Final
MISO DPP 2019 Cycle 1 South Area Study Phase II Report

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1. Executive Summary

This report presents the results of a System Impact Study performed to evaluate the interconnection of the generators in the DPP 2019 Cycle 1 South Area Phase II. The study was performed under the direction of MISO and reviewed by an ad hoc study group. The ad hoc study group was formed to review the study scope, methodology, models and results. The ad hoc study group consisted of representatives from the interconnection customers and the following utility companies – Entergy, Cooperative Energy, CLECO, AECC, AECI, Southern Company, PowerSouth, SPP, and TVA.

1.1. Project List

The original interconnection requests for DPP 2019 Cycle 1 South Area had a total of 70 generation projects. Projects J1283, J1291, J1309, J1433, J1443, and J1484 withdrew prior to the start of DPP Phase I. Projects 1220, J1236, J1238, J1245, J1250, J1259, J1260, J1261, J1267, J1277, J1278, J1280, J1287, J1290, J1293, J1351, J1364, J1380, J1384, J1400, J1404, J1414, J1439, J1462, and J1469 withdrew during Decision Point I prior to the start of DPP Phase II. Therefore, there are 39 generation projects with a combined nameplate rating of 5998.98 MW of Energy Resource Interconnection Service (ERIS) & 5489.73 MW of Network Resource Interconnection Service (NRIS). The detailed list of South Area DPP 1 is shown below in Table 1, and the Phase II study was kicked off on February 10th, 2020.

Table 1: List of DPP 2019 Cycle 1 South Area Phase II Projects

Project	Fuel Type	Transmission Owner	County	State	Service Requested	MW (ERIS/NRIS If different)	Point of Interconnection (POI)
J1205	Solar	Cleco Corporation	Allen Parish, Assumption Parish	LA	NRIS	125	Centennial - West Bay 138 kV
J1215	Solar	Entergy Arkansas	Arkansas County	AR	NRIS	155	Stuttgart Ricuskey – Woodward 230 kV
J1217	Solar	Cleco Corporation	St. Landry Parish	LA	NRIS	200	Ville Platte – West Fork 230 kV
J1219	Solar	Entergy Louisiana	Tangipahoa Parish	LA	NRIS	100	Chicken Farm – Amite 115 kV
J1223	Solar	Entergy Mississippi	Pike County	MS	NRIS	75	Colonial Pipeline – Kentwood 115 kV
J1239	Solar	Entergy Louisiana	Ouachita Parish	LA	NRIS	100/70	Rilla 115 kV Substation
J1246	Gas	Entergy Louisiana	Iberville Parish	LA	NRIS	705	Bayou Labutte 500 kV Substation
J1247	Waste Heat Recovery	Cleco Corporation	St Mary Parish	LA	ERIS	30.98	Ivanhoe 138 kV Substation
J1249	Gas	Cooperative Energy	Lamar County	MS	NRIS	600	Morrow 161 kV Substation
J1257	Battery Storage	Entergy Louisiana	Tangipahoa County	LA	NRIS	20	Chicken Farm – Amite 115 kV
J1258	Battery Storage	Entergy Arkansas	Lonoke County	AR	NRIS	50	KEO EHV 500 kV Substation
J1279	Solar	Entergy Texas	Hardin County	TX	NRIS	100	Rye – Cypress 138 kV
J1281	Solar	Entergy Arkansas	Ashley County	AR	NRIS	75	Crossett – Monticello East 115 kV
J1282	Solar	Cleco Coporation	Beauregard Parish	LA	NRIS	200	Cooper – Penton Road 230 kV
J1286	Solar	Cleco	Evangeline	LA	NRIS	125	Manuel 138 kV Substation

Project	Fuel Type	Transmission Owner	County	State	Service Requested	MW (ERIS/NRIS If different)	Point of Interconnection (POI)
		Coporation	Parish				
J1294	Solar	Entergy Mississippi	Sunflower County	MS	NRIS	99	Indianola – Cleveland 115 kV
J1347	Solar	Entergy Mississippi	Scott County	MS	ERIS	175	Pelahatchie – Scott 115 kV
J1361	Solar	Entergy Louisiana	Washington Parish	LA	NRIS	50	Lagen Holton – Franklinton 115 kV
J1367	Solar	Cleco Corporation	St. Mary Parish	LA	NRIS	95	Caneland 230 kV Substation
J1368	Solar	Entergy Louisiana	Point Coupee Parish	LA	NRIS	200/130	Fancy Point – Waterloo 230 kV
J1372	Solar	Entergy Louisiana	Point Coupee Parish	LA	NRIS	100/65	Fancy Point – Waterloo 230 kV
J1373	Solar	Entergy Arkansas	White County	AR	NRIS	95/80.75	Griffithville – Searcy Price 115 kV
J1402	Battery Storage	Entergy Arkansas	Jackson County	AR	NA	0	Cash – Newport AB 161 kV
J1415	Solar	Entergy Arkansas	Lonoke County	AR	NRIS	250	KEO EHV 500 kV Substation
J1421	Solar	Entergy Louisiana	East Feliciana Parish	LA	NRIS	300	Moler - Colfel 230 kV
J1424	Solar	Cleco Corporation	Beauregard Parish	LA	NRIS	200	Cooper – Penton 230 kV
J1425	Gas	Entergy Arkansas	Jefferson County	AR	NRIS	114	Pine Bluff International Paper 115 kV Substation
J1431	Solar	Entergy Louisiana	St. James Parish	LA	NRIS	90	Vacherie 230 kV Substation
J1434	Solar	Entergy Arkansas	Monroe County	AR	NRIS	100	Brinkley East – Aubrey 230 kV
J1436	Solar	Entergy Louisiana	Morehouse Parish	LA	ERIS	50	Oak Ridge 115 kV Substation
J1437	Wind	Arkansas Electric Cooperative Corporation	Carroll County	AR	NRIS	180	AECC Dry Creek 161 kV Switchyard Station
J1440	Solar	Entergy Mississippi	Tunica County	MS	NRIS	150	Lula – Tunica 115 kV
J1441	Solar	Entergy Louisiana	Terrebonne Parish	LA	NRIS	200	Schriever 230 kV Substation
J1442	Solar	Entergy Texas	Polk County	TX	NRIS	105	Rich (SHECO) – Livingston 138 kV
J1452	Solar	Cleco Corporation	Red River Parish	LA	NRIS	75	Carroll – Mansfield 138 kV
J1455	Solar	Cleco Corporation	St. Mary Parish	LA	NRIS	150	Teche – Morbihan 138 kV
J1458	Solar	Entergy Mississippi	Washington County	MS	NRIS	200/170	Ray Braswell – Tinnin – Gerald Andrus 230 kV
J1463	Solar	Entergy Louisiana	West Baton Rouge Parish	LA	NRIS	150/45	Addis – Big Cajun 230 kV
J1465	Solar	Entergy Louisiana	Pointe Coupee Parish	LA	NRIS	150	Livonia 138 kV Substation

1.2. Total Network Upgrades

The cost allocation of Network Upgrades for the projects in the DPP 2019 Cycle 1 South Phase II reflects responsibilities for mitigating system impacts. The total cost of Network Upgrades is listed in Table 2 below. The costs for Network Upgrades are planning-level estimates and subject to revision in the facility studies. Details pertaining to the cost allocation has been detailed in Appendix A – Cost Allocation Summary (CEII).

