CALIFORNIA PUBLIC UTILITIES COMMISSION

ADVICE LETTER FILING SUMMARY
ENERGY UTILITY

MUST BE COMPLETED BY LSE (Attach additional pages as needed)

Company name/CPUC Utility No. **Liberty Utilities (CalPeco Electric) LLC (U 933-E)**

Utility type:

☑ ELC ☐ GAS

☐ PLC ☐ HEAT ☐ WATER

Contact Person for questions and approval letters:
Alain Blunier _____

Phone #: 530-546-1702

E-mail: **Alain.Blunier@libertyutilities.com**

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas
PLC = Pipeline HEAT = Heat WATER = Water

(Date Filed/ Received Stamp by CPUC)

Advice Letter (AL) #: 64-E

Subject of AL: Liberty Utilities (CalPeco Electric) LLC (U 933-E) – Verification of the Attainment of 89 MW Trigger for Phase 2 of the Line 625 and 650 Upgrade Project Pursuant to D. 15-03-020

Tier Designation: ☐ 1 ☑ 2 ☐ 3

Keywords (choose from CPUC listing):

AL filing type: ☐ Monthly ☐ Quarterly ☐ Annual ☑ One-Time ☐ Other

_____

If AL filed in compliance with a Commission order, indicate relevant Decision/Resolution:

Decision 15-03-020

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL _____

Summarize differences between the AL and the prior withdrawn or rejected AL:

Resolution Required? ☐ Yes ☑ No

Requested effective date: November 14, 2016 No. of tariff sheets:

Estimated system annual revenue effect: (%): ___

Estimated system average rate effect (%): ___

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed: N/A

Pending advice letters that revise the same tariff sheets: N/A

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this filing, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division Utility Info (including e-mail)
Attention: Tariff Unit
505 Van Ness Ave.,
San Francisco, CA 94102
edtariffunit@cpuc.ca.gov

Liberty Utilities (CalPeco Electric) LLC
Attention: Advice Letter Protests
933 Eloise Avenue
South Lake Tahoe, CA 96150
Email: Alain.Blunier@libertyutilities.com

Liberty Utilities (CalPeco Electric) LLC
933 Eloise Avenue
South Lake Tahoe, CA 96150
Tel: 800-782-2506
Fax: 530-544-4811

October 14, 2016

VIA EMAIL AND HAND DELIVERY

California Public Utilities Commission
Energy Division
Attention: Tariff Unit
505 Van Ness Avenue, 4th Floor San
Francisco, CA 94102-3298

Re: Advice Letter 64-E - Verification of the Attainment of the 89 MW Load Trigger for Phase 2 of the Line 625 and 650 Upgrade Project Pursuant to D. 15-03-020

Liberty Utilities (CalPeco Electric) LLC (U 933-E) ("Liberty CalPeco") submits this Tier 2 Advice Letter providing verification of load triggers and the attainment of the 89 MW trigger authorizing the commencement of the construction of Phase 2 of the Line 625 and 650 Upgrade Project.

I. PURPOSE

The purpose of this Advice Letter is to provide information and documentation to support granting Liberty CalPeco the authority to commence construction of Phase 2 of Liberty CalPeco's Line 625 and 650 Upgrade Project ("Upgrade"). In Decision ("D.") 15-03-020 ("Upgrade Approval Decision") the California Public Utilities Commission ("Commission") authorized Liberty CalPeco to construct the Project in three separate phases subject to Liberty CalPeco obtaining all necessary permits and other approvals required for each phase, and subject to the additional conditions discussed in this Advice Letter.

II. BACKGROUND

The Upgrade Approval Decision authorized Liberty CalPeco to upgrade the North Lake Tahoe Transmission System by proceeding with the construction in three separate phases. It also certified the Environmental Impact Statement/Environmental Impact Statement/Environmental Impact Report for all three phases jointly prepared by Tahoe Regional Planning Agency, the U.S. Forest Service, and the Commission. The Upgrade Approval Decision authorized Liberty CalPeco to immediately construct Phase 1. Liberty CalPeco commenced construction of Phase 1 on August 5, 2015. Construction has been completed and Phase 1 was placed into service on October 5, 2016.

The Upgrade Approval Decision also authorized Liberty CalPeco to construct Phases 2 and 3, but placed the following requirements as preconditions to Liberty CalPeco commencing construction on these subsequent phases of the Upgrade:

Ordering Paragraph 1(b) of the Upgrade Approval Decision requires that:

> Construction of Phase 2 shall not commence without verification that load growth on the North Lake Tahoe Transmission System is approaching 89 megawatts (MW), as further specified in Ordering Paragraphs 2 and 3

Ordering Paragraph 2 of the Upgrade Approval Decision further specifies that Liberty CalPeco:

> … [S]hall perform a new network study to verify the load growth predicates that warrant commencement of Phase 2 and of Phase 3; all data and assumptions for the new network study must be documented and justified along with results and power flow plots, with the final deliverables being the construction commencement timeline (i.e., the "trigger points") for Phase 2 and for Phase 3. Liberty [CalPeco's] new network study analysis must identify and explain any "other considerations" that affect its identification of the trigger points and must verify that load growth outside of its own system is not the basis for the trigger points.

Ordering Paragraph 3 of the Upgrade Approval Decision additionally specifies that Liberty CalPeco:

> … [M]ust file the new network study and other information supporting the construction commencement timeline (i.e. the "trigger points") for Phase 2 in a Tier 2 Advice Letter for review by the Commission's Energy Division. Liberty [CalPeco] must file the Tier 2 Advice Letter on the service list for Application 10-08-024, together with all other service required by General Order 96-B.

As demonstrated below, Liberty CalPeco has satisfied each of these preconditions and is thus requesting the authority to commence construction of Phase 2 of the Upgrade.

III. NETWORK STUDY

In response to Ordering Paragraph 2 of the Upgrade Approval Decision, Liberty CalPeco engaged the services of an independent third party engineering firm – Ascension Power Engineering ("Ascension") of Virginia City, Nevada -- to perform a new network study to verify the load growth predicates that warrant commencement of Phase 2.

As required by Ordering Paragraph 2 of the Upgrade Approval Decision, Ascension "documented and justified" "all data and assumptions for the new network study." In addition, the network study documents and justifies its results and presents the requisite power flow plots. The Ascension network study is attached as **Attachment A**.

In performing the new network study, Ascension:

1. Determined the peak load demand experienced on the North Lake Tahoe Transmission system during the winter of 2015/2016;
2. Modeled and represented the physical electric facilities of the North Lake Tahoe Transmission system and the interconnection of such facilities to the surrounding transmission grid in the General Electric Positive Sequence Load Flow ("PSLF") program;
3. Performed PSLF power flow simulations with the above-determined load demand applied to the model for both normal conditions (all facilities in service) and all pertinent single contingency outage conditions; and
4. In the event that the modeled system is found to experience operational criteria violations for either the normal or contingency conditions, model the Phase 2 facility improvements and re-assess performance for normal and contingency conditions.

Ascension determined that the Liberty CalPeco system experienced its peak demand on the North Lake Tahoe system during the 2015-2016 winter on December 31, 2015 at 17:55 hours: 88.7 MW. Ascension further confirmed that at the 88.7 MW peak experienced in December 2015, the Phase 2 facilities are needed and that Liberty CalPeco should commence "construction of Phase 2 as soon as possible."[1]

Further, assuming the same conservative 1% load growth forecast that the Commission found reasonable in the Upgrade Approval Decision[2], the 89 MW load trigger Ordering Paragraph 1(b) establishes will be eclipsed by this coming winter of 2016/2017.[3] Thus, Liberty CalPeco has demonstrated that its peak load will exceed the 89 MW triggering point and thus it may appropriately in this Tier 2 Advice Letter seek the authority to commence construction of Phase 2.

[1] Ascension network study, Attachment A, at 16.
[2] The Upgrade Approval Decision referenced Paul Scheuerman's conclusion that the "1% growth [Liberty CalPeco was projecting] is a possibly conservative but reasonable assumption." Mr. Scheuerman was retained as an environmental consultant for the preparation of the EIS/EIS/EIR. Upgrade Approval Decision, mimeo at 32; and at 31, n. 20.
[3] 88.7 MW x 1.01 = 89.587 MW.

Ordering Paragraph 2 of the Upgrade Approval Decision permitted Liberty CalPeco to "identify and explain any 'other considerations' that affect its identification of the trigger points." Liberty CalPeco construes this provision as authorizing Liberty CalPeco to submit an advice letter to request the authority to commence construction of Phase 2 under scenarios in which the 89 MW triggering point was not yet projected to be reached, but that Liberty CalPeco believed nonetheless that "other considerations" relating to the reliability of its system or the safety of its customers, employees, or communities warranted the commencement of Phase 2. As set forth above, the Ascension network study determined that the 89 MW triggering point would be exceeded by as early as the 2016-17 winter. Thus, Liberty CalPeco is requesting that the Commission authorize Liberty CalPeco to commence construction of Phase 2 based on Liberty CalPeco projected load exceeding 89 MW, and is not requesting the Commission to grant this authority based on any additional "other considerations."

Finally, Ordering Paragraph 2 of the Upgrade Approval Decision requires Liberty CalPeco to verify that "load growth outside of its own system is not the basis for the trigger points." Table 1, prepared by Richard J. Salgo, P.E. of TriSage Consulting,[4] below compares the peak demand load forecast for the North Lake Tahoe system for the 2011-2012 winter that served as the basis for the Upgrade Approval Decision and the actual peak demand experienced during the 2015-2016 winter, as reported in the Ascension network study. The comparison demonstrates that the source of the load growth resulting in the projected peak load exceeding the 89 MW triggering point is growth attributable to Liberty CalPeco's own customer load, and is not attributable to "load growth outside of its own system" including from growth in the Truckee Donner Public Utility District ("TDPUD") system.

[4] *See* Declaration of Richard J. Salgo, P.E. attached as Attachment B.

Table 1[5]

Entity	Load Description[6]	2011[7]	2015[8]
Liberty CalPeco	Squaw Valley	11.6	13.3
	Tahoe City	26.4	25.2
	Brockway	15	12.3
	Northstar	8.7	9.2
	Glenshire	2.8	2.5
	Truckee (Liberty CalPeco loads only)	3.8	8.1
	Subtotal Liberty	**68.3**	**70.6**
Others	Martis Valley	8.7	7.6
	Truckee (TDPUD load only)	9.7	10.5
	Subtotal Others	**18.4**	**18.1**
	Total North Lake Tahoe Transmission System Load	**86.7**	**88.7**

The total system demand increased from 2011 to 2015 by 2 MW (88.7 versus 86.7 MW). Of that 2 MW difference, Liberty CalPeco's customer load served by the North Lake Tahoe system (which flows through the 5 substations that Liberty CalPeco owns in North Lake Tahoe and the Truckee substation) increased by 2.3 MW. In contrast, the non-Liberty CalPeco load across the North Lake Tahoe Transmission system (which flows through the Martis Valley substation and the portion of the Truckee substation serving TDPUD load) decreased.

Furthermore, in the 2011 forecast that serves as the basis for the Upgrade Approval Decision, Liberty CalPeco's load comprised 78.8% of the total demand being served by the

[5] As the Commission explained in the Upgrade Approval Decision, "all interconnected substations should be included in an accurate modeling of demand since the four 60kV transmission lines and one 120kV transmission line that comprise the North Lake Tahoe Transmission system are 'configured as a single interconnected electrical network to provide service' quoting the Final EIR/EIS/EIR, Appendix P2b at pdf 456). Accordingly, this study follows this approach. However, this table identifies separately the load growth experienced with respect to the Liberty CalPeco load and load from others.

[6] The load description column references the substation through which the particular load flows. Liberty CalPeco does not own the Truckee or Martis Valley substations. However, Liberty CalPeco serves customers with energy that flows through the Truckee substation and onto its distribution Line 7203 and transmission line 608. Liberty CalPeco owns the Squaw Valley, Tahoe City, Brockway, Northstar, and Glenshire substations, and similarly serves its customers with energy flowing through these substations.

[7] The peak demand load forecast for the North Lake Tahoe system for the 2011-2012 winter that served as the basis for the Upgrade Approval Decision, as provided in the ZGlobal Study Report, at 12.

[8] The actual peak demand during the 2015-2016 winter as described in Attachment A, at 9.

North Lake Tahoe system. During the peak conditions experienced in 2015, Liberty CalPeco's percentage of the total area's demand increased to 79.6% of the total. Together and individually, these facts verify that the load growth by Liberty CalPeco's own customers is responsible for the increase in the North Lake Tahoe system demand that is now projected by December 2016 to exceed the 89 MW triggering point for construction of Phase 2 to commence.

IV. EFFECTIVE DATE

Liberty CalPeco requests that this Tier 2 Advice Letter become effective as of November 14, 2016 and in all events become effective in the necessary time frame described below.

V. REQUEST FOR TIMELY APPROVAL

As set forth above, Liberty CalPeco is intending to complete construction of Phase 2 in time for it to be operational at the start of the 2017-18 winter. The peak load projected for that period is projected to be 90.5 MW.

Liberty CalPeco is forecasting a construction schedule of six months. However, constraints imposed by the Tahoe Regional Planning Agency ("TRPA") restrict construction activities involving ground disturbance to the period of May 15 to October 15. Thus, in order to have Phase 2 operational during the 2017-18 winter, Liberty CalPeco must commence construction by no later than May 15, 2017.

Liberty CalPeco would further request that the authority requested to commence construction of Phase 2 be granted by no later than March 1, 2017. In order to commence and complete construction on the most efficient and expeditious schedule, it is necessary that Liberty CalPeco procure the necessary equipment, including long lead-time equipment such as substation power transformers, before the actual commencement of construction. Accordingly the requested March 2017 deadline is essential for meeting the construction schedule and ensuring that Phase 2 is operational prior to the 2017-2018 winter.

VI. NOTICE

Pursuant to Ordering Paragraph 4 of D.15-03-020, a copy of this advice letter is being served on the service list of Application 10-08-024, as well as all other service required by General Order 96-B.

VII. PROTESTS

Anyone wishing to protest this advice letter may do so by letter sent via U.S. mail, by facsimile or by email, any of which must be received no later than November 3, 2016, which is 20 days after the date of this advice letter. The protest shall set forth the grounds upon which it is

based and shall be submitted expeditiously. There is no restriction on who may submit a protest. Protests should be mailed to:

California Public Utilities Commission
Energy Division, Tariff Unit
505 Van Ness Avenue, 4th Floor
San Francisco, CA 94102-3298
Facsimile: (415) 703-2200
Email: edtariffunit@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest should be sent via email and U.S. Mail (and by facsimile, if possible) to Liberty Utilities (CalPeco Electric) LLC at the address shown below on the same date it is mailed or delivered to the Commission:

Alain Blunier
Liberty Utilities (CalPeco Electric) LLC
933 Eloise Avenue
South Lake Tahoe, CA 96150
Fax: 530-544-4811
Email: Alain.Blunier@libertyutilities.com

Steven F. Greenwald
Vidhya Prabhakaran
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505 Montgomery Street, Suite 800
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Email: stevegreenwald@dwt.com
Email: vidhyaprabhakaran@dwt.com

Respectfully submitted,

LIBERTY UTILITIES (CALPECO ELECTRIC) LLC

/s/ Greg Sorensen
Greg Sorensen
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933 Eloise Avenue
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Attachments

cc: A.10-08-024 Service List
Liberty CalPeco Advice Letter Service List
Mary Jo Borak, CPUC (Email: maryjo.borak@cpuc.ca.gov)
Michael Rosauer, CPUC (Email: michael.rosauer@cpuc.ca.gov)
Jack Mulligan, CPUC (Email: jack.mulligan@cpuc.ca.gov)

ATTACHMENT A

Ascension Network Study

Ascension Power Engineering

SEPTEMBER 29, 2016

LIBERTY UTILITIES
2016 TRANSMISSION STUDY

ASCENSION POWER ENGINEERING
55 North C Street, Suite 201
P.O. Box 46
Virginia City, NV 89440
(775) 583-6004

Contents

Executive Summary

Liberty Utilities is currently engaged in a phased improvement project to increase the reliable capacity of the North Lake Tahoe ("NLT") 60-120kV transmission system. At the time of this report Liberty is finalizing the construction of Phase 1 of the project consisting of a rebuild of the 650 line using larger conductor and 120kV components. This Study was required as part of the conditional approval of Phase 2. Ascension Power Engineering analyzed the loading on the system and created updated power flows to confirm the load trigger for Phase 2.

The NLT system is a winter peaking system and the coincident system peak for the 2015/2016 winter season was 88.7MW on December 31st 2015 at 17:55 local time. Given a 1% annual growth rate, which is supported by the California Public Utilities Commission ("CPUC") Decision approving this phased project, expected loads in the winter of 2016-17 and 2017-18 are 89.6 MW and 90.5 MW, respectively. These expected loads exceed the 89 MW trigger point authorized in that Decision.

This Study was performed by modifying the regional study base case model of the upcoming winter season (2016-17 winter case) utilizing winter line ratings, which increased the normal capacity of the lines by 25%. Power flow analyses were performed for N-0 conditions (all lines in service) and for N-1 (single contingency) scenarios using 88.7MW, the 2015 coincident peak load. The use of diesel generation at Kings Beach was not considered as mitigation for N-1 contingencies because of the long duration outages this area could experience and the 60 machine-hour limit Liberty has for running the diesels.

The power flow study results revealed no issues under N-0 conditions for the 2015 system peak model; however, the N-1 power flow studies demonstrated that the existing 60kV system cannot handle peak loads for 2 out of the 10 contingencies studied. The NLT existing 60kV system was determined to have already reached the level necessary for the construction of Phase 2 at the 2015 88.7MW system peak, as shown in power flow plots in Appendix A.

