

**Exh. JBN-2
Dockets UE-220066, UG-220067,
UG-210918
Witness: Joel B. Nightingale**

**BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

**DOCKETS UE-220066, UG-220067,
UG-210918 (consolidated)**

In the Matter of the Petition of

PUGET SOUND ENERGY

**For an Order Authorizing Deferred
Accounting Treatment for Puget Sound
Energy's Share of Costs Associated with
the Tacoma LNG Facility**

EXHIBIT TO TESTIMONY OF

JOEL B. NIGHTINGALE

**STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION**

PSE Response to UTC Staff Data Request No. 96, Attachment A

July 28, 2022

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

**Dockets UE-220066 & UG-220067
Puget Sound Energy
2022 General Rate Case**

WUTC STAFF DATA REQUEST NO. 096:

REQUESTED BY: Joel Nightingale

Re: Energize Eastside

Tables 3-1 and 3-2 in Exhibit DRK-4 show a reduction in normal winter peak and an increase in normal summer peak based on the 2014 load forecast with respect to the 2012 load forecast.

- a. Did PSE perform similar power flow analyses in the years since 2015 (using more current load forecasts)? If so, please provide any relevant documents and data showing how subsequent forecasts impacted this ongoing analysis.
- b. Mr. Koch references PSE's F21 load forecast on page 68 of Exhibit DRK-1T. Please provide the normal winter and summer peak loads for the PSE system and the Eastside area for all years in this forecast. Please include 100 percent conservation. This is an ongoing data request. When available, please provide the same for the load forecast developed for the 2023 Integrated Resource Plan Progress Report.
- c. Please provide the actual annual winter and summer peak loads in megawatts (MW) for the PSE system, and for the Eastside area since 2013.

Response:

- a. Yes. Puget Sound Energy ("PSE") performs annual transmission planning ("TPL") assessments in compliance with the NERC TPL-001-4 standard. Additionally, three independent analyses were performed during this time period. These assessments include and continue to identify the need for the Energize Eastside project in every year the assessment has been completed. See the table below for specific studies that have been completed since 2015, with all showing the need for Energize Eastside. Attached as Attachment A to PSE's Response to WUTC Staff Data Request NO. 096 is an excerpt from the relevant TPLs, which show data related to the Energize Eastside project.

Table of studies:

Year	Study	Author	Exhibit/Attachment
2015	Supplemental Eastside Needs Assessment Report	Quanta Services & PSE	Exh. DRK-4r
2015	Independent Technical Analysis	Utility System Efficiencies, Inc. (City of Bellevue Consultant)	Exh. DRK-10
2015	Review Memo of Project Need – prepared for Partner Cities of Bellevue, Kirkland, Newcastle, Redmond, and Renton	Stantec Consulting (EIS consultant)	Exh. DRK-11
2015	Annual TPL Assessment TPL-001-4	PSE	See Attachment A
2016	Annual TPL Assessment TPL-001-4	PSE	See Attachment A
2017	Annual TPL Assessment TPL-001-4	PSE	See Attachment A
2018	Annual TPL Assessment TPL-001-4	PSE	See Attachment A
2019	Annual TPL Assessment TPL-001-4	PSE	See Attachment A
2020	Annual TPL Assessment TPL-001-4	PSE	See Attachment A
2020	Assessment of Proposed Energize Eastside Project	MaxETA/Synapse (City of Newcastle consultant)	Exh. DRK-12
2021	Annual TPL Assessment TPL-001-4	PSE	See Attachment A

The City of Newcastle initiated a study using a third party to evaluate the need for the Energize Eastside project as part of the city’s permitting process. MaxETA/Synapse completed its evaluation in 2020. The evaluation is included in Exh. DRK-12, which documents concurrence that a need exists. A key finding from page 3 of the study related specifically to need for the project, is shown in the following excerpt:

- *“Our review of historical summer peak loads and the capacity thresholds in King County provided by PSE shows that there is a summer transmission capacity deficiency in King County under N-1-1 contingencies even at today’s peak load level. We further find that this capacity deficiency for the summer season has been 13 to 20 percent (or 200 to 300 megawatts, or MW) above the area’s capacity threshold.”*

- b. The following information is the F21 load forecast used in PSE’s transmission planning studies. This includes the winter and summer for the entire system and King County. In 2021, PSE did not produce an “Eastside area” forecast. In the context of the electrical network and planning models, there is no defined “Eastside area” due to the interconnected nature of the grid, which does not align with any city or jurisdictional boundaries. For power flow modeling, King County growth represents growth in the eastside area and is the input for power flow modeling.

