PJM Generator Interconnection Request
Queue #X3-051
Flatlick 765 kV
Facilities Study

March 2016

X3-051 Flatlick 765 kV Facilities Study Report

A. Facilities Study Summary

1. Project Description

Tenaska Inc. proposes to install PJM Project #X3-051, a 610 MW (610 MW capacity) addition at its natural gas generating facility (Rolling Hills) in Vinton County, Ohio. The existing plant consists of five F class gas turbines. Tenaska plans to add two steam turbine generators to create 2-2x1 combined cycle units. One standalone gas turbine will remain. The existing gas turbines are 170 MW each. The point of interconnection evaluated is the existing Flatlick 765 kV station (Figure 1).

*The Generation Interconnection Agreement does not in or by itself establish a requirement for American Electric Power to provide power for consumption at the developer's facilities. A separate agreement may be reached with the local utility that provides service in the area to ensure that infrastructure is in place to meet this demand and proper metering equipment is installed. The metering work above and cost indicated below does not include any potential work or cost to address metering requirements of the local service provider. It is the responsibility of the developer to contact the local service provider to determine if a local service agreement is required.

2. Amendments/Changes to the Impact Study Report

- The requested back feed date has changed from 6/1/2015 to 6/1/2016
- The commercial operation date has changed from 3/1/2016 to 3/1/2017

3. Interconnection Customer Schedule

Tenaska has proposed the following schedule for their collector station:

- Receive back feed from AEP: 6/1/2016
- Commercial Operation Date: 3/1/2017

4. Scope of Work to Facilitate Tenaska's Interconnection

- AEP shall relocate the Flatlick 765 kV circuit breaker "C" to accommodate Tenaska's new steam turbine generator.
- AEP shall install 765 kV revenue metering.
- AEP shall replace/upgrade relay and controls at Marysville 765 kV station.
- Tenaska shall be responsible for obtaining the right-of-way, and land purchases for all facilities including access road.
- Tenaska shall be responsible for obtaining approval from the Corps of Engineers if required.

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

Direct Connection Work

- Relocate the Flatlick 765 kV circuit breaker "C" to accommodate Tenaska's new steam turbine generator.
- New 765kV revenue metering at Flatlick Station.

Network Upgrade Work

- Marysville Station – 765kV relay settings changes.
- Relocate a portion of the Gavin-Marysville 765 kV T-Line

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

Direct Connection facilities	$18,800,700
Network Upgrade facilities	$787,000
Total Cost	$19,587,700

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

Engineering start by March 2, 2016
Material ordered by April 1, 2016
Outage requests made by March 15, 2016
Backfeed by October 20, 2017
Commercial Operation date of December 31, 2017

B. Transmission Owner Facilities Study Results

1. Transmission Lines – New

- None required.

2. Transmission Lines – Upgrades

- Relocate a portion of the Gavin-Marysville 765kV T-Line.

3. Substation Facilities – New

- None

4. Substation Facilities – Upgrades

Marysville 765 kV station
Modify line relay package

5. Metering & Communications

All metering equipment to be installed at the AEP Interconnect Station and the Tenaska's 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

Tenaska will obtain all necessary permits including those from the Ohio Power Siting Board. Tenaska will be responsible for obtaining approval from the Corps of Engineers if required.

7. Summary of Results of Study

Cost Estimates for AEP

Description	Network Upgrade Number	Engineering	Material	Construction	Misc.	Total
Flatlick: Move 765kV CB - "C"	**n3729**	$373,800	$4,331,300	$8,636,100	$2,274,200	**$15,615,400**
Flatlick Removal Work	**n3729.1**	$240,100	$0	$1,235,700	$381,800	**$1,857,600**
Flatlick: 765kV Metering	**n3729.2**	$92,400	$717,200	$297,700	$220,400	**$1,327,700**
Marysville: Relay Work	**n3730**	$36,100	$198,600	$47,300	$111,100	**$393,100**
Gavin-Marysville T-Line Relocation	**n3729.3**	$17,300	$106,000	$201,600	$69,000	**$393,900**
	Total	**$759,700**	**$5,353,100**	**$10,418,400**	**$3,056,500**	**$19,587,700**

*Please note that any unforeseen changes of the Flatlick 765 kV station could change the remote end estimates at Marysville and Gavin stations.

