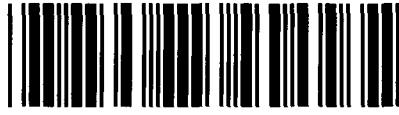




Control Number: 50690



Item Number: 9

Addendum StartPage: 0



PUC DOCKET NO. 50690

APPLICATION OF ELECTRIC  
TRANSMISSION TEXAS, LLC TO  
AMEND ITS CERTIFICATES OF  
CONVENIENCE AND NECESSITY FOR  
THE RELOJ DEL SOL 345-KV  
TRANSMISSION LINE IN ZAPATA  
COUNTY

PUBLIC UTILITY COMMISSION  
OF TEXAS

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO  
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**MAY 21, 2020**

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**PUC DOCKET NO. 50690**

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO  
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**Question No. STAFF 1-1:**

In reference to page 5 of the application:

- a. Please provide the ERCOT-submitted study that shows the interconnection at 345-kV.
- b. Please provide the same study with the costs and equipment needed to interconnect at 138-kV.

**Response No. STAFF 1-1:**

- a) As stated on page 5 in the CCN Application and in its Response to Order No. 1, the Electric Reliability Council of Texas (ERCOT) Nodal Protocols Section 3.11 relating to Transmission Planning defines a project that is to interconnect new generation as a “neutral project”, which is not required to be submitted for ERCOT Regional Planning Group (RPG) review. Therefore, no study was submitted to the ERCOT RPG for this project. In addition to the interconnection agreement requirement under obligation to interconnect 16 TAC Rule 25.198(b), ETT is also required to interconnect the wind farm to the ERCOT transmission system pursuant to 16 TAC Rule 25.191(d)(3).

When an interconnect request by a generator is made at a point of delivery, the utility does submit a Facilities Interconnection Study (FIS) series with ERCOT. The submission is made based on the request from the generator, which in this case was for the 345-kV interconnection request. Therefore, no 138-kV study was performed. Also, the 138-kV transmission line in this area is rated at 216 MVA to serve the load in the area. Connecting a 209 MW generator would create overload issues. The steady state FIS for the 345-kV interconnection request is provided in response to this RFI as Staff 1-1 Attachment. Note as discussed in the results on page 7 of 25 in this FIS that the 138-kV network is the limiting transfer element at certain generation and load levels even with the interconnection at 345-kV.

- b) As stated in the response to (a) above, no 138-kV FIS was performed.

Prepared by: Randal E Roper

Title: Regulatory Case Manager, AEP Texas

Sponsored by: Witness Designated if Testimony Filed

**Interconnection Study for Reloj Del Sol Wind**  
**In**  
**Zapata County, TX**

**Steady State Study**  
**Report for Generation 17INR0025**



**American Electric Power Service Corporation**  
**(AEPSC)**  
**West Transmission Planning**  
**501 South Boston**  
**Tulsa, Oklahoma 74103**  
**(918) 599-2664**

**April 2020**

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## EXECUTIVE SUMMARY

Reloj Del Sol Wind Farm, LLC has requested to interconnect a 202.0 MW solar generating facility called "Reloj Del Sol Wind" in Zapata County, TX. The requested point of interconnection to the ERCOT transmission system is:

- AEP 345 kV Cenizo Station.

Generator	Proposed Location	Size (MW)	Requested In-Service Date
Reloj Del Sol Wind	345 kV Cenizo Station	202.0 MW	12/01/2020

The purpose of this study is to determine the transmission system impacts and what transmission system improvements may be required to reliably accommodate the Reloj Del Sol Wind generating facility to the above point of interconnection to the ERCOT transmission system.

### 345 kV Cenizo Station Interconnection

#### Steady State Analysis Summary

Under present system conditions, steady state analysis revealed no additional N-0 voltage issues due to the addition of the Reloj Del Sol Wind 202.0 MW generating facility.

N-0 analysis revealed that curtailment of Reloj Del Sol Wind may be required if existing area generation is dispatched above 75%. Reloj Del Sol Wind may be limited from 192.2 MW to 0.0 MW depending on the existing area generation dispatch.

N-1 analysis revealed that curtailment of Reloj Del Sol Wind may be required if existing area generation is dispatched above 50%. Reloj Del Sol Wind may be limited from 198.8 MW to 0.0 depending on the existing area generation dispatch.

N-G-1 and N-A-1 analysis revealed that curtailment of Reloj Del Sol Wind may be required if existing area generation is dispatched above 50%. Reloj Del Sol Wind may be limited from 198.6 MW to 0.0 depending on the existing area generation dispatch.

N-1-1 analysis revealed that curtailment of Reloj Del Sol Wind may be required if existing area generation is dispatched above 25%. Reloj Del Sol Wind may be limited from 200.0 MW to 0.0 depending on the existing area generation dispatch.

Area generation curtailment levels would be determined by ERCOT system operations and would depend on what future generation is connected and the system generation and load conditions.

## STUDY OBJECTIVES

- Develop sound and efficient engineering solutions to reliably accommodate the Reloj Del Sol Wind generating facility to the requested point of interconnection.
- Maximize the use of the existing transmission system, minimize the need for new right-of-way, and minimize the need for a Certificate of Convenience and Necessity (CCN).
- Determine the facilities required to provide the direct interconnection of the generation facility.
- Maintain full compliance with the transmission reliability requirements of American Electric Power Service Corporation (AEPSC), Electric Reliability Council of Texas (ERCOT) and North American Electric Reliability Corporation (NERC).

## STUDY ASSUMPTIONS

- This study utilized PSSE power system simulator by Siemens.
- The Reloj Del Sol Wind generating plant was assumed capable of producing the reactive power needed to maintain a voltage profile established by ERCOT, at the point of interconnection, with a minimum power factor of 0.95 leading to 0.95 lagging. This requirement is outlined in the *ERCOT Nodal Protocols 3.15 Standards*. Reference Appendix C for a link to this document.
- The required reactive resources will achieve ERCOT power factor requirement and ensure compliance with AEP's voltage flicker requirements specified in *Requirements for Connection of New Facilities or Changes to Existing Facilities Connected to the AEP Transmission System*. Reference Appendix C for a link to this document.
- Thermal rating criteria (ERCOT and AEP):
  - The N-0 loading of transmission elements should be less than 100% of Rate A.
  - The N-1 loading of transmission elements should be less than 100% of Rate B.
- Voltage criteria (ERCOT and AEP):
  - Under N-0 the bus voltages should be between 0.95 P.U. and 1.05 P.U.
  - Under N-1 the bus voltages should be between 0.92 P.U. and 1.05 P.U.
  - Reference AEP and ERCOT planning criteria in Appendix C for links to detailed documentation.
- Outage Scenarios:

Reliability standard FAC-002 "Facility Interconnection Studies" specifies adherence to applicable reliability standards, planning criteria, and interconnection requirements. Additionally, this standard requires that study assumptions be communicated. The contingency categories in the table below were selected to be applicable for this interconnection study and consist of the TPL-001 events that could require redispatch as a pre-contingency corrective action plan.

## CONTINGENCY DEFINITIONS

Type	NERC Category	Descriptions
N-0	P0	Transmission system operating under normal conditions with zero facilities out of service.
N-1	P1,P2.1, P7/ERCOT1	Transmission system operating with a forced outage of a single line, transformer, generator, or switched shunt. ERCOT criteria consider double circuit lines greater than one ½ mile a single outage (ERCOT1).
N-A-1	P6.2	Transmission system operating with an outage of a single 345kV autotransformer followed by a forced outage of a single line, transformer, generator, or switched shunt.
N-G-1	P3	Transmission system operating with an outage of a single generating unit followed by a forced outage of a single line, transformer, generator, or switched shunt.
N-1-1*	P6	Transmission system operating with a planned maintenance outage of a single line, transformer, generator, or switched shunt followed by a forced outage of a single line, transformer, generator, or switched shunt.

\* Since planned maintenance outages generally occur during off-peak conditions, this study used a 2020 Spring case for the N-1-1 analysis.

Simultaneous multiple events (P4 and P5) are not explicitly studied since additional generation would improve system performance for extreme events. In addition, no preemptive action is taken in anticipation of these events that would influence a decision to commit to interconnection.

The transmission system must reliably operate under N-0, N-1, N-A-1, and N-G-1 conditions in both On-Peak and Off-Peak system conditions. If it is determined that the transmission system cannot accommodate the next worst outage, the transmission system must be upgraded or area generating facilities could be curtailed according to ERCOT operating procedures.

## STEADY STATE ANALYSIS

This study utilized the ERCOT 19SSWG U2 2021 Summer Peak and 2023 High Wind Low Load Off-Peak cases to assess the transmission system impacts associated with the interconnection of the Reloj Del Sol Wind generating facility under normal and single outage system conditions. Planned maintenance outages plus single outage system conditions were also performed using the ERCOT 19SSWG U2 2020 Spring case for consideration.

An analysis was performed which considered the impacts of the Reloj Del Sol Wind generating facility connecting to the present ERCOT transmission system.

- Changes to the SSWG Cases:
  - 1) Added Reloj Del Sol Wind generating facility to all seasonal cases.
  - 2) Turned on Las Lomas Wind (16INR0111) in the 2021 Summer Peak case.
  - 3) Added Las Lomas Wind (16INR0111) to the 2020 Spring case.
  - 4) Added Hidalgo 2 Wind (19INR0053) to all seasonal cases.
  - 5) Turned on Hidalgo & Starr Wind (16INR0024) in the 2023 HWLL and 2020 Spring case.
  - 6) Turned on Cabezon Wind (17INR0005) in the 2023 HWLL case.
  - 7) Corrected MW capacity for Cabezon Wind (17INR0005) in the 2020 Spring case to match the latest ERCOT GIS.
  - 8) Turned on Mesteno Wind (16INR0081) in the 2023 HWLL case.
  - 9) Applied all relevant 19SSWG U2 Off-Cycle updates to all seasonal cases.

- System Conditions Studied:

The scenarios below describe the interconnection options, generation dispatch, and load patterns evaluated in this generation interconnection study. Distant generation was adjusted to offset the changing generation dispatch.

*AEP 345 kV Cenizo Station Interconnection.*

Scenario	Case Name	System Conditions
1	Case0	21SUM_G25
2	Case1	21SUM_G50
3	Case2	21SUM_G75
4	Case3	21SUM_G100
5	Case0	21SUM_G25
6	Case1	21SUM_G50
7	Case2	21SUM_G75
8	Case3	21SUM_G100
9	Case0	23HWLL_G25
10	Case1	23HWLL_G50
11	Case2	23HWLL_G75
12	Case3	23HWLL_G100
13	Case0	23HWLL_G25
14	Case1	23HWLL_G50
15	Case2	23HWLL_G75
16	Case3	23HWLL_G100
17	Case0	20SPG_G25
18	Case1	20SPG_G50
19	Case2	20SPG_G75
20	Case3	20SPG_G100

The existing generation considered for scaling the above "Present System" scenarios consisted of:

Bus	Generator	MW	Unit ID
160591	Cedro Hill Wind	75.0	W1
160593		75.0	W2
160832	Whitetail Wind Energy Project	92.3	W1
161052	Sendero Wind	76.0	W1
160881	Los Vientos III	200.0	W1
161102	Javelina Wind	19.7	W1
161103		230.0	W2
161201	Los Vientos V	110.0	W1
161551	Los Vientos IV	200.0	W1
161106		96.0	W3
161107	Javelina 2 Wind	74.0	W4
161108		30.0	W5
161701		52.0	W1
161701	Hidalgo & Starr Wind	98.0	W2
161701		50.4	W3
161702		50.4	W4
161251		127.5	W1
161252	Torrecillas Wind	150.0	W1
161254		23.0	W2
161851	Cabezon Wind	115.2	W1
161852		122.4	W2
162101	Mesteno Windpower	201.6	W1
162451	Las Lomas Wind	200.0	W1
162641	Hidalgo II Wind	51.0	W1
	Total	2519.5	

## 345 kV Cenizo Station Interconnection Results

This section presents the steady state results of the Reloj Del Sol Wind generating facility connecting to the AEP 345 kV Cenizo Station.

### N-0 Results

Under present system conditions, steady state analysis revealed no additional N-0 voltage issues due to the addition of the Reloj Del Sol Wind 202.0 MW generating facility. The Piloncillo to North Laredo Switch 138 kV line begins to experience overloading under N-0 contingency conditions when Reloj Del Sol Wind output is greater than 12.4 MW and existing area generation is dispatched at 100% in the 2021 Summer Peak case. The Piloncillo to North Laredo Switch 138 kV line begins to experience overloading under N-0 contingency conditions when Reloj Del Sol Wind output is greater than 190.0 MW to 0.0 MW and existing area generation is dispatched from 75% to 100% in the 2020 Spring case.

### N-1 Results

With only Reloj Del Sol Wind generation considered, N-1 steady state results revealed:

- The Las Cruces to Laredo VFT North 138 kV line begins to experience overloading for the loss of the Lobo to Fowlerton 345 kV line when Reloj Del Sol Wind output is greater than 37.5 MW to 0.0 MW and existing area generation is dispatched from 50% to 100% in the 2021 Summer Peak case.
- The Las Cruces to Laredo VFT North 138 kV line begins to experience overloading for the loss of the Lobo to Fowlerton 345 kV line when Reloj Del Sol Wind output is greater than 92.7 MW to 0.0 MW and existing area generation is dispatched from 50% to 100% in the 2023 HWLL case.
- The Las Cruces to Milo 138 kV line begins to experience overloading for the loss of the San Miguel to Lobo 345 kV line when Reloj Del Sol Wind output is greater than 111.3 MW to 0.0 MW and existing area generation is dispatched from 50% to 100% in the 2021 Summer Peak case.

Reference Tables in Appendix A for detailed N-1 results.

### N-G-1 and N-A-1 Results

Should a forced outage of a 345 kV transformer or generating unit occur, steady state N-G-1 and N-A-1 results in the present system revealed:

*For outage of the Torrecillas Wind Unit 3:*

- The Las Cruces to Laredo VFT North 138 kV line begins to experience overloading for the loss of the San Miguel to Lobo 345 kV line when Reloj Del Sol Wind output is greater than 3.2 MW to 0.0 MW and existing area generation is dispatched from 50% to 100% in the 2021 Summer Peak case.

*For outage of the San Miguel generating unit:*

- The Las Cruces to Laredo VFT North 138 kV line begins to experience overloading for the loss of the Lobo to Fowlerton 345 kV line when Reloj Del Sol Wind output is greater than 27.4 MW to 0.0 MW and existing area generation is dispatched from 50% to 100% in the 2023 HWLL case.
- The Las Cruces to Milo 138 kV line begins to experience overloading for the loss of the San Miguel to Lobo 345 kV line when Reloj Del Sol Wind output is greater than 32.7 MW to 0.0 MW and existing area generation is dispatched from 50% to 100% in the 2021 Summer Peak case.

Reference Tables in Appendix A for detailed results.

### N-1-1 Results

Steady state results revealed that the area generation (including Reloj Del Sol Wind) could be required to limit output for the following off-peak maintenance outages:

*For the planned outage of the Laredo VFT North to Laredo Plant 138 kV circuit #1:*

- The Mines Road to North Laredo Switch 138 kV line begins to experience overloading for the loss of the Laredo VFT North to Laredo Plant 138 kV circuit #2 when Reloj Del Sol Wind output is greater than 7.1 MW to 0.0 MW and existing area generation is dispatched from 25% to 100% in the 2020 Spring case.

*For the planned outage of the Gateway West Tap to Wormser Road 138 kV line:*

- The Las Cruces to Milo 138 kV line begins to experience overloading for the loss of the San Miguel to Lobo 345 kV line when Reloj Del Sol Wind output is greater than 28.6 MW to 0.0 MW and existing area generation is dispatched from 25% to 100% in the 2020 Spring case.

