Generation Interconnection
Feasibility Study Report
Queue Position AB2-185

The Interconnection Customer (IC) has proposed a 20 MW (14 MWC) solar generating facility to be located in Queen Anne's County, Maryland. PJM studied the AB2-185 project at both a Primary and Secondary Point of Interconnection. The study results are provided below. The planned in-service date, as requested by the IC during the project kick-off call, is June 30, 2017. This date is not attainable due to additional required PJM studies and Transmission Owner construction schedules.

Point(s) of Interconnection

The Interconnection Customer requested a Primary and Secondary Point of Interconnection (POI) be evaluated for the AB2-185 project.

Primary Point of Interconnection

The IC requested a distribution level interconnection for the Primary POI option. As a result, PJM studied the AB2-185 project into the Delmarva Power and Light Company (DPL) system as a direct connection at the Wye Mills 25 kV Substation and evaluated it for compliance with reliability criteria for summer peak conditions in 2020.

The AB2-185 project will interconnect with the Delmarva Power and Light distribution system as follows:

> The first 8 MWs will connect to the existing 69/25 kV T2 transformer at the Wye Mills Substation via a new express feeder; the next 10 MWs will connect to a new 69/25 kV T4 transformer at the Wye Mills Substation via a new express feeder; the last 2 MWs will connect to a new 69/25 kV T5 transformer at the Wye Mills Substation via a new express feeder.

Direct Connection Requirements

Criteria Limits for Distributed Energy Resource (DER) Connections to the ACE, DPL and Pepco Distribution Systems (less than 69kV)

1. Single Phase Limit

Any DER with a capacity that exceeds 100 kW shall be a balanced 3 phase system.

2. Voltage Limits

DER's are permitted to cause a voltage fluctuation of up to 2% at the Point of Interconnection, ½ the band width of any voltage regulator at its terminals, and ½ the net dead band of a switched capacitor bank at its connection point. When a DER is at maximum output, it shall not raise the feeder voltage above the ANSI C84.1 or state limit, whichever is more conservative.

3. Existing Distribution Circuit Capacity Limits

The aggregate limit of large (250 kW and over) generators running in parallel with a single, existing distribution circuit is 0.5 MWs on the 4kV, 3MWs on the 12 kV, 6 MWs on the 25 kV, and 10 MWs on the 34 kV.

4. Express Circuit Capacity Limits
Distributed generation installations which exceed the limit for an existing circuit require an express circuit.

The maximum generator size for express circuits shall be:

- 4 kV 0.5 MW
- 12 – 13.8 kV 10 MW
- 23 – 25 kV 10 MW
- 33.26 – 34.5 kV 15 MW

5. Distribution Power Transformer Limit
The aggregate limit of large (250 kW and over) generator injection to a single distribution transformer of 22.5 MVA nameplate or larger is 10 MWs. Transformers with nameplate ratings lower than 22.5 MVA will be given lower ratings on an individual basis. If the transformer rating is significantly greater than 40 MVA it may be possible to consider a greater generation capacity.

Adding a new transformer will be considered if there is no availability on any of the existing transformers and space is available in an existing substation. Any proposed transformers would be PHI's standard distribution transformer.

6. Express Circuit Length Limit
If there is no space for an additional transformer at the closest substation, the next closest substation will be considered. The length of an express circuit is limited to 5 miles, or for the sake of the feasibility study, 3.8 straight line miles to the substation. This simplification is used because the feasibility study phase does not allow for the time and resources to examine routes in detail (including existing pole lines, easements, ROW, and environmental issues etc.)

7. When a New Substation is Required
If a distribution express circuit can't be built from an existing substation for a project, it will be necessary to construct a new distribution substation with a standard ring bus design. It will be supplied by extending existing transmission lines. It is the developer's responsibility to verify eligibility of this configuration for solar renewable energy certificates.

All limits, given above in MWs, are subject to more detailed study to ensure feasibility.

Transmission Owner Scope of Work
TO scope of work required to accommodate 8 MW of generation on an express feeder from Wye Mills Substation T2:

1. Design and construct one new 25 kV feeder with 477 aluminum conductor from Wye Mills Substation to the generation site – approximately 2.4 miles.

