PJM Generator Interconnection Request
Queue #K23
Meyersdale North 115 kV
Impact Study Report

April 2004
DMS# 263426

Meyersdale North 115 kV Impact Study

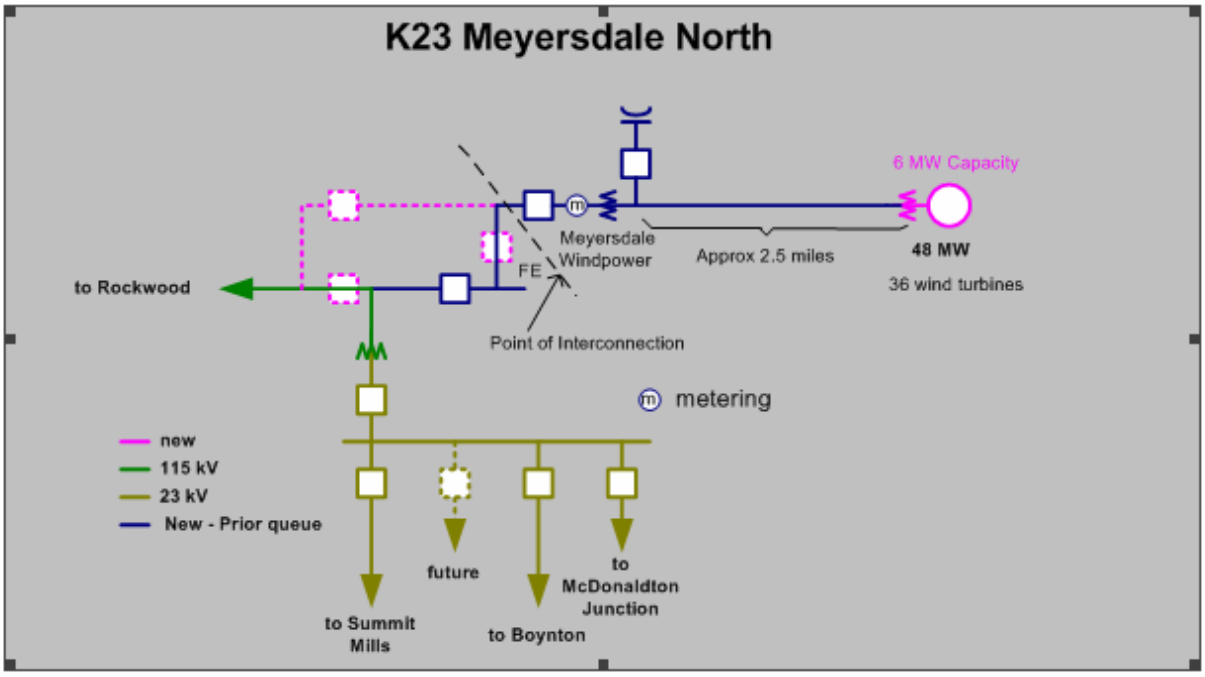
General

Meyersdale Windpower L.L.C. has requested Capacity Interconnection Rights for 6MW at the Meyersdale Windpower project, interconnected under queue position G21, located in Summit Township, Somerset County, Pennsylvania. The project is in service and connected as an energy-only resource to the Meyersdale North 115 kV substation via a new 115/34.5 kV power transformer located at Meyersdale North and a new 34.5 kV underground transmission line from Meyersdale North to the wind turbine collector substation.

Direct Connection

The Meyersdale Windpower generation facility is connected to the transmission system via a new 115/34.5 kV transformer located at the Meyersdale North substation and a new underground 34.5kV transmission line, approximately two and one-half miles long, built by the developer from the project site to the Meyersdale North 115 kV substation (see Figure 1). The existing interconnection is sufficient for 6 MW of Capacity Interconnection Rights.

Figure #1



Network Impacts

The system, as planned, was evaluated for compliance with MAAC reliability criteria utilizing a summer 2008 system. The Meyersdale North K23 project was modeled as described in the direct connection section and was studied as a 6 MW Capacity project. The results are summarized below.

Normal System
No identified problems.

Single Contingency (MAAC Criteria IIA)
No identified problems.

Second Contingency (MAAC Criteria IIB)
No identified problems.

Multiple Facility Contingency (MAAC Criteria IIC)
No identified problems.

Generator Deliverability
No identified problems.

Stability (MAAC Criteria IV)
The stability analysis performed for the project at queue position G21 is valid for the request at queue position K23. The results are reiterated here.

No identified problems.

See attachment #1 for the fault cases evaluated.

Stability analysis was performed at light load conditions. The range of contingencies evaluated was limited to that necessary to demonstrate compliance with MAAC Reliability Criteria II and IV.

Note: While the stability analysis has been performed at extreme system conditions, there is a potential that evaluation at higher levels of generator output over a range of load levels would disclose unforeseen stability problems. The MAAC yearly reliability analysis to be performed to test all system changes will include this evaluation. Any problems uncovered will need to be resolved. Moreover, when the proposed generating station is designed and unit specific dynamics data for the turbine generators are available, and if it is different than the data provided for this study, a transient stability study at a variety of expected operating conditions using the more accurate data should be performed to verify impact on the dynamic performance of the system. As more accurate or unit

specific dynamic data for the proposed facility, as well as Plant layout becomes available, it should be forwarded to PJM.

CETO/CETL (MAAC Criteria III / VIIB)
No identified problems.

Short Circuit Analysis
No breaker duty problems identified.