Table 2: Total Cost of Network Upgrades for DPP 2019 Cycle 1 South Phase II Projects

Project	ERIS Network Upgrades ($)				NRIS Network Upgrades ($)	Interconnection Facilities ($)		Shared Network Upgrades ($)	Total Network Upgrade Cost for Milestone Calculation ($)	M2 ($)	M3 ($)	M4 ($)
	Thermal	Stability	Short Circuit	Affected System	Deliverability	TO Network Upgrades	TO – Owned Direct Assigned					
a	b	c	d	e	f	g	h	i	j = b+c+d+f+g+i	$4,000/MW	10% of (j) from Phase I-M2	(20% of (j) from Phase II) – M2 – M3
J1205	-	-	-	-	33,716,350	10,094,000	1,075,000	-	43,810,350	500,000	3,475,319	4,786,751
J1215	-	-	-	902,000	317,794	13,149,000	1,546,000	-	13,466,794	800,000	4,252,878	-
J1217	-	-	-	-	59,851,714	8,978,660	322,040	-	68,830,374	800,000	6,670,422	6,295,653
J1219	-	-	-	-	-	5,946,000	1,249,000	-	5,946,000	400,000	350,977	438,223
J1223	-	-	-	-	-	13,688,000	1,564,000	-	13,688,000	600,000	151,444	1,986,156
J1239	-	-	-	-	2,582,309	3,802,000	3,431,000	-	6,384,309	400,000	4,016,325	-
J1246	-	-	TBD	-	43,907,022	10,648,000	2,524,000	-	54,555,022	2,900,800	3,378,495	4,631,709
J1247	-	-	-	-	-	-	2,928,018	-	-	124,000	-	-
J1249	6,772,000	-	-	63,005,000	-	7,550,000	1,160,000	-	14,322,000	2,400,000	-	464,400
J1257	-	-	-	-	-	5,946,000	1,249,000	-	5,946,000	80,000	670,195	439,005
J1258	-	-	-	-	-	1,959,500	2,484,500	-	1,959,500	200,000	282,027	-
J1279	-	-	-	-	41,436,794	15,446,000	1,829,000	-	56,882,794	400,000	3,212,224	7,764,335
J1281	-	-	-	-	2,331,278	11,779,000	1,507,000	-	14,110,278	300,000	1,828,655	693,401
J1282	2,500,000	-	-	-	90,439,234	8,749,146	312,659	-	101,688,380	800,000	8,857,952	10,679,724
J1286	-	-	-	-	68,527,633	2,426,089	195,433	-	70,953,722	600,000	5,978,388	7,612,356
J1294	-	-	-	902,000	4,189,107	12,015,000	1,517,000	-	16,204,107	396,000	1,831,523	1,013,299
J1347	-	-	-	14,200,000	-	12,910,000	1,515,000	-	12,910,000	700,000	1,822,322	59,678
J1361	-	-	-	-	-	1,364,000	-	-	1,364,000	200,000	200,480	-
J1367	-	-	-	-	7,314,765	3,650,000	1,503,000	-	10,964,765	380,000	923,623	889,330
J1368	-	-	-	-	42,700,207	7,500,000	-	-	50,200,207	800,000	5,418,271	3,821,771
J1372	-	-	-	-	21,350,104	7,500,000	-	-	28,850,104	400,000	3,084,135	2,285,885
J1373	-	-	-	-	-	10,453,000	1,609,000	-	10,453,000	380,000	2,117,528	-
J1402	-	-	-	-	-	-	-	-	-	-	-	-
J1415	-	-	-	-	-	1,959,500	2,484,500	-	1,959,500	1,000,000	-	-
J1421	19,600,000	-	TBD	-	-	15,000,000	-	-	34,600,000	1,200,000	1,553,225	4,166,775
J1424	2,500,000	-	-	-	90,618,429	8,978,660	322,040	-	102,097,089	800,000	8,439,655	11,179,762
J1425	-	-	-	-	216,390	-	-	-	216,390	840,000	-	-
J1431	-	-	-	-	8,678,439	608,000	809,000	-	9,286,439	800,000	3,382,034	-
J1434	-	-	-	792,000	211,598	-	-	-	211,598	400,000	1,921,525	-

Project	ERIS Network Upgrades ($)				NRIS Network Upgrades ($)	Interconnection Facilities ($)		Shared Network Upgrades ($)	Total Network Upgrade Cost for Milestone Calculation ($)	M2 ($)	M3 ($)	M4 ($)
	Thermal	Stability	Short Circuit	Affected System	Deliverability	TO Network Upgrades	TO – Owned Direct Assigned					
a	b	c	d	e	f	g	h	i	j = b+c+d+f+g+i	$4,000/MW	10% of (j) from Phase I-M2	(20% of (j) from Phase II) – M2 – M3
J1436	-	-	-	-	-	-	-	-	-	200,000	157,619	-
J1437	-	-	-	500,000	-	2,500,000	-	-	2,500,000	720,000	-	-
J1440	-	-	-	946,000	379,113	12,064,000	1,496,000	-	12,443,113	640,000	2,419,980	-
J1441	-	-	-	-	19,621,561	3,255,000	3,937,000	-	22,876,561	800,000	3,675,142	100,170
J1442	-	-	-	-	44,284,120	13,578,000	2,012,000	-	57,862,120	660,000	5,668,331	5,244,093
J1452	-	-	-	-	5,261,535	10,250,000	811,000	-	15,511,535	800,000	2,311,132	-
J1455	-	-	-	-	12,033,496	10,814,000	1,071,000	-	22,847,496	600,000	1,957,465	2,012,035
J1458	-	-	-	858,000	13,572,412	4,380,000	136,000	-	17,952,412	800,000	3,839,272	-
J1463	-	-	TBD	-	22,427,269	-	128,000	-	22,427,269	600,000	2,934,367	951,087
J1465	-	-	-	-	32,493,325	15,000,000	-	-	47,493,325	600,000	3,130,304	5,768,361

Analyses performed demonstrate the following transmission facilities are required to reliably interconnect this group of generators to the transmission system. ERIS Network Upgrades and NRIS Network Upgrades are shown in Table 3.

Table 3: ERIS & NRIS Upgrades (Planning level cost estimates)

Network Upgrade	TO	GI projects requiring upgrade for ERIS	GI projects requiring upgrade for NRIS	Cost of solution ($)	TO Self-Fund Election
LTCR for Purvis Bulk 230/161 kV Transformers	CE		J1249	$ -	NA
LTCR for Oak Grove 161/69 kV Transformer	CE	J1249		$ -	NA
Morrow - Purvis Bulk 161 kV New Line, Upgrade Purvis Bulk Substation	CE	J1249		$ 5,847,500	Yes
Cooper 230/138 kV Transformer Upgrade	Cleco	J1282, J1424		$ 5,000,000	Yes
Cocodrie – Big Cajun 230 kV New Line	Cleco		J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455, J1465	$198,750,000	Yes
J1217 POI - Westfork 230 kV Reconductor	Cleco		J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465	$ 20,448,000	Yes
Westfork - Wells 230 kV Reconductor	Cleco		J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465	$ 14,764,000	Yes
Andrus - Refuge 115 kV Upgrade	EES		J1458	$ -	NA
Bayou Labutte - Pt. Pleasant: New Line	EES		J1246, J1452, J1279, J1282, J1424, J1442, J1205, J1286, J1217	$ 14,800,000	No
Bayou Labutte - Willow Glen 500 kV Upgrade	EES		J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455	$ 22,900,000	No
Bayou Labutte 500/230 kV 2nd Autotransformer	EES		J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442	$ 30,000,000	No
Goosport - LC Bulk North 138 kV Upgrade	EES		J1279, J1282, J1424	$ 8,900,000	No
Bogalusa - Adams Creek 230 kV Upgrade	EES		J1239, J1281, J1294, J1458	$ 15,000,000	No
LC Bulk North - Henning 138 kV Upgrade	EES		J1279, J1282, J1424, J1442	$ 45,400,000	No
Coly - Moler 230 kV Upgrade	EES	J1421		$ 19,600,000	No
LC Bulk South - Lowe Grout Rd 138 kV Upgrade	EES		J1279, J1282, J1424, J1442	$ 18,000,000	No
Lowe Grout Rd - Jennings 138 kV Upgrade	EES		J1279, J1282, J1424, J1442	$ 35,700,000	No
Greenville - SE Greenville 115 kV Reconductor	EES		J1458	$ 5,300,000	No
Nelson - Goosport 138 kV Upgrade	EES		J1279, J1282, J1424	$ 20,600,000	No
Isola SS - Belzoni 115 kV Upgrade	EES		J1294, J1458	$ 500,000	No
Nelson - LC Bulk South 138 kV Upgrade	EES		J1279, J1282, J1424	$ 29,500,000	No
Gypsy - Ironman 230 kV Upgrade	EES		J1441	$ 500,000	No
Frisco - Convent 230 kV Upgrade	EES		J1431, J1441	$ 23,800,000	No
J1368 POI - Fancy Point 230 kV Upgrade	EES		J1368, J1372, J1463	$ 39,300,000	No
J639 Tap - Addis 230 kV Upgrade	EES		J1368, J1372, J1463	$ 45,400,000	No
Pelican Road - Jacinto 138 kV Uprate	EES		J1442	$ 13,700,000	No
Tezcuco - Frisco 230 kV Circuit #1 Upgrade	EES		J1431, J1441	$ 4,000,000	No
Ray Braswell - Franklin 500 kV Upgrade	EES		J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458	$ 3,000,000	No
Sabine - Mud Lake 230 kV Reconductor	EES		J1279, J1442	$ 900,000	No
Big Cajun - Fancy Point 500 kV Upgrade	EES		J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455	$ 54,200,000	No
Waterloo – Big Cajun 230 kV Upgrade	EES		J1205, J1217, J1282, J1286, J1424, J1463	$3,100,000	No

Note:

1) Details pertaining to upgrades, costs, and the execution plan for interconnection of the generating facility at the POI will be documented in the Facility Study for Interconnecting Generator.
2) Facilities that have been included as base case assumptions and the level of interconnection service that would be conditional upon these facilities being in service will be documented in the GIA (Generator Interconnection Agreement) for each respective GI request successfully achieving GIA execution.
3) A detailed summary of the estimated cost of Network Upgrades on a per project basis can be found in Appendix B – Network Upgrade Table Per Project (CEII).

