Generation Interconnection Feasibility Study Report

PJM Generation Interconnection Request Queue Position #R56 Quemahoning - Hooversville 230kV

124.5 MW

(24.8 MW capacity)

October 2008

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Preface

The intent of the Generation Interconnection Feasibility Study is to determine a plan, with ballpark 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.

The proposed interconnection facilities must be designed in accordance with the FirstEnergy "Requirements for Transmission Connected Facilities" document. Procedures for gaining access to these standards can be found at the link below.

http://www.pjm.com/planning/trans-standard.html

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 Generation Interconnection Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed.

The Generation Interconnection Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities unless noted in the report. The project developer is responsible for acquiring any necessary right of way and real estate, as well as applying for and obtaining any and all permits unless prior agreement by interested parties allows for other arrangements. For properties currently owned by Transmission Owners, some permitting and real estate costs may be included in the study.

Cost and Timing Estimates

The estimates in this report do not include tax gross-up.

While the information in this transmittal is reasonable for the scope of work defined, it should, however, be noted that the cost figures and time estimates are conceptual in nature at this stage, as an engineering team has not been assigned to the project. Any change to the scope of work will require that the estimates be revisited. The costs are a best estimate, but the developer will be charged for actual costs. Any under-runs or over-runs will be reconciled at the conclusion of the project.

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General
The #R56 project was studied as a 124.5 MW (24.8 MW of capacity) injection at two distinct points of the Penelec system. Option #1 taps the Quemahoning to Hooversville 230 kV line, while option #2 studies the direct connection to Hooversville 230 kV substation. Project #R56 was evaluated for compliance with reliability criteria for summer peak conditions in 2011.

Metering
The Interconnection Customer will be required to install and maintain metering and telemetry equipment to provide revenue metering and real-time telemetry data to PJM and the Transmission Owner. The PJM requirements for this equipment are listed in Appendix 2, section 8 of Attachment O to the PJM Tariff, as well as PJM Manuals 01 and 14D. The PJM and Transmission Owner requirements for Metering Equipment will be discussed in more detail in subsequent studies.

Design Requirements
The generation owner is responsible for specifying appropriate equipment and facilities such that the parallel generation is compatible with the FirstEnergy Transmission System. The generation owner is also responsible for meeting any applicable federal, state, and local codes. It is also the developer's responsibility to obtain any needed right-of-way between the plant site and FirstEnergy's facilities.

FirstEnergy will complete detailed relay coordination studies to identify off-site relay setting changes required due to this generation interconnection during the Facilities Study phase of this project. This may result in additional individual relay replacements being required. These relay replacements will be done at the cost of the developer.

Reactive Power

Requirements to be provided during the System Impact Study or Facilities Study phase of the project studies.

Cost and Timing Estimates
While the information in this transmittal is reasonable for the scope of work defined, it should, however, be noted that the cost figures and time estimates are conceptual in nature at this stage, as an engineering team has not been assigned to the project. Any change to the scope of work will require that the estimates be revisited. The costs are a best estimate, but the Interconnection Customer will be charged for actual costs. Any under-runs or over-runs will be reconciled at the conclusion of the project.

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Direct Connection Facilities

Connection to the Quemahoning to Hooversville 230kV line (Option 1) would be through a 230 kV substation with a 3 breaker ring bus (see Figure 1). This substation will be built for the sole benefit of the developer and may thus be subject to ongoing maintenance costs. The developer is responsible for constructing all of the facilities on its side of the Point of Interconnection. Option 2, connection to the 230 kV at Hooversville, would also be through a 3 breaker ring bus (see figure 2). This option will likely require the acquisition of additional land on the 230 kV end (north side) of Hooversville substation to make this option practical.

The proposed Interconnection Facilities must be designed in accordance with the FirstEnergy "Requirements for Transmission Connected Facilities" document. Procedures for gaining access to these standards can be found at the link below.

http://www.pjm.com/planning/trans-standard.html

Below are conceptual estimates for the engineering/construction associated with Direct Connection requirements based upon similar projects that have been designed and/or constructed.

