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CHAPTER 5 – DETAILED DISCUSSION OF SIGNIFICANT IMPACTS

5.0 INTRODUCTION

In accordance with the Proponent's Environmental Assessment (PEA) Checklist issued by the California Public Utilities Commission (CPUC) on November 24, 2008, this section:

1. Identifies the potentially significant impacts that will result from the construction, operation, or maintenance of the Sierra Pacific Power Company (SPPCo) 625 and 650 Line Upgrade Project (project)

2. Discusses the alternatives that were evaluated in determining the proposed project and the justification for the selection of the preferred alternative

3. Discusses the project's potential to induce growth in the area

5.1 POTENTIALLY SIGNIFICANT IMPACTS AND APPLICANT-PROPOSED MEASURES

Based on the findings in Chapter 4 – Environmental Impact Assessment Summary, the project is not likely to result in significant impacts to any resource areas after the implementation of the applicant-proposed measures (APMs), with the exception of air quality. Air quality in the project area will be temporarily impacted during construction, operation, and maintenance activities. The implementation APMs will reduce many of these air quality impacts to the less-than-significant level; however, some construction-related impacts will still be considered potentially significant because they will exceed thresholds established by the local air quality management district.

SPPCo has identified 96 APMs that it plans to implement during construction and/or operation of the project to reduce or avoid impacts. Chapter 3 – Project Description provides the APMs that have been proposed as part of the project, as well as the justification for each.

5.2 DESCRIPTION OF PROJECT ALTERNATIVES AND IMPACT ANALYSIS

5.2.0 Introduction

Section 15126.6, subdivision (a) of the California Environmental Quality Act (CEQA) Guidelines (dated January 1, 2009) requires an evaluation of a range of reasonable alternatives to the project, or to the location of the project, which would feasibly achieve most of the project objectives, but would avoid or lessen any of the significant impacts of the project. As the lead agency, the CPUC also requires applicants for a Permit to Construct or a Certificate of Public Convenience and Necessity to describe a reasonable range of alternatives within the PEA. The CPUC Checklist states that projects that will result in significant environmental impacts must include a discussion of alternatives "capable of substantially reducing or eliminating any said significant environmental effects, even if the alternative(s) substantially impede the attainment of project objectives, and are more costly."

In accordance with the aforementioned guidelines, this section summarizes and compares the environmental advantages and disadvantages of the project and the alternatives considered.

This alternatives analysis discusses the No Project Alternative, seven system alternatives, and three transmission line route alternatives for the 625 Line. Because the upgrades to the 650 Line, 132 Line, Northstar Tap, and substations involve upgrades to existing facilities in their existing locations, alternatives for these project components were not evaluated. Table 5-1: Alternatives Considered lists each alternative that was considered during the alternatives evaluation process. System alternatives that were clearly not feasible are described in Section 5.2.4, but are not evaluated further in this document. The three transmission line route alternatives evaluated (including the preferred alternative) are described in Section 5.2.6 Transmission Line Alternatives and are shown in Figure 5-1: Transmission Line Alternatives Overview Map and Figure 5-2: Transmission Line Alternatives Detail Map.

5.2.1 Methodology

The CEQA Guidelines do not provide specific direction regarding the methodology of alternatives comparison. Resource areas that are generally given more weight in comparing alternatives are those with long-term impacts, such as visual impacts, permanent loss of habitat, or land-use conflicts. Impacts associated with construction (i.e., temporary or short-term) or those that are easy to mitigate to the less-than-significant level are considered to be less important.

In order to evaluate the alternatives listed in Table 5-1: Alternatives Considered, SPPCo used a multi-tiered approach. In general, the system and transmission line alternatives were analyzed based on their ability to meet the project objectives, engineering issues, feasibility factors, and environmental constraints. SPPCo began with the system alternatives to determine which system option was preferred. After determining the appropriate system solution to meet the project objectives, SPPCo initiated discussions with the United States (U.S.) Department of Agriculture, Forest Service (USFS) to introduce the project and obtain agency feedback to incorporate into the environmental impact analysis. During these discussions, the USFS expressed concern with SPPCo's proposal to rebuild the 625 Line within its existing right-of-way (ROW), and requested that SPPCo evaluate new route alternatives for the 625 Line. SPPCo selected two additional transmission line route options for the 625 Line for further evaluation. This analysis resulted in the selection of the preferred transmission line route for the 625 Line. Analyses of the system and transmission line options are provided in Sections 5.2.4 and 5.2.5, respectively.

5.2.2 Project Objectives

The project is being proposed to meet the following five primary objectives identified by SPPCo and the CPUC:

1. Provide reliable capacity during single-contingency outages
2. Provide additional normal capacity for projected future loads in the north Lake Tahoe area
3. Reduce dependence on the Kings Beach Diesel Generation Station

Table 5-1: Alternatives Considered

Type of Alternative	Alternative	Evaluated or Eliminated
No Action Alternatives	No Project Alternative	Evaluated
System Alternatives	Rebuild the 650 Line at 120 kV with new, larger conductor and operate the line at 60 kV, utilizing the increased current capacity of the larger conductor	Eliminated
	Operate the 629 Line at 120 kV immediately after reconductoring and reinsulating, instead of using the increased current capacity of the larger conductor and continued operation at 60 kV	Eliminated
	Reconductor the 609 Line with larger conductor from Truckee to Squaw Valley	Eliminated
	Complete a closed 120 kV loop through to the Incline Substation from Kings Beach	Eliminated
	Provide distribution backup	Eliminated
	Utilize additional diesel generation	Eliminated
	Rebuild the 650 Line, the 629 Line, and the 625 Line to complete the 120-kV loop	Evaluated
Transmission Line Route Alternatives	Rebuild the 625 Line in place	Evaluated
	Realign the 625 Line in a new ROW	Evaluated
	Realign a portion of the 625 Line and double-circuit the remainder of it with the 650 Line	Evaluated

4. Reduce fire hazards and outage durations associated with old wooden poles and encroaching vegetation
5. Provide reliable access to the 625 Line for operation and maintenance activities

The project components, their locations, the project's preliminary configuration, and the existing and proposed system configuration, are presented in Chapter 3 – Project Description. Each of the project objectives are more thoroughly described in Chapter 2 – Project Purpose and Need.

5.2.3 No Project Alternative

The CEQA Guidelines require an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the project with the impacts of not approving the project (CEQA Guidelines, Section 15126.6(e)). Under the No Project Alternative, upgrades of the 625 and 650 lines would not take place and the 625 Line would remain in its existing alignment. The upgrades and modifications to the substations and switching stations, Northstar Tap, and 132 Line would not be conducted, and the Brockway Substation would not be decommissioned.

System Impacts

The No Project Alternative would not meet any of the project's objectives. Under the No Project Alternative, the existing north Lake Tahoe transmission system would not be capable of supporting the current capacity needs of the north Lake Tahoe area and would not support any additional capacity placed on the system as a result of projected growth in the region. Without the project, the final two legs of the north Lake Tahoe transmission system would be limited to operation at 60 kilovolt (kV), which would constrain the system's capacity to existing levels of service and require dependence on the Kings Beach Diesel Generation Station as the source for single-contingency reliability.

