

FirstEnergy

GREENFIELD PROJECT PROPOSAL FOR THE AP South Reactive Interface A Market Efficiency Proposal

For the 2014-15 RTEP Long Term Proposal Window

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A. Executive Summary

A.1. Name and address of proposing entity

FirstEnergy Corporation (FirstEnergy)
76 South Main Street
Akron, Ohio 44308

A.2. General description of proposed projects

This proposal is a submittal by FirstEnergy in response to the 2014-15 RTEP Long Term Proposal Window. This proposal has two project portions as identified below that will resolve the AP South congestion detailed in Section A.3. FirstEnergy requests Designated Entity status for these projects as described below. The elements include:

Install series capacitors on the Mt.Storm-Doubs 500 kV line - resolves the PJM 2014-15 RTEP Long Term Proposal Window market congestion posted for the AP South Interface for loss of Black Oak-Bedington detailed in section A.3 below.

1. **Install a [REDACTED] series capacitor at Doubs Substation:** Upgrade/expand the Doubs 500 kV Substation. Install a [REDACTED] series capacitor and associated facilities.
2. **Install a [REDACTED] series capacitor at Notlew station:** Construct a new 500 kV switching station approximately [REDACTED] from Dominion's existing Mt. Storm substation to FirstEnergy's new Notlew 500 kV switching station. Install a [REDACTED] series capacitor and associated facilities. Construct a 0.5 mile 500 kV loop from the Doubs-Mt. Storm 500 kV line into Notlew switching station.

A.3. Market Efficiency congestion issue proposed to resolve

The proposed solution provides a long-term solution to the Market Efficiency congestion issue reported in the 2014-15 RTEP Long Term Proposal Window v8 provided during the RFP process.

Market Efficiency congestion resolved by the proposals

The proposed project will address the Market Efficiency congestion associated with the AP South Interface for the loss of the Black Oak-Bedington 500 kV line. The Benefit to Cost ratio based on the FE PROMOD analysis is 2.83 which exceeds the threshold of 1.25. See Attachment 4 ME – Benefit-Cost Calculation.

A.4. Total proposed project cost

Proposal	Estimated Cost
Install series capacitors on the Mt.Storm-Doubs 500 kV line	\$66.7 million

A.5. Overall schedule duration

The expected schedule duration is 32 months from receipt of approval from PJM.

A.6. Designated Entity

A.6.a. Status/pre-qualification

FirstEnergy has received Pre-Qualification status from PJM under ID 13-10 indicating satisfaction of the pre-qualification requirements for Designated Entity status as defined in the PJM Amended and Restated Operating Agreement ("PJM OZ") in section 1.5.8(a). Consequently, FirstEnergy is eligible as a Designated Entity to construct, own and operate facilities within PJM's footprint. The information as posted on PJM's website reflects the Company's current qualifications.

A.6.b. Statement of intent

For this proposal, FirstEnergy seeks to be the designated entity to construct, own, operate, maintain and finance the proposed project as described in section A.2 above.

B. Company Evaluation Information

B.1. Technical and engineering qualifications

FirstEnergy

FirstEnergy is a regional energy provider headquartered in Akron, Ohio. Its subsidiaries and affiliates are involved in the generation, transmission, distribution and sale of electricity, as well as energy management and other energy-related services. FirstEnergy is a publicly traded corporation. JCP&L, Met-Ed and Penelec are wholly-owned direct subsidiaries of FirstEnergy. Mon Power, Potomac Edison and West Penn Power are wholly-owned direct subsidiaries of Allegheny Energy, Inc., which is a wholly-owned direct subsidiary of FirstEnergy. ATSI and TrAILCo are wholly-owned direct subsidiaries of FirstEnergy Transmission, LLC, which is a wholly-owned subsidiary of Allegheny Energy, Inc.

FirstEnergy submitted its prequalification documentation on June 27, 2013 and was subsequently granted pre-qualified status by PJM and given ID number 13-10. Further, in compliance with the PJM Operating Agreement Schedule 6, Subsection 1.5.8(a)(3), on September 29, 2014, FirstEnergy submitted the appropriate updates to Section F of its initial prequalification information. As such, FirstEnergy hereby states that the pre-qualification information provided to PJM, as updated, reflects FirstEnergy's current qualifications for eligibility as a Designated Entity as defined in the Operating Agreement Subsection 1.5.8(a).

FirstEnergy hereby submits by reference as to the specific section in its original pre-qualification documentation (dated June 27, 2013 and subsequently accepted by PJM) as evidence of the following:

- FirstEnergy's technical and engineering qualifications (Section B)
- FirstEnergy's experience in:
 - developing, operating and maintaining transmission facilities (Section C);
 - adherence to standardized construction, maintenance and operating practices (Section E), and including the ability for emergency response and system restoration (Section H);
 - working in the geographic region in which the proposed project is located (Section D);
 - ability to acquire rights of way within the proposed projects geographic region (Section I)
- FirstEnergy has adequate financial resources available to construct, operate and maintain the proposed project.
- FirstEnergy has demonstrated its managerial ability to contain costs and adhere to construction schedules for numerous transmission projects that have been constructed by its 10 utilities and 2 transmission companies.
- FirstEnergy will not be offering any construction cost caps or commitments for the proposed project.
- FirstEnergy is amply qualified to construct, operate, and maintain the proposed project (Section C).

B.2. Experience

B.2.a. Types of facilities proposed

The facilities being proposed for this proposal are typical EHV facilities within the FirstEnergy transmission zone in PJM. The type of facilities in this proposal are not atypical of those which FirstEnergy already has extensive experience developing, operating and maintaining on a daily basis.

B.2.b. Standardized construction, maintenance, and operating practices

FirstEnergy has fully developed standardized construction, maintenance, and operating practices.

All work and design meets and adheres to the PJM Transmission and Substation Design Technical Requirements and PJM Manual 7 - PJM Protection standards.

As mentioned above, this Greenfield/upgrade proposal will become part of the existing transmission footprint of FirstEnergy. These new facilities will utilize the same standard construction, maintenance, and operating practices already in place at FirstEnergy.

For more information on FirstEnergy, please refer to the pre-qualification documents posted on PJM's website.

B.2.c. Working in the geographical region

This Greenfield/upgrade project is within the geographical region of FirstEnergy's existing transmission system. For FirstEnergy, this will become part of the PJM Western region. All new facilities will be supported by existing resources of FirstEnergy.

B.2.d. Rights of way in geographical region of project

FirstEnergy has extensive experience in acquiring rights-of-way for this proposal as this proposal is part of the company's existing transmission footprint with PJM.

B.3. Financing plan

Refer to the filed pre-qualification documents of FirstEnergy posted on PJM's website for information regarding the financing plan.

B.4. Cost containment and adherence to construction schedules

FirstEnergy will not be offering any construction cost caps or commitments to construction schedules for the proposed project.

B.5. Commitments

FirstEnergy will not be offering any commitments to the proposed project.

B.6. Unique qualifications

Refer to the filed pre-qualification documents of FirstEnergy posted on PJM's website for information regarding the unique qualifications of FirstEnergy.

B.7. Assumptions in developing proposal

The assumptions made in developing the proposal are mentioned in the various project components outlined herein.

C. Proposed Project Constructability Information

C.1. Component Scope

C.1.a. Upgraded/expanded Substation Facility Element Detail – Doubs 500 kV

C.1.a.1. General description of the proposed location

The proposed site for the expansion of Doubs Substation is located approximately 1.5 miles northeast of the town of Point of Rocks, MD; on the western side of Route 351. On *Attachment 2 Doubs Substation*, FirstEnergy has identified this site adjacent to the existing Doubs Substation which will permit expansion to connect to the existing FirstEnergy owned facilities at the Doubs Substation. The site is outlined in yellow.

C.1.a.2. One-line diagram and general arrangement drawing

See *Attachment 1 Doubs-Mt_Storm Series Cap Install*

C.1.a.3. Electrical design



C.1.a.4. Relay communications plan



C.1.a.5. Geographic map

See *Attachment 2 Doubs Substation*.

C.1.b. Greenfield Substation Element Detail – Notlew 500 kV Substation

C.1.b.1. General description of the proposed location

The proposed 500 kV switching station to be constructed will be located

[REDACTED]
On *Attachment 3 Notlew Switching Station*, FirstEnergy has identified this site. The site is outlined in yellow.

C.1.b.2. One-line diagram and general arrangement drawing

See *Attachment 1 Doubs-Mt_Storm Series Cap Install*

C.1.b.3. Electrical design

[REDACTED]

C.1.b.4. Relay communications plan

[REDACTED]

C.1.b.5. Geographic map

See *Attachment 3 Notlew Switching Station*.

Environmental, Permitting and Land Acquisition

C.1.b.6. Environmental impacts

Doubs Substation Site: FirstEnergy has not performed an environmental review for the preferred Doubs Substation expansion site:

Notlew Switching Station Site: FirstEnergy has not performed an environmental review for the preferred Notlew Switching Station site:

C.1.b.7. Right-of-way and land acquisition

FirstEnergy will acquire new easements (approx. 200' width) for the right-of-way needed for the new 500 kV line from the Mt.Storm-Doubs 500 kV line to the Notlew Switching Station and will acquire new property (approx. 10 acres) for the construction of the Notlew Switching Station.

