

Mid-Atlantic MCN, LLC  
Greenfield Project Proposal for  
Project B  
(New Shaker Run Substation, 345/138 kV)  
Submitted to:  
PJM Interconnection, LLC  
August 15, 2016  
For 2016 RTEP Proposal Window 2

## SIGNATURE PAGE

Approvals:

**Noman Williams**  
Noman Williams \_\_\_\_\_  
Senior Vice President, Chief Operating Officer                      Date

Digitally signed by Noman Williams  
DN: cn=Noman Williams, o=South Central  
MCN, ou=Engineering & Operations,  
email=williams@gridliance.com, c=US  
Date: 2016.08.15 15:38:35 -05'00'

**N. Beth Emery**  
N. Beth Emery \_\_\_\_\_  
Senior Vice President, General Counsel & Secretary                      Date

Digitally signed by N. Beth Emery  
DN: cn=N. Beth Emery, o=GridLiance, ou=SVP,  
General Counsel & Secretary,  
email=bemery@gridliance.com, c=US  
Date: 2016.08.15 15:28:11 -05'00'

Inquiries:

Questions and comments regarding this document should be referred to:

Noman Williams  
Senior VP, Engineering & Operations, COO  
Mid-Atlantic MCN, LLC  
2 N. LaSalle, Suite 430, Chicago, IL 60602  
Phone: (785) 259-5110  
Email: [nwilliams@gridliance.com](mailto:nwilliams@gridliance.com)

**Table of Contents**

**SIGNATURE PAGE**..... i  
**TABLE OF APPENDICES**..... iii  
**A. EXECUTIVE SUMMARY** ..... 4  
**B. COMPANY EVALUATION INFORMATION** ..... 5  
**C. PROPOSED PROJECT CONSTRUCTABILITY INFORMATION** ..... 45  
**D. ANALYTICAL ASSESSMENT** ..... 53  
**E. COST** ..... 53  
**F. SCHEDULE** ..... 55  
**G. OPERATIONS/MAINTENANCE** ..... 56

## TABLE OF APPENDICES

PREVIOUSLY SUBMITTED CONFIDENTIAL Appendix 1	Powerflow analysis results, single-line diagram(s) of proposed project, and aerial map(s) of proposed project
PREVIOUSLY SUBMITTED CONFIDENTIAL Appendix 2	Powerflow modeling files of proposed project: models, contingency files, and ideas
CONFIDENTIAL Appendix 3	Routing constraints of proposed project
CONFIDENTIAL Appendix 4	Project Schedule
Appendix 5	RTEP Proposal Template
CONFIDENTIAL Appendix 6	Detailed cost information of proposed project
CONFIDENTIAL Appendix 7	Financial records

## A. EXECUTIVE SUMMARY

Mid-Atlantic MCN, LLC (Mid-Atlantic MCN) is pleased to submit for consideration in the 2016 Regional Transmission Expansion Plan Proposal Window 2 Project B. As requested by PJM Interconnection, LLC (PJM), Mid-Atlantic MCN has organized this proposal in conformance with PJM's Greenfield Project Proposal Template.

- **Name of proposing entity:**
  - Mid-Atlantic MCN, LLC
  - 2 N. LaSalle Street
  - Suite 420
  - Chicago, IL 60602
  
- **Proposal Window and associated violation/issue being addressed**
  - **Identify the type of regional/interregional analysis or process that identified the violation/issue:**
    - 2016 RTEP Proposal Window 2
  
- **Violations caused by proposal/nearby violations not addressed by your proposal**
  - The proposal addresses the generator deliverability and N-1-1 thermal flowgates 907, N2-T6, N2-T7, N2-T8, N2-T9, and N2-T10.
  
- **Identify projects that span (e.g. ties between or taps) between two PJM Transmission Owner zones or between PJM and a neighboring Balancing Authority. This group includes transmission that spans two or more affiliated companies (e.g. Meted and Allegheny Power).**
  - This project does not span two PJM Transmission Owner zones or between PJM and a neighboring Balancing Authority.
  
- **Indication of intentions to construct/own/operate/maintain**
  - Mid-Atlantic MCN, LLC intends to construct, own, operate and maintain this Project.
  
- **Description of the proposed solution and corresponding violation(s) it resolves.**
  - Project B is a new Shaker Run 345/138 kV substation adjacent to the existing Shaker Run 138 kV substation. The new substation will connect the Todhunter to Foster 345 kV line and Warren to Nickel 138 kV line and existing Shaker Run 138 kV substation together through a 560 MVA transformer. A new double circuit 1-mile 138 kV line will be built to bring the Warren to Nickel 138 kV facility in and out of the new substation, and a new 138 kV tie line will be built between the new substation and existing Shaker Run substation. Project B resolves violations on generator deliverability and N-1-1 thermal flowgates 907, N2-T6, N2-T7, N2-T8, N2-T9, and N2-T10.

- **Description of how the project should be considered; only as a whole or if portions of the project should be considered as well. (Separable portions/combinations should be submitted as separate proposals. If a proposal is submitted with multiple options, PJM will split it into multiple proposals. PJM reserves the right to select the best project, regardless of how it is packaged by proposing entities.)**

This Project should be considered as a whole.

- **High Level overview of cost and cost commitment.**

Mid-Atlantic MCN estimates the cost of Project B as \$29.5 million including \$1 million by others for the addition of the new 138 kV terminal at the existing Shaker Run Substation. and committed to cost containment by agreeing to cap the capital expenditures that it seeks rate recovery of to \$ 28.5 million in 2016 dollars and \$29.1 million in year of occurrence dollars.

- **Additional benefits of your proposal above solving the identified violation/constrains.**

This Project provides no additional benefits to those identified above.

## **B. COMPANY EVALUATION INFORMATION**

- **Name and address of the entity including a primary and secondary point of contact.**

Mid-Atlantic MCN, LLC  
2 N. LaSalle Street, Suite 420  
Chicago, IL 60602

### **The primary point of contact is:**

Noman Williams  
Senior VP, Engineering & Operations, COO  
Mid-Atlantic MCN, LLC  
2 N. LaSalle Street, Suite 420, Chicago, IL 60602  
Phone: (785) 259-5110  
Email: [nwilliams@gridliance.com](mailto:nwilliams@gridliance.com)

### **The secondary point of contact is:**

N. Beth Emery  
Senior VP, General Counsel and Secretary  
Mid-Atlantic MCN, LLC  
2 N. LaSalle Street, Suite 420, Chicago, IL 60602

Phone: (210) 380-6599  
Email: [bemery@gridliance.com](mailto:bemery@gridliance.com)

- **Pre-qualification submittal identification number**

Mid-Atlantic MCN, LLC's Pre-qualification submittal identification number is 15-02.

- **Optional: Additional company information, not already included in the pre-qualification, relevant to the specific proposal project that demonstrates one or more of the following:**

- **Technical and engineering qualifications of the entity or its affiliate, partner, or parent company.**

In addition to the technical and engineering qualifications of Mid-Atlantic MCN's senior leadership team submitted in the pre-qualification process. Mid-Atlantic MCN has added additional internal resources with decades of technical experience developing, designing, constructing, operating and maintaining transmission and substation facilities:

Neal Chapman, Vice President Engineering

A. Transmission Project Development - LS Power Development, LLC and Affiliates

- a. Cross Texas – 236 miles of double circuit 345 kV transmission and new 345 kV switching station and 345 kV series compensation station.
- b. Artificial Island – New competitively bid 230 kV solution for PJM window addressing issues around Artificial Island nuclear plants.
- c. New York Energy Highway – Competitive solution in response to New York State's Energy Blueprint. Proposal consisted of 130 miles of 345 kV transmission in Upstate New York and the Hudson Valley.
- d. Delaney – Colorado River – Competitive proposal in response to CAISO RFP for construction of the Delaney – Colorado River 500 kV transmission project.
- e. Ft. McMurray West project – Competitive proposal in response to AESO RFP for construction of the Ft. McMurray West 500 kV transmission line.