In its existing condition, the system is not capable of maintaining reliable service in the event of an outage on any one of the four legs of the loop. It is also barely capable of handling the peak loads placed on the system during winter months. With any additional service needs placed on the system by the growing Northstar area and other area ski resorts, the potential for brown-outs and black-outs would increase substantially. In addition, the transmission structures in their current state are vulnerable to the threat of fire because they are wood, and due to their age, are susceptible to continued damage from high winds and snow loading. These factors greatly compromise service reliability in the area and increase the need for (and environmental impacts from) frequent vegetation management, maintenance, and repair activities on the system. Lastly, as mentioned previously, the Kings Beach Diesel Generation Station would have to be used as a backup in the case of an outage on one of the four legs of the system. With the operating hour restrictions placed on this facility by its air operating permit, SPPCo prefers to keep this station as a backup for multi-contingency events (multiple outages on the system). The No Project Alternative would result in frequent service interruptions in the north Lake Tahoe area due to insufficient electrical system reliability and continued damage from environmental sources, such as fire, wind, and snow.

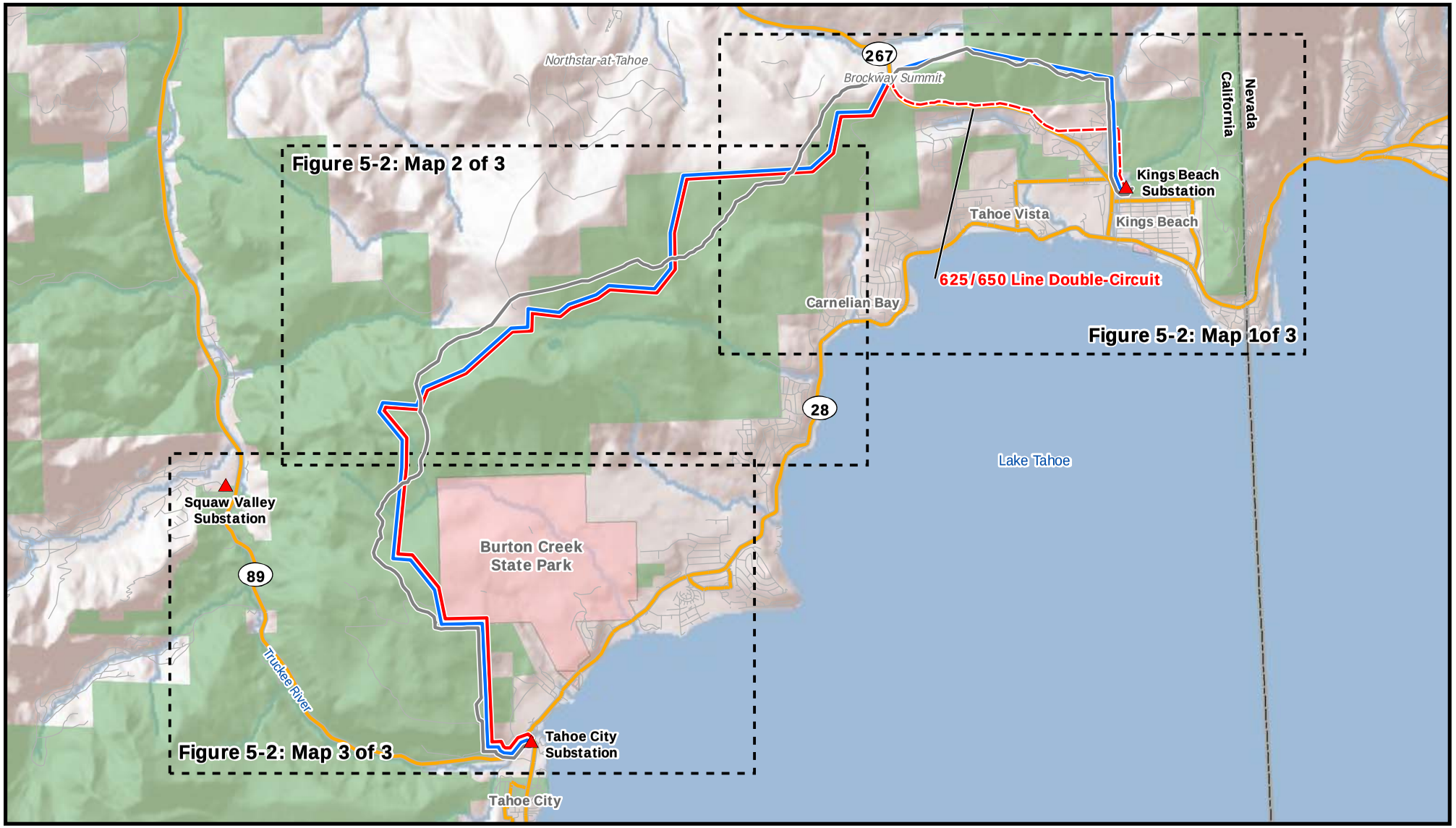

Figure 5-1: Transmission Line Alternatives Overview Map

625 and 650 Line Upgrade Project

- Substation
- Rebuild the 625 Line within its Existing Right-of-Way
- Remove the Existing 625 Line and Rebuild the 625 Line in a New Right-of-Way
- Realign and Double-Circuit the 625 Line with the 650 Line

Sierra Pacific™

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Figure 5-2: Transmission Line Alternatives Detail Map 1 of 3

625 and 625 and 650 Line Upgrade Project

- Rebuild the 625 Line within its Existing Right-of-Way
- Remove the Existing 625 Line and Rebuild the 625 Line in a New Right-of-Way
- Realign and Double-Circuit the 625 Line with the 650 Line
- Spotted Owl Protected Activity Center (PAC)
- Spotted Owl Home Range Core Area (HRCA)
- Northern Goshawk PAC
- Loyalton-Truckee Deer Herd Known Critical Fawning Area
- CNDDB Occurrence
- Local Park
- State Park
- Major Drainage
- Scenic Corridor
- Substation/Switching Station
- Major Road
- Local Road