2. FERC Order 827 Compliance Review

The Final Rule of FERC Order 827 "Reactive Power Requirements for Non-Synchronous Generation", which was issued June 16, 2016, states that "Under this Final Rule, newly interconnecting non-synchronous generators that have not yet executed a Facilities Study Agreement as of the effective date of this Final Rule will be required to provide dynamic reactive power within the range of 0.95 leading to 0.95 lagging at the high-side of the generator substation." As such, this Final Rule applies to all wind and solar projects included in the DPP 2019 Cycle 1 South study cycle.

In this study, the power factor at the high-side of the generator substation for each inverter-based project was calculated and reviewed. The study method is to set Qgen of each study project at its Qmax, solve the case, then record the P and Q injection on the high side of the generator substation to calculate the lagging power factor (injecting VAR to the system). The same process is then repeated by setting Qgen at Qmin to calculate the leading power factor (absorbing VAR from the system).

The results show that all projects meet the requirement to maintain 0.95 leading power factor, however, 32 projects do not meet the requirement to provide reactive power capability corresponding to 0.95 lagging power factor, as highlighted in red below in Table 4. Additional reactive support will be needed for these projects to meet the FERC requirement on reactive power capability prior to the completion of their GIA.

Table 4: FERC Order 827 Review Results

Project	Pmax (MW)	Reactive Power Capability (MVAr)	Proposed VAR Compensation	VAR Injection			VAR Absorption			Meet FERC Order 827 Requirement?	Add'l VAR Needed (MVAr)
				P (MW)	Q (MVAr)	Lagging p.f (pu)	P (MW)	Q (MVar)	Leading p.f. (pu)		
J1205	125	±41.0900	1 x 18 MVAr Cap	123.4	37.9	0.9559	123.2	-63.5	-0.8889	**No**	**2.7**
J1215	155	±50.94	2 x 3 MVAr Cap	154	38.5	0.970	153.7	-76.3	-0.896	**No**	**12.5**
J1217	200	±65.74	2 x 3 MVAr Cap	198.3	39.4	0.9808	197.7	-110.3	-0.8733	**No**	**25.8**
J1219	100	±32.87	1 x 3 MVAr Cap	99.1	18.8	0.9825	98.8	-56.4	-0.8685	**No**	**13.8**
J1223	75	±24.6500	1 x 4 MVAr Cap	74.7	23	0.956	74.6	-32.2	-0.918	**No**	1.5
J1239	100	±50	None	99	39.2	0.9298	98.6	-66.6	-0.8287	**Yes**	
J1257	20	±9.6900	None	19.8	6.2	0.9543	19.8	-19.7	-0.7089	**No**	**0.3**
J1258	50	±16.4300	1 x 2 MVAr Cap	49.3	14.8	0.9578	49.2	-22.5	-0.9094	**No**	**1.4**
J1279	102.6	±63.5900	None	99.9	47.2	0.9042	98.3	-103.3	-0.6894	**Yes**	
J1281	75	±50.2000	None	74.9	38.2	0.8908	74.1	-74.5	-0.7052	**Yes**	
J1282	200	±133.8600	None	199.3	98.7	0.8961	195.1	-214.7	-0.6725	**Yes**	
J1286	125	±41.1000	1 x 4 MVAr Cap	123.2	45.6	0.938	122.8	-47.8	-0.932	**Yes**	
J1294	99	±40.8000	None	99	25.5	0.9684	97.1	-67.1	-0.8227	**No**	**7.0**
J1347	175	±101.3700	None	172.8	83.2	0.9010	169.9	-155.4	-0.7379	**Yes**	
J1361	50	±17.3900	None	52.1	8.3	0.9875	51.8	-29.5	-0.8690	**No**	**8.8**
J1367	95	±32.63	None	94.1	20.6	0.9769	93.8	-47.9	-0.8906	**No**	**10.3**
J1368	200	±65.7000	1 x 10 MVAr Cap	199.1	27.6	0.9905	197.2	-142.6	-0.8103	**No**	**37.8**
J1372	100	±38.5950	1 x 12 MVAr Cap	100.6	9.3	0.9958	98.2	-62.1	-0.8452	**No**	**23.8**

Project	Pmax (MW)	Reactive Power Capability (MVAr)	Proposed VAR Compensation	VAR Injection			VAR Absorption			Meet FERC Order 827 Requirement?	Add'l VAR Needed (MVAr)
				P (MW)	Q (MVAr)	Lagging p.f (pu)	P (MW)	Q (MVar)	Leading p.f. (pu)		
J1373	95	±45.6700	1 x 6 MVAr Cap	95	38.2	0.9278	94.4	-73.2	-0.7903	**Yes**	
J1402 (w J919)	180	±79.25	1 x 42 MVAr Cap	180	95.1	0.8842	179	-131.7	-0.8055	**Yes**	
J1415	250	±82.18	2 x 4 MVAr Cap	245.3	61.5	0.9700	244.1	-124.7	-0.8905	**No**	**19.1**
J1421	300	±50.7400	2 x 38 MVAr Cap	295.2	135.8	0.9085	293.5	-139.8	-0.9028	**Yes**	
J1424	200	±65.7400	1 x 14 MVAr Cap	197.8	46.3	0.9737	197.1	-110.9	-0.8715	**No**	**18.7**
J1431	90	±49.3000	None	88.5	40.2	0.910	88.2	-50.2	-0.869	**Yes**	
J1434	100	±32.87	2 x 7 MVAr	98.9	32.7	0.9494	98.6	-53.9	-0.8775	**Yes**	
J1436	50	±16.53	3 x 7.5	49.9	37	0.8033	49.8	-20.9	-0.9221	**Yes**	
J1437	180	±87.38	4 x 10.5 MVAr Cap	175.4	115.2	0.8358	151.5	-162.4	-0.4227	**Yes**	
J1440	150	±49.303	1 x 5 MVAr Cap	148.9	32.3	0.977	148.9	-84.4	-0.870	**No**	**16.7**
J1441	200	±71	2 x 14 MVAr Cap	200.1	66	0.9497	199.1	-121.1	-0.8544	**Yes**	
J1442	105	±39.7400	1 x 6 MVAr Cap	104.5	36.4	0.944	104.3	-52.3	-0.894	**Yes**	
J1452	75	±24.65	2 x 3 MVAr Cap	74.7	28.2	0.936	74.7	-28.2	-0.936	**Yes**	
J1455	150	±49.3	2 x 11 MVAr Cap	148.4	50.2	0.9473	147.8	-82.1	-0.8742	**Yes**	
J1458	200	±65.74	2 x 14 MVAr Cap	197.4	63.7	0.9517	197	-112.9	-0.8676	**No**	**1.2**
J1463	150	±52.4	None	147.4	23.5	0.9875	146.3	-93.8	-0.8418	**No**	**24.9**
J1465	150	±49.3	2 x 14 MVAr Cap	148.6	61.3	0.9244	148	-76.2	-0.8891	**Yes**	

3. Model Development and Study Assumptions

3.1. Base Case Models

The origin of the DPP 2019 Cycle 1 South models is the MTEP19 models with the Bench Cases including all pre-queued projects and associated Network Upgrades, while the Study Cases contain all of the interconnection requests in DPP 2019 Cycle 1 South Phase II, in addition to all the facilities in the Bench Cases.

- Bench Cases
  - DPP19C1-Phase2-2024SUM-Bench_v4
- Study Cases
  - DPP19C1-Phase2-2024SUM-Study-Discharging_v5

3.2. Monitored Elements

Under NERC category P0 conditions (system intact) branches were monitored for loading above the normal rating (PSS®E Rating A), and for NERC category P1-P7 conditions branches were monitored for emergency rating (PSS®E Rating B). Voltage limits were specified for system intact and contingent conditions as per applicable Transmission Owner Planning Criteria.