Schedule

Task	Date
Project funding approved at AEP	August 1, 2016
Outage requests made by	March 15, 2016
Material ordered	April 1, 2016
Outage for testing & checkout	September 1, 2017 – October 20, 2017
Backfeed	October 20, 2017
Commercial Operation	December 31, 2017

Assumptions

System conditions allow for scheduled outages to occur.
ISA signed by March 1, 2016.
ICSA signed by April 1, 2016.
Tenaska will have their construction and required checkout completed prior to the start of the outage.

8. Information Required for Interconnection Service Agreement

	Direct Interconnection Cost Breakdown	Network Upgrade Cost Breakdown	Total
Direct Material	$5,048,500	$304,600	**$5,353,100**
Direct Labor	$10,875,800	$302,300	**$11,178,100**
Indirect Material	$723,200	$22,300	**$745,500**
Indirect Labor	$2,153,200	$157,800	**$2,311,000**
Total	**$18,800,700**	**$787,000**	**$19,587,700**

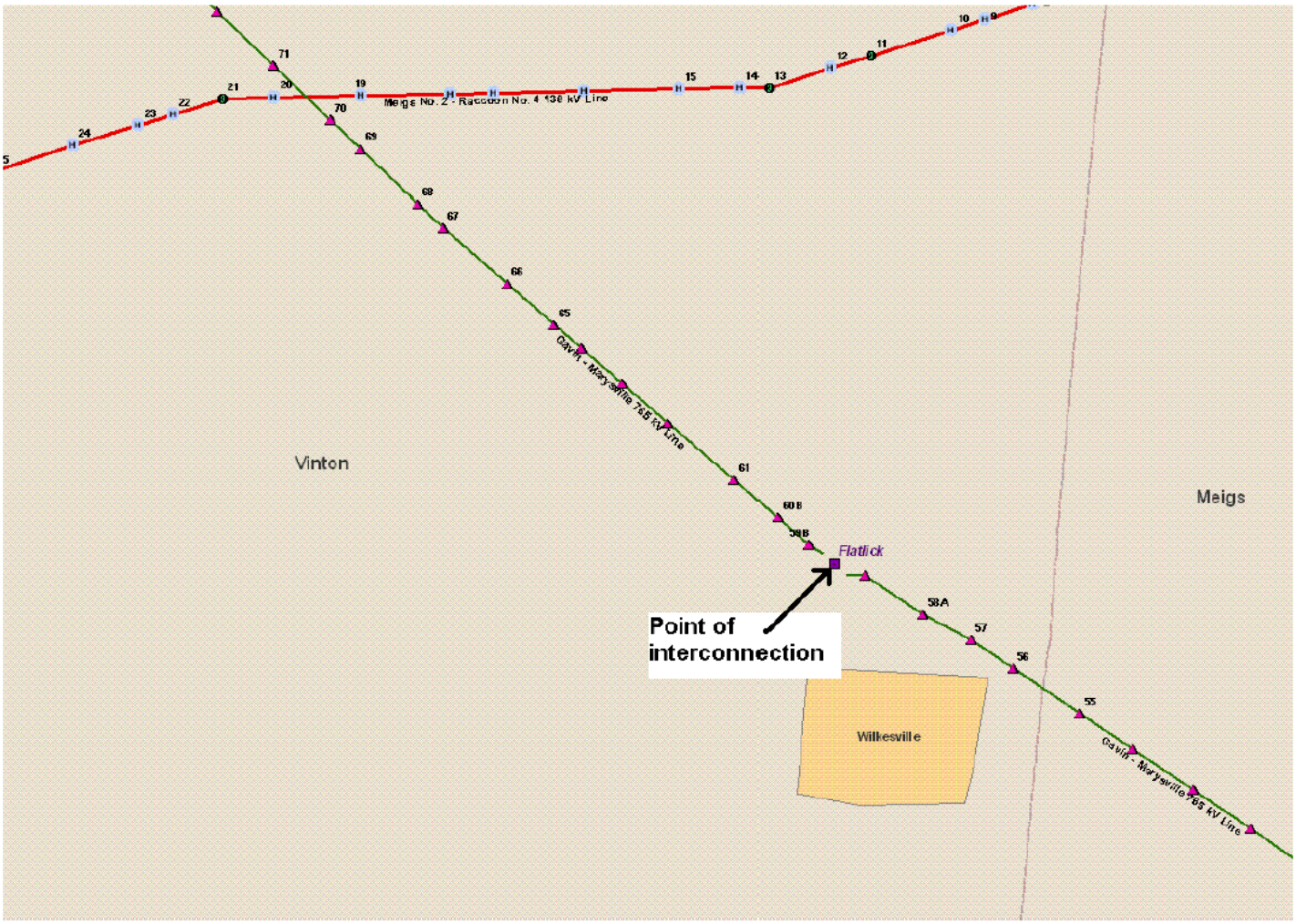
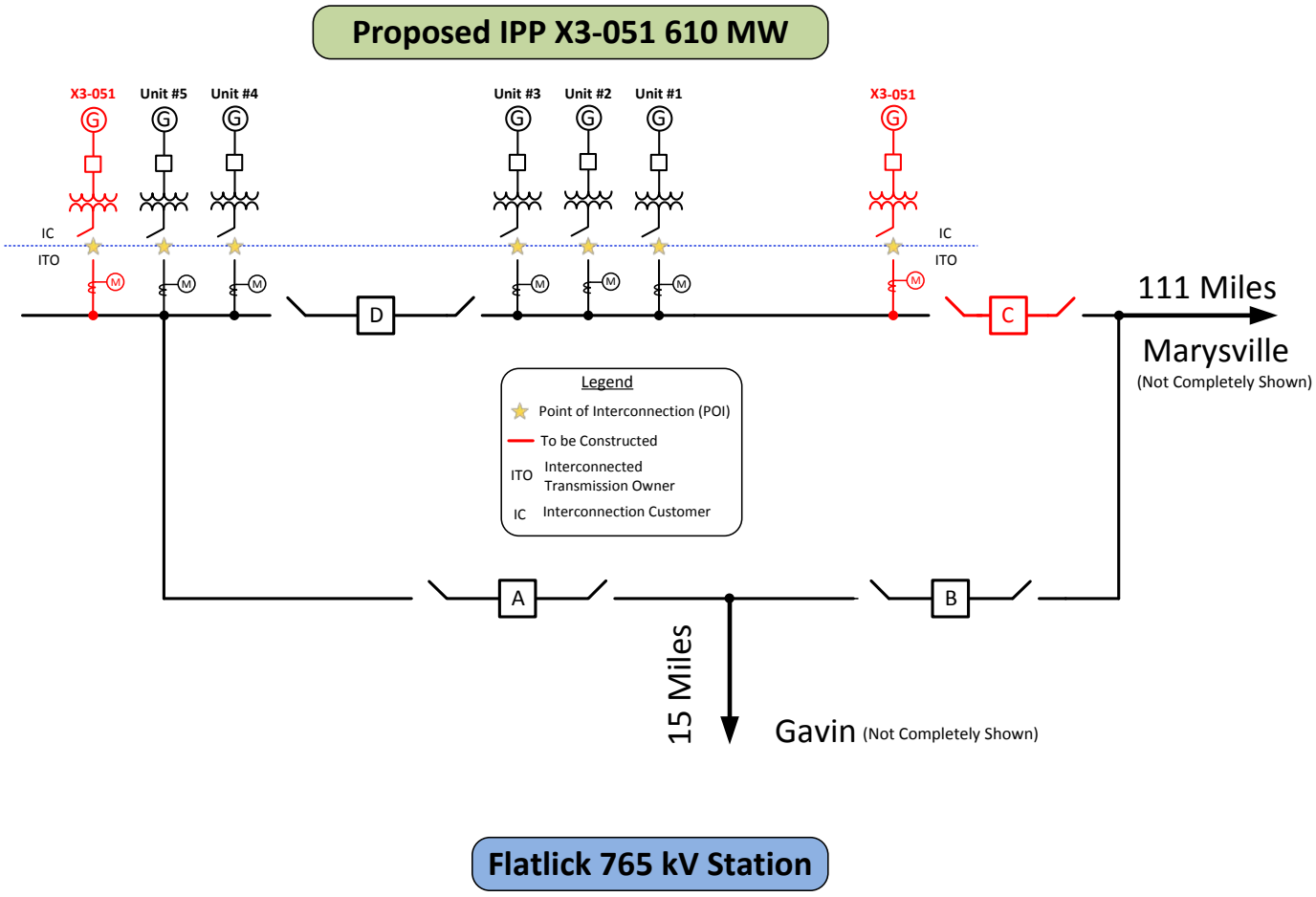