*For the planned outage of the Lobo to Fowlerton 345 kV line:*

- The Laredo Plant to Del Mar 138 kV line begins to experience overloading for the loss of the Laredo VFT North to Las Cruces 138 kV line when Reloj Del Sol Wind output is greater than about 39.9 MW to 0.0 MW and existing area generation is dispatched from 25% to 100% in the 2020 Spring case.

Area generation curtailment levels would be determined by ERCOT system operations and would depend on what future generation is connected and the system generation and load conditions.

Reference Tables in Appendix A for detailed N-1-1 results.

## APPENDIX A Tables

### 345 KV CENIZO STATION INTERCONNECTION PRESENT SYSTEM STUDY GENERATION = 2519.5 MW

#### TRANSFER ANALYSIS

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0	CASE1	CASE2	CASE3	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
TRANSFER (MW)	TRANSFER (MW)	TRANSFER (MW)	TRANSFER (MW)					
>202.0	>202.0	>202.0	12.4	80481 PILONCIL4 138.00 88909 NLARSW4B 138.00 1	BASE CASE	122	46.3	100.0
>202.0	>202.0	>202.0	64.9	8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	BASE CASE	122	5.2	100.0
>202.0	>202.0	>202.0	154.8	8283 ASHERTONA4 138.00 8970 CATARINA4 138.00 1	BASE CASE	122	8.3	100.0
>202.0	>202.0	>202.0	2.1	(18) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.00 1	BRNCH_8894;8508;1	122	46.3	100.0
>202.0	>202.0	198.1	0.0	(18) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.00 1	BRNCH_8909;8108;1	122	46.3	100.0
>202.0	>202.0	>202.0	6.0	(70) 8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	BRNCH_5870;5868;1	122	5.2	100.0
>202.0	>202.0	36.3	0.0	(70) 8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	BRNCH_5901;5709;1	122	5.2	100.0
>202.0	>202.0	>202.0	9.3	(3) 8643 MINES_RDA4 138.00 8918 MIL04A 138.00 1	BRNCH_8909;8134;1	257	3.0	100.0
>202.0	>202.0	>202.0	71.6	(3) 8643 MINES_RDA4 138.00 8918 MIL04A 138.00 1	BRNCH_8574;8383;1	257	3.0	100.0
>202.0	>202.0	>202.0	13.1	(79) 8283 ASHERTONA4 138.00 8970 CATARINA4 138.00 1	DB_ID_7536	122	8.3	100.0
>202.0	>202.0	101.4	0.0	(79) 8283 ASHERTONA4 138.00 8970 CATARINA4 138.00 1	BRNCH_5901;5709;1	122	8.3	100.0
>202.0	>202.0	>202.0	33.9	(1) 8650 GATEWP4A 138.00 8134 UNITEC4A 138.00 1	BRNCH_8918;8112;1	245	12.0	100.0
>202.0	37.5	0.0	0.0	(70) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4A 138.00 1	BRNCH_80219;5709;1	257	0.5	100.0
>202.0	47.9	0.0	0.0	(70) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4A 138.00 1	BRNCH_8645;8293;1	257	0.5	100.0
>202.0	>202.0	58.2	0.0	(2) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1	BRNCH_80219;5709;1	245	25.5	100.0
>202.0	>202.0	78.5	0.0	(2) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1	DB_ID_7853	245	25.5	100.0
>202.0	>202.0	67.9	0.0	(1) 8293 LAREDO4A 138.00 8645 DEL_MARA4 138.00 1	BRNCH_80013;8112;1	239	2.7	100.0
>202.0	>202.0	79.0	0.0	(6) 8643 MINES_RDA4 138.00 8909 NLARSW4A 138.00 1	DB_ID_7853	*246	5.9	100.0
>202.0	>202.0	90.6	0.0	(6) 8643 MINES_RDA4 138.00 8909 NLARSW4A 138.00 1	BRNCH_80219;5709;1	*246	5.9	100.0
>202.0	>202.0	107.2	0.0	(2) 8108 HOLCOMBA4 138.00 8619 ENCINAL4A 138.00 1	BRNCH_80219;5709;1	245	1.3	100.0
>202.0	>202.0	132.3	0.0	(2) 8108 HOLCOMBA4 138.00 8619 ENCINAL4A 138.00 1	DB_ID_7853	245	1.3	100.0
>202.0	111.3	0.0	0.0	(313) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1	DB_ID_7853	257	2.4	100.0
>202.0	152.4	0.0	0.0	(313) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1	BRNCH_80219;5709;1	257	2.4	100.0
>202.0	>202.0	112.8	0.0	(1) 8909 NLARSW4A 138.00 8134 UNITEC4A 138.00 1	BRNCH_8918;8112;1	245	4.4	100.0
>202.0	>202.0	125.0	0.0	(2) 8619 ENCINAL4A 138.00 8627 LEMAY4A 138.00 1	BRNCH_80219;5709;1	245	24.6	100.0
>202.0	>202.0	151.7	0.0	(2) 8619 ENCINAL4A 138.00 8627 LEMAY4A 138.00 1	DB_ID_7853	245	24.6	100.0
>202.0	>202.0	167.2	0.0	(1) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.00 1	BRNCH_8918;8643;1	245	1.9	100.0

CASE LEGEND	FIELD LEGEND
CASE0 : 21SUM_G25	NB : No Branch
CASE1 : 21SUM_G50	NC : No Contingency
CASE2 : 21SUM_G75	NS : No Solution
CASE3 : 21SUM_G100	* : Rate C > Rate B
	~ : Rating Changed
	@ : Duplicate Label
	[] : No Solve Transfer
	! : Lowest Transfer
	: Existing Issue

#### Contingency Legend:

BRNCH\_5870;5868;1: TRIP LINE FROM BUS 5870 [BRUNDAGESUB969.00] TO BUS 5868 [BIGWELLSUB969.00] CKT1  
 BRNCH\_5901;5709;1: TRIP LINE FROM BUS 5901 [MIGUEL5 345.00] TO BUS 5709 [FOWLERTONSW5345.00] CKT1  
 BRNCH\_80013;8112;1: TRIP LINE FROM BUS 80013 [LARDVNTH4A 138.00] TO BUS 8112 [LSCRUCESA4 138.00] CKT1  
 BRNCH\_80219;5709;1: TRIP LINE FROM BUS 80219 [LOB07A 345.00] TO BUS 5709 [FOWLERTONSW5345.00] CKT1  
 BRNCH\_8574;8383;1: TRIP LINE FROM BUS 8574 [POMELO7A 345.00] TO BUS 8383 [NEDINTA 345.00] CKT1  
 BRNCH\_8645;8293;1: TRIP LINE FROM BUS 8645 [DEL\_MARA4 138.00] TO BUS 8293 [LAREDO4A 138.00] CKT1  
 BRNCH\_8894;8508;1: TRIP LINE FROM BUS 8894 [PREMONT2A 69.00] TO BUS 8508 [FALFUR2A 69.00] CKT1  
 BRNCH\_8909;8108;1: TRIP LINE FROM BUS 8909 [NLARSW4A 138.00] TO BUS 8108 [HOLCOMBA4 138.00] CKT1  
 BRNCH\_8909;8134;1: TRIP LINE FROM BUS 8909 [NLARSW4A 138.00] TO BUS 8134 [UNITEC4A 138.00] CKT1  
 BRNCH\_8918;8112;1: TRIP LINE FROM BUS 8918 [MIL04A 138.00] TO BUS 8112 [LSCRUCESA4 138.00] CKT1  
 BRNCH\_8918;8643;1: TRIP LINE FROM BUS 8918 [MIL04A 138.00] TO BUS 8643 [MINES\_RDA4 138.00] CKT1  
  
 DB\_ID\_7536: OPEN BRANCH FROM BUS 8647 [UNIVERSI4A 138.00] TO BUS 8649 [GATEETP4A 138.00] CKT1  
 - OPEN BRANCH FROM BUS 8649 [GATEETP4A 138.00] TO BUS 8653 [ST\_NINO4A 138.00] CKT1  
 - OPEN BRANCH FROM BUS 8653 [ST\_NINO4A 138.00] TO BUS 8295 [WORMSER4A 138.00] CKT1  
 DB\_ID\_7853: OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345.00] TO BUS 5901 [MIGUEL5 345.00] CKT1  
 - OPEN BRANCH FROM BUS 80219 [LOB07A 345.00] TO BUS 5709 [FOWLERTONSW5345.00] CKT1

**Table 1A**  
**Present System P0 (N-0) and P1 (N-1)**  
**2021 Summer Peak**

### TRANSFER ANALYSIS

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0 TRANSFER (MW)	CASE1 TRANSFER (MW)	CASE2 TRANSFER (MW)	CASE3 TRANSFER (MW)	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
>202.0	>202.0	>202.0	2.3	(3) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.00 1	DB_ID_37143	122	46.3	100.0
>202.0	>202.0	>202.0	4.0	(3) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.00 1	DB_ID_38083	122	46.3	100.0
>202.0	>202.0	36.3	0.0	(5) 8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	DB_ID_37515	122	5.2	100.0
>202.0	>202.0	>202.0	51.3	(5) 8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	DB_ID_37249	122	5.2	100.0
>202.0	37.5	0.0	0.0	(2) 8112 LSCRUCES4A 138.00 80013 LARDVNTH4A 138.00 1	DB_ID_37516	257	0.5	100.0
>202.0	>202.0	78.8	0.0	(2) 8112 LSCRUCES4A 138.00 80013 LARDVNTH4A 138.00 1	DB_ID_37515	257	0.5	100.0
>202.0	>202.0	>202.0	58.2	(1) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1	DB_ID_37516	245	25.5	100.0
>202.0	>202.0	90.6	0.0	(1) 8643 MINES RD4A 138.00 8909 NLARSW4A 138.00 1	DB_ID_37516	*246	5.9	100.0
>202.0	>202.0	101.4	0.0	(5) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.00 1	DB_ID_37515	122	8.3	100.0
>202.0	>202.0	>202.0	140.7	(5) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.00 1	DB_ID_37249	122	8.3	100.0
>202.0	>202.0	>202.0	107.2	(1) 8108 HOLCOMBA4 138.00 8619 NCINAL4A 138.00 1	DB_ID_37516	245	1.3	100.0
>202.0	>202.0	>202.0	125.0	(1) 8619 ENCINAL4A 138.00 8627 LEMAY4A 138.00 1	DB_ID_37516	245	24.6	100.0
>202.0	152.4	0.0	0.0	(30) 8112 LSCRUCES4A 138.00 8918 MILO4A 138.00 1	DB_ID_37516	257	2.4	100.0
>202.0	>202.0	>202.0	164.2	(30) 8112 LSCRUCES4A 138.00 8918 MILO4A 138.00 1	DB_ID_37524	257	2.4	100.0

CASE LEGEND		FIELD LEGEND	
CASE0 :	21SUM_G25	NB :	No Branch
CASE1 :	21SUM_G50	NC :	No Contingency
CASE2 :	21SUM_G75	NS :	No Solution
CASE3 :	21SUM_G100	*	Rate C > Rate B
		~	Rating Changed
		@	Duplicate Label
		[]	No Solve Transfer
		!	Lowest Transfer
		:	Existing Issue

Contingency Legend:

DB\_ID\_37143: OPEN BRANCH FROM BUS 8377 [NEDIN2A 69.000] TO BUS 5782 [MVFAWSY9 69.000] CKT1  
 DB\_ID\_37249: OPEN BRANCH FROM BUS 5688 [GEORGEWSTSW8138.00] TO BUS 5701 [TILDENSU88 138.00] CKT1  
 DB\_ID\_37515: OPEN BRANCH FROM BUS 5901 [MIGUELS 345.00] TO BUS 5709 [FOWLERTONSW5345.00] CKT1  
 DB\_ID\_37516: OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345.00] TO BUS 80219 [LOBO7A 345.00] CKT1  
 DB\_ID\_37524: OPEN BRANCH FROM BUS 5654 [SANDIEGOSUB969.000] TO BUS 8890 [SAN\_DIEGA2A 69.000] CKT1  
 DB\_ID\_38083: OPEN BRANCH FROM BUS 5863 [DLYSWSTCSB969.000] TO BUS 5876 [COTULLASUB9 69.000] CKT1

Table 1B  
 Present System P2  
 2021 Summer Peak

### TRANSFER ANALYSIS

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0 TRANSFER (MW)	CASE1 TRANSFER (MW)	CASE2 TRANSFER (MW)	CASE3 TRANSFER (MW)	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
>202.0	>202.0	>202.0	2.9	(1) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.00 1	DB_ID_37258	122	46.3	100.0
>202.0	>202.0	>202.0	44.5	(6) 8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	DB_ID_37180	122	5.2	100.0
>202.0	>202.0	>202.0	46.4	(6) 8970 CATARINA4 138.00 80481 PILONCIL4 138.00 1	DB_ID_37250	122	5.2	100.0
>202.0	>202.0	>202.0	133.8	(6) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.00 1	DB_ID_37180	122	8.3	100.0
>202.0	>202.0	>202.0	135.6	(6) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.00 1	DB_ID_37250	122	8.3	100.0
>202.0	>202.0	>202.0	156.9	(7) 8112 LSCRUCES4A 138.00 8918 MILO4A 138.00 1	DB_ID_37180	257	2.4	100.0
>202.0	>202.0	>202.0	171.8	(7) 8112 LSCRUCES4A 138.00 8918 MILO4A 138.00 1	DB_ID_37353	257	2.4	100.0

CASE LEGEND		FIELD LEGEND	
CASE0 :	21SUM_G25	NB :	No Branch
CASE1 :	21SUM_G50	NC :	No Contingency
CASE2 :	21SUM_G75	NS :	No Solution
CASE3 :	21SUM_G100	*	Rate C > Rate B
		~	Rating Changed
		@	Duplicate Label
		[]	No Solve Transfer
		!	Lowest Transfer
		:	Existing Issue

Contingency Legend:

DB\_ID\_37180: OPEN BRANCH FROM BUS 5754 [ADERHOLDSUB8138.00] TO BUS 8360 [ELSA4A 138.00] CKT1  
 - OPEN BRANCH FROM BUS 5754 [ADERHOLDSUB8138.00] TO BUS 8963 [HEC4A 138.00] CKT1  
 DB\_ID\_37250: OPEN BRANCH FROM BUS 5686 [GEORGEWSTSW969.000] TO BUS 5695 [SIMMONSSUB9 69.000] CKT1  
 - OPEN BRANCH FROM BUS 5688 [GEORGEWSTSW8138.00] TO BUS 5701 [TILDENSU88 138.00] CKT1  
 DB\_ID\_37258: OPEN BRANCH FROM BUS 5686 [GEORGEWSTSW969.000] TO BUS 5695 [SIMMONSSUB9 69.000] CKT1  
 - OPEN BRANCH FROM BUS 5688 [GEORGEWSTSW8138.00] TO BUS 5701 [TILDENSU88 138.00] CKT1  
 - OPEN BRANCH FROM BUS 5693 [SNMIGUELTA969.000] TO BUS 5702 [SNMIGUELWA969.000] CKT1  
 - OPEN BRANCH FROM BUS 5695 [SIMMONSSUB9 69.000] TO BUS 5696 [CALLIHAMS969.000] CKT1  
 - OPEN BRANCH FROM BUS 5696 [CALLIHAMS969.000] TO BUS 5697 [CALLIHAMS969.000] CKT1  
 - OPEN BRANCH FROM BUS 5696 [CALLIHAMS969.000] TO BUS 5698 [NCALLIHAMS969.000] CKT1  
 - OPEN BRANCH FROM BUS 5698 [NCALLIHAMS969.000] TO BUS 5699 [CHKCANPRIS969.000] CKT1  
 - OPEN BRANCH FROM BUS 5699 [CHKCANPRIS969.000] TO BUS 5701 [TILDENSU88 138.00] CKT1  
 DB\_ID\_37353: OPEN BRANCH FROM BUS 8380 [NEDIN4A 138.00] TO BUS 5771 [WEDINBURGSB8138.00] CKT1  
 - OPEN BRANCH FROM BUS 8380 [NEDIN4A 138.00] TO BUS 5771 [WEDINBURGSB8138.00] CKT2