3.3. Contingencies

The following contingencies were considered in the steady state analysis:

1) NERC Category P0 (system intact -- no contingencies)
2) NERC Category P1 contingencies
    a. Single element outages, at buses with a nominal voltage of 68 kV and above
    b. Multiple element NERC Category P1 contingencies
3) NERC Category P2-P7 contingencies
4) For all the contingencies and post-disturbance analyses, cases were solved with transformer tap adjustment enabled, area interchange adjustment disabled, phase shifter adjustment disabled (fixed) and switched shunt adjustment enabled.

3.4. Study Methodology

Non-linear (AC) contingency analysis was performed on the benchmark and study cases, and the incremental impact of the DPP 2019 Cycle 1 South generating facilities was evaluated by comparing the steady state performance of the transmission system in the Bench and Study Cases. Analyses used PSS®E version 33.11.0 and TARA version 2001.

3.5. Performance Criteria

A branch is considered a thermal constraint if the following conditions are met:

1) The generator has a larger than twenty percent (20%) sensitivity factor on the overloaded facilities under post-contingent condition (see NERC TPL) or five percent (5%) sensitivity factor under system-intact condition, or
2) The overloaded facility or the overload-causing contingency is at generator's outlet, or
3) The megawatt impact due to the generator is greater than or equal to twenty percent (20%) of the applicable rating (normal or emergency) of the overloaded facility, or
4) For any other constrained facility, where none of the Study Generators meet one of the above criteria, however, the cumulative MW impact of the group of study generators is greater than twenty percent (20%) of the rating of the facility, then only those study generators whose individual MW impact is greater than five percent (5%) of the rating of the facility and has DF greater than five percent (5%) will be responsible for mitigating the cumulative MW impact constraint, or
5) Impacts on Affected Systems would be classified as injection constraints based on the Affected Systems' criteria, or
6) Any other applicable Transmission Owner Local Planning Criteria are met.

A bus is considered a voltage constraint if both of the following conditions are met:

1) The bus voltage is outside of the applicable normal or emergency limits for the post change case, and
2) The change in bus voltage is greater than 0.01 per unit

All generators must mitigate thermal injection constraints and voltage constraints in order to obtain any type of Interconnection Service. Further, all generators requesting NRIS must mitigate constraints found by using the Deliverability algorithm to meet the system performance criteria for NERC category P1 events, if DFAX due to the study generator is equal to or greater than 5%.

4. Thermal Analysis

The thermal analysis results for 2024 Summer show generator projects J1249, J1282, J1421 and J1424 causing constraints. The details pertaining to the thermal analysis can be found in Appendix C – MISO ERIS Analysis (CEII).

4.1. J1249

Thermal analysis determined that this generator contributes to the following constraints:

1. Purvis – Oak Grove 69 kV
2. Purvis – Lumber 69 kV
3. Oak Grove 161/69 kV Transformer

Per MISO cost allocation rules, the project receives cost allocation for upgrades required to mitigate the listed constraints. The planned upgrade is to add a new line from Morrow – Purvis and upgrade the Purvis substation. The cost estimate is $6.772 million, with the project allocated 100% of the cost.

4.2. J1282

Thermal analysis determined that this generator contributes to the following constraints:

1. Cooper 230/138 kV Transformer

Per MISO cost allocation rules, the project receives cost allocation for upgrades required to mitigate the listed constraint. The planned upgrade is an upgrade of the Cooper 230/138 kV transformer. The cost estimate is $5 million, with the project allocated 50% of the cost.

4.3. J1421

Thermal analysis determined that this generator contributes to the following constraints:

1. Coly – Moler 230 kV

Per MISO cost allocation rules, the project receives cost allocation for upgrades required to mitigate the listed constraint. The planned upgrade is to upgrade the Coly - Moler line. The cost estimate is $19.6 million, with the project allocated 100% of the cost.

4.4. J1424

Thermal analysis determined that this generator contributes to the following constraints:

1. Cooper 230/138 kV Transformer

Per MISO cost allocation rules, the project receives cost allocation for upgrades required to mitigate the listed constraint. The planned upgrade is an upgrade of the Cooper 230/138 kV transformer. The cost estimate is $5 million, with the project allocated 50% of the cost.

5. Voltage Analysis

The voltage analysis results for 2024 Summer show no generator projects causing voltage violations. The details pertaining to the voltage analysis can be found in Appendix C – MISO ERIS Analysis (CEII). Although a low voltage was initially identified on the Fourchon 115 kV bus, it was determined that changing the settings of existing equipment would be sufficient to mitigate the constraint and no network upgrades were required.

6. Stability Analysis

Two stability analyses were performed on the 2019-Cycle 1-South-Phase II study units to determine their dynamics performance – one using the dispatch from the ERIS discharging case and one capturing the Entergy Local Planning Criteria (LPC) for new generator interconnections. In the base analysis, J1436 was shown to not return to its nominal active power output following fault clearing for the 3-phase fault on the line from J1436 POI - Sterling. If this unacceptable generator performance cannot be solved by changing generator parameters, it may be assigned a network upgrade cost in Phase 3.

The details pertaining to the stability analysis can be found in **Error! Reference source not found.** and **Error! Reference source not found.**.

6.1. Model Development

The following summer peak 2024 models were developed based on Phase II study models. The Entergy LPC stability models were developed based on the Phase II stability study models and were adjusted in order to comply with Entergy's LPC by fully dispatching nearby local generation.

- Bench Case
  - DPP19C1-Phase2-2024SUM-Bench
  - DPP19C1-Phase2-2024SUM-Bench_Entergy LPC_v1
- Study Case
  - DPP19C1-Phase2-2024SUM-Study
  - DPP19C1-Phase2-2024SUM-STudy_Entergy LPC_v1

6.2. Study Methodology

The purpose of the study is to identify potential angular instabilities, voltage dip violations, and damping violations, if any, due to the interconnection of the projects in the DPP 2019-1 South study cycle under disturbance conditions, and the impact of all study projects on the system stability performance.

The fault scenarios simulated in this study cover faults simulated as part of the MTEP19 analysis as well as selected three-phase (3PH) faults with normal clearing and single line to ground (SLG) faults with delayed clearing. Dynamic simulations of fault scenarios were performed using the DSATools TSAT program (version 19.0.10).

Fault scenarios were first simulated using the study case and the results were reviewed. For scenarios that exhibited instability, the bench case was simulated such that the stability performance with and without the proposed interconnection projects could be compared. Any new stability problems attributed to the proposed interconnection projects are flagged and reported.

For each fault, rotor angles, speed deviation, and electrical power outputs of the study generators and the generators in the proximity were monitored. Voltages at selected buses, including all POI buses of the study projects and all future buses, were also monitored.

In addition Section 10 of the "Entergy Transmission Local Planning Criteria"[1] states the following:

- **New Generator Interconnections:** *For Generator Interconnection (GI) Stability Studies and TPL Reliability Stability Studies only, new generation requests (for GI studies) or generation with an executed Generator Interconnection Agreement (GIA) since performance of the last reliability assessment (for TPL studies) will be studied with all generation local to the new generator at full output to determine whether the aggregate of the generation can be injected into the transmission system without experiencing transient stability issues for local faults.*

For the purposes of the Entergy LPC study local generation has be defined as generation located within one breaker substation from the Point of Interconnection if interconnecting to an existing substation or located within one breaker substation from a termination substation when tapping a line.

The fault scenarios simulated in the Entergy LPC study cover selected 3PH and 3PH P3 contingency faults with normal clearing. In each fault scenario, a generator is disconnected at 0.5 seconds and the simulation continues to run until 5.0 seconds at which point the fault is initiated and the total simulation run time is 20.0 seconds.

6.3. Study Criteria

Transient stability study criteria are based upon Section 11.A of the "Entergy Transmission Local Planning Criteria".

[1] https://cdn.misoenergy.org/Entergy%20TO%20Planning%20Criteria108226.pdf

In addition, all renewable study projects are subject to the voltage ride-through and frequency ride-through criteria specified in NERC PRC-024-2 ("Generator Frequency and Voltage Protective Relay Settings"[2]) to check if the projects remain connected during frequency and voltage excursions. Specifically, PRC-024-2 mandates that protective relaying should be set in such a way that:

- Voltage Ride-Through: a generator shall withstand zero voltage at the POI (typically the primary side of the station transformer) for up to 0.15 seconds (9 cycles) and the ensuing voltage recovery period for three phase faults.
- Frequency Ride-Through: a generator shall maintain continuous operation between 59.5 and 60.5 Hz.

6.4. Study Results

The stability analyses showed that J1436 failed to recover to its nominal active power level after 3PH fault clearing. The complete list of 3PH and SLG faults simulated as well as their corresponding results and plots are included in **Error! Reference source not found.** and **Error! Reference source not found.**.