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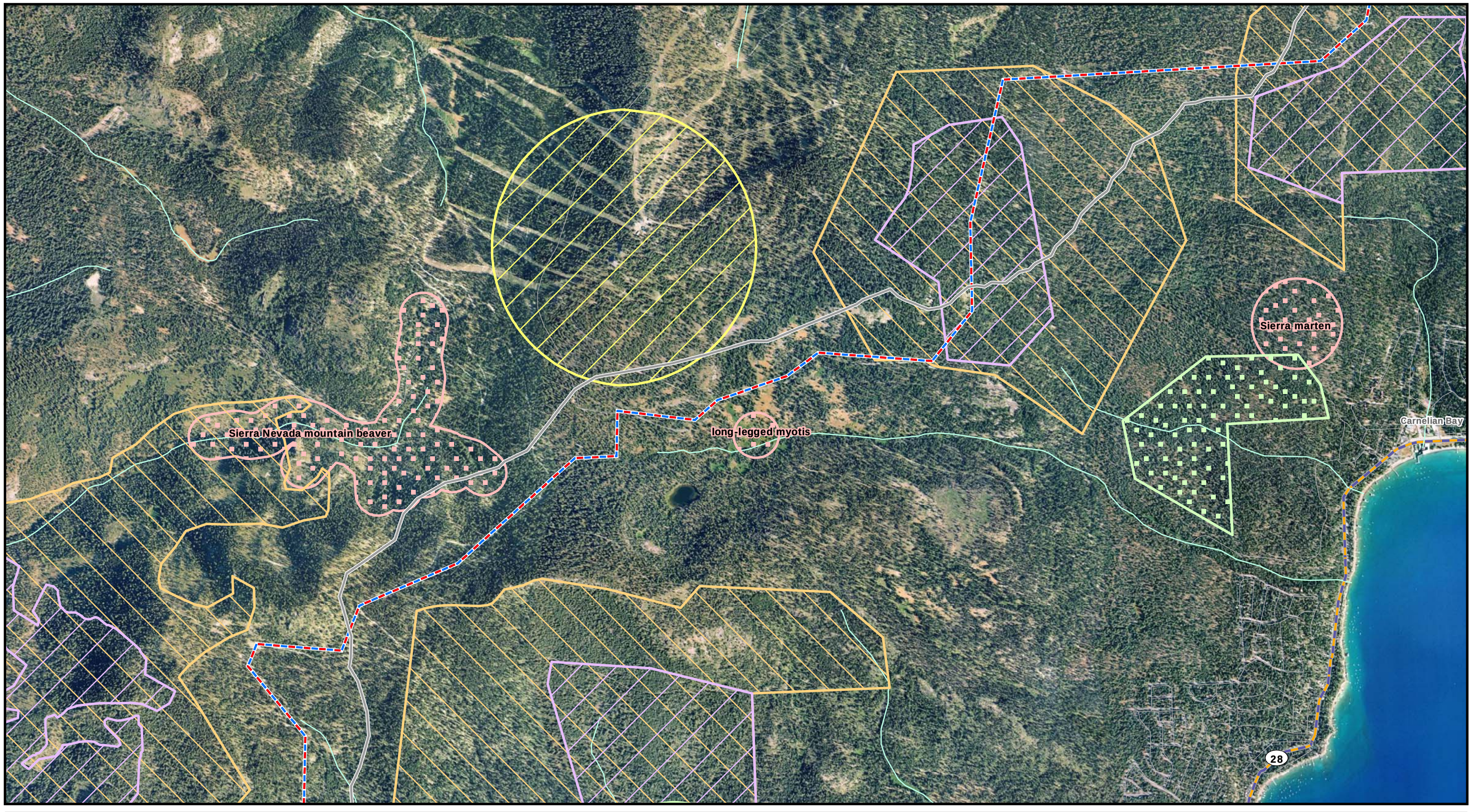

Figure 5-2: Transmission Line Alternatives Detail Map 2 of 3

625 and 650 Line Upgrade Project

- Rebuild the 625 Line within its Existing Right-of-Way
- Remove the Existing 625 Line and Rebuild the 625 Line in a New Right-of-Way
- Realign and Double-Circuit the 625 Line with the 650 Line
- Spotted Owl Protected Activity Center (PAC)
- Spotted Owl Home Range Core Area (HRCA)
- Northern Goshawk PAC
- Loyalton-Truckee Deer Herd Known Critical Fawning Area
- CNDDB Occurrence
- Local Park
- State Park
- Major Drainage
- Scenic Corridor
- Substation/Switching Station
- Major Road
- Local Road

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Figure 5-2: Transmission Line Alternatives Detail Map 3 of 3

625 and 650 Line Upgrade Project

- Rebuild the 625 Line within its Existing Right-of-Way
- Remove the Existing 625 Line and Rebuild the 625 Line in a New Right-of-Way
- Realign and Double-Circuit the 625 Line with the 650 Line
- Spotted Owl Protected Activity Center (PAC)
- Spotted Owl Home Range Core Area (HRCA)
- Northern Goshawk PAC
- Loyalton-Truckee Deer Herd Known Critical Fawning Area
- CNDDB Occurrence
- Local Park
- State Park
- Major Drainage
- Scenic Corridor
- Substation/Switching Station
- Major Road
- Local Road

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Environmental Impacts

While there would be no construction-related resource impacts associated with the No Project Alternative, there would continue to be environmental impacts as a result of the operation and maintenance of the transmission system in its current state. The existing lines are constructed with wood poles and are, therefore, vulnerable to the threat of fire, snow loading, high winds, and downed trees. As a result, SPPCo must perform maintenance on these lines on a more frequent basis due to damage from downed trees, snow loading, and high winds. These activities require access to the transmission lines with vehicles, and often heavy equipment. While the majority of the system components are readily accessible from public roads, the 625 Line, in particular, winds its way through forested areas and is not easily accessible from existing area roadways. This requires SPPCo to establish access to the transmission line to conduct repairs. Depending on the location of the repair or vegetation management site, access may be required through sensitive areas, such as stream channels, riparian areas, wet meadows, and other habitat for sensitive species. While SPPCo has the ability to use helicopters to conduct standard maintenance procedures to avoid impacts to sensitive areas, helicopters are not always a feasible alternative to ground crews, particularly during inclement weather. Thus, the No Project Alternative has environmental consequences associated with the operation of the existing lines.

The No Project Alternative also involves the continued use of the Kings Beach Diesel Generation Station as the source for the system's single-contingency reliability. While this facility maintains an air operating permit with limited operating hours, the pollutant emissions in the Lake Tahoe Basin would be reduced if this facility was only used for less frequent, multi-contingency events.

When compared to the No Project Alternative, the project would result in more construction-related environmental impacts; however, the continual environmental impacts associated with operation and maintenance of the project and system as a whole would be greatly reduced. Construction impacts are temporary, lasting only the duration of construction, and can be reduced through the implementation of best management practices, APMs, permit requirements, and restoration. The continual, long-term environmental impacts associated with the No Project Alternative dismissed this option as a viable alternative. As a result, the No Project Alternative was eliminated from further review.

5.2.4 System Alternatives

SPPCo prepared the North Tahoe Capacity Plan to document the results of a study to determine long-term electric capacity solutions for the north Lake Tahoe area. This report provides a review of the various system alternatives considered to relieve the current capacity and reliability issues of the system and provides a recommended, or preferred, system solution. Among the factors that were used to eliminate alternatives from detailed consideration were failure to meet most of the project objectives, infeasibility, or inability to avoid significant environmental impacts. A description of the system alternatives considered in this report, but eliminated from further review, follows.

Eliminated System Alternatives

The alternatives that were dismissed include:

1) Rebuilding the 650 Line at 120 kV with new, larger conductor, but operating the line at 60 kV, utilizing the increased current capacity of the larger conductor. The line would then be operated at 120 kV when more incremental capacity was needed. However, the larger conductor would not provide adequate reliable capacity system-wide. This option would only provide a reliable capacity of 85 megavolt-amperes (MVA), which is less than the January 2008 non-coincident peak of 92.5 MVA. Because the option would neither provide adequate reliable capacity to meet current needs nor provide adequate capacity to accommodate projected future growth, it was eliminated from further review.