Table 1C  
 Present System P7/ERCOT1  
 2021 Summer Peak

**TRANSFER ANALYSIS**

HIGH BRANCHES/LOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0	CASE1	CASE2	CASE3	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
TRANSFER (MW)	TRANSFER (MW)	TRANSFER (MW)	TRANSFER (MW)					
>202.0	>202.0	1.7	0.0	(34) 8643 MINES_RD4A 138.00 8909 NLARSW4A 138.00 1	GENERATOR_160131;L1:DB_ID_7853	•246	5.9	100.0
>202.0	>202.0	5.8	0.0	(34) 8643 MINES_RD4A 138.00 8909 NLARSW4A 138.00 1	GENERATOR_160131;L1:BRNCH_80219;5709;1	•246	5.9	100.0
>202.0	>202.0	2.5	0.0	(11) 8526 STECTLA4A 138.00 8610 COTULLA4A 138.00 1	GENERATOR_161102;W1:BRNCH_5901;5709;1	239	4.6	100.0
>202.0	>202.0	9.5	0.0	(11) 8526 STECTLA4A 138.00 8610 COTULLA4A 138.00 1	GENERATOR_161254;W2:BRNCH_5901;5709;1	239	4.6	100.0
>202.0	>202.0	207.0	3.0	(15) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1	GENERATOR_160131;L1:DB_ID_7853	245	25.5	100.0
>202.0	>202.0	202.0	76.7	(15) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1	GENERATOR_161102;W1:BRNCH_80219;5709;1	245	25.5	100.0
>202.0	3.2	0.0	0.0	(1400) 8112 LSCRUCE5A 138.00 80013 LARDVNTHA 138.00 1	GENERATOR_161254;W2:DB_ID_7853	257	0.5	100.0
>202.0	3.8	0.0	0.0	(1400) 8112 LSCRUCE5A 138.00 80013 LARDVNTHA 138.00 1	GENERATOR_161108;W5:DB_ID_7853	257	0.5	100.0
>202.0	>202.0	202.0	5.2	(16) 8650 GATEWTP4A 138.00 8134 UNITEC4A 138.00 1	GENERATOR_160832;W1:BRNCH_80013;8112;1	245	12.0	100.0
>202.0	>202.0	207.0	33.6	(16) 8650 GATEWTP4A 138.00 8134 UNITEC4A 138.00 1	GENERATOR_161251;W1:BRNCH_80013;8112;1	245	12.0	100.0
>202.0	32.7	0.0	0.0	(810) 8112 LSCRUCE5A 138.00 8918 MIL04A 138.00 1	GENERATOR_160131;L1:DB_ID_7853	257	2.4	100.0
>202.0	65.7	0.0	0.0	(810) 8112 LSCRUCE5A 138.00 8918 MIL04A 138.00 1	GENERATOR_160131;L1:BRNCH_80219;5709;1	257	2.4	100.0
>202.0	>202.0	202.0	7.6	(17) 8909 NLARSW4A 138.00 8134 UNITEC4A 138.00 1	GENERATOR_161102;W1:BRNCH_80013;8112;1	245	4.4	100.0
>202.0	>202.0	202.0	13.6	(17) 8909 NLARSW4A 138.00 8134 UNITEC4A 138.00 1	GENERATOR_161254;W2:BRNCH_80013;8112;1	245	4.4	100.0
>202.0	>202.0	202.0	10.5	(36) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1	GENERATOR_161107;W4:DB_ID_7853	257	3.0	100.0
>202.0	>202.0	202.0	24.5	(36) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1	GENERATOR_161106;W3:DB_ID_7853	257	3.0	100.0
>202.0	>202.0	202.0	11.6	(43) 80481 PILONCILA 138.00 88909 NLARSW4B 138.00 1	GENERATOR_161102;W1:BRNCH_5901;5709;1	122	46.3	100.0
>202.0	>202.0	202.0	16.6	(43) 80481 PILONCILA 138.00 88909 NLARSW4B 138.00 1	GENERATOR_161254;W2:BRNCH_5901;5709;1	122	46.3	100.0
>202.0	>202.0	202.0	15.5	(2) 8610 COTULLAA 138.00 8612 REVILLE4A 138.00 1	GENERATOR_161252;W1:BRNCH_5901;5709;1	239	2.6	100.0
>202.0	>202.0	202.0	60.9	(2) 8610 COTULLAA 138.00 8612 REVILLE4A 138.00 1	GENERATOR_161103;W2:BRNCH_5901;5709;1	239	2.6	100.0
>202.0	>202.0	202.0	19.5	(12) 8108 HOLCOMBA4 138.00 8619 ENCINAL4A 138.00 1	GENERATOR_160131;L1:BRNCH_80219;5709;1	245	1.3	100.0
>202.0	>202.0	202.0	57.0	(12) 8108 HOLCOMBA4 138.00 8619 ENCINAL4A 138.00 1	GENERATOR_160131;L1:DB_ID_7853	245	1.3	100.0
>202.0	>202.0	202.0	37.3	(9) 8619 ENCINAL4A 138.00 8627 LEMAYA4 138.00 1	GENERATOR_160131;L1:BRNCH_80219;5709;1	245	24.6	100.0
>202.0	>202.0	202.0	76.3	(9) 8619 ENCINAL4A 138.00 8627 LEMAYA4 138.00 1	GENERATOR_160131;L1:DB_ID_7853	245	24.6	100.0
>202.0	>202.0	202.0	46.3	(354) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.00 1	GENERATOR_160131;L1:BRNCH_5901;5709;1	122	8.3	100.0
>202.0	>202.0	202.0	114.5	(354) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.00 1	GENERATOR_161102;W1:BRNCH_5901;5709;1	122	8.3	100.0
>202.0	>202.0	202.0	49.2	(268) 8970 CATARINA4 138.00 80481 PILONCILA 138.00 1	GENERATOR_161102;W1:BRNCH_5901;5709;1	122	5.2	100.0
>202.0	>202.0	202.0	54.3	(268) 8970 CATARINA4 138.00 80481 PILONCILA 138.00 1	GENERATOR_161254;W2:BRNCH_5901;5709;1	122	5.2	100.0
>202.0	>202.0	202.0	79.0	(13) 8293 LAREDO4A 138.00 8645 DEL_MAR4A 138.00 1	GENERATOR_161102;W1:BRNCH_80013;8112;1	239	2.7	100.0
>202.0	>202.0	202.0	84.3	(13) 8293 LAREDO4A 138.00 8645 DEL_MAR4A 138.00 1	GENERATOR_161254;W2:BRNCH_80013;8112;1	239	2.7	100.0
>202.0	>202.0	202.0	109.2	(5) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.00 1	GENERATOR_160131;L1:BRNCH_8918;8643;1	245	1.9	100.0
>202.0	>202.0	202.0	178.9	(5) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.00 1	GENERATOR_160131;L1:DB_ID_7729	245	1.9	100.0
>202.0	>202.0	202.0	187.6	(1) 8039 FINCAS4A 138.00 8650 GATEWTP4A 138.00 1	GENERATOR_160131;L1:BRNCH_8918;8643;1	245	1.5	100.0

CASE LEGEND
CASE0 : 21SUM_G25
CASE1 : 21SUM_G50
CASE2 : 21SUM_G75
CASE3 : 21SUM_G100

FIELD LEGEND
NB : No Branch
NC : No Contingency
NS : No Solution
• : Rate C > Rate B
- : Rating Changed
@ : Duplicate Label
[] : No Solve Transfer
! : Lowest Transfer
: Existing Issue

**Contingency Legend.**

GENERATOR\_160131,L1 BRNCH\_5901,5709,1 REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_160131,L1 BRNCH\_80219,5709,1 REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]  
 - TRIP LINE FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_160131,L1 BRNCH\_8918,8643,1 REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]  
 - TRIP LINE FROM BUS 8918 [MIL04A138 00] TO BUS 8643 [MINES\_RD4A138 00] CKT 1

GENERATOR\_160131,L1 DB\_ID\_7729 REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]  
 - OPEN BRANCH FROM BUS 8112 [LSCRUCESA138 00] TO BUS 8918 [MIL04A138 00] CKT 1  
 - OPEN BRANCH FROM BUS 8643 [MINES\_RD4A138 00] TO BUS 8909 [NLAWSW4A138 00] CKT 1  
 - OPEN BRANCH FROM BUS 8918 [MIL04A138 00] TO BUS 8643 [MINES\_RD4A138 00] CKT 1  
 - OPEN BRANCH FROM BUS 80013 [LARDVNTH4A138 00] TO BUS 8112 [LSCRUCESA138 00] CKT 1

GENERATOR\_160131,L1 DB\_ID\_7853 REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT 1  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_160832,W1 BRNCH\_80013,8112,1 REMOVE MACHINE W1 FROM BUS 160832 [EXG\_WIND\_134 500]  
 - TRIP LINE FROM BUS 80013 [LARDVNTH4A138 00] TO BUS 8112 [LSCRUCESA138 00] CKT 1

GENERATOR\_161102,W1 BRNCH\_5901,5709,1 REMOVE MACHINE W1 FROM BUS 161102 [BRS\_JAVEL1834 500]  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161102,W1 BRNCH\_80013,8112,1 REMOVE MACHINE W1 FROM BUS 161102 [BRS\_JAVEL1834 500]  
 - TRIP LINE FROM BUS 80013 [LARDVNTH4A138 00] TO BUS 8112 [LSCRUCESA138 00] CKT 1

GENERATOR\_161102,W1 BRNCH\_80219,5709,1 REMOVE MACHINE W1 FROM BUS 161102 [BRS\_JAVEL1834 500]  
 - TRIP LINE FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161103,W2 BRNCH\_5901,5709,1 REMOVE MACHINE W2 FROM BUS 161103 [BRS\_JAVEL2034 500]  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161106,W3 DB\_ID\_7853 REMOVE MACHINE W3 FROM BUS 161106 [BRS\_JAVEL2A34 500]  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT 1  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161107,W4 DB\_ID\_7853 REMOVE MACHINE W4 FROM BUS 161107 [BRS\_JAVEL2B34 500]  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT 1  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161108,W5 DB\_ID\_7853 REMOVE MACHINE W5 FROM BUS 161108 [BRS\_JAVEL2C34 500]  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT 1  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161251,W1 BRNCH\_80013,8112,1 REMOVE MACHINE W1 FROM BUS 161251 [TOMCLAS\_W1 34 500]  
 - TRIP LINE FROM BUS 80013 [LARDVNTH4A138 00] TO BUS 8112 [LSCRUCESA138 00] CKT 1

GENERATOR\_161252,W1 BRNCH\_5901,5709,1 REMOVE MACHINE W1 FROM BUS 161252 [TOMCLAS\_W2 34 500]  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161254,W2 BRNCH\_5901,5709,1 REMOVE MACHINE W2 FROM BUS 161254 [TOMCLAS\_W3 34 500]  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

GENERATOR\_161254,W2 BRNCH\_80013,8112,1 REMOVE MACHINE W2 FROM BUS 161254 [TOMCLAS\_W3 34 500]  
 - TRIP LINE FROM BUS 80013 [LARDVNTH4A138 00] TO BUS 8112 [LSCRUCESA138 00] CKT 1

GENERATOR\_161254,W2 DB\_ID\_7853 REMOVE MACHINE W2 FROM BUS 161254 [TOMCLAS\_W3 34 500]  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT 1  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT 1

Table 1D  
 Present System N-G-1  
 2021 Summer Peak

**TRANSFER ANALYSIS**

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0	CASE1	CASE2	CASE3	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
>202.0	>202.0	>202.0	17.2	(15) 8650 GATEWTP4A 138.00 8134 UNITEC4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_8918;8112;1	245	12.0	100.0
>202.0	>202.0	>202.0	17.2	(15) 8650 GATEWTP4A 138.00 8134 UNITEC4A 138.001	3-WINDING XFMR_5901;5902;5908;1:BRNCH_8918;8112;1	245	12.0	100.0
>202.0	26.5	0.0	0.0	(661) 8112 LSCRUCESA 138.00 80013 LARDVNTH4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_8645;8293;1	257	0.5	100.0
>202.0	26.5	0.0	0.0	(661) 8112 LSCRUCESA 138.00 80013 LARDVNTH4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_8645;8293;1	257	0.5	100.0
>202.0	>202.0	30.5	0.0	(1110) 8970 CATARINA4 138.00 80481 PILONCIL4 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_5901;5709;1	122	5.2	100.0
>202.0	>202.0	32.8	0.0	(1110) 8970 CATARINA4 138.00 80481 PILONCIL4 138.001	3-WINDING XFMR_5371;5369;5374;3:BRNCH_5901;5709;1	122	5.2	100.0
>202.0	>202.0	45.0	0.0	(23) 8643 MINES_RD4A 138.00 8918 MIL04A 138.001	2-WINDING XFMR_80221;80219;1:DB_ID_7853	257	3.0	100.0
>202.0	>202.0	45.9	0.0	(23) 8643 MINES_RD4A 138.00 8918 MIL04A 138.001	2-WINDING XFMR_80221;80219;2:DB_ID_7853	257	3.0	100.0
>202.0	>202.0	47.2	0.0	(12) 8293 LAREDO4A 138.00 8645 DEL_MAR4A 138.001	3-WINDING XFMR_5901;5902;5908;1:BRNCH_80013;8112;1	239	2.7	100.0
>202.0	105.6	0.0	0.0	(12) 8293 LAREDO4A 138.00 8645 DEL_MAR4A 138.001	3-WINDING XFMR_5709;705;706;1:BRNCH_80013;8112;1	239	2.7	100.0
>202.0	>202.0	>202.0	51.0	(29) 8108 HOLCOMB4A 138.00 8909 NLARSW4A 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_80221;5709;1	245	25.5	100.0
>202.0	>202.0	>202.0	57.4	(29) 8108 HOLCOMB4A 138.00 8909 NLARSW4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_80219;5709;1	245	25.5	100.0
>202.0	>202.0	54.1	0.0	(453) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8627;8612;1	122	46.3	100.0
>202.0	>202.0	76.3	0.0	(453) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.001	2-WINDING XFMR_80221;80219;1:BRNCH_5901;5709;1	122	46.3	100.0
>202.0	>202.0	71.1	0.0	(54) 8643 MINES_RD4A 138.00 8909 NLARSW4A 138.001	2-WINDING XFMR_5727;5725;1:DB_ID_7853	*246	5.9	100.0
>202.0	>202.0	73.3	0.0	(54) 8643 MINES_RD4A 138.00 8909 NLARSW4A 138.001	3-WINDING XFMR_5901;5902;5909;2:DB_ID_7853	*246	5.9	100.0
>202.0	>202.0	>202.0	73.7	(15) 8909 NLARSW4A 138.00 8134 UNITEC4A 138.001	2-WINDING XFMR_80221;80219;1:BRNCH_80013;8112;1	245	4.4	100.0
>202.0	>202.0	>202.0	74.7	(15) 8909 NLARSW4A 138.00 8134 UNITEC4A 138.001	2-WINDING XFMR_80221;80219;2:BRNCH_80013;8112;1	245	4.4	100.0
>202.0	>202.0	80.7	0.0	(1) 8039 FINCAS4A 138.00 8650 GATEWTP4A 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8918;8112;1	245	1.5	100.0
>202.0	>202.0	89.9	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.002	2-WINDING XFMR_80221;80219;1:DB_ID_7853	*717	2WXFMR	100.0
>202.0	>202.0	93.9	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.002	2-WINDING XFMR_80221;80219;1:BRNCH_80221;5709;1	*717	2WXFMR	100.0
>202.0	>202.0	92.5	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.001	2-WINDING XFMR_80221;80219;2:DB_ID_7853	*717	2WXFMR	100.0
>202.0	>202.0	96.5	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.001	2-WINDING XFMR_80221;80219;2:BRNCH_80219;5709;1	*717	2WXFMR	100.0
>202.0	>202.0	95.7	0.0	(1397) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_5901;5709;1	122	8.3	100.0
>202.0	>202.0	98.0	0.0	(1397) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.001	3-WINDING XFMR_5371;5369;5374;3:BRNCH_5901;5709;1	122	8.3	100.0
>202.0	>202.0	100.0	0.0	(27) 8108 HOLCOMB4A 138.00 8619 ENCINAL4A 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_80221;5709;1	245	1.3	100.0
>202.0	>202.0	106.5	0.0	(27) 8108 HOLCOMB4A 138.00 8619 ENCINAL4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_80219;5709;1	245	1.3	100.0
>202.0	101.3	0.0	0.0	(1677) 8112 LSCRUCESA 138.00 8918 MIL04A 138.001	3-WINDING XFMR_5901;5902;5909;2:DB_ID_7853	257	2.4	100.0
>202.0	101.3	0.0	0.0	(1677) 8112 LSCRUCESA 138.00 8918 MIL04A 138.001	3-WINDING XFMR_5901;5902;5908;1:DB_ID_7853	257	2.4	100.0
>202.0	>202.0	117.8	0.0	(25) 8619 ENCINAL4A 138.00 8627 LEMAY4A 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_80219;5709;1	245	24.6	100.0
>202.0	>202.0	124.4	0.0	(25) 8619 ENCINAL4A 138.00 8627 LEMAY4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_80219;5709;1	245	24.6	100.0
>202.0	>202.0	151.1	0.0	(11) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_8918;8643;1	245	1.9	100.0
>202.0	>202.0	151.1	0.0	(11) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.001	3-WINDING XFMR_5901;5902;5908;1:BRNCH_8918;8643;1	245	1.9	100.0

