

**Site: Albany**

**Circuit Branch: ALB-HEN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[505] Amps and [96.26] MVA [for summer period] and [552] Amps and [105.08] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04613] PU (using 100MVA as the base) Reactance [0.18245] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02547] PU (using 100MVA as the base) Reactance [0.05527] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: ALB-HEN-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[505] Amps and [96.26] MVA [for summer period] and [552] Amps and [105.08] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04612] PU (using 100MVA as the base) Reactance [0.18634] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02546] PU (using 100MVA as the base) Reactance [0.05526] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: ALB-HEN-3

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1473] Amps and [561.32] MVA [for summer period] and [1620] Amps and [617.46] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00987] PU (using 100MVA as the base) Reactance [0.04888] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00183] PU (using 100MVA as the base) Reactance [0.01564] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: ALB-HPI-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1473] Amps and [561.32] MVA [for summer period] and [1620] Amps and [617.46] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00539] PU (using 100MVA as the base) Reactance [0.03296] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00100] PU (using 100MVA as the base) Reactance [0.00860] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Transformer Branch: ALB-TF-T4

Service Measure	Service Level
Overall 24 hour post contingency capacity rating of the interconnection transformer branch	<b>HV</b> [719] Amps and [274.00] MVA [for summer period] and [761] Amps and [290.00] MVA [for winter period] <b>MV</b> [1438] Amps and [274.00] MVA [for summer period] and [1440] Amps and [274.27] MVA [for winter period] <b>LV</b> [3727] Amps and [71.01] MVA [for summer period] and [3727] Amps and [71.01] MVA [for winter period]
Continuous capacity rating of the interconnection transformer branch	<b>HV</b> [525] Amps and [200.01] MVA <b>MV</b> [1050] Amps and [200.01] MVA <b>LV</b> [3149] Amps and [60.00] MVA

# Interconnection Branch Report

As at : 01/07/2009 12:48

Level of Impedance of the interconnection transformer branch Resistive and Reactive - Shunt	<b>HV</b> Resistance [0.00028] PU (using 100MVA as the base) <b>HV</b> Reactance [0.02627] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00044] PU (using 100MVA as the base) <b>MV</b> Reactance [-0.00081] PU (using 100MVA as the base) <b>LV</b> Resistance [0.00334] PU (using 100MVA as the base) <b>LV</b> Reactance [0.06875] PU (using 100MVA as the base)
Level of Impedance of the interconnection transformer branch Resistive and Reactive - Series	<b>HV</b> Resistance [0.00028] PU (using 100MVA as the base) <b>HV</b> Reactance [0.02627] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00044] PU (using 100MVA as the base) <b>MV</b> Reactance [-0.00081] PU (using 100MVA as the base) <b>LV</b> Resistance [0.00334] PU (using 100MVA as the base) <b>LV</b> Reactance [0.06875] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection transformer branch	[220] kV
High voltage range that the interconnection transformer branch can operate over	Maximum: [242] kV Minimum: [198] kV
Tapping steps and ranges ALB-TF-T4B ALB-TF-T4B-Tap Changer -- ONLOAD -- HV	Tap voltage range: Maximum: [231] kV Minimum: [198] kV Number of tapping steps: [12] Size of each tapping step as a percentage of nominal operating voltage range: [1.25]% On-load/Off-load [Onload] On-load tapping capability [Manual] If on-load tapping capability is automatic, is it auto selected? [Not Applicable] If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [5]
Tapping steps and ranges ALB-TF-T4R ALB-TF-T4R-Tap Changer -- ONLOAD -- HV	Tap voltage range: Maximum: [231] kV Minimum: [198] kV Number of tapping steps: [12] Size of each tapping step as a percentage of nominal operating voltage range: [1.25]% On-load/Off-load [Onload] On-load tapping capability [Manual] If on-load tapping capability is automatic, is it auto selected? [Not Applicable] If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [5]

# Interconnection Branch Report

As at : 01/07/2009 12:48

<p>Tapping steps and ranges ALB-TF-T4Y</p> <p>ALB-TF-T4Y-Tap Changer -- ONLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [231] kV Minimum: [198] kV</p> <p>Number of tapping steps: [12]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [1.25]%</p> <p>On-load/Off-load [Onload]</p> <p>On-load tapping capability [Manual]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [5]</p>
<p>Tapping steps and ranges ALB-TF-T4B</p> <p>ALB-TF-T4B-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges ALB-TF-T4R</p> <p>ALB-TF-T4R-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>

## Interconnection Branch Report

As at : 01/07/2009 12:48

<p>Tapping steps and ranges ALB-TF-T4Y</p> <p>ALB-TF-T4Y-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
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**Site: Arthurs Pass**