7. Short Circuit Analysis

Short circuit analysis was performed utilizing ASPEN software. Single line to ground faults and three phase faults were evaluated for pre- and post-project cases (similar to Bench and Study models). The short circuit studies for the DPP 2019-1 South study cycle indicate that the study generators J1246, J1421, and J1463 have adverse impacts on circuit breaker capability that require upgrades. Cost estimates for the required upgrades will be provided in phase 3. The details pertaining to the short circuit analysis are presented in **Error! Reference source not found.**.

8. Affected System Impact Study

The details pertaining to the AECI, SOCO, SPP, and TVA Affected Systems studies are in Appendix H – AECI Affected Systems Study Report (CEII), Appendix I – SOCO Affected Systems Study Report (CEII), Appendix J – SPP Affected Systems Study Report (CEII) and Appendix K – TVA Affected Systems Report (CEII). MLGW and PowerSouth did not study any projects in the DPP 2019 Cycle 1 South Phase II analysis. Projects not listed in this section did not contribute to any of the relevant constraints.

8.1. J1215

The TVA Study identified that this generator contributes to the following constraints:

1. Batesville 161 kV #1
2. Batesville 161 kV #2

Per cost allocation rules, this project is assigned costs for upgrades required to mitigate the listed constraints. The planned upgrades to replace breakers and switches as well as buswork at the Batesville 161 kV sub and will involve work by both TVA and Cooperative for a total of $3.3 million. This project is allocated 27% of the cost.

8.2. J1249

The SOCO Study identified the following costs for J1249.

1. Carriere SW – Marion South 230 kV

Per SOCO cost allocation rules, this project is assigned costs for the planned upgrade to build a new 230 kV 3 breaker ring switching station on Hattiesburg SW – Adams Creek 230 kV line, construct a new 230 kV 3 breaker ring bus at Carriere SW, and construct a new 33 mile line between Carriere SW and Marion S for $52.7 million. This project is allocated 100% of the cost.

[2] http://www.nerc.com/pa/Stand/Reliability%20Standards/PRC-024-2.pdf

2. Kiln – Bayou Lacroix 115 kV

Per SOCO cost allocation rules, this project is assigned costs for the planned upgrade to reconductor/rebuild 6.2 miles of 115 kV line from Kiln – Bayou Lacroix for $8.22 million. This project is allocated 100% of the cost.

3. Hattiesburg Hwy 11 – Hattiesburg Co. Drive

Per SOCO cost allocation rules, this project is assigned costs for the planned upgrade to rebuild 3.2 miles from Hattiesburg Hwy 11 – Hattiesburg Co Drive for $2.085 million. This project is allocated 100% of the cost.

8.3. J1294

The TVA Study identified that this generator contributes to the following constraints:

1. Batesville 161 kV #1
2. Batesville 161 kV #2

Per cost allocation rules, this project is assigned costs for upgrades required to mitigate the listed constraints. The planned upgrades to replace breakers and switches as well as buswork at the Batesville 161 kV sub and will involve work by both TVA and Cooperative for a total of $3.3 million. This project is allocated 25.8% of the cost.

8.4. J1347

The SOCO Study identified the following costs for J1347.

1. Forest Industrial – Newton 115 kV

Per SOCO cost allocation rules, this project is assigned costs for the planned upgrade to reconductor/rebuild 23 miles of Forest Industrial – Newton line for $14.2 million. This project is allocated 100% of the cost.

8.5. J1434

The TVA Study identified that this generator contributes to the following constraints:

1. Batesville 161 kV #1
2. Batesville 161 kV #2

Per cost allocation rules, this project is assigned costs for upgrades required to mitigate the listed constraints. The planned upgrades to replace breakers and switches as well as buswork at the Batesville 161 kV sub and will involve work by both TVA and Cooperative for a total of $3.3 million. This project is allocated 7.25% of the cost.

8.6. J1437

The AECI Study identified that this generator contributes to the following constraints:

1. Kingdom City 345/151 kV Transformer
2. Kingdom City – Williamsburg 161 kV
3. Montgomery City – Williamsburg 161 kV
4. Thomas Hill 161 kV Bus tie
5. Reform – Chamois 69 kV
6. Enon 345/161 kV Transformer
7. Thomas Hill 345/161 kV Transformer

Per cost allocation rules, the project is assigned costs for upgrades required to mitigate the listed constraints. This project's costs are approximately $500,000.

8.7. J1440

The TVA Study identified that this generator contributes to the following constraints:

1. Batesville 161 kV #1
2. Batesville 161 kV #2

Per cost allocation rules, this project is assigned costs for upgrades required to mitigate the listed constraints. The planned upgrades to replace breakers and switches as well as buswork at the Batesville 161 kV sub and will involve work by both TVA and Cooperative for a total of $3.3 million. This project is allocated 26% of the cost.

8.8. J1458

The TVA Study identified that this generator contributes to the following constraints:

1. Batesville 161 kV #1
2. Batesville 161 kV #2

Per cost allocation rules, this project is assigned costs for upgrades required to mitigate the listed constraints. The planned upgrades to replace breakers and switches as well as buswork at the Batesville 161 kV sub and will involve work by both TVA and Cooperative for a total of $3.3 million. This project is allocated 13.5% of the cost.

9. Deliverability Analysis

Generator interconnection projects have to pass Generator Deliverability Study to be granted NRIS. If the generator is deemed not fully deliverable, the customer can choose either to change the project to an Energy Resource project or to proceed with the system upgrades that will make the generator fully deliverable. Generator Deliverability Study ensures that the Network Resources, on an aggregate basis, can meet the MISO aggregate load requirements during system peak condition without getting bottled up. The wind and solar generators are tested at 100% of their maximum output level which then can be used to meet Resource Adequacy obligations, under Module E, of the MISO Transmission and Energy Market Tariff (TEMT).

The MISO Generator Deliverability Study whitepaper describing the algorithm can be found in BPM 015 – Generation Interconnection, Appendix C.

9.1. Determining the MW Restriction

If one facility is overloaded based on the assessed “severe yet credible dispatch” scenario described in the study methodology, and the generator under study has a DF greater than 5%, part or all of its output it is not deliverable. The restricted MW is calculated as following:

(MW restricted) = (worst loading – MW rating) / (generator sensitivity factor)

If the result is larger than the maximum output of the generator, 100% of this generator’s output is not deliverable.

9.2. Deliverability Study Results

The limiting constraints (monitored facilities – contingency facility pairs) seen in the deliverability analysis for the 2024 Summer case are summarized in Appendix D – MISO Deliverability Analysis (CEII).

9.2.1 J1205

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 5 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 5: NRIS Results for J1205

J1205 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
303000 6BIG_CAJUN1% 230 335827 6WATERLOO! 230 1	26.86	0.1087	J1205, J1217, J1282, J1286, J1424, J1463	$ 278,141	$ 3,100,000
42180 J1217 POI 230 500920 WSTFORK6 230 1	39.54	0.2468	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 2,249,573	$20,448,000
500190 COCODR 6 230 500880 VILPLT 6 230 1	46.47	0.2303	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 5,270,000	$198,750,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	63.66	0.0946	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 464,817	$ 14,800,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	64.01	0.2468	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 1,624,252	$14,764,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	74.16	0.2778	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 962,176	$22,900,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	78.33	0.3049	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 4,933,233	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	89.28	0.0884	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 2,022,875	$198,750,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	90.41	0.0737	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 952,538	$15,000,000
500540 MANUEL 4 138 500300 EUNICE 4 138 1	90.98	0.0788	J1205, J1217, J1286,	$ 1,803,196	$198,750,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	91.52	0.0886	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 2,027,451	$198,750,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	99.29	0.2468	J1205, J1279, J1282, J1286, J1424, J1442,	$ 5,270,000	$198,750,000

			J1452,		
500300 EUNICE 4 138 335366 4RICHARD% 138 1	108.21	0.0788	J1205, J1217, J1286,	$ 1,803,196	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	114.18	0.0886	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 2,027,451	$198,750,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	125	0.0886	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 2,027,451	$198,750,000

9.2.2 J1215

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 6 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 6: NRIS Results for J1215

J1215 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	155	0.0593	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$317,794	$3,000,000

9.2.3 J1217

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 7 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 7: NRIS Results for J1217

J1217 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (21.49%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
303000 6BIG_CAJUN1% 230 335827 6WATERLOO! 230 1	42.98	0.0936	J1205, J1217, J1282, J1286, J1424, J1463	$ 382,150	$ 3,100,000

42180 J1217 POI 230 500920 WSTFORK6 230 1	74.36	0.7896	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 11,515,481	$20,448,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	101.86	0.1173	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 922,166	$ 14,800,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	102.42	0.7896	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 8,314,484	$14,764,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	118.66	0.3472	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 1,924,074	$22,900,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	125.32	0.3818	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 9,883,940	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	142.84	0.0946	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 3,463,601	$198,750,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	144.66	0.0913	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 1,888,015	$15,000,000
500540 MANUEL 4 138 500300 EUNICE 4 138 1	145.58	0.1522	J1205, J1217, J1286,	$ 5,572,516	$198,750,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	158.86	0.0948	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 3,470,923	$198,750,000
500300 EUNICE 4 138 335366 4RICHARD% 138 1	173.14	0.1522	J1205, J1217, J1286,	$ 5,572,516	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	182.68	0.0948	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 3,470,923	$198,750,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	200	0.0948	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 3,470,923	$198,750,000

9.2.4 J1219

This generator is determined to be fully deliverable to 100 MW.

