PJM Generation Interconnection Request
System Impact Study Report
For
Queue Position AD1-039
(Analysis Queue Position AD2-000)
"Kendall-Tazewell & Dresden-Mole Creek"

Revision 0: December 2020
Revision 1: June 2021
Revision 2: July 2021
Revision 3: May 2022

Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner. In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed. The System Impact Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study. The Interconnection Customer seeking to interconnect a wind or solar generation facility shall maintain meteorological data facilities as well as provide that meteorological data which is required per Schedule H to the Interconnection Service Agreement and Section 8 of Manual 14D. An Interconnection Customer with a proposed new Customer Facility that has a Maximum Facility Output equal to or greater than 100 MW shall install and maintain, at its expense, phasor measurement units (PMUs). See Section 8.5.3 of Appendix 2 to the Interconnection Service Agreement as well as section 4.3 of PJM Manual 14D for additional information.

General

Queue AD1-039 is a proposal for an upgrade of 93.0 MW Energy (93.0 MW Capacity) to AB1-122 a natural gas fired combined cycle facility to be located in Grundy County, IL. It is proposed in the AD1-039 Interconnection Request (Attachment N) that the customer is selecting the POI at the interconnection substation proposed for AB1-122. The combined AB1-122 and AD1-039 facility will have a Maximum Facility Output of 1262.7 MW, with 1243 MW of this output recognized by PJM as Capacity.

The project capability is summarized below:

Queue	Summer Energy (MW)	Winter Energy (MW)	Capacity Interconnection Rights (MW)
AB1-122	1150.0	1160.0	1150.0
AD2-000 Increase	93.0	102.7	93.0
AB1-122 + AD1-039	1243	1262.7	1243

Revision History

Revision 0 – Issued December 2020
Revision 1 – Issued June 2021. The revised report updates the Summer Peak Analysis to include retooled load flow analysis results.
Revision 2 – Issued July 2021. The revised report adds a project capability summary table to the general section of the report and clarified in the Contribution to Previously Identified System Reinforcements that the AD1-039 project currently does not receive cost allocation for the Dresden 345/138 kV transformer 'B' overload reinforcement.
Revision 3 – Issued May 2022. The facility output was reduced from 112.7 MW to 93.0 MW. The revised report updates the Summer Peak Analysis to include retooled load flow analysis results. The project slid from queue position AD1-039 to AD2-000 for analysis.

Point of Interconnection

The Interconnection Customer (IC) for AD1-039 is proposing a 93.0 MW uprate to a prior PJM generation interconnection request AB1-122. The AB1-122 generation request is to be interconnected to a new interconnection substation looping Kendall-Tazewell and Dresden-Mole Creek 345kV lines (See Attachment 1). It should be noted that in between the Queue Request AB1-122 and AD1-039, an RTEP baseline, namely b2732.1 will reconfigure the Kendall-Tazewell 93505 line.

Attachment Facilities

Included in AB1-122 request

Direct Connection Network Upgrades

Included in AB1-122 request

Non-Direct Connection Network Upgrades

Included in AB1-122 request

Network Impacts

The Queue Project AD1-039 was evaluated as a 93.0 MW (Capacity 93.0 MW) injection as an uprate to AB1-122 tapping the Kendall – Tazewell and Dresden – Mole Creek 345 kV line in the ComEd area. Project AD1-039 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AD1-039 was studied with a commercial probability of 100%. Potential network impacts were as follows:

Summer Peak Analysis - 2021

Generator Deliverability

(Single or N-1 contingencies for the Capacity portion only of the interconnection)

#	Type	Contingency Name	Affected Area	Facility Description	Bus From	Bus To	Ckt	Power Flow	Loading % Initial	Loading % Final	Rating Type	Rating MVA	MW Contribution	Flowgate Appendix
1	N-1	COMED_P1-2_345-L1221 B-S	CE - CE	KENDALL ;BU-LOCKPORT ; B 345 kV line	274702	270810	1	AC	99.23	100.23	ER	1479	14.48	1
2	N-1	COMED_P1-2_345-L14321TB-N	CE - CE	KENDALL ;BU-LOCKPORT ; B 345 kV line	274702	270810	1	AC	99.06	100.06	ER	1479	14.48	