The power flow studies used to meet NERC requirements that identify the need for the Energize Eastside project are completed based on county level forecast information included as part of the F21 forecast referenced in Exhibit DRK-1T. The King County forecast developed as part of the F21 forecast is used in the 2021 Annual TPL Assessment. Both the F21 planning forecast for winter and summer peak loads with 100% conservation are included in tables below.

Regarding the ongoing data request, the 2023 IRP load forecast will be developed as part of the ongoing IRP progress report process and is anticipated to be finalized in the first quarter of 2023 per the current IRP timeline.

Planning level load forecasts used for Energize Eastside project:

System Load Forecast with 100% conservation		System Load Forecast with 100% conservation	
Winter - December	Planning Load Forecast	Summer - August	Planning Load Forecast
2021	5176	2021	4025
2022	5187	2022	4060
2023	5232	2023	4127
2024	5274	2024	4199
2025	5303	2025	4251
2026	5320	2026	4299
2027	5339	2027	4346
2028	5357	2028	4392
2029	5379	2029	4440
2030	5399	2030	4489
2031	5417	2031	4536

King County Load Forecast with 100% conservation		King County Load Forecast with 100% conservation	
Winter - December	Planning Load Forecast	Summer - August	Planning Load Forecast
2021	2501	2021	2033
2022	2508	2022	2069
2023	2524	2023	2102
2024	2541	2024	2137
2025	2559	2025	2170
2026	2564	2026	2196
2027	2573	2027	2221
2028	2583	2028	2247
2029	2594	2029	2272
2030	2604	2030	2299
2031	2614	2031	2326

- c. PSE tracks actual peak native load at the system and county level consistent with the load forecast. In the context of the electrical network and planning models, there is no defined “Eastside area”, due to the interconnected nature of the grid, which does not align with any city or jurisdictional boundaries. As such, and for consistency with part b of this data request, and since it is also an input for power flow modelling, King County actual peak loads are provided. King County load growth and peak load represents demand driving the need for Energize Eastside. It is important to remember that actuals do not include contractual obligations for transportation load and are not normalized. Winter and summer forecasts that are used in planning studies are normalized to specific temperatures so trends and comparisons may be made. The peak actuals since 2013 for both the system and King County are shown below.

System* Actual Peak Load for Winter			System* Actual Peak Load for Summer		
Winter	Peak Date	Peak Load	Summer	Peak Date	Peak Load
2012-2013	1/16/2013	4,461	2013	7/1/2013	3,390
2013-2014	2/6/2014	4,879	2014	8/11/2014	3,503
2014-2015	12/1/2014	4,515	2015	7/2/2015	3,512
2015-2016	11/30/2015	4,420	2016	8/19/2016	3,508
2016-2017	1/5/2017	4,841	2017	8/3/2017	3,629
2017-2018	2/23/2018	4,487	2018	8/8/2018	3,675
2018-2019	2/6/2019	4,751	2019	6/12/2019	3,480
2019-2020	1/14/2020	4,527	2020	7/27/2020	3,664
2020-2021	2/12/2021	4,449	2021	6/28/2021	4,319
*System peak load is for PSE's entire balancing area			*System peak load is for PSE's entire balancing area		

King County Actual Peak Load for Winter			King County Actual Peak Load for Summer		
Winter	Peak Date	Peak Load	Summer	Peak Date	Peak Load
2012-2013	1/16/2013	2,324	2013	7/1/2013	1,770
2013-2014	2/6/2014	2,147	2014	8/11/2014	1,836
2014-2015	12/1/2014	2,087	2015	7/2/2015	1,809
2015-2016	11/30/2015	2,235	2016	8/19/2016	1,796
2016-2017	1/5/2017	2,035	2017	8/3/2017	1,849
2017-2018	2/23/2018	2,219	2018	8/8/2018	1,837
2018-2019	2/6/2019	2,045	2019	6/12/2019	1,774
2019-2020	1/14/2020	2,114	2020	7/27/2020	1,752
2020-2021	2/12/2021	2,054	2021	6/28/2021	2,129