The model was subsequently modified to reflect the Phase 2 improvements, and new N-1 scenarios were run to analyze the partial 120kV loop system. The power flow study results showed that the Phase 2 partial 120kV transmission loop improved the system so that no N-1 condition resulted in voltage or line overload criteria violations at today's loading. See Appendix B for power flow plots for Phase 2 at the 2015 system peak load level. Ascension Power Engineering therefore recommends Liberty Utilities begin the construction of Phase 2 as soon as possible.

Background

North Lake Tahoe System Description

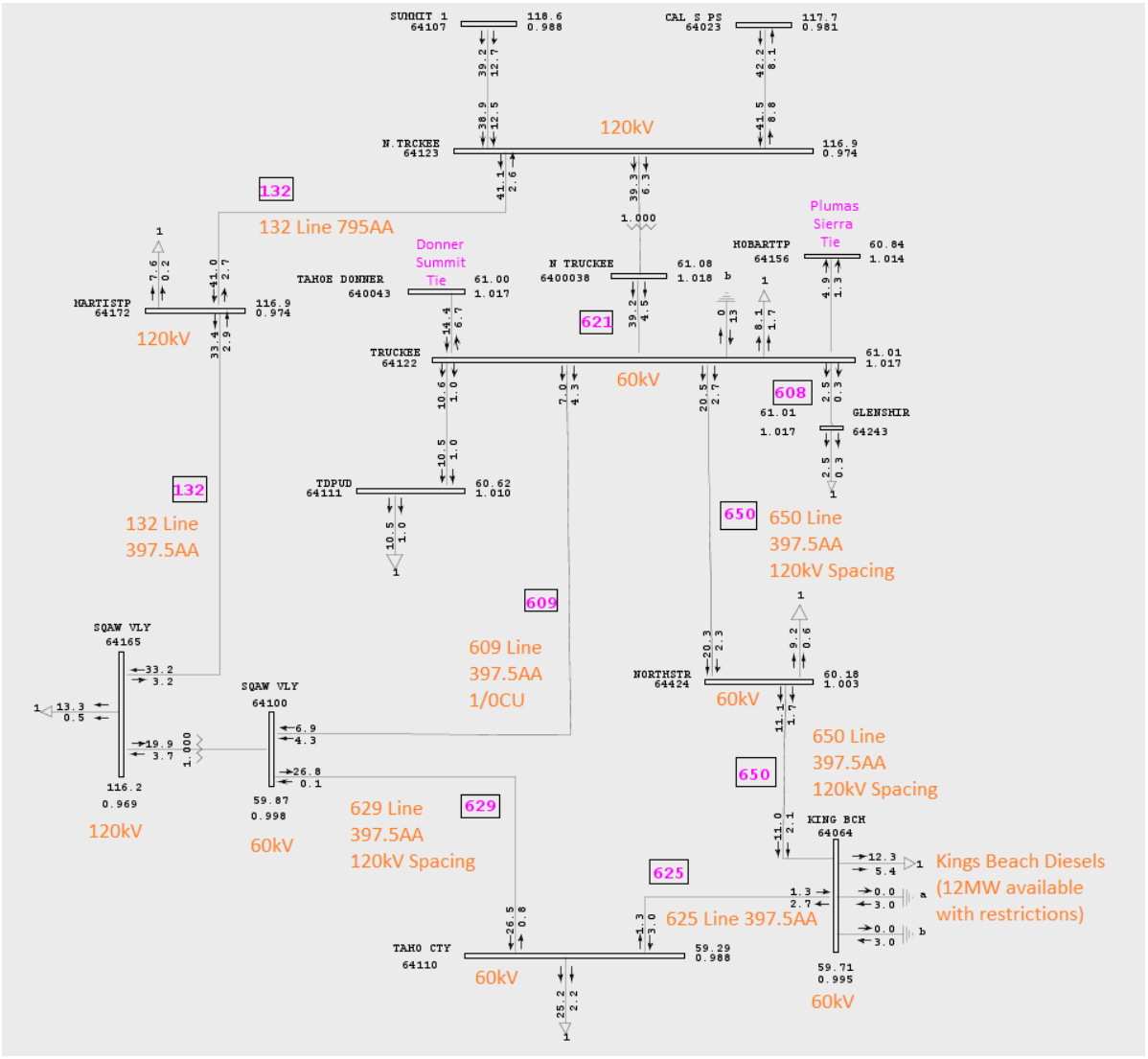
Liberty Utilities purchased the North Lake Tahoe transmission system from NV Energy in 2010, and is currently engaged in a phased improvement project to increase the reliable capacity of that system. Reliable capacity, for the purposes of this study, is defined as the system's ability to withstand the most severe single element contingency during peak demand.

The NLT transmission system consists of a 60kV loop with an additional 120kV source connected at Squaw Valley. The 60kV system is sourced by an NV Energy owned 120/60kV transformer at North Truckee, and two non-Liberty owned 60kV ties. In addition, the Kings Beach diesel generation station is capable of providing up to 12MW of capacity for a limited period of time.

As shown in Figure 1 below, the NLT transmission system serves Liberty loads at Squaw Valley, Tahoe City, Kings Beach, Brockway, Glenshire, Truckee, and Northstar as well as non-Liberty load at Martis Valley, TDPUD, and Hobart (Plumas Sierra Tie).

The NLT system is winter peaking, driven by the use of electric heating and load related to multiple ski resorts in the area. System peak for the NLT system consistently occurs during the last week of December or first week of January.

Figure 1. Existing North Lake Tahoe Electric System



*The portion of the 650 line between Northstar and Kings Beach is currently under construction, with estimated completion by early 2017.

Previous North Lake Tahoe System Studies

NV Energy studied the 60kV sub-transmission loop in 1996 and recommended systematic upgrades for eventual loop operation at 120kV. The upgrades were to be completed in phases as shown below:

Phase 1: Rebuild the 60kV 650 line from Truckee to Northstar and from Northstar to Kings Beach using 120kV spacing and components. Reconductor the line with larger wire to increase capacity. The 650 line will continue to be operated at 60kV until Phase 2.

Phase 2: Upgrade the 60kV 650 line terminations to 120kV at North Truckee, Northstar, and Kings Beach substations. This phase will also include the decommissioning of Brockway Substation, rerouting the 14.4kV distribution feeders so that they are fed from the Kings Beach Substation. Liberty operations has indicated

that the Brockway substation transformers are gassing, an indication of impending failure, further highlighting the need for Phase 2.

Phase 3: Complete the final leg of the 120kV loop by rebuilding the 625 Line and upgrading line terminations at Squaw Valley and Tahoe City substations. After Phase 3 is completed, the entire NLT transmission system will be operating at 120kV.

After purchasing the system, Liberty Utilities commissioned ZGlobal to review and update the 1996 NV Energy study. Subsequent to the 2011 ZGlobal study and the addendum added in 2014, Liberty was issued a Permit to Construct Order from the CPUC. In the March 2015 Permit to Construct Order, Liberty was authorized to proceed with construction of Phase 1 of the project, consisting of a rebuild of the 650 line with larger conductor and 120kV components. Phase 2 of the project was conditionally approved, with the requirement that a new network planning study be performed and submitted to the CPUC for review before starting construction. The new study would correct flaws in the ZGlobal study that were identified by interveners, verify load triggers, and establish a basis for Liberty to schedule Phase 2. The prescribed network study is the subject of this document.

Ascension Power Engineering and Z Global Study Comparisons

The conclusions and recommendations made by Ascension Power Engineering differ somewhat from those made in the ZGlobal study for a variety of reasons described in detail below. The following section outlines these variances by splitting them into 3 categories: differences in the model, loading data, and engineering philosophies.

Differences in Ascension Power Engineering's transmission system model:

- Ascension Power Engineering modeled the 629 line as 397.5 AA to accurately reflect the way the line is constructed in the field.

- Ascension Power Engineering modeled the Kings Beach diesels using nameplate values and commissioning data, resulting in an accurate representation of VAR generation. See the section on the impact of the Kings Beach diesels later in this report.

- The Ascension Power Engineering model shows all loads on the transmission busses, consistent with typical transmission studies.

Differences in Ascension Power Engineering's loading data:

- Loads used in the Ascension Power Engineering study were actual loads measured during the 2015 system peak, and were slightly different from projected loads estimated in 2011.

- The Ascension Power Engineering model does not include 4MW of load permanently transferred from Liberty's system to NV Energy's system in 2012.

- Ascension Power Engineering discovered that PI data for distribution transformer #1 at Squaw Valley substation was incorrectly reading low. The feeder load values were confirmed to be accurate, and these values were used in the Ascension Power Engineering study to determine the correct Squaw load.

- PI data provided by NV Energy allowed Ascension Power Engineering to model power flow on the Plumas Sierra system tie to match actual conditions that existed during the 2015 system peak.

- The NLT system is an integrated transmission system made up of Liberty and non-Liberty loads. The Plumas Sierra tie impacts the NLT system, particularly with respect to the N. Truckee 120/60kV transformer loading. Therefore, for this study the Plumas Sierra tie was included in the NLT integrated transmission system power flow plots.

- As a result of these load variances, Ascension Power Engineering recalculated the coincident and non-coincident system peaks for 2010-2015, and used the 2015 loads in the model to represent actual conditions during the system peak of 2015.

Differences in engineering philosophies used by Ascension Power Engineering reflected system operating conditions and constraints:

- Ascension Power Engineering confirmed the winter line ratings used by the controlling party to operate the system, and used those limits in the study. This allowed all lines (but specifically the 609) to be operated at higher loading levels during system peak, without the need for a transfer trip scheme.

- Ascension Power Engineering determined that the limited operating hours permitted for the Kings Beach diesels precludes their use to mitigate N-1 contingencies. This is consistent with one of Liberty's objectives for the project, to minimize use of and reliance upon the Kings Beach generation.

- The NLT transmission system has good power factor (greater than 0.99 at 2015 coincidental peak), and for this reason, Ascension Power Engineering does not recommend adding capacitor banks in this study to mitigate voltage criteria violations.

- In this study, Ascension Power Engineering used +5%/-10% of nominal voltage as limits for evaluating N-1 contingency conditions. These are the voltage limits on the transmission system that maintain distribution feeder voltage within the limits specified in Liberty Utilities standard ENG06U.

Description of the Study

Objective

The purpose of this Study is to verify the triggering load conditions for constructing Phase 2 of the Transmission Upgrade Project. This Study utilizes verified peak demand data combined with an accurate system model to validate this triggering load level, previously found to be 89 MW. Special attention has been placed on the accuracy of the NLT electric facility model parameters and their associated normal, winter, and emergency ratings.

Model

The model Ascension Power Engineering developed for this study is derived from the 2016-2017 heavy winter WECC base case. From that starting point, the model has been modified to incorporate the Phase 1 upgrade to the 650 line. Specifically, the conductor has been changed to 397.5AA in both the Truckee-Northstar and Northstar-Kings Beach sections. The Study model of the existing 60kV system therefore represents the NLT transmission system as it will be immediately after Phase 1 is completed in late 2016 or early 2017, but before

Phase 2 is started. This model is the one used to determine the triggering load conditions for Phase 2 of the project.

The Study model has been further modified to represent the NLT system after completing the Phase 2 upgrade. This model is referred to as the partial 120kV loop. Specifically, in this model the 650 line termination has been moved from Truckee substation (a 60kV bus), to North Truckee (a 120kV bus). The remaining 650 line terminations at Northstar and Kings Beach substations have been changed to 120kV, a new 120/60kV transformer has been added at Kings Beach, and the Brockway distribution load has been moved to Kings Beach. This model represents the system as it will be after Phase 2 is completed but before Phase 3 is started.

Load Data

Loads applied to the Study model are those measured at the coincident system peak for the NLT system during the winter of 2015-2016. The North Lake Tahoe system peaked at 88.7MW at 17:55 local time on December 31, 2015.

Although interveners have questioned the inclusion of non-Liberty loads in the study, the fact is that the NLT transmission system serves both Liberty and non-Liberty loads. Conclusions reached by modeling and studying only Liberty loads would be inaccurate. For this reason, system peak loads used in this study include all loads and transmission ties connected to the Liberty transmission system.

The load data used in this study comes from a variety of sources, depending upon the technology available at each measurement point. Data from Liberty's PI system, information from primary meters, and analog electromechanical load charts were all utilized to develop the most accurate load picture available.

It is worth noting that Squaw Valley and Northstar did not peak during the 2015 NLT coincident system peak. Had these two substations peaked during the coincident peak, the NLT system would have experienced an additional 6.2MW of load, for a system total of 94.9MW. The NLT base loads used in this Study are shown in Table 1.

Table 1
North Lake Tahoe 2015 System Peak Loads

Load Description	2015-16 Winter Actual Demand	
	MW	MVAR
Squaw Valley #1	7.6	1.3
Squaw Valley #2	5.7	-0.75
Tahoe City #1	11.1	0.96
Tahoe City #2	14.1	1.2
Brockway #1	4.1	1.6
Brockway #2	8.2	3.8
Northstar #1	9.2	0.6
Martis Valley #1	7.6	0.2
Glenshire #1	2.5	0.3
Truckee #1	8.1	1.7
Truckee TDPUD	10.5	0.95
Truckee/North Tahoe System Peak	**88.7MW***	**11.86MVAR**

*A summation of MW on the power flow plots yields a total of 93.6MW, 4.9MW greater than the total shown above. The difference is a result of the power flow on the Plumas Sierra tie.

Study Method

The Study is performed by conducting a power flow analysis on the model of the existing 60kV system described above, loaded as it was during the 2015 coincident peak, and with all transmission lines and transformers in service. All lines and transformers in service are referred to in the Study as the N-0 condition. The power flow simulation is evaluated for component overloads and voltage criteria violations (the criteria for both are discussed later in this section).

The process is repeated for the existing 60kV system, but this time with one transmission line or transformer taken out of service at a time (referred to as the N-1 condition). Table 2 shows the N-1 contingency list for the existing 60kV system in this study. The point at which a criteria violation occurs for the existing 60kV system under N-1 conditions is considered the trigger point for the proposed Phase 2 upgrade.

Table 2
N-1 Contingency List for Existing 60kV System

#	Element Type	Contingency Outage Description
1	Transformer	North Truckee 120/60kV xfmr
2	Transformer	Squaw Valley 120/60kV xfmr
3	Transmission Line	North Truckee-Martis 120kV line (#132)
4	Transmission Line	Martis-Squaw Valley 120kV line (#132)
5	Transmission Line	North Truckee-Truckee 60kV line (#621)
6	Transmission Line	Truckee-Squaw Valley 60kV line (#609)
7	Transmission Line	Squaw Valley-Tahoe City 60kV line (#629)
8	Transmission Line	Kings Beach-Tahoe City 60kV line (#625)
9	Transmission Line	Truckee-Northstar 60kV line (#650)
10	Transmission Line	Northstar-Kings Beach 60kV line (#650)

The process just described is then repeated again in its entirety, this time using the Study model representing the NLT system upon completion of Phase 2 (i.e. the partial 120kV loop). The purpose of this analysis is to determine how the Phase 2 upgrade affects the reliable capacity of the system. Table 3 below shows the N-1 contingency list for the partial 120kV loop system in this study.

Table 3
N-1 Contingency List for Partial 120kV System

#	Element Type	Contingency Outage Description
1	Transformer	Kings Beach 120/60kV xfmr
2	Transformer	North Truckee 120/60kV xfmr
3	Transformer	Squaw Valley 120/60kV xfmr
4	Transmission Line	North Truckee-Martis 120kV line (#132)
5	Transmission Line	Martis-Squaw Valley 120kV line (#132)
6	Transmission Line	North Truckee-Truckee 60kV line (#621)
7	Transmission Line	Truckee-Squaw Valley 60kV line (#609)
8	Transmission Line	Squaw Valley-Tahoe City 60kV line (#629)
9	Transmission Line	Kings Beach-Tahoe City 60kV line (#625)
10	Transmission Line	N Truckee-Northstar (new 120kV line, old 650 line)
11	Transmission Line	Northstar-Kings Beach (new 120kV line, old 650 line)

Line Ratings

Winter line ratings are used in the study, increasing the conductor's summer capacity by 25% to accurately reflect the operation of the NLT transmission system by System Control. See Appendix C for a table of conductor sizes and ratings.

Transformer Ratings

The transformer ratings used for the North Truckee and Squaw Valley 120/60kV transformers were those found in the 2016/2017 Winter WECC Base case model and they correspond to the Forced Air (FA) ratings of the

transformer nameplates. The North Truckee transformer is not a Liberty transformer; it is owned by NV Energy. See Appendix C for a table of the 60/120kV transformer ratings.

Voltage Criteria

Typically, transmission studies are performed utilizing voltage criteria established for the system by the Transmission Planner or Planning Coordinator, and in accordance with NERC and WECC guidelines. For the purposes of the Study, it was necessary to derive appropriate transmission voltage criteria based upon compliance with established distribution voltage standards as well. The remainder of this section discusses how that criteria was developed for the Study.

Liberty Utility engineering and construction standard ENG06U provides distribution system steady state voltage criteria. Section 4.0 of that standard gives the following voltage limits at the first and last transformer on a distribution feeder:

- 126V-119V (normal conditions)
- 127V-115V (emergency conditions)

Distribution substation transformers are equipped with a fixed tap that can be set such that low side voltage is nominal for typical transmission voltage at a given point in the system. This provides a utility with the flexibility to define transmission voltage criteria referenced to steady state N-0 voltage instead of nominal transmission voltage. However, it requires that fixed taps are set correctly, and that the system is studied together with other interconnected systems to check for unexpected results during contingencies. With that in mind, the decision was made to be conservative and reference voltage criteria in the Study to nominal voltage.

In addition to the fixed taps, the distribution substation transformers on the NLT system are equipped with load tap changers, or paired with external regulators, capable of ±10% voltage regulation on distribution feeders.