2. One new 25 kV feeder terminal position will be constructed.
3. A utility operated recloser equipped with the proper relaying and communications will be required.
4. Utility grade primary metering will be required.
5. Generation telemetry and remote trip capability will be provided to the control center.
6. A detailed, time-based study may be performed during later study phases.
7. Protection, Planning, and other engineering departments will perform studies, design work, and prepare engineering estimates.
8. Direct transfer trip will be required. Approximately 2.4 miles of 48SM ADSS fiber optic cable was estimated for this report to provide the communication channel from Wye Mills Substation to the PV site. 69 kV potential transformers will need to be installed if none already in-service.
9. If the voltage regulators in the substation are not properly equipped to handle the reverse power flow that the generator will cause, adjustments to their controllers will be required. If regulator cannot operate with controller, entire regulator will be upgraded.

Estimated Costs			
Wye Mills Substation T2			
477 AAC Express Feeder	2.4	Miles	$960,000
Fiber Installation			$120,000
New Feeder Terminal			$300,000
Substation Relaying & 69 kV PTs			$200,000
Recloser & Metering			$80,000
SCADA Integration into EMS			$10,000
Dynamic Study			$50,000
Various Departments Work			$90,000
Subtotal Cost			$1,810,000
Approximate Total Cost with 18% Contingency			$2,081,500

The estimated time to complete this work is **36-48 months** after receipt of a fully executed interconnection agreement.

TO work required to accommodate 10 MW of generation on an express feeder from a new transformer T4 at Wye Mills Substation:

1. Design and construct one new 25 kV feeder with 477 aluminum conductor from Wye Mills Substation to the generation site – approximately 2.4 miles.
2. One new 37 MVA 69/25kV transformer will be constructed.
3. One new 25 kV feeder terminal position will be constructed.
4. One new 69 kV feeder terminal position will be constructed.
5. Reconfiguration of the 69 kV bus may be required.

6. A utility operated recloser equipped with the proper relaying and communications will be required.
7. Utility grade primary metering will be required for each feeder.
8. Generation telemetry and remote trip capability will be provided to the control center.
9. A detailed, time-based study may be performed during later study phases.
10. Protection, Planning, and other engineering departments will perform studies, design work, and prepare engineering estimates.
11. Direct transfer trip will be required. Approximately 2.4 miles of 48SM ADSS fiber optic cable was estimated for this report to provide the communication channel from Wye Mills Substation to the PV site. 69 kV potential transformers will need to be installed.
12. If the voltage regulators in the substation are not properly equipped to handle the reverse power flow that the generator will cause, adjustments to their controllers will be required. If regulator cannot operate with controller, entire regulator will be upgraded.

Estimated Costs			
Wye Mills Substation New T4			
477 AAC Express Feeder	2.4	Miles	$960,000
Fiber Installation			$120,000
Transformer			$3,000,000
69 & 25 kV Feeder Terminals			$600,000
Ring Bus Reconfiguration			
Substation Relaying & 69 kV PTs			$200,000
Recloser & Metering			$80,000
SCADA Integration into EMS			$10,000
Dynamic Study			$30,000
Various Departments Work			$90,000
Subtotal Cost			$5,090,000
Approximate Total Cost with 18% Contingency			$5,853,500

TO work required to accommodate 2 MW of generation on an express feeder from a new transformer T5 at Wye Mills Substation:

1. Design and construct one new 25 kV feeder with 477 aluminum conductor from Wye Mills Substation to the generation site – approximately 2.4 miles.
2. One new 37 MVA 69/25kV transformer will be constructed.
3. One new 25 kV feeder terminal position will be constructed.
4. One new 69 kV feeder terminal position will be constructed.
5. Reconfiguration of the 69 kV bus will be required.
6. A utility operated recloser equipped with the proper relaying and communications will be required.
7. Utility grade primary metering will be required for each feeder.
8. Generation telemetry and remote trip capability will be provided to the control center.
9. A detailed, time-based study may be performed during later study phases.