ATTACHMENT A to PSE's Response to WUTC Staff Data Request No. 096

Transmission Planning (TPL) Assessment Results Excerpt

The actual TPL assessments contain Critical Energy Infrastructure Information (“CEII”) and cover much more than the Energize Eastside results. PSE has included excerpts from the annual TPL results specific to the Energize Eastside needs for 2015-2021. The TPL results include specific equipment combinations (called contingencies) that results in parts of the bulk electric system nearing or overloading their respective limit. This is shown as a percent overload for each specific case. Anything over 100% is shaded in orange identifying an overload and those between 90%-100% are shaded in yellow as they are approaching the limit. For each identified over 100% overload item, the specific corrective action plan (CAP) is identified which describes the required solution to address the system deficiency. The attached results have been summarized with numbered contingency names instead of specific equipment combinations, which is CEII, in order to provide a non-redacted response.

For example Contingency #X replaced a specific combination of a transformer and transmission line or a combination of two specific transmission line segments or two transformers.

Definitions of Heavy, extreme and Light winter/summer cases:

Heavy/Light (off-peak) case descriptions can be found in public documents of WECC Base Case Compilation Schedule. The latest 2022 Base Case Compilation Schedule has been published online: <https://www.wecc.org/Reliability/2022BCCS.pdf>

Extreme winter/summer cases are base cases used in TPL studies with extreme system loads modeled in the cases. TPL Standard TPL-001-4 Requirement R2.1.4 requires sensitivity analysis in Planning Assessments with varying conditions which includes change in real forecasted loads. PSE TPL Assessments includes sensitivity analysis of extreme loads provided by the Load Forecasting team as a sensitivity cases.

TPL 2021 Report:

Table 8-2: Year 1/5/10 Base Heavy Summer and Year 1 Extreme Summer without Energize Eastside 230kV

Outage	Base Heavy Summer			Base Off-Peak	Base Extreme Summer	CAP
	2023 Heavy Summer	2027 Heavy Summer	2031 Heavy Summer	2023 Light Summer	2023 Extreme Summer	
BRANCH MVA VIOLATIONS:						
MONROE 230 to MON_NOV_CIO 230 ckt 1						
Contingency #1	<u>103</u>	<u>104</u>	<u>109</u>	--	<u>106</u>	Short Term & Long Solution: BPA Nomograms
Contingency #2	<u>127</u>	<u>126</u>	<u>129</u>	<u>114</u>	<u>128</u>	
Contingency #3	<u>100 - 130</u>	<u>126 - 129</u>	<u>102 - 132</u>	<u>114 - 117</u>	<u>100 - 131</u>	
SAMMSH W 230 to SAMMSH W 115 ckt 2						
Contingency #1	<u>124</u>	<u>127</u>	<u>135</u>	<u>113</u>	<u>128</u>	Short Term Solution: Load Shed, King Long Term Solution: Energize Eastside 230kV Project
SAMMSH E 230 to SAMMSH E 115 ckt 1						
Contingency #1	<u>124</u>	<u>127</u>	<u>135</u>	<u>113</u>	<u>128</u>	
NOVELTY 230 to NOVELTY 115 ckt 1						
Contingency #1	<u>103</u>	<u>103</u>	<u>105</u>	--	<u>105</u>	
Contingency #2	<u>107</u>	<u>109</u>	<u>117</u>	96	<u>110</u>	
BEVERLY 115 to HILTNLKT 115 ckt 1						
Contingency #1	<u>104</u>	<u>104</u>	<u>108</u>	<u>100</u>	<u>107</u>	
HILTNLKT 115 to OLYCANYT 115 ckt 1						
Contingency #1	<u>99</u>	<u>99</u>	<u>102</u>	97	<u>102</u>	

Table 8-3: Year 1/5/10 Base Heavy Winter without Energize Eastside 230kV

Outage	Base Heavy Winter			CAP
	2023 Heavy Winter	2027 Heavy Winter	2031 Heavy Winter	
BRANCH MVA VIOLATIONS:				
SAMMSH W 230 to SAMMSH W 115 ckt 2				
Contingency #1	--	96	<u>100</u>	Short Term Solution: Load Shed, King Long Term Solution: Energize Eastside 230kV Project
SAMMSH E 230 to SAMMSH E 115 ckt 1				
Contingency #1	--	96	<u>100</u>	