Notes:

Violation 1: ComEd SSTE rating is 1568 MVA (Not a violation)

Violation 2: ComEd SSTE rating is 1568 MVA (Not a violation)

Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

#	Contingency		Affected	Facility	Bus			Power	Loading %		Rating		MW	Flowgate
	Type	Name	Area	Description	From	To	Ckt	Flow	Initial	Final	Type	MVA	Contribution	Appendix
3	LFFB	COMED_P4_112-65-BT5-6__	CE - CE	WILTON ; B-WILTON ;3M 345 kV line	270926	275232	1	AC	94.044	95.0	LDR	1379	14.59	2
4	LFFB	COMED_P4_112-65-BT2-3__	CE - CE	WILTON ; R-WILTON ;4M 345 kV line	270927	275233	1	AC	96.014	97.01	LDR	1379	14.9	3
5	LFFB	COMED_P4_112-65-BT5-6__	CE - CE	WILTON ; 765/345 kV transformer	275232	270644	1	AC	94.028	94.99	LDR	1379	14.59	4
6	LFFB	COMED_P4_112-65-BT2-3__	CE - CE	WILTON ; 765/345 kV transformer	275233	270644	1	AC	95.997	96.99	LDR	1379	14.9	5

Note: Violation 3, 4, 5, and 6 are not valid violations. Facility loading is below 100%

Contribution to Previously Identified Overloads

(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

#	Type	Contingency Name	Affected Area	Facility Description	Bus From	Bus To	Ckt	Power Flow	Loading % Initial	Loading % Final	Rating Type	Rating MVA	MW Contribution	Flowgate Appendix
7	DCTL	COMED_P7_345-L11620_B-S_+_345-L11622_R-S	CE - CE	DRESDEN ; B-KENDALL ;BU 345 kV line	270716	274702	1	AC	103.621	105.03	LDR	1195	17.53	6
8	LFFB	COMED_P4_012-45-BT5-6__	CE - CE	DRESDEN ; B 345/138 kV transformer	270716	275179	1	AC	123.45	125.82	LDR	442	10.39	7
9	N-1	COMED_P1-2_345-L10805_B-S	CE - CE	DRESDEN ; B 345/138 kV transformer	270716	275179	1	AC	103.693	104.83	ER	442	5.09	
10	LFFB	COMED_P4_012-45-BT5-6__	CE - CE	DRESDEN ;1M-DRESDEN ; R 138 kV line	275179	271337	1	AC	120.947	123.25	LDR	442	10.39	8
11	N-1	COMED_P1-2_345-L10805_B-S	CE - CE	DRESDEN ;1M-DRESDEN ; R 138 kV line	275179	271337	1	AC	101.601	102.71	ER	442	5.09	

Notes:
Violation 7: ComEd SSTE rating is 1568 MVA (Not a violation)
Violation 8: ComEd SSTE rating is 520 MVA (Violation Valid)
Violation 9: ComEd SSTE rating is 520 MVA (Not a violation)
Violation 10: ComEd SSTE rating is 520 MVA (Violation Valid)
Violation 11: ComEd SSTE rating is 520 MVA (Not a violation)

Steady-State Voltage Requirements

(Results of the steady-state voltage studies should be inserted here)

None

Short Circuit
(Summary of impacted circuit breakers)

Not Applicable.

Affected System Analysis & Mitigation

MISO Impacts:

No MISO Impacts found in the Preliminary MISO affected system study. Final MISO impacts to be determined by MISO during the Facilities Study phase.

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

Not Applicable

Light Load Analysis - 2021

Not Required.

System Reinforcements

Short Circuit
(Summary form of Cost allocation for breakers will be inserted here if any)

Not Applicable

Stability and Reactive Power Requirement
(Results of the dynamic studies should be inserted here)

To be determined during the Facilities Study.