Option #1

Item	Description	Conceptual Cost Estimate
1	New 230 kV 3-breaker ring bus termination point at a new interconnection substation.	$3,080,000
2	New 230 kV loop into interconnection substation	$400,000
3	230 kV transmission line extending from the new interconnection substation structure to the generation plant substation.	Developer cost. Line built, owned and maintained by the developer.
4	Fiber optic communication from R56 substation to Hooversville and relay replacement at Hooversville and Homer City.	$480,000

Conceptual Estimate: $3, 960,000
Estimated Lead Time: 2.0 years from signed CSA

Notes:

- The above estimates do not include 1) tax gross-up, 2) property costs and site development up to rough grade which is to be provided by the developer, 3) interconnection metering and generation SCADA to be provided by the developer, and 4) engineering and field activities for design review and commissioning of the developer's facilities

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Figure 1 provides a conceptual one line diagram of the Direct Connection Network Upgrades required to accommodate this project.

Option #2

Item	Description	Conceptual Cost Estimate
1	New 230 kV 3-breaker ring bus termination point at a new interconnection substation.	$3,080,000
2	New 230 kV loop into interconnection substation.	$400,000
3	230 kV transmission line extending from the new interconnection substation structure to the generation plant substation.	Developer cost. Line built, owned and maintained by the developer.
4	Relay replacement at Homer City.	$140,000

Conceptual Estimate: $3, 620,000
Estimated Lead Time: 2.0 years from signed CSA

Notes:

- The above estimates do not include 1) tax gross-up, 2) property costs and site development up to rough grade which is to be provided by the developer, 3) interconnection metering and generation SCADA to be provided by the developer, 4) engineering and field activities for design review and commissioning of the developer's facilities, and 5) real estate costs

Figure 2 provides a conceptual one line diagram of the Direct Connection Network Upgrades required to accommodate this project.

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Network Impacts
Potential network impacts were as follows:

OPTION 1:

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

No problems were identified.

Multiple Facility Contingency
(Double Circuit Tower Line for the full energy output. Stuck breaker and bus fault contingencies will be performed for the System Impact Study)

No problems were identified.

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)

1. The Scalp Level – Hooversville 115 kV line is overloaded at 263% (470 MVA) of its emergency rating (179 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower51 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 76 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch and substation conductor at the Scalp Level substation, replacement of a disconnect switch, a line trap, a CT circuit, a circuit breaker, and substation conductor at the Hooversville substation, as well as rebuilding approximately 6.92 miles of 115kV conductor from Scalp Level to Hooversville. The total estimated cost for this reinforcement is approximately $4,335,000.

2. The Scalp Level – Rachel Hill 115 kV line is overloaded at 256% (458 MVA) of its emergency rating (179 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower51 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 76 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch and substation conductor at the Scalp Level substation, replacement of a 500/230kV transformer at Scalp Level, replacement of a disconnect switch, a line trap, a CT circuit, a circuit breaker, and substation conductor at the Rachael Hill substation, as well as rebuilding approximately 2.7 miles of 115kV conductor from Scalp Level to Rachael Hill. The total estimated cost for this reinforcement is approximately $6,225,000.

3. The Rachel Hill - Hillclay 115 kV line is overloaded at 230% (423 MVA) of its emergency rating (184 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower51 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 76 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch at the Hillclay substation, replacement of a disconnect switch, a line trap, and

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substation conductor at the Rachael Hill substation, as well as rebuilding approximately 3.06 miles of 115kV line from Rachael Hill to Hillclay. The total estimated cost for this reinforcement is approximately $1,930,000.

4. The Garrett – 01Garrett 115 kV line is overloaded at 284% (355 MVA) of its emergency rating (125 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 30 MW to this overload. To mitigate this overload would require the replacement of 4 CT circuits, a circuit breaker, replacement of the 115/138kV transformer, and replacement of substation conductor at the Garrett substation, replacement of a disconnect switch, a line trap, a CT circuit and substation conductor at the Garrett Tap, as well as rebuilding approximately 1.9 miles of 115kV line. The total estimated cost for this reinforcement is approximately $3,995,000.