Table 8-4: Year 1 Sensitivity Heavy Winter without Energize Eastside 230kV

Outage	2023 Light Summer		CAP	
	Full + NS	Min + SN		
BRANCH MVA VIOLATIONS:				
MONROE 230 to MON_NOV_CIO 230 ckt 1				
Contingency #1	<u>142</u>	--	Short Term and Long Term Solution: BPA Nomograms	
Contingency #2	<u>145-109</u>	--		
Contingency #3	<u>109</u>	--		
SAMMSH E 230 to SAMMSH E 115 ckt 1				
Contingency #1	<u>125</u>	--	Short Term Solution: Load Shed, N.King Long Term Solution: Energize Eastside 230 kV	
SAMMSH W 230 to SAMMSH W 115 ckt 2				
Contingency #1	<u>125</u>	--		
TALBOT S 115 to LAKESIDE 115 ckt 2				
Contingency #1	--	<u>105</u>		
Contingency #2	--	96		
TALBOT N 115 to LAKESIDE 115 ckt 1				
Contingency #1	--	<u>104</u>		
Contingency #2	--	95		
NOVELTY 230 to NOVELTY 115 ckt 1				
Contingency #1	<u>113</u>	--		
Contingency #2	<u>110</u>	--		
TALBOT 230 to TALBOT N 115 ckt 2				
Contingency #1	--	<u>110</u>		
Contingency #2	--	<u>105</u>		
Contingency #3	--	<u>105</u>		
BEVERLY 115 to HILTNLKT 115 ckt 1				
Contingency #1	<u>109</u>	--		
TALBOT 230 to TALBOT S 115 ckt 1				
Contingency #1	--	<u>108</u>		
Contingency #2	--	<u>104</u>		
HILTNLKT 115 to OLYCANYT 115 ckt 1				
Contingency #1	<u>103</u>	--		
OLYCANYT 115 to SW922TAP 115 ckt 1				
Contingency #1	<u>103</u>	--		

Table 8-5: Year 1 Sensitivity Heavy Winter without Energize Eastside 230kV

Outage	2022-23 Heavy Winter				CAP	
	Full + NS	Full + NS + EW	Min + SN	Min + SN + WE		
BRANCH MVA VIOLATIONS:						
SAMMSH E 230 to SAMMSH E 115 ckt 1						
Contingency #1	<u>111</u>	<u>115</u>	--	--	Short Term Solution: Load Shed, N.King Long Term Solution: Energize Eastside 230 kV	
SAMMSH W 230 to SAMMSH W 115 ckt 2						
Contingency #1	<u>111</u>	<u>115</u>	--	--		
TALBOT S 115 to LAKESIDE 115 ckt 2						
Contingency #1	--	--	<u>113</u>	<u>114</u>		
Contingency #2	--	--	<u>103</u>	<u>104</u>		
TALBOT N 115 to LAKESIDE 115 ckt 1						
Contingency #1	--	--	<u>113</u>	<u>114</u>		
Contingency #2	--	--	<u>103</u>	<u>105</u>		
NOVELTY 230 to NOVELTY 115 ckt 1						
Contingency #1	<u>98</u>	<u>100</u>	--	--		
TALBOT 230 to TALBOT N 115 ckt 2						
Contingency #1	--	--	<u>106</u>	<u>106</u>		
Contingency #2	--	--	<u>100</u>	<u>101</u>		
Contingency #3	--	--	<u>100</u>	<u>102</u>		
TALBOT 230 to TALBOT S 115 ckt 1						
Contingency #1	--	--	<u>101</u>	<u>101</u>		
Contingency #2	--	--	<u>96</u>	<u>97</u>		

Table 8-6: Year 1 Base and Sensitivity Light Winter without Energize Eastside 230kV