2) Operating the 629 Line at 120 kV immediately after reconductoring and reinsulating for 120 kV, instead of using the increased current capacity of the larger conductor and continued operation at 60 kV. Similar to Option 1, this option would only provide a reliable capacity of 85 MVA, which is not enough to meet current peak electrical needs or to accommodate future planned growth in the area. In addition, the benefits of this option did not justify the cost of the additional 120-kV facilities required at the Tahoe City and Squaw Valley substations. As a result, this option was eliminated from further review.

3) Reconductoring the 609 Line with larger conductor from Truckee to Squaw Valley. This option was not chosen because of the unacceptable reliability of the circuit route. This line has experienced extended outages in the past due to landslides and weather, and is unreliable. Also, reconductoring the 609 Line would not provide a strong, reliable source on the eastern side of the north Lake Tahoe loop, which is greatly needed to increase the reliability of the overall system and provide ready capacity for the growing Northstar area. As a result, this option was eliminated from further review.

4) Completing a closed 120-kV loop to the Incline Substation from Kings Beach. This 120-kV loop would include the 650 Line rebuild. Along with increasing the available capacity on the eastern side of the north Lake Tahoe loop, this option would provide a solution for the reliability problems at Incline. However, this option would have necessitated costly modifications to the California and North Truckee substations involving the relocation of the California Substation phase shifter to the Pacific Gas and Electric Company (PG&E) side of the North Truckee Substation. Additionally, the 607 Line would have to be phase shifted. A phase shifter is a transformer-like devise that regulates power flow by adjusting the angle at which the power is transmitted. Presently, power comes into the North Truckee Switching Station and the Truckee Substation by the 101, 133, and 607 lines which are interconnected with PG&E's lines. The power flows through the north Lake Tahoe loop at the same angle as the PG&E system. The Incline Substation receives its power from the Brunswick Substation where the power flows at the SPPCo power flow angle. In order to get the power to flow in a new Incline to Kings Beach loop, a phase shifter would have to be installed on the PG&E side of the North Truckee Switching Station and the Truckee Substation so that power flow angle is compatible with the flow angle on the SPPCo system.

The costs for adding or relocating a phase shifter, which can approach several million dollars, immediately disqualified this as a viable alternative. Furthermore, the proposal to build a 120-kV overhead transmission line from Kings Beach to the Incline Substation would have met with opposition from many sides, namely the Tahoe Regional Planning Agency (TRPA) and organized residents, thus making an overhead line very challenging to permit.

In addition, the cost for installing a new 120-kV transmission line underground would be at least 10 times more expensive than an overhead line. As a result, this option was eliminated from further review.

5) Utilizing distribution backup for single-contingency transmission outages on the north Lake Tahoe loop. A larger (12 MVA) transformer was modeled at the Truckee Substation along with a new 397.5 all aluminum (AA)-feeder to the Northstar-at-Tahoe Resort. The system impedance of this configuration was such that a maximum of 330 horsepower (hp) could be started at the resort, assuming a 65 percent starter tap. Northstar-at-Tahoe has several motors rated at 600 hp or more. With the larger transformer that was installed at the Northstar Substation in 1992, the maximum start capability is 1,000 hp (65 percent tap). This alternative helps to pick up the load at the Northstar Substation, relieving the 650 Line in the event of a contingency, however it does not relieve enough load so that power can be transferred around the loop in the event that a single leg fails. As a result, using the distribution system to provide backup for the loss of transmission system components on the north Lake Tahoe loop is not an acceptable option and was eliminated from further review.

6) Utilizing additional diesel generation to provide reliable capacity for transmission outages. Using the recent replacement of the generators at the Kings Beach Diesel Generation Station as a reference, this alternative would cost approximately $1.5 million per megawatt (MW). The costs to construct a comparable facility capable of generating 12 MW with suitable operational hours would be approximately $18 million, excluding operational costs. This is assuming a Selective Catalytic Reduction system for nitrogen oxides would be incorporated in the facility's design. However, cost is not the only factor in evaluating additional diesel generation in the Tahoe area. If the diesel generators were to be located within the Lake Tahoe Basin, very rigorous review by several agencies would be required, with the outcome of the permitting process questionable due to the sensitive nature of the area. There would also be substantial costs associated with data collection for air quality studies, modeling, and environmental impact assessments. Although the diesel generators would be Tier II compliant, if the units were located outside of the Lake Tahoe Basin at a load substation, such as the Northstar Substation, skiing and recreational opportunities in the Sierra could be adversely affected due to increases in air pollution. Noise pollution could also be an issue, especially for residents in the area; however, noise impacts could be reduced with a suitably large enough parcel and noise attenuation measures, such as unit enclosures. Fuel handling and storage would also be a concern. All of these issues and challenges make diesel generation an undesirable option to improve the reliable capacity issue in the north Lake Tahoe area. Further, diesel generation does not satisfactorily address growth-only contingencies. As a result, this option was eliminated from further review.

Preferred System Alternative

After consideration of the above alternatives, The Lake Tahoe Capacity Plan concluded that the recommended option to provide reliable capacity (i.e., adequate single-contingency reliability) to meet the projected load growth in the north Lake Tahoe area is a three-part project, including:

1. Rebuilding the remaining 9.6-mile-long portion of the 650 Line to operate at 120 kV using 397.5 AA conductor. Installing a 120-kV terminal at the North Truckee Substation. Installing a 120-kV terminal and a 120/60-kV transformer at the Kings Beach Substation. Installing two 120-kV terminals and a line fold at the Northstar Substation and replacing the transformer with a new 120/14.4-kV unit.

2. Rebuilding the remaining 5.3-mile-long portion of the 629 Line using 397.5 AA conductor and 120-kV insulation. Operating it at 60 kV until the 120-kV loop has been completed.

3. Completing the 120-kV loop by rebuilding the 15.4-mile-long 625 Line at 120 kV. Installing two 120-kV terminals at the Tahoe City Substation. Re-tapping the No. 2 transformer at 120 kV and replacing the No. 1 transformer with a larger 120-kV unit. Installing 120-kV terminals at the Squaw Valley and Kings Beach substations.

This system option was selected as the preferred system alternative primarily because sections of the existing lines have already been upgraded to 120-kV insulation levels or have larger-diameter conductor. In addition, this alternative provides more reliable capacity on the eastern side of the north Lake Tahoe loop, where it is needed most. The Northstar load on a single leg of the North Tahoe loop is the Achilles' heel of the 650 Line. If the 650 Line experiences an outage on the Martis Valley side of the system, there is insufficient capacity in the remaining north Lake Tahoe loop to restore power to that area. The proposed project is designed to eliminate this issue, among others.