**Circuit Branch: APS-CLH-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[232] Amps and [26.51] MVA [for summer period] and [283] Amps and [32.39] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.39973] PU (using 100MVA as the base) Reactance [1.31210] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.25897] PU (using 100MVA as the base) Reactance [0.39621] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [69.3] kV Minimum: [62.7] kV

**Circuit Branch: APS-OTI-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[232] Amps and [26.51] MVA [for summer period] and [283] Amps and [32.39] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.12777] PU (using 100MVA as the base) Reactance [0.44010] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.08158] PU (using 100MVA as the base) Reactance [0.12403] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

**Site: Argyle****Circuit Branch: ARG-BLN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[292] Amps and [55.68] MVA [for summer period] and [357] Amps and [67.99] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.20415] PU (using 100MVA as the base) Reactance [0.72983] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.12178] PU (using 100MVA as the base) Reactance [0.23232] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: ARG-KIK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[292] Amps and [55.68] MVA [for summer period] and [357] Amps and [67.99] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.12181] PU (using 100MVA as the base) Reactance [0.43335] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.07266] PU (using 100MVA as the base) Reactance [0.13806] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Site: Arapuni**

**Circuit Branch: ARI-BOB-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.36731] PU (using 100MVA as the base) Reactance [1.38185] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.21683] PU (using 100MVA as the base) Reactance [0.41780] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: ARI-HAM-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [324] Amps and [61.73] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14363] PU (using 100MVA as the base) Reactance [0.47734] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.08615] PU (using 100MVA as the base) Reactance [0.16494] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV



## Circuit Branch: ARI-HAM-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [324] Amps and [61.73] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14444] PU (using 100MVA as the base) Reactance [0.47985] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.08660] PU (using 100MVA as the base) Reactance [0.16594] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: ARI-HTI-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[300] Amps and [57.14] MVA [for summer period] and [366] Amps and [69.80] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14832] PU (using 100MVA as the base) Reactance [0.59414] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.08212] PU (using 100MVA as the base) Reactance [0.19094] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: ARI-KIN-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[300] Amps and [57.14] MVA [for summer period] and [366] Amps and [69.80] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.09842] PU (using 100MVA as the base) Reactance [0.35669] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.05443] PU (using 100MVA as the base) Reactance [0.12342] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: ARI-KIN-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [63.36] MVA [for summer period] and [406] Amps and [77.36] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.10045] PU (using 100MVA as the base) Reactance [0.39708] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.05547] PU (using 100MVA as the base) Reactance [0.12262] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: ARI-PAK-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[584] Amps and [111.36] MVA [for summer period] and [714] Amps and [135.98] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.30558] PU (using 100MVA as the base) Reactance [1.39893] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.11342] PU (using 100MVA as the base) Reactance [0.24678] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: ARI-RTO-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[300] Amps and [57.14] MVA [for summer period] and [366] Amps and [69.80] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.11147] PU (using 100MVA as the base) Reactance [0.45164] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.06177] PU (using 100MVA as the base) Reactance [0.14518] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV



**Site: Ashburton**

**Circuit Branch: ASB-BRY-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1995] Amps and [760.20] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.03477] PU (using 100MVA as the base) Reactance [0.21329] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00645] PU (using 100MVA as the base) Reactance [0.05507] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: ASB-OPI-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1995] Amps and [760.20] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02607] PU (using 100MVA as the base) Reactance [0.16035] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00484] PU (using 100MVA as the base) Reactance [0.04136] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: ASB-OPI-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [2000] Amps and [762.10] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02601] PU (using 100MVA as the base) Reactance [0.16005] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00483] PU (using 100MVA as the base) Reactance [0.04127] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: ASB-ISL-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [2000] Amps and [762.10] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02996] PU (using 100MVA as the base) Reactance [0.18339] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00556] PU (using 100MVA as the base) Reactance [0.04751] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Site: Ashley**

**Circuit Branch: ASY-SBK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [38.02] MVA [for summer period] and [395] Amps and [45.15] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.09001] PU (using 100MVA as the base) Reactance [0.35531] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.04971] PU (using 100MVA as the base) Reactance [0.10628] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

**Circuit Branch: ASY-WPR-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [38.02] MVA [for summer period] and [406] Amps and [46.41] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.21834] PU (using 100MVA as the base) Reactance [0.88206] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.12058] PU (using 100MVA as the base) Reactance [0.25782] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