CASE LEGEND

CASE0 : 21SUM\_G25  
 CASE1 : 21SUM\_G50  
 CASE2 : 21SUM\_G75  
 CASE3 : 21SUM\_G100

FIELD LEGEND

NB : No Branch  
 NC : No Contingency  
 NS : No Solution  
 • : Rate C > Rate B  
 - : Rating Changed  
 @ : Duplicate Label  
 [] : No Solve Transfer  
 : Lowest Transfer  
 ! : Existing Issue

**Contingency Legend**

2-WINDING XFMR\_5727,5725,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS 5727 [PAWNEESUB#138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_5727,5725,1 BRNCH\_#0219,5709,1 TRIP LINE FROM BUS 5727 [PAWNEESUB#138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_5727,5725,1 DB\_ID\_7853 TRIP LINE FROM BUS 5727 [PAWNEESUB#138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1

2-WINDING XFMR\_5727,5725,1 DB\_ID\_7853 TRIP LINE FROM BUS 5727 [PAWNEESUB#138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_#0221,80219,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A345 00] CKT1  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_#0221,80219,1 BRNCH\_80013,8112,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A345 00] CKT1  
 - TRIP LINE FROM BUS 80013 [LARDVNTHA#138 00] TO BUS #112 [LSCRUCES4A#138 00] CKT1

2-WINDING XFMR\_#0221,80219,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS 80219 [LOBO7A345 00] CKT1  
 - TRIP LINE FROM BUS 80219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2 WINDING XFMR\_#0221,80219,1 DB\_ID\_7853 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS 80219 [LOBO7A345 00] CKT1  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1

2-WINDING XFMR\_#0221,80219,1 DB\_ID\_7853 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS 80219 [LOBO7A345 00] CKT1  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_#0221,80219,2 BRNCH\_80013,8112,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A345 00] CKT1  
 - TRIP LINE FROM BUS 80013 [LARDVNTHA#138 00] TO BUS #112 [LSCRUCES4A#138 00] CKT1

2-WINDING XFMR\_#0221,80219,2 BRNCH\_#0219,5709,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A345 00] CKT1  
 - TRIP LINE FROM BUS 80219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_#0221,80219,2 DB\_ID\_7853 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS 80219 [LOBO7A345 00] CKT2  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1

2-WINDING XFMR\_#0221,80219,2 DB\_ID\_7853 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

3-WINDING XFMR\_5371,5369,5374,3 BRNCH\_5901,5709,1 TRIP LINE FROM BUS 5371 [SKYLINE\_5 345 00] TO BUS 5369 [SKYLIN3\_#138 00] TO BUS 5374 [SKYAUT03 13 #00] CKT3  
 - TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_#0013,8112,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNNSU#138 00] TO BUS 5706 [FOWLRTNTERT 24 900] CKT1  
 - TRIP LINE FROM BUS 80013 [LARDVNTHA#138 00] TO BUS #112 [LSCRUCES4A#138 00] CKT1

3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_#8627,8612,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNNSU#138 00] TO BUS 5706 [FOWLRTNTERT 24 900] CKT1  
 - TRIP LINE FROM BUS 8627 [LEMAVVA#138 00] TO BUS 8612 [REVELLE4A#138 00] CKT1

3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_#8918,8112,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNNSU#138 00] TO BUS 5706 [FOWLRTNTERT 24 900] CKT1  
 - TRIP LINE FROM BUS 8918 [MIL04A#138 00] TO BUS #112 [LSCRUCES4A#138 00] CKT1

3-WINDING XFMR\_5901,5902,5908,1 BRNCH\_#0013,8112,1 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL#138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 - TRIP LINE FROM BUS 80013 [LARDVNTHA#138 00] TO BUS #112 [LSCRUCES4A#138 00] CKT1

3-WINDING XFMR\_5901,5902,5908,1 BRNCH\_#8645,8293,1 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 - TRIP LINE FROM BUS 8645 [DEL\_MARAA#138 00] TO BUS 8293 [LAREDOAA#138 00] CKT1

3-WINDING XFMR\_5901,5902,5908,1 BRNCH\_#8918,8112,1 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 - TRIP LINE FROM BUS 8918 [MIL04A#138 00] TO BUS #112 [LSCRUCES4A#138 00] CKT1

3-WINDING XFMR\_5901,5902,5908,1 DB\_ID\_7853 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL#138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1

3-WINDING XFMR\_5901,5902,5908,1 DB\_ID\_7853 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL#138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

3-WINDING KFMR\_5901,5902,5909,2 BRNCH\_#0219,5709,2 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5909 [SMIGLT2 24 900] CKT2  
 - TRIP LINE FROM BUS 80219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

3-WINDING XFMR\_5901,5902,5909,2 BRNCH\_#8645,8293,2 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL#138 00] TO BUS 5909 [SMIGLT2 24 900] CKT2  
 - TRIP LINE FROM BUS 8645 [DEL\_MARAA#138 00] TO BUS 8293 [LAREDOAA#138 00] CKT1

3-WINDING XFMR\_5901,5902,5909,2 BRNCH\_#8918,8112,2 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5909 [SMIGLT2 24 900] CKT2  
 - TRIP LINE FROM BUS 8918 [MIL04A#138 00] TO BUS 8643 [MINES\_RD4A#138 00] CKT1

3-WINDING XFMR\_5901,5902,5909,2 BRNCH\_#8643,1 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5909 [SMIGLT2 24 900] CKT2  
 - TRIP LINE FROM BUS 8643 [MIL04A#138 00] TO BUS 8643 [MINES\_RD4A#138 00] CKT1

3-WINDING XFMR\_5901,5902,5909,2 DB\_ID\_7853 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL#138 00] TO BUS 5909 [SMIGLT2 24 900] CKT2  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1

3-WINDING XFMR\_5901,5902,5909,2 DB\_ID\_7853 TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5902 [MIGUEL#138 00] TO BUS 5909 [SMIGLT2 24 900] CKT2  
 - OPEN BRANCH FROM BUS 80219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

Table 1E  
 Present System N-A-1  
 2021 Summer Peak

### TRANSFER ANALYSIS

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0 TRANSFER (MW)	CASE1 TRANSFER (MW)	CASE2 TRANSFER (MW)	CASE3 TRANSFER (MW)	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
>202.0	>202.0	>202.0	12.3	(1) 8643 MINES_RD4A 138.00 8909 NLARSW4A 138.00 1	BRNCH_5901;5709;1	*246	5.9	100.0
>202.0	>202.0	>202.0	15.9	(1) 8909 NLARSW4A 138.00 8134 UNITEC4A 138.00 1	BRNCH_8909;8643;1	245	4.4	100.0
>202.0	>202.0	40.4	0.0	(16) 8970 CATARINA4 138.00 80481 PILONCILA 138.00 1	DB_ID_7525	122	5.2	100.0
>202.0	>202.0	40.4	0.0	(16) 8970 CATARINA4 138.00 80481 PILONCILA 138.00 1	BRNCH_8905;8455;1	122	5.2	100.0
>202.0	>202.0	44.1	0.0	(1) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1	BRNCH_5901;5709;1	257	3.0	100.0
>202.0	>202.0	44.9	0.0	(11) 8283 ASHERTONA4 138.00 8970 CATARINA4 138.00 1	DB_ID_7525	122	8.3	100.0
>202.0	92.7	0.0	0.0	(7) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4A 138.00 1	BRNCH_80219;5709;1	257	0.5	100.0
>202.0	93.2	0.0	0.0	(7) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4A 138.00 1	DB_ID_7853	257	0.5	100.0
>202.0	>202.0	96.3	0.0	(9) 80481 PILONCILA 138.00 88909 NLARSW4B 138.00 1	BRNCH_8574;8383;1	122	46.3	100.0
>202.0	>202.0	134.3	0.0	(9) 80481 PILONCILA 138.00 88909 NLARSW4B 138.00 1	BRNCH_8611;8526;1	122	46.3	100.0
>202.0	135.0	0.0	0.0	(13) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1	BRNCH_80219;5709;1	257	2.4	100.0
>202.0	137.4	0.0	0.0	(13) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1	DB_ID_7853	257	2.4	100.0
>202.0	>202.0	135.0	0.0	(1) 8611 JARDINA4 138.00 8212 DILLEYSW4A 138.00 1	BRNCH_5901;5709;1	239	11.5	100.0
>202.0	>202.0	149.9	0.0	(1) 5701 TILDENSUB8 138.00 5705 FOWLERNTNSUB8138.00 1	BRNCH_5901;5709;1	240	20.8	100.0
>202.0	>202.0	198.8	0.0	(1) 8299 ZAPATA4A 138.00 8985 S_YGANCIA4A 138.00 1	BRNCH_80220;80219;1	347	13.6	100.0

CASE LEGEND
CASE0 : 23HWLL_G25
CASE1 : 23HWLL_G50
CASE2 : 23HWLL_G75
CASE3 : 23HWLL_G100

FIELD LEGEND
NB : No Branch
NC : No Contingency
NS : No Solution
* : Rate C > Rate B
~ : Rating Changed
@ : Duplicate Label
[] : No Solve Transfer
■ : Lowest Transfer
: Existing Issue

#### Contingency Legend:

BRNCH\_5901;5709;1: TRIP LINE FROM BUS 5901 [MIGUEL5 345.00] TO BUS 5709 [FOWLERNTNSW5345.00] CKT1  
 BRNCH\_80219;5709;1: TRIP LINE FROM BUS 80219 [LOBO7A345.00] TO BUS 5709 [FOWLERNTNSW5345.00] CKT1  
 BRNCH\_80220;80219;1: TRIP LINE FROM BUS 80220 [CENI207A345.00] TO BUS 80219 [LOBO7A345.00] CKT1  
 BRNCH\_8574;8383;1: TRIP LINE FROM BUS 8574 [POMELO7A345.00] TO BUS 8383 [NEDIN7A345.00] CKT1  
 BRNCH\_8611;8526;1: TRIP LINE FROM BUS 8611 [JARDINA4 138.00] TO BUS 8526 [STECTLA4A 138.00] CKT1  
 BRNCH\_8905;8455;1: TRIP LINE FROM BUS 8905 [NEDIN7C345.00] TO BUS 8455 [LONHILL7A345.00] CKT1  
 BRNCH\_8909;8643;1: TRIP LINE FROM BUS 8909 [NLARSW4A 138.00] TO BUS 8643 [MINES\_RD4A 138.00] CKT1  
 DB\_ID\_7525: OPEN BRANCH FROM BUS 8455 [LONHILL7A345.00] TO BUS 8905 [NEDIN7C345.00] CKT1  
     - OPEN BRANCH FROM BUS 8901 [NEDIN7B345.00] TO BUS 8383 [NEDIN7A345.00] CKT 1  
     - OPEN BRANCH FROM BUS 8905 [NEDIN7C345.00] TO BUS 8901 [NEDIN7B345.00] CKT 51  
 DB\_ID\_7853: OPEN BRANCH FROM BUS 5709 [FOWLERNTNSW5345.00] TO BUS 5901 [MIGUEL5 345.00] CKT1  
     - OPEN BRANCH FROM BUS 80219 [LOBO7A345.00] TO BUS 5709 [FOWLERNTNSW5345.00] CKT1

Table 2A

Present System P1 (N-1)  
 2023 High Wind Low Load

### TRANSFER ANALYSIS

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0 TRANSFER (MW)	CASE1 TRANSFER (MW)	CASE2 TRANSFER (MW)	CASE3 TRANSFER (MW)	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
>202.0	>202.0	>202.0	12.3	(1) 8643 MINES_RD4A 138.00 8909 NLARSW4A 138.00 1	DB_ID_37515	*246	5.9	100.0
>202.0	>202.0	>202.0	44.1	(1) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1	DB_ID_37515	257	3.0	100.0
>202.0	92.7	0.0	0.0	(1) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4A 138.00 1	DB_ID_37516	257	0.5	100.0
>202.0	>202.0	>202.0	135.0	(1) 8611 JARDINA4 138.00 8212 DILLEYSW4A 138.00 1	DB_ID_37515	239	11.5	100.0
>202.0	135.0	0.0	0.0	(1) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1	DB_ID_37516	257	2.4	100.0
>202.0	>202.0	149.9	0.0	(1) 5701 TILDENSUB8 138.00 5705 FOWLERNTNSUB8138.00 1	DB_ID_37515	240	20.8	100.0

CASE LEGEND
CASE0 : 23HWLL_G25
CASE1 : 23HWLL_G50
CASE2 : 23HWLL_G75
CASE3 : 23HWLL_G100

FIELD LEGEND
NB : No Branch
NC : No Contingency
NS : No Solution
* : Rate C > Rate B
~ : Rating Changed
@ : Duplicate Label
[] : No Solve Transfer
■ : Lowest Transfer
: Existing Issue

#### Contingency Legend:

DB\_ID\_37515: OPEN BRANCH FROM BUS 5901 [MIGUEL5 345.00] TO BUS 5709 [FOWLERNTNSW5345.00] CKT1  
 DB\_ID\_37516: OPEN BRANCH FROM BUS 5709 [FOWLERNTNSW5345.00] TO BUS 80219 [LOBO7A345.00] CKT1