B. Transmission Design – Ameren Services

- a. Multiple 110 kV to 345 kV re-build, re-conductor and greenfield transmission line projects.
- C. Transmission Maintenance – Ameren Services
  - a. Responsible for \$8 million annual budget for maintenance of 7000 miles of transmission facilities
  - b. Negotiate and manage internal and third party construction contracts and activities
  - c. Provide point of contact for easement encroachments and development with landowners, developers and state agencies
- D. Transmission and Distribution Design – City Utilities of Springfield, MO

Jim Useldinger, Vice President Operations

- A. Transmission Operations – Kansas City Power & Light Co.
  - a. Responsible for the reliable and safe operation of over 3300 miles of 345/161/69 kV transmission lines serving 820,000 customers in the Kansas City service area.
  - b. Subject matter expert for all transmission operations reliability compliance with respect to NERC Reliability Standards
  - c. Member of the SPP Operating Reliability Working Group (ORWG), member of the NERC Operating Committee (OC) and EMS Working Group (EMSWG)
- B. Transmission Planning – Kansas City Power & Light Co.
  - a. Responsible for the long-term transmission planning and operations planning functions of the KCP&L bulk transmission systems
  - b. Reliability analysis of bulk power transmission system, load serving system planning, and modeling

Rachel Hulett, Manager RTO Planning

- A. Transmission Planning – Southwest Power Pool
  - a. Planning studies for NERC Standards
  - b. SPP Transmission Expansion Plan studies
    - i. Integrated Transmission Planning
    - ii. SPP Priority Projects
    - iii. Balanced Portfolio
    - iv. Interregional Planning
    - v. Sub-Regional Planning
    - vi. SPP Tariff Attachment AQ
  - c. Transmission expansion project tracking

Eric Burkey, Manager RTO Planning

- A. Transmission Planning – Ameren Services
  - a. Ameren planning studies
    - i. NERC TPL Standards
    - ii. Economic
    - iii. Generation Interconnection
    - iv. Generation Deliverability
    - v. Load Addition
    - vi. Harmonic analysis
    - vii. Short circuit
  - b. Participation in MISO and SPP transmission studies
  - c. Participation in PJM Studies
    - i. Reliability Studies
    - ii. Market Efficiency Studies
  - d. Implementation of processes to support Order 1000
- B. Transmission Planning – Southwest Power Pool
  - a. Planning studies for NERC TPL Standards
  - b. Entergy SPP Cost Benefit Study
  - c. Entergy economic studies
  - d. Transmission Service studies

Raja Srivastava, Manager Transmission Planning

- A. Transmission Planning – RES America
  - a. Various transmission studies
  - b. Cost benefit analysis using revenue requirements and customer rate impacts
  - c. Participation in CAISO, ERCOT, MISO, and SPP transmission studies
- B. Transmission Planning – MISO
  - a. FERC Order and tariff related to open access
  - b. Generation Interconnection policies
  - c. Operational challenges with integrating large renewable wind and solar to the grid
  - d. Various transmission studies
- C. Transmission Planning – CAISO
  - a. FERC orders related to transmission planning and generation interconnection
  - b. Generation interconnection studies
  - c. Economic studies

Sinisa Mandic, Manager, Capital Projects

- A. Project Management Manager – PLH Group
  - a. 345 kV Sewaren to Metuchen Conversion Project (PSE&G)
  - b. S.O.N.G.S Cold and Dark ( Kiewit/Southern California Edison)
  - c. 230 kV Monticello to Reed Project (Entergy Arkansas)
  - d. 345 kV Woodward to Hitchland Transmission Project (OG&E)
  - e. Oklaunion Substation Construction (345 kV , HVDC/AC) ABB
  - f. Services for OH Distribution Facilities (LADWP)
  - g. Energy Maintenance Projects (CenterPoint Energy)
  
- B. Construction Manager – Henkels & McCoy
  - a. Solar Star Power Complex 1 & 2 (Sunpower)
  - b. Topaz Solar farm (First Solar/MidAmerican Energy)
  - c. SCE Maintenance Program (Southern California Edison)
  - d. Power and Communication Rebuild (MetroLink – California)
  - e. Eldorado Power Complex Expansion (SEMPRA Generation)

Randall Huisinga, Senior Substation Engineer

- A. Substation Design – Stanley Consultants
  - a. Iowa Fertilizer Plant 69 kV greenfield substation
  - b. Cross Texas – Two (2) new 345 kV nine position greenfield substations. 345 kV series capacitor installation, two circuits
  - c. University of Iowa – 15 kV switchgear replacement
  - d. Project ALCOA Warrick Aluminum Plant – 138 kV ring bus expansion, addition of two 138 kV circuit breakers, and addition of two 138/13.8/4.16 kV transformers
  - e. Project US Navy – 11 kV distribution system upgrade in Djibouti, Africa
  - f. Marshalltown, IA – Relocation of multiple transmission lines, 345 kV and 161 kV, to greenfield substations and 161 kV substation upgrade
  - g. NPPD – 115/69 kV and 115/34.5 kV substation expansions
  - h. Texas A&M University – 25 MVA, 138/12 kV transformer addition with switchgear and protective relay systems renovation
  - i. Great Lakes Naval Base – voltage regulator replacement
  
- B. Substation Design – ABB Inc.
  - a. Multiple 115 kV to 345 kV upgrade and greenfield substation projects.

○ **Qualifications/partnerships for specific technical aspects of a proposal**

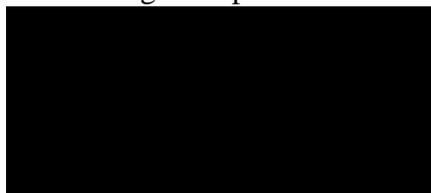
Mid-Atlantic MCN, with its internal personnel and through its agreements with third parties, including Public Power partners, legal and consulting firms, engineering companies, and construction companies, has access to the technical and engineering capabilities necessary to successfully sponsor projects in the PJM region.

At the core of Mid-Atlantic MCN's qualifications is its executive management team, which has decades of experience managing the siting, permitting, engineering, procurement and construction of transmission projects. The management team consists of the following:

- President and CEO: Edward Rahill
- Senior Vice President, Engineering & Operations and COO: Noman Williams
- Senior Vice President Business Development: Carl Huslig
- Senior Vice President, General Counsel and Secretary: Beth Emery
- Vice President, Regulatory and Compliance: Trent Carlson
- Vice President, Operations: Jim Useldinger
- Vice President, Engineering: Neal Chapman
- Director, Transmission Planning: Jody Holland
- Manager, RTO Planning: Rachel Hulett
- Manager, RTO Planning: Eric Burkey
- Manager, Transmission Planning: Raja Srivastava
- Manager, Capital Projects: Sinisa Mandic
- Manager, Substation Engineering: Randall Huisinga

Successful competitive transmission development requires being able to manage a large number of major contractors, consultants, and suppliers. Mid-Atlantic MCN leverages its in-house experience and capabilities with major contractors, consultants and suppliers. Mid-Atlantic MCN combines individual contractor selection with alliance arrangements, based on the experience and qualifications of the contractors relative to the requirements of each individual project.

