Figure 73**  
[Sub 16 to Midrose Substation](#)



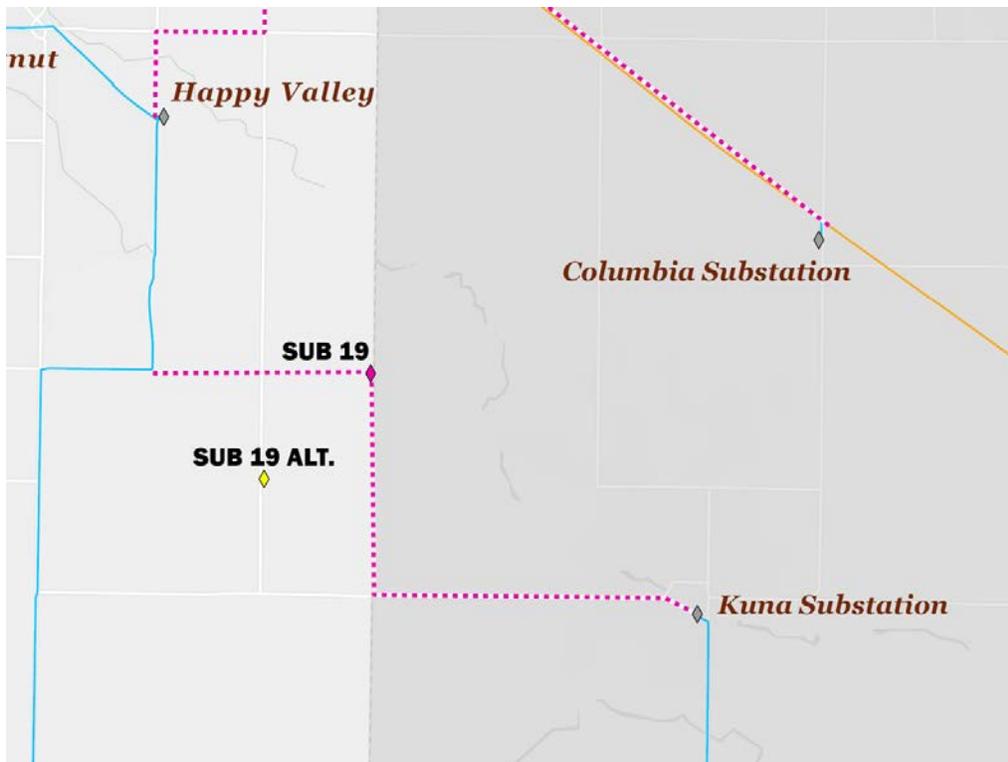
**Figure 74**  
[Sub 18 to Sub 18 Junction](#)



**Figure 75**  
[Sub 18 to Bowmont Substation](#)



**Figure 76**  
[Bowmont to Sub 19](#)



**Figure 77**  
[Sub 19 to Kuna Substation](#)

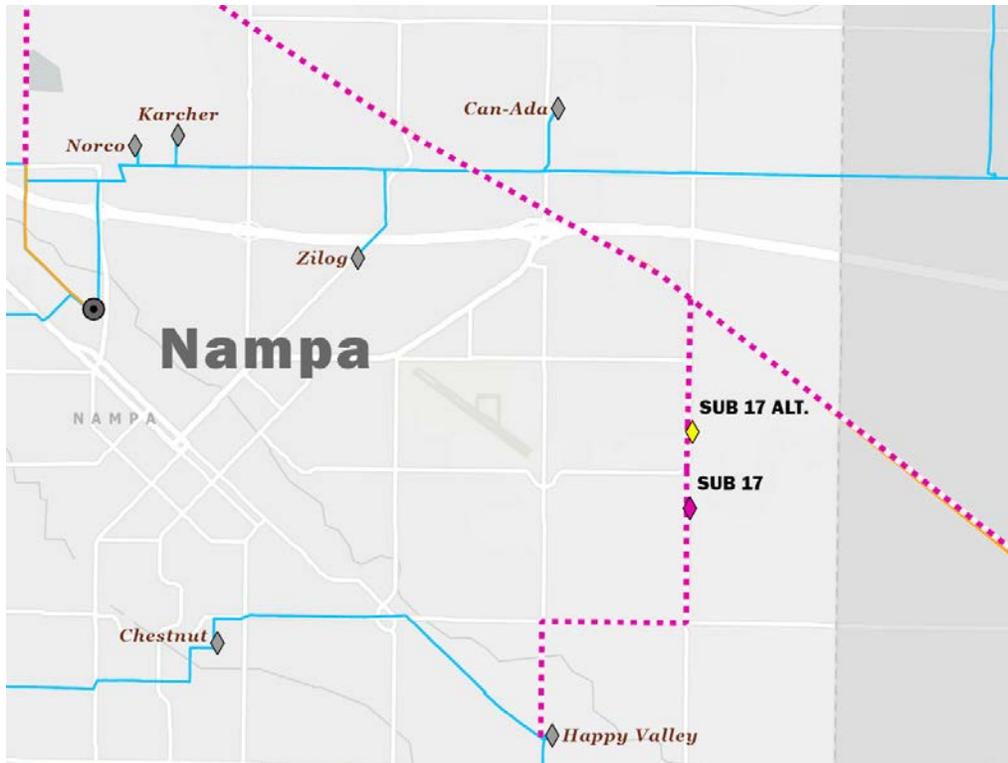


Figure 78  
[Happy Valley to Sub 17](#)