Table 2B  
 Present System P2  
 2023 High Wind Low Load

### TRANSFER ANALYSIS

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0 TRANSFER (MW)	CASE1 TRANSFER (MW)	CASE2 TRANSFER (MW)	CASE3 TRANSFER (MW)	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING	CASE LEGEND	FIELD LEGEND
>202.0	>202.0	>202.0	>202.0	NONE	NONE	—	—	—	CASE0 : 23HWLL_G25	NB : No Branch
<b>Contingency Legend:</b>										
NONE										
<b>CASE1</b>										
CASE1 : 23HWLL_G50										
<b>CASE2</b>										
CASE2 : 23HWLL_G75										
<b>CASE3</b>										
CASE3 : 23HWLL_G100										
<b>FIELD LEGEND</b>										
NB : No Branch										
NC : No Contingency										
NS : No Solution										
• : Rate C > Rate B										
~ : Rating Changed										
@ : Duplicate Label										
[] : No Solve Transfer										
: Lowest Transfer										
: Existing Issue										

Table 2C  
 Present System P7/ERCOT1  
 2023 High Wind Low Load

CASE0 TRANSFER (MW)	CASE1 TRANSFER (MW)	CASE2 TRANSFER (MW)	CASE3 TRANSFER (MW)	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING	CASE LEGEND	FIELD LEGEND
>202.0	>202.0	4.3	0.0	(5) 8108 HOLCOMBA 138.00 8619 ENCINALA 138.00 1	GENERATOR_161251;W1:BRNCH_80219;5709;1	245	1.3	100.0	CASE0 : 23HWLL_G25	NB : No Branch
>202.0 >202.0 12.5 0.0 (5) 8108 HOLCOMBA 138.00 8619 ENCINALA 138.00 1 GENERATOR_161251;W1:BRNCH_80219;5709;1 245 1.3 100.0 CASE1 : 23HWLL_G50										
>202.0 >202.0 8.9 0.0 (8) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.00 1 GENERATOR_161106;W3:DB_ID_7729 245 1.9 100.0 CASE2 : 23HWLL_G75										
>202.0 >202.0 19.9 0.0 (8) 8039 FINCAS4A 138.00 8295 WORMSER4A 138.00 1 GENERATOR_161251;W1:BRNCH_8918;8643;1 245 1.9 100.0 CASE3 : 23HWLL_G100										
>202.0 >202.0 9.0 0.0 (8) 8039 FINCAS4A 138.00 8650 GATEWTP4A 138.00 1 GENERATOR_161106;W3:DB_ID_7729 245 1.5 100.0										
>202.0 >202.0 20.1 0.0 (8) 8039 FINCAS4A 138.00 8650 GATEWTP4A 138.00 1 GENERATOR_161251;W1:BRNCH_8918;8643;1 245 1.5 100.0										
>202.0 >202.0 9.5 0.0 (8) 8650 GATEWTP4A 138.00 8134 UNITECA4 138.00 1 GENERATOR_161251;W1:BRNCH_8918;8643;1 245 1.5 100.0										
>202.0 >202.0 20.7 0.0 (8) 8650 GATEWTP4A 138.00 8134 UNITECA4 138.00 1 GENERATOR_161251;W1:BRNCH_8918;8643;1 245 1.5 100.0										
>202.0 >202.0 10.8 0.0 (3) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1 GENERATOR_161252;W1:DB_ID_7853 245 25.5 100.0										
>202.0 >202.0 19.8 0.0 (3) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.00 1 GENERATOR_161103;W2:BRNCH_80219;5709;1 245 25.5 100.0										
>202.0 >202.0 10.8 0.0 (5) 8619 ENCINALA 138.00 8627 LEIMAYAA 138.00 1 GENERATOR_161252;W1:BRNCH_80219;5709;1 245 24.6 100.0										
>202.0 >202.0 19.5 0.0 (5) 8619 ENCINALA 138.00 8627 LEIMAYAA 138.00 1 GENERATOR_161251;W1:DB_ID_7853 245 24.6 100.0										
>202.0 >202.0 13.6 0.0 (11) 8909 NLARSW4A 138.00 8134 UNITECA4 138.00 1 GENERATOR_161106;W3:BRNCH_8918;8643;1 245 4.4 100.0										
>202.0 >202.0 25.5 0.0 (11) 8909 NLARSW4A 138.00 8134 UNITECA4 138.00 1 GENERATOR_161107;W4:DB_ID_7729 245 4.4 100.0										
>202.0 >202.0 13.6 0.0 (1) 8526 STECLLA4A 138.00 8611 JARDIN4A 138.00 1 GENERATOR_161103;W2:BRNCH_5901;5709;1 239 4.6 100.0										
>202.0 >202.0 15.0 0.0 (182) 8970 CATARINA4 138.00 80481 PILONC4A 138.00 1 GENERATOR_161103;W2:BRNCH_8612;8610;1 222 5.2 100.0										
>202.0 >202.0 25.2 0.0 (182) 8970 CATARINA4 138.00 80481 PILONC4A 138.00 1 GENERATOR_161103;W2:DB_ID_7559 222 5.2 100.0										
>202.0 >202.0 16.7 0.0 (1) 5701 TILDENSUB8 138.00 5688 GEORGESTWSU8138.00 1 GENERATOR_161103;W2:BRNCH_5901;5709;1 240 21.5 100.0										
>202.0 >202.0 19.5 0.0 (153) 80481 PILONC4 138.00 88909 NLARSW4B 138.00 1 GENERATOR_160131;L1:BRNCH_8606;5725;1 222 46.3 100.0										
>202.0 >202.0 198.6 0.0 (153) 80481 PILONC4 138.00 88909 NLARSW4B 138.00 1 GENERATOR_160131;L1:BRNCH_5901;5709;1 222 46.3 100.0										
>202.0 >202.0 25.5 0.0 (11) 8909 NLARSW4A 138.00 8134 UNITECA4 138.00 1 GENERATOR_161107;W4:DB_ID_7729 245 4.4 100.0										
>202.0 >202.0 13.6 0.0 (1) 8526 STECLLA4A 138.00 8611 JARDIN4A 138.00 1 GENERATOR_161103;W2:BRNCH_5901;5709;1 239 4.4 100.0										
>202.0 >202.0 35.4 0.0 (153) 80481 PILONC4 138.00 88909 NLARSW4B 138.00 1 GENERATOR_160131;L1:DB_ID_7853 257 0.5 100.0										
>202.0 >202.0 44.1 0.0 (10) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1 GENERATOR_160002;N4:BRNCH_5901;5709;1 257 3.0 100.0										
>202.0 >202.0 182.8 0.0 (10) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1 GENERATOR_160131;L1:BRNCH_8295;8039;1 257 3.0 100.0										
>202.0 >202.0 70.0 0.0 (67) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1 GENERATOR_160131;L1:BRNCH_8295;8039;1 257 2.4 100.0										
>202.0 >202.0 27.4 0.0 (57) 8112 LSCRUCESA4 138.00 80013 LARDVNTHA 138.00 1 GENERATOR_160131;L1:BRNCH_80219;5709;1 257 0.5 100.0										
>202.0 >202.0 35.4 0.0 (57) 8112 LSCRUCESA4 138.00 80013 LARDVNTHA 138.00 1 GENERATOR_160131;L1:DB_ID_7853 257 0.5 100.0										
>202.0 >202.0 44.1 0.0 (10) 8643 MINES_RD4A 138.00 8918 MIL04A 138.00 1 GENERATOR_160002;N4:BRNCH_5901;5709;1 257 3.0 100.0										
>202.0 >202.0 182.8 0.0 (67) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.00 1 GENERATOR_160131;L1:DB_ID_7853 257 2.4 100.0										
>202.0 >202.0 94.1 0.0 (5) 8611 JARDINA 138.00 8212 DILLEYSW4A 138.00 1 GENERATOR_160131;L1:BRNCH_5901;5709;1 239 11.5 100.0										
>202.0 >202.0 135.0 0.0 (5) 8611 JARDINA 138.00 8212 DILLEYSW4A 138.00 1 GENERATOR_160002;N4:BRNCH_5901;5709;1 239 11.5 100.0										
>202.0 >202.0 105.7 0.0 (5) 5701 TILDENSUB8 138.00 5705 FOWLERNSUB8138.00 1 GENERATOR_160131;L1:BRNCH_5901;5709;1 240 20.8 100.0										
>202.0 >202.0 149.9 0.0 (5) 5701 TILDENSUB8 138.00 5705 FOWLERNSUB8138.00 1 GENERATOR_160002;N4:BRNCH_5901;5709;1 240 20.8 100.0										
>202.0 >202.0 128.5 0.0 (9) 5876 COTULLASU9 69.000 5878 HOLLANDSUB9 69.000 1 GENERATOR_161249;W1:BRNCH_8297;5887;1 40 16.3 100.0										
>202.0 >202.0 128.8 0.0 (9) 5876 COTULLASU9 69.000 5878 HOLLANDSUB9 69.000 1 GENERATOR_161249;W1:BRNCH_8297;5887;1 40 16.3 100.0										
>202.0 >202.0 136.9 0.0 (9) 5878 HOLLANDSUB9 69.000 5880 FREERSUB9 69.000 1 GENERATOR_161103;W2:BRNCH_8297;5887;1 40 29.2 100.0										
>202.0 >202.0 137.3 0.0 (9) 5878 HOLLANDSUB9 69.000 5880 FREERSUB9 69.000 1 GENERATOR_162491;W1:BRNCH_8297;5887;1 40 29.2 100.0										
>202.0 >202.0 143.4 0.0 (9) 5880 FREERSUB9 69.000 5888 BRUNSUB9 69.000 1 GENERATOR_161252;W1:BRNCH_8297;5887;1 40 35.0 100.0										

**Contingency Legend:**

- REMOVE MACHINE N4 FROM BUS 160002 [LARDVFTN\_G4 13 800]
- TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- TRIP LINE FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- TRIP LINE FROM BUS 80219 [CENIZOT7A 345 00] TO BUS 80219 [LOBO7A 345 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- TRIP LINE FROM BUS 8295 [WORMSER4A 138 00] TO BUS 8039 [FINCAS4A 138 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- TRIP LINE FROM BUS 80606 [GOODDARD7A 345 00] TO BUS 5725 [PAWNEESW5 345 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- OPEN BRANCH FROM BUS 55709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1
- OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE L1 FROM BUS 160131 [SAN\_SANMIGG124 000]
- OPEN BRANCH FROM BUS 8039 [FINCAS4A 138 00] TO BUS 8295 [WORMSER4A 138 00] CKT1
- OPEN BRANCH FROM BUS 8134 [UNITEC4A 138 00] TO BUS 650 [GATEWT7A 138 00] CKT1
- OPEN BRANCH FROM BUS 8650 [GATEWT7A 138 00] TO BUS 8039 [FINCAS4A 138 00] CKT1
- OPEN BRANCH FROM BUS 8909 [NLARSW4A 138 00] TO BUS 8134 [UNITEC4A 138 00] CKT1
- REMOVE MACHINE W2 FROM BUS 161103 [BRDS\_JAVEL2034 500]
- TRIP LINE FROM BUS 5901 [MIGUEL5 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE W2 FROM BUS 161103 [BRDS\_JAVEL2034 500]
- TRIP LINE FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE W2 FROM BUS 161103 [BRDS\_JAVEL2034 500]
- TRIP LINE FROM BUS 8297 [BRUN44A 138 00] TO BUS 5847 [BRUNISW8 138 00] CKT1
- REMOVE MACHINE W2 FROM BUS 161103 [BRDS\_JAVEL2034 500]
- TRIP LINE FROM BUS 8612 [REVELLE4A 138 00] TO BUS 8610 [COTULL44A 138 00] CKT1
- REMOVE MACHINE W2 FROM BUS 161103 [BRDS\_JAVEL2034 500]
- OPEN BRANCH FROM BUS 8610 [COTULL44A 138 00] TO BUS 8526 [STECTL44A 138 00] CKT1
- OPEN BRANCH FROM BUS 8612 [REVELLE4A 138 00] TO BUS 8610 [COTULL44A 138 00] CKT1
- REMOVE MACHINE W3 FROM BUS 161106 [BRDS\_JAVEL2A34 500]
- TRIP LINE FROM BUS #918 [MIL04A 138 00] TO BUS 8643 [MINES\_RD4A 138 00] CKT1
- REMOVE MACHINE W3 FROM BUS 161106 [BRDS\_JAVEL2A34 500]
- OPEN BRANCH FROM BUS #912 [LSCRUCESA4A 138 00] TO BUS 8918 [MIL04A 138 00] CKT1
- OPEN BRANCH FROM BUS #643 [MINES\_RD4A 138 00] TO BUS #909 [NLARSW4A 138 00] CKT1
- OPEN BRANCH FROM BUS #918 [MIL04A 138 00] TO BUS 8643 [MINES\_RD4A 138 00] CKT1
- OPEN BRANCH FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4A 138 00] CKT1
- REMOVE MACHINE W4 FROM BUS 161107 [BRDS\_JAVEL2B34 500]
- OPEN BRANCH FROM BUS #112 [LSCRUCESA4A 138 00] TO BUS 8918 [MIL04A 138 00] CKT1
- OPEN BRANCH FROM BUS #643 [MINES\_RD4A 138 00] TO BUS 8909 [NLARSW4A 138 00] CKT1
- OPEN BRANCH FROM BUS #918 [MIL04A 138 00] TO BUS 8643 [MINES\_RD4A 138 00] CKT1
- OPEN BRANCH FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4A 138 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161251 [TORCILAS\_W1 34 500]
- TRIP LINE FROM BUS 80220 [CENIZOT7A 345 00] TO BUS 80219 [LOBO7A 345 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161251 [TORCILAS\_W1 34 500]
- TRIP LINE FROM BUS #918 [MIL04A 138 00] TO BUS 8643 [MINES\_RD4A 138 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161251 [TORCILAS\_W1 34 500]
- OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1
- OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161252 [TORCILAS\_W2 34 500]
- TRIP LINE FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161252 [TORCILAS\_W2 34 500]
- TRIP LINE FROM BUS 80220 [CENIZOT7A 345 00] TO BUS 80219 [LOBO7A 345 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161252 [TORCILAS\_W2 34 500]
- TRIP LINE FROM BUS 8297 [BRUN44A 138 00] TO BUS 5847 [BRUNISW8 138 00] CKT1
- REMOVE MACHINE W1 FROM BUS 161252 [TORCILAS\_W2 34 500]
- OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUEL5 345 00] CKT1
- OPEN BRANCH FROM BUS 80219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1
- REMOVE MACHINE W1 FROM BUS 162491 [RELI\_5 34 500]
- TRIP LINE FROM BUS 8297 [BRUN44A 138 00] TO BUS 5847 [BRUNISW8 138 00] CKT1

Table 2D  
 Present System N-G-1  
 2023 High Wind Low Load

**TRANSFER ANALYSIS**

[HIGH BRANCH FLOW]