9.2.5 J1223

This generator is determined to be fully deliverable to 75 MW.

9.2.6 J1239

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 8 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 8: NRIS Results for J1239

J1239 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0.0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	0	0.0879	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458	$212,739	$3,000,000
336129 6BOGALUSA 230 336131 6ADMSCRK% 230 Z1	41.23	0.0761	J1239, J1281, J1294, J1458	$5,528,998	$35,000,000
336130 8BOGALUS 500 336129 6BOGALUSA 230 1	70	0.0761	J1239, J1281, J1294, J1458	$-	$-

9.2.7 J1246

This generator is determined to be deliverable up to 262.11 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 9 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 9: NRIS Results for J1246

J1246 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	262.11 MW (37.2%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	361.03	0.3733	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 10,344,947	$ 14,800,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	503.53	0.6337	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$12,378,981	$22,900,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	705	0.2906	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$21,183,094	$15,000,000

9.2.8 J1249

This generator is determined to be deliverable up to 509.08 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 10 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 10: NRIS Results for J1249

J1249 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	509.08 MW (71.45%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
318004 5PURVIS 161 388310 6PURVIS B1 230 1	511.72	0.5059	J1249	$ -	$ -

318004 5PURVIS 161 388301 6PURVIS B2 230 1	600	0.5043	J1249	$ -	$ -

9.2.9 J1257

This generator is determined to be fully deliverable to 20 MW.

9.2.10 J1258

This generator is determined to be fully deliverable to 50 MW.

9.2.11 J1279

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 11 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 11: NRIS Results for J1279

J1279 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
335200 4NELSON% 138 335219 4GOOSPORT 138 2	0	0.051	J1279, J1282, J1424,	$ 3,851,173	$20,600,000
335200 4NELSON% 138 335207 4LC_BULK_S! 138 1	9.15	0.0511	J1279, J1282, J1424,	$ 5,515,734	$29,500,000
335219 4GOOSPORT 138 335210 4LC_BULK_N! 138 1	26.2	0.051	J1279, J1282, J1424,	$ 1,663,856	$8,900,000
42180 J1217 POI 230 500920 WSTFORK6 230 1	38.8	0.0738	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 538,147	$20,448,000
500190 COCODR 6 230 500880 VILPLT 6 230 1	43.95	0.0738	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 1,351,024	$198,750,000
335210 4LC_BULK_N! 138 335284 4HENNING% 138 1	46.24	0.0678	J1279, J1282, J1424, J1442,	$ 7,452,714	$45,400,000
335207 4LC_BULK_S! 138 335220 4LOWEGROUT 138 1	51.21	0.062	J1279, J1282, J1424, J1442,	$ 2,952,030	$18,000,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	52.71	0.2589	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 717,372	$22,900,000

500920 WSTFORK6 230 500940 WELLS 6 230 1	59.33	0.0738	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 388,557	$14,764,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	62.66	0.2847	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 3,685,120	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	62.82	0.0623	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 1,140,499	$198,750,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	71.42	0.0911	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 358,096	$ 14,800,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	72.79	0.0709	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 733,079	$15,000,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	73.22	0.0625	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 1,144,160	$198,750,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	80.15	0.0738	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 1,351,024	$198,750,000
334434 6SABINE% 230 335084 6MUD_LAKE% 230 1	86.57	0.177	J1279, J1442,	$ 451,032	$900,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	89.2	0.0625	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 1,144,160	$198,750,000
335220 4LOWEGROUT 138 335280 4JENNINGS1! 138 1	91.34	0.062	J1279, J1282, J1424, J1442,	$ 5,854,859	$35,700,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	100	0.0625	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 1,144,160	$198,750,000

9.2.12 J1281

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 12 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 12: NRIS Results for J1281

J1281 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	0	0.0885	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$229,490	$3,000,000
336129 6BOGALUSA 230 336131 6ADMSCRK% 230 Z1	44.46	0.063	J1239, J1281, J1294, J1458,	$4,904,170	$35,000,000
336130 8BOGALUS 500 336129 6BOGALUSA 230 1	74.81	0.063	J1239, J1281, J1294, J1458,	$-	$-
337040 6ANDRUS% 230 998764 6ANDRUS% 115 1	75	0.0855	J1281, J1458,	$-	$-

9.2.13 J1282

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 13 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 13: NRIS Results for J1282

J1282 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
335200 4NELSON% 138 335219 4GOOSPORT 138 2	0	0.0559	J1279, J1282, J1424,	$ 8,442,375	$20,600,000
335200 4NELSON% 138 335207 4LC_BULK_S! 138 1	0	0.056	J1279, J1282, J1424,	$ 12,089,279	$29,500,000
303000 6BIG_CAJUN1% 230 335827 6WATERLOO! 230 1	18.29	0.0516	J1205, J1217, J1282, J1286, J1424, J1463	$ 210,673	$ 3,100,000
335219 4GOOSPORT 138 335210 4LC_BULK_N! 138 1	52.4	0.0559	J1279, J1282, J1424,	$ 3,647,434	$8,900,000
42180 J1217 POI 230 500920 WSTFORK6 230 1	74.36	0.1078	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 1,572,149	$20,448,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	77.6	0.0993	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 780,657	$ 14,800,000
500190 COCODR 6 230 500880 VILPLT 6 230 1	87.9	0.1078	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 2,960,170	$198,750,000

335210 4LC_BULK_N! 138 335284 4HENNING% 138 1	92.49	0.0701	J1279, J1282, J1424, J1442,	$ 15,411,070	$45,400,000
335207 4LC_BULK_S! 138 335220 4LOWEGROUT 138 1	102.42	0.0642	J1279, J1282, J1424, J1442,	$ 6,113,558	$18,000,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	105.42	0.2854	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 1,581,598	$22,900,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	118.65	0.1078	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 1,135,133	$14,764,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	125.32	0.3139	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 8,126,162	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	142.85	0.0729	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 2,669,096	$198,750,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	145.57	0.0773	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 1,598,506	$15,000,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	146.43	0.0731	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 2,676,419	$198,750,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	173.14	0.1078	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 3,946,894	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	178.39	0.0731	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 2,676,419	$198,750,000
335220 4LOWEGROUT 138 335280 4JENNINGS1! 138 1	182.69	0.0642	J1279, J1282, J1424, J1442,	$ 12,125,223	$35,700,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	200	0.0731	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 2,676,419	$198,750,000

9.2.14 J1286

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 14 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 14: NRIS Results for J1286

J1286 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	Distribution Factor	Projects Associated With NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
303000 6BIG_CAJUN1% 230 335827 6WATERLOO! 230 1	7.23	0.0771	J1205, J1217, J1282, J1286, J1424, J1463	$ 234,251	$ 3,100,000
42180 J1217 POI 230 500920 WSTFORK6 230 1	22.44	0.1163	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 1,272,084	$20,448,000

500190 COCODR 6 230 500880 VILPLT 6 230 1	30.77	0.1163	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 2,262,691	$198,750,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	51.39	0.109	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 642,686	$ 14,800,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	51.82	0.1163	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 918,479	$14,764,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	63.99	0.3267	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 1,357,852	$22,900,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	68.99	0.3591	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 6,972,216	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	82.13	0.1003	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 2,754,222	$198,750,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	83.5	0.0848	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 1,315,200	$15,000,000
500540 MANUEL 4 138 500300 EUNICE 4 138 1	84.18	0.733	J1205, J1217, J1286,	$ 20,128,061	$198,750,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	94.15	0.1005	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 2,759,714	$198,750,000
500300 EUNICE 4 138 335366 4RICHARD% 138 1	104.86	0.733	J1205, J1217, J1286,	$ 20,128,061	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	105.81	0.1005	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 2,759,714	$198,750,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	112.02	0.1163	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 2,262,691	$198,750,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	125	0.1005	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 2,759,714	$198,750,000

9.2.15 J1294

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 15 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 15: NRIS Results for J1294

J1294 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	0	0.1382	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$473,045	$3,000,000

336129 6BOGALUSA 230 336131 6ADMSCRK% 230 Z1	58.68	0.0787	J1239, J1281, J1294, J1458,	$8,086,743	$35,000,000
336130 8BOGALUS 500 336129 6BOGALUSA 230 1	84.62	0.0787	J1239, J1281, J1294, J1458,	$-	$-
336994 3ISOLA+ 115 336993 3BELZONI 115 1	99	0.0921	J1294, J1458,	$250,314	$500,000

9.2.16 J1361

This generator is determined to be fully deliverable to 50 MW.