While the primary reason for recommending this system alternative was the added reliable capacity, this alternative would also achieve the other four project objectives outlined previously and described further in Chapter 2 – Project Purpose and Need. With the completion of the loop upgrade to 120 kV, SPPCo would not have to rely on the Kings Beach Diesel Generation Station as the system's source for single-contingency reliability. This would allow SPPCo to reserve the facility's operating hours imposed by its air quality permit for multi-contingency events (outages on multiple legs of the system), and thereby reduce area air emissions. Further, the additional capacity generated from the new larger conductor and 120-kV insulation would provide the additional normal capacity needed to accommodate planned development in the growing Northstar area and projected future loads at area ski resorts. The upgrades of the transmission lines and installation of new steel poles would also reduce the duration of outages experienced on the system and continued damage from environmental sources, such as fire, wind, and snow. Lastly, the relocation of the 625 Line to coincide more closely with Mount Watson Road would improve access to the line for operation, maintenance, and emergency situations.

As mentioned previously, this system solution consists of three distinct components. The first component (rebuilding the 650 Line) and third component (rebuilding the 625 Line) reflect the

upgrades and modifications associated with the current proposal. The second component (rebuilding the 629 Line) was completed in 2008 under separate authorizations and permits. The 629 Line upgrade was only 3.1 miles long and, as a result, was less expensive to construct and permit, so it was slated for construction ahead of the upgrades associated with the current project.

5.2.5 Substation Alternatives

Because the modifications to the substations and switching stations will be upgrades to existing facilities, alternatives for these project components were not evaluated.

5.2.6 Transmission Line Alternatives

As previously mentioned, the preferred system solution consists of three distinct components. The first component (rebuilding the 650 Line) and third component (rebuilding the 625 Line) reflect the upgrades and modifications associated with the project.

Originally, SPPCo proposed to upgrade the 650 and 625 lines within their existing ROWs. While the 650 Line is readily accessible from existing roads, access to the 625 Line is limited. Due to the access limitations, the line has not been maintained as regularly as the other system components. To facilitate more efficient access for operation and maintenance, rebuilding the 625 Line in its existing ROW would entail the construction of a new, approximately 15-mile-long, permanent access road along the transmission centerline. In addition, a significant amount of tree and vegetation removal would be required to establish a 90-foot-wide temporary ROW to facilitate construction. In discussing these details with the USFS, agency staff expressed concern regarding the construction of a new, permanent road along the entire alignment, the width of the temporary construction ROW, and the associated amount of permanent tree removal. The USFS then requested that SPPCo evaluate alternatives to rebuilding the 625 Line in place. As a result of these discussions with the USFS, SPPCo identified two additional route variations for the 625 Line. The three evaluated alternatives are described and analyzed in the following sections.

Evaluated Alternatives

Rebuild the 625 Line within its Existing Right-of-Way

This alternative reflects SPPCo's original proposal, which would involve reconductoring the existing 15.4-mile-long 625 Line and rebuilding the line with steel poles within its existing ROW. While the existing ROW is approximately 40-feet-wide, a temporary, 90-foot-wide ROW would be required to facilitate construction. Access to the transmission line corridor would be achieved through the use of existing dirt access roads, varying in width from approximately 8 to 10 feet. All access roads would likely be improved and widened to approximately generally be 12 feet wide for straight sections and up to 25 feet wide at curves to facilitate construction. In addition to the existing access roads, a new approximately 25-foot-wide dirt centerline access road would be built parallel to the 625 Line within the existing 40-foot-wide easement. Several new spur roads[1] would also be installed, as necessary, to facilitate access from the existing roads to the pole work sites in rough terrain. Upon completion of construction, the new permanent centerline access would be reduced to a width of approximately 14 feet and would fall within the

[1] Spur roads are short access routes that connect existing access roads to specific areas of construction.

existing 40-foot-wide easement. All other access roads would be returned to their preconstruction widths.

Remove the Existing 625 Line and Rebuild the 625 Line in a New Right-of-Way

Mount Watson Road, also known as the Fiberboard Highway, is a collection of developed logging roads that connect State Route (SR) 267, in a generally southwest direction, to Tahoe City. This 15.8-mile-long alternative reflects SPPCo's current proposal, and would involve removing the existing 625 Line, abandoning the existing ROW, and rebuilding the 625 Line within a new ROW generally parallel to Mount Watson Road and the existing 625 Line ROW. From the Kings Beach Substation to milepost (MP) 0.6,[2] the 625 Line and 650 Line would be double-circuited where the lines currently share a ROW. This alternative would improve access to the transmission line for operation and maintenance of the line and would involve substantially less tree removal than rebuilding the line within its existing ROW. While this alternative would require a new 40-foot-wide permanent ROW, no new permanent access roads would be required for construction and operation of this alternative. Due to the alignment's location generally parallel to Mount Watson Road, this alternative would only require a 65-foot-wide temporary construction ROW, within which a temporary centerline road would be established.

Realign and Double-Circuit the 625 Line with the 650 Line

This alternative is similar to the removal and realignment of the existing 625 Line; however, the 3.1-mile-long portion of the 625 Line east of the Brockway Summit would be double-circuited within the existing 650 Line's ROW to the Kings Beach Substation. The difference between this alternative and the previous alternative would be the length of the proposed double-circuit with the 650 Line east of the Brockway Summit—0.6 mile for the previous alternative, compared with 3.1 miles for this alternative. Similar to the previous alternative, the portion of the 625 Line to be realigned would be located generally parallel to Mount Watson Road and would improve access to the line for operations and maintenance purposes.

While this 15.2-mile-long alternative would be shorter than rebuilding the 625 Line in place or within a new ROW, a 2.5-mile section of the double-circuit with the 650 Line would require a 200-foot-wide corridor to ensure that hazard trees in a steep slope area would not be capable of causing outages on two legs of the transmission system simultaneously. The proposed double circuit further down the line between the Kings Beach Substation and MP 0.6 where the two lines would share a ROW is located in flatter terrain and presents less risk of hazard trees taking out both lines.

[2] Mileposting is based on mileposts from the new 625 Line described in Chapter 3 – Project Description.

Evaluation

All three route alternatives for the 625 Line achieve the project objectives established by SPPCo; however, some meet the objectives more efficiently than others. To evaluate the potential alternatives and select a preferred transmission line route, the following criteria were used, and are presented in no particular order:

- Parallel to existing utility and transportation corridors
- Availability of existing access
- Amount of tree and vegetation removal required
- Potentially sensitive species and habitat crossed
- Visibility from scenic routes, and public areas
- Known cultural resources present within the Area of Potential Effect (APE)
- Residences within 1,000 feet
- Agency preferences

Potential fire and geologic hazards and traffic impacts were not specifically included in the following evaluation of alternatives because the three route alternatives are generally located within 0.25 mile of each other and traverse similar topographic conditions. As a result, the three routes will encounter very similar wildland fire threat levels (over 90 percent of each alternative traverses lands designated as having a high fire threat level) and similar geologic hazards. The three route alternatives will also encounter the same roads and roadway crossings; therefore, traffic impacts were also assumed to be very similar; therefore, a detailed analysis of impacts was not performed.

A comparison of the route alternatives according to the previously outlined environmental constraints criteria follows. In addition, Figure 5-2: Transmission Line Alternatives Detail Map

shows the location of the various environmental constraints in relation to the three route alternatives. The comparison of the environmental impacts relative to each route is summarized in Table 5-2: Transmission Corridor Alternative Constraints Comparison.

