PJM Generator Interconnection Request
Queue #V4-010
Fremont Center-Tiffin Center 138 kV
Facilities Study

September 2015 (Revised May 2017)

V4-010 Fremont Center – Tiffin Center 138 kV Facilities Study Report

A. Facilities Study Summary

1. Project Description

Republic Wind, LLC proposes to install PJM Project #V4-010, a 200 MW wind generating facility. This generation facility would connect to the American Electric Power (AEP) Fremont Center – Tiffin Center 138 kV circuit via a new 138 kV switching station consisting of three (3) 138 kV circuit breakers to be physically configured in a breaker and one half bus arrangement, initially operated as a ring bus configuration (Figure 2). The proposed location of the generating facilities is located in Seneca County, Ohio (Figure 1). The projected in-service date is scheduled for December 31, 2016. Republic Wind, LLC has elected the "Option to Build" option, and will be responsible for the construction of the new 138 kV switching station.

2. Amendments/Changes to the Impact Study Report

3. Interconnection Customer Schedule

PJM and AEP currently understand that Republic Wind, LLC has established the following schedule dates:

Back feed In-service Date: **July 8, 2016**
Commercial Operation Date: **December 31, 2016**

4. AEP's Scope of Work to Facilitate Republic Wind, LLC's Interconnection

- AEP will review Interconnection Customer's drawings and will, at Interconnection Customer's request, provide advice and input concerning construction of Transmission Owner Interconnection Facilities to be built by Interconnection Customer, including the first span of conductors and communication cable connecting the transmission switching station to the generation collector station. **(n3134)**
- AEP shall construct 138 kV revenue metering. **(n3134)**
- AEP shall construct transmission line extension to connect the new 138 kV switching station to the Fremont Center – Tiffin Center 138 kV circuit. **(n3135)**
- AEP shall replace relay and controls at Fremont Center 138 kV Station. **(n3137)**
- AEP shall replace relay and controls at Tiffin Center 138 kV Station. **(n3136)**
- Republic Wind, LLC shall be responsible for obtaining the right-of-way, designing and constructing the transmission line between the wind project collector station and the new 138 kV switching station.

5. Description of Transmission Owner Facilities Included in the Facilities Study

Direct Connection Work

None required.

Network Upgrade Work
None required.

6. Total Cost of Transmission Owner Facilities Included in the Facilities Study:

Direct Connection facilities	$2,194,900
Network Upgrade facilities	0
Total Cost	$2,194,900

The estimates do not include the impact that delays in obtaining ROW, permits or other approvals may have.

7. Summary of Schedule Milestones for Completion of Transmission Owner Work Included in Facilities Study:

V4-010 Schedule	
Engineering Start	September 1, 2017
AEP Material Ordered	October 15, 2017
Construction Oversight Start	TBD
Construction Start	April 15, 2018
Outage (T-Line Foundations)	May 7, 2018 to May 18, 2018
Outage (T-Line, Remote Ends, Testing)	September 4, 2018 to September 19, 2018
Ready for back feed	October 19, 2018
Commercial Operation Date	December 31, 2018
Submission of Interconnection Customer as-built drawings	January 31, 2018

B. Transmission Owner Facilities Study Results

1. Transmission Lines – New

None required.

2. Transmission Lines – Upgrades

None required.

3. Substation Facilities – New

Republic Wind, LLC will be responsible for construction of the New 138 kV Switching Station consisting of three (3) new 138 kV circuit breakers to be physically configured in a breaker and one half bus arrangement, initially and operated as a ring bus to facilitate future expansion, relays, SCADA, 138 kV revenue metering, and associated equipment connecting to the Fremont Center – Tiffin Center 138 kV circuit. **(n3134)**

4. Substation Facilities – Non-Direct Connection Network Upgrades

AEP shall replace relay and controls at Fremont Center 138 kV Station. **(n3137)**
AEP shall replace relay and controls at Tiffin Center 138 kV Station. **(n3136)**

5. Metering & Communications

All metering equipment to be installed at the AEP Interconnect Station and the Republic Wind, LLC generation station shall meet the requirements as specified by AEP in the "AEP Metering and Telemetering Requirements for AEP Transmission Customers" document (SS-490011).