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0	CASE1	CASE2	CASE3	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
TRANSFER (MW)	TRANSFER (MW)	TRANSFER (MW)	TRANSFER (MW)					
>202.0	>202.0	11.4	0.0	(211) 8970 CATARINA 138.00 80481 PILONCILA 138.001	3-WINDING XFMR_5709;5705;5706;1:DB_ID_10535	122	5.2	100.0
>202.0	>202.0	11.4	0.0	(211) 8970 CATARINA 138.00 80481 PILONCILA 138.001	3-WINDING XFMR_5709;5705;5706;1:DB_ID_19219	122	5.2	100.0
>202.0	>202.0	14.9	0.0	(1) 5654 SANDIEGOSUB69.000 5658 ORANGEGRSW969.0001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_5901;5709;1	45	21.6	100.0
>202.0	>202.0	15.9	0.0	(211) 8283 ASHERTONA 138.00 8970 CATARINA 138.001	3-WINDING XFMR_5709;5705;5706;1:DB_ID_19219	122	8.3	100.0
>202.0	>202.0	15.9	0.0	(211) 8283 ASHERTONA 138.00 8970 CATARINA 138.001	3-WINDING XFMR_5709;5705;5706;1:DB_ID_17473	122	46.3	100.0
>202.0	>202.0	19.6	0.0	(184) 80481 PILONCILA 138.00 88909 NLARSW48 138.001	3-WINDING XFMR_5901;5902;5908;1:DB_ID_10535	122	46.3	100.0
>202.0	>202.0	20.7	0.0	(184) 80481 PILONCILA 138.00 88909 NLARSW48 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_5901;5709;1	257	3.0	100.0
>202.0	>202.0	35.7	0.0	(14) 8643 MINES_RDA4 138.00 8918 MIL04A 138.001	3-WINDING XFMR_8164;8162;8160;2:BRNCH_5901;5709;1	257	3.0	100.0
>202.0	>202.0	38.7	0.0	(14) 8643 MINES_RDA4 138.00 8918 MIL04A 138.001	3-WINDING XFMR_8164;8162;8160;2:BRNCH_80013;8112;1	245	1.9	100.0
>202.0	>202.0	42.0	0.0	(2) 8039 FINCASEA 138.00 8295 WORMSER4A 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8918;8112;1	245	1.9	100.0
>202.0	>202.0	85.0	0.0	(2) 8039 FINCASEA 138.00 8295 WORMSER4A 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_80013;8112;1	245	1.5	100.0
>202.0	>202.0	42.2	0.0	(2) 8039 FINCASEA 138.00 8650 GATEWTPTA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_80013;8112;1	245	1.5	100.0
>202.0	>202.0	85.2	0.0	(2) 8039 FINCASEA 138.00 8650 GATEWTPTA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8918;8112;1	245	1.5	100.0
>202.0	>203.0	42.8	0.0	(2) 8650 GATEWTPTA 138.00 8134 UNITECA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_80013;8112;1	245	12.0	100.0
>202.0	>202.0	85.8	0.0	(2) 8650 GATEWTPTA 138.00 8134 UNITECA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8918;8112;1	245	12.0	100.0
>202.0	>702.0	77.2	0.0	(4) 8909 NLARSW4A 138.00 8134 UNITECA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_80013;8112;1	245	4.4	100.0
>202.0	>202.0	120.3	0.0	(4) 8909 NLARSW4A 138.00 8134 UNITECA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8918;8112;1	245	4.4	100.0
>202.0	>202.0	79.4	0.0	(1) 8610 COTULLAAA 138.00 8612 REVEILLE4A 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_5901;5709;1	239	2.6	100.0
>202.0	83.7	0.0	0.0	(101) 8112 LSCRUCE54A 138.00 80013 LARDVNTHA 138.001	2-WINDING XFMR_5727;5725;1:DB_ID_7853	257	0.5	100.0
>202.0	84.3	0.0	0.0	(101) 8112 LSCRUCE54A 138.00 80013 LARDVNTHA 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_80219;5709;1	257	0.5	100.0
>202.0	>202.0	93.1	0.0	(1) 8526 SECTLAAA 138.00 8610 COTULLAAA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_5901;5709;1	239	4.6	100.0
>202.0	>202.0	93.6	0.0	(1) 5654 SANDIEGOSUB99.000 88909 SAN_DIEG2A 69.0001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_5901;5709;1	61	0.3	100.0
>202.0	>702.0	100.9	0.0	(1) 8612 REVILLE4A 138.00 8627 LEMAYAA 138.001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_5901;5709;1	347	1.8	100.0
>202.0	>202.0	122.7	0.0	(13) 5701 TILDENSUB88 138.00 5705 FOWLERINSU88138.001	2-WINDING XFMR_80221;80219;2:BRNCH_5901;5709;1	240	20.8	100.0
>202.0	>202.0	123.4	0.0	(13) 5701 TILDENSUB88 138.00 5705 FOWLERINSU88138.001	2-WINDING XFMR_80221;80219;1:BRNCH_5901;5709;1	240	20.8	100.0
>202.0	>202.0	123.7	0.0	(13) 8611 JARDIN4A 138.00 8212 DILLEYSW4A 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_5901;5709;1	239	11.5	100.0
>202.0	>202.0	129.8	0.0	(13) 8611 JARDIN4A 138.00 8212 DILLEYSW4A 138.001	3-WINDING XFMR_8164;8162;8160;2:BRNCH_5901;5709;1	239	11.5	100.0
>202.0	126.5	0.0	0.0	(103) 8112 LSCRUCE54A 138.00 8918 MIL04A 138.001	2-WINDING XFMR_5727;5725;1:BRNCH_80219;5709;1	257	2.4	100.0
>202.0	127.8	0.0	0.0	(103) 8112 LSCRUCE54A 138.00 8918 MIL04A 138.001	2-WINDING XFMR_5727;5725;1:DB_ID_7853	257	2.4	100.0
>202.0	>202.0	130.8	0.0	(5) 5876 COTULLASUB9 69.000 5878 HOLLANDSUB9 69.0001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8297;5887;1	40	16.3	100.0
>202.0	>202.0	167.8	0.0	(5) 5876 COTULLASUB9 69.000 5878 HOLLANDSUB9 69.0001	3-WINDING XFMR_5371;5370;5375;4:BRNCH_8297;5887;1	40	16.3	100.0
>202.0	>202.0	139.5	0.0	(5) 5878 HOLLANDSUB9 69.000 5880 FREERSUB9 69.0001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8297;5887;1	40	29.2	100.0
>202.0	>202.0	168.9	0.0	(5) 5878 HOLLANDSUB9 69.000 5880 FREERSUB9 69.0001	3-WINDING XFMR_5371;5370;5375;4:BRNCH_8297;5887;1	40	29.2	100.0
>202.0	>202.0	145.9	0.0	(5) 5880 FREERSUB9 69.000 5888 BRUNISUB9 69.0001	3-WINDING XFMR_5709;5705;5706;1:BRNCH_8297;5887;1	40	35.0	100.0
>202.0	>202.0	169.7	0.0	(5) 5880 FREERSUB9 69.000 5888 BRUNISUB9 69.0001	3-WINDING XFMR_5371;5370;5375;4:BRNCH_8297;5887;1	40	35.0	100.0
>202.0	>202.0	164.0	0.0	(12) 8299 ZAPATA4A 138.00 8985 S_YGANCI4A 138.001	3-WINDING XFMR_8164;8162;8181;1:BRNCH_80220;80219;1	347	13.6	100.0
>202.0	>202.0	186.7	0.0	(12) 8299 ZAPATA4A 138.00 8985 S_YGANCI4A 138.001	3-WINDING XFMR_8164;8162;8160;2:BRNCH_80220;80219;1	347	13.6	100.0
>202.0	>202.0	168.4	0.0	(7) 8646 RIO_BRAV4A 138.00 8985 S_YGANCI4A 138.001	3-WINDING XFMR_8164;8162;8181;1:BRNCH_80220;80219;1	347	17.2	100.0
>202.0	>202.0	189.1	0.0	(7) 8646 RIO_BRAV4A 138.00 8985 S_YGANCI4A 138.001	3-WINDING XFMR_8164;8162;8160;2:BRNCH_80220;80219;1	347	17.2	100.0
>202.0	>202.0	181.4	0.0	(27) 8643 MINES_RDA4 138.00 8909 NLARSW4A 138.001	3-WINDING XFMR_5901;5902;5908;1:BRNCH_8295;8039;1	•246	5.9	100.0
>202.0	>202.0	181.4	0.0	(27) 8643 MINES_RDA4 138.00 8909 NLARSW4A 138.001	3-WINDING XFMR_5901;5902;5909;2:BRNCH_8295;8039;1	•246	5.9	100.0
>202.0	>202.0	181.9	0.0	(2) 8299 ZAPATA4A 138.00 8957 LOPENO4A 138.001	3-WINDING XFMR_8164;8162;8181;1:BRNCH_80220;80219;1	•287	20.3	100.0
>202.0	>202.0	194.9	0.0	(2) 8299 ZAPATA4A 138.00 8957 LOPENO4A 138.001	3-WINDING XFMR_8164;8162;8160;2:BRNCH_80220;80219;1	•287	20.3	100.0
>202.0	>202.0	190.6	0.0	(1) 8646 RIO_BRAV4A 138.00 80230 MOLINAA 138.001	3-WINDING XFMR_8164;8162;8181;1:BRNCH_80220;80219;1	347	1.5	100.0

CASELEGEND	FIELD LEGEND
CASE0 : 23HWLL_G25	NB : No Branch
CASE1 : 23HWLL_G50	NC : No Contingency
CASE2 : 23HWLL_G75	NS : No Solution
CASE3 : 23HWLL_G100	• : Rate C > Rate B
	● : Rating Changed
	■ : Duplicate Label
	□ : No Solve Transfer
	■ : Lowest Transfer
	■ : Existing Issue

**Contingency Legend**

2-WINDING XFMR\_5727,5725,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS 5727 [PAWNEESUB8 138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 2-WINDING XFMR\_5727,5725,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS 5727 [PAWNEESUB8 138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 2-WINDING XFMR\_5727,5725,1 DB\_ID\_7853 TRIP LINE FROM BUS 5727 [PAWNEESUB8 138 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 OPEN BRANCH FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 2-WINDING XFMR\_#0221,80219,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A 345 00] CKT1  
 - TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 2-WINDING XFMR\_#0221,80219,2 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A 345 00] CKT2  
 - TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_8297,587,1 TRIP LINE FROM BUS 5371 [SKYLINE\_5 345 00] TO BUS 5370 [SKYLINE\_8 138 00] TO BUS 5375 [SKYAUTO4 13 00] CKT4  
 - TRIP LINE FROM BUS 8297 [BRUNI4A138 00] TO BUS 587 [BRUNISW8 138 00] CKT1  
 3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 - TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 3 WINDING XFMR\_5709,5705,5706,1 BRNCH\_#0013,112,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS 5112 [SCRUCESA4A 138 00] CKT1  
 3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_8297,587,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 TRIP LINE FROM BUS #297 [BRUNI4A138 00] TO BUS 587 [BRUNISW8 138 00] CKT1  
 3-WINDING XFMR\_5709,5705,5706,1 BRNCH\_#918,112,1 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 - TRIP LINE FROM BUS #918 [MIL04A138 00] TO BUS #112 [LSCRUCESA4A 138 00] CKT1  
 3-WINDING XFMR\_5709,5705,5706,1 DB\_ID\_10535 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 - OPEN BRANCH FROM BUS 5901 [MIGUELS 345 00] TO BUS 5133 [ELMCREEK 345 00] CKT1  
 OPEN BRANCH FROM BUS 5901 [MIGUELS 345 00] TO BUS 5133 [ELMCREEK 345 00] CKT2  
 3-WINDING XFMR\_5709,5705,5706,1 DB\_ID\_17473 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 - OPEN BRANCH FROM BUS 5915 [SO\_TEX\_345A345 00] TO BUS #249 [ANGSTM7A 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5915 [SO\_TEX\_345A345 00] TO BUS 44200 [HILLIE\_B345A345 00] CKT1  
 3-WINDING XFMR\_5709,5705,5706,1 DB\_ID\_19219 TRIP LINE FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5705 [FOWLERTNSUB8 138 00] TO BUS 5706 [FOWLRTNTERT24 900] CKT1  
 - OPEN BRANCH FROM BUS 5133 [ELMCREEK 345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5133 [ELMCREEK 345 00] TO BUS 5901 [MIGUELS 345 00] CKT2  
 3-WINDING XFMR\_5901,5902,5908,1 BRNCH\_8295,8039,1 TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 TRIP LINE FROM BUS #295 [WORMSEAA 138 00] TO BUS #039 [FNCSA5A138 00] CKT1  
 3-WINDING XFMR\_5901,5902,5908,1 DB\_ID\_10535 TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5908 [SMIGLT1 24 900] CKT1  
 - OPEN BRANCH FROM BUS 5901 [MIGUELS 345 00] TO BUS 5133 [ELMCREEK 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5901 [MIGUELS 345 00] TO BUS 5133 [ELMCREEK 345 00] CKT2  
 3-WINDING XFMR\_5901,5902,5908,1 TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5902 [MIGUEL8 138 00] TO BUS 5908 [SMIGLT2 24 900] CKT2  
 - TRIP LINE FROM BUS #295 [WORMSEAA 138 00] TO BUS #039 [FNCSA5A138 00] CKT1  
 3-WINDING XFMR\_#164,8162,8160,2 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #164 [COLETO7A 345 00] TO BUS #162 [COLETO4A 138 00] TO BUS #160 [CC1TER13 800] CKT2  
 - TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 3-WINDING XFMR\_#164,8162,8160,2 BRNCH\_#0220,80219,1 TRIP LINE FROM BUS #164 [COLETO7A 345 00] TO BUS #162 [COLETO4A 138 00] TO BUS #160 [CC1TER13 800] CKT2  
 - TRIP LINE FROM BUS #0220 [CENIZ07A 345 00] TO BUS #0219 [LOBO7A 345 00] CKT1  
 3-WINDING XFMR\_#164,8162,8160,2 BRNCH\_#0220,80219,1 TRIP LINE FROM BUS #164 [COLETO7A 345 00] TO BUS #162 [COLETO4A 138 00] TO BUS #160 [CC1TER13 800] CKT1  
 - TRIP LINE FROM BUS #0220 [CENIZ07A 345 00] TO BUS #0219 [LOBO7A 345 00] CKT1