The regulators are programmed with a first-house protection setting. This limits the regulator, preventing it from increasing voltage at the first customer above a desired limit (126V per Liberty's standard). Typically, first-house protection is programed at 126V, with a set regulation voltage of 123V and a bandwidth of 1V (122-124V). With the regulator controller settings programed in this way, the end-of-the-line distribution voltage remains above the lower limit of 119V in normal conditions, and 115V in emergency conditions. If it does not, other measures are taken to either increase the voltage profile or reduce load.

The lower voltage limit on the transmission system during normal (N-0) conditions is the lowest transmission voltage that will allow the distribution system to be operated at the upper voltage limit. This ensures maximum operability of the distribution system at all times. On a per unit basis with a 120V base, 126V corresponds to 1.05 per unit on the distribution feeder. Since the regulator is capable of increasing voltage by 10%, the transmission system voltage may be as low as 0.95 per unit under normal conditions while still maintaining the maximum allowable distribution feeder voltage.

The lower voltage limit on the transmission system during an emergency (N-1) condition is derived from the minimum distribution voltage allowable by the Liberty standard. Recall that the regulator is programed to maintain end of line voltage above 119V under normal conditions, with a typical set regulation voltage range of

122-124V. Under emergency conditions, end of line voltage may be reduced by 4V to 115V. Assuming the regulator is at maximum raise, then regulator output voltage may drop from the normal operating band of 122-124V to as low as 118-120V while maintaining end of line voltage at 115V. This corresponds to a range of 0.98-1.0 per unit on a 120V base, and results in a lower voltage limit on the transmission system of 0.88-0.9 per unit after accounting for the 10% boost by the regulator. Again, the conservative value of 0.9 per unit was selected for use in the Study.

Based on this analysis, transmission system voltage criteria for the Study are as follows:

- +5%/-5% (1.05-0.95 per unit) under normal conditions
- +5%/-10% (1.05-0.90 per unit) under emergency conditions

Kings Beach Diesels

The Kings Beach diesel generation station consists of six individual generators manufactured by Caterpillar, Inc. Each generator has a nameplate electrical capacity of 2,500kW at a power factor of 0.8, and is limited by the manufacturer to nameplate operation at altitudes up to 1,000 meters.

Due to the fact that the Kings Beach generation station is located at an altitude of approximately 6,250' (1,900 meters), the rated output capacity must be de-rated to a maximum of 2,000kW per unit. Operating at this capacity with a 0.8 power factor, each generator provides 1,500kVAR.

The Kings Beach generation station may operate no more than 720 "machine hours" each calendar year. With all six units running to generate 12MW, the Kings Beach station is limited to 120 hours per 12-month Permit Year. This equates to only five days of backup generation per year. However, Kings Beach generation is also committed to respond to emergencies experienced by NV Energy, up to 50% of the machine hours in a calendar year. Therefore, for planning purposes, Liberty can only rely upon Kings Beach generation operating at maximum capacity for 2.5 days (60 hours) per calendar year.

The North Lake Tahoe transmission system has experienced, and will continue to experience, longer duration outages compared to systems located in flatter terrain. Wildfires, storms, and high winds combine with heavy trees and steep terrain to increase the time needed to find and fix problems. Even a relatively minor problem like a tree falling through a line would likely take more than 60 hours to repair if it happened during a snow storm or in a hard to reach spot. An event like an avalanche or fire would certainly exceed the 60-hour limitation.

For this reason, the use of diesel generation at Kings Beach is not considered as mitigation for N-1 contingencies in this study. While running the diesels does mitigate N-1 contingencies, the limited run-time does not provide reliable capacity for most transmission system outages that could occur during system peak weather conditions. The exclusion of the diesels as a mitigating factor during N-1 contingencies is also consistent with the objective to reduce Liberty's reliance on diesel-fired generation at Kings Beach.

Deliverables

Power flow analysis results for the 2015 system peak with the existing 60kV system:

- N-0 study for the existing system with all lines and transformers in service
- N-1 studies for the loss of any single transmission line or transformer as described in Table 1
- Validation of trigger point for Phase 2 upgrade

Power flow analysis results for the partial 120kV loop system:

- N-0 study of the partial 120kV loop system with all lines and transformers in service
- N-1 studies for the loss of any single transmission line or transformer as described in Table 2

Study Results

Existing 60kV System

N-0 – All lines in Service

See Appendix Plot A1 for a power flow plot at 88.7MW during N-0 conditions. This represents the loading on the system as it was during the 2015 NLT system peak.

N-1 – Single Contingency Analysis

The existing 60kV system at 2015 system peak loading level is analyzed for each of the N-1 contingencies described in Table 2.

The loss of the North Truckee to Martis 120kV line segment results in an overload of the 120/60kV transformer at North Truckee substation, as well as the 609 line loading to 98.9% of its winter operating limit. See Appendix Plot A4.

The loss of the 629 line results in low voltage at the Tahoe City substation bus as shown in Appendix Plot A8. The NLT system meets voltage and loading criteria for all other N-1 contingencies at the 2015 system peak loading level.

In addition to the plots noted above, Appendix A contains power flow plots for each N-1 contingency studied at the 2015 system peak loading level. Table 4 below provides a summary of the N-1 results for the existing NLT 60kV system.

Table 4
N-1 Results Summary for Existing 60kV at 2015 Peak

#	Contingency Element	Violation	Location	Plot	Comment
1	North Truckee 120/60kV transformer	None	N/A	A2	
2	Squaw Valley 120/60kV transformer	None	N/A	A3	
3	North Truckee-Martis 120kV line (#132)	Overload	North Truckee Transformer & 609 Line	A4	4.2 MVA over 75 MVA rating & 98.9% of 609 Line rating
4	Martis-Squaw Valley 120kV line (#132)	None	N/A	A5	
5	North Truckee-Truckee 60kV line (#621)	None	N/A	A6	
6	Truckee-Squaw Valley 60kV line (#609)	None	N/A	A7	
7	Squaw Valley-Tahoe City 60kV line (#629)	Low voltage	Tahoe City bus	A8	0.888 p.u.
8	Kings Beach-Tahoe City 60kV line (#625)	None	N/A	A9	
9	Northstar-Kings Beach 60kV line (#650)	None	N/A	A10	
10	Truckee-Northstar 60kV line (#650)	None	N/A	A11	

Phase 2 – Partial 120kV System

N-0 – All lines in Service

See Appendix Plot B1 for a power flow plot at 88.7MW during N-0 conditions. This represents the loading on the system during the 2015 NLT system peak.

N-1 – Single Contingency Analysis for 2015 System Peak

The partial 120kV loop system is modeled and studied for the 2015 system peak.

The Phase 2 upgrade to the partial 120kV loop mitigates the loss of the 132 line between North Truckee and the Martis tap at the 2015 peak loading level. The 120/60kV transformer at the North Truckee substation and the 609 line no longer overload during this contingency as shown in Appendix Plot B4.

Similarly, the loss of the 629 line between Squaw Valley and Tahoe City no longer causes low voltage at the Tahoe City bus with the partial loop system at 2015 peak loads. See Appendix plot B8.

The power flow analysis for the loss of the new 120kV line between North Truckee and Northstar revealed that the new Kings Beach 120/60kV transformer tap should be set differently than the current tap setting for the Squaw Valley 120/60kV transformer. Ascension Power Engineering conducted a sensitivity analysis on the system to establish the correct tap setting to maximize operational performance during N-0 and

N-1 conditions. The tap setting shall be a ratio of 2:1, any other tap setting will yield poor N-0 or N-1 voltages.

In addition to the plots noted above, Appendix B contains power flow plots for each N-1 contingency studied at 2015 system peak load with the 120kV partial loop system. Table 5 below provides a summary of the N-1 results for the 120kV partial loop.

Table 5
N-1 Results Summary for the Partial 120kV loop at 2015 Peak

#	Contingency Element	Violation	Location	Plot	Comment
1	North Truckee 120/60kV transformer	None	N/A	B2	
2	Squaw Valley 120/60kV transformer	None	N/A	B3	
3	North Truckee-Martis 120kV line (#132)	None	N/A	B4	Phase 2 mitigates this violation at 2015 peak load level
4	Martis-Squaw Valley 120kV line (#132)	None	N/A	B5	
5	North Truckee-Truckee 60kV line (#621)	None	N/A	B6	
6	Truckee-Squaw Valley 60kV line (#609)	None	N/A	B7	
7	Squaw Valley-Tahoe City 60kV line (#629)	None	N/A	B8	Phase 2 mitigates this violation at 2015 peak load level
8	Kings Beach-Tahoe City 60kV line (#625)	None	N/A	B9	
9	Northstar-Kings Beach 120kV line (new)	None	N/A	B10	
10	Truckee-Northstar 120kV line (new)	None	N/A	B11	
11	Kings Beach 120/60kV transformer	None	N/A	B12	

Recommendations

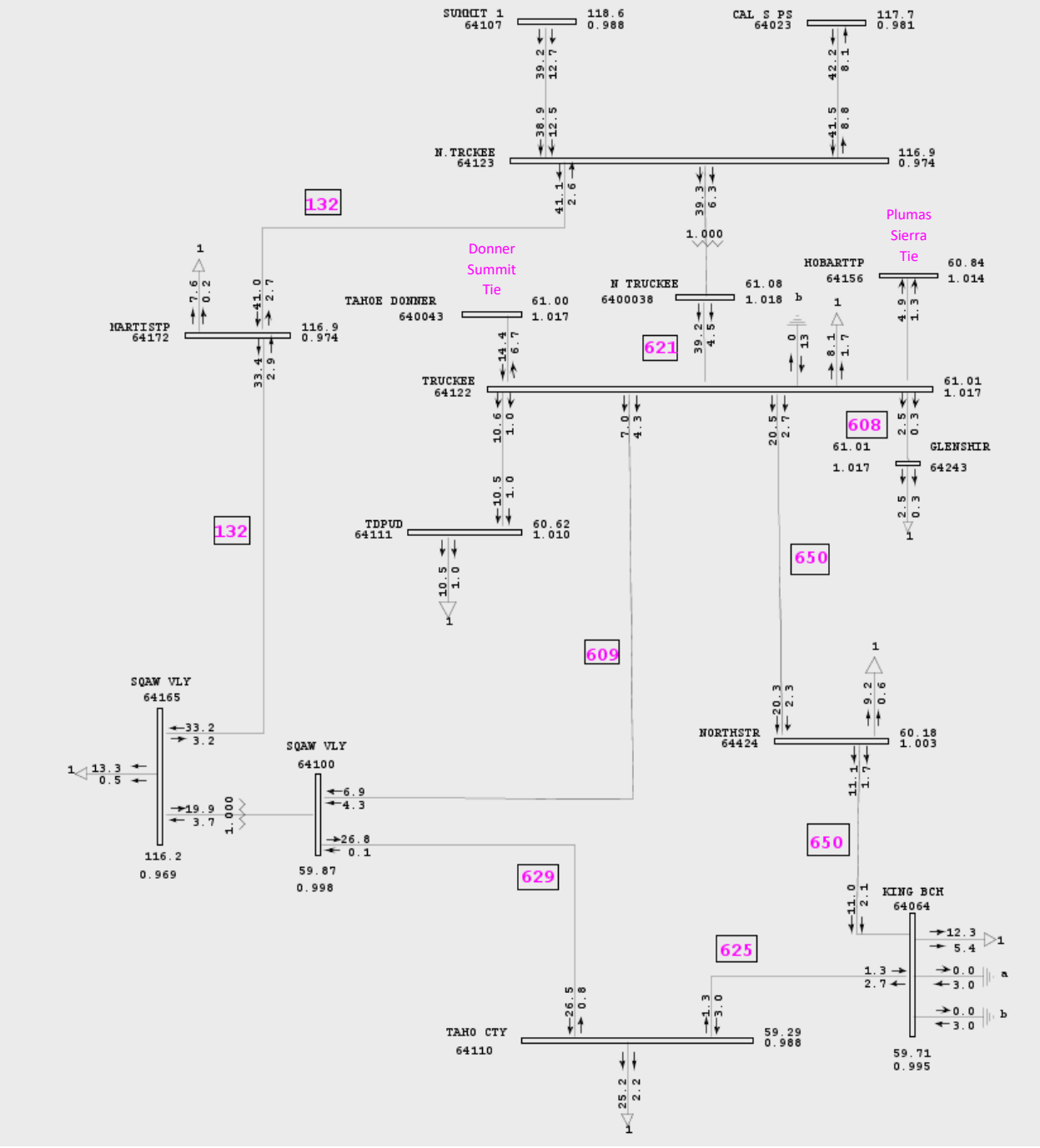
The power flow analyses for the single contingency scenarios representing the loss of a transformer or transmission line demonstrate that the existing 60kV system cannot support the loss of the 629 transmission line or the 132 line from North Truckee to Martis. The loss of the North Truckee to Martis 120kV line segment results in an overload of the 120/60kV transformer at North Truckee substation. This transformer is not owned by Liberty Utilities, rather it is owned and operated by NV Energy. Liberty Utilities is not in control of nor do they have the ability to specify operational limits of this transformer.

The transformer overload alone does not lead Ascension Power Engineering to recommend a system improvement based on this N-1 situation. The same N-1 scenario results in the 609 line loading to 98.9% of its winter operational rating. The other N-1 scenario, the loss of the 629 line, results in low voltage at the Tahoe City substation.

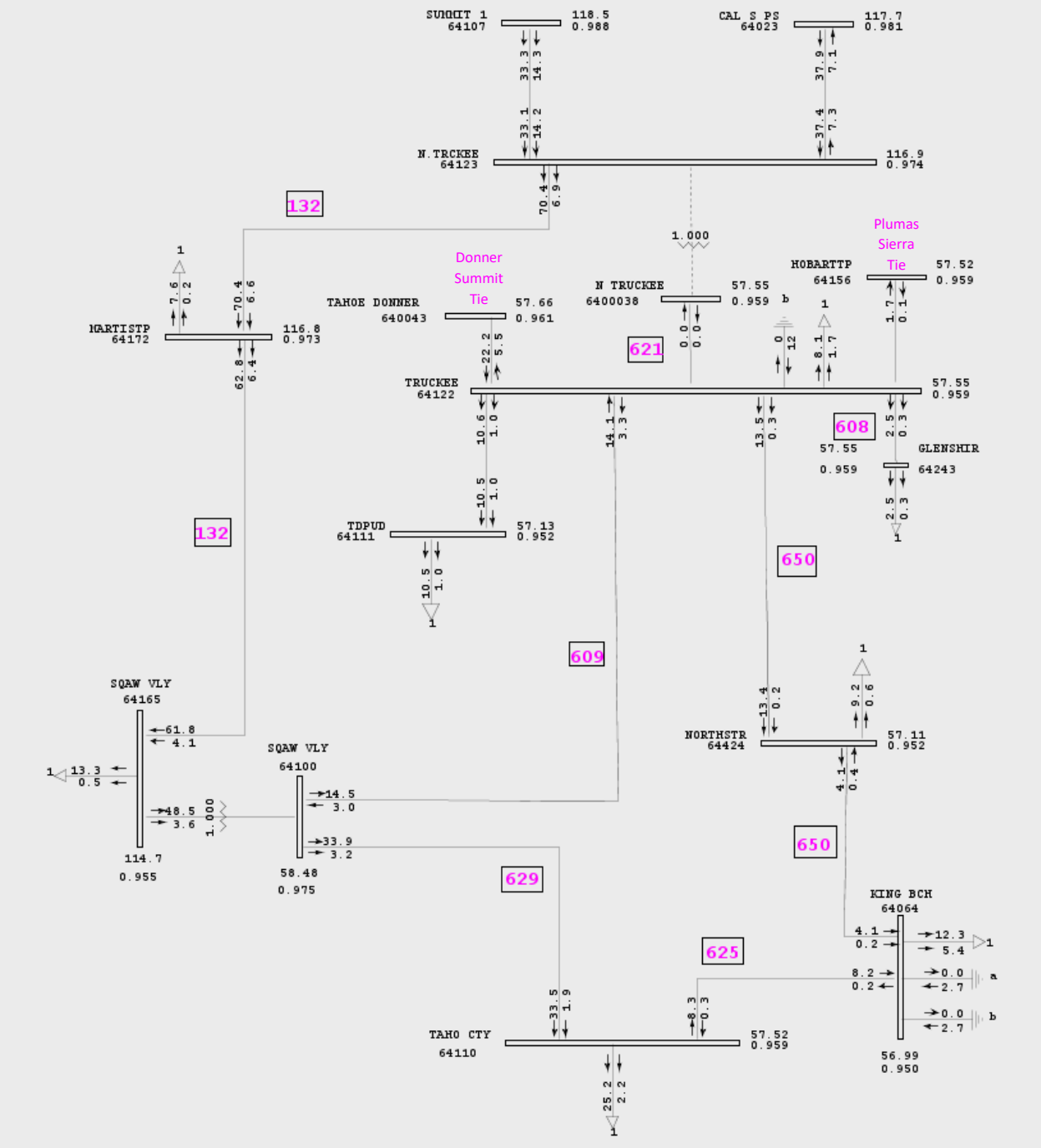
Therefore, even at the 2015 peak of 88.7 MW, Phase 2 is needed. The existing system load, when escalated by an annual growth rate of 1%, exceeds the 89 MW trigger for Phase 2 in the winter of 2016-17, and therefore, conditions have met the criteria for the construction of Phase 2. It is recommended that Liberty Utilities begin the construction of Phase 2 as soon as possible.