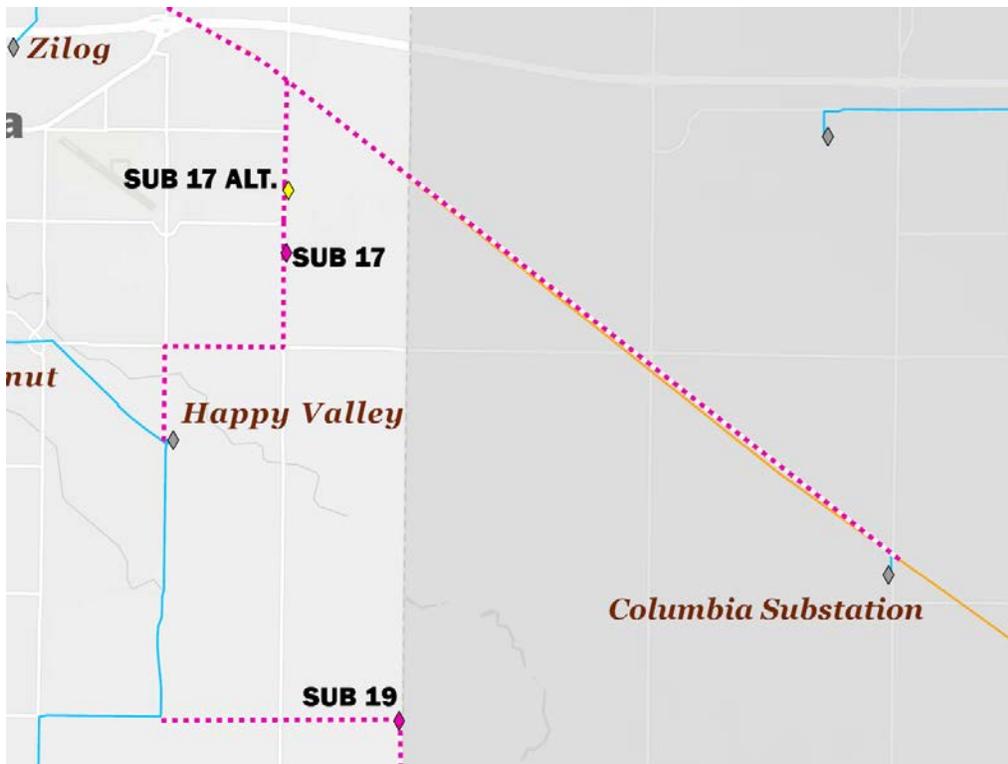
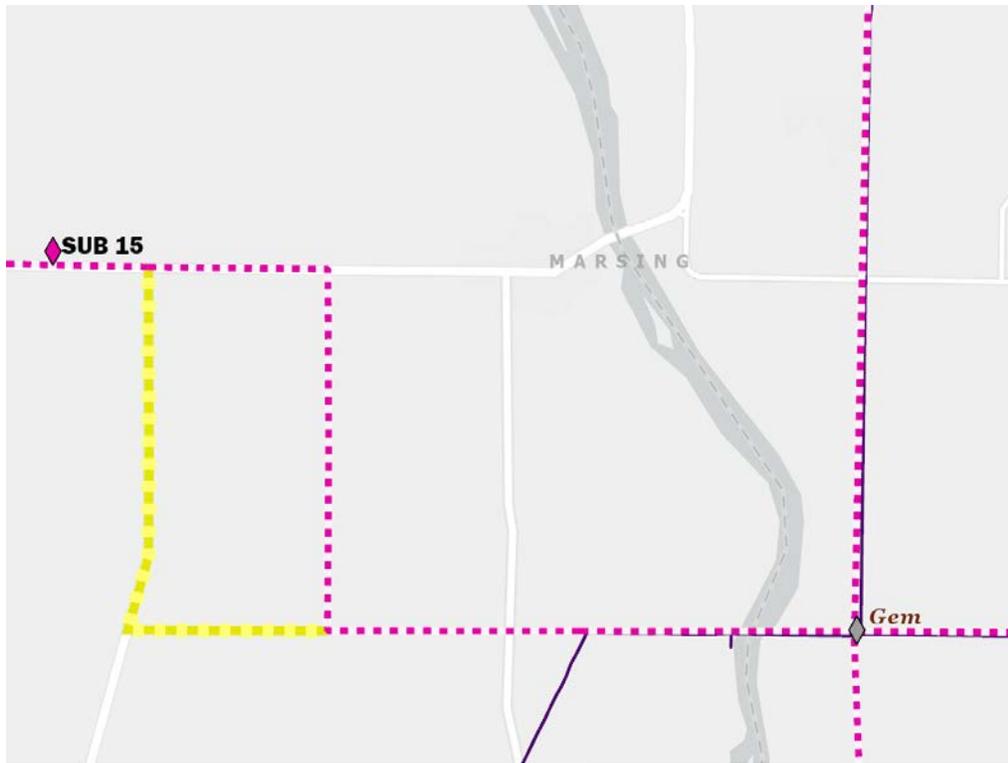


Figure 79  
[Sub 17 to Columbia Substation](#)



**Figure 80**  
[Sub 15 to Gem Substation](#)