10. Protection, Planning, and other engineering departments will perform studies, design work, and prepare engineering estimates.
11. Direct transfer trip will be required. Approximately 2.4 miles of 48SM ADSS fiber optic cable was estimated for this report to provide the communication channel from Wye Mills Substation to the PV site. 69 kV potential transformers will need to be installed.
12. If the voltage regulators in the substation are not properly equipped to handle the reverse power flow that the generator will cause, adjustments to their controllers will be required. If regulator cannot operate with controller, entire regulator will be upgraded.

Estimated Costs			
Wye Mills Substation New T5			
477 AAC Express Feeder	2.4	Miles	$960,000
Fiber Installation			$120,000
Transformer			$3,000,000
69 & 25 kV Feeder Terminals			$600,000
Ring Bus Reconfiguration			
Substation Relaying & 69 kV PTs			$200,000
Recloser & Metering			$80,000
SCADA Integration into EMS			$10,000
Dynamic Study			$30,000
Various Departments Work			$90,000
Subtotal Cost			$5,090,000
Approximate Total Cost with 18% Contingency			$5,853,500

The estimated time to complete this work is **36-48 months** after receipt of a fully executed interconnection agreement.

Interconnection Customer Scope of Work

The Interconnection Customer (IC) is responsible for all design and construction related to activities on their side of the point of Interconnection. Site preparation, including grading and an access road, as necessary, is assumed to be by the IC. Route selection, line design, and right-of-way acquisition of the direct connect facilities is not included in this report, and is the responsibility of the IC.

Protective relaying and metering design and installation must comply with PHI's applicable standards. The IC is also required to provide revenue metering and real-time telemetering data to PJM in conformance with the requirements contained in PJM Manuals M-01 and M-14 and the PJM Tariff.

The IC will purchase and install all metering instrument transformers as well as construct a metering structure per PHI's specifications. The secondary wiring connections at the instrument transformers will be completed by the interconnection customer's contractors and inspected by PHI, while the secondary wiring work at the metering enclosure will be completed by PHI's Meter technicians. The metering control cable and meter cabinets will be supplied by PHI and installed by the

interconnection customer's contractors. PHI's meter technicians will program and install two solid state multi-function meters (Primary & Backup) for the new metering position. Each meter will be equipped with load profile, telemetry, and form-c pulse outputs. The ownership of metering equipment purchased or installed by the IC shall be transferred to the Transmission Owner at Commercial Operation, unless the IC asserts its right to install, own and operate the metering system.

Equipment Requirements

Any transformers on the IC's side must be Wye grounded on the utility side or alternatively 3 phase potential transformers and a relay capable of detecting over/under voltage shall be installed to detect an undesirable condition on the high side of the IC's transformer.

The inverter at the DG location shall have the following capabilities:

- Voltage flicker reduction through dynamic VAR or fixed PF response
- Ramp rate control
- SCADA communications
- Curtailment or other mitigation ability if high voltage were to occur
- Low voltage and system disturbance ride through
- Ability to receive and respond to a transfer trip signal
- Ability to adjust PF or VARs based on utility signal
- Ability to Adjust Real Power Output based on utility signal

The inverter shall operate in accordance with the IEEE 1547 series of standards that have been approved. While inverters should be capable of voltage stabilization thru dynamic VAR response and capable of low voltage and system disturbance ride through, neither of these capabilities shall be implemented until such time that the IEEE 1547 series of standards are revised and approved to include standards for these capabilities. At such time as these revised standards become available, the PV owner/operator shall cooperate with the Company (the 'Company' referring to ACE, DPL, or PEPCO) to implement these capabilities with settings acceptable to the Company. It is the responsibility of the owner to secure the inverter from any unauthorized access (including physical and remote access) which could alter settings or adversely affect the inverter's ability to operate as required. Security measures should include utilizing secure password settings and/or physical locks on cabinet doors.

High Voltage Warning

Voltage received at the meter from the utility can be 104% or 105% of nominal. Normal operating procedures dictate that voltage at the substation be raised to the higher end of an acceptable bandwidth in order to provide adequate supply to distant customers. Transformers with no load taps should be used to reduce the voltage by 2.5% to avoid the possibility of inverter trips. Failure to account for this may result in lost energy production.