**Site: Atiamuri**

**Circuit Branch: ATI-OHK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[874] Amps and [333.13] MVA [for summer period] and [940] Amps and [358.32] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00294] PU (using 100MVA as the base) Reactance [0.01223] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00110] PU (using 100MVA as the base) Reactance [0.00529] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: ATI-TRK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[874] Amps and [332.94] MVA [for summer period] and [970] Amps and [369.76] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01980] PU (using 100MVA as the base) Reactance [0.11412] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00620] PU (using 100MVA as the base) Reactance [0.03694] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: ATI-TRK-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[874] Amps and [332.94] MVA [for summer period] and [970] Amps and [369.76] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01980] PU (using 100MVA as the base) Reactance [0.11412] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00620] PU (using 100MVA as the base) Reactance [0.03694] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: ATI-WKM-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[874] Amps and [333.13] MVA [for summer period] and [940] Amps and [358.32] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01169] PU (using 100MVA as the base) Reactance [0.04838] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00439] PU (using 100MVA as the base) Reactance [0.02107] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV



**Site: Atarau**

**Circuit Branch: ATU-DOB-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[292] Amps and [55.68] MVA [for summer period] and [357] Amps and [67.99] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.08824] PU (using 100MVA as the base) Reactance [0.32450] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.05264] PU (using 100MVA as the base) Reactance [0.09571] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: ATU-RFC-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[292] Amps and [55.68] MVA [for summer period] and [357] Amps and [67.99] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.12460] PU (using 100MVA as the base) Reactance [0.45079] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.07433] PU (using 100MVA as the base) Reactance [0.14009] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Site: Aviemore**

**Circuit Branch: AVI-BEN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[530] Amps and [201.99] MVA [for summer period] and [647] Amps and [246.43] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00854] PU (using 100MVA as the base) Reactance [0.03754] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00320] PU (using 100MVA as the base) Reactance [0.01509] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: AVI-BEN-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[530] Amps and [201.99] MVA [for summer period] and [647] Amps and [246.43] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00853] PU (using 100MVA as the base) Reactance [0.03751] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00320] PU (using 100MVA as the base) Reactance [0.01508] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: AVI-WTK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[770] Amps and [293.44] MVA [for summer period] and [848] Amps and [323.09] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00424] PU (using 100MVA as the base) Reactance [0.02100] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00155] PU (using 100MVA as the base) Reactance [0.00772] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Site: Balclutha**

**Circuit Branch: BAL-BWK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.15998] PU (using 100MVA as the base) Reactance [0.59256] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.09583] PU (using 100MVA as the base) Reactance [0.18177] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BAL-GOR-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.25350] PU (using 100MVA as the base) Reactance [0.92485] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.15191] PU (using 100MVA as the base) Reactance [0.29670] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

# Interconnection Branch Report

As at : 01/07/2009 12:48

**Site: Brydone Substation**

**Circuit Branch: BDE-EDN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04200] PU (using 100MVA as the base) Reactance [0.15296] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02516] PU (using 100MVA as the base) Reactance [0.04920] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BDE-GOR-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.05115] PU (using 100MVA as the base) Reactance [0.18527] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.03065] PU (using 100MVA as the base) Reactance [0.06008] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Interconnection Branch Report

As at : 01/07/2009 12:48

**Site: Bells Pond Tee Point**

**Circuit Branch: BDT-WTK-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [63.36] MVA [for summer period] and [406] Amps and [77.36] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.13208] PU (using 100MVA as the base) Reactance [0.53115] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.07294] PU (using 100MVA as the base) Reactance [0.15945] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BDT-GNY-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [63.36] MVA [for summer period] and [406] Amps and [77.36] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.03466] PU (using 100MVA as the base) Reactance [0.13943] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.01914] PU (using 100MVA as the base) Reactance [0.04184] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Site: Benmore AC**

**Circuit Branch: AVI-BEN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[530] Amps and [201.99] MVA [for summer period] and [647] Amps and [246.43] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00854] PU (using 100MVA as the base) Reactance [0.03754] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00320] PU (using 100MVA as the base) Reactance [0.01509] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: AVI-BEN-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[530] Amps and [201.99] MVA [for summer period] and [647] Amps and [246.43] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00853] PU (using 100MVA as the base) Reactance [0.03751] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00320] PU (using 100MVA as the base) Reactance [0.01508] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BEN-OHB-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1473] Amps and [561.32] MVA [for summer period] and [1620] Amps and [617.46] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01265] PU (using 100MVA as the base) Reactance [0.06233] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00228] PU (using 100MVA as the base) Reactance [0.02545] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BEN-OHC-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1473] Amps and [561.32] MVA [for summer period] and [1620] Amps and [617.46] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00995] PU (using 100MVA as the base) Reactance [0.04813] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00178] PU (using 100MVA as the base) Reactance [0.02117] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BEN-TWZ-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1060] Amps and [403.98] MVA [for summer period] and [1293] Amps and [492.85] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01841] PU (using 100MVA as the base) Reactance [0.09215] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00425] PU (using 100MVA as the base) Reactance [0.02953] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV





**Site: Blenheim**

**Circuit Branch: ARG-BLN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[292] Amps and [55.68] MVA [for summer period] and [357] Amps and [67.99] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.20415] PU (using 100MVA as the base) Reactance [0.72983] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.12178] PU (using 100MVA as the base) Reactance [0.23232] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BLN-STK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[400] Amps and [76.21] MVA [for summer period] and [400] Amps and [76.21] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14963] PU (using 100MVA as the base) Reactance [0.66961] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.05617] PU (using 100MVA as the base) Reactance [0.24010] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BLN-STK-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[551] Amps and [104.89] MVA [for summer period] and [672] Amps and [127.97] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14553] PU (using 100MVA as the base) Reactance [0.66961] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.05207] PU (using 100MVA as the base) Reactance [0.24010] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Site: Bombay**

**Circuit Branch: ARI-BOB-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.36731] PU (using 100MVA as the base) Reactance [1.38185] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.21683] PU (using 100MVA as the base) Reactance [0.41780] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BOB-WET-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.13906] PU (using 100MVA as the base) Reactance [0.51726] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.08315] PU (using 100MVA as the base) Reactance [0.15987] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BOB-WET-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.13908] PU (using 100MVA as the base) Reactance [0.51766] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.08316] PU (using 100MVA as the base) Reactance [0.15989] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BOB-WRT-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[324] Amps and [61.69] MVA [for summer period] and [399] Amps and [76.05] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.06655] PU (using 100MVA as the base) Reactance [0.26813] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.03611] PU (using 100MVA as the base) Reactance [0.08080] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BOB-WRT-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[324] Amps and [61.69] MVA [for summer period] and [399] Amps and [76.05] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.06635] PU (using 100MVA as the base) Reactance [0.26748] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.03600] PU (using 100MVA as the base) Reactance [0.08055] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV



## Interconnection Branch Report

As at : 01/07/2009 12:48

**Site: Black Point Transmission Tee Point**

**Circuit Branch: BPC-OAM-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[253] Amps and [48.23] MVA [for summer period] and [309] Amps and [58.90] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.18336] PU (using 100MVA as the base) Reactance [0.63855] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.11215] PU (using 100MVA as the base) Reactance [0.19889] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BPC-WTK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [63.36] MVA [for summer period] and [406] Amps and [77.36] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.08034] PU (using 100MVA as the base) Reactance [0.31730] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.04437] PU (using 100MVA as the base) Reactance [0.09699] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Site: Bunnythorpe**

**Circuit Branch: BPE-BRK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1870] Amps and [712.57] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02671] PU (using 100MVA as the base) Reactance [0.16459] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00496] PU (using 100MVA as the base) Reactance [0.04250] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: BPE-BRK-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1870] Amps and [712.57] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02678] PU (using 100MVA as the base) Reactance [0.16559] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00497] PU (using 100MVA as the base) Reactance [0.04252] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV



**Circuit Branch: BPE-HAY-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[807] Amps and [307.52] MVA [for summer period] and [880] Amps and [335.48] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.05821] PU (using 100MVA as the base) Reactance [0.29568] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02185] PU (using 100MVA as the base) Reactance [0.10480] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: BPE-HAY-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[807] Amps and [307.52] MVA [for summer period] and [880] Amps and [335.48] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.05818] PU (using 100MVA as the base) Reactance [0.29568] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02184] PU (using 100MVA as the base) Reactance [0.10475] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: BPE-LTN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [2000] Amps and [762.10] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00769] PU (using 100MVA as the base) Reactance [0.03870] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00143] PU (using 100MVA as the base) Reactance [0.01251] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BPE-MHO-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[253] Amps and [48.23] MVA [for summer period] and [309] Amps and [58.90] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14324] PU (using 100MVA as the base) Reactance [0.46649] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.09258] PU (using 100MVA as the base) Reactance [0.13803] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BPE-MHO-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[253] Amps and [48.23] MVA [for summer period] and [309] Amps and [58.90] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.14351] PU (using 100MVA as the base) Reactance [0.46223] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.09275] PU (using 100MVA as the base) Reactance [0.13826] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BPE-MTN-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [63.36] MVA [for summer period] and [406] Amps and [77.36] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.08669] PU (using 100MVA as the base) Reactance [0.34535] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.04787] PU (using 100MVA as the base) Reactance [0.10502] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BPE-MTN-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[333] Amps and [63.36] MVA [for summer period] and [406] Amps and [77.36] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.08710] PU (using 100MVA as the base) Reactance [0.35032] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.04810] PU (using 100MVA as the base) Reactance [0.10554] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BPE-MTR-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[300] Amps and [57.14] MVA [for summer period] and [366] Amps and [69.80] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.19405] PU (using 100MVA as the base) Reactance [0.77949] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.10753] PU (using 100MVA as the base) Reactance [0.25290] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BPE-TKU-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[807] Amps and [307.52] MVA [for summer period] and [880] Amps and [335.48] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.07968] PU (using 100MVA as the base) Reactance [0.40470] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02991] PU (using 100MVA as the base) Reactance [0.14342] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BPE-TKU-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[807] Amps and [307.52] MVA [for summer period] and [880] Amps and [335.48] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.07964] PU (using 100MVA as the base) Reactance [0.40436] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02989] PU (using 100MVA as the base) Reactance [0.14334] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BPE-WDV-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[300] Amps and [57.14] MVA [for summer period] and [366] Amps and [69.80] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.06089] PU (using 100MVA as the base) Reactance [0.24537] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.03371] PU (using 100MVA as the base) Reactance [0.07576] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: BPE-WDV-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[300] Amps and [57.14] MVA [for summer period] and [366] Amps and [69.80] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.06089] PU (using 100MVA as the base) Reactance [0.25060] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.03371] PU (using 100MVA as the base) Reactance [0.07577] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BPE-TWT-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [2006] Amps and [764.34] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00429] PU (using 100MVA as the base) Reactance [0.02158] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00080] PU (using 100MVA as the base) Reactance [0.00698] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Transformer Branch: BPE-TF-T1**