Appendix A – Plots for Existing 60kV System at 88.7MW 2015 System Peak

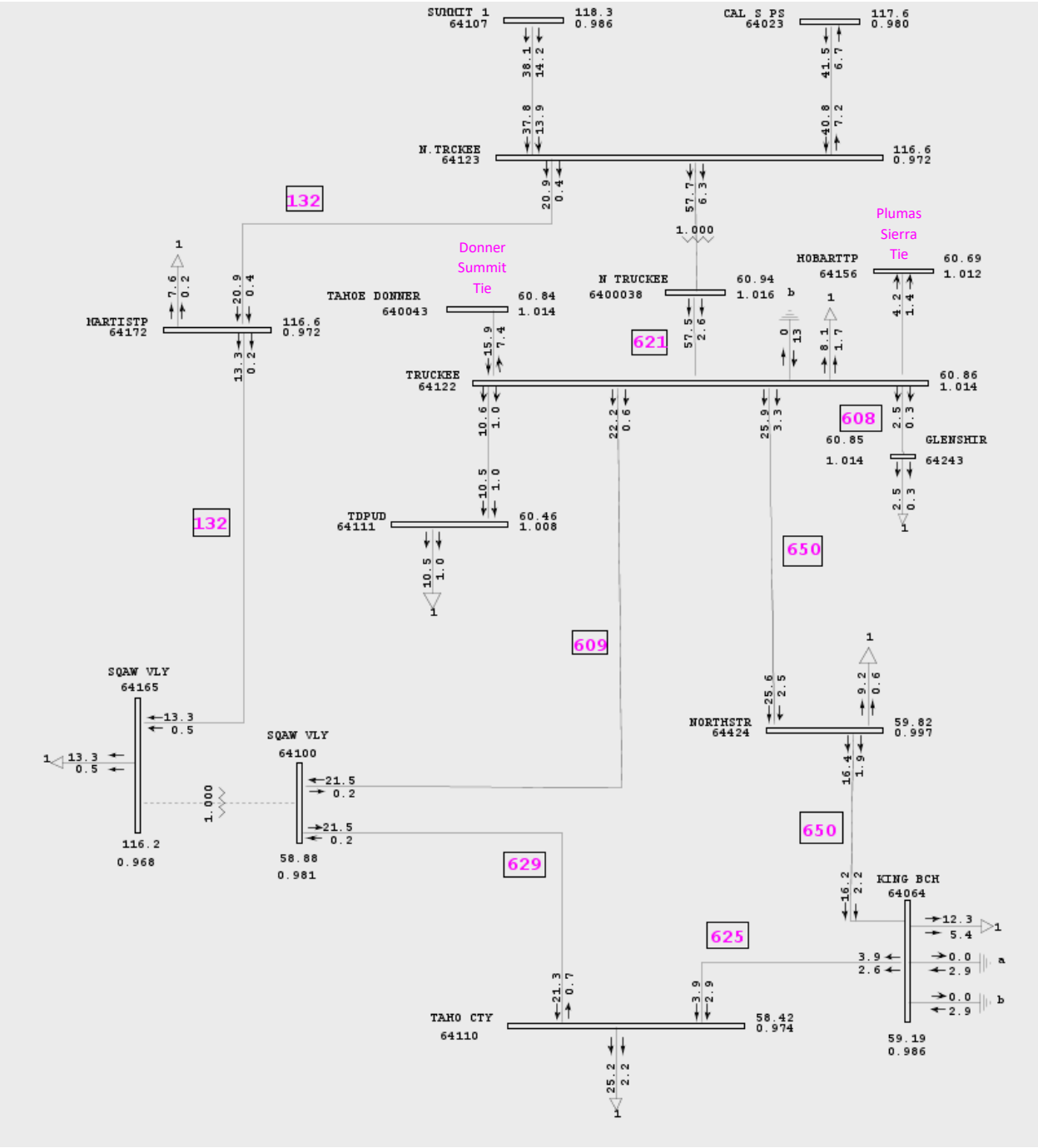
Plot A1 – N-0



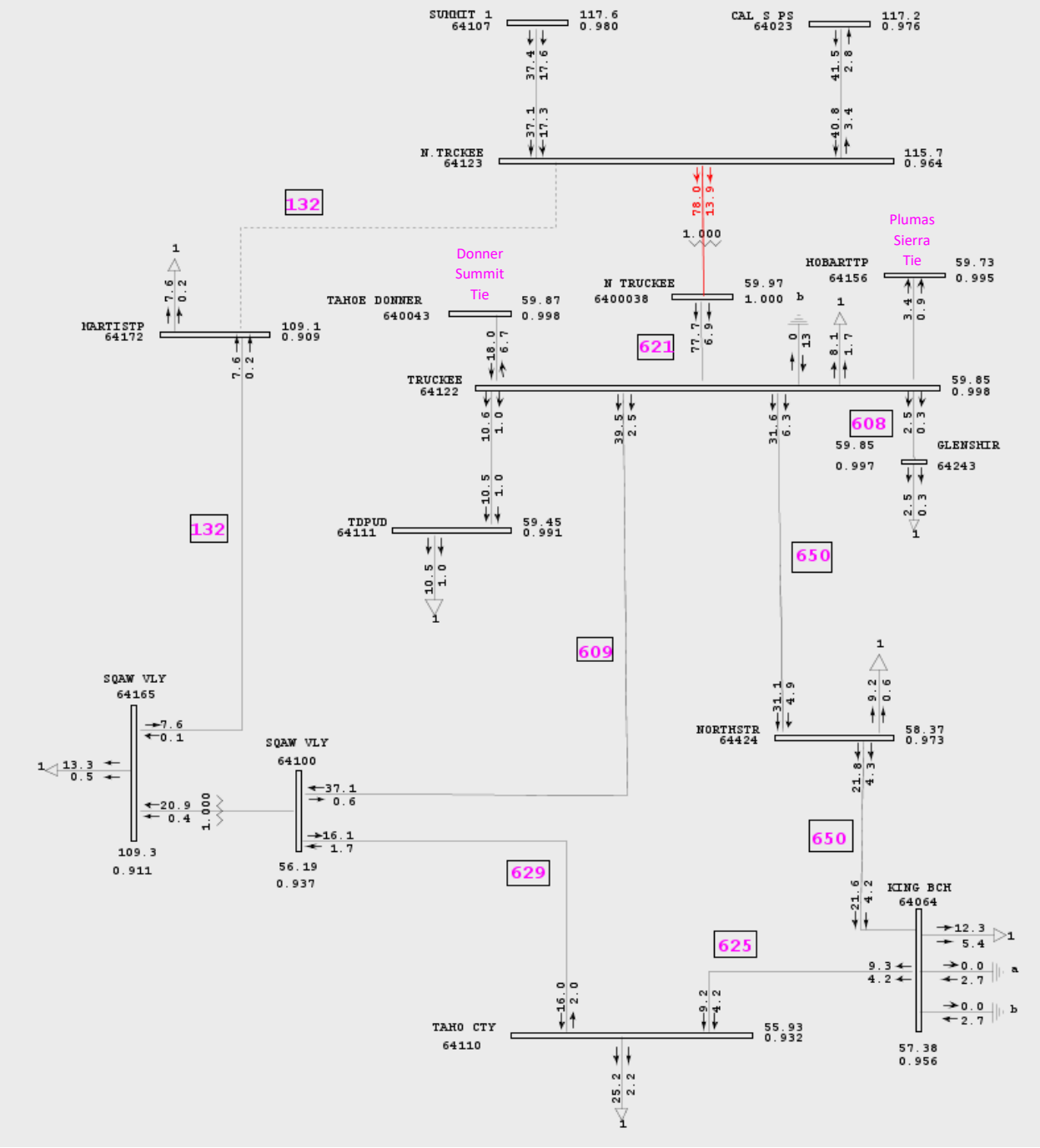
Plot A2 – N-1 Loss of N. Truckee Transformer



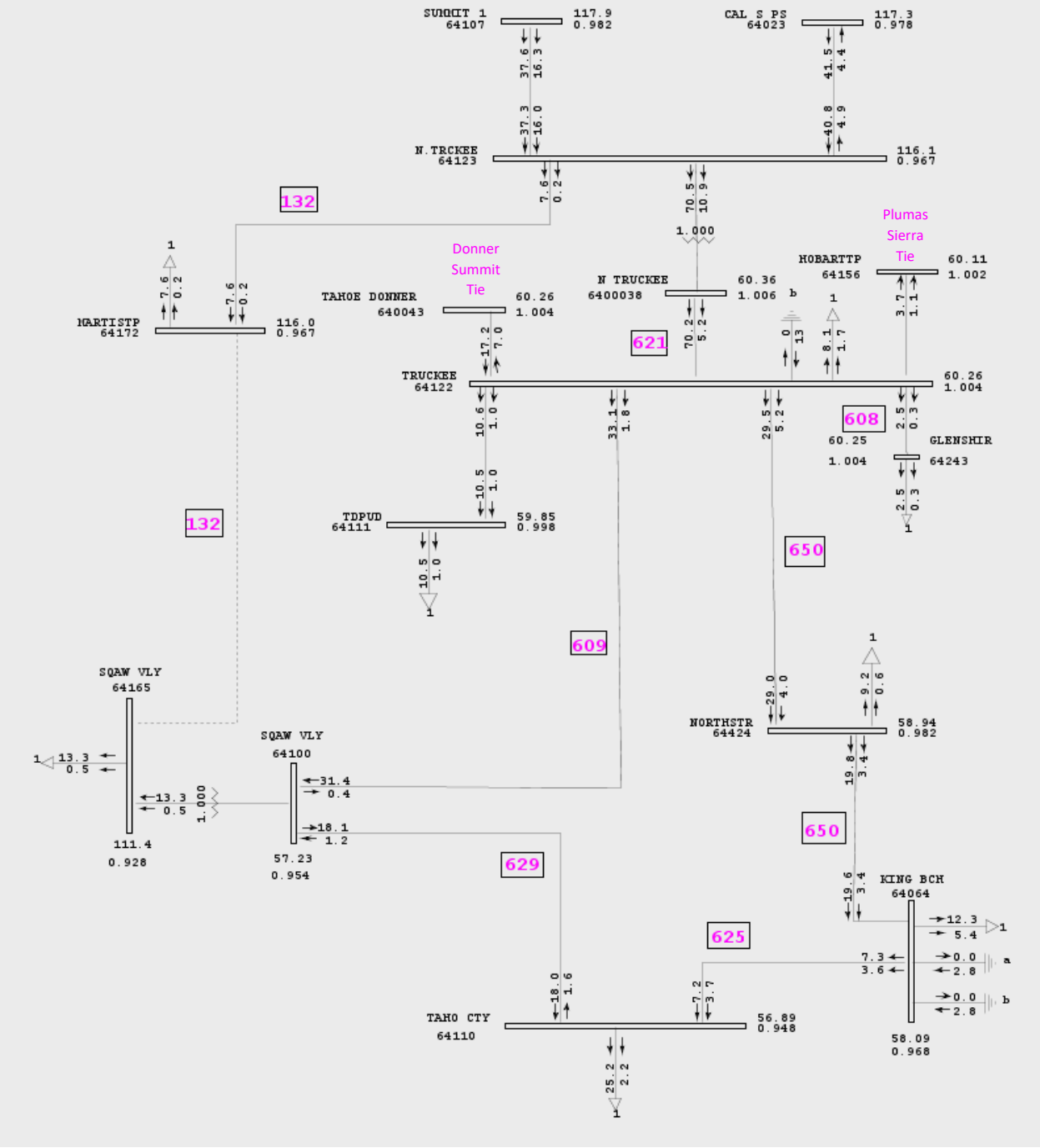
Plot A3 – N-1 Loss of Squaw Valley Transformer



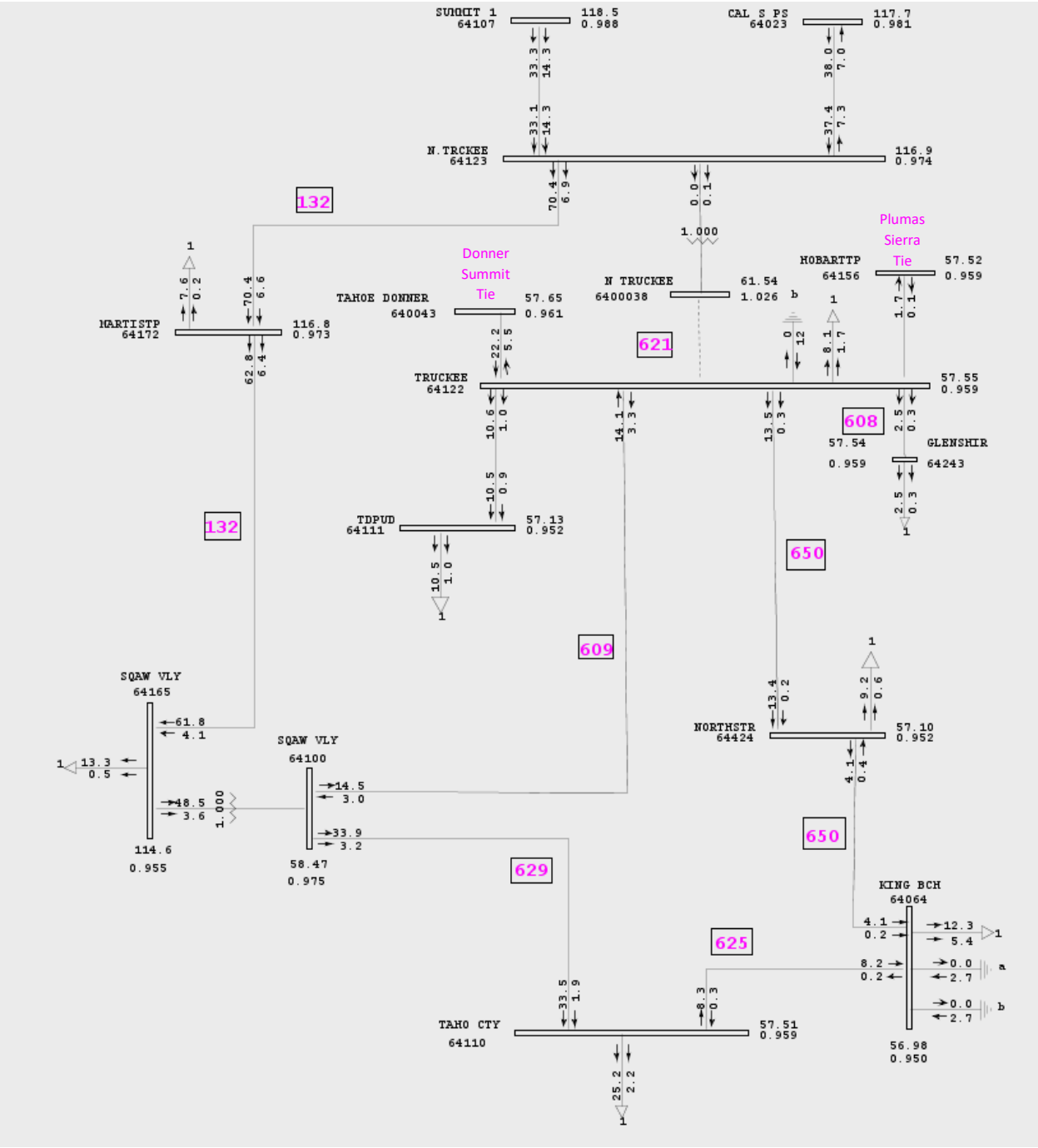
Plot A4 – N-1 Loss of 132 Line from N. Truckee to Martis Valley



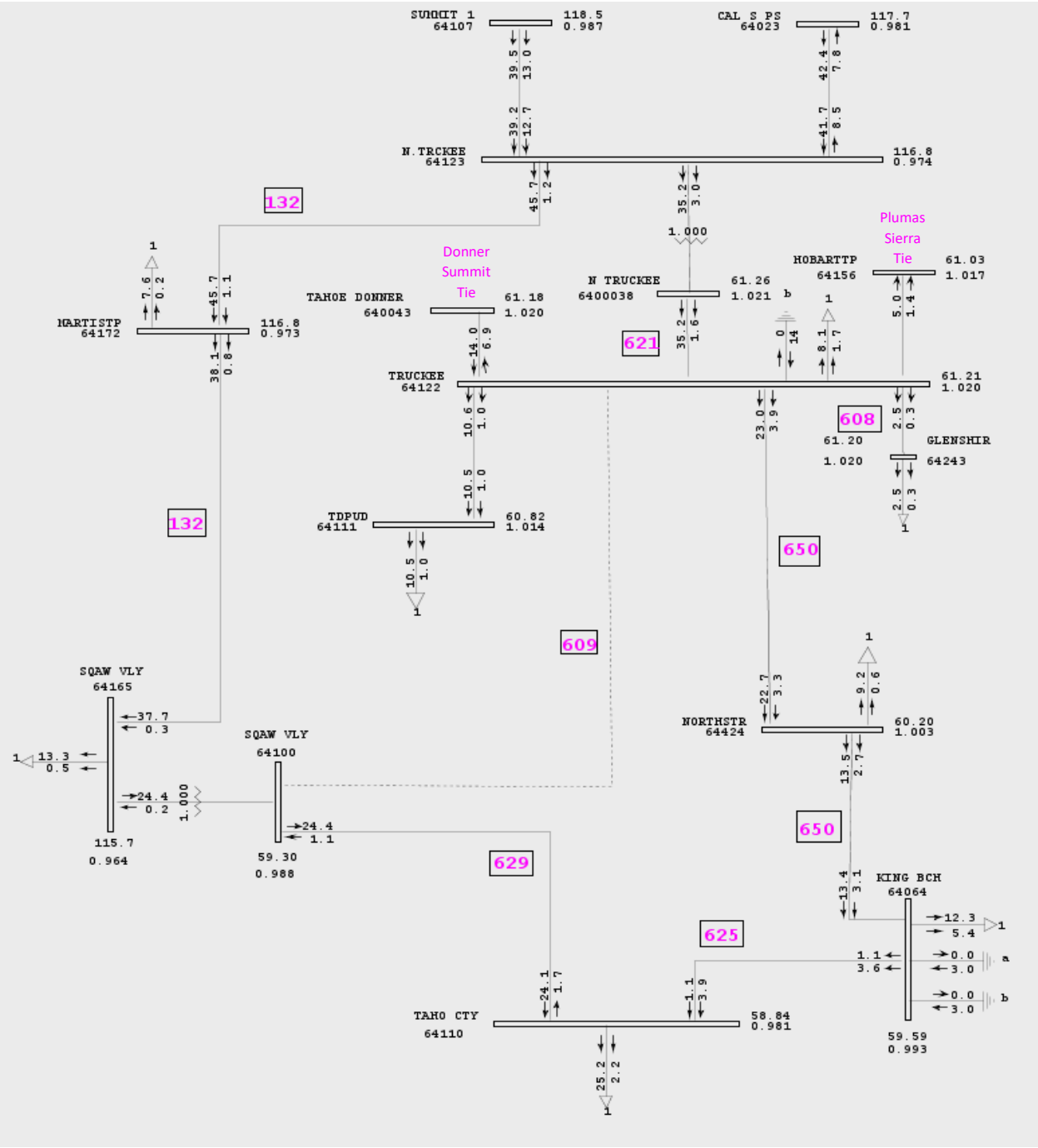
Plot A5 – N-1 Loss of 132 Line from Martis Valley to Squaw Valley