5. The Saxton – Curryville 115 kV line is overloaded at 123% (220 MVA) of its emergency rating (179 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 13 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch, a line trap, and a CT circuit at the Saxton substation. The total estimated cost for this reinforcement is approximately $320,000.

6. The Rockwood – Penn-Mar 115 kV line is overloaded at 237% (339 MVA) of its emergency rating (143 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 31 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch and substation conductor at the Rockwood substation, replacement of two disconnect switches, a line trap, a CT circuit, a circuit breaker, and substation conductor at the Penn Mar substation, as well as rebuilding approximately 14.7 miles of 115kV line. The total estimated cost for this reinforcement is approximately $8,305,000.

7. The Hillclay – Hilltop 115 kV line is overloaded at 284% (508 MVA) of its emergency rating (179 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 64 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch, a line trap, two (2) CT circuits, a circuit breaker and substation conductor at the Hilltop substation, as well as rebuilding approximately 4.73 miles of 115kV line. The total estimated cost for this reinforcement is approximately $3,160,000.

8. The Penn-Mar – Garrett 115 kV line is overloaded at 202% (337 MVA) of its emergency rating (167 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 30 MW to this overload. To mitigate this overload would require the replacement of a disconnect switch, a line trap, twp (2) CT circuits, a circuit breaker and substation conductor at the Penn Mar substation, as well as rebuilding approximately 14.95 miles of 115kV line. The total estimate cost for this reinforcement is approximately $8,270,000.

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9. The Claysburg – Curryville 115 kV line is overloaded at 110% (202 MVA) of its emergency rating (184 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 13 MW to the overload. To mitigate this overload would require the replacement of a disconnect switch, a line trap and substation conductor at the Claysburg substation. The total estimated cost for this reinforcement is approximately $320,000.

10. The Hilltop – Rosedale 115 kV line is overloaded at 180% (322 MVA) of its emergency rating (179 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 46 MW to the overload. To mitigate this overload would require the replacement of two (2) disconnect switches, a line trap, a CT circuit, one circuit breaker and substation conductor at the Hilltop substation, as well as rebuilding approximately 1.54 miles of 115kV line. The total estimated cost for this reinforcement is approximately $1,520,000.

11. The Rosedale – Cooper 115 kV line is overloaded at 136% (245 MVA) of its emergency rating (180 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 31 MW to the overload. To mitigate this overload would require the replacement of a line trap, a CT circuit and substation conductor at the Cooper substation. The total estimate cost for this reinforcement is approximately $365,000.

12. The Cooper – Seward 115 kV line is overloaded at 133% (245 MVA) of its emergency rating (184 MVA) for the **tower** outage of Homer City to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 36 MW to this overload. To mitigate this overload would require the replacement of a line trap and substation conductor at the Cooper substation. The total estimated cost for this reinforcement is approximately $240,000.

13. The Snake Springs – Q62opt1 115 kV line is overloaded at 142% of its emergency rating (124 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 13 MW to this overload. This overload is a subset of #21 and a lesser magnitude overload. See the evaluation of the overload for #21.

14. The R09opt1 – Summit 115 kV line is overloaded at 309% (451 MVA) of its emergency rating (146 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 22 MW to this overload. To mitigate this overload would require the replacement of two (2) disconnect switches, a line trap, one CT circuit, one circuit breaker and substation conductor at the Summit substation, replacement of three (3) disconnect switches, one line trap, one CT circuit and substation conductor at the Claysburg substation, as well as reconductoring approximately 12.13 miles of 115kV line. The total estimated cost for this reinforcement is approximately $7,420,000.

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15. The Claysburg – R09opt1 115 kV line is overloaded at 286% (418 MVA) of its emergency rating (146 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 22 MW to this overload. See #14 above for reinforcement of this overload.