Service Measure	Service Level
Overall 24 hour post contingency capacity rating of the interconnection transformer branch	<b>HV</b> [152] Amps and [58.00] MVA [for summer period] and [164] Amps and [62.50] MVA [for winter period] <b>MV</b> [304] Amps and [58.00] MVA [for summer period] and [328] Amps and [62.50] MVA [for winter period] <b>LV</b> [1827] Amps and [34.80] MVA [for summer period] and [1968] Amps and [37.50] MVA [for winter period]
Continuous capacity rating of the interconnection transformer branch	<b>HV</b> [131] Amps and [50.01] MVA <b>MV</b> [262] Amps and [50.01] MVA <b>LV</b> [1575] Amps and [30.00] MVA
Level of Impedance of the interconnection transformer branch Resistive and Reactive - Shunt	<b>HV</b> Resistance [-0.00013] PU (using 100MVA as the base) <b>HV</b> Reactance [0.03677] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00405] PU (using 100MVA as the base) <b>MV</b> Reactance [0.05886] PU (using 100MVA as the base) <b>LV</b> Resistance [0.01168] PU (using 100MVA as the base) <b>LV</b> Reactance [0.14235] PU (using 100MVA as the base)
Level of Impedance of the interconnection transformer branch Resistive and Reactive - Series	<b>HV</b> Resistance [-0.00013] PU (using 100MVA as the base) <b>HV</b> Reactance [0.03677] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00405] PU (using 100MVA as the base) <b>MV</b> Reactance [0.05886] PU (using 100MVA as the base) <b>LV</b> Resistance [0.01168] PU (using 100MVA as the base) <b>LV</b> Reactance [0.14235] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection transformer branch	[220] kV
High voltage range that the interconnection transformer branch can operate over	Maximum: [242] kV Minimum: [198] kV

# Interconnection Branch Report

As at : 01/07/2009 12:48

<p>Tapping steps and ranges BPE-TF-T1B</p> <p>BPE-TF-T1B-Tap Changer -- OFFLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [220] kV Minimum: [198] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T1R</p> <p>BPE-TF-T1R-Tap Changer -- OFFLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [220] kV Minimum: [198] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T1Y</p> <p>BPE-TF-T1Y-Tap Changer -- OFFLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [220] kV Minimum: [198] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>

## Interconnection Branch Report

As at : 01/07/2009 12:48

<p>Tapping steps and ranges BPE-TF-T1B</p> <p>BPE-TF-T1B-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T1R</p> <p>BPE-TF-T1R-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T1Y</p> <p>BPE-TF-T1Y-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>

### Transformer Branch: BPE-TF-T2

Service Measure	Service Level
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## Interconnection Branch Report