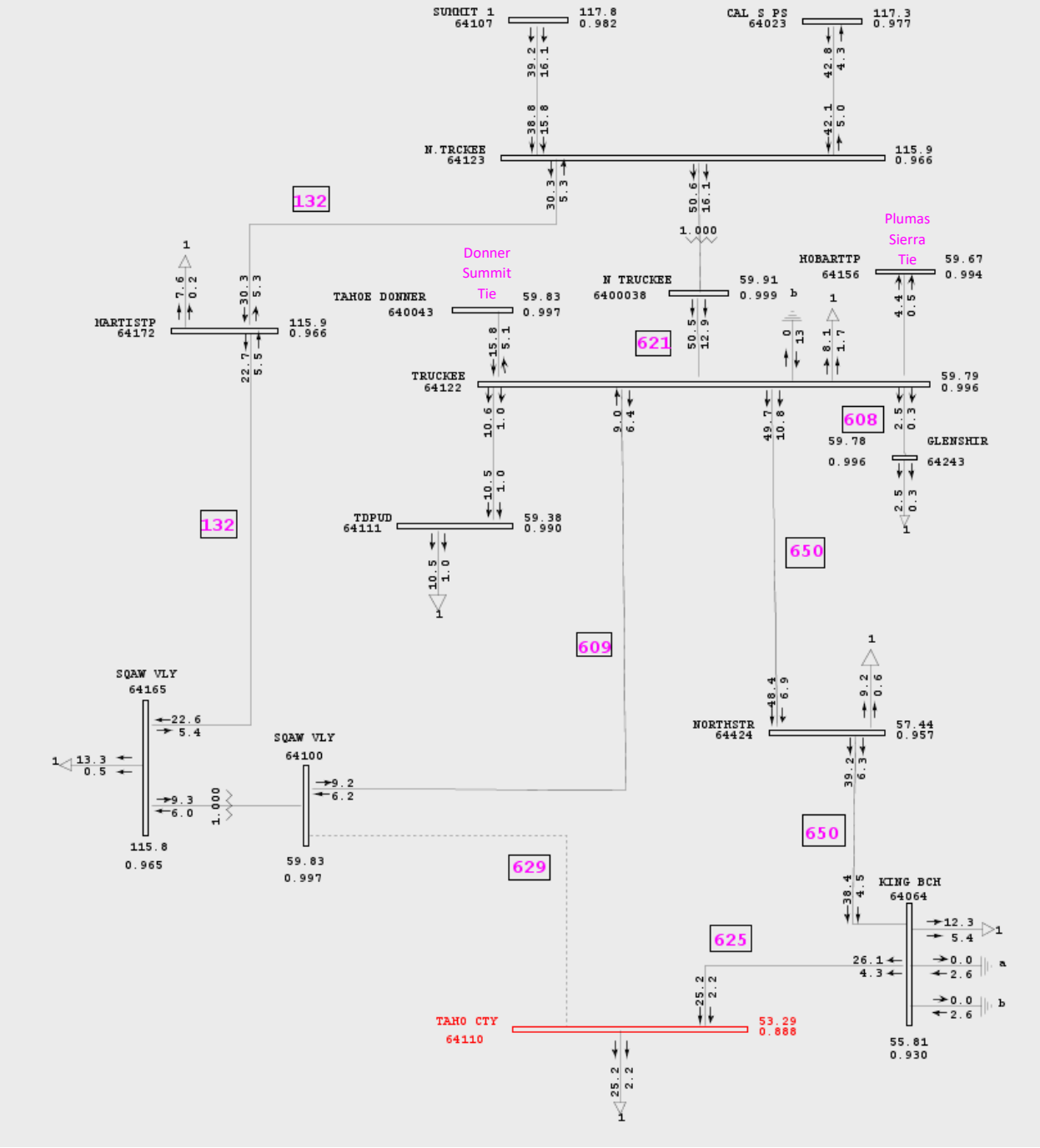
Plot A6 – N-1 Loss of 621 Line



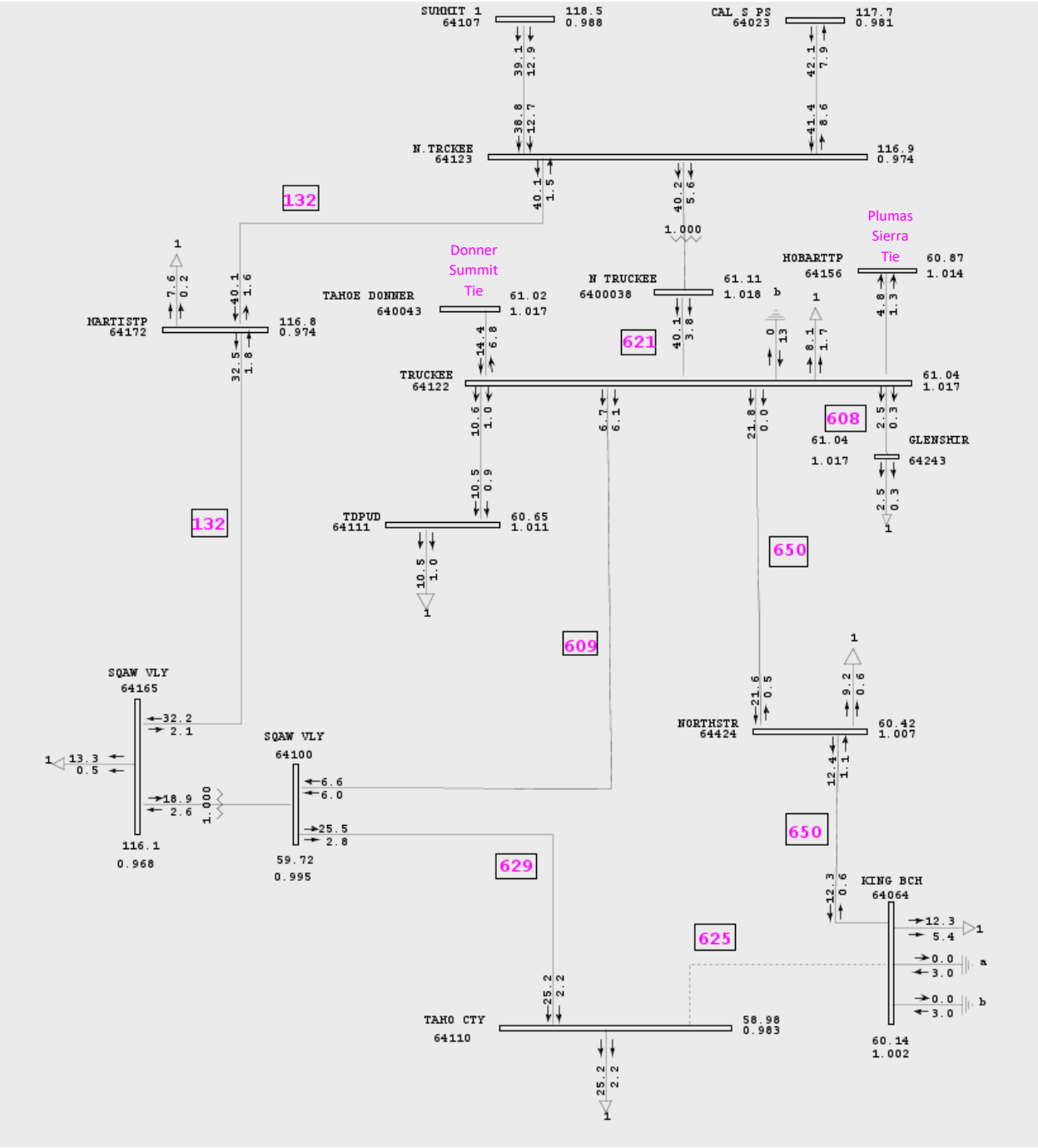
Plot A7 – N-1 Loss of 609 Line



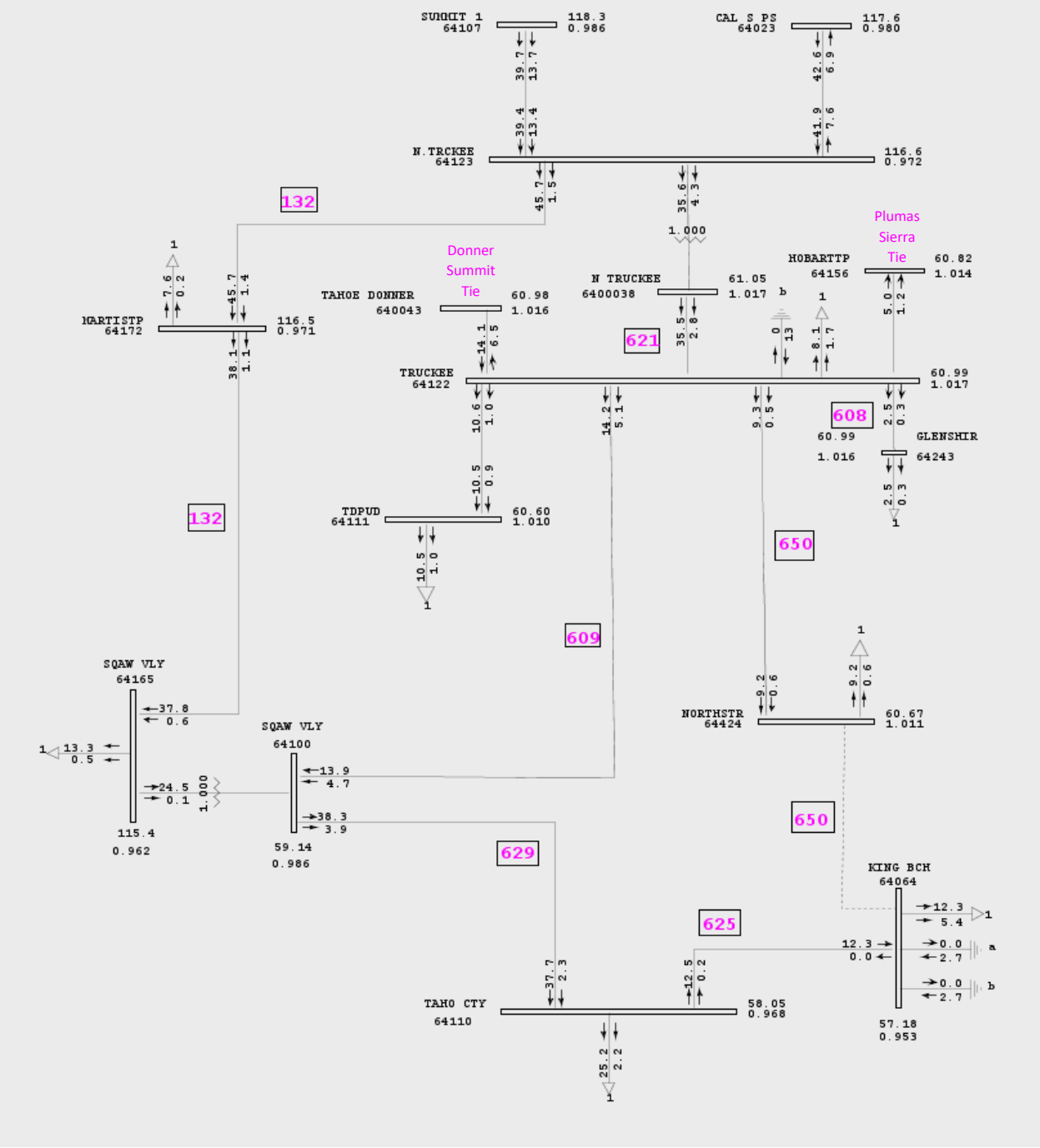
Plot A8 – N-1 Loss of 629 Line



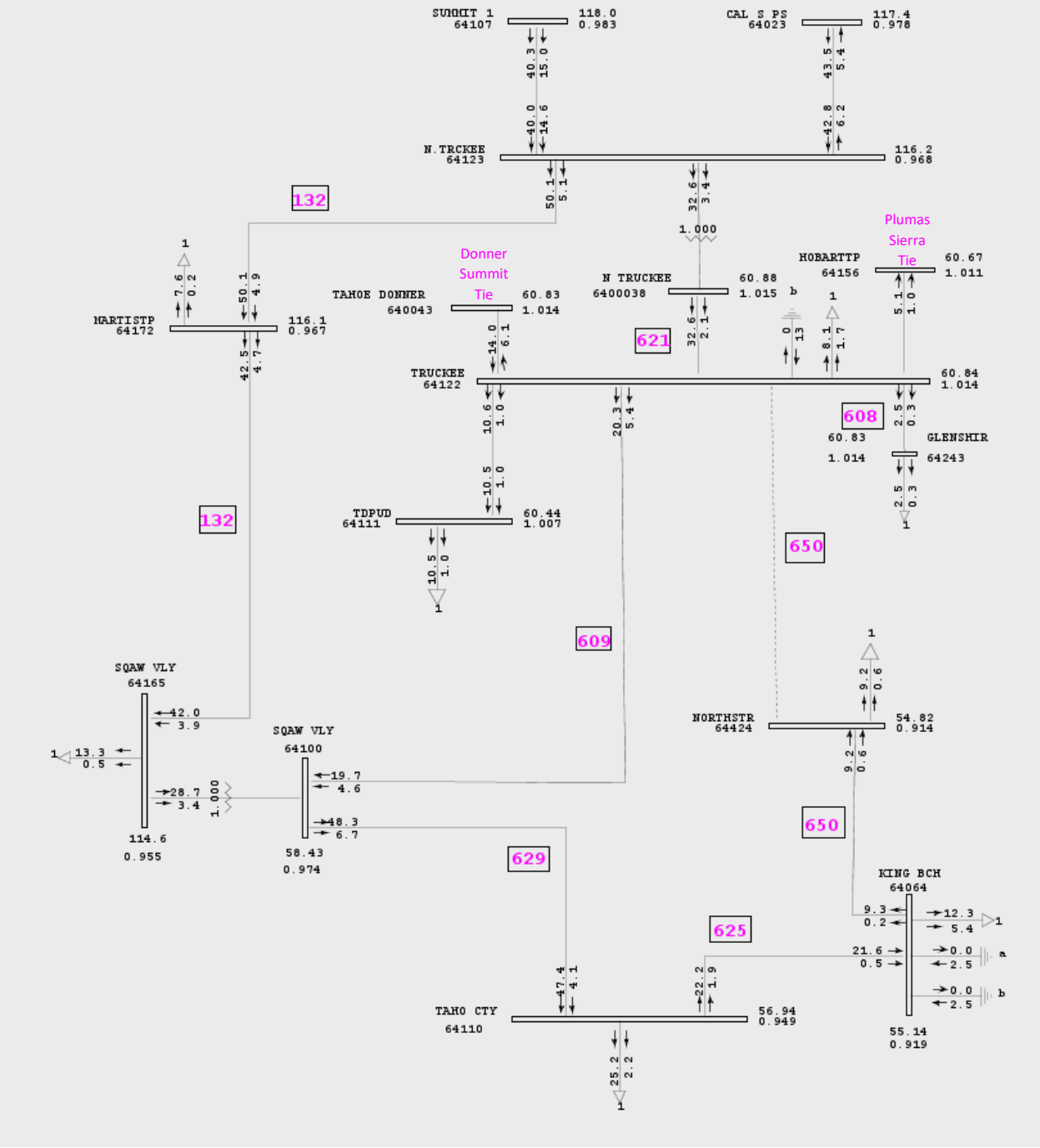
Plot A9 – N-1 Loss of 625 Line



Plot A10 – N-1 Loss of 650 Line from Northstar to Kings Beach

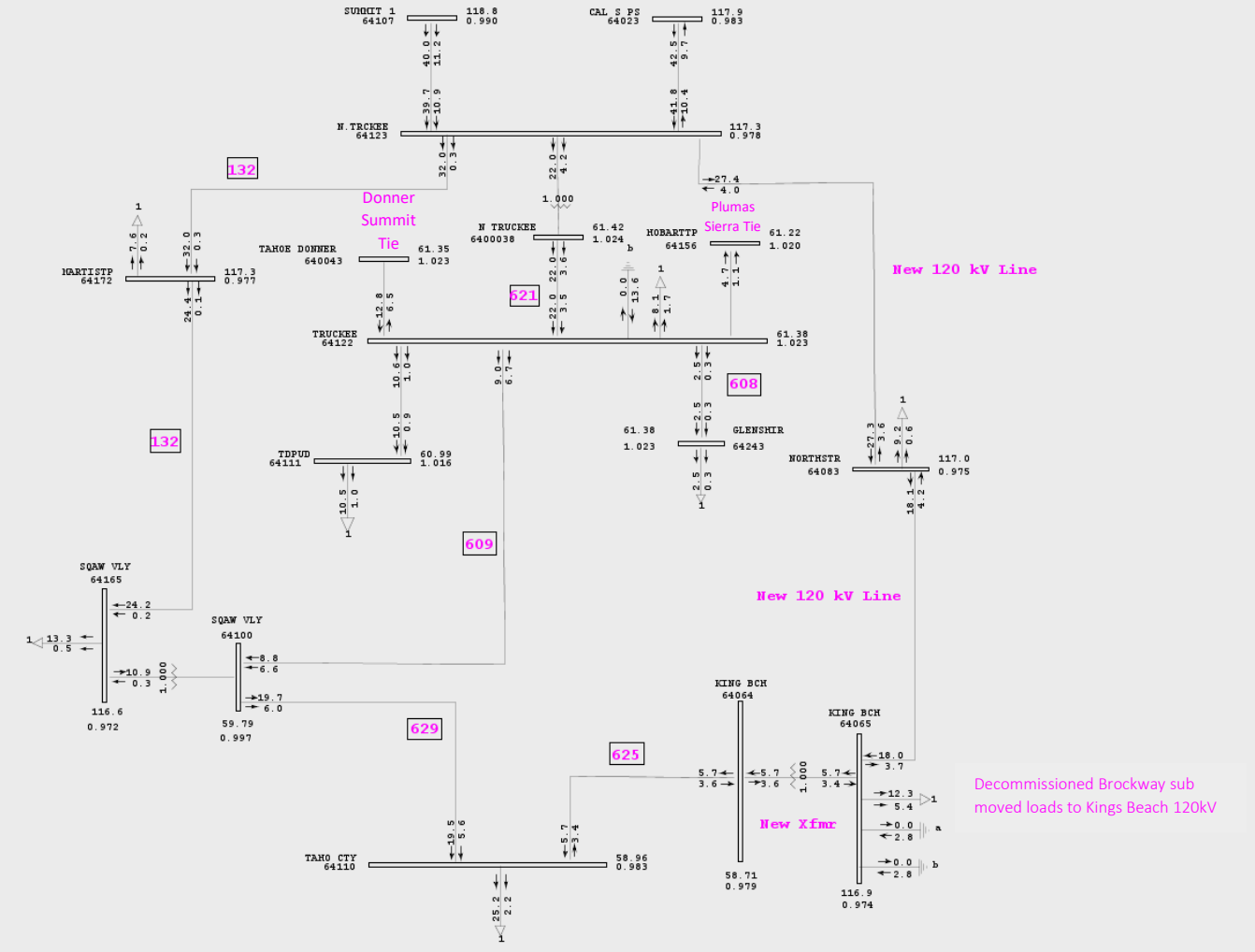