Additional Operating Requirements

1. The Company (DPL, ACE, Pepco) will require the capability to remotely disconnect the generator from the grid by communication from its System Operations facility. This will be accomplished with a line recloser.

2. It is the Interconnection Customer's responsibility to send the data that PJM and the Company requires directly to PJM. The Interconnection Customer will grant permission for PJM to send the Company the following telemetry that the Interconnection Customer sends to PJM: real time MW, MVAR, volts, amperes, generator breaker status or inverter status, and interval MWH and MVARH.

3. The Interconnection Customer will be required to make provisions for a voice quality phone line within approximately 3 feet of each Company metering position to facilitate remote interrogation and data collection.

4. A mutually acceptable means of interrupting and disconnecting the generator with a visible break, able to be tagged and locked out, shall be worked out with Company Distribution Engineering.

5. Company reserves the right to charge the Interconnection Customer operation and maintenance expenses to maintain the Interconnection Customer attachment facilities, including metering and telecommunications facilities, owned by Company.

Summer Peak Analysis - 2020

Transmission Network Impacts

Potential transmission network impacts are as follows:

Generator Deliverability

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

None

Multiple Facility Contingency

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

1. (DP&L - DP&L) The TOWNSEND-MIDLTNTP 138 kV line (from bus 232107 to bus 232106 ckt 1) loads from 98.65% to 100.47% (DC power flow) of its emergency rating (348 MVA) for the tower line contingency outage of 'DBL_4NC'. This project contributes approximately 6.31 MW to the thermal violation.

   CONTINGENCY 'DBL_4NC'/* RED LION-CEDAR CREEK 230;RED LION-CARTANZA 230
   OPEN LINE FROM BUS 231004 TO BUS 232002 CKT 1
   OPEN LINE FROM BUS 231004 TO BUS 232003 CKT 1
   END

   Please refer to Appendix 1 for a table containing the generators having contribution to this flowgate.

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)

None

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)

1. To mitigate the (DP&L) TOWNSEND-MIDLTNTP 138 kV line (from bus 232107 to bus 232106 ckt 1) overload will require reinforcements to increase the emergency rating of the Townsend to Middletown Tap 138 kV line. Those reinforcements include rebuilding a small section of the circuit and installing new poles and the re-mounting of 138 kV disconnect switches. The estimated cost to perform this work is **$800,000** and will take **18 months** to complete.

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)

None

Steady-State Voltage Requirements

None

Short Circuit

No issues identified.

Stability and Reactive Power Requirement

To be performed during later study phases.

Light Load Analysis - 2020

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

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.

1. (DP&L - DP&L) The OIL_CITY-STEEL138 138 kV line (from bus 232801 to bus 232103 ckt 1) loads from 128.69% to 130.7% (DC power flow) of its emergency rating (159 MVA) for the single line contingency outage of 'CKT 13808'. This project contributes approximately 3.19 MW to the thermal violation.

   CONTINGENCY 'CKT 13808'
   DISCONNECT BUS 232106/MOUNT PLEASANT - MIDDLETOWN - TOWNSEND 138
   DISCONNECT BUS 232804/MIDDLETOWN 138
   END

2. (DP&L - DP&L) The AB2-036 TAP-OIL_CITY 138 kV line (from bus 923950 to bus 232801 ckt 1) loads from 130.58% to 132.59% (DC power flow) of its emergency rating (159 MVA) for the single line contingency outage of 'CKT 13808'. This project contributes approximately 3.19 MW to the thermal violation.

   CONTINGENCY 'CKT 13808'
   DISCONNECT BUS 232106/MOUNT PLEASANT - MIDDLETOWN - TOWNSEND 138
   DISCONNECT BUS 232804/MIDDLETOWN 138
   END

Secondary Point of Interconnection

PJM studied the AB2-185 project into the Delmarva Power and Light Company (DPL) system as a tap of the Wye Mills-Stevensville 69 kV circuit and evaluated it for compliance with reliability criteria for summer peak conditions in 2020.

Summer Peak Analysis - 2020

Transmission Network Impacts

Potential transmission network impacts are as follows:

Generator Deliverability

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

None

Multiple Facility Contingency

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

None

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)

None

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.