Figure 1



The Point of Interconnection is at the Interconnected Transmission Owner's transformer disconnect switch in Flatlick substation

Figure 2

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Schedule

Task	Date
Project funding approved at AEP	May 1, 2016
Outage requests made by	March 15, 2017
Material ordered	May 15, 2016
Outage for testing & checkout	September 1, 2017 – October 20, 2017
Backfeed	October 20, 2017
Commercial Operation	December 31, 2017

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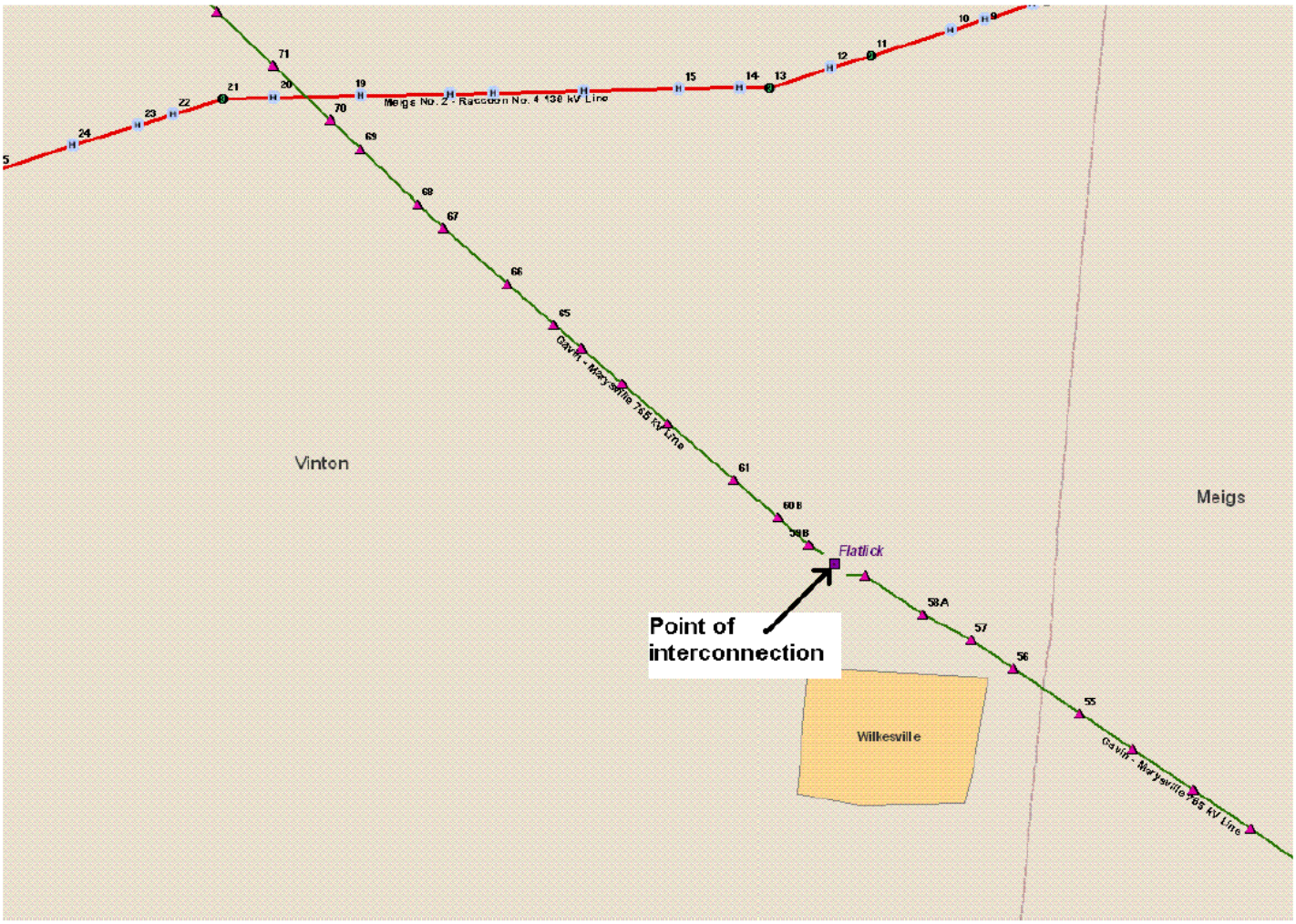