Plot A11 – N-1 Loss of 650 Line from Truckee to Northstar

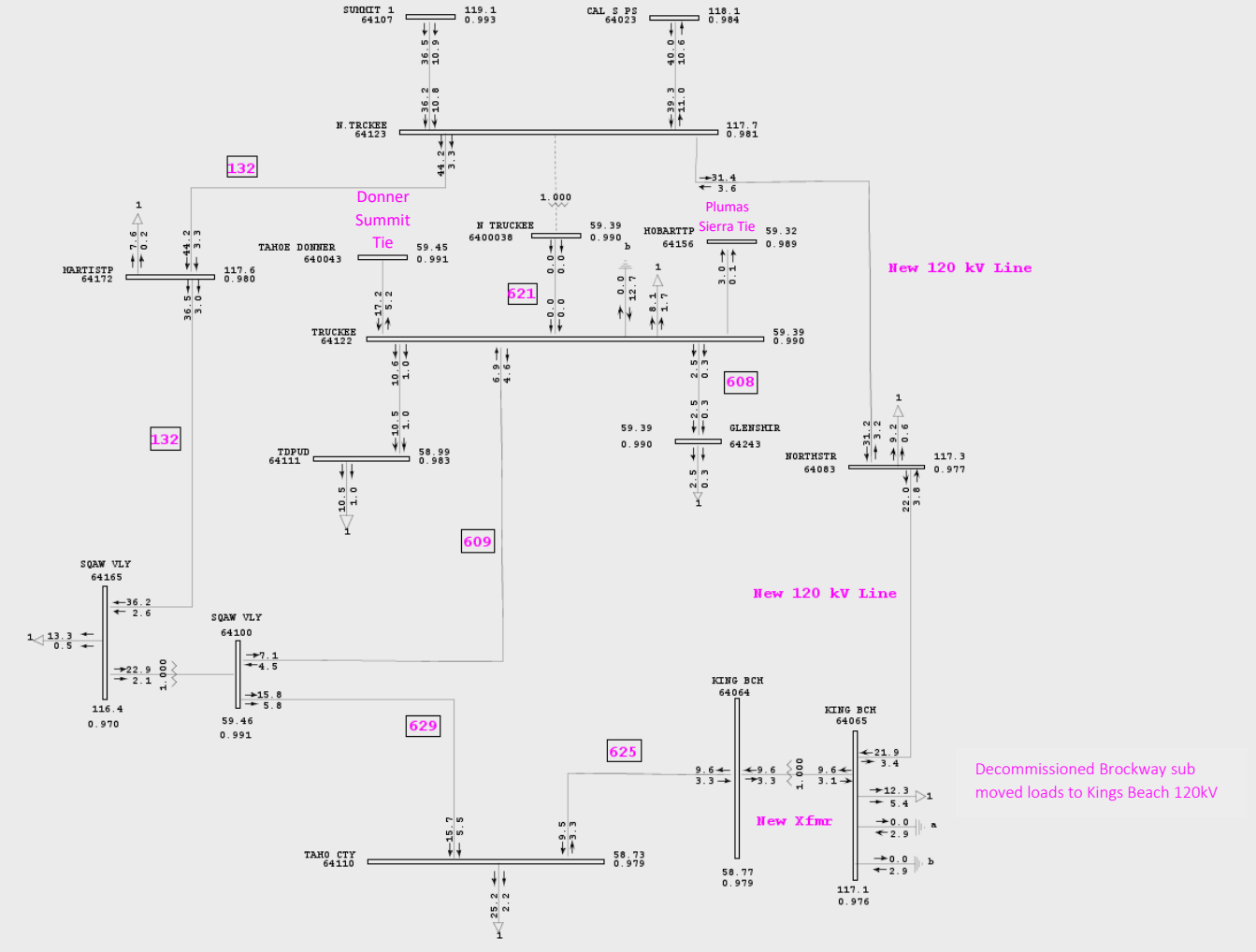


Appendix B – Plots for 120kV Partial Loop at 88.7MW 2015 System Peak

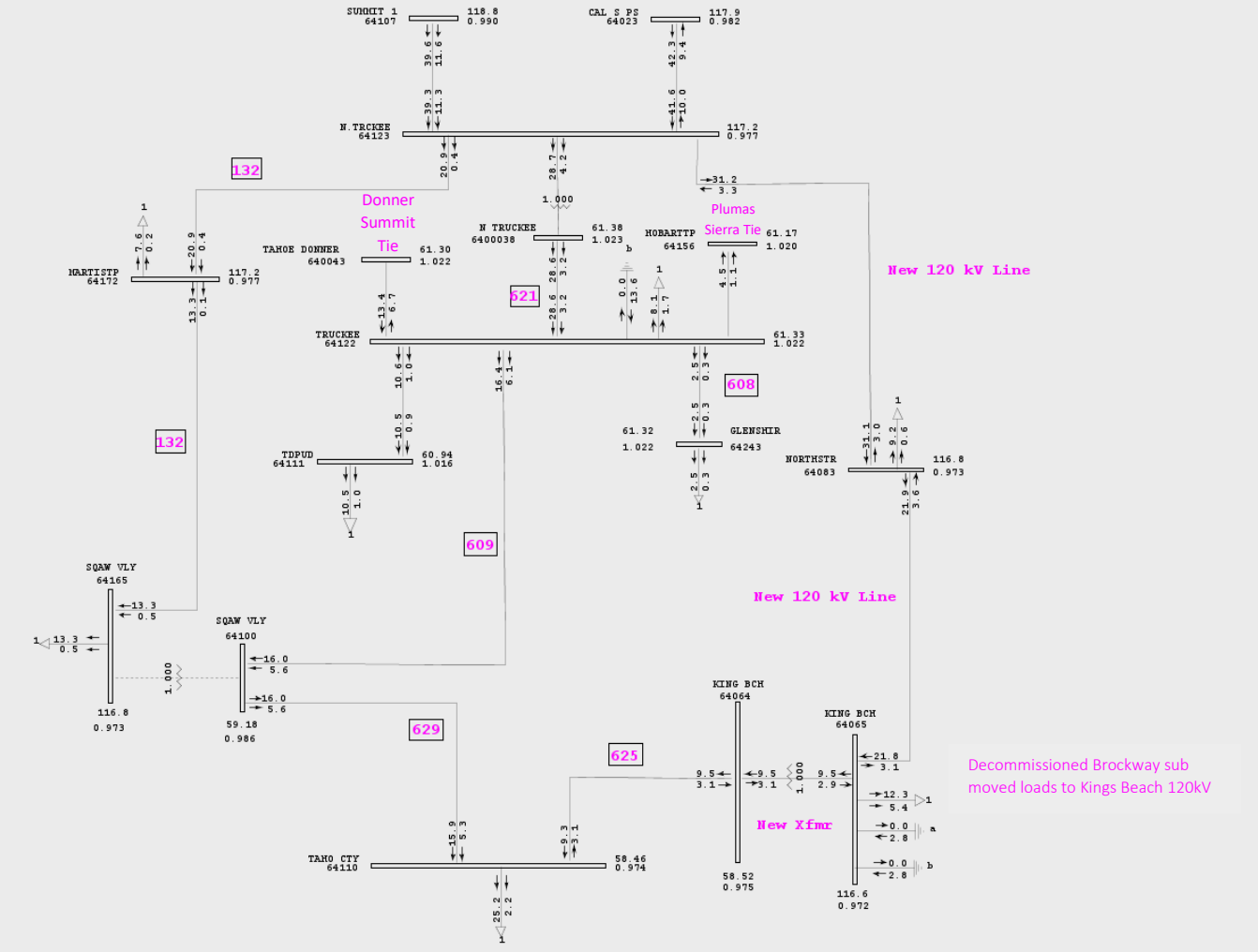
Plot B1 – N-0



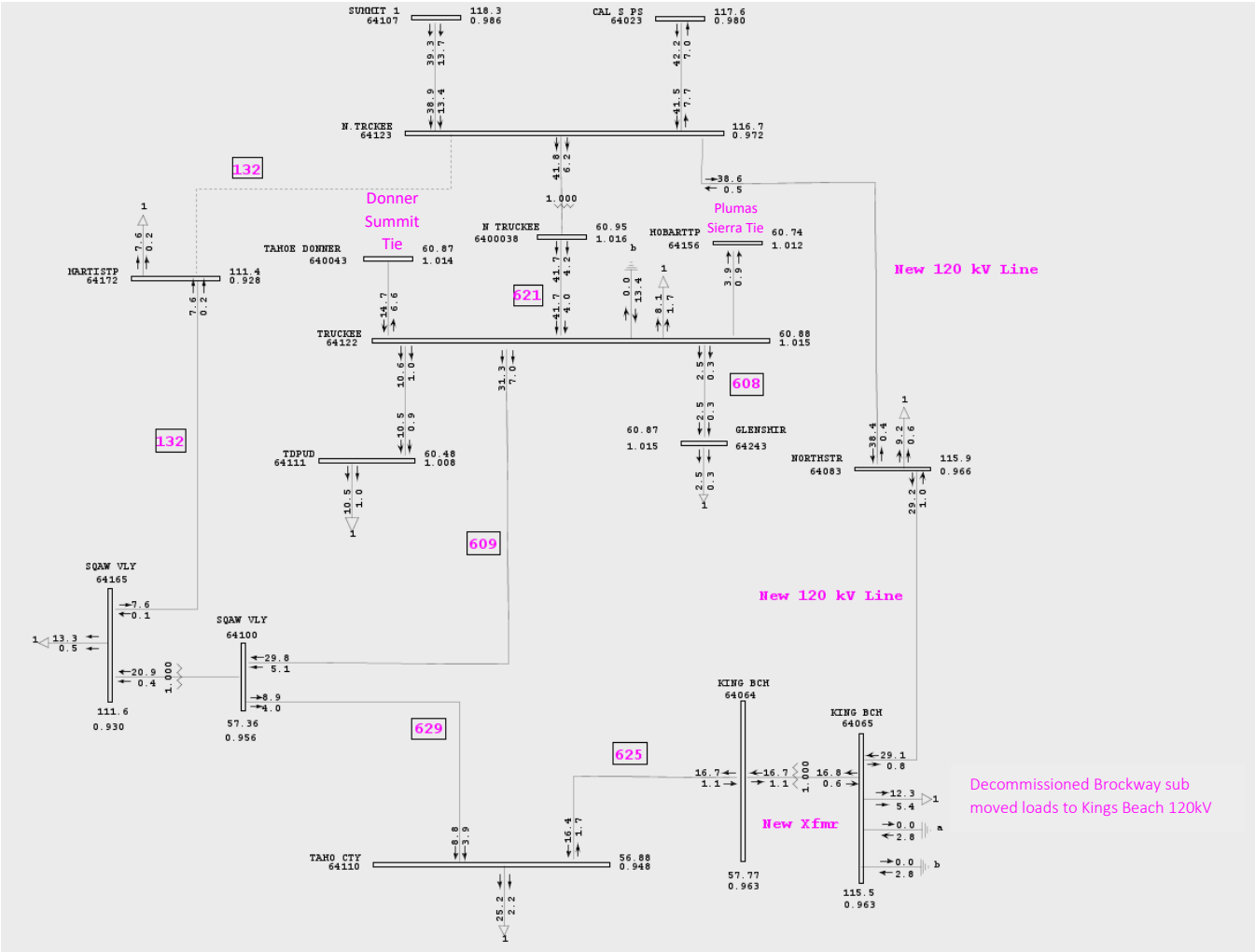
Plot B2 – Loss of N Truckee Transformer



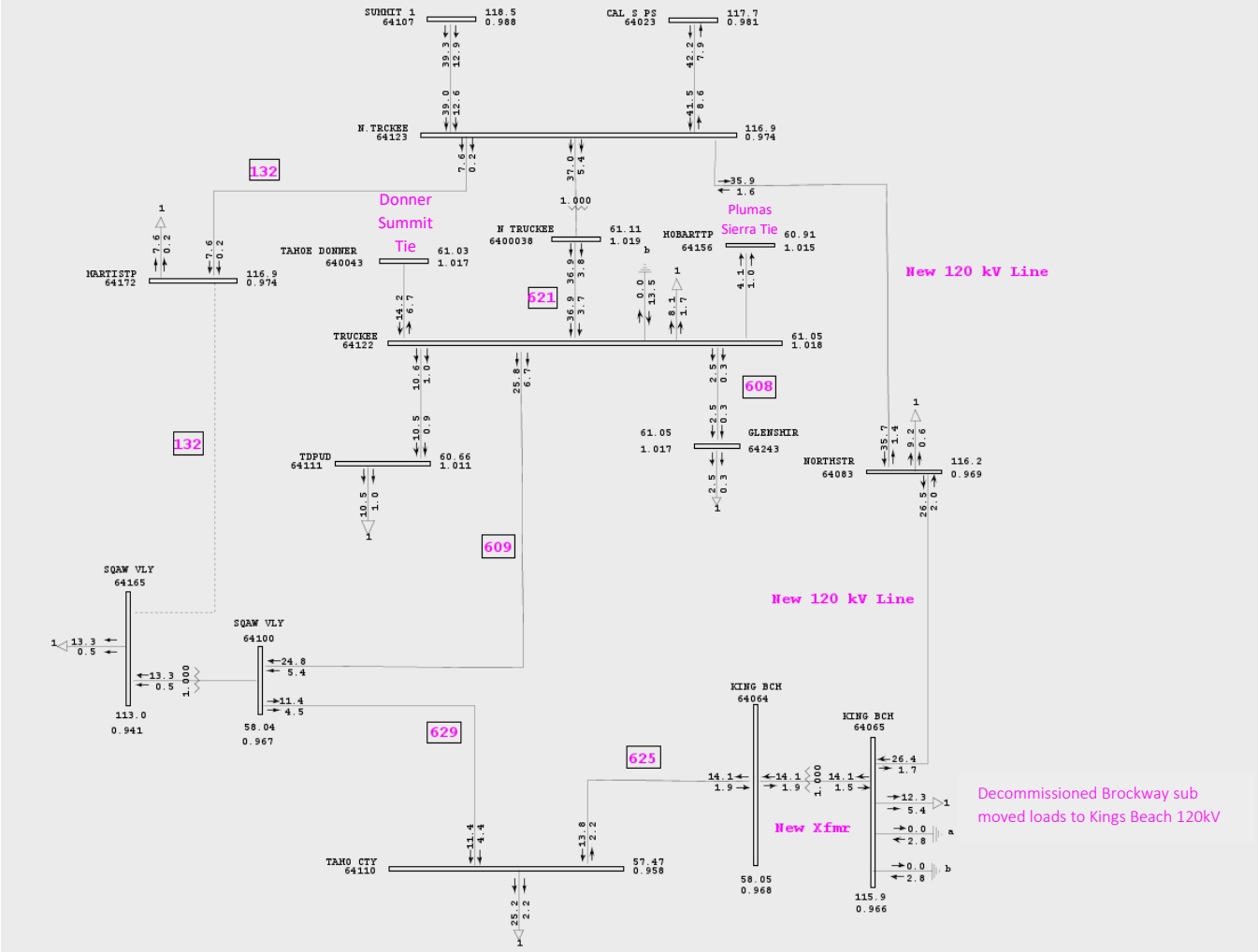
Plot B3 – Loss of Squaw Valley Transformer