1. (DP&L - DP&L) The OIL_CITY-STEEL138 138 kV line (from bus 232801 to bus 232103 ckt 1) loads from 117.98% to 119.99% (DC power flow) of its emergency rating (159 MVA) for the single line contingency outage of 'CKT 13833'. This project contributes approximately 3.19 MW to the thermal violation.

   CONTINGENCY 'CKT 13833'
   OPEN LINE FROM BUS 232100 TO BUS 232107 CIRCUIT 1/CHURCH - TOWNSEND 138
   END

2. (DP&L - DP&L) The AB2-036 TAP-OIL_CITY 138 kV line (from bus 923950 to bus 232801 ckt 1) loads from 119.93% to 121.94% (DC power flow) of its emergency rating (159 MVA) for the single line contingency outage of 'CKT 13833'. This project contributes approximately 3.19 MW to the thermal violation.

   CONTINGENCY 'CKT 13833'
   OPEN LINE FROM BUS 232100 TO BUS 232107 CIRCUIT 1/CHURCH - TOWNSEND 138
   END

Facilities Study Estimate

7 months; $50,000

Appendices
(Primary Point of Interconnection)

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. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact.
It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

Appendix 1

(DP&L - DP&L) The TOWNSEND-MIDLTNTP 138 kV line (from bus 232107 to bus 232106 ckt 1) loads from 98.65% to 100.47% (DC power flow) of its emergency rating (348 MVA) for the tower line contingency outage of 'DBL_4NC'. This project contributes approximately 6.31 MW to the thermal violation.

CONTINGENCY 'DBL_4NC'/* RED LION-CEDAR CREEK 230;RED LION-CARTANZA 230
OPEN LINE FROM BUS 231004 TO BUS 232002 CKT 1
OPEN LINE FROM BUS 231004 TO BUS 232003 CKT 1
END

Bus Number	*Bus Name*	*Full Contribution*
232900	*DEMECSMY*	*2.15*
232851	*DUP-SFR1*	*0.41*
232902	*EASTMUNI*	*3.4*
232923	*MR1*	*3.36*
232924	*MR2*	*3.36*
232910	*NRG_G1*	*2.43*
232911	*NRG_G2*	*2.43*
292089	*T-011*	*0.17*
297076	*V2-028 C*	*0.09*
297077	*V2-028 E*	*0.75*
904212	*V4-022E*	*0.61*
232813	*VAUGHN*	*0.15*
232919	*VN10*	*0.57*
901004	*W1-003 E*	*0.89*
901014	*W1-004 E*	*0.89*
901024	*W1-005 E*	*0.89*
901034	*W1-006 E*	*0.89*
901411	*W1-062*	*2.28*
907052	*X1-032 E*	*0.79*
907324	*X1-096 E*	*18.27*

910571	*X3-008 C*	*0.32*
910572	*X3-008 E*	*2.68*
910591	*X3-015 C*	*0.3*
910592	*X3-015 E*	*2.51*
910821	*X3-066 C*	*0.17*
910822	*X3-066 E*	*1.41*
913361	*Y1-079 C*	*0.24*
913362	*Y1-079 E*	*1.96*
913411	*Y1-080 C*	*0.05*
913412	*Y1-080 E*	*0.43*
915751	*Y3-033*	*1.46*
915752	*Y3-033*	*9.76*
920543	*Y3-054 E*	*2.48*
915541	*Y3-058 C*	*0.22*
915542	*Y3-058 E*	*1.86*
920582	*Z1-076 C*	*1.05*
920583	*Z1-076 E*	*1.71*
920592	*Z1-077 C*	*0.75*
920593	*Z1-077 E*	*1.22*
916281	*Z1-081 C*	*0.2*
916282	*Z1-081 E*	*1.65*
917082	*Z2-012 E*	*2.44*
920763	*Z2-076 E*	*0.4*
920773	*Z2-077 E*	*0.4*
920812	*Z2-097 C*	*1.57*
920813	*Z2-097 E*	*0.65*
921122	*AA1-059 C*	*0.84*
921123	*AA1-059 E*	*0.33*
921142	*AA1-061 C*	*2.87*
921143	*AA1-061 E*	*1.41*
921442	*AA1-110 C*	*1.78*
921443	*AA1-110 E*	*0.89*
921592	*AA1-140 C*	*1.51*
921593	*AA1-140 E*	*2.47*
921602	*AA1-141 C*	*1.13*
921603	*AA1-141 E*	*1.84*
921872	*AA2-069*	*104.81*
922213	*AA2-129 E*	*3.94*
922222	*AA2-130*	*0.39*
922752	*AB1-056 C OP*	*12.79*
922753	*AB1-056 E OP*	*36.43*
922762	*AB1-057 C*	*12.99*
922763	*AB1-057 E*	*37.03*
923282	*AB1-137 C*	*2.79*
923283	*AB1-137 E*	*1.2*
923322	*AB1-141 C OP*	*5.3*