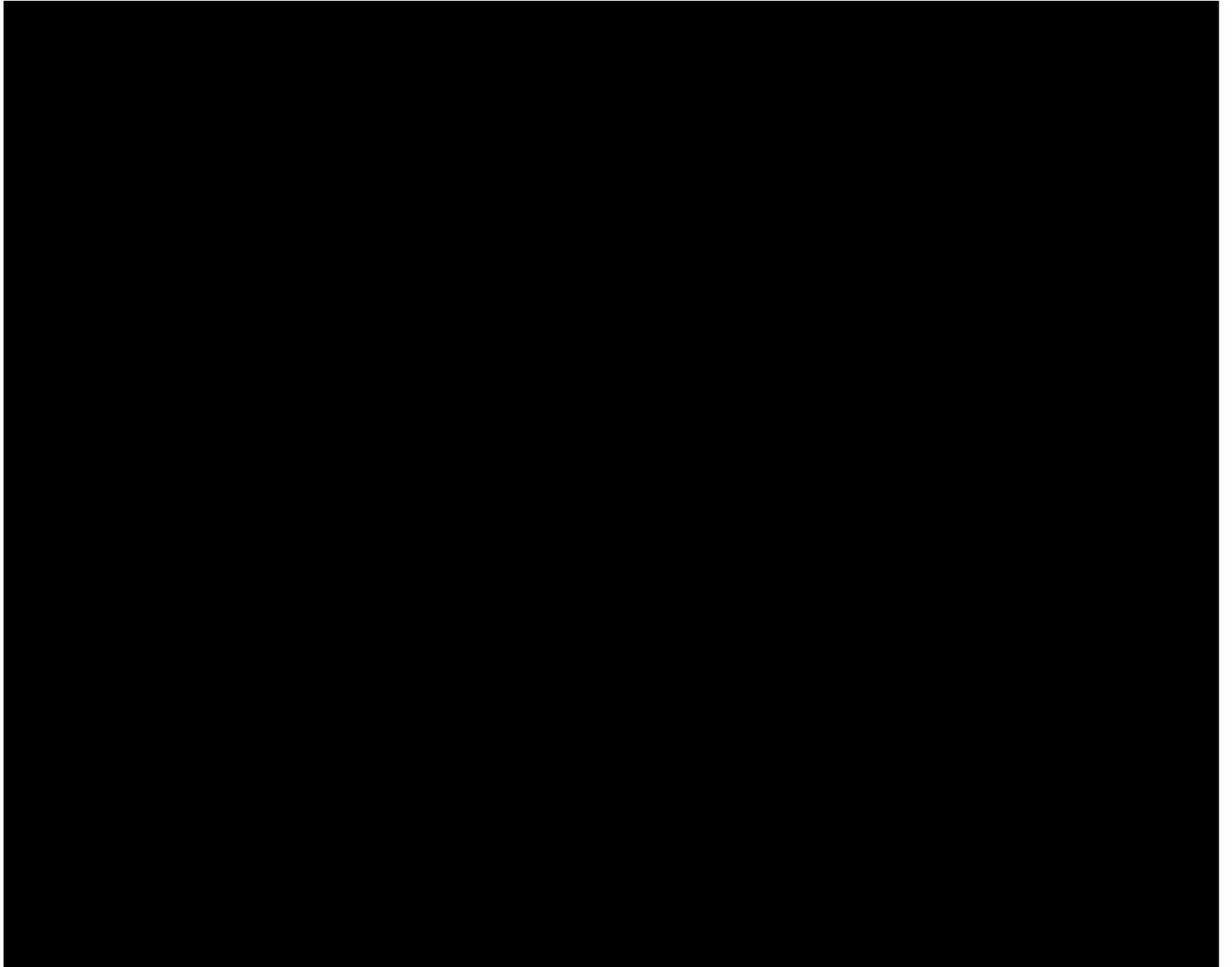
Mid-Atlantic MCN executives will manage a team of capable and competent internal resources and third party firms, with experience in transmission planning and engineering. Mid-Atlantic MCN has already entered into agreements with or engaged the following third parties:





Each of these entities brings proven experience, capabilities and competencies needed to provide technical and engineering services to Mid-Atlantic MCN as required by PJM in its designated entity pre-qualification process. Consequently, Mid-Atlantic MCN is well positioned to participate in PJM's competitive regional transmission expansion planning processes.

Mid-Atlantic MCN has identified the following team to lead this project.



- **Demonstrated experience of the entity or its affiliate, partner, or parent company to develop, construct, maintain, and operate transmission facilities. Including a**

**list or other evidence of transmission facilities previously developed regarding construction, maintenance, or operation of transmission facilities both inside and outside of the PJM Region.**

Ed Rahill, President and CEO

- A. Transmission Project Development – ITC Holdings, LLC and Affiliates
  - a. The acquisition, integration, and upgrade of the Michigan Electric Transmission Company (METC) and Alliant Energy transmission systems
  - b. Development activities for the Green Power Express, a proposed \$12 Billion project to transport renewable power from the Upper Midwest to East
  - c. The Michigan Thumb loop project
  - d. The Iowa 34.5 kV rebuild
  - e. “Hugo-Valiant,” a 19-mile, 345 kV project between Hugo and Valliant, Oklahoma, placed in service in the summer of 2012
  - f. “KETA Project,” a 180-mile, 345 kV project between Spearville, Kansas, and Axtell, Nebraska, placed in service in December of 2012
  - g. “Kansas V Plan,” an almost 200-mile double circuit 345 kV line, placed in service in 2014

Noman Williams, Senior Vice President and COO

- A. Transmission Project Development – Sunflower Electric Power Corporation/Mid-Kansas Electric Company, LLC
  - a. Holcomb Tie-Line #4 - 5.5 miles of new 115 kV transmission line and breaker position addition at the Holcomb 115 kV substation
    - i. Design Engineer
      - 1. Designed wood pole portion of line
      - 2. Managed and oversaw the design by consultant the steel pole portion of line.
      - 3. Design lead for substation addition
      - 4. Oversaw engineering design for protection and control systems
    - ii. Project Manager
      - 1. Developed and awarded contract for engaging engineering consultant for design and material specification
      - 2. Managed and developed material contracts and bidding process
      - 3. Developed and managed construction contract bidding and award
      - 4. On-site construction manager
      - 5. Permitting

- a. Acted as agent for right-of-way acquisition
    - b. Developed required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
    - c. Developed required State of Kansas permits (EL, CC)
    - d. Developed storm water permits
  - 6. Managed final check-out and commissioning activities.
- b. Sagebrush Relocation – 8 mile 115 kV transmission line rebuild, reconductor and relocation
  - i. Design Engineer
    - 1. Lead design engineer for project
  - ii. Project Manager
    - 1. Managed and developed material contracts and bidding process
    - 2. Managed construction activities of in-house construction
    - 3. Permitting
      - a. Acted as agent for right-of-way acquisition
      - b. Developed required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
      - c. Developed required State of Kansas permits (EL, CC)
      - d. Developed storm water permits
    - 4. Managed final check-out and commissioning activities.
- c. Pioneer Tap 115 kV breaker additions
  - i. Design Engineer
    - 1. Lead design engineer for substation physical work
    - 2. Oversaw substation electric design
  - ii. Project Manager
    - 1. Managed and developed material contracts and bidding process
    - 2. On-site construction manager
    - 3. Permitting
      - a. Developed required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
      - b. Developed storm water permits

4. Managed final check-out and commissioning activities.
- d. Fletcher-Pioneer Project – 35 miles 115 kV transmission line with new Fletcher substation and modifications at Pioneer substation
  - i. Design Engineer
    1. Lead designed engineering for project
  - ii. Project Manager
    1. Developed routing alternative and hosted public meetings
    2. Developed and awarded contract for engaging engineering consultant for design and material specification
    3. Managed and developed material contracts and bidding process
    4. Developed and managed construction contract bidding and award
    5. On-site construction manager
    6. Permitting
      - a. Acted as agent for right-of-way acquisition
      - b. Developed required RUS Borrower’s Environmental Report which required coordination with several state and federal agencies
      - c. Developed required permits State of Kansas permits (EL, CC, crossing), county/local permits, railroad permits.
      - d. Developed storm water permits
    7. Managed final check-out and commissioning activities.
- e. Holcomb – Fletcher Project – 22 mile 115 kV transmission line rebuild and reconductor
  - i. Design Engineer
    1. Lead designed engineering for project
  - ii. Project Manager
    1. Developed routing alternative and host public meetings
    2. Developed and awarded contract for engaging engineering consultant for design and material specification
    3. Managed and developed material contracts and bidding process
    4. Developed and managed construction contract bidding and award
    5. On-site construction manager