As at : 01/07/2009 12:48

Overall 24 hour post contingency capacity rating of the interconnection transformer branch	<b>HV</b> [152] Amps and [58.00] MVA [for summer period] and [164] Amps and [62.50] MVA [for winter period] <b>MV</b> [304] Amps and [58.00] MVA [for summer period] and [328] Amps and [62.50] MVA [for winter period] <b>LV</b> [1827] Amps and [34.80] MVA [for summer period] and [1968] Amps and [37.50] MVA [for winter period]
Continuous capacity rating of the interconnection transformer branch	<b>HV</b> [131] Amps and [50.01] MVA <b>MV</b> [262] Amps and [50.01] MVA <b>LV</b> [1575] Amps and [30.00] MVA
Level of Impedance of the interconnection transformer branch Resistive and Reactive - Shunt	<b>HV</b> Resistance [-0.00013] PU (using 100MVA as the base) <b>HV</b> Reactance [0.03677] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00405] PU (using 100MVA as the base) <b>MV</b> Reactance [0.05887] PU (using 100MVA as the base) <b>LV</b> Resistance [0.01169] PU (using 100MVA as the base) <b>LV</b> Reactance [0.14235] PU (using 100MVA as the base)
Level of Impedance of the interconnection transformer branch Resistive and Reactive - Series	<b>HV</b> Resistance [-0.00013] PU (using 100MVA as the base) <b>HV</b> Reactance [0.03677] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00405] PU (using 100MVA as the base) <b>MV</b> Reactance [0.05887] PU (using 100MVA as the base) <b>LV</b> Resistance [0.01169] PU (using 100MVA as the base) <b>LV</b> Reactance [0.14235] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection transformer branch	[220] kV
High voltage range that the interconnection transformer branch can operate over	Maximum: [242] kV Minimum: [198] kV
Tapping steps and ranges BPE-TF-T2B BPE-TF-T2B-Tap Changer -- OFFLOAD -- HV	Tap voltage range: Maximum: [220] kV Minimum: [198] kV Number of tapping steps: [4] Size of each tapping step as a percentage of nominal operating voltage range: [2.5]% On-load/Off-load [Offload] On-load tapping capability [Not Applicable] If on-load tapping capability is automatic, is it auto selected? [Not Applicable] If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]



<p>Tapping steps and ranges BPE-TF-T2R</p> <p>BPE-TF-T2R-Tap Changer -- OFFLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [220] kV Minimum: [198] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T2Y</p> <p>BPE-TF-T2Y-Tap Changer -- OFFLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [220] kV Minimum: [198] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T2B</p> <p>BPE-TF-T2B-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>

<p>Tapping steps and ranges BPE-TF-T2R</p> <p>BPE-TF-T2R-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T2Y</p> <p>BPE-TF-T2Y-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>

## Transformer Branch: BPE-TF-T3

Service Measure	Service Level
Overall 24 hour post contingency capacity rating of the interconnection transformer branch	<p><b>HV</b> [152] Amps and [58.00] MVA [for summer period] and [164] Amps and [62.50] MVA [for winter period]</p> <p><b>MV</b> [304] Amps and [58.00] MVA [for summer period] and [328] Amps and [62.50] MVA [for winter period]</p> <p><b>LV</b> [1827] Amps and [34.80] MVA [for summer period] and [1968] Amps and [37.50] MVA [for winter period]</p>
Continuous capacity rating of the interconnection transformer branch	<p><b>HV</b> [131] Amps and [50.01] MVA</p> <p><b>MV</b> [262] Amps and [50.01] MVA</p> <p><b>LV</b> [1575] Amps and [30.00] MVA</p>

# Interconnection Branch Report

As at : 01/07/2009 12:48

Level of Impedance of the interconnection transformer branch Resistive and Reactive - Shunt	<b>HV</b> Resistance [-0.00013] PU (using 100MVA as the base) <b>HV</b> Reactance [0.03677] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00405] PU (using 100MVA as the base) <b>MV</b> Reactance [0.05887] PU (using 100MVA as the base) <b>LV</b> Resistance [0.01169] PU (using 100MVA as the base) <b>LV</b> Reactance [0.14235] PU (using 100MVA as the base)
Level of Impedance of the interconnection transformer branch Resistive and Reactive - Series	<b>HV</b> Resistance [-0.00013] PU (using 100MVA as the base) <b>HV</b> Reactance [0.03677] PU (using 100MVA as the base) <b>MV</b> Resistance [0.00405] PU (using 100MVA as the base) <b>MV</b> Reactance [0.05887] PU (using 100MVA as the base) <b>LV</b> Resistance [0.01169] PU (using 100MVA as the base) <b>LV</b> Reactance [0.14235] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection transformer branch	[220] kV
High voltage range that the interconnection transformer branch can operate over	Maximum: [242] kV Minimum: [198] kV
Tapping steps and ranges BPE-TF-T3B BPE-TF-T3B-Tap Changer -- OFFLOAD -- HV	Tap voltage range: Maximum: [220] kV Minimum: [198] kV Number of tapping steps: [4] Size of each tapping step as a percentage of nominal operating voltage range: [2.5]% On-load/Off-load [Offload] On-load tapping capability [Not Applicable] If on-load tapping capability is automatic, is it auto selected? [Not Applicable] If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]
Tapping steps and ranges BPE-TF-T3R BPE-TF-T3R-Tap Changer -- OFFLOAD -- HV	Tap voltage range: Maximum: [220] kV Minimum: [198] kV Number of tapping steps: [4] Size of each tapping step as a percentage of nominal operating voltage range: [2.5]% On-load/Off-load [Offload] On-load tapping capability [Not Applicable] If on-load tapping capability is automatic, is it auto selected? [Not Applicable] If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]