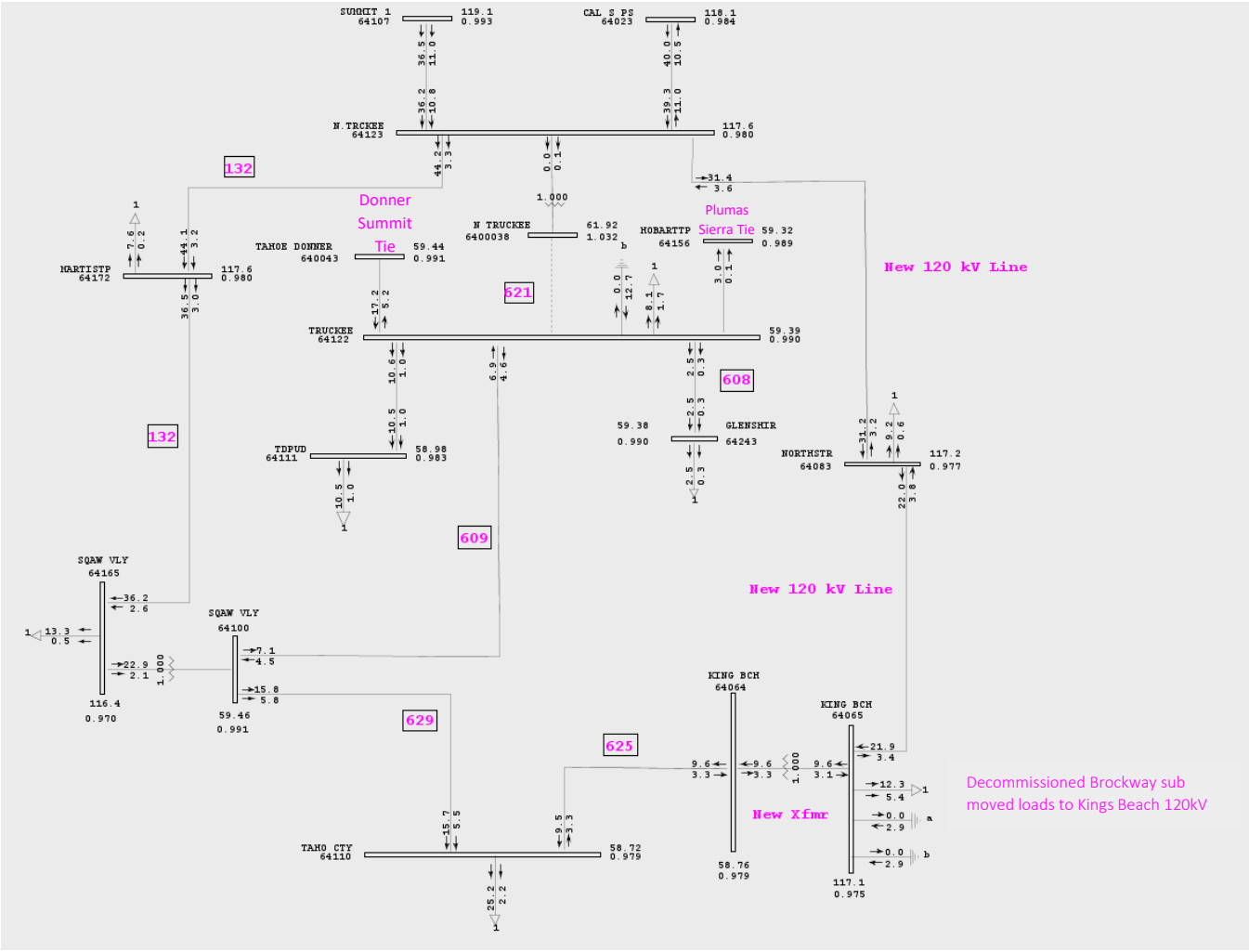
Plot B4 – N-1 Loss of 132 Line Segment from North Truckee to Martis Valley



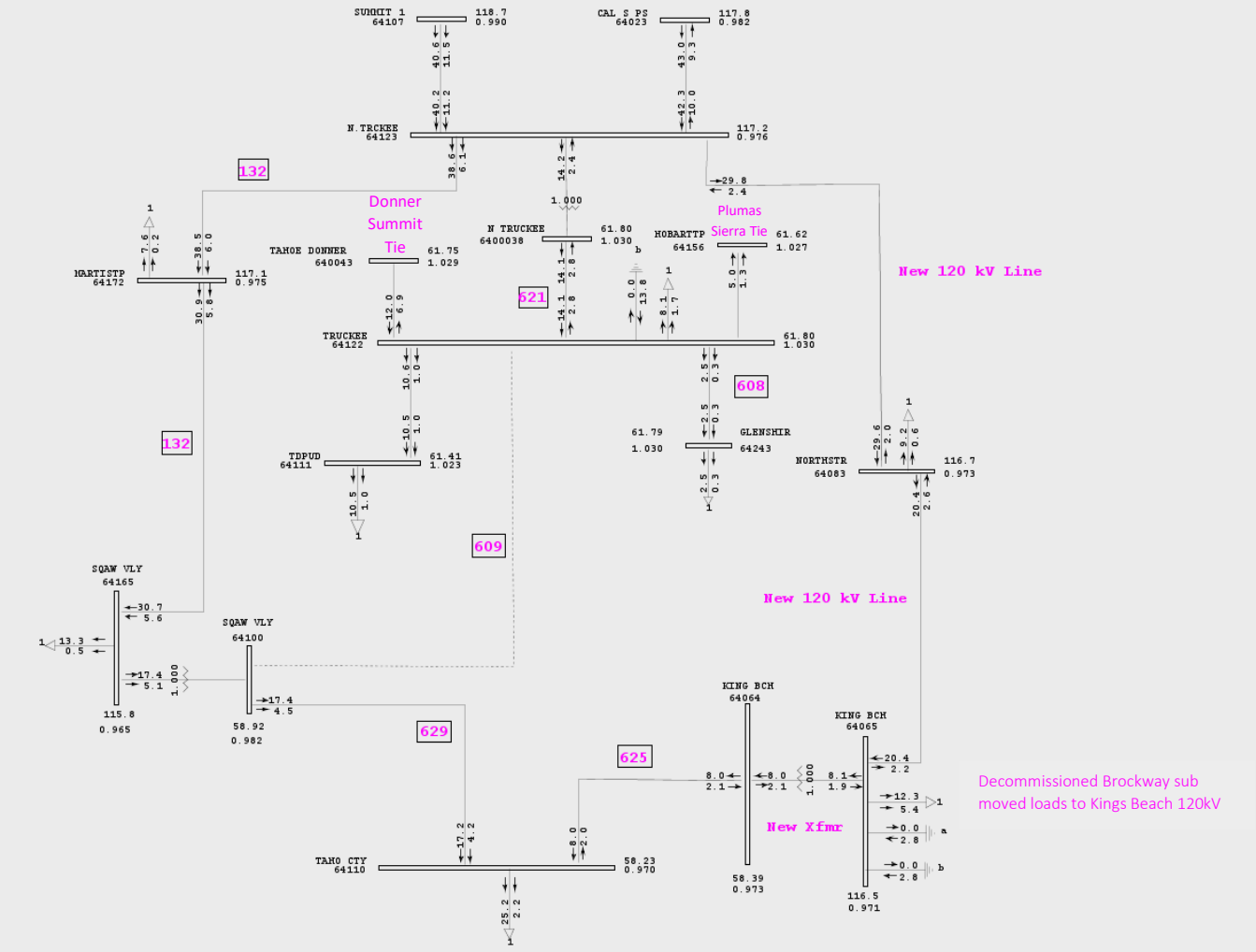
Plot B5 – N-1 Loss of 132 Line Segment from Martis Valley to Squaw Valley