923323	*AB1-141 E OP*	*2.47*
923332	*AB1-142 C OP*	*5.3*
923333	*AB1-142 E OP*	*2.47*
923452	*AB1-162 C OP*	*2.4*
923453	*AB1-162 E OP*	*3.92*
923602	*AB1-176 C*	*1.29*
923603	*AB1-176 E*	*2.12*
923902	*AB2-030 E*	*0.79*
923921	*AB2-032 C*	*5.34*
923922	*AB2-032 E*	*2.51*
923931	*AB2-033 C*	*1.41*
923932	*AB2-033 E*	*0.56*
923951	*AB2-036 C*	*13.81*
923952	*AB2-036 E*	*22.54*
923961	*AB2-037 C*	*14.99*
923962	*AB2-037 E*	*24.45*
924191	*AB2-063 C*	*2.87*
924192	*AB2-063 E*	*4.69*
924361	*AB2-084 C*	*0.75*
924362	*AB2-084 E*	*1.22*
924461	*AB2-095 C*	*2.27*
924462	*AB2-095 E*	*3.7*
924681	*AB2-120 C OP*	*7.49*
924682	*AB2-120 E OP*	*12.21*
924781	*AB2-130 C OP*	*7.73*
924782	*AB2-130 E OP*	*12.62*
924801	*AB2-133 C OP*	*14.2*
924802	*AB2-133 E OP*	*19.08*
924821	*AB2-135 C*	*12.06*
924822	*AB2-135 E*	*18.18*
924831	*AB2-136 C OP*	*5.19*
924832	*AB2-136 E OP*	*7.37*
924881	*AB2-142 C*	*1.14*
924882	*AB2-142 E*	*1.85*
924891	*AB2-143 C OP*	*3.37*
924892	*AB2-143 E OP*	*5.5*
924971	*AB2-153 C*	*2.98*
924972	*AB2-153 E*	*4.87*
925071	*AB2-164 C OP*	*1.5*
925072	*AB2-164 E OP*	*2.44*
925081	*AB2-165 C OP*	*1.5*
925082	*AB2-165 E OP*	*2.44*
925091	*AB2-166 C*	*0.4*
925092	*AB2-166 E*	*0.7*
925101	*AB2-167 C*	*1.05*
925102	*AB2-167 E*	*1.72*

925151	*AB2-172 C OP*	*4.11*
925152	*AB2-172 E OP*	*6.7*
925231	*AB2-177 C*	*0.49*
925232	*AB2-177 E*	*0.81*
925251	*AB2-179 C OP*	*26.29*
925252	*AB2-179 E OP*	*8.67*
925261	*AB2-180 C*	*2.8*
925262	*AB2-180 E*	*1.2*
925271	*AB2-185 C OP*	*4.42*
925272	*AB2-185 E OP*	*1.89*
925311	*AB2-192 C OP*	*1.5*
925312	*AB2-192 E OP*	*2.44*

Appendices
(Secondary Point of Interconnection)

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. Although this information is not used "as is" for cost allocation purposes, it can be used to gage other generators impact.
It should be noted the generator contributions presented in the appendices sections are full contributions, whereas in the body of the report, those contributions take into consideration the commercial probability of each project.

None