

**#P46 – Lena 138kV
Generation Interconnection**

Option 1: Interconnection to the Baileyville Wind Farm to Lena 138kV line 11902 directly outside of the Lena 138 kV substation (TSS 180).

Network Impacts

The #P46 project was studied as a 100 MW (20 MW of Capacity) injection into (1) a tap of the Baileyville Wind Farm to Lena 138kV line 11902 directly outside of the Lena 138 kV substation and (2) into the Lancaster 138 kV substation. Project #P46 was evaluated for compliance with PJM reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

Option 1: Into a tap of the Baileyville Wind Farm to Lena 138kV line 11902

Generator Deliverability

No problems were identified.

Multiple Facility Contingency

No problems were identified.

Contribution to Previously Identified Overload

No problems were identified.

Contribution to Previously Identified System Reinforcements

To be determined at the System Impact Study.

Short Circuit

Two circuit breakers became overdutied at TSS 121 Freeport as a result of the interconnection of the #P46 project. Bus tie 1-2 circuit breaker at TSS 121 Freeport was overdutied at 100.2% of the breaker rating. Bus tie 1-5 circuit breaker at TSS 121 Freeport was overdutied at 102.6% of the breaker rating. The short-circuit study for #P46 considers the overdutied breakers upgraded for projects ahead of #P46 in the PJM queue. If projects ahead of #P46 drop out, the short-circuit analysis will be repeated, and #P46 may ultimately be responsible for additional breaker upgrades.

New System Reinforcements

| Qty | Item Description | Material | Labor | Total |
|--------------------------|---|------------------|------------------|------------------|
| 2 | Freeport 138kV Breaker Replacement, Relay and SCADA Modifications | \$420,000 | \$400,000 | \$820,000 |
| Material Subtotal | | \$420,000 | | |
| Labor Subtotal | | | \$400,000 | |
| Grand Total | | | | \$820,000 |

Potential Issues

Impacts on the MISO member transmission systems are not included in this analysis, but they will be included in the Impact Study, which may reveal upgrades needed in the MISO system not identified in this Feasibility Study.

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:

No problems were identified.

Option 2: Interconnection to the existing Lancaster Substation.

Network Impacts

The #P46 project was studied as a 100 MW (20 MW of Capacity) injection into the Lancaster 138 kV substation. Project #P46 was evaluated for compliance with PJM reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

Option 2: Into the Lancaster 138kV substation:

Generator Deliverability

No problems were identified.

Multiple Facility Contingency

No problems were identified.

Contribution to Previously Identified Overload

No problems were identified.

Contribution to Previously Identified System Reinforcements

To be determined at the System Impact Study.

Short Circuit

Two circuit breakers became overdutied at TSS 121 Freeport as a result of the interconnection of the #P46 project. Bus tie 1-2 circuit breaker at TSS 121 Freeport was overdutied at 100.4% of the breaker rating. Bus tie 1-5 circuit breaker at TSS 121 Freeport was overdutied at 102.8% of the breaker rating. The short-circuit study for #P46

considers the overdutied breakers upgraded for projects ahead of #P46 in the PJM queue. If projects ahead of #P46 drop out, the short-circuit analysis will be repeated, and #P46 may ultimately be responsible for additional breaker upgrades.

New System Reinforcements

| Qty | Item Description | Material | Labor | Total |
|--------------------------|---|------------------|------------------|------------------|
| 2 | Freeport 138kV Breaker Replacement, Relay and SCADA Modifications | \$420,000 | \$400,000 | \$820,000 |
| Material Subtotal | | \$420,000 | | |
| Labor Subtotal | | | \$400,000 | |
| Grand Total | | | | \$820,000 |

Potential Issues

Impacts on the MISO member transmission systems are not included in this analysis, but they will be included in the Impact Study, which may reveal upgrades needed in the MISO system not identified in this Feasibility Study.

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:

No problems were identified.