Rebuild the 625 Line within its Existing Right-of-Way

As mentioned previously, SPPCo initially proposed this option because the 625 Line is an existing line and this alternative takes advantage of the existing transmission line corridor. While both the USFS and the TRPA encourage the use of existing linear corridors in the Lake Tahoe region, this particular corridor has access limitations that have resulted in inadequate vegetation management within the ROW. Over the years this line has been in service, vegetation encroachment has been an ever-present maintenance issue and has led to many outages on the line as a result of hazard trees falling into the lines and snow loading. The access limitations have also reduced SPPCo's response time in performing necessary repairs or in emergency situations such as forest fires. To meet the project's fifth objective to improve maintenance access along the north Lake Tahoe loop, this alternative would require SPPCo to construct a new permanent centerline access road for the entire length of the alignment. This new access road would provide the necessary access to maintain vegetation within the ROW, conduct required inspections and repairs, and increase SPPCo's response time when outages or emergency situations occur.

Table 5-2: Transmission Corridor Alternative Constraints Comparison

Environmental Considerations	Rebuild the 625 Line within its Existing ROW	Remove the Existing 625 Line and Rebuild in a New ROW	Realign and Double-Circuit the 625 Line with the 650 Line
Aesthetics			
Proximity to Designated Scenic Corridors	Crosses SR 267 and SR 89*	Crosses SR 267 and SR 89	2.5 miles are adjacent to SR 267
Public Parks within 0.5 Mile	0.6 mile is adjacent to Burton Creek State Park, 0.3 mile is adjacent to 64-Acres Park	0.6 mile is adjacent to Burton Creek State Park, 0.3 mile is adjacent to 64-Acres Park	0.6 mile is adjacent to Burton Creek State Park, 0.3 mile is adjacent to 64-Acres Park, 0.2 mile is 0.4 mile north of North Tahoe Regional Park
Biological Resources			
Approximate Acres of Forest Removal	130.7	123.1	153.1
Approximate Acres of PAC Removal	4.2	7.9	7.9
Approximate Acres of HRCA Removal	29.7	31.5	31.5
CNDDB Occurrences within 0.25 Mile	5 (mingan moonwort, Sierra Nevada mountain beaver, Sierra Nevada snowshoe hare, western white-tailed jackrabbit, yellow warbler)	4 (mingan moonwort, Sierra Nevada snowshoe hare, western white-tailed jackrabbit, long-legged myotis)	4 (mingan moonwort, Sierra Nevada snowshoe hare, western white-tailed jackrabbit, long-legged myotis)
Miles of Loyalton-Truckee Deer Herd Known Critical Fawning Area Crossed	0.25	0	0
Cultural Resources			
Number of Known Sites within the Project's Area of Potential Effect (APE)[3]	10	13	13

[3] The existing and new 625 Line, new 650 Line, and Northstar Tap APE was surveyed using a 90-foot-wide corridor centered on the transmission line alignment for the straight segments of the line, but increased to a 300-foot-diameter area at the proposed conductor pulling sites. An area measuring 500 feet wide by approximately 5,000

Environmental Considerations	Rebuild the 625 Line within its Existing ROW	Remove the Existing 625 Line and Rebuild in a New ROW	Realign and Double-Circuit the 625 Line with the 650 Line
Hydrological Resources On Site			
Blue Line Drainages Crossed	7	7	6
Land Use and Noise			
Residences Within 1,000 Feet	130 residences, 2 multi-family residential complexes	130 residences, 2 multi-family residential complexes	236 residences, 5 multi-family residential complexes
Existing Access	Limited access due to existing topography	Adequate access (route is aligned with Mount Watson Road)	Adequate access (route is aligned with Mount Watson Road and SR 267)
New Permanent Access Roads Required	New permanent 14-foot-wide road, new spur roads	None	None
Sensitive Noise Receptors within 1,000 Feet	130 residences, 2 multi-family residential complexes, Kings Beach Elementary School, Kings Beach Preschool	130 residences, 2 multi-family residential complexes, Kings Beach Elementary School, Kings Beach Preschool	236 residences, 5 multi-family residential complexes, Kings Beach Elementary School, Kings Beach Preschool

* The alternative with the fewest environmental constraints in each category is highlighted.

feet long was surveyed to accommodate the realignment of a portion of the 650 Line from the west side of SR 267 to the east side. The six staging areas were surveyed in blocks measuring an average of 600 feet by 600 feet.

Permanent spur roads would also be required where physical obstacles, such as ravines or steep cliffs, would prevent the establishment of a centerline road. In addition to the new permanent centerline road and spur roads, several new temporary access roads would need to be built to access the ROW for construction. While these roads would be reclaimed following construction and revegetated, permanent tree removal would be required for their construction.

Due to the access limitations of the existing 625 Line, the width of the temporary construction ROW to rebuild the line in place would need to be 90 feet to establish work sites and the new centerline travel route. Considering the amount of vegetation encroachment on the ROW and the length of the 625 Line—15.4 miles—this amounts to approximately 130.7 acres of tree and brush removal[4]. This represents the worst-case scenario that tree and brush removal would be required throughout the entire width and length of the existing ROW. In addition, the ROW would be maintained in an herbaceous state and tree removal would be permanent.

The removal of trees and brush within the existing ROW would result in both temporary and permanent impacts to sensitive wildlife and habitats. Approximately 0.5 mile of Protected Activity Centers (PACs) and 3.5 miles of Home Range Core Areas (HRCAs) for California spotted owl are also crossed by the existing 625 Line ROW. One northern goshawk PAC is located adjacent to the existing 625 Line ROW. Assuming the worst-case scenario that tree removal would be required within a 70-foot-wide portion of the temporary ROW[5], this constitutes approximately 4.2 acres and 29.7 acres of permanent tree removal within PACs and HRCAs, respectively. Construction of temporary access roads, which also require permanent tree removal, would increase these acreages if the roads were located within PACs or HRCAs. Construction of temporary access roads could also impact the adjacent PAC for northern goshawk depending on location.

In addition to having the fewest known cultural resources within the alignment's APE, another advantage of rebuilding the 625 Line within its existing ROW is that it utilizes an existing utility corridor. However, due to the lack of access to the line coupled with limited vegetation management over the years, upgrading the line within the existing ROW would still involve a substantial change in the visual character of the area. While the 625 Line is located in a predominantly forested area with only scattered residences along the route; the ROW is within approximately 1,000 feet of approximately 130 single-family residences and two multi-family residential complexes, which are primarily concentrated near the line's origin in Kings Beach.

Once cleared of trees and vegetation, the existing ROW will be visible to recreationists utilizing the many forest trails in the area, including those utilizing the Burton Creek State Park and the 64-Acres Park, which are adjacent to the ROW for 0.4 mile and 0.3 mile, respectively. However, the majority of the existing ROW is not generally visible from area roadways, parks, or other public areas. The exception to this is where the line currently runs parallel to the Truckee River and the 64-Acres Park near Tahoe City, and where the line crosses SR 89 in Tahoe City and SR 267 in Kings Beach (both roadways are designated scenic corridors). Construction activities

[4] This calculation assumes that no tree removal would be required under the existing conductors or within 10 feet of the outside conductors as this is the area that is permanently maintained by SPPCo per General Order 95D.
[5] This calculation is based on the 90-foot-wide temporary ROW minus the 20-foot-wide portion that is currently maintained by SPPCo per General Order 95D.

would be visible in these areas sporadically throughout the duration of construction, and the permanent tree removal that would be required to construct, operate, and maintain the line would result in permanent visual impacts even though this line would be rebuilt within an existing ROW.