9.2.17 J1367

This generator is determined to be deliverable up to 48.65 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 16 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 16: NRIS Results for J1367

J1367 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	48.65MW (51.17%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	56.36	0.2008	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 528,566	$22,900,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	59.54	0.2263	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 2,782,738	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	69.16	0.0574	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 998,257	$198,750,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	82.26	0.0576	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 1,001,735	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	86.79	0.0576	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 1,001,735	$198,750,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	95	0.0576	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 1,001,735	$198,750,000

9.2.18 J1368

This generator is determined to be deliverable up to 73.27 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 17 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 17: NRIS Results for J1368

J1368 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	73.27 MW (56.31%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
60023 J639_TAP 230 335536 6ADDIS% 230 1	119.57	0.2949	J1368, J1372, J1463,	$21,412,707	$45,400,000
43684 J1368 POI 230 335825 6FANCY_PT% 230 1	130	1	J1368, J1372, J1463,	$21,287,500	$39,300,000

9.2.19 J1372

This generator is determined to be deliverable up to 36.63 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 18 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 18: NRIS Results for J1372

J1372 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	36.63 MW (56.35%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
60023 J639_TAP 230 335536 6ADDIS% 230 1	59.79	0.2949	J1368, J1372, J1463,	$10,706,354	$45,400,000
43684 J1368 POI 230 335825 6FANCY_PT% 230 1	65	1	J1368, J1372, J1463,	$10,643,750	$39,300,000

9.2.20 J1373

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 19 shows the NRIS results and cost estimates determined in the NRIS analysis. J1026 – Maywood is mitigated by the $45,000,000 DPP-2018-Central-Phase II Network Upgrade to rebuild the J1026 – Maywood line and no costs are allocated to J1373 at this time. If the J1026 – Maywood overload persists into DPP-2018-Central-Phase III, the rebuild of that line will be included in the DPP-2019-South-Phase III model.

Table 19: NRIS Results for J1373

J1373 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)

40264 J1026 POI 345 345435 7MAYWOOD 345 1	80.75	0.0522	J1373, J1437	$-	$-

9.2.21 J1415

This generator is determined to be fully deliverable to 250 MW.

9.2.22 J1421

This generator is determined to be fully deliverable to 300 MW.

9.2.23 J1424

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 20 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 20: NRIS Results for J1424

J1424 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
335200 4NELSON% 138 335219 4GOOSPORT 138 2	0	0.055	J1279, J1282, J1424,	$ 8,306,452	$20,600,000
335200 4NELSON% 138 335207 4LC_BULK_S! 138 1	0	0.0551	J1279, J1282, J1424,	$ 11,894,987	$29,500,000
303000 6BIG_CAJUN1% 230 335827 6WATERLOO! 230 1	18.29	0.0532	J1205, J1217, J1282, J1286, J1424, J1463	$ 217,205	$ 3,100,000
335219 4GOOSPORT 138 335210 4LC_BULK_N! 138 1	42.97	0.055	J1279, J1282, J1424,	$ 3,588,710	$8,900,000
42180 J1217 POI 230 500920 WSTFORK6 230 1	63.26	0.1108	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 1,615,901	$20,448,000
500190 COCODR 6 230 500880 VILPLT 6 230 1	74.36	0.1108	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 4,056,733	$198,750,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	87.9	0.0988	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 776,726	$ 14,800,000
335210 4LC_BULK_N! 138 335284 4HENNING% 138 1	92.49	0.0687	J1279, J1282, J1424, J1442,	$ 15,103,288	$45,400,000
335207 4LC_BULK_S! 138 335220 4LOWEGROUT 138 1	101.86	0.0629	J1279, J1282, J1424, J1442,	$ 5,989,763	$18,000,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	102.42	0.1108	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 1,166,723	$14,764,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	118.65	0.2842	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 1,574,948	$22,900,000

303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	125.32	0.3124	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 8,087,331	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	142.85	0.073	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 2,672,757	$198,750,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	145.57	0.0769	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 1,590,234	$15,000,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	146.43	0.0732	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 2,680,080	$198,750,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	173.14	0.1108	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 4,056,733	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	178.39	0.0732	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 2,680,080	$198,750,000
335220 4LOWEGROUT 138 335280 4JENNINGS1! 138 1	182.69	0.0629	J1279, J1282, J1424, J1442,	$ 11,879,697	$35,700,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	200	0.0732	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 2,680,080	$198,750,000

9.2.24 J1425

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 21 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 21: NRIS Results for J1425

J1421 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	114	0.0549	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$216,390	$3,000,000

9.2.25 J1431

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 22 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 22: NRIS Results for J1431

J1431 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336066 6FRISCO! 230 336065 6CONVNT! 230 1	74.44	0.1018	J1431, J1441,	$7,429,896	$23,800,000
336069 6TEZCUCO% 230 336066 6FRISCO! 230 1	90	0.1202	J1431, J1441,	$1,248,543	$4,000,000

9.2.26 J1434

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 23 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 23: NRIS Results for J1434

J1434 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	100	0.0612	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$211,598	$3,000,000

9.2.27 J1436

This generator is determined to be fully deliverable to 50 MW.

9.2.28 J1437

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 24 shows the NRIS results and cost estimates determined in the NRIS analysis. J1026 – Maywood is mitigated by the $45,000,000 DPP-2018-Central-Phase II Network Upgrade to rebuild the J1026 – Maywood line and no costs are allocated to J1437 at this time. J1039 – Enon Tap is mitigated by updated line ratings and no costs will be assigned to J1437 at any time. J1039 – Enon Tap ratings will be updated in the DPP-2019-South-Phase III base model. If the J1026 – Maywood overload persists into DPP-2018-Central-Phase III, the rebuild of that line will be included in the DPP-2019-South-Phase III model as well. Based on the results of the Phase II analysis, these facilities will not be listed as contingent upgrades for J1437.

Table 24: NRIS Results for J1437

J1437 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
40400 J1039 POI 345 344536 7ENON_TP 345 1	0	0.0513	J1373, J1437	$-	$-

40264 J1026 POI 345 345435 7MAYWOOD 345 1	180	0.0724	J1373, J1437	$-	$-

9.2.29 J1440

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 25 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 25: NRIS Results for J1440

J1440 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	150	0.0731	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$379,113	$3,000,000

9.2.30 J1441

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 26 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 26: NRIS Results for J1441

J1441 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336190 6GYPSY% 230 336189 6IRONMAN% 230 1	0	0.0502	J1441,	$ 500,000	$ 500,000
336066 6FRISCO! 230 336065 6CONVNT! 230 1	166.45	0.0982	J1431, J1441,	$ 16,370,104	$ 23,800,000
336069 6TEZCUCO% 230 336066 6FRISCO! 230 1	200	0.1192	J1431, J1441,	$ 2,751,457	$ 4,000,000

9.2.31 J1442

This generator is determined to be deliverable up to 27.51 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 27 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 27: NRIS Results for J1442