System Reinforcements
None required

Cost Allocation
None

Attachment #1

Meyersdale North-G21
2007 Light Load Stability Faults

Breaker Clearing Times (cycles)

Station	Primary (3ph/slg)	Stuck Breaker (total)	Zone 2 (total)
Rockwood 115 kV	7	20	36
Somerset 115 kV	7	20	36
Penn-Mar 115 kV	7	20	36
Hooversville 115 kV	7	20	36
F04 115 kV	7	20	36

CRITERIA TEST FAULTS (ALL STABLE)

g21-1a 3ph @ Rockwood 115 kV on Rockwood – Penn-Mar 115 kV
g21-1c slg @ 80% of Rockwood 115 kV on Rockwood – Penn-Mar 115 kV, zone 2 operation

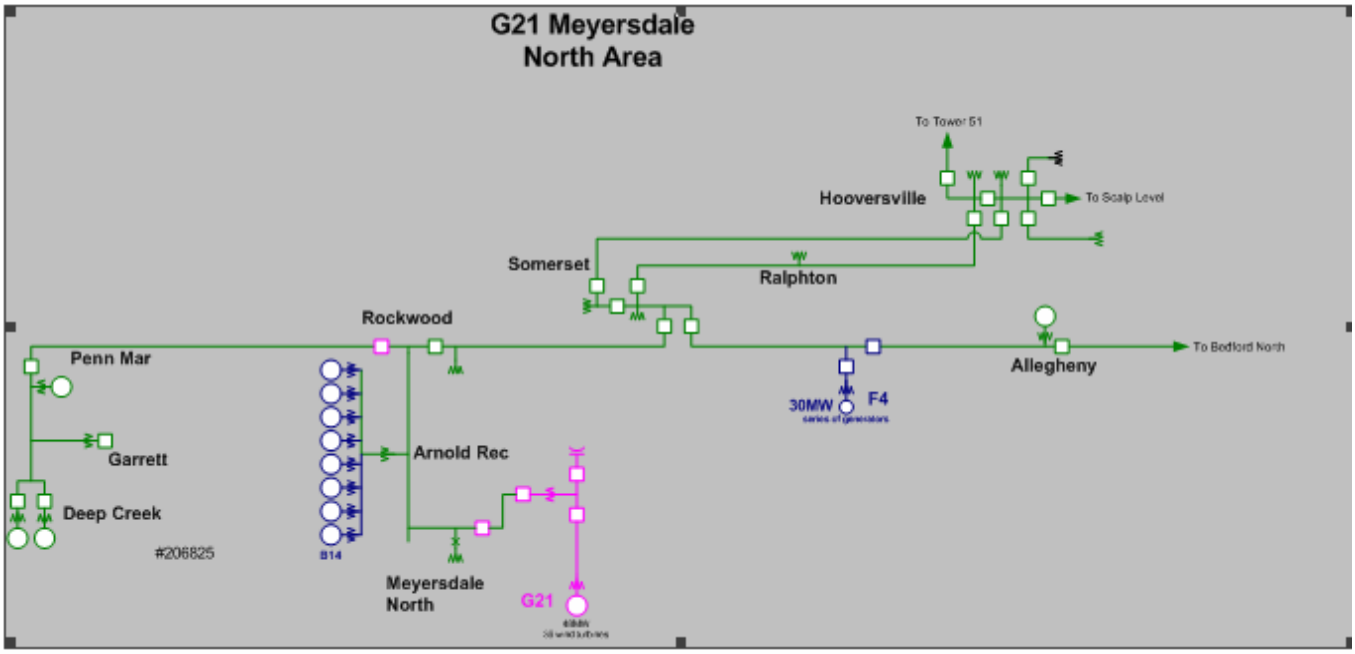
g21-2a 3ph @ Somerset 115 kV on Somerset – Hooversville 115 kV
g21-2b slg @ Somerset 115 kV on Somerset – Hooversville 115 kV, stuck at Somerset (loss of one Somerset transformer)
g21-2c slg @ 80% of Somerset 115 kV on Somerset – Hooversville 115 kV, zone 2 operation

g21-3a 3ph @ Somerset 115 kV on Somerset – Ralphton – Hooversville 115 kV
g21-3b slg @ Somerset 115 kV on Somerset – Ralphton – Hooversville 115 kV, stuck at Somerset (loss of Somerset – Rockwood, Somerset – F04, and one Somerset transformer)
g21-3c slg @ 80% of Somerset 115 kV on Somerset – Ralphton – Hooversville 115 kV, zone 2 operation

g21-4a 3ph @ Somerset 115 kV on Somerset – F04 115 kV
g21-4b slg @ Somerset 115 kV on Somerset – F04 115 kV, stuck at Somerset (loss of Somerset – Rockwood, Somerset – Ralphton, and one Somerset transformer)
g21-4c slg @ 80% of Somerset 115 kV on Somerset – F04 115 kV, zone 2 operation

ADDITIONAL TEST FAULTS

g21-1d same as g21-1c, but 3ph rather than slg fault (UNSTABLE)
g21-2d same as g21-2c, but 3ph rather than slg fault (UNSTABLE)
g21-3d same as g21-3c, but 3ph rather than slg fault (MARGINALLY STABLE)
g21-4d same as g21-4c, but 3ph rather than slg fault (UNSTABLE)


G21 Meyersdale
North Area
To Tower 51
Hooversville
To Scalp Level
Somerset
Ralphton
Rockwood
Penn Mar
To Bedford North
Allegheny
30MW
F4
Garrett
Arnold Rec
Deep Creek
#206825
B14
Meyersdale
North
G21