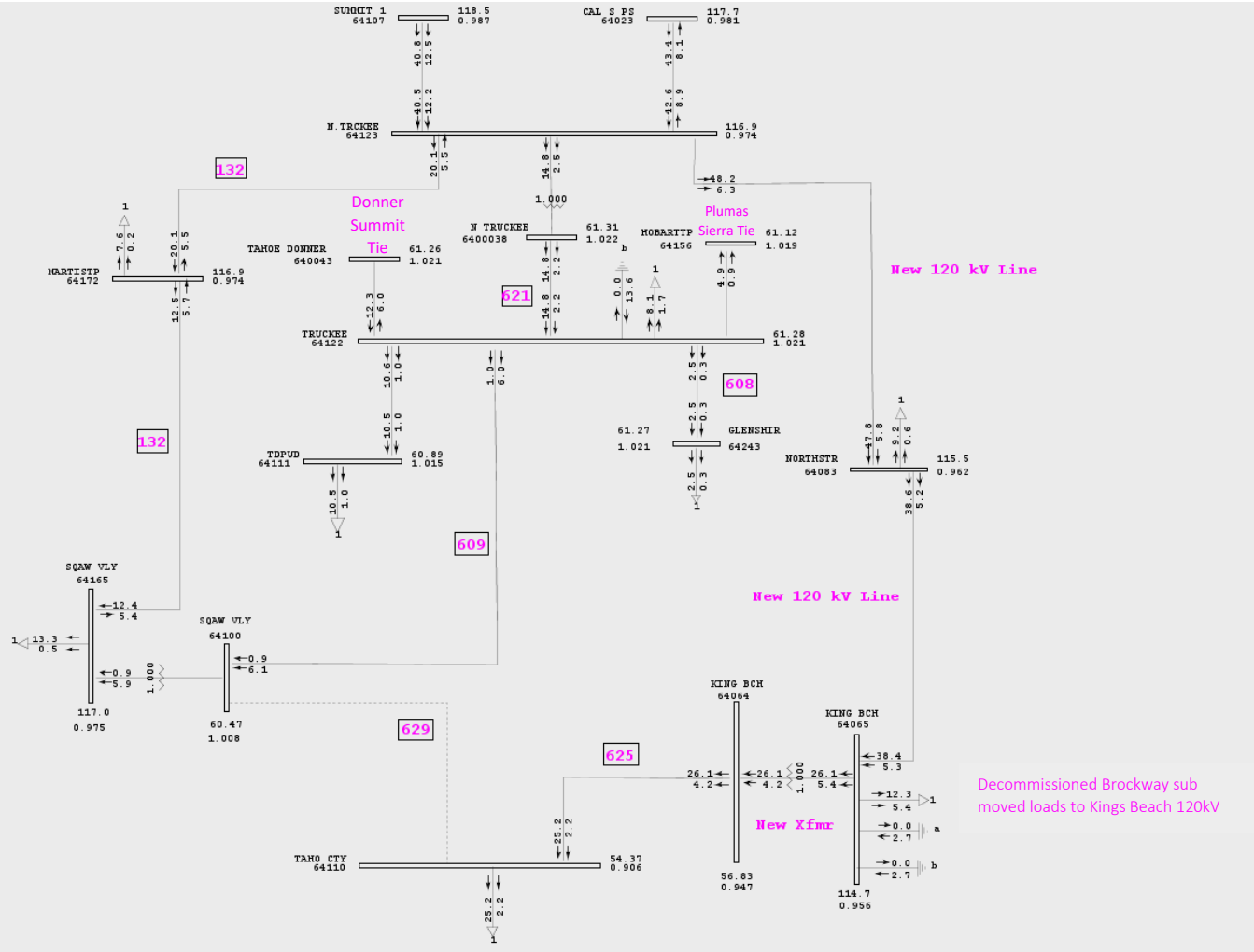
Plot B6 – N-1 Loss of 621 Line



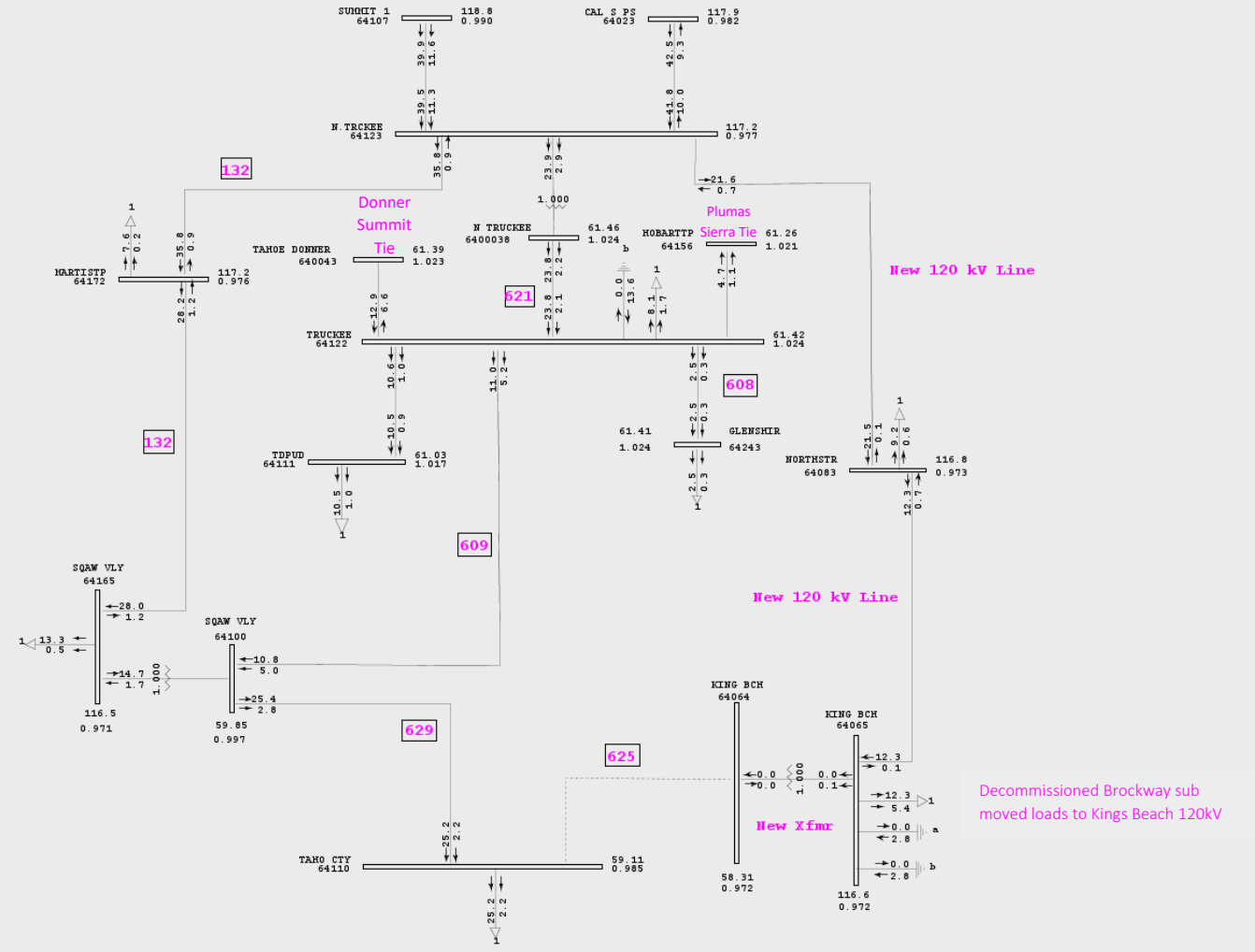
Plot B7 – N-1 Loss of 609 Line



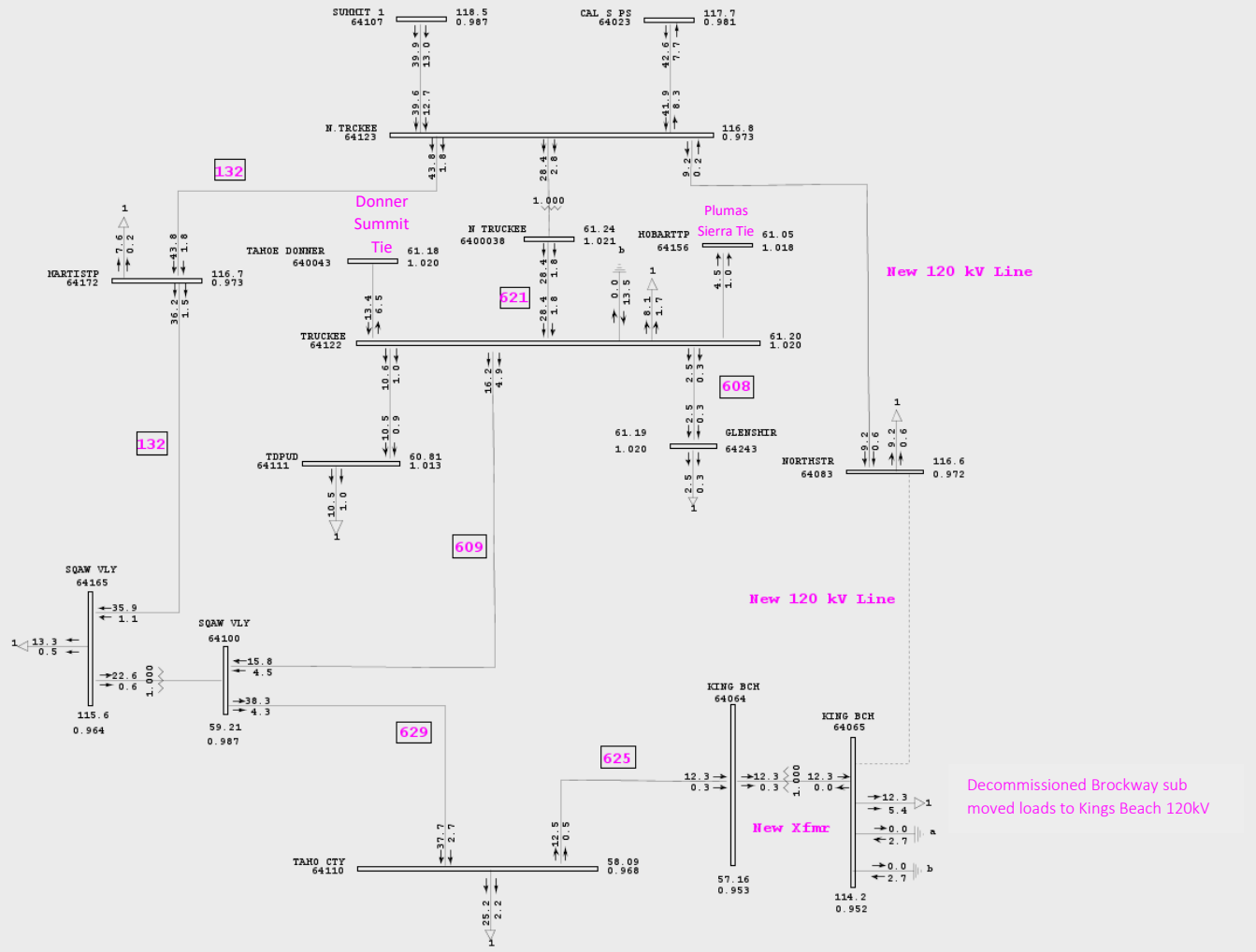
Plot B8 – N-1 Loss of 629 Line



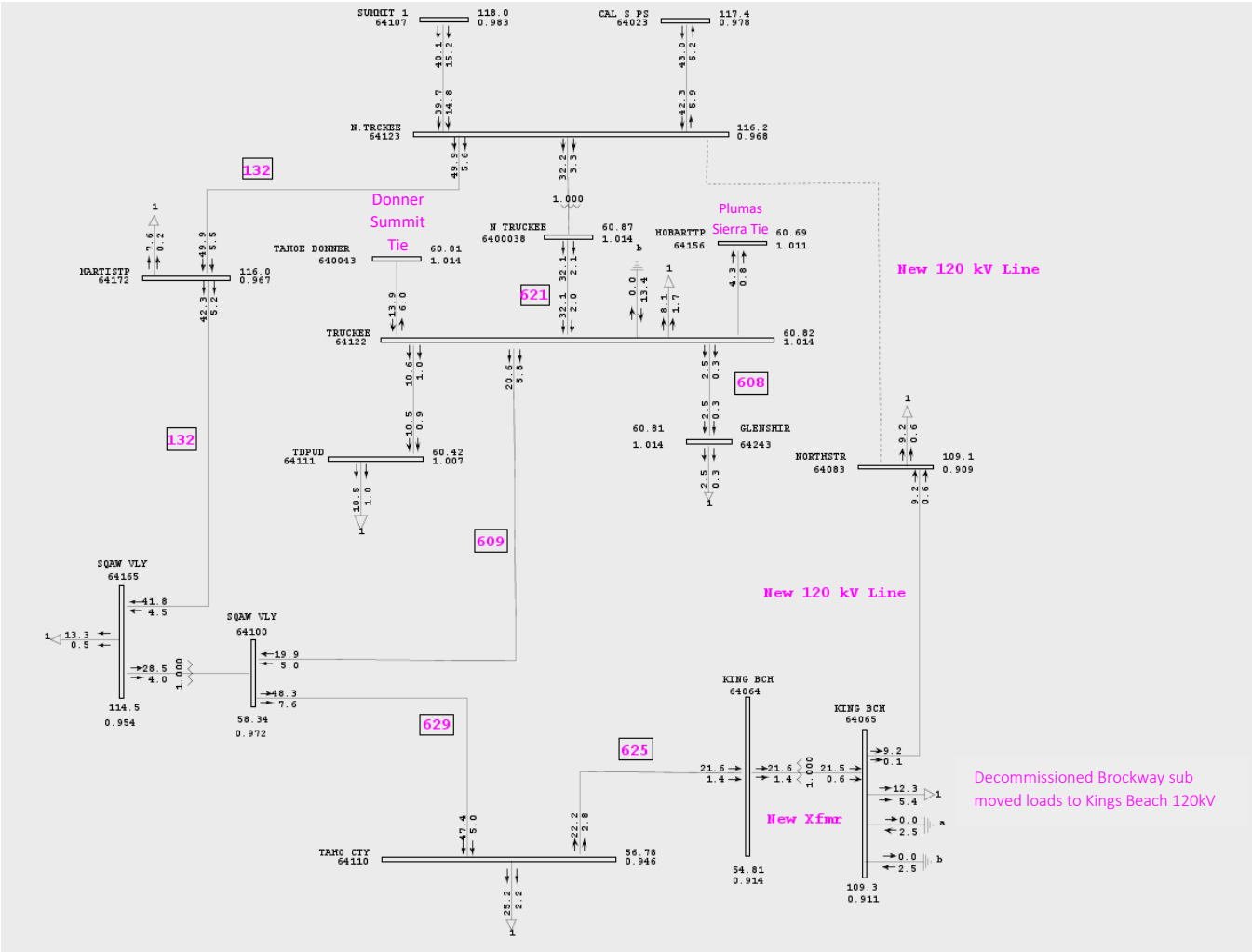
Plot B9 – N-1 Loss of 625 Line



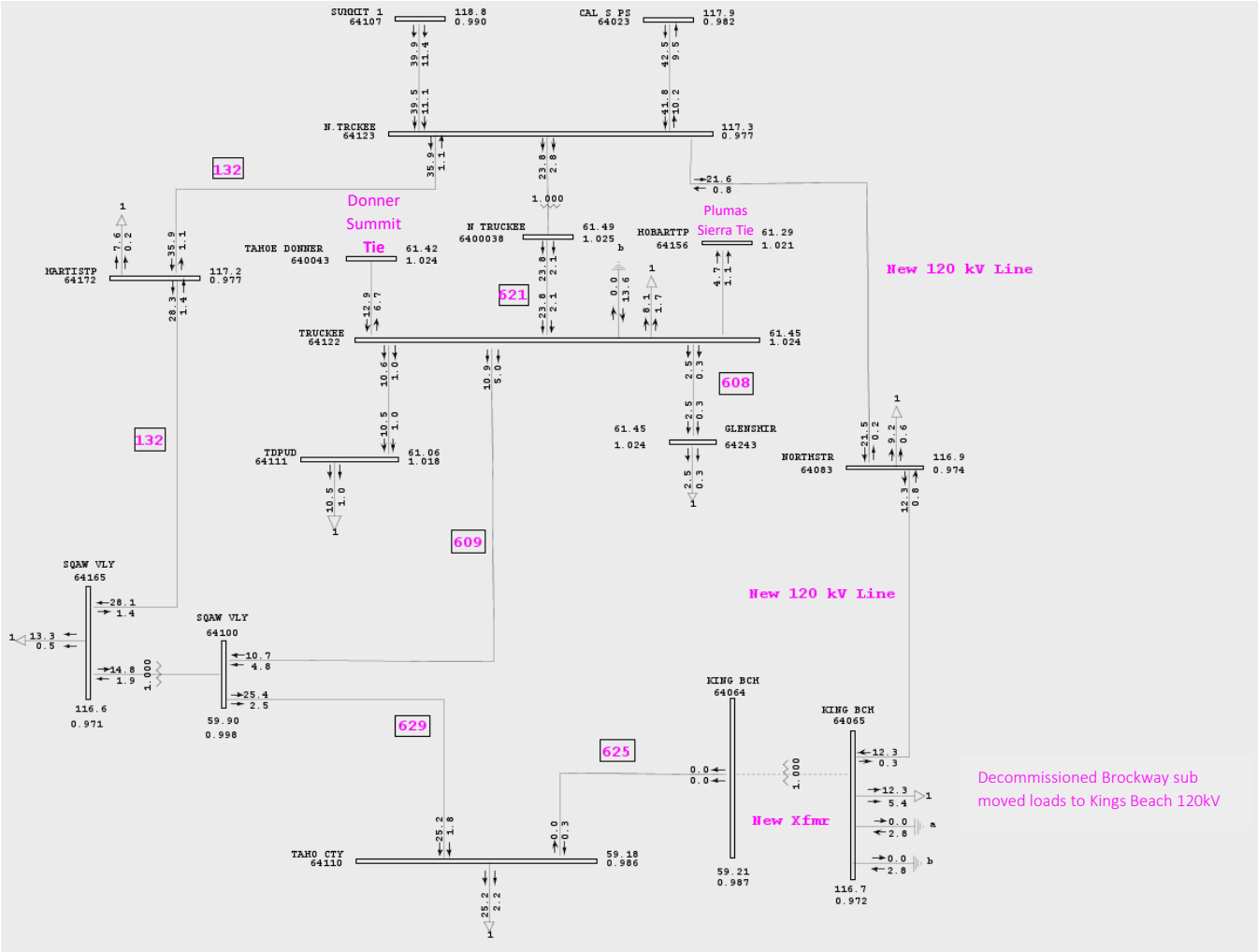
Plot B10 – N-1 Loss of 120kV Line from Northstar to Kings Beach



Plot B11 – N-1 Loss of new 120kV Line N Truckee to Northstar



Plot B12 – N-1 Loss of new Kings Beach 60/120kV Transformer



Appendix C – Conductor & Transformer Ratings

Line Number	Line Section	Conductor Type	Normal		Winter Ratings	
			MVA	Amps*	MVA	Amps
132	N. Truckee-Martis Valley	397.5AA	120	575	150	718.75
132	Martis Valley-Squaw Valley	397.5AA	120	575	150	718.75
609	Truckee-Squaw Valley	1/0CU (8.3 miles) 397.5AA (1.24 miles)	32 60	310 575	40 75	387.5 718.75
629	Squaw Valley-Tahoe City	397.5AA	60	575	75	718.75
625	Kings Beach-Tahoe City	397.5 AA	60	575	75	718.75
650	Truckee-Northstar	397.5AA	60	575	75	718.75
650	Northstar-Kings Beach	397.5AA	60	575	75	718.75
621	N. Truckee-Truckee	795AA	93	897	116.25	1121.25

*Ampacity provided by Liberty Utilities and confirmed with Table 2.13 from the Electric Power Distribution Handbook by T.A. Short © 2004.

Transformer	MVA (FA) Rating
Squaw Valley 120/60kV	75
North Truckee 120/60kV	75
New Kings Beach 120/60kV	75

Appendix D – Company Biography

Ascension Power Engineering is a company that specializes in utility grade power system engineering. The company's areas of expertise include overhead and underground power line engineering, power system protection, distribution and transmission power system analysis and planning, equipment standards, power quality analysis, project estimation, system mapping, and other electric utility engineering applications.

The principal engineers at Ascension Power Engineering are Eric Troska and John Perra. Eric and John are both licensed professional engineers in the states of Nevada and California. Zeina Randall is a Senior Engineer who is a licensed professional engineer in the state of California. Combined they have 47 years of electrical power experience. More important than the years of experience is the diversity of that experience. The three have been employed by the military, investor owned electrical utilities, electrical cooperatives, and private sector companies and have held positions as technicians, designers, engineers, and managers. Ascension Power Engineering is well versed in electrical power transmission, distribution, generation, system protection, substation design, construction, maintenance, and management.

The engineers at Ascension Power Engineering are extremely familiar with the geographical challenges and benefits of the Liberty Utility electric system, as well as their customers. Each has direct working experience in engineering and management positions for the Lake Tahoe electric system while it was owned by Sierra Pacific Power Co./NV Energy.

ATTACHMENT B

Declaration of Richard J. Salgo, P.E.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

DECLARATION OF RICHARD J. SALGO, P.E. IN SUPPORT OF LIBERTY UTILITIES (CALPECO ELECTRIC) LLC (U 933 E) ADVICE LETTER 64-E

I, Richard J. Salgo, P.E. declare:

1. I am a professional engineer employed by Tri Sage Consulting. My business address is 5418 Longley Lane, Suite A, Reno, Nevada 89511.

2. I have served as a consultant to Liberty Utilities (CalPeco Electric) LLC ("Liberty CalPeco") in connection with its program to upgrade its Lines 625 and 650 ("Line 625/650 Upgrade Project"). My qualifications are set forth in an attachment to this Declaration.

3. I make this Declaration in support of Liberty CalPeco's Advice Letter 64-E which provides verification of load triggers established in Commission Decision 15-03-20 ("Upgrade Approval Decision") relating to the commencement of the construction of Phase 2 of the Line 625/ 650 Upgrade Project. The Advice Letter additionally demonstrates that the North Lake Tahoe Transmission System is projected to have a peak load in the 2016/2017 winter that will exceed the 89 MW triggering point the Upgrade Approval Decision establishes as a condition for construction of Phase 2 of the Line 625/650 Upgrade Project to commence.

4. The conclusion that the peak load on the Liberty CalPeco North Lake Tahoe Transmission System will exceed the 89 MW triggering point by the winter of 2016/2017 is based on Ascension Power Engineering's ("Ascension") determination in the preparation of its network study that the North Lake Tahoe Transmission System experienced its peak demand during the 2015-2016 winter on December 31, 2015 at 17:55 hours at a level of 88.7 MW. I then applied the 1% annual load growth forecast that the California Public Utilities Commission ("Commission") recognized as conservative and reasonable in the Upgrade Approval Decision, and calculated the 2016/2017 winter peak demand as 88.7 MW x 1.01 = 89.587 MW. I similarly calculated the projected peak demand for the winter of 2017/2018 as 90.483 MW (89.587 x 1.01).

5. I prepared Table 1 in the Advice Letter. The load amounts in the Column labeled "2011" are taken from page 12 of the ZGlobal Study. In the Column labeled "2015" I inserted the December 2015 actual peak loads Ascension identified at page 9 of its network study. I then grouped the substations and provided subtotals for the loads on the North Lake Tahoe Transmission system representing usage by Liberty CalPeco customers and the load being served by other distribution utilities.

6. I am also responsible for the analysis that immediately follows Table 1 in the Advice Letter. My conclusion is that the increase in demand on the North Lake Tahoe Transmission System, from the 86.7 MW projected for 2011 to the 88.7 MW recorded in 2015, is wholly attributable to Liberty CalPeco customers.

I declare under penalty of perjury that the facts set forth above are true and correct to the best of my knowledge.

Executed this 14th day of October, 2016, at Reno, Nevada.

/s/ Richard J. Salgo, P.E.
Richard J. Salgo, P.E.

STATEMENT OF QUALIFICATIONS

RICHARD J. SALGO
CONSULTANT, TRANSMISSION OPERATIONS AND COMPLIANCE
Tri Sage Consulting
5418 Longley Lane Suite A
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(775) 336-1300

My name is Richard J. Salgo. My business address is 5418 Longley Lane, Suite A, Reno, Nevada. I am employed in the position of Consultant, Transmission Operations and Compliance for Tri Sage Consulting.

I graduated from the University of Nevada-Reno in May 1985 with a Bachelor of Science degree in Electrical Engineering. I am a Registered Professional Engineer in the states of Nevada (#24056) and California (#E012827).

In May 1984, I joined Sierra Pacific Power Company ("Sierra") as a student engineering intern in the Substation Control and Test Department.

Upon graduation in 1985, I began in a permanent position of Associate Engineer in the System Protection Department of Sierra. In this role, my primary activities were the design and specification of control systems associated with substation construction projects. I was also responsible for reviewing the adequacy of protective relay settings and schemes. I was promoted to the position of Engineer in 1987.

In June of 1988, I transferred back into the Substation Control and Test Department as a Field Engineer. My responsibility in this group was to develop protective relay test plans, and to provide substation maintenance and construction field technical support to substation crews. While in this group, I was promoted to the position of Senior Engineer in 1990, and was assigned projects with increasing levels of complexity and responsibility.

In April 1991, I was selected as Supervisor of Telecommunications Operations. My responsibility in this role was to supervise the daily activities of Sierra's telecommunications technicians with respect to maintenance and construction of Sierra's communications facilities, including backbone microwave assets, substation supervisory and data acquisition systems, communications for system protection relaying support, and mobile radio communications systems.

I transferred to System Protection as a Supervisor in December 1991. In this position, I directed the design of protection and control systems for substation construction projects and reviewed and approved the configuration and setting calculations for Sierra's protective relaying devices and systems.

In August 1994, I became the Manager of Sierra's Electric System Control Center. Responsibilities here included the management of the real-time transmission, distribution and generation dispatch operations as well as many coordination activities with utilities throughout the Western Interconnection.

I became the Manager of Engineering, Planning and Standards in March 1998. I was responsible for the civil and substation design groups, sub-transmission and distribution planning activities, including capital budget planning, as well as the development and maintenance of electric distribution standards.

Sierra and Nevada Power Company ("Nevada Power") merged in July 1999. I then became the Director of Electric Operations and Maintenance, responsible for substation, transmission and distribution maintenance and construction, electric and gas service dispatch, and trouble operations for the Sierra service territory. In August 2001, I became responsible for

Substation Design, Civil Engineering, Construction Management and Project Management in addition to these operations and maintenance duties.

In January 2005, I became Director of Electric System Control Operations, responsible for electric transmission and distribution grid operations and Balancing Area interconnected operations for both Nevada Power and Sierra. In May 2012, I was promoted to Executive, Grid Operations and Reliability.

I served as the interim Vice President of Transmission for NV Energy (the parent of Nevada Power and Sierra) in December 2013. In this capacity, I was responsible for the Company's transmission business activities, including Transmission Planning, Transmission Contracts, Power Scheduling and Settlements, in addition to the duties related to Grid Operations.

In May 2014, I was named Executive, Transmission Compliance. My responsibilities included managing and directing the operational activities to achieve robust NERC compliance performance for the Company's operations. This position was a cross-functional assignment, providing leadership and support across the organization with the common goal of ensuring regulatory compliance in the Company's electric operations.

I joined Liberty CalPeco in its California operating area in Tahoe Vista, California as the Vice President of Operations in December 2014. My responsibilities for Liberty CalPeco included the management and administration of operations, planning, and new business for the California electric service area. Early in 2015, I became the leader of the Liberty CalPeco California team, adding the responsibility of Rates and Regulatory Affairs, Accounting and Finance, Customer Service, and Materials Management.

Presently, I serve as Consultant, Transmission Operations and Compliance with Tri Sage Consulting in Reno, Nevada. I joined Tri Sage in February 2016. I am engaged in assisting our clients in the areas of transmission operations, generation interconnection planning and logistics, and substation design, engineering and quality assurance.

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