6. Environmental, Real Estate and Permitting Issues

7. Summary of Results of Study

Attachment Facilities	Network Upgrade Number (NUN)	Engineering	Material	Construction	Misc.	Total
New Station – Revenue Metering	**n3134**	$50,400	$90,100	$22,500	$48,700	$211,700
Fremont Center –Remote End Work	**n3137**	$37,500	$182,200	$144,000	$146,700	$510,400
Tiffin Center-Remote End Work	**n3136**	$37,100	$169,600	$122,400	$132,600	$461,700
Transmission Line Extension to New 138 kV Station	**n3135**	$90,300	$274,100	$260,800	$135,900	$761,100
Option to Build Oversight for New 138 kV Switching Station	**n3134**	$0	$0	$250,000	$0	$250,000
Total		**$215,300**	**$716,000**	**$549,700**	**$463,900**	**$2,194,900**

Schedules

October 15, 2017	Funding Approved
June 1, 2017	Outage requests made by
October 15, 2018	Backfeed
December 31, 2018	In-Service Date

Assumptions

None

8. Information Required for Interconnection Service Agreement

New Switching Station Interconnection Cost Breakdown

Direct Material	$729,209
Direct Labor	$768,015
Indirect Material	$69,647
Indirect Labor	$628,029
Total	$2,194,900