**Table 2E**  
**Present System N-A-1**  
**2023 High Wind Low Load**

**N-1-1 RESULTS**

PRESENT SYSTEM STUDY GENERATION = 2519.5 MW

**TRANSFER ANALYSIS**

HIGH BRANCH FLOW

Basecase >= 100.0 % Contingency >= 100.0 % Distribution Factor >= 3.0 %

Basecase = Rate A Contingency = Rate B

LOWEST 2 TRANSFERS FOR EACH CASE AND BRANCH

CASE0	CASE1	CASE2	CASE3	BRANCH	CONTINGENCY	RATING	LENGTH	% LOADING
>202.0	>202.0	190.0	0.0	80481 PILONCIL4 138.00 88909 NLARSW4B 138.001	BASE CASE	122	46.3	100.0
>202.0	>202.0	190.3	0.0	8643 MINES_RDMA 138.00 8909 NLARSW4A 138.001	BASE CASE	209	5.9	100.0
>202.0	>202.0	192.2	0.0	8112 LSCRUCESA4 138.00 8918 MIL04A 138.001	BASE CASE	239	2.4	100.0
>202.0	1.1	0.0	0.0	(2609) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.001	D12249:DB_ID_7853	122	8.3	100.0
>202.0	4.7	0.0	0.0	(2609) 8283 ASHERTON4A 138.00 8970 CATARINA4 138.001	BRNCH_80219:5709:1:BRNCH_80439:8297:1	122	8.3	100.0
>202.0	1.2	0.0	0.0	(4684) 8970 CATARINA4 138.00 80481 PILONCIL4 138.001	BRNCH_80219:5709:1:BRNCH_8695:8510:1	122	5.2	100.0
>202.0	1.3	0.0	0.0	(4684) 8970 CATARINA4 138.00 80481 PILONCIL4 138.001	D12191:DB_ID_7853	122	5.2	100.0
>202.0	>202.0	>202.0	1.7	(283) 8612 REVILLE4A 138.00 88627 LE MAYTP4A 138.001	D6943:DB_ID_7769	245	1.8	100.0
>202.0	>202.0	>202.0	12.7	(283) 8612 REVILLE4A 138.00 88627 LE MAYTP4A 138.001	D12200:DB_ID_7853	245	1.8	100.0
>202.0	>202.0	1.8	0.0	(24) 8526 STECTLAA4 138.00 8610 COTULLAA4 138.001	BRNCH_8956:5915:1:BRNCH_5901:5709:1	239	4.6	100.0
>202.0	>202.0	41.9	0.0	(24) 8526 STECTLAA4 138.00 8610 COTULLAA4 138.001	BRNCH_8404:5688:1:BRNCH_5901:5709:1	239	4.6	100.0
>202.0	>202.0	2.1	0.0	(139) 8610 COTULLAA4 138.00 8612 REVILLE4A 138.001	BRNCH_8624:8164:1:BRNCH_5901:5709:1	239	2.6	100.0
>202.0	>202.0	8.8	0.0	(139) 8610 COTULLAA4 138.00 8612 REVILLE4A 138.001	BRNCH_5901:5723:1:BRNCH_5901:5709:1	239	2.6	100.0
>202.0	5.1	0.0	0.0	(6149) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.001	D12178:DB_ID_7853	122	46.3	100.0
>202.0	7.5	0.0	0.0	(6149) 80481 PILONCIL4 138.00 88909 NLARSW4B 138.001	D12209:DB_ID_7853	122	46.3	100.0
7.1	0.0	0.0	0.0	(735) 8643 MINES_RDMA 138.00 8909 NLARSW4A 138.001	BRNCH_80013:8293:2:BRNCH_80013:8293:1	*246	5.9	100.0
12.3	0.0	0.0	0.0	(735) 8643 MINES_RDMA 138.00 8909 NLARSW4A 138.001	BRNCH_8647:8645:1:BRNCH_80230:8641:1	*246	5.9	100.0
>202.0	>202.0	10.4	0.0	(5) 8649 GATETP4A 138.00 8653 ST_NINO4A 138.001	D18131:DB_ID_7729	244	6.6	100.0
>202.0	124.7	0.0	0.0	(5) 8649 GATETP4A 138.00 8653 ST_NINO4A 138.001	BRNCH_80230:8641:1:BRNCH_8918:8112:1	244	6.6	100.0
>202.0	>202.0	>202.0	12.8	(3) 5705 FOWLERNTNSUB8138.00 5723 LOSANGLESUB8138.00	BRNCH_8606:8455:1:BRNCH_5901:5709:1	240	16.4	100.0
>202.0	>202.0	>202.0	40.6	(3) 5705 FOWLERNTNSUB8138.00 5723 LOSANGLESUB8138.00	BRNCH_8404:5688:1:BRNCH_5901:5709:1	240	16.4	100.0
>202.0	>202.0	>202.0	13.6	(14) 5701 TILDENSUB8 138.00 5705 FOWLERNTNSU8138.00 1	BRNCH_8606:5725:1:BRNCH_5901:5709:1	240	20.8	100.0
>202.0	>202.0	101.8	0.0	(14) 5701 TILDENSUB8 138.00 5705 FOWLERNTNSU8138.00 1	BRNCH_5901:5709:1:BRNCH_80355:8574:1	240	20.8	100.0
>202.0	>202.0	>202.0	23.5	(5) 5723 LOSANGLESUB8138.00 8612 REVILLE4A 138.001	BRNCH_8918:8643:1:BRNCH_5901:5709:1	240	22.3	100.0
>202.0	>202.0	>202.0	45.8	(5) 5723 LOSANGLESUB8138.00 8612 REVILLE4A 138.001	BRNCH_8606:5725:1:BRNCH_5901:5709:1	240	22.3	100.0
>202.0	26.9	0.0	0.0	(227) 8295 WORMSER4A 138.00 8650 GATEWTP4A 138.001	BRNCH_8918:8643:1:BRNCH_80219:5709:1	245	3.4	100.0
>202.0	32.5	0.0	0.0	(227) 8295 WORMSER4A 138.00 8650 GATEWTP4A 138.001	BRNCH_80219:5709:1:DB_ID_7729	245	3.4	100.0
28.6	0.0	0.0	0.0	(1478) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.001	D12186:DB_ID_7853	257	2.4	100.0
69.5	0.0	0.0	0.0	(1478) 8112 LSCRUCESA4 138.00 8918 MIL04A 138.001	D12178:DB_ID_7853	257	2.4	100.0
>202.0	>202.0	32.1	0.0	(5) 8641 SIEVISTAA4 138.00 80230 MOLINA4 138.001	BRNCH_8647:8645:1:BRNCH_80013:8112:1	347	9.9	100.0
>202.0	148.2	0.0	0.0	(5) 8641 SIEVISTAA4 138.00 80230 MOLINA4 138.001	BRNCH_8645:8293:1:BRNCH_80013:8112:1	347	9.9	100.0
39.9	0.0	0.0	0.0	(323) 8293 LAREDO4A 138.00 8645 DEL_MARA4 138.001	BRNCH_82019:5709:1:BRNCH_8918:8112:1	239	2.7	100.0
116.9	0.0	0.0	0.0	(323) 8293 LAREDO4A 138.00 8645 DEL_MARA4 138.001	BRNCH_80219:5709:1:BRNCH_8918:8112:1	239	2.7	100.0
>202.0	>202.0	>202.0	40.2	(2) 80169 LARDVF4B 138.00 86104 CID-138 138.001	2-WINDING XFMR_80169:80168:1:BRNCH_80219:5709:1	150	12.4	100.0
>202.0	>202.0	>202.0	41.2	(2) 80169 LARDVF4B 138.00 86104 CID-138 138.001	BRNCH_8645:8293:1:BRNCH_80013:8112:1	347	2.9	100.0
>202.0	48.1	0.0	0.0	(5) 8295 WORMSER4A 138.00 8641 SIEVISTAA4 138.001	BRNCH_8645:8293:1:BRNCH_80013:8112:1	347	2.9	100.0
>202.0	173.6	0.0	0.0	(5) 8295 WORMSER4A 138.00 8641 SIEVISTAA4 138.001	BRNCH_8645:8293:1:BRNCH_8918:8112:1	347	2.9	100.0
>202.0	>202.0	50.5	0.0	(5) 8295 WORMSER4A 138.00 8653 ST_NINO4A 138.001	D18240:DB_ID_7703	244	3.3	100.0
>202.0	>202.0	153.8	0.0	(5) 8295 WORMSER4A 138.00 8653 ST_NINO4A 138.001	BRNCH_82030:8641:1:BRNCH_80013:8112:1	244	3.3	100.0
>202.0	>202.0	58.4	0.0	(7) 8526 STECTLAA4 138.00 8611 JARDINA4 138.001	BRNCH_8956:5915:1:BRNCH_5901:5709:1	239	4.6	100.0
>202.0	>202.0	131.4	0.0	(7) 8526 STECTLAA4 138.00 8611 JARDINA4 138.001	BRNCH_8404:5688:1:BRNCH_5901:5709:1	239	4.6	100.0
59.4	0.0	0.0	0.0	(3028) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4 138.001	BRNCH_8650:8295:1:BRNCH_80219:5709:1	257	0.5	100.0
62.5	0.0	0.0	0.0	(3028) 8112 LSCRUCESA4 138.00 80013 LARDVNTH4 138.001	D12161:DB_ID_7853	257	0.5	100.0
64.6	0.0	0.0	0.0	(25) 8645 DEL_MARA4 138.00 8647 UNIVERS4A 138.001	D18240:DB_ID_7703	239	2.5	100.0
107.1	0.0	0.0	0.0	(25) 8645 DEL_MARA4 138.00 8647 UNIVERS4A 138.001	BRNCH_8918:8112:1:BRNCH_8641:8295:1	239	2.5	100.0
>202.0	>202.0	65.2	0.0	(37) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.001	BRNCH_8606:5725:1:BRNCH_80219:5709:1	245	25.5	100.0
>202.0	>202.0	72.7	0.0	(37) 8108 HOLCOMBA4 138.00 8909 NLARSW4A 138.001	BRNCH_8606:5725:1:DB_ID_7853	245	25.5	100.0
>202.0	>202.0	80.1	0.0	(4) 8508 FALFUR2A 69.000 8894 PREMONT2A 69.0001	D12153:DB_ID_7853	38	12.3	100.0
>202.0	>202.0	80.1	0.0	(4) 8508 FALFUR2A 69.000 8894 PREMONT2A 69.0001	BRNCH_80307:80225:1:DB_ID_7853	38	12.3	100.0
92.7	0.0	0.0	0.0	(1060) 8643 MINES_RDMA 138.00 8918 MIL04A 138.001	BRNCH_80230:80221:1:BRNCH_8645:8293:1	257	3.0	100.0
147.5	0.0	0.0	0.0	(1060) 8643 MINES_RDMA 138.00 8918 MIL04A 138.001	D4999:DB_ID_7328	257	3.0	100.0
>202.0	>202.0	93.9	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.002	D12258:DB_ID_7853	*717	2WXFMR	100.0
>202.0	99.7	0.0	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.002	BRNCH_80219:5709:1:2-WINDING XFMR_80221:80219:1	*717	2WXFMR	100.0
>202.0	95.7	0.0	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.001	D12158:DB_ID_7853	*717	2WXFMR	100.0
>202.0	101.4	0.0	0.0	(2) 80219 LOBO7A 345.00 80221 LOBO4A 138.001	2-WINDING XFMR_80221:80219:2:BRNCH_80219:5709:1	*717	2WXFMR	100.0
>202.0	102.9	0.0	0.0	(57) 8108 HOLCOMBA4 138.00 8619 ENCINAL4A 138.001	BRNCH_8606:5725:1:BRNCH_80219:5709:1	245	1.3	100.0
>202.0	114.9	0.0	0.0	(57) 8108 HOLCOMBA4 138.00 8619 ENCINAL4A 138.001	BRNCH_8606:5725:1:DB_ID_7853	245	1.3	100.0
>202.0	>202.0	103.4	0.0	(2) 8299 ZAPATATA4 138.00 8957 LOPENO4A 138.001	BRNCH_8606:5725:1:BRNCH_8020:80219:1	*287	20.3	100.0
>202.0	>202.0	121.6	0.0	(2) 8299 ZAPATATA4 138.00 8957 LOPENO4A 138.001	BRNCH_8606:8455:1:BRNCH_80220:80219:1	*287	20.3	100.0
>202.0	106.7	0.0	0.0	(11) 8647 UNIVERS4A 138.00 8649 GATETP4A 138.001	D18223:DB_ID_7703	239	3.4	100.0
>202.0	149.0	0.0	0.0	(11) 8647 UNIVERS4A 138.00 8649 GATETP4A 138.001	BRNCH_80013:8112:1:BRNCH_8641:8295:1	239	3.4	100.0
>202.0	>202.0	115.8	0.0	(13) 8505 FREER2A 69.000 80222 LOBO2A 69.0001	BRNCH_80307:80225:1:DB_ID_7853	39	49.5	100.0
>202.0	200.0	0.0	0.0	(13) 8505 FREER2A 69.000 80222 LOBO2A 69.0001	BRNCH_5901:5709:1:BRNCH_80355:8574:1	39	49.5	100.0
>202.0	116.8	0.0	0.0	(61) 8619 ENCINAL4A 138.00 88627 LE MAYTP4A 138.001	BRNCH_8606:5725:1:BRNCH_80219:5709:1	245	24.6	100.0
>202.0	129.2	0.0	0.0	(61) 8619 ENCINAL4A 138.00 88627 LE MAYTP4A 138.001	BRNCH_8606:8451:1:BRNCH_80219:5709:1	245	24.6	100.0
>202.0	>202.0	118.9	0.0	(3) 8611 JARDINA4 138.00 8212 DILLEYSW4A 138.001	BRNCH_8606:5725:1:BRNCH_5901:5709:1	239	11.5	100.0
>202.0	>202.0	131.5	0.0	(3) 8611 JARDINA4 138.00 8212 DILLEYSW4A 138.001	BRNCH_8606:8455:1:BRNCH_5901:5709:1	239	11.5	100.0
>202.0	>202.0	120.3	0.0	(1) 5878 COTULASUB9 69.000 5878 HOLLANDSUB9 69.0001	BRNCH_8612:86101:1:BRNCH_8297:5887:1	40	16.3	100.0
>202.0	123.5	0.0	0.0	(105) 8650 GATEWTP4A 138.00 8134 UNITECA4 138.001	BRNCH_8918:8643:1:DB_ID_7853	245	12.0	100.0
>202.0	137.7	0.0	0.0	(105) 8650 GATEWTP4A 138.00 8134 UNITECA4 138.001	D12198:DB_ID_7853	245	12.0	100.0
>202.0	>202.0	136.1	0.0	(1) 5878 HOLLANDSUB9 69.000 5880 FREERSUB9 69.0001	BRNCH_8612:8610:1:BRNCH_8297:5887:1	40	29.2	100.0
>202.0	>202.0	147.4	0.0	(1) 5880 FREERSUB9 69.000 5888 BRUNSLUB9 69.0001	BRNCH_8612:86101:1:DB_ID_7853	40	35.0	100.0
>202.0	160.6	0.0	0.0	(64) 8909 NLARSW4A 138.00 8134 UNITECA4 138.001	BRNCH_8918:8643:1:DB_ID_7853	245	4.4	100.0
>202.0	175.1	0.0	0.0	(64) 8909 NLARSW4A 138.00 8134 UNITECA4 138.001	D12198:DB_ID_7853	245</td		

Contingency Legend

2-WINDING XFMR\_80169,80168,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #0169 [LARDVFT4B 138 00] TO BUS #0168 [LARDVFT56A 230 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2 WINDING XFMR\_80169,80168,1 DB\_ID\_7853 TRIP LINE FROM BUS #0169 [LARDVFT4B 138 00] TO BUS #0168 [LARDVFT56A 230 00] CKT1  
 - OPEN BRANCH FROM BUS #0169 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

2-WINDING XFMR\_80221,80219,2 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A 345 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_5901,5709,1 BRNCH\_80355,574,1 TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0355 [DELSOL7A 345 00] TO BUS #574 [POMELO7A 345 00] CKT1

BRNCH\_5901,5725,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS 5901 [MIGUELS 345 00] TO BUS 5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_80013,8112,1 BRNCH\_8641,8295,1 TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1  
 - TRIP LINE FROM BUS #8641 [SIEVISTAA4 138 00] TO BUS #295 [WORMSENA4 138 00] CKT1

BRNCH\_80013,8293,2 BRNCH\_80013,8293,1 TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #293 [LARDO4A 138 00] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS 8293 [LARDO4A 138 00] CKT1

BRNCH\_80219,5709,1 2-WINDING XFMR\_80221,80219,1 TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0221 [LOBO4A 138 00] TO BUS #0219 [LOBO7A 345 00] CKT1

BRNCH\_80219,5709,1 BRNCH\_80013,8112,1 TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_80219,5709,1 BRNCH\_80439,8297,1 TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0439 [LAQUINTAA4 138 00] TO BUS #297 [BRUNI44A 138 00] CKT1

BRNCH\_80219,5709,1 BRNCH\_8695,8510,1 TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #8695 [CRESTON4A 138 00] TO BUS #510 [FAFLURA138 00] CKT1

BRNCH\_80219,5709,1 BRNCH\_8918,8112,1 TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_80219,5709,1 DB\_ID\_7229 TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - OPEN BRANCH FROM BUS #112 [LSCRUCESA4 138 00] TO BUS #918 [ML04A 138 00] CKT1  
 - OPEN BRANCH FROM BUS 8643 [MINES\_NDA4A 138 00] TO BUS #909 [INLARSW4A 138 00] CKT1  
 OPEN BRANCH FROM BUS #918 [ML04A 138 00] TO BUS #643 [MINES\_NDA4A 138 00] CKT1  
 - OPEN BRANCH FROM BUS #013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_80230,8221,1 BRNCH\_8645,8293,1 TRIP LINE FROM BUS #0230 [MOLINAAA 138 00] TO BUS #0221 [LOBO4A 138 00] CKT1  
 - TRIP LINE FROM BUS #8645 [DEL\_MARKA 138 00] TO BUS #293 [LARDO4A 138 00] CKT1