16. The Somerset – Q34 115 kV line is overloaded at 132% (210 MVA) of its emergency rating (159 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 30 MW to this overload. To mitigate this overload would require the replacement of two (2) disconnect switches, one line trap and two (2) CT circuits at the Somerset substation, replacement of a disconnect switch at the Rockwood substation, as well as reconductoring 8.12 miles of 115kV line. The total estimated cost for this reinforcement is approximately $2,838,000.

17. The Q34 - Rockwood 115 kV line is overloaded at 157% (250 MVA) of its emergency rating (159 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 30 MW to this overload. See #16 above for reinforcement of this overload.

18. The P48_C – Bedford N 115 kV line is overloaded at 153% (243 MVA) of its emergency rating (159 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 13 MW to this overload. To mitigate this overload would require the replacement of a line trap, two (2) circuit breakers and substation conductor at the Bedford North substation, replacement of substation conductor at the Allegheny substation, as well as reconductoring approximately 21.76 miles of 115kV line. The total estimated cost for this reinforcement is approximately $6,599,000.

19. The P60_C - P48_C 115 kV line is overloaded at 120% (180 MVA) of its emergency rating (150 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 13 MW to this overload. See #18 above for the reinforcement of this overload.

20. The Bedford North – Snake Springs 115 kV line is overloaded at 157% (250 MVA) of its emergency rating (159 MVA) for the **tower** outage of Homer Ct to Quemahoning and Seward to Tower 230 kV line (Cont Id. 2PN). The R56 project contributes approximately 13 MW to this overload. To mitigate this overload would require the replacement of substation conductor at the Snake Springs substation, replacement of one line trap, two (2) CT circuits and substation conductor at the Bedford North substation, as well as reconductoring approximately 7.06 miles of 115kV line. The total estimated cost for this reinforcement is approximately $2,553,750.

Short Circuit

PJM studied the 230kV and above voltage systems and found no new breakers to be overdutied, and no addition to the fault current associated with any previously identified overdutied breakers.

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Additional short circuit study will be conducted during the System Impact Study phase of this project.

Steady-State Voltage Requirements
(Results of the steady-state voltage studies should be inserted here)

To be determined during the System Impact Study phase of the study of this project.

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

To be determined during the System Impact Study phase of the study of this project.

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.
As a result of the aggregate energy resources in the area, the following violations were identified:

1. The Keystone – Conemaugh 500 kV line is overloaded at 170% of its emergency rating (3013 MVA) for the outage of Juniata – Keystone 500 kV line (Cont Id. PJM24B). The R56 project contributes approximately 16 MW to the overload.

2. The Keystone – Juniata 500 kV line is overloaded at 143% of its emergency rating (3500 MVA) for the outage of Conemaugh – Keystone 500 kV line (Cont Id. PJM21). The R56 project contributes approximately 14 MW to the overload.

3. The Altoona – Raystown 230 kV line is overloaded to 146% of its emergency rating (554 MVA) for the outage of Homer City – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 23 MW to the overload.

4. The Glory – Dixonville 115 kV line is overloaded to 198% of its emergency rating (124 MVA) for the outage of Homer City – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 9 MW to the overload.

5. The Raystown – Lewistown 230 kV line is overloaded to 145% of its emergency rating (554 MVA) for the outage of Homer City – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 24 MW to the overload.

6. The North Meshoppen - Oxbow 230 kV line is overloaded at 129% of its normal rating (499 MVA) at base case. The R56 project contributes approximately 8 MW to this overload.

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7. The Oxbow - Lackawanna 230 kV line is overloaded at 153% of its emergency rating (504 MVA) for the generator outage of unit#1 at Susquehanna 24 kV substation (Cont Id. PL57). The R56 project contributes approximately 8 MW to this overload.

8. The Timblin – Piney 115 kV line is overloaded to 142% of its emergency rating (124 MVA) for the outage of Homer City – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 9 MW to the overload.

9. The Trade City - Timblin 115 kV line is overloaded to 149% of its emergency rating (146 MVA) for the outage of Homer City – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 9 MW to the overload.

10. The Scalp Level – Rachel Hill 115 kV line is overloaded to 143.4% of its emergency rating (179 MVA) for the outage of Quemahoning – Homer City 230 kV line and Quemahoning – R56opt1 230 kV line and Hooversville 230/115 kV transformer (PN37_WITH_R56OP1_A). The R56 project contributes approximately 35.7 MW to the overload.