Approximate interconnection location of the proposed facilities

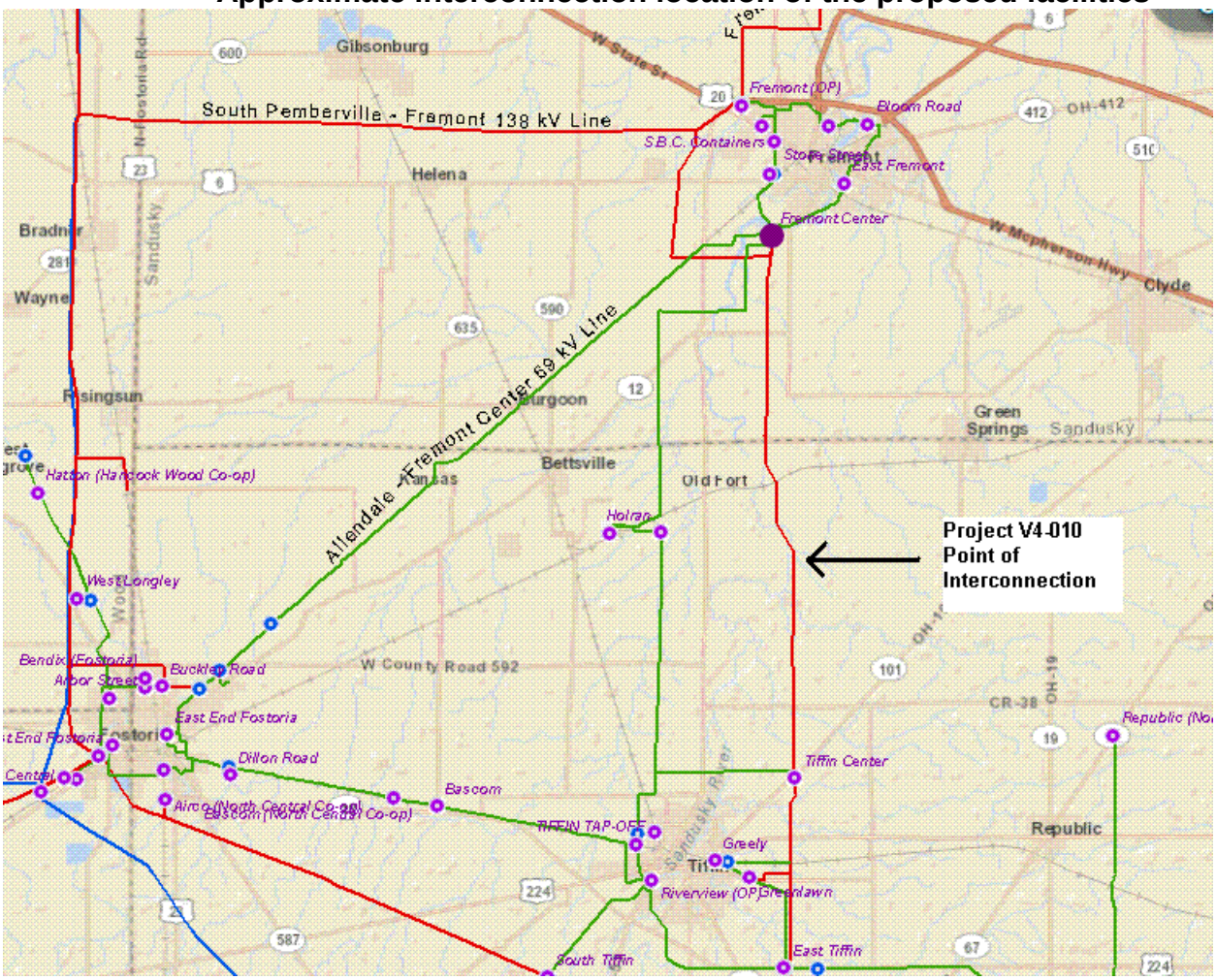
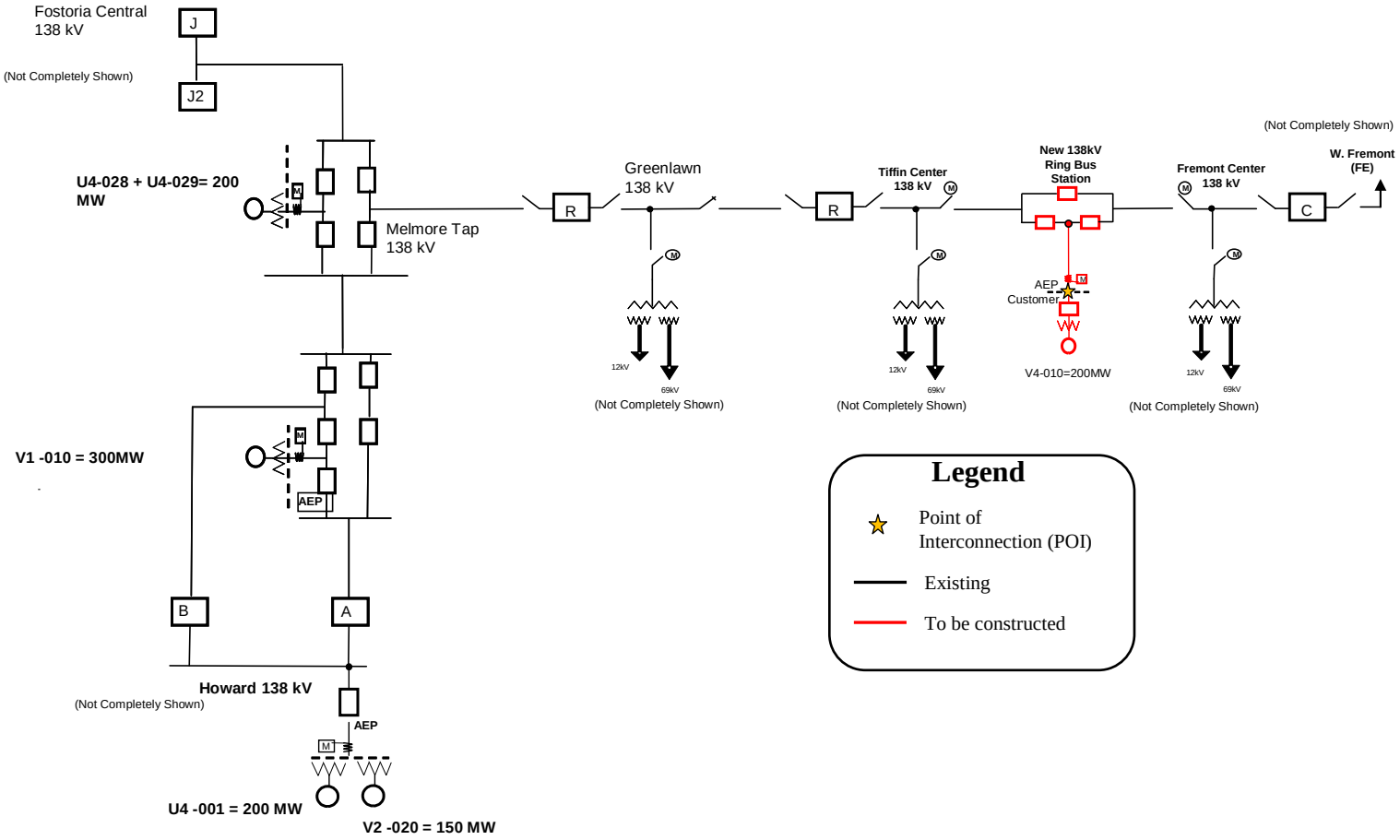


Figure 1

Project V4-010 One-Line Diagram

Tap the Tiffin Center-Fremont Center 138 kV line



The above one-line diagram shows the requirements for interconnection to the AEP system. The developer is responsible for configuration at the collector station.

Figure 2