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None.

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

Facility	Upgrade Description	Cost	Cost Allocation	Upgrade Number
KENDALL ;BU-LOCKPORT ; B 345 kV Ckt. 1	ComEd SSTE 1568 MVA is sufficient. No upgrades required.	$0	$0	
DRESDEN ; B-KENDALL ;BU Ckt. 1	ComEd SSTE 1568 MVA is sufficient. No upgrades required.	$0	$0	

DRESDEN ; B 345/138 kV transformer **&** **DRESDEN ;1M-DRESDEN ; R 345 kV Ckt. 1**	The applicable rating is the SSTE rating which is 520 MVA. During the Facilities Study, it was investigated and determined that resolving the stuck breaker contingency causing the overload is a feasible and more economical solution ('COMED_P4_012-45-BT5-6__') such as adding a 345 kV breaker to the ring bus. This would also not increase fault levels at Dresden as a new transformer would. Baseline upgrade b3711 will address this facility overload. **Project ID**: b3711 **Description**: Install 345 kV bus tie 5-20 circuit breaker in the ring at Dresden station in series with existing bus tie 5-6. **Cost:** $4,260,000 **Time** Estimate: Projected In Service Date: 12/01/2026 **Notes**: 1. This transformer overload does not go away since Dresden unit 2 withdrew its deactivation. As a result, this facility remains loaded above ComEd applicable SSTE rating. 2. This baseline upgrade will eliminate the breaker contingency *'COMED_P4_012-45-BT5-6__'* 3. Although baseline projects to do not get cost allocated, AD1-039 (AD2-000) project can post security to expedite b3711 upgrade construction schedule. 4. AD1-039 (AD2-000) project is subject to annual interim studies should the project plan to be in service prior to 2026. **Note:** This transformer overload does not go away since Dresden unit 2 withdrew its deactivation. As a result, this facility remains loaded above ComEd applicable SSTE rating.	$4,260,000	$0	B3711
	Total Cost	**$4,260,000**	**$0**	

Light Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

None

Contingencies

Contingency Name	Description
COMED_P1-2_345-L10805_B-S	CONTINGENCY 'COMED_P1-2_345-L10805_B-S' TRIP BRANCH FROM BUS 270810 TO BUS 274702 CKT 1 / LOCKP; B 345 KENDA;BU 345 END
COMED_P1-2_345-L1221__B-S	CONTINGENCY 'COMED_P1-2_345-L1221__B-S' TRIP BRANCH FROM BUS 270716 TO BUS 270928 CKT 1 / DRESD; B 345 WOLFS; B 345 END
COMED_P1-2_345-L14321TB-N	CONTINGENCY 'COMED_P1-2_345-L14321TB-N' TRIP BRANCH FROM BUS 270928 TO BUS 270730 CKT 1 / WOLFS; B 345 ELECT; B 345 TRIP BRANCH FROM BUS 270928 TO BUS 272794 TO BUS 275334 CKT 1 / WOLFS; B 345 WOLFS; B 138 WOLFS;1C 34.5 END
COMED_P4_012-45-BT5-6__	CONTINGENCY 'COMED_P4_012-45-BT5-6__' TRIP BRANCH FROM BUS 270716 TO BUS 270736 CKT 1 / DRESD; B 345 ELWOO; B 345 TRIP BRANCH FROM BUS 270736 TO BUS 270737 CKT 1 / ELWOO; B 345 ELWOO; R 345 TRIP BRANCH FROM BUS 274702 TO BUS 270716 CKT 1 / KENDA; B 345 DRESD; B 345 END
COMED_P4_112-65-BT2-3__	CONTINGENCY 'COMED_P4_112-65-BT2-3__' TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1 / WILTO; 765 COLLI; 765 TRIP BRANCH FROM BUS 275232 TO BUS 270644 CKT 1 / WILTO;3M 345 WILTO; 765 TRIP BRANCH FROM BUS 275232 TO BUS 270926 CKT 1 / WILTO;3M 345 WILTO; B 345 TRIP BRANCH FROM BUS 275232 TO BUS 275332 CKT 1 / WILTO;3M 345 WILTO;3C 33 END
COMED_P4_112-65-BT5-6__	CONTINGENCY 'COMED_P4_112-65-BT5-6__' TRIP BRANCH FROM BUS 270644 TO BUS 270607 CKT 1 / WILTO; 765 COLLI; 765 TRIP BRANCH FROM BUS 275233 TO BUS 270644 CKT 1 / WILTO;4M 345 WILTO; 765 TRIP BRANCH FROM BUS 275233 TO BUS 270927 CKT 1 / WILTO;4M 345 WILTO; R 345 TRIP BRANCH FROM BUS 275233 TO BUS 275333 CKT 1 / WILTO;4M 345 WILTO;4C 33