- 6. Permitting
  - a. Acted as agent for right-of-way acquisition
  - b. Developed required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
  - c. Developed required permits State of Kansas permits (EL, CC, road crossing), county/local permits, railroad permits.
  - d. Developed storm water permits
- 7. Managed final check-out and commissioning activities.
- f. Hickok 115 kV Substation Project – Construction of a new 115/69/13.2 substation with 3 - 115 kV line terminals, 115/69 transformer, 115/13.2 transformer, 1 – 69 kV line terminal, 3.5 miles of new double circuit 115 kV transmission and 2.0 miles of new double circuit 115/69 transmission line.
  - i. Design Engineer
    - 1. Lead design engineering for project
  - ii. Project Manager
    - 1. Developed routing alternative and host public meetings
    - 2. Developed and awarded contract for engaging engineering consultant for design and material specification
    - 3. Managed and developed material contracts and bidding process with engineering consultant
    - 4. Developed and managed construction contract bidding and award with consultant
    - 5. On-site construction manager
    - 6. Permitting
      - a. Acted as agent for right-of-way acquisition
      - b. Developed required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
      - c. Developed required permits State of Kansas permits (EL, CC, road crossing), county/local permits, railroad permits.
      - d. Developed storm water permits
    - 7. Managed final check-out and commissioning activities.
- g. Hugoton Project – 45 mile, new 115 kV transmission line project (Pioneer-Hugoton-Walkemeyer) with new Hugoton 115/69 kV substation (2 – 115 kV line terminals, 2 – 69 kV line terminals,

115/69 kV transformer, 3 mile, new 69 kV transmission line, new City of Hugoton distribution substation, line terminal additions and modifications at Pioneer and Walkemeyer substations

- i. Design Engineer
  - 1. Lead designed engineering for transmission line portion of project
  - 2. Managed engineering (internal and consultant) for substation design.
- ii. Project Manager
  - 1. Developed routing alternative and hosted public meetings
  - 2. Developed and awarded contract for engaging engineering consultant for design and material specification
  - 3. Managed and developed material contracts and bidding process
  - 4. Developed and managed construction contract bidding and award
  - 5. Managed internal construction crews and on-site construction manager for project
  - 6. Permitting
    - a. Acted as agent for right-of-way acquisition
    - b. Provided oversight and supported development of required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
    - c. Developed required permits State of Kansas permits (EL, CC, road crossing), county/local permits, railroad permits.
    - d. Developed storm water permits
  - 7. Managed final check-out and commissioning activities.
- h. Johnson Corner 115/69 kV substation project, with 32 miles 115 kV line conversion and terminal addition at Syracuse substation
  - i. Design Engineer
    - 1. Managed the internal and consultant engineering
  - ii. Provide project oversight and managed the internal/external Project Managers for the substation and line design and construction activities:
    - 1. For engaging engineering consultant for design and material specification
    - 2. Development of material contracts and bidding process

3. Development of construction contract bidding and award
  4. Permitting
    - a. RUS Borrower's Environmental Report which required coordination with several state and federal agencies
    - b. Required permits State of Kansas permits, county/local permits, railroad permits as required
    - c. Storm water permits
  5. Managed final check-out and commissioning activities.
- i. Various 115 and 69 kV capacitor bank additions at Rhoades, Pioneer, Walkemeyer, Hickok, Johnston Corner, Harper, Pratt-River Road
- i. Design Engineer
    1. Managed the internal and consultant engineering
    2. Lead designed engineer for several projects
  - ii. Project Manager
    1. Developed and awarded contract for engaging engineering consultant for design and material specification
    2. Managed and developed material contracts and bidding process
    3. Developed and managed construction contract bidding and award
    4. On-site construction manager
    5. Permitting
      - a. Developed required RUS Borrower's Environmental Report which required coordination with several state and federal agencies
      - b. Developed required permits State of Kansas permits, county/local permits, railroad permits as required
      - c. Developed storm water permits
    6. Managed final check-out and commissioning activities.

Carl A. Huslig, Senior Vice President Business Development

A. Transmission Project Development – ITC Great Plains

- a. “Hugo-Valiant,” a 19-mile, 345 kV project between Hugo and Valliant, Oklahoma, placed in service in the summer of 2012

- b. “KETA Project,” a 180-mile, 345 kV project between Spearville, Kansas, and Axtell, Nebraska, placed in service in December of 2012
- c. “Kansas V Plan,” an almost 200-mile double circuit 345 kV line, placed in service in 2014

N. Beth Emery, General Counsel and Chief Compliance Officer

A. Transmission Project Development

- a. Supervised legal and regulatory team on development of CPS Energy’s 30-mile 345 kV Cagnon-to-Kendall line in Hill Country, Texas, overseeing
  - i. Siting process
  - ii. City Counsel determination of need
  - iii. Right-of-way acquisition
  - iv. Condemnation proceedings
  - v. Successful defense of multiple suits alleging violation of federal environmental rules

Mid-Atlantic MCN will also leverage its relationships with major contractors, consultants and suppliers for development, construction, operations and maintenance transmission experience. Mid-Atlantic MCN combines individual contractor selection with alliance arrangements, based on the experience and qualifications of the contractors relative to the work demands.

Mid-Atlantic MCN executives will manage a team of capable and competent internal resources and third party firms, with experience in development, construction, operations and maintenance of transmission. Mid-Atlantic MCN anticipates the following third parties being used for these services as they have already engaged them for other services:



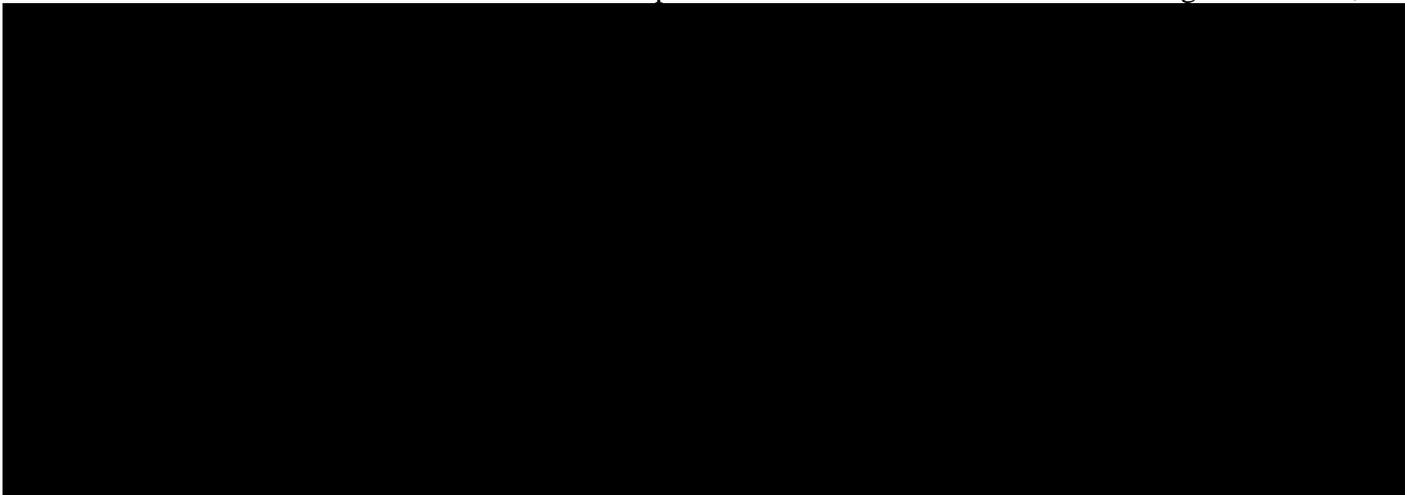
Each of these entities brings proven experience, capabilities and competencies needed to provide transmission development, construction, operations and maintenance services to Mid-Atlantic MCN as required by PJM in its designated entity pre-qualification process.

- **Previous record of the entity or its affiliate, partner, or parent company to adhere to standardized construction, maintenance and operating practices.**

The management team of Mid-Atlantic MCN has been involved with numerous projects that demonstrate its abilities to adhere to standardized construction, maintenance and operating practices including the following:

- i. Key support of the Artificial Island bid in PJM
- ii. Selection as one of the “new entrant” CREZ transmission providers in Texas
- iii. Successful development of the Hugo-Valiant 345 kV, KETA 345 kV, and Kansas V Plan projects
- iv. Development activities for the Green Power Express, a proposed \$12 billion project to transport renewable power from the Upper Midwest to East
- v. Michigan Thumb loop project
- vi. Demonstrated capabilities to be approved sponsors of project submittals in AESO, CAISO, ERCOT, FRCC, MISO, NYISO, and SPP

As well as the extensive experience of Mid-Atlantic MCN’s management team,

















○ **Capability of the entity or its affiliate, partner, or parent company to adhere to standardized construction, maintenance and operating practices.**

As described in detail in the responses above, the management team of Mid-Atlantic MCN includes decades of proven experience in the construction, maintenance, and operations of transmission facilities throughout the US. Further, coupling the experience of the Mid-Atlantic MCN management team with qualified and experienced third party contractors, consultants and suppliers, the combined team will be matched with some of the best and most complete experience in the industry.

Mid-Atlantic MCN intends to utilize the experience of a specialized service provider truly capable of delivering a comprehensive and integrated set of transmission construction, maintenance and operations services, including key asset management and program management capabilities available on a 24/7 basis.

The Mid-Atlantic MCN project team will develop solutions grounded in technical best practices and practical experience resulting in the following benefits.

- Enhanced planning and decision making
- Optimized capital budgets
- Improved asset reliability
- Minimized life cycle costs
- Reduced TCO (total cost of ownership)

Mid-Atlantic MCN's team will design and construct its awarded transmission facilities in accordance with all applicable standards and criteria (including Local, State, Federal, Transmission Owner and PJM).

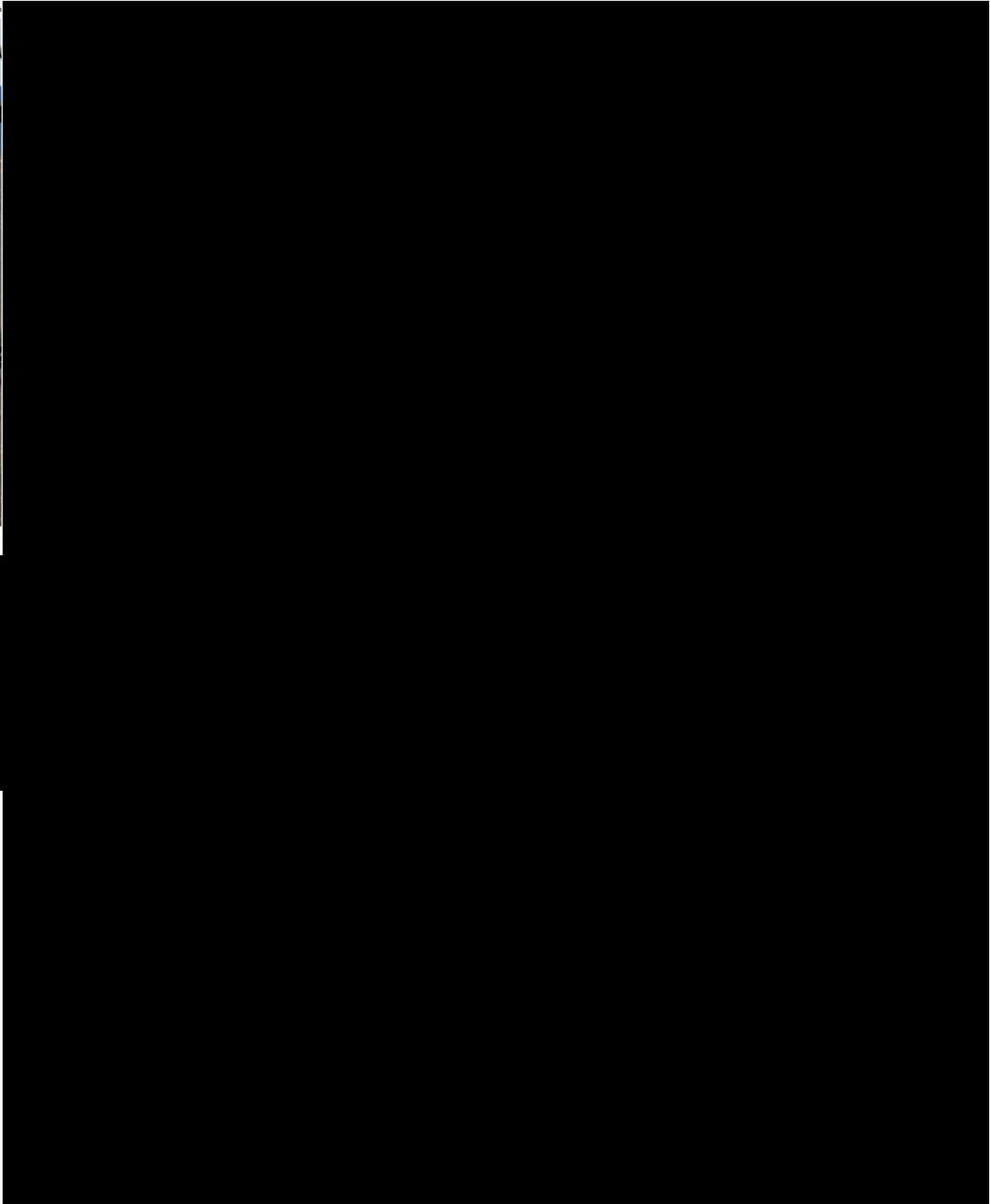
Mid-Atlantic MCN's detail-oriented management approach, dedication to safety excellence and commitment to total quality management provides an effective and efficient way to manage the program process. Experienced, certified project managers with proven track records for managing complex programs and projects are a critical part of our success in delivering a quality project on time and within budget.

The key differentiator of successful projects lies in effective communication and clear understanding of the goals of the project. Each member of the team brings their expertise, experience and the resources necessary to bring the project to a successful completion. The team jointly develops a set of guidelines and procedures that outline the duties and responsibilities for each team member in the planning, construction, and close-out phases of the project.

The foundation for a successful project starts with early program planning. Early involvement at the preplanning phase of the program will enable Mid-Atlantic MCN to provide value with pre-construction planning, subcontracting services, cost control, scheduling coordination, quality assurance and safety.

Mid-Atlantic MCN's project management program will be a combination of the best practices and standards collected from both the experience and expertise from within its organization and those of its third party contractors, consultants, and suppliers. Our approach is different from other approaches in that it focuses on implementation and results rather than on technology.

In addition to Mid-Atlantic MCN's capabilities, our strategic partner [REDACTED] has additional capabilities as outlined below.













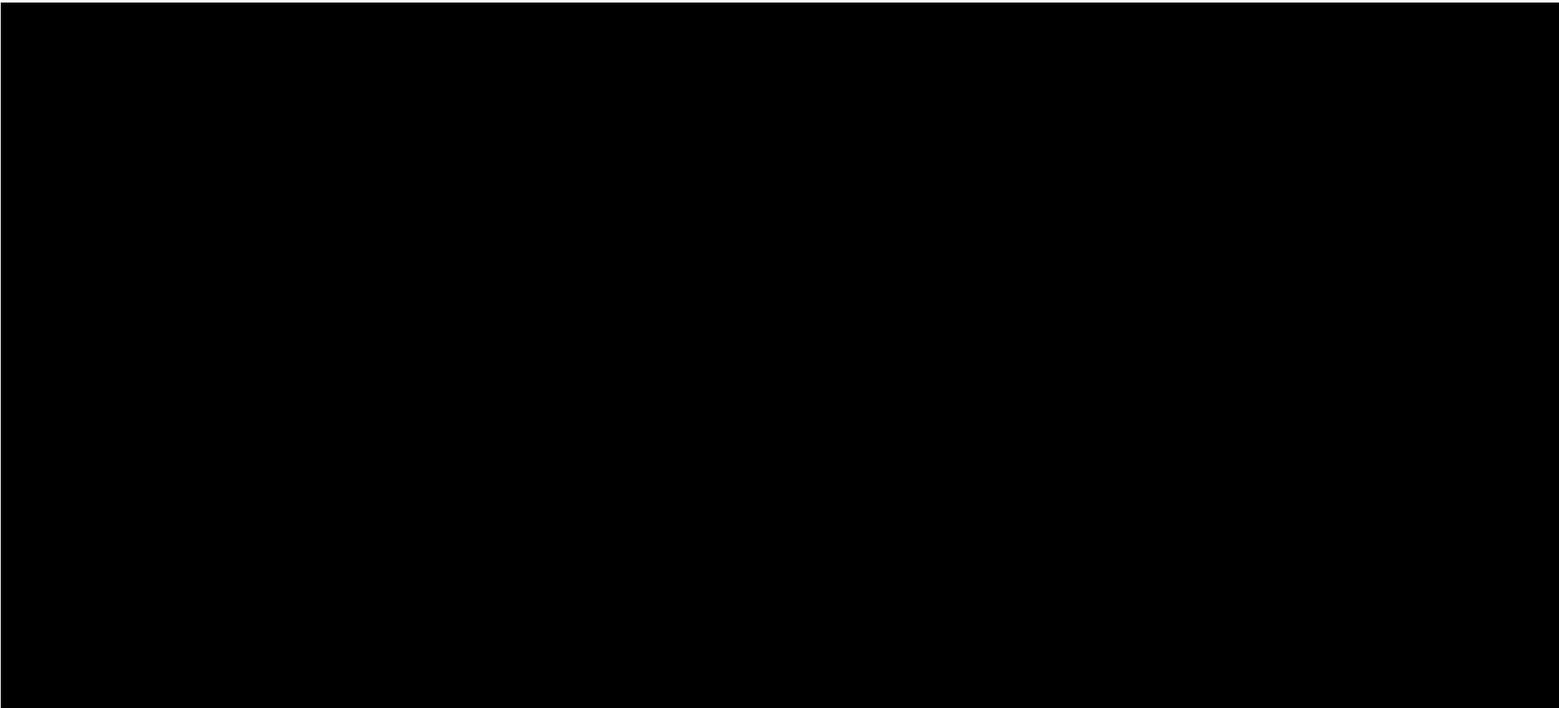








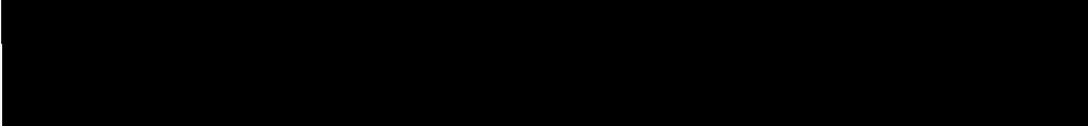
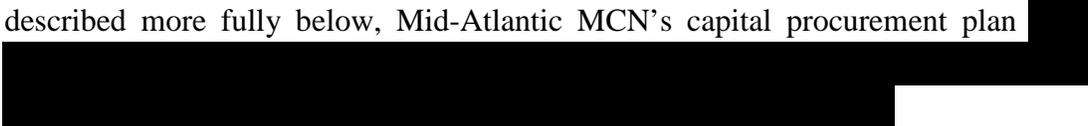




- **Financial statements of the entity or its affiliate, partner, or parent company. Please provide the most recent fiscal quarter, as well as the most recent three fiscal years, or the period of existence of the entity, if shorter, or such other evidence demonstrating an entity’s current and expected financial capability acceptable to the Office of the Interconnection.**

Mid-Atlantic MCN and its affiliates are portfolio companies of the Blackstone Group, a leading private equity fund with \$356 billion in assets under management. Mid-Atlantic MCN does not currently have assets on its balance sheet or three years of financial statements to provide. Any such financial statements, moreover, would not be indicative of the overall financial capability of the company.

The ultimate corporate parent of Mid-Atlantic MCN is GridLiance Holdco, LP. The parent’s general partner is GridLiance GP, LLC (GridLiance GP), which is wholly-owned and controlled by Blackstone Power & Natural Resources Holdco L.P. (Blackstone Power). Both Blackstone Power and GridLiance GP are owned and controlled by affiliates of the Blackstone Group (collectively, Blackstone). As described more fully below, Mid-Atlantic MCN’s capital procurement plan



[REDACTED]

The same is true for the acquisition of insurance and development of risk mitigation strategies.

[REDACTED]

[REDACTED]

See Appendix 7 for the previous three years audited financials for the Blackstone Group.

- **Commitment by the entity to execute the Consolidated Transmission Owners Agreement, if the entity becomes a Designated Entity.**

Mid-Atlantic MCN is committed to execute the Consolidated Transmission Owners Agreement when PJM selects Mid-Atlantic MCN as the Designated Entity to construct the Project.

- **Evidence demonstrating the ability of the entity to address and timely remedy failure of facilities.**

Mid-Atlantic MCN will always be prepared to address and timely remedy the failure of facilities. Whether we are talking about an emergency, equipment failure, or a major weather event, nothing is more important than getting power restored quickly, efficiently and safely. From ice storms to hurricanes to wildfires, Mid-Atlantic MCN will be prepared to remedy the failure quickly with an effective emergency response team composed of internal staff and third party contractors, consultants and suppliers.

Mid-Atlantic MCN's control center and emergency response establishment will be staffed 24x7, 365 days a year and ready to respond to system emergencies at all times. Mid-Atlantic MCN's contractors, consultants and suppliers will likely be the same folks that perform the regular operations and maintenance, so they will already be familiar with the transmission facilities. Mid-Atlantic MCN has already entered into agreements with or engaged the following third parties to support the remedy of any failed facilities:



As outlined below [REDACTED] brings proven experience, capabilities and competencies to address and timely remedy the failure of any facilities as required by PJM in its designated entity pre-qualification process.

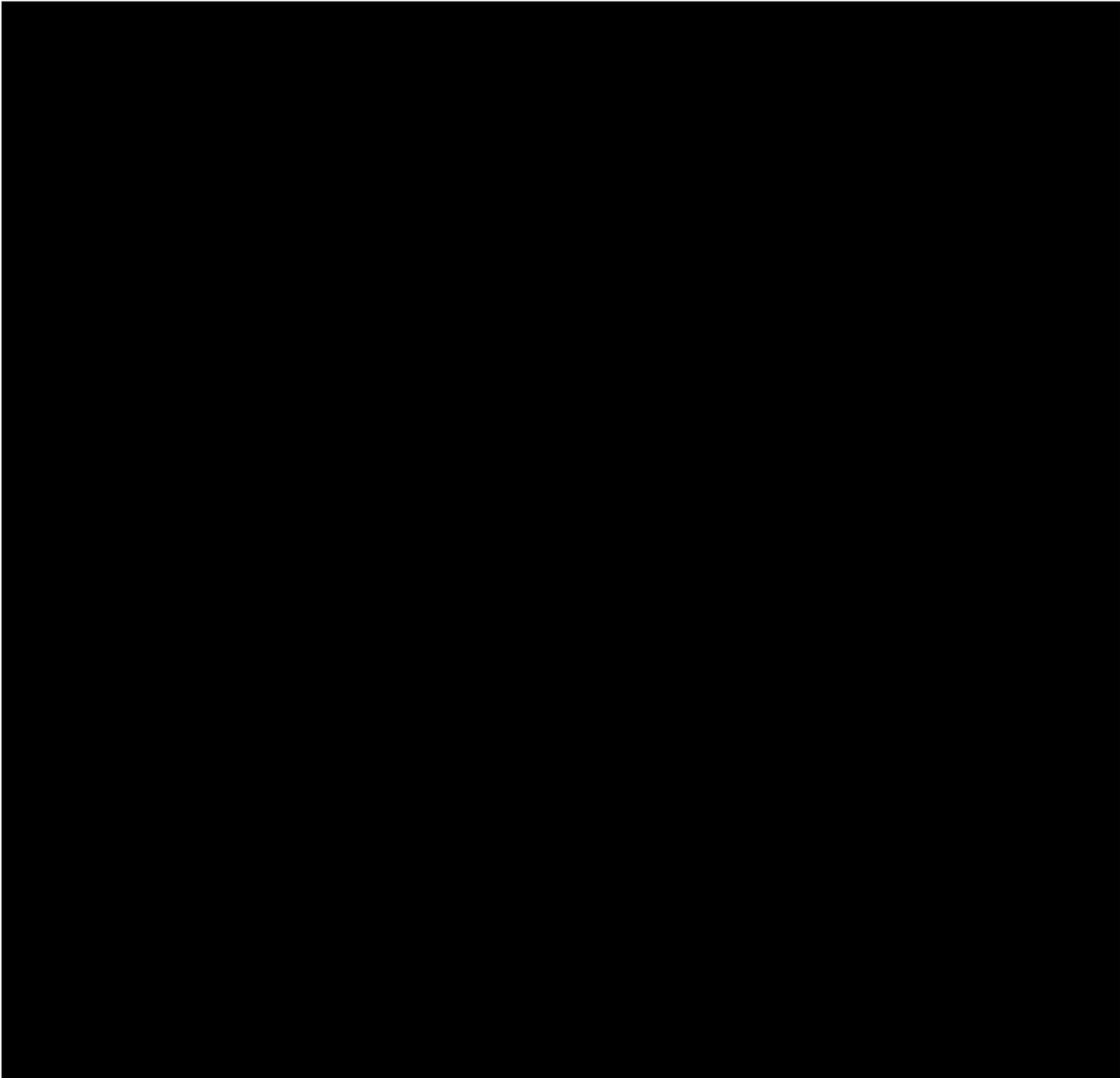
Mid-Atlantic MCN will work with its third party contractors, consultants and suppliers to size, procure and maintain a spare material and equipment specifically for failure response. The spare material and equipment will be sized based on plant in service and can be scaled as needed for coverage of the system.

When a failure does occur, Mid-Atlantic MCN's contracted response teams and assessors will be deployed to provide complete power restoration.

- i. Self-sufficient teams of expert first responders
- ii. Boots on the ground within 24 hours or less
- iii. From single crews to multiple organized teams

- iv. A fleet of off-road vehicles that can access the toughest, most remote areas
- v. Comprehensive disaster repairs and post-storm cleanup

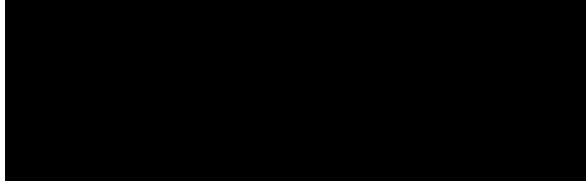
The first step in a crisis situation is response planning. Mid-Atlantic MCN's third party contractor assessors are located throughout the PJM footprint and available for activation 24 hours a day, 7 days a week, 365 days a year. Once the assessors establish a recovery plan they manage the deployment of first-response crews, vehicles and equipment to tackle whatever problems there are, wherever they are. Mid-Atlantic MCN is well positioned to address and timely remedy a failure of a facility, whether as a result of a mechanical failure or major weather event.





o **Description of the experience of the entity in acquiring rights of way.**

Mid-Atlantic MCN's management team has first-hand experience in performing right of way (ROW) acquisition in various regions in the US. Additionally, Mid-Atlantic MCN has strong relationships with third party contractors that have specific, relevant and local experience in the PJM region providing all aspects of ROW acquisition (including title research, cost appraisals, property valuations, ownership negotiations and securing easements). Mid-Atlantic MCN executives will manage internal resources and third party firms used in acquiring ROW associated with new transmission projects in the PJM footprint. Mid-Atlantic MCN anticipates the following third parties being options for these services as they have already engaged them for ROW services outside of PJM:



Each of these entities brings proven experience, capabilities and competencies to perform sensitive ROW negotiations as required by PJM in its designated entity pre-qualification process.

Additionally, the Mid-Atlantic MCN management team will work with third party contractors and legal firms to effectively manage the increasingly complex rules and regulations governing transmission project development and construction, securing all necessary permits to proceed with a project. Mid-Atlantic MCN's team of internal and external resources have extensive experience in working with federal, state and local jurisdictions, as well as a thorough knowledge of the procedures, allowing us to successfully manage the permitting process. Mid-Atlantic MCN assures PJM that any transmission project awarded through a competitive process will be compliant with all jurisdictional requirements prior to construction.

### C. PROPOSED PROJECT CONSTRUCTABILITY INFORMATION

- **Scope of Project**

Project B is a new Shaker Run 345/138 kV substation adjacent to the existing Shaker Run 138 kV substation. The new substation will connect the Todhunter to Foster 345 kV line and Warren to Nickel 138kV line and existing Shaker Run 138 kV substation together through a 560 MVA transformer. A new double circuit 1-mile 138 kV line will be built to bring the Warren to Nickel 138 kV facility in and out of the new substation, and a new 138 kV tie line will be built between the new substation and existing Shaker Run substation.

- **Is this project being proposed as a solution to Cross-Border issues? (Stakeholder is responsible for initiating and satisfying all Regional and Interregional requirements.)**
  - **Is evaluation for Interregional Cost Allocation desired?**

Mid-Atlantic MCN is not desiring evaluation for Interregional Cost Allocation.
  - **Has the proposal been evaluated in a coordinated interregional analysis under PJM Tariff or Agreement provisions? Please specify the analysis and applicable Tariff or Agreement provisions.**

The Project has not been evaluated in a coordinated interregional analysis under PJM or Agreement provisions.

- **List the specific Regional and Interregional violations and issues from the Regional and/or Interregional analyses that identified the violations and issues addressed by the proposal.**

This Project was developed to address generator deliverability and N-1-1 thermal flowgates 907, N2-T6, N2-T7, N2-T8, N2-T9, and N2-T10.

- **Detailed breakdown of all proposal elements**

- **General description**

Project B is a new Shaker Run 345/138 kV substation adjacent to the existing Shaker Run 138 kV substation. The new substation will connect the Todhunter to Foster 345 kV line and Warren to Nickel 138kV line and existing Shaker Run 138 kV substation together through a 560 MVA transformer. A new double circuit 1-mile 138 kV line will be built to bring the Warren to Nickel 138 kV facility in and out of the new substation, and a new 138 kV tie line will be built between the new substation and existing Shaker Run substation.

- **Geographic description**

The proposed Shaker Run 345/138 kV Substation project is located in approximately 3.7 miles east of Monroe, Warren County, OH. The geographic area surrounding Project B is generally rural and currently used as agricultural and light industrial areas. The potential routes as shown in Appendix 1 are bounded by [REDACTED]

Impacts will be minimized by locating the new substation adjacent to [REDACTED] on high ground as to minimize [REDACTED] Endangered species that potentially occur in Warren County have been identified in the study area as shown in Appendix 3.

- **Route description including existing/new ROW, if new ROW is required details on obtaining land**

- Assessment of environmental impacts related to all facilities (i.e. environmental impact study requirements, environmental permitting, sediment, and erosion control issues)

- Right of way and land acquisition plan and approach for both public and private lands
- Permitting plan and approach
- Discussion of potential public opposition

Additional Rights of Ways (ROW) will be required for the new Shaker Run to Nickel and Shaker Run to Warren 138 kV lines. The additional ROW will be up to 100 feet in width. All identified potential routes of the line follow existing established corridors to reduce fragmentation of habitat. Mid-Atlantic MCN will work with the owners of the existing facilities to narrow the new ROW by overlapping easements where possible.

The new Shaker Run substation will require approximately five acres of land.

No acquisition of public lands is expected. Private land would be acquired in accordance with Ohio Law and Mid-Atlantic MCN's Land Rights Acquisition Plan by Mid-Atlantic MCN and its third party contractors.

Mid-Atlantic MCN will contract with a licensed right-of-way land agent to obtain land rights for the new right-of-way. A project map at a detailed scale will be prepared on an aerial photo base showing the location of the parcels on the existing right-of-way, the pertinent portion of the parcel boundaries, the parcel number, the right-of-way boundaries, existing and future structure sites (as this information becomes available), road and stream names, township and county boundaries, and other pertinent information. This map will employ existing electronic information from landownership records and other commonly available electronic GIS data sources. The names and addresses of the current landowners along the route will be obtained from landownership records held in the project area and/or from electronic sources. Based on the map and other data, the Mid-Atlantic MCN right-of-way team will generate a list of affected properties, current property owner names and addresses, and the land rights required on each. Mid-Atlantic MCN has counted the easement parcels shown on the county parcel data. The count resulted in identifying about 5-7 parcels along the theoretical right-of-way, depending on the final selected route. Mid-Atlantic MCN's right-of-way team will prepare a line list that summarizes the list of effected property and required rights. This summary, along with accompanying maps, will be updated periodically as land rights are obtained. The line list and maps will include:

- Parcel number
- Current owner name and address
- Parcel address (as appropriate)
- Easement deficiencies and required rights

- Updated project property map

Following the development of the original line list, the Mid-Atlantic MCN right-of-way team will finalize a Land Rights Acquisition Plan. This plan includes:

- Identification of current landowners (accomplished above)
- Obtaining rights-of-entry
- Establishment of field offices (if necessary)
- Selection and use of appraisers
- Policies and procedures regarding agent contacts, negotiations, and payments
- Property surveying
- Record keeping and coordination meetings
- Closings and recordings
- Condemnation support

If the contracted agent does not have an office already located in the project area, the Mid-Atlantic MCN right-of way team will establish a field office in a central location. In accordance with the policies and procedures specified in the Land Rights Acquisition Plan, contacts will be commenced towards securing rights of entry for surveying and scientific study for permitting work. The field office will coordinate these activities. The agents will start building relationships with the property owners.

The right-of-way team will perform title searches and identify commitments. Once the title search commitments are identified, the Mid-Atlantic MCN right-of-way team will review all title issues and restrictions and commence the necessary curative actions. Utilizing the title commitments, the line list will be updated, a property database created, and the office and field files created.

As a part of the commitment review, the right-of-way team will work to identify properties where special easements or other commitments have been sold or otherwise agreed to, including conservation or special interest property owner agreements. Parcels with these types of agreements will be identified in the line list and coded on the project parcel map. The effects of the agreements on the acquisition of land rights for the project will be determined and, if necessary, undergo legal review.

Using the procedures developed for the Land Rights Acquisition Plan, Mid-Atlantic MCN will identify an appraisal firm, or firms, qualified to perform the appraisal task and capable of doing so in an efficient manner. When ready, the prepared easements, title commitments and contact information for the required parcels will be supplied to the appraiser to commence work. Upon completion of the appraisals, the line list and all forms will be updated to include the initial and subsequent offers. The offers will

be presented and negotiations commenced. The approved Land Rights Acquisition Plan will indicate the extent and type of negotiations to be employed by the agents. Once title issues are resolved and the owners indicate satisfaction with the compensation, payments will be made in exchange for the executed easements, which will then be recorded. The exact process for payments and closings will be established after a more detailed analysis is completed as the Land Rights Acquisition Plan is finalized.

Condemnation support for Mid-Atlantic MCN will be required in those instances where a settlement cannot be reached. The right-of-way team will support condemnation efforts by providing, preparing, administering, or abstracting materials such as drawings, appraisals, appraisal updates, information sheets, and other information as required. Right-of-way personnel will be made available for testimony concerning the efforts to reach a negotiated settlement as shown in the records of that agent's property owner contact file. These services can be extended and repeated as necessary for any condemnation appeals.

For the purpose of route alternative identification and evaluation, multiple techniques will be used. These include but are not limited to desktop data surveys, agency and stakeholder information requests, field reconnaissance surveys, and constraints mapping.

Desktop data surveys:

The desktop data surveys will be conducted by the environmental staff to identify environmental and socioeconomic constraints and regulatory requirements for the project. Agencies that will be contacted include:

- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture
- USFWS Ohio Ecological Services
- National Park Service
- U.S. Geological Service
- Natural Resources Conservation Service
- Federal Aviation Administration
- Federal Emergency Management Agency
- Federal Highway Administration
- State specific departments
- Individual county offices

Agency and Stakeholder Information Requests

Informational request letters will be sent to various government agencies, including local, state, and federal, and other public officials (e.g., commissioners,

councilmembers, and school superintendents). The letters will request information for routing constraint areas as well as routing opportunity areas within the study area. Examples of categories of specific information include socioeconomics, land use, cultural resources, transportation corridors, waterbodies and wetland areas, wildlife and vegetation, aesthetics, and soils.

Public meetings will be held to discuss the project and potential routing opportunities with the public. Information gained from public meetings will be incorporated into the routing study to aid in route development and evaluation.

#### Field Reconnaissance Survey

A team of environmental scientists will perform a field reconnaissance survey of the study area. The Routing Team members will examine potential routes and other areas of concern by automobile from points of public access. Prior to the field reconnaissance, key features (e.g., wetlands conservation areas, cemeteries, and urban or developed areas) will be identified and mapped in GIS using aerial photography. These features will then be verified during field reconnaissance, and new features added to the GIS database when identified.

#### Constraints Mapping

The Routing Team will identify and map routing constraints in the Study Area. These constraints are defined as areas that should be avoided to the extent feasible during the route selection study process. The list of constraints includes:

- Urban areas
- Federal lands, including national parks,
- Conservation lands and lands designated for their natural importance or scenic value
- Areas near airports and airstrips
- National Register of Historic Places Historic Districts and adjacent areas; recorded and designated historic buildings and sites
- Large lakes and reservoirs that could not be spanned with structures set well back from the shores
- Large wetlands or wetland complexes
- Structures including houses, churches, schools, and commercial buildings
- Communication towers

Information received from stakeholders will also be included in the constraints mapping effort. Areas identified by the public that are determined to be incompatible with transmission line routing will be identified during route development and evaluation.

Ohio Guidelines are those specific state regulations that influence either the

development of specific alignments for the Project, or the ultimate selection of the Proposed Route.

The Mid-Atlantic MCN is committed to follow the "Guidelines for the Protection of Natural, Historic, Scenic, and Recreational Values in the Design and Location of Rights-of-Way and Transmission Facilities," which reflect regulations adopted by the Federal Power Commission in Order No. 414 issued November 27, 1970, and applied by the Federal Energy Regulatory Commission (FERC).

Expected permitting agencies for this Project include:

- Ohio State Corporation Commission
- U.S. Army Corps of Engineers
- Marine Resources Commission ("VMRC")
- Department of Environmental Quality ("DEQ")
- Virginia Department of Transportation ("VDOT")
- Project Counties

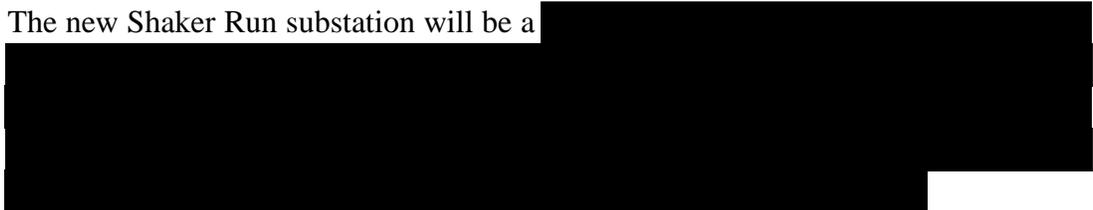
Through the permitting process the following state agencies will also be consulted:

- Ohio Environmental Protection Agency
- Ohio Historic Preservation Office
- Ohio Department of Natural Resources
- Ohio Department of Transportation

While new transmission facilities are seeing ever greater public opposition, Mid-Atlantic MCN sought to minimize this opposition by providing a solution that has minimal impact to the public by identifying a short (up to 1.0 mile) line and a discreet substation location that provide robust solutions to the problem. The transmission line will be routed parallel to existing linear features to further minimize opposition and the substation will be located adjacent to existing transmission lines.

- **Physical characteristic**

The new Shaker Run substation will be a



- **Maps and supporting diagrams**

See Appendix 1.

- **Specific location of interconnection with incumbent TO facilities and assumptions that were made for this proposal.**

The new Shaker Run 345/138 kV substation will be located [REDACTED]

[REDACTED] The new 1-mile double circuit 138 kV transmission line will split the Warren to Nickel 138 kV facility [REDACTED]

[REDACTED] The new substