



PJM RTEP -2015 Window 1
Dequine-Meadow Lake 345 kV #3

A proposal to PJM Interconnection, Submitted August 4, 2015

Submitted by

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A. Executive Summary

American Electric Power (“AEP”) submits this proposal (the “Proposal”) to PJM Interconnection, LLC (“PJM”) in response to the *PJM RTEP 2015 Project Proposal Window 1*. AEP seeks to be considered the Designated Entity for the project described within this Proposal. As the Designated Entity AEP is proposing to construct, own, operate and maintain the proposed 345 kV line and associated station assets. Project should be considered as a whole.

AEP submits the “Dequine-Meadow Lake 345 kV ckt 3” proposal to address overloads identified during the 2020 generator deliverability analysis on the Dequine-Meadow Lake 345 kV ckt 1 under NERC Category B contingency conditions. AEP proposes to establish a third Dequine-Meadow Lake 345 kV circuit by constructing a Greenfield single circuit 345 kV line, approximately 14 miles between Dequine and Meadow Lake stations near West Lafayette, Indiana. In addition, installation of two 345 kV circuit breakers and re-arrangement of three (3) 345 kV lines at Dequine and Meadow Lake stations is also proposed. Total project cost is estimated to be at \$25.6 million with an in-service date of second quarter 2020.

The project proposes to address following Generator Deliverability overloads identified by PJM.

Flow Gate Number	Overloaded Branch	Rating (MVA)	Overload %	Contingency Definition
59	Dequine-Meadow Lake 345 kV #1	971	102.22	6490_B2_TOR16000 Loss of Dequine-Meadow Lake 345 kV #2

Project will require very limited outages as it involves mostly in the clear construction

B. Company Evaluation Information

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C. Proposed Project Constructability Information

Scope of the project will include those components associated with the Dequine-Meadow Lake 345 kV Ckt 3 project including a new single circuit 345 kV line between Dequine and Meadow Lake stations in addition to necessary modifications required at Dequine and Meadow Lake stations. AEP is requesting designated entity status for all components.

AEP proposes to establish Dequine-Meadow Lake 345 kV circuit number three by constructing a Greenfield single circuit 345 kV line between Meadow Lake stations near Lafayette, Indiana. The new line shall be constructed utilizing galvanized steel monopoles in new right of way (ROW). Steel poles will have full length anchor bolt dried pier foundations. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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Figure C.1: Dequine-Meadow Lake 345 kV #3 Proposed Line Route

Drawing of a typical 345 kV transmission line structure that AEP has used in the past for similar projects is shown in Figure C.2.

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Figure C.2: Typical 345 kV Transmission Line Structure

The study area is located in Tippecanoe and White Counties in the west-central region of the state, north of the city of West Lafayette, Indiana, within the glacial till plains near the intersection of the Central and Eastern Corn Belt Plains ecoregions. The project area is relatively flat agricultural land northwest of the confluence of the Wabash and Tippecanoe Rivers, bisected near the county boundary by Burnett Creek and several channelized tributaries. The study area northwest of the existing 345kV corridor is flatter and mostly agricultural, with a few channelized drainages and almost no remnant woodlots or tree lines. The study area southeast of the existing 345kV transmission lines is more rolling, but also predominantly agricultural, with a few patches of riparian forest along Indian and Burnett

Creeks and their tributaries that drain southeast into the Wabash River valley. The south limits of the study area contain scattered residential areas in the outskirts of West Lafayette. The project also crosses the Interstate 65 corridor in the southern portion of White County.

[REDACTED]

[REDACTED]

[REDACTED]

Dequine and Meadow Lake station simplified oneline diagrams are shown in Figure C.3 and Figure C.4 respectively.

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Figure C.3: Dequine Station Proposed Simplified Oneline Diagram

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Figure C.4: Meadow Lake Station Proposed Simplified Oneline Diagram

Dequine and Meadow Lake station simplified geographic maps with superimposed onelines are shown in Figure C.5 and Figure C.6 respectively.

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Figure C.5: Dequine Station Geographic Map with Superimposed Oneline

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Figure C.6: Meadow Lake Station Geographic Map with Superimposed Oneline

AEP brings extensive experience and knowledge in transmission line and station siting and environmental permitting. Early and effective communication with stakeholders and protecting human and environmental resources is of high importance. In this regard, AEP begins outreach efforts early in project siting/planning process to clearly convey the need for the project, as well as collect input from interested parties and stakeholders.

During the siting stages, extensive stakeholder input is collected and existing land use is assessed, including the presence of and proximity to dwellings/homes, schools, daycares, hospitals, other community facilities, businesses, commercial structures, churches and airports, and protected lands. Future plans for residential, industrial, and commercial development are also considered. Additional factors include the presence of and proximity to the following natural and cultural resources: wetlands, streams, springs, forests, prime farmland soils, previously documented architectural and archaeological resources, rare or endangered species, and recreational and aesthetic resources like bikeways, scenic byways, trails and parks. A preferred route is ultimately selected based on the evaluation of all potential routes using the stakeholder input, siting criteria, evaluation of potential impacts to sensitive areas, field evaluations and the professional judgment of the siting team. This process ensures that the final route reasonably minimizes adverse impacts to both landowners and sensitive resources and is consistent with the siting criteria of the jurisdictional agency while allowing the construction, operation and maintenance of the asset.

Once a preferred route has been identified, AEP continues communication with agencies and stakeholders and completes the required environmental field studies including historic (i.e. archaeological and architectural) and natural resources (i.e. protected species and wetlands). Ultimately, the Company complies with all federal, state, and local requirements including storm water regulations (i.e. erosion and sediment control approvals).

Low to moderate potential for public opposition is expected for this project. The project area is north of the community of West Lafayette and Purdue University, and northwest of the confluence of the Tippecanoe and Wabash Rivers, an area with numerous significant historic and archaeological sites. The proximity of the project area to a land grant university may generate some general public and academic interest, particularly if a Greenfield third circuit is proposed, with the potential to affect additional agricultural areas and crossing tributaries of the Tippecanoe and Wabash Rivers. Any potential opposition to the project can be avoided or reduced by effective early project need explanation and encouraging early input from potentially-affected parties and interested stakeholders, as well as implementing good design and siting practices to avoid impacts to identified natural and cultural resources, and minimize impacts to agricultural lands.

Assessment of environmental impacts related to all facilities is shown in Table C.1.

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Table C.1: Project Environmental Impacts

D. Analytical Assessment

Gen Delv and N-1 analysis was performed for the project. Modeling information was provided separately on 7/17/2015 to PJM. Station configuration is covered in section C and was also provided to PJM on 7/17/2015.

Loading on Dequine-Meadow Lake 345 kV Ckt 1 is decreased by 50% under this proposal. N-1 simulation results are shown in Figure D1 and D2 below.

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Figure D1: Loading on Dequine-Meadow 345 kV Ckt 1 for the loss of Dequine-Meadow Lake 345 kV Ckt 2

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Figure D2: Loading on Dequine-Meadow 345 kV Ckt 1 for the loss of Dequine-Meadow Lake 345 kV Ckt 2 under this project

E. Cost

Project cost information is provided in Figure E1 below.

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Project assumptions broken down by line, station and ROW are provided below.

Transmission Line Assumptions:

[REDACTED]

[Redacted text block]

ROW Assumptions:

[Redacted text block]

Substation Assumptions:

[Redacted text block]

F. Schedule

Project conceptual schedule is shown below in Figure F1.

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Figure F1: Conceptual Project Schedule

G. Operations/Maintenance

Operational Plan

[REDACTED]

Maintenance Plan

[REDACTED]