Outage	2023 Light Summer			CAP
	Base	Full + NS	Min + SN	
BRANCH MVA VIOLATIONS:				
MONROE 230 to MON_NOV_CIO 230 ckt 1				
Contingency #1	--	<u>100</u>	--	Short Term & Long Solution: BPA Nomograms
Contingency #2	<u>114</u>	<u>132</u>	--	
Contingency #3	<u>114-117</u>	<u>101-135</u>	--	
SAMMSH W 230 to SAMMSH W 115 ckt 2				
Contingency #1	<u>113</u>	<u>118</u>	--	Short Term Solution: Load Shed, King Long Term Solution: Energize Eastside 230kV Project
SAMMSH E 230 to SAMMSH E 115 ckt 1				
Contingency #1	<u>113</u>	<u>118</u>	--	
NOVELTY 230 to NOVELTY 115 ckt 1				
Contingency #1	--	<u>105</u>	--	
Contingency #2	96	<u>100</u>	--	
NOVELTY 230 to NOVELTY 115 ckt 2				
Contingency #1	--	--	99	
Contingency #2	--	--	95	
Contingency #3	--	--	95	
BEVERLY 115 to HILTNLKT 115 ckt 1				
Contingency #1	<u>100</u>	<u>106</u>	--	
HILTNLKT 115 to OLYCANYT 115 ckt 1				
Contingency #1	97	<u>103</u>	--	
OLYCANYT 115 to SW922TAP 115 ckt 1				
Contingency #1	--	<u>101</u>	--	

TPL 2020 Report:

Table 7-15: 2021-2022 Heavy Summer P6 King Results (Continued)

Outage	Year 1 Heavy Summer Cases				CAP
	Base	Full + NS	Min + SN	Extreme	
NOVELTY 230 to NOVELTY 115 ckt 1					
Contingency #1	98	99	--	101	Not Required for Single Sensitivity Case
Contingency #2	97	102	--	98	
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	113	114	--	117	Load Drop N. King
Contingency #2	106	107	--	108	
Contingency #3	97	100	--	99	
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	113	114	--	117	

TPL 2019 Report:

Table 7-16: 2021 Heavy Summer P6 King Results (Continued)

Outage	Year 2021		CAP
	Base	Extreme	
SAMMSH E 230 to SAMMSH E 115 ckt 1			
Contingency #1	<u>116</u>	<u>124</u>	Manual Load Shed, King County
Contingency #2	--	<u>102</u>	
Contingency #3	--	<u>101</u>	
Contingency #4	--	<u>101</u>	
Contingency #5	--	<u>101</u>	
Contingency #6	--	<u>100</u>	
Contingency #7	95	<u>101</u>	BPA RAS or Nomograms
SAMMSH W 230 to SAMMSH W 115 ckt 2			
Contingency #1	<u>116</u>	<u>124</u>	Manual Load Shed, King County
Contingency #2	<u>109</u>	<u>116</u>	
Contingency #3	--	<u>102</u>	
Contingency #4	--	<u>101</u>	
Contingency #5	--	<u>101</u>	
Contingency #6	--	<u>101</u>	
Contingency #7	--	<u>100</u>	
Contingency #8	--	<u>100</u>	
Contingency #9	--	<u>100</u>	
Contingency #10	97	<u>101</u>	BPA RAS or Nomograms
Contingency #11	95	<u>101</u>	
NOVELTY 230 to NOVELTY 115 ckt 1			
Contingency #1	<u>100</u>	<u>107</u>	Manual Load Shed, King County
Contingency #2	--	<u>101</u>	BPA RAS or Nomograms
Contingency #3	96	<u>100</u>	

TPL 2018 Report:

Table 7-15: 2019-2020 Heavy Winter P3, P6 King Results

Outage	Base	Tono	NS Raver-Paul	SN Raver-Paul	NS Full Gen	SN Min Gen	CAP	
	%	%	%	%	%	%		
BRANCH MVA VIOLATIONS:								
TALBOT N 115 to LAKESIDE 115 ckt 1								
Contingency #1	93	92	--	120	--	133	Temporary: Manual Load Drop in N.King and S.King Planned: Energize Eastside 230 kV	
Contingency #2	--	--	--	115	--	127		
Contingency #3	--	--	--	108	--	120		
Contingency #4	--	--	--	107	--	120		
Contingency #5	--	--	--	107	--	119		
Contingency #6	--	--	--	107	--	119		
TALBOT S 115 to LAKESIDE 115 ckt 2								
Contingency #1	93	92	--	120	--	132		
Contingency #2	--	--	--	115	--	127		
Contingency #3	--	--	--	108	--	120		
Contingency #4	--	--	--	107	--	119		
Contingency #5	--	--	--	107	--	119		
Contingency #6	--	--	--	106	--	119		
SAMMSH E 230 to SAMMSH E 115 ckt 1								
Contingency #1	--	90	109	--	113	--		
SAMMSH W 230 to SAMMSH W 115 ckt 2								
Contingency #1	--	90	109	--	113	--		
BERYDALE 230 to BERRYDAL 115 ckt 1								
Contingency #1	91	92	--	104	--	110		
Contingency #2	91	92	--	102	--	107		
Contingency #3	91	92	--	102	--	107		
Contingency #4	90	92	--	102	--	106		
Contingency #5	96	98	90	104	--	106		
Contingency #6	--	--	--	100	--	105		
Contingency #7	--	--	--	100	--	105		
Contingency #8	--	--	--	98	--	103		
Contingency #9	--	--	--	98	--	103		
Contingency #10	--	--	--	98	--	103		
Contingency #11	--	--	--	98	--	103		
Contingency #12	--	--	--	98	--	103		