In addition, the installation of a new permanent access road along the length of the existing 625 Line would require an additional year of construction. Rebuilding the line in place would also require more angle structures than the new 625 Line, which would follow a straighter, more linear alignment. Both of these factors would considerably increase construction costs and temporary noise, visual, and air quality impacts.

In discussing the aforementioned issues, challenges, and impacts with the USFS, agency staff expressed concerns regarding the amount of tree removal required, the number of permanent roads in the Lake Tahoe Basin, and associated impacts to sensitive species and habitat.

Remove the Existing 625 Line and Rebuild the 625 Line in a New Right-of-Way

As a result of the discussions with the USFS, SPPCo decided to evaluate the option of removing the existing 625 Line in its entirety and rebuilding the line in a new permanent ROW generally parallel to Mount Watson Road. While this option would require an entirely new permanent ROW, the location of the new ROW would either be adjacent to or within 1,000 feet of the existing ROW and parallel to Mount Watson Road. As such, this option would also take advantage of existing ROWs and linear corridors. By realigning the ROW closer to Mount Watson Road, access to the line would improve and SPPCo would not have to maintain a permanent centerline access road along the transmission line alignment. This new alignment would increase SPPCo's response time in emergency situations or in repairing damage on the line, and would therefore be able to achieve the project's fourth objective—reducing outage durations—in a more efficient manner as compared to the previous alternative.

In addition, the width of the temporary construction ROW could be reduced to 65 feet as a result of the increased access. The overall length of this alternative—15.8 miles—would be 0.4-mile longer than the line's existing ROW; however, due to the reduction in the temporary ROW width and 0.6-mile-long double-circuit with the existing 650 Line, the amount of permanent tree removal would be slightly less at approximately 123.1 acres. Again, this represents the worst-case scenario that tree and brush removal would be required throughout the entire width and length of the new ROW. The amount of permanent tree removal would also be partially compensated for by the abandonment of the existing 625 Line, which would be allowed to revegetate naturally.

Similar to the previous alternative, tree removal to establish a new ROW would result in both temporary and permanent impacts to sensitive wildlife and habitats. Approximately 1 mile of PACs and 4 miles of HRCAs for California spotted owl would be crossed by this alternative. This alignment would also be adjacent to one northern goshawk PAC. Assuming the worst-case scenario that tree removal would be required throughout the entire width of the 65-foot-wide temporary ROW, this constitutes approximately 7.9 acres and 31.5 acres of permanent tree removal within PACs and HRCAs, respectively. However, due to the new alignment's location generally parallel to Mount Watson Road, the number of temporary access roads required and

associated tree removal would be less than rebuilding the line within its existing ROW. While the alignment has the potential to impact sensitive species, there are fewer sensitive species occurrences along this line as compared to rebuilding the 625 Line within its existing ROW. In addition, it is assumed that wildlife that may be present in habitat adjacent to a heavily utilized area roadway would be acclimated to a certain level of disturbance and human presence and therefore, would not be significantly affected by construction of the transmission line.

As with the previous alternative, the realignment of the 625 Line would be located within approximately 1,000 feet of 130 residences and two multi-family residential complexes in Kings Beach. While the new 625 Line alignment would be located between two existing linear corridors—the existing 625 Line ROW and Mount Watson Road—the new ROW would constitute a visible change to recreationists on Mount Watson Road. Similar to the previously discussed alternative, this alignment would also cross two designated scenic corridors (SR 89 in Tahoe City and SR 267 in Kings Beach), and would run immediately adjacent to 0.6 mile of Burton Creek State Park and 0.3 mile of 64-Acres Park. However, in many locations the line would be located either above or below grade of the road due to the terrain, lessening the overall visual impact. Despite any potential new visual impacts associated with this alternative, the USFS indicated that realigning the 625 Line would be their preferred option, primarily because it does not involve the establishment of a new permanent road on USFS land, requires less overall vegetation removal, will entail less continual maintenance, and presents a straighter, more linear feature than the existing line.

Realign and Double-Circuit the 625 Line with the 650 Line

Similar to the previous option, the third option that SPPCo considered for the rebuilding of the 625 Line was to realign the ROW between Tahoe City and the Brockway Summit. This alternative deviates from the previous option by utilizing the existing 650 Line ROW and double-circuiting the 625 Line with the 650 Line from the Brockway Summit—where the lines intersect—to the Kings Beach Substation. Between Tahoe City and Brockway Summit, this alternative has all of the same benefits of the previous alternative; however, the 2.5-mile-long portion of the double-circuit between Brockway Summit and MP 0.6 has one significant disadvantage—the need for a 200-foot-wide corridor to ensure that hazard trees do not fall and cause outages on two critical components of the north Lake Tahoe Loop simultaneously. While this alternative would be the shortest of all three alternatives at 15.2 miles, the amount of tree clearing would be greater than realigning the 625 Line in a new ROW due to the 2.5-mile-long segment that would require a 200-foot-wide corridor. In addition, this segment of the line would be located along a designated scenic corridor, SR 267. Much of the tree removal would occur immediately adjacent to the road, thus impacting views along the corridor. In addition, this alternative is also located within 0.5 mile of the most public parks (Burton Creek State Park, 64-Acres Park, and the North Tahoe Regional Park), thus potentially resulting in the most impacts to views from public areas.

Overall, realigning and double-circuiting the 625 Line with the 650 Line would result in the greatest impacts to residences in the area. There are approximately 236 residences and 5 multi-family complexes within 1,000 feet of this alignment alternative. These residences are concentrated around SR 267, where there would be significant tree removal.

This alternative would require approximately 153.1 acres of permanent tree removal, which would be 30 acres more than realigning the 625 Line within a new ROW and 22.4 acres more than rebuilding the line within the existing 625 Line ROW. Assuming the worst-case scenario that tree removal would be required throughout the entire width of the temporary ROW, this constitutes approximately 7.9 acres and 31.5 acres of permanent tree removal within PACs and HRCAs, respectively, which is the same as realigning the 625 Line within a new ROW. Similar to the previous alternative, it is also assumed that wildlife that may be present in habitat adjacent to a heavily utilized area roadway and routinely maintained transmission line would be acclimated to a certain level of disturbance and human presence, and therefore, would not be significantly affected by construction of the transmission line.

While this alternative would not involve the establishment of a new permanent centerline road on USFS land, would entail less continual maintenance, and presents a straighter, more linear feature than the existing line, it would entail more vegetation clearing than realigning the 625 Line in a new ROW, and therefore, more visual and biological impacts than the other two alternatives. As a result, this alternative would not be in alignment with the preferences expressed by the USFS and TRPA.

5.2.7 Conclusion

Based on the analysis provided in Section 5.0.6, SPPCo determined that a realignment of the 625 Line in a new ROW generally parallel to Mount Watson Road and existing 625 Line would be the preferred alternative. As mentioned previously, all of the transmission line alternatives achieve the project objectives; however, through this analysis it became clear that realigning the 625 Line closer to Mount Watson Road, and increasing access to the line, would be a more effective solution for reducing the duration of outages on the transmission system. By improving access to the 625 Line, SPPCo will be able to maintain encroaching vegetation, inspect the line, and make any necessary repairs more efficiently.

As shown in Table 5-2: Transmission Corridor Alternative Constraints Comparison, realigning the 625 Line in a new ROW was determined to be environmentally superior because it will result in the fewest environmental impacts when compared to the other alternatives. Because the preferred alternative is proximate to the fewest number residences, land use conflicts and noise would be lower than the alternatives. The preferred alternative also involves the least amount of tree removal because the majority of the ROW will be accessed by existing roads (primarily Mount Watson Road). In addition, new permanent access roads will be required. The only two categories where the preferred alternative is not the best option are the number of known cultural sites within the APE and the number of blue-line drainages crossed. Thus, the preferred alternative outranked the others in terms of constraints in three out of the five categories analyzed. Lastly, the preferred alternative was identified as preferable to the agencies and will result in lower overall costs of operating and maintaining the transmission line.

5.3 GROWTH-INDUCING IMPACTS

5.3.0 Growth-Inducing Impacts

The CEQA Guidelines require a lead agency to review and discuss ways in which a project could induce growth. The CEQA Guidelines (Section 15126.2d) consider a project to be growth-

inducing if it fosters economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding area. New employees hired for proposed commercial and industrial development projects, and population growth resulting from residential development projects represent direct forms of growth. Other examples of growth-inducing projects are the expansion of urban services into previously undeveloped areas or the removal of major obstacles to growth, such as transportation corridors and potable water supply.

The growth-inducing potential of the project could be considered significant if it were to stimulate human population growth or a population concentration in Tahoe City, Kings Beach, Truckee, or the surrounding rural communities, above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth impacts could also occur if the project were to provide infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies. Because the project will not increase housing, bring in new services, or expand the existing infrastructure system into new areas, it will not stimulate population growth nor result in a new concentration of residents, businesses, or industries.

5.3.1 Growth Caused by Direct and Indirect Employment

As described in Section 4.12 Population and Housing, the construction and operation of the project itself will not affect employment patterns in the area. A maximum of approximately 63 workers are anticipated to be on site at any one time during construction. Because transmission line and substation construction requires skills and equipment not typically found by contractors based in the Lake Tahoe area, SPPCo does not anticipate hiring from local sources. Construction will take place within a three-year period and will not result in long-term employment opportunities in the project area. Contractors from outside of the Lake Tahoe Basin may be mobilized to the job site for all or part of the construction phase of the project and may stay at existing local hotels. An adequate supply of hotels and other lodging facilities are within close proximity to the project area and can be utilized by the out-of-town personnel.

Operation and maintenance of the project will be performed by current SPPCo employees and will, therefore, not create new jobs. Because the project will not result in an increase in local employment opportunities during the construction or operation and maintenance phase, the project will not increase the demand for new housing.

5.3.2 Growth Related to the Provision of Additional Electric Power

Regional Background

The Sierra Nevada region has been under considerable pressure because of population increases in recent years. Between 1990 and 2000, the percentage of population growth in the Sierra Nevada region was more than twice California's growth rate percentage. The Sierra Nevada region experienced a 27 percent population growth rate from 1990 to 2000, which makes it one of the fastest growing regions in California. The north central region of the Sierra Nevada region, which consists of El Dorado, Nevada, and Placer counties, contains 72 percent of the region's residents. It is the most populous and fastest growing region of the Sierra Nevada, increasing its population by 33 percent from 1990 to 2000. This trend is expected to continue through 2010.

Increased population has led to a variety of changes and needs, including home construction, changing land uses from agricultural or forestry to commercial and residential, and demand for infrastructure improvements, such as roads and utilities. Population in the Sierra Nevada region reached 819,000 residents in 2000, and is growing faster than was predicted in the Sierra Business Council's 1999 to 2000 Wealth Index. Almost all of the additional growth is in the north central counties, including Placer and Nevada counties, where the project is located. At this pace, population in the Sierra Nevada region will surpass 1 million full-time residents by 2020. While these numbers account for full-time residents spread out among all of the counties that make up the Sierra Nevada region, they do not account for the growing "shadow population" of recreational visitors and second homeowners who also enjoy the area. For example, in 2000, second homes in the Sierra Nevada made up 15.7 percent of the region's total housing units.

While the Sierra Nevada region as a whole continues to expand, growth in the Lake Tahoe Basin has been controlled by the restrictions on residential and commercial development enforced by the TRPA and local governments. Although this has helped keep the population growth in the basin at about 1 percent per year, tourism and its accompanying services have continued to expand and are now the major factors affecting the load growth in the north Lake Tahoe area.

Growth Projections

Due to the Sierra Nevada region's escalating growth pattern and a steady increase in tourism, corresponding investment in building homes, roads, infrastructure, and schools in the region has been required. In addition, persistent drought in the Sierra Nevada region has led ski resorts to install snow-making equipment or expand existing snow-making systems. This technology has been validated over the past several years and more resorts are now using snow-making equipment to increase tourist revenue by extending the ski season. In all likelihood, this trend will continue into the future.

In order to arrive at a reasonable load growth projection, 1 to 2 percent was added to the base of 1-percent population growth to allow for the large sporadic growth increases caused by ski resort additions. As a result, the load growth projections for the north Lake Tahoe area are in the 2 to 3 percent range and provide the basis for the projected need for increased capacity in the north Lake Tahoe electrical system. Upon completion of the upgrade to 120 kV, the north Lake Tahoe transmission system will be capable of 114 MVA, which will accommodate peak loads and should provide adequate capacity to accommodate current and projected growth in the area. At a 1-percent load-growth rate, this capacity would meet the needs of the area for approximately 20 years. At a 2-percent load-growth rate, capacity would last approximately 11 years. At a 3-percent load-growth rate, capacity would last for slightly over eight years.

Proposed Project and Growth

The project will increase system reliability and accommodate existing and planned power demands in SPPCo's service territory. As described previously, SPPCo has based its load-growth projections on recent development trends and existing plans for development in the Lake Tahoe Basin. The load-growth scenarios only account for projected development and existing forecasts, and do not take into consideration future unplanned development.

In addition, the project involves an upgrade of SPPCo's existing transmission system that serves the north Lake Tahoe area and surrounding communities, such as the Town of Truckee. There are no new extensions of service to new communities, either inside or outside of the Lake Tahoe Basin. Furthermore, one of the main reasons for selecting the project, as opposed to one of the several other system alternatives, was that it created a stronger source of reliable capacity on the eastern side of the north Lake Tahoe loop within the Lake Tahoe Basin. Therefore, the project can be seen as enhancing the system's reliability and capacity, as opposed to inducing population growth in the area.

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