	END
COMED_P7_345-L11620_B-S_+_345-L11622_R-S`	CONTINGENCY 'COMED_P7_345-L11620_B-S_+_345-L11622_R-S' TRIP BRANCH FROM BUS 270736 TO BUS 270770 CKT 1 / ELWOO; B 345 GOODI;3B 345 TRIP BRANCH FROM BUS 270737 TO BUS 270769 CKT 1 / ELWOO; R 345 GOODI;1R 345 END

Appendices

The following appendices contain additional information about each flowgate presented in the body of the report. For each appendix, a description of the flowgate and its contingency was included for convenience. However, the intent of the appendix section is to provide more information on which projects/generators have contributions to the flowgate in question. All New Service Queue Requests, through the end of the Queue under study, that are contributors to a flowgate will be listed in the Appendices. Please note that there may be contributors that are subsequently queued after the queue under study that are not listed in the Appendices. Although this information is not used "as is" for cost allocation purposes, it can be used to gage the impact of other projects/generators.

It should be noted the project/generator MW contributions presented in the body of the report and appendices sections are full contributions, whereas the loading percentages reported in the body of the report, take into consideration the commercial probability of each project as well as the ramping impact of "Adder" contributions.

Appendix 1

(CE - CE) The KENDALL ;BU-LOCKPORT ; B 345 kV line (from bus 274702 to bus 270810 ckt 1) loads from 99.232% to 100.23% (AC power flow) of its emergency rating (1479 MVA) for the single line contingency outage of 'COMED_P1-2_345-L1221__B-S'. This project contributes approximately 14.48 MW to the thermal violation.

CONTINGENCY 'COMED_P1-2_345-L1221__B-S'
TRIP BRANCH FROM BUS 270716 TO BUS 270928 CKT 1 / DRESD; B 345 WOLFS; B 345
END

Bus Number	*Bus Name*	*Full Contribution*
934111	*AD2-000 2*	*14.48*
936511	*AD2-066 C O1*	*9.11*
937401	*AD2-194 C1*	*5.87*
937411	*AD2-194 C2*	*5.78*
LTF	*BLUEG*	*0.35*
LTF	*CALDERWOOD*	*0.07*
LTF	*CANNELTON*	*0.03*
LTF	*CARR*	*0.12*
LTF	*CATAWBA*	*0.07*
LTF	*CBM-W2*	*2.47*
LTF	*CHEOAH*	*0.07*
LTF	*CLIFTY*	*1.9*
LTF	*COTTONWOOD*	*0.04*
274658	*DRESDEN ;2U*	*50.97*
LTF	*ELMERSMITH*	*0.09*
274729	*ELWOOD EC;1P*	*2.58*
274731	*ELWOOD EC;2P*	*2.58*
274733	*ELWOOD EC;3P*	*2.58*
274735	*ELWOOD EC;4P*	*2.58*
274728	*ELWOOD EC;5P*	*2.62*
274730	*ELWOOD EC;6P*	*2.62*
274732	*ELWOOD EC;7P*	*2.62*
274734	*ELWOOD EC;8P*	*2.62*
274736	*ELWOOD EC;9P*	*2.62*
274836	*EQUISTAR ; R*	*2.51*
LTF	*FARMERCITY*	*0.07*
LTF	*GIBSON*	*0.03*
LTF	*HAMLET*	*0.12*
274704	*KENDALL ;1C*	*16.11*
274705	*KENDALL ;1S*	*10.74*
274706	*KENDALL ;2C*	*16.11*