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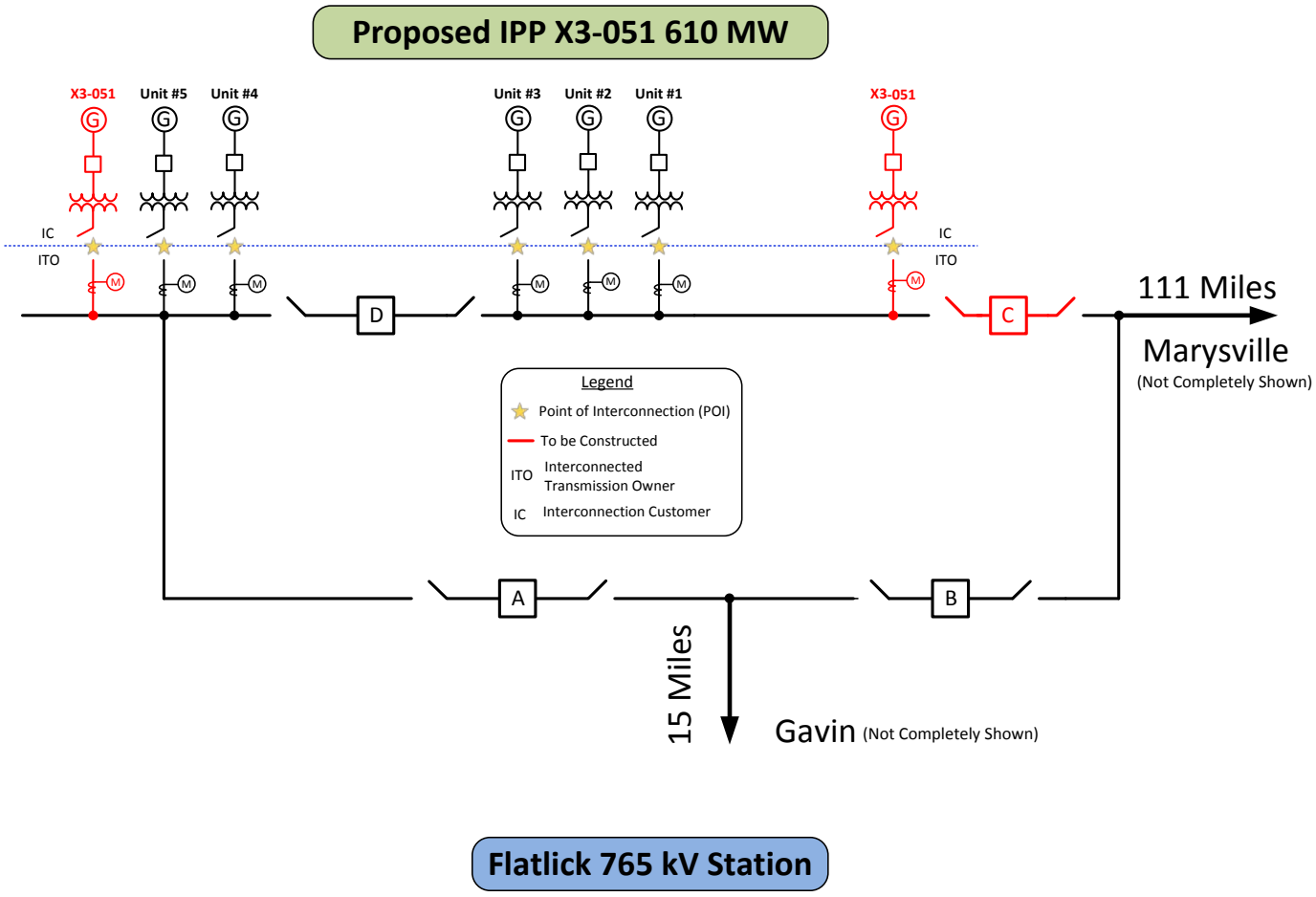

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