Table 7-16: 2019-2020 Heavy Winter P3, P6 King Results (continued)

Outage	Base	NS Raver-Paul	SN Raver-Paul	NS Full Gen	SN Min Gen	CAP	
	%	%	%	%	%		
TALBOT 230 to TALBOT N 115 ckt 2							
Contingency #1	<u>101</u>	<u>96</u>	<u>108</u>	92	<u>109</u>	Temporary: Manual Load Drop in N.King and S.King Planned: Energize Eastside 230 kV	
Contingency #2	94	--	<u>105</u>	--	<u>109</u>		
Contingency #3	<u>97</u>	93	<u>103</u>	--	<u>104</u>		
Contingency #4	<u>97</u>	92	<u>103</u>	--	<u>104</u>		
Contingency #5	--	--	<u>98</u>	--	<u>100</u>		
TALBOT 230 to TALBOT S 115 ckt 1							
Contingency #1	<u>99</u>	94	<u>106</u>	90	<u>107</u>		
Contingency #2	93	--	<u>103</u>	--	<u>106</u>		
Contingency #3	<u>95</u>	91	<u>101</u>	--	<u>102</u>		
Contingency #4	<u>95</u>	91	<u>101</u>	--	<u>102</u>		
OBRIEN N 230 to OBRIEN N 115 ckt 1							
Contingency #1	<u>97</u>	94	<u>103</u>	91	<u>106</u>		
Contingency #2	<u>97</u>	93	<u>103</u>	91	<u>105</u>		
Contingency #3	--	--	<u>98</u>	--	<u>103</u>		
Contingency #4	93	--	<u>98</u>	--	<u>101</u>		
OBRIEN S 230 to OBRIEN S 115 ckt 2							
Contingency #1	92	--	<u>98</u>	--	<u>101</u>		
Contingency #2	92	--	<u>98</u>	--	<u>100</u>		
TALBOT S 115 to PACCAR 115 ckt 1							
Contingency #1	--	--	<u>104</u>	--	<u>111</u>		
Contingency #2	--	--	<u>100</u>	--	<u>107</u>		
Contingency #3	--	--	<u>95</u>	--	<u>103</u>		

Table 7-20: 2020 Heavy Summer P3, P6 King Results (continued)

Outage	Base	NS Full Gen	SN Min Gen	Corrective Action Plan	
	%	%	%		
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	<u>121</u>	<u>122</u>	--	Temporary: Open Sammamish end of all 115-kV lines to Bellevue and/or Manual Load Drop Planned: Energize Eastside 230 kV	
Contingency #2	<u>113</u>	<u>116</u>	--		
Contingency #3	<u>104</u>	<u>110</u>	--		
Contingency #4	<u>102</u>	<u>105</u>	--		
Contingency #5	<u>97</u>	<u>101</u>	--		
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	<u>121</u>	<u>122</u>	--		
Contingency #2	<u>101</u>	<u>105</u>	--		
NOVELTY 230 to NOVELTY 115 ckt 1					
Contingency #1	<u>100</u>	<u>106</u>	--		
Contingency #2	<u>103</u>	<u>104</u>	--		
TALBOT S 115 to LAKESIDE 115 ckt 2					
Contingency #1	--	--	<u>103</u>		
TALBOT N 115 to LAKESIDE 115 ckt 1					
Contingency #1	--	--	<u>103</u>		

TPL 2017 Report:

Table 20: 2018-19 Heavy Winter N-1-1 Contingency Results

	Northern	King	Southern	Western	
Outage	% Ovld	% Ovld	% Ovld	% Ovld	Corrective Action Plans
BRANCH MVA VIOLATIONS:					
TALBOT 230 to TALBOT N 115 ckt 2					
Contingency #1	--	<u>100</u>	--	--	IOP:Open Lakeside - Talbot 115kV lines Planned Project: Eastside 230kV

Table 21: 2019 Heavy Summer N-1-1 Contingency Results

	Northern	King	Southern	Western	
Outage	% Ovld	% Ovld	% Ovld	% Ovld	Corrective Action Plans
BRANCH MVA VIOLATIONS:					
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>113</u>	--	--	Open Sammamish end of all 115- kV lines to Bellevue -manual load drop Planned Project: Eastside 230kV
Contingency #2	--	<u>109</u>	--	--	
Contingency #3	--	<u>101</u>	--	--	
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	--	<u>113</u>	--	--	

TPL 2016 Report:

Table 20: 2017-18 Heavy Winter N-1-1 Contingency Results

	Northern	King	Southern	Western	
Outage	% Ovd	% Ovd	% Ovd	% Ovd	Corrective Action Plan
BRANCH MVA VIOLATIONS:					
TALBOT N 230 to TALBOT N 115 ckt 2					
Contingency #1	--	<u>101</u>	--	--	IOP: Open Lakeside - Talbot 115kV lines Planned Project: Eastside 230kV
Contingency #2	--	<u>100</u>	--	--	

Table 21: 2018 Heavy Summer N-1-1 Contingency Results

	Northern	King	Southern	Western	
Outage	% Ovd	% Ovd	% Ovd	% Ovd	Corrective Action Plan
BRANCH MVA VIOLATIONS:					
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>110</u>	--	--	Open Sammamish - Lakeside 115kV lines Planned Project: Eastside 230kV
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	--	<u>105</u>	--	--	

TPL 2015 Report:

Table 20: 2016-17 Heavy Winter N-1-1, G-1&N-1 Contingency Results

	Northern	King	Southern	Western	
Outage	% Ovld	% Ovld	% Ovld	% Ovld	Corrective Action Plan
BRANCH MVA VIOLATIONS:					
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>101</u>	--	--	Open Sammamish end of Sammamish - Lakeside lines <u>Planned Project:</u> Eastside 230kV

Table 21: 2017 Heavy Summer N-1-1, G-1&N-1 Contingency Results

	Northern	King	Southern	Western	
Outage	% Ovld	% Ovld	% Ovld	% Ovld	Corrective Action Plan
BRANCH MVA VIOLATIONS:					
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	--	<u>106</u>	--	--	Open Sammamish end of Sammamish - Lakeside lines
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>112</u>	--	--	<u>Planned Project:</u>
Contingency #2	--	<u>105</u>	--	--	Eastside 230kV

Table 22: 2021 Heavy Summer N-1-1, G-1&N-1 Contingency Results

	Northern	King	Southern	Western	Corrective Action Plan
Outage	% Ovd	% Ovd	% Ovd	% Ovd	
BRANCH MVA VIOLATIONS:					
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>112</u>	--	--	Planned Project: Eastside 230kV
Contingency #2	--	<u>105</u>	--	--	
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	--	<u>106</u>	--	--	

Table 25: 2024-25 Heavy Winter N-1-1, G-1&N-1 Contingency Results

	Northern	King	Southern	Western	Corrective Action Plan
Outage	% Ovd	% Ovd	% Ovd	% Ovd	
BRANCH MVA VIOLATIONS:					
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>105</u>	--	--	Planned Project: Eastside 230kV
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	--	<u>100</u>	--	--	

Table 26: 2025 Heavy Summer N-1-1, G-1&N-1 Contingency Results

	Northern	King	Southern	Western	Corrective Action Plan
Outage	% Ovd	% Ovd	% Ovd	% Ovd	
BRANCH MVA VIOLATIONS:					
SAMMSH W 230 to SAMMSH W 115 ckt 2					
Contingency #1	--	<u>117</u>	--	--	Planned Project: Eastside 230kV
Contingency #2	--	<u>108</u>	--	--	
SAMMSH E 230 to SAMMSH E 115 ckt 1					
Contingency #1	--	<u>111</u>	--	--	