274707	*KENDALL ;2S*	*10.74*
274879	*MINONK ;1U*	*1.24*
LTF	*MORGAN*	*0.09*
274677	*POWERTON ;5U*	*8.67*
274678	*POWERTON ;6U*	*8.61*
LTF	*RENSSELAER*	*0.09*
LTF	*TATANKA*	*0.58*
LTF	*TRIMBLE*	*0.07*
LTF	*TVA*	*0.04*
LTF	*UNIONPOWER*	*0.08*
918111	*AA1-040 1*	*0.34*
930771	*AB1-122 2*	*179.04*
927091	*AC1-204 1*	*54.58*
927101	*AC1-204 2*	*53.75*

Appendix 2

No violations.

Appendix 3

No violations

Appendix 4

No violations.

Appendix 5

No violations

Appendix 6

(CE - CE) The DRESDEN ; B-KENDALL ;BU 345 kV line (from bus 270716 to bus 274702 ckt 1) loads from 103.621% to 105.03% (AC power flow) of its load dump rating (1195 MVA) for the tower line contingency outage of 'COMED_P7_345-L11620_B-S_+_345-L11622_R-S'. This project contributes approximately 17.53 MW to the thermal violation.

CONTINGENCY 'COMED_P7_345-L11620_B-S_+_345-L11622_R-S'
TRIP BRANCH FROM BUS 270736 TO BUS 270770 CKT 1 / ELWOO; B 345 GOODI;3B 345
TRIP BRANCH FROM BUS 270737 TO BUS 270769 CKT 1 / ELWOO; R 345 GOODI;1R 345
END

Bus Number	*Bus Name*	*Full Contribution*
934101	*AD2-000 1*	*3.81*
934111	*AD2-000 2*	*13.72*
936511	*AD2-066 C O1*	*9.23*
936512	*AD2-066 E O1*	*6.15*
937401	*AD2-194 C1*	*11.37*
937411	*AD2-194 C2*	*11.29*
LTF	*BLUEG*	*0.06*
LTF	*CARR*	*0.09*
LTF	*CBM-S1*	*1.07*

LTF	*CBM-S2*	*0.18*
LTF	*CBM-W1*	*1.62*
LTF	*CBM-W2*	*14.46*
LTF	*CIN*	*0.39*
LTF	*CLIFTY*	*1.11*
LTF	*CPLE*	*< 0.01*
274658	*DRESDEN ;2U*	*48.28*
274733	*ELWOOD EC;3P*	*5.04*
274735	*ELWOOD EC;4P*	*5.04*
274728	*ELWOOD EC;5P*	*5.07*
274730	*ELWOOD EC;6P*	*5.07*
274732	*ELWOOD EC;7P*	*5.07*
274734	*ELWOOD EC;8P*	*5.07*
274736	*ELWOOD EC;9P*	*5.07*
LTF	*G-007*	*0.22*
LTF	*IPL*	*0.18*
LTF	*MEC*	*8.*
LTF	*O-066*	*1.4*
290021	*O50 E*	*26.72*
LTF	*RENSSELAER*	*0.07*
LTF	*TRIMBLE*	*0.02*
930761	*AB1-122 1*	*47.09*
930771	*AB1-122 2*	*169.64*
927091	*AC1-204 1*	*105.74*
927101	*AC1-204 2*	*105.03*

Appendix 7

(CE - CE) The DRESDEN ; B 345/138 kV transformer (from bus 270716 to bus 275179 ckt 1) loads from 123.45% to 125.82% (AC power flow) of its load dump rating (442 MVA) for the line fault with failed breaker contingency outage of 'COMED_P4_012-45-BT5-6__'. This project contributes approximately 10.39 MW to the thermal violation.