11. The Tower51 – Seward 115 kV line is overloaded at 258% of its emergency rating (159 MVA) for the outage of Homer Ct – Quemahoning 230 kV line and R56opt1 - Hooversville 230 kV line and Hooversville 230/115 kV transformer (Cont Id. PN37_WITH_R56OP1_B). The R56 project contributes approximately 62 MW to this overload.

12. The Hooversville - Tower51 115 kV line is overloaded to 299% of its emergency rating (146 MVA) for the outage of Quemahoning – Homer City 230 kV line and Quemahoning – R56opt1 230 kV line and Hooversville 230/115 kV transformer (PN37_WITH_R56OP1_A). The R56 project contributes approximately 63 MW to the overload.

13. The Rockwood – Penn-Mar 115 kV line is overloaded at 226% of its emergency rating (143 MVA) for the outage of Homer CT – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 15 MW to this overload.

14. The Penn-Mar – Garrett 115 kV line is overloaded at 197% of its emergency rating (167 MVA) for the outage of Homer CT – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 15 MW to this overload.

15. The Johnstown – N39 230 kV line is overloaded at 114% of its emergency rating (617 MVA) for the outage of Homer CT – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 21 MW to this overload.

16. The Dixonville – Trade City 115 kV line is overloaded at 116% of its emergency rating (197 MVA) for the outage of Homer CT – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 9 MW to this overload.

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17. The Homer City - Shelocta 230 kV line is overloaded at 188% of its emergency rating (854 MVA) for the outage of Erie West – Wayne 345 line and Wayne 345/115 kV transformer (Cont Id. PN32). The R56 project contributes approximately 61 MW to this overload.

18. The Shelocta – Keystone 230 kV line is overloaded at 193% of its emergency rating (854 MVA) for the outage of Erie West – Wayne 345 line and Wayne 345/115 kV transformer (Cont Id. PN32). The R56 project contributes approximately 66 MW to this overload.

19. The Keystone 500/230 kV ckt#3 transformer is overloaded at 224% of its emergency rating (471 MVA) for the outage of Keystone 500/230 kV transformer ckt#4 (Cont Id. PJM31). The R56 project contributes approximately 47 MW to this overload.

20. The Keystone 500/230 kV ckt#4 transformer is overloaded at 226% of its emergency rating (465 MVA) for the outage of Keystone 500/230 kV transformer ckt#3 (Cont Id. PJM30). The R56 project contributes approximately 47 MW to this overload.

21. The Lewistown – Juniata 230 kV line is overloaded at 148% of its emergency rating (617 MVA) for the outage of Homer CT – Shelocta – Keystone 230 kV line (Cont Id. PN41). The R56 project contributes approximately 21 MW to this overload.

22. The Juniata – Junia-H1 230 kV line is overloaded at 102.1% of its emergency rating (573 MVA) for the outage of Dauphin – Juniata 230 kV line and Dauphin 230/69 kV transformer (Cont. Id. PL10). This project contributes approximately 8 MW to this overload.

23. The Shingletown – Lewistown 230 kV line is overloaded at 122.2% of its emergency rating (505 MVA) for the outage of Raystown – Altoona 230 kV line Raystown – Lewistown 230 kV line (PN38). This project contributes approximately 6 MW to this overload.

24. The Garrett – N33C 138 kV line is overloaded at 107% of its emergency rating (201 MVA) for the outage of Carlos 138 kV bus (Cont Id. 584). The R56 project contributes approximately 8 MW to this overload.

25. The 01Albright – N33C 138 kV line is overloaded at 133% of its emergency rating (201 MVA for the outage of Carlos 138 kV bus (Cont Id. 584). The R56 project contributes approximately 9 MW to this overload.

26. The N39 – Altoona 230 kV line is overloaded at 116% of its normal rating (488 MVA). The R56 project contributes approximately 9 MW to this overload.