<p>Tapping steps and ranges BPE-TF-T3Y</p> <p>BPE-TF-T3Y-Tap Changer -- OFFLOAD -- HV</p>	<p>Tap voltage range:</p> <p>Maximum: [220] kV Minimum: [198] kV</p> <p>Number of tapping steps: [4]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [2.5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T3B</p> <p>BPE-TF-T3B-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
<p>Tapping steps and ranges BPE-TF-T3R</p> <p>BPE-TF-T3R-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>

<p>Tapping steps and ranges BPE-TF-T3Y</p> <p>BPE-TF-T3Y-Tap Changer -- OFFLOAD -- LV</p>	<p>Tap voltage range:</p> <p>Maximum: [11.55] kV Minimum: [10.45] kV</p> <p>Number of tapping steps: [2]</p> <p>Size of each tapping step as a percentage of nominal operating voltage range: [5]%</p> <p>On-load/Off-load [Offload]</p> <p>On-load tapping capability [Not Applicable]</p> <p>If on-load tapping capability is automatic, is it auto selected? [Not Applicable]</p> <p>If on-load tapping capability is manual, what tap step is normally set? (Actual or expected position at winter peak demand) [Not Applicable]</p>
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**Site: Bream Bay**

**Circuit Branch: BRB-HPI-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[875] Amps and [333.31] MVA [for summer period] and [971] Amps and [370.08] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04769] PU (using 100MVA as the base) Reactance [0.22119] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.01408] PU (using 100MVA as the base) Reactance [0.08723] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: BRB-MDN-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[795] Amps and [302.94] MVA [for summer period] and [795] Amps and [302.94] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00137] PU (using 100MVA as the base) Reactance [0.00649] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00025] PU (using 100MVA as the base) Reactance [0.00226] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Site: Brunswick**

**Circuit Branch: BPE-BRK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1870] Amps and [712.57] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02671] PU (using 100MVA as the base) Reactance [0.16459] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00496] PU (using 100MVA as the base) Reactance [0.04250] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: BPE-BRK-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1870] Amps and [712.57] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.02678] PU (using 100MVA as the base) Reactance [0.16559] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00497] PU (using 100MVA as the base) Reactance [0.04252] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BRK-SFD-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[627] Amps and [238.85] MVA [for summer period] and [765] Amps and [291.34] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04266] PU (using 100MVA as the base) Reactance [0.24387] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.01336] PU (using 100MVA as the base) Reactance [0.07999] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BRK-SFD-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[610] Amps and [232.53] MVA [for summer period] and [752] Amps and [286.38] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04266] PU (using 100MVA as the base) Reactance [0.24388] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.01336] PU (using 100MVA as the base) Reactance [0.07999] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: BRK-SFD-3

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[627] Amps and [238.85] MVA [for summer period] and [765] Amps and [291.34] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04301] PU (using 100MVA as the base) Reactance [0.20104] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.01346] PU (using 100MVA as the base) Reactance [0.08140] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV





**Site: Bromley**

**Circuit Branch: ASB-BRY-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [1995] Amps and [760.20] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.03477] PU (using 100MVA as the base) Reactance [0.21329] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00645] PU (using 100MVA as the base) Reactance [0.05507] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: BRY-ISL-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1822] Amps and [694.33] MVA [for summer period] and [2000] Amps and [762.10] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01056] PU (using 100MVA as the base) Reactance [0.06547] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00196] PU (using 100MVA as the base) Reactance [0.01662] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Site: Berwick**

**Circuit Branch: BAL-BWK-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.15998] PU (using 100MVA as the base) Reactance [0.59256] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.09583] PU (using 100MVA as the base) Reactance [0.18177] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: BWK-HWB-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [50.68] MVA [for summer period] and [325] Amps and [61.92] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.10833] PU (using 100MVA as the base) Reactance [0.39472] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.06494] PU (using 100MVA as the base) Reactance [0.12815] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Site: Castle Hill**