CONTINGENCY 'COMED_P4_012-45-BT5-6__'
TRIP BRANCH FROM BUS 270716 TO BUS 270736 CKT 1 / DRESD; B 345 ELWOO; B 345
TRIP BRANCH FROM BUS 270736 TO BUS 270737 CKT 1 / ELWOO; B 345 ELWOO; R 345
TRIP BRANCH FROM BUS 274702 TO BUS 270716 CKT 1 / KENDA; B 345 DRESD; B 345
END

Bus Number	*Bus Name*	*Full Contribution*
934111	*AD2-000 2*	*10.39*
LTF	*BLUEG*	*0.31*
LTF	*CALDERWOOD*	*0.01*
LTF	*CANNELTON*	*0.04*
LTF	*CARR*	*0.07*
LTF	*CATAWBA*	*0.03*
LTF	*CBM-S1*	*0.05*
LTF	*CBM-W1*	*8.16*
LTF	*CBM-W2*	*2.72*
LTF	*CHEOAH*	*0.01*
LTF	*CLIFTY*	*1.4*
274658	*DRESDEN ;2U*	*36.59*
LTF	*ELMERSMITH*	*0.1*
LTF	*G-007*	*0.2*
LTF	*GIBSON*	*0.09*
LTF	*HAMLET*	*0.06*
LTF	*MEC*	*5.48*
274879	*MINONK ;1U*	*0.87*
LTF	*NEWTON*	*0.02*
LTF	*O-066*	*1.25*
290021	*O50 E*	*19.51*
LTF	*RENSSELAER*	*0.06*
LTF	*TILTON*	*0.16*
LTF	*TRIMBLE*	*0.06*
LTF	*WEC*	*1.06*
916512	*Z1-107 E*	*1.88*
930771	*AB1-122 2*	*128.47*

Appendix 8

(CE - CE) The DRESDEN ;1M-DRESDEN ; R 138 kV line (from bus 275179 to bus 271337 ckt 1) loads from 120.947% to 123.25% (AC power flow) of its load dump rating (442 MVA) for the line fault with failed breaker contingency outage of 'COMED_P4_012-45-BT5-6__'. This project contributes approximately 10.39 MW to the thermal violation.

CONTINGENCY 'COMED_P4_012-45-BT5-6__'
TRIP BRANCH FROM BUS 270716 TO BUS 270736 CKT 1 / DRESD; B 345 ELWOO; B 345
TRIP BRANCH FROM BUS 270736 TO BUS 270737 CKT 1 / ELWOO; B 345 ELWOO; R 345
TRIP BRANCH FROM BUS 274702 TO BUS 270716 CKT 1 / KENDA; B 345 DRESD; B 345
END

Bus Number	*Bus Name*	*Full Contribution*
934111	*AD2-000 2*	*10.39*
LTF	*BLUEG*	*0.31*
LTF	*CALDERWOOD*	*0.01*
LTF	*CANNELTON*	*0.04*
LTF	*CARR*	*0.07*
LTF	*CATAWBA*	*0.03*
LTF	*CBM-S1*	*0.05*
LTF	*CBM-W1*	*8.16*
LTF	*CBM-W2*	*2.72*
LTF	*CHEOAH*	*0.01*
LTF	*CLIFTY*	*1.4*
274658	*DRESDEN ;2U*	*36.59*
LTF	*ELMERSMITH*	*0.1*
LTF	*G-007*	*0.2*
LTF	*GIBSON*	*0.09*
LTF	*HAMLET*	*0.06*
LTF	*MEC*	*5.48*
274879	*MINONK ;1U*	*0.87*
LTF	*NEWTON*	*0.02*
LTF	*O-066*	*1.25*
290021	*O50 E*	*19.51*
LTF	*RENSSELAER*	*0.06*
LTF	*TILTON*	*0.16*
LTF	*TRIMBLE*	*0.06*
LTF	*WEC*	*1.06*
916512	*Z1-107 E*	*1.88*
930771	*AB1-122 2*	*128.47*

Attachment 1: Single Line Diagram