27. The R56opt1 – Quemahoning 230 kV line overloads at 177.8%of its emergency rating (263 MVA) for the outage of Garrett – Deep Creek – Penn Mar 115 kV line (Cont. Id. 585). This project contributes approximately 80 MW to the overload.

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OPTION 2:

All overloads and short circuit results identified for Option #2 are the same as were identified for Option #1.

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Figure #1
(Option 1)

Quemahoning – Hooversville 230 kV Line

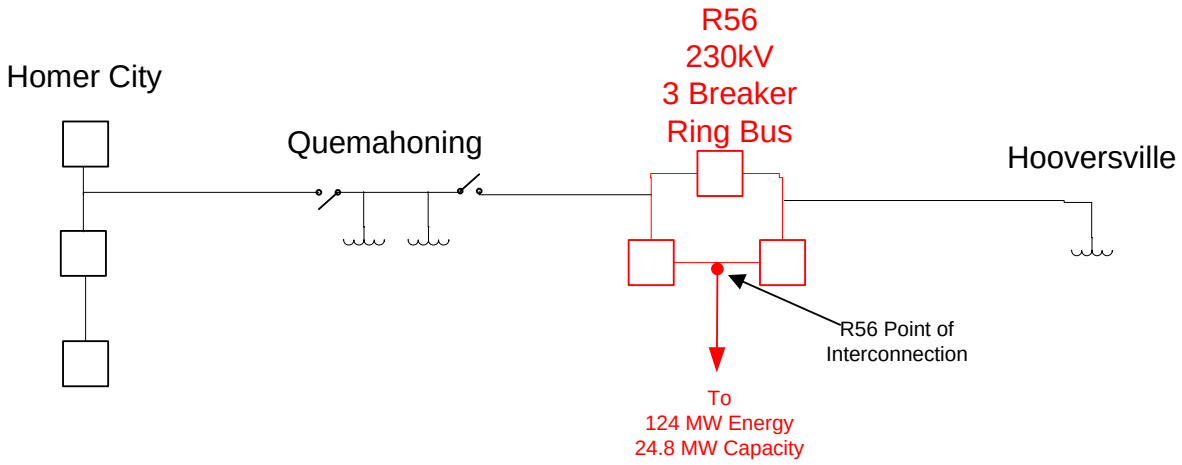
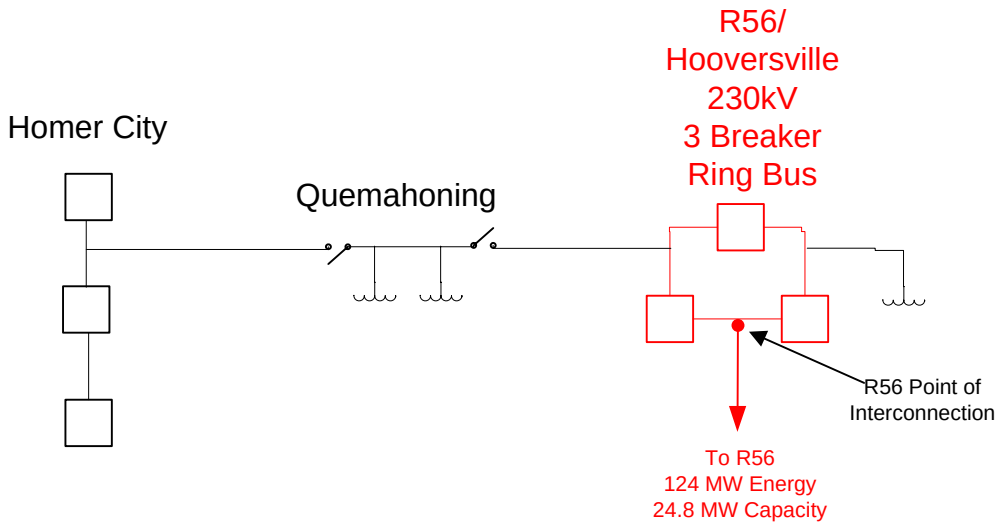


Figure #2
(Option 2)

Hooversville 230 kV Substation



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