J1442 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	27.51 MW (26.2%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
42180 J1217 POI 230 500920 WSTFORK6 230 1	39.04	0.0731	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 559,695	$20,448,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	40.74	0.0874	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 360,730	$ 14,800,000
500190 COCODR 6 230 500880 VILPLT 6 230 1	46.15	0.0731	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 1,405,120	$198,750,000
335210 4LC_BULK_N! 138 335284 4HENNING% 138 1	48.56	0.0644	J1279, J1282, J1424, J1442,	$ 7,432,928	$45,400,000
335207 4LC_BULK_S! 138 335220 4LOWEGROUT 138 1	53.77	0.0589	J1279, J1282, J1424, J1442,	$ 2,944,649	$18,000,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	55.35	0.2477	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 720,655	$22,900,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	62.29	0.0731	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 404,115	$14,764,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	65.79	0.2725	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 3,703,565	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	74.99	0.06	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 1,153,313	$198,750,000
336010 8BYULABUTTE% 500 336011 6BYULABUTTE! 230 1	76.42	0.0681	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442,	$ 739,335	$15,000,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	76.88	0.0601	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 1,155,235	$198,750,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	84.15	0.0731	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 1,405,120	$198,750,000
334434 6SABINE% 230 335084 6MUD_LAKE% 230 1	90.9	0.1678	J1279, J1442,	$ 448,968	$900,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	93.65	0.0601	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 1,155,235	$198,750,000
335220 4LOWEGROUT 138 335280 4JENNINGS1! 138 1	95.91	0.0589	J1279, J1282, J1424, J1442,	$ 5,840,221	$35,700,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	102.98	0.0601	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 1,155,235	$198,750,000
334231 4PELCNRD! 138 334208 4JACINTO% 138 1	105	0.7246	J1442,	$ 13,700,000	$13,700,000

9.2.32 J1452

This generator is determined to be deliverable up to 16.12 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 28 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 28: NRIS Results for J1452

J1452 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	16.12 MW (21.5%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
42180 J1217 POI 230 500920 WSTFORK6 230 1	23.72	0.0911	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 498,224	$20,448,000
500190 COCODR 6 230 500880 VILPLT 6 230 1	27.88	0.0911	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 1,250,796	$198,750,000
336011 6BYULABUTTE! 230 336000 6IBERVIL% 230 1	38.2	0.0506	J1205, J1217, J1246, J1279, J1282, J1286, J1424, J1442, J1452	$ 149,174	$ 14,800,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	38.4	0.0911	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 359,731	$14,764,000
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	44.5	0.1376	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 285,951	$22,900,000
303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	54.92	0.1511	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 1,466,864	$54,200,000
500880 VILPLT 6 230 42180 J1217 POI 230 1	75	0.0911	J1205, J1279, J1282, J1286, J1424, J1442, J1452,	$ 1,250,796	$198,750,000

9.2.33 J1455

This generator is determined to be deliverable up to 76.82 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 29 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 29: NRIS Results for J1455

J1455 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	76.82 MW (51.12%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336010 8BYULABUTTE% 500 335618 8WILLOW_GL% 500 1	88.99	0.2088	J1205, J1217, J1246, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 867,828	$22,900,000

303005 8BIG_CAJUN2% 500 335835 8FANCY_PT% 500 1	93.99	0.2348	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1452, J1455,	$ 4,558,831	$54,200,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	109.18	0.06	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 1,647,590	$198,750,000
335455 4CHAMPAGNE! 138 335453 4BOBCAT 138 1	129.86	0.0602	J1205, J1217, J1279, J1282, J1367, J1286, J1424, J1442, J1455,	$ 1,653,082	$198,750,000
335453 4BOBCAT 138 303153 4KROTZ_SPRG! 138 1	137.02	0.0602	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455,	$ 1,653,082	$198,750,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	150	0.0602	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 1,653,082	$198,750,000

9.2.34 J1458

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 30 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 30: NRIS Results for J1458

J1458 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
336839 8R.BRASWELL% 500 336562 8FRANKLIN% 500 1	0	0.1633	J1215, J1239, J1281, J1294, J1425, J1434, J1440, J1458,	$959,831	$3,000,000
336129 6BOGALUSA 230 336131 6ADMSCRK% 230 Z1	100.77	0.0934	J1239, J1281, J1294, J1458,	$16,480,088	$35,000,000
336130 8BOGALUS 500 336129 6BOGALUSA 230 1	124.15	0.0934	J1239, J1281, J1294, J1458,	$-	$-
337044 3GREENVILLE! 115 337045 3SE.GREENVL 115 1	145.31	0.0681	J1458,	$5,300,000	$5,300,000
336994 3ISOLA+ 115 336993 3BELZONI 115 1	149.74	0.0535	J1294, J1458,	$249,686	$500,000
337042 3ANDRUS! 115 337068 3REFUGE+ 115 1	169.56	0.1246	J1458,	$-	$-
337040 6ANDRUS% 230 998764 6ANDRUS% 115 1	170	0.2478	J1281, J1458,	$-	$-

9.2.35 J1463

This generator is determined to be deliverable up to 0 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 31 shows the NRIS results and cost estimates determined

in the NRIS analysis.

Table 31: NRIS Results for J1463

J1463 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	0 MW (0%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
303000 6BIG_CAJUN1% 230 335827 6WATERLOO! 230 1	25.36	0.8293	J1205, J1217, J1282, J1286, J1424, J1463	$ 1,777,580	$ 3,100,000
60023 J639_TAP 230 335536 6ADDIS% 230 1	41.39	0.5284	J1368, J1372, J1463,	$13,280,939	$45,400,000
43684 J1368 POI 230 335825 6FANCY_PT% 230 1	45	0.9996	J1368, J1372, J1463,	$7,368,750	$39,300,000

9.2.36 J1465

This generator is determined to be deliverable up to 81.19 MW. Required upgrades to attain higher deliverable levels were identified in the NRIS analysis. Table 32 shows the NRIS results and cost estimates determined in the NRIS analysis.

Table 32: NRIS Results for J1465

J1465 Deliverable (NRIS) Amount in 2024 Case: (Conditional on ERIS and case assumptions)	81.19 MW (54.13%)

Next Upgrade for Higher NRIS Level (cumulative) (i.e. All upgrades must be made for 100% NRIS)	Level of Service Attainable (MW)	DFAX	Projects Associated with NRIS Constraint	NRIS Cost Allocated to Project ($)	Total Cost of Upgrade ($)
42180 J1217 POI 230 500920 WSTFORK6 230 1	93.99	0.0573	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 626,745	$20,448,000
335552 J683_TAP 138 335507 4WILBERT! 138 1	125.14	0.5719	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1465, J1455,	$ 15,704,281	$198,750,000
500920 WSTFORK6 230 500940 WELLS 6 230 1	137.02	0.0573	J1205, J1217, J1279, J1282, J1286, J1424, J1442, J1452, J1465,	$ 452,527	$14,764,000
335505 4LIVONIA 138 335552 J683_TAP 138 1	150	0.5721	J1205, J1217, J1279, J1282, J1286, J1367, J1424, J1442, J1455, J1465,	$ 15,709,773	$198,750,000

10. Shared Network Upgrades Analysis

Shared Network Upgrade (SNU) Analysis, which tests for Network Upgrades driven by higher queued interconnection projects, was performed for this System Impact Study. No Shared Network Upgrades were identified for any of the 2019-Cycle 1-South-Phase II projects.

11. Cost Allocation

The cost allocation of Network Upgrades (NU) for the study group reflects responsibilities for mitigating system impacts based on Interconnection Customer-elected level of NRIS as of the draft System Impact Study report date.

11.1 Cost Assumptions for Network Upgrades

The cost estimate for each NU identified in the System Impact Study is provided by the corresponding Transmission Owner.

11.2 Cost Allocation Methodology

The costs of NU for a set of generation projects (one or more sub-groups or entire group with identified NU) are allocated based on the MW impact from each project on the constrained facilities in the Study Case.

Cost Allocation Methodology for Thermal Constraints

1. With all study group generation projects dispatched in the Study Case, all thermal constraints are identified.
2. Distribution factor from each project on each constraint is obtained.
3. For each thermal constraint, the maximum MW contribution (increasing flow) from each project is then calculated in the Post Case without any Network Upgrades.
4. For each thermal constraint, the cost estimates for one or a subset of NU are provided by the corresponding Transmission Owner.
5. The cost of each NU is allocated based on the pro rata share of the MW contribution from each project on the constraints mitigated or partly mitigated by this NU. The methodology to determine the cost allocation of one NU is:

$$Project\ A\ Cost\ Portion\ of\ NU = \frac{Max(Proj.A\ MW\ contribution\ on\ constraint)}{\sum_i Max(Proj.i\ MW\ contrution\ on\ constraint)}$$

6. The total NU costs for each project are calculated if more than one NU is required.

Appendix A – Cost Allocation Summary (CEII)

Appendix B – Network Upgrade Table Per Project (CEII)

Appendix C – MISO ERIS Analysis (CEII)

Appendix D – MISO Deliverability Analysis (CEII)

Appendix E – MISO Stability Plots (CEII)

Appendix F – Entergy LPC Stability Plots (CEII)

Appendix G – Short Circuit Study

Appendix H – AECI Affected Systems Report

Appendix I – SOCO Affected Systems Report

Appendix J – SPP Affected Systems Report

Appendix K – TVA Affected Systems Report

Appendix L – A10 Results