C.1.b.8. Permitting plan and approach

FirstEnergy's permitting plan and approach is combined with their discussion of public opposition in Section c.1.b.9 below.

C.1.b.9. Discussion of potential public opposition

There is a potential for public opposition to occur in response to any project that proposes to install new or modify existing electric infrastructure. FirstEnergy plans to implement the following tasks to educate officials and the public on the need and benefits of the project. Through these communications efforts, the company seeks to minimize misunderstanding and the potential for significant public opposition to the project which could result in delays to the project schedule.

- a. FirstEnergy will develop a comprehensive communications plan to advise and gather input from the local communities on the project.
- b. FirstEnergy has initiated a site selection study to identify and evaluate potential sites for its substation to be installed next to or near the existing Doubs Substation. This study will evaluate the substation sites in an effort to identify and rank the sites that have the best potential for minimizing the overall impacts of the project. This will be followed by efforts starting with the most favorable site, to acquire property rights via negotiations.
- c. As project details become refined, local officials will be advised of the project. In addition to providing information on the project, this effort will seek to develop a dialog for future discussions that can resolve concerns about the project before they become points of opposition.
- d. FirstEnergy will host public information meetings on the project to both present project information and to solicit input from the community on the project. Additionally, the company will use a toll free phone line and web based site to also provide project details and provide an avenue to ask questions and provide comments.

C.2. Project Component Cost Estimates

C.2.a. Cost Estimate Table – Doubs Substation

Detail (required)	Estimated Cost
Engineering and design costs	██████████
Material and equipment costs	██████████
Construction and commissioning costs	██████████
Right-of-way and land procurement costs	██████████
Permitting costs	██████████
Construction management costs	██████████
Contingency	██████████
Other cost adders such as corporate overhead	██████████
TOTAL:	\$27,495,700

C.2.b. Cost Estimate Table – Doubs Substation Line Work

Detail (required)	Estimated Cost
Engineering and design costs	██████████
Material and equipment costs	██████████
Construction and commissioning costs	██████████
Right-of-way and land procurement costs	██████████
Permitting costs	██████████
Construction management costs	██████████
Contingency	██████████
Other cost adders such as corporate overhead	██████████
TOTAL:	\$2,065,000

C.2.c. Cost Estimate Table – Notlew Switching Station

Detail (required)	Estimated Cost
Engineering and design costs	██████████
Material and equipment costs	██████████
Construction and commissioning costs	██████████
Right-of-way and land procurement costs	██████████
Permitting costs	██████████
Construction management costs	██████████
Contingency	██████████
Other cost adders such as corporate overhead	██████████
TOTAL:	\$26,086,000

C.2.d. Cost Estimate Table – Notlew Switching Station Line Work

Detail (required)	Estimated Cost
Engineering and design costs	██████████
Material and equipment costs	██████████
Construction and commissioning costs	██████████
Right-of-way and land procurement costs	██████████
Permitting costs	██████████
Construction management costs	██████████
Contingency	██████████
Other cost adders such as corporate overhead	██████████
TOTAL:	\$11,027,000

C.3. Schedule

The schedule estimates below include consideration of preliminary work already completed and in progress.

C.3.a. Schedule for Doubs Substation and Line work

Task	Start Date	End Date
Engineering	1/1/2017	██████
Siting	██████	██████
Major Equipment Ordered		██████
Transmission Line	██████	██████
Substation Below Grade	██████	██████
Substation Above Grade	██████	6/1/2019

C.3.b. Schedule for Notlew Switching Station and Line Work

Task	Start Date	End Date
Engineering	1/1/2017	██████
Siting	██████	██████
Major Equipment Ordered		██████
Transmission Line	██████	██████
Substation Below Grade	██████	██████
Substation Above Grade	██████	6/1/2019

C.4. On-going Transmission Facility Items

C.4.a. Operational Plan

C.4.a.1. Plan for operating the new Transmission Facilities

The FirstEnergy facilities of the proposed Project will be operated from FirstEnergy's FE South control center.

C.4.a.2. Required telemetry

Facilities of the proposed Project will have telemetry consistent with FirstEnergy's practices.

C.4.b. Maintenance Plan

Facilities of the proposed Project will be maintained consistent with FirstEnergy's practices.

C.5. Assumptions

There are no other assumptions other than those mentioned above.