BRNCH\_80230,8641,1 BRNCH\_80013,8112,1 TRIP LINE FROM BUS #0230 [MOLINAAA 138 00] TO BUS #641 [SIEVISTAA4 138 00] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_80230,8641,1 BRNCH\_8918,8112,1 TRIP LINE FROM BUS #0230 [MOLINAAA 138 00] TO BUS #641 [SIEVISTAA4 138 00] CKT1  
 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_80307,80225,1 DB\_ID\_7853 TRIP LINE FROM BUS #0307 [DELSOL7C 345 00] TO BUS #0225 [CENIZOT7C 345 00] CKT1  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8404,8568,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #404 [SIGMOR4A 138 00] TO BUS #588 [GEORGEWSTS8138 00] CKT1  
 - TRIP LINE FROM BUS #901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8606,8525,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #606 [GOODARD7A 345 00] TO BUS #5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8606,5725,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #606 [GOODARD7A 345 00] TO BUS #5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8606,5725,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #606 [GOODARD7A 345 00] TO BUS #5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8606,5725,1 BRNCH\_80220,80219,1 TRIP LINE FROM BUS #606 [GOODARD7A 345 00] TO BUS #5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #0220 [CENIZOT7A 345 00] TO BUS #0219 [LOBO7A 345 00] CKT1

BRNCH\_8606,5725,1 BRNCH\_80220,80219,1 TRIP LINE FROM BUS #606 [GOODARD7A 345 00] TO BUS #5725 [PAWNEESWS 345 00] CKT1  
 - TRIP LINE FROM BUS #0220 [CENIZOT7A 345 00] TO BUS #0219 [LOBO7A 345 00] CKT1

BRNCH\_8612,8610,1 BRNCH\_8297,5887,1 TRIP LINE FROM BUS #612 [REVELLE4A 138 00] TO BUS #610 [COTULLA4A 138 00] CKT1  
 - TRIP LINE FROM BUS #297 [BRUNI44A 138 00] TO BUS #887 [INLARSW4A 138 00] CKT1

BRNCH\_8624,8164,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #624 [GRISOM7A 345 00] TO BUS #164 [COLET07A 345 00] CKT1  
 - TRIP LINE FROM BUS #5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8645,8293,1 BRNCH\_80013,8112,1 TRIP LINE FROM BUS #645 [DEL\_MAR4A 138 00] TO BUS #293 [LARDO4A 138 00] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_8645,8293,1 BRNCH\_8918,8112,1 TRIP LINE FROM BUS #645 [DEL\_MAR4A 138 00] TO BUS #293 [LARDO4A 138 00] CKT1  
 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_8647,8645,1 BRNCH\_80013,8112,1 TRIP LINE FROM BUS #647 [UNIVERSHA4 138 00] TO BUS #645 [DEL\_MAR4A 138 00] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1

BRNCH\_8647,8645,1 BRNCH\_80230,8641,1 TRIP LINE FROM BUS #647 [UNIVERSHA4 138 00] TO BUS #645 [DEL\_MAR4A 138 00] CKT1  
 TRIP LINE FROM BUS #0230 [MOLINAAA 138 00] TO BUS #641 [SIEVISTAA4 138 00] CKT1

BRNCH\_8650,8285,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #650 [GATEWTP4A 138 00] TO BUS #295 [WORMSER4A 138 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8918,8112,1 BRNCH\_8641,8285,1 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #112 [LSCRUCESA4 138 00] CKT1  
 - TRIP LINE FROM BUS #8641 [SIEVISTAA4 138 00] TO BUS #295 [WORMSER4A 138 00] CKT1

BRNCH\_8918,8643,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #643 [MINES\_NDA4A 138 00] CKT1  
 - TRIP LINE FROM BUS #5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8918,8643,1 BRNCH\_80219,5709,1 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #643 [MINES\_NDA4A 138 00] CKT1  
 - TRIP LINE FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8918,8643,1 DB\_ID\_7853 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #643 [MINES\_NDA4A 138 00] CKT1  
 - OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1

BRNCH\_8918,8643,1 DB\_ID\_7853 TRIP LINE FROM BUS #918 [ML04A 138 00] TO BUS #643 [MINES\_NDA4A 138 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

BRNCH\_8956,5915,1 BRNCH\_5901,5709,1 TRIP LINE FROM BUS #956 [WHITEPT7A 345 00] TO BUS #5915 [SO\_TEK\_345A345 00] CKT1  
 - TRIP LINE FROM BUS #5901 [MIGUELS 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

D12153 DB\_ID\_7853 OPEN BRANCH FROM BUS #5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A 345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - OPEN BRANCH FROM BUS #0220 [CENIZOT7A 345 00] TO BUS #0223 [CENIZOT7B 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0223 [CENIZOT7B 345 00] TO BUS #0225 [CENIZOT7C 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0307 [DELSOL7C 345 00] TO BUS #0308 [DELSOL7B 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0308 [DELSOL7B 345 00] TO BUS #0355 [DELSOL7C 345 00] CKT1

D12158 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0221 [LOBO4A138 00] TO BUS #0219 [LOBO7A345 00] CKT2  
 D12161 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - OPEN BRANCH FROM BUS #134 [UNITECA138 00] TO BUS #650 [GATEWTP4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #650 [GATEWTP4A138 00] TO BUS #295 [WORMSER4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #8909 [NLARSW4A138 00] TO BUS #134 [UNITECA138 00] CKT1  
 D12178 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #8647 [UNIVERS4A138 00] TO BUS #645 [DEL\_MAR4A138 00] CKT1  
 D12186 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #650 [GATEWTP4A138 00] TO BUS #8295 [WORMSER4A138 00] CKT1  
 D12191 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS 5727 [PAWNEESU138 00] TO BUS #5725 [PAWNEESW5345 00] CKT1  
 D12198 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #12 [LSCRUCESA138 00] TO BUS #938 [MLC04A138 00] CKT1  
 - OPEN BRANCH FROM BUS #643 [MINES\_RDA138 00] TO BUS #8909 [NLARSW4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #818 [MLC04A138 00] TO BUS #643 [MINES\_RDA4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #0013 [LARDVNTH4A138 00] TO BUS #112 [LSCRUCESA138 00] CKT1  
 D12200 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0222 [LOBO2A69 000] TO BUS #505 [FREER2A69 000] CKT1  
 D12209 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - REMOVE MACHINE W4 FROM BUS 161107 [#RDS\_JAVEL2B34 500]  
 D12249 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0439 [LAQUINT4A138 00] TO BUS #297 [MLUNH4A138 00] CKT1  
 D12258 DB\_ID\_7853 OPEN BRANCH FROM BUS 5709 [FOWLERTONSW5345 00] TO BUS 5901 [MIGUELS 345 00] CKT1  
 - OPEN BRANCH FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1  
 - TRIP LINE FROM BUS #0221 [LOBO4A138 00] TO BUS #0219 [LOBO7A345 00] CKT1  
 D18131 DB\_ID\_7729 OPEN BRANCH FROM BUS #812 [LSCRUCESA138 00] TO BUS #918 [MLC04A138 00] CKT1  
 - OPEN BRANCH FROM BUS #643 [MINES\_RDA138 00] TO BUS #8909 [NLARSW4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #818 [MLC04A138 00] TO BUS #643 [MINES\_RDA4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #0013 [LARDVNTH4A138 00] TO BUS #112 [LSCRUCESA138 00] CKT1  
 - TRIP LINE FROM BUS #0230 [MOLINAAA138 00] TO BUS #8641 [SIEVIST4A138 00] CKT1  
 D18223 DB\_ID\_7703 OPEN BRANCH FROM BUS #8641 [SIEVIST4A138 00] TO BUS #295 [WORMSER4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #0230 [MOLINAAA138 00] TO BUS #641 [SIEVIST4A138 00] CKT1  
 - TRIP LINE FROM BUS #0013 [LARDVNTH4A138 00] TO BUS #112 [LSCRUCESA138 00] CKT1  
 D18240 DB\_ID\_7703 OPEN BRANCH FROM BUS #8641 [SIEVIST4A138 00] TO BUS #295 [WORMSER4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #0230 [MOLINAAA138 00] TO BUS #641 [SIEVIST4A138 00] CKT1  
 - TRIP LINE FROM BUS #8918 [MLC04A138 00] TO BUS #112 [LSCRUCESA138 00] CKT1  
 D4999 DB\_ID\_7328 OPEN BRANCH FROM BUS #293 [LAREDO4A138 00] TO BUS #8645 [DEL\_MAR4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #645 [DEL\_MAR4A138 00] TO BUS #647 [UNIVERS4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #641 [SIEVIST4A138 00] TO BUS #295 [WORMSER4A138 00] CKT1  
 - OPEN BRANCH FROM BUS #0230 [MOLINAAA138 00] TO BUS #641 [SIEVIST4A138 00] CKT1  
 D6943 DB\_ID\_7769 OPEN BRANCH FROM BUS #637 [ANNAST4A138 00] TO BUS #293 [LAREDO4A138 00] CKT2  
 - OPEN BRANCH FROM BUS #0040 [BIGHTSA138 00] TO BUS #637 [ANNAST4A138 00] CKT2  
 - TRIP LINE FROM BUS #0219 [LOBO7A345 00] TO BUS 5709 [FOWLERTONSW5345 00] CKT1

Table 3  
 N-1-1 Results  
 2020 Spring

**APPENDIX B**  
**Figures**



Figure 1  
Reloj Del Sol Wind Area Transmission System

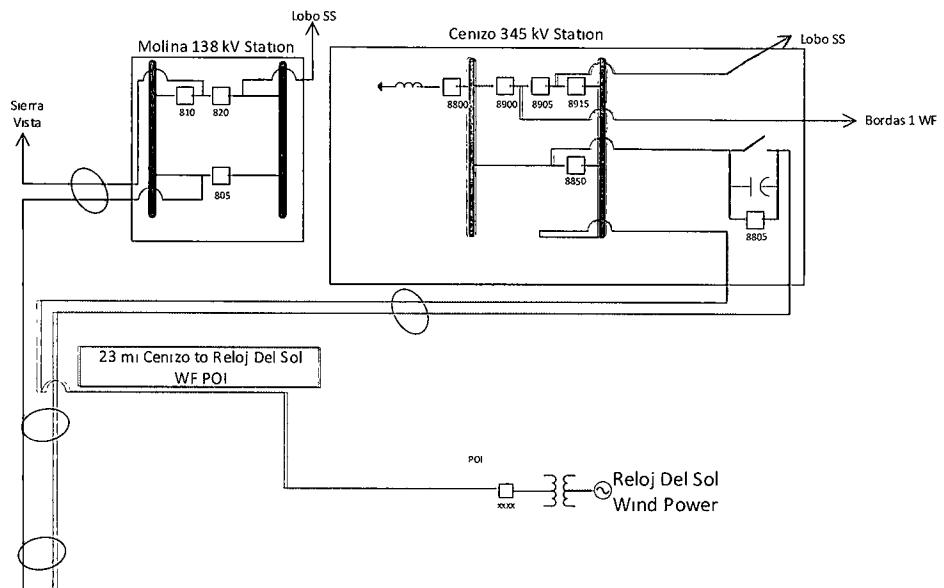


Figure 2  
345 kV Cenizo Station Connection

## APPENDIX C

### Interconnection Procedures, Guidelines, and Planning Criteria

NERC Transmission Planning (TPL) Reliability Standard(s):

<http://www.nerc.com/pa/stand/Pages/ReliabilityStandardsUnitedStates.aspx>

ERCOT Generation Interconnection Procedures:

<http://www.ercot.com/gridinfo/generation/>

ERCOT Planning Guide (Current Planning Guide):

<http://www.ercot.com/mktrules/guides/planning/current>

ERCOT Planning Criteria (Current Nodal Operating Guides):

<http://www.ercot.com/mktrules/guides/noperating/cur>

ERCOT Planning Criteria (Current Nodal Protocols):

<http://www.ercot.com/mktrules/nprotocols/current>

AEP Interconnection Guidelines:

<http://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/>

AEP Transmission Planning Criteria:

<http://www.aep.com/about/codeofconduct/OASIS/TransmissionStudies/>

**Note:** *If there are conflicts between AEPSC and ERCOT Guidelines, ERCOT guidelines rule*

PUC DOCKET NO. 50690

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO  
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**Question No. STAFF 1-2:**

Please explain in detail the need for a 1094-MVA capacity transmission line in comparison to the generation output of 209 MW.

**Response No. STAFF 1-2:**

The request for the interconnection by the generator was at 345-kV. The smallest conductor used by ETT for 345-kV operation is 795 KCM ASCR. Using a conductor at 345-kV operation that is smaller than 795 KCM ASCR creates a noise level that is very noticeable and the cost reduction using a smaller conductor is less than 10% of the overall cost of the transmission line. Also, conductor inventory available for the existing 345-kV network is typically 954 KCM ASCR and larger. The reason 795 KCM ASCR was used in this case was to reduce the cost of the interconnection, while also addressing the noticeable noise level created by a conductor use smaller.

Prepared by: Randal E Roper

Title: Regulatory Case Manager, AEP Texas

Sponsored by: Witness Designated if Testimony Filed

**PUC DOCKET NO. 50690**

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO  
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**Question No. STAFF 1-3:**

If additional customers exist, please provide any specific loads committed and allocated to this project.

- a. Please provide any signed agreements related to any specific loads committed and allocated to this project.

**Response No. STAFF 1-3:**

ETT does not have current knowledge of any additional customers allocated to this project.

Prepared by: Randal E Roper

Title: Regulatory Case Manager, AEP Texas

Sponsored by: Witness Designated if Testimony Filed

PUC DOCKET NO. 50690

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO  
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**Question No. STAFF 1-4:**

Please provide electric utility standards set forth by industry organizations for audible noise levels on high voltage transmission lines.

**Response No. STAFF 1-4:**

ETT is not aware of any industry standards setting levels for audible noise (AN). IEEE Standard 656-2018 does give standard methods for measuring AN, but it does not set levels. EPRI has also published information on AN, but again did not set limits.

Prepared by: Randal E Roper

Title: Regulatory Case Manager, AEP Texas

Sponsored by: Witness Designated if Testimony Filed

**PUC DOCKET NO. 50690**

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO  
COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**Question No. STAFF 1-5:**

Please provide a cost estimate for a 345-kV transmission line that closely matches the 209 MW capacity of the generator.

**Response No. STAFF 1-5:**

The smallest conductor that ETT could use for this 345-kV interconnection request would be the 795 KCM ACSR for the reasons described in ETT's response to Staff 1-2. As provided in the response to Staff 1-2 a smaller conductor size than 795 KCM ACSR would reduce the cost less than 10%, and would create an issue with an undesirable noise level. Therefore, the reduction in cost is not substantial and would create a noise issue. ETT would not have designed a 345-kV transmission line specifically for such a small amount with these issues. Also, as described in ETT's response to Staff 1-1, a 138-kV interconnection was not requested by the generator nor would a 138-kV interconnection be functional at this location. Thus, for these reasons a 209 MW capacity 345-kV transmission line is not practicable and would not be constructed, thus a cost estimate was not prepared.

Prepared by: Randal E Roper

Title: Regulatory Case Manager, AEP Texas

Sponsored by: Witness Designated if Testimony Filed

**PUC DOCKET NO. 50690**

**ELECTRIC TRANSMISSION TEXAS, LLC'S RESPONSE TO**

**COMMISSION STAFF'S FIRST REQUEST FOR INFORMATION**

**Question No. STAFF 1-6:**

Please explain any plans the generator has for future expansion beyond the 209 MW capacity.

**Response No. STAFF 1-6:**

ETT has no knowledge of any future expansion plans for this generation project.

Prepared by: Randal E Roper

Title: Regulatory Case Manager, AEP Texas

Sponsored by: Witness Designated if Testimony Filed