**Circuit Branch: APS-CLH-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[232] Amps and [26.51] MVA [for summer period] and [283] Amps and [32.39] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.39973] PU (using 100MVA as the base) Reactance [1.31210] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.25897] PU (using 100MVA as the base) Reactance [0.39621] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [69.3] kV Minimum: [62.7] kV

**Circuit Branch: CLH-COL-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[232] Amps and [26.51] MVA [for summer period] and [283] Amps and [32.39] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.27785] PU (using 100MVA as the base) Reactance [0.95642] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.18005] PU (using 100MVA as the base) Reactance [0.26770] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

**Site: Cromwell**

**Circuit Branch: CML-CYD-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1473] Amps and [561.32] MVA [for summer period] and [1600] Amps and [609.68] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00772] PU (using 100MVA as the base) Reactance [0.05219] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00138] PU (using 100MVA as the base) Reactance [0.01638] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Circuit Branch: CML-CYD-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1473] Amps and [561.32] MVA [for summer period] and [1600] Amps and [609.68] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.00773] PU (using 100MVA as the base) Reactance [0.05221] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00138] PU (using 100MVA as the base) Reactance [0.01638] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: CML-TWZ-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1011] Amps and [385.41] MVA [for summer period] and [1233] Amps and [469.76] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04424] PU (using 100MVA as the base) Reactance [0.29807] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00789] PU (using 100MVA as the base) Reactance [0.09383] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

## Circuit Branch: CML-TWZ-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1011] Amps and [385.41] MVA [for summer period] and [1233] Amps and [469.76] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04424] PU (using 100MVA as the base) Reactance [0.29807] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00789] PU (using 100MVA as the base) Reactance [0.09383] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[220] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [242] kV Minimum: [198] kV

**Site: Coleridge**

**Circuit Branch: COL-OTI-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[232] Amps and [26.51] MVA [for summer period] and [283] Amps and [32.39] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.80552] PU (using 100MVA as the base) Reactance [2.70927] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.52070] PU (using 100MVA as the base) Reactance [0.78811] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

**Circuit Branch: CLH-COL-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[232] Amps and [26.51] MVA [for summer period] and [283] Amps and [32.39] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.27785] PU (using 100MVA as the base) Reactance [0.95642] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.18005] PU (using 100MVA as the base) Reactance [0.26770] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

## Circuit Branch: COL-HOR-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [30.41] MVA [for summer period] and [325] Amps and [37.15] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.39637] PU (using 100MVA as the base) Reactance [1.49392] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.23684] PU (using 100MVA as the base) Reactance [0.42520] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV

## Circuit Branch: COL-HOR-3

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[266] Amps and [30.41] MVA [for summer period] and [325] Amps and [37.15] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.39615] PU (using 100MVA as the base) Reactance [1.49327] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.23669] PU (using 100MVA as the base) Reactance [0.42503] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[66] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [72.6] kV Minimum: [59.4] kV



**Site: Carrington Street**

**Circuit Branch: CST-HUI-1**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[195] Amps and [37.15] MVA [for summer period] and [195] Amps and [37.15] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04174] PU (using 100MVA as the base) Reactance [0.15063] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02305] PU (using 100MVA as the base) Reactance [0.05050] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

**Circuit Branch: CST-HUI-2**

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[195] Amps and [37.15] MVA [for summer period] and [195] Amps and [37.15] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.04174] PU (using 100MVA as the base) Reactance [0.15053] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.02305] PU (using 100MVA as the base) Reactance [0.05050] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: CST-MNI-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[324] Amps and [61.69] MVA [for summer period] and [395] Amps and [75.26] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.09160] PU (using 100MVA as the base) Reactance [0.31421] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.05059] PU (using 100MVA as the base) Reactance [0.10912] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: CST-NPL-1

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1220] Amps and [232.53] MVA [for summer period] and [1503] Amps and [286.38] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01608] PU (using 100MVA as the base) Reactance [0.07037] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00299] PU (using 100MVA as the base) Reactance [0.02289] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV

## Circuit Branch: CST-NPL-2

Service Measure	Service Level
Overall continuous capacity rating of the interconnection circuit branch	[1220] Amps and [232.53] MVA [for summer period] and [1503] Amps and [286.38] MVA [for winter period]
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Shunt	Resistance [0.01608] PU (using 100MVA as the base) Reactance [0.07045] PU (using 100MVA as the base)
Level of Impedance of the interconnection circuit branch Resistive and Reactive - Series	Resistance [0.00299] PU (using 100MVA as the base) Reactance [0.02289] PU (using 100MVA as the base)
Nominal high voltage rating of the interconnection circuit branch	[110] kV
High voltage range that the interconnection circuit branch can operate over	Maximum: [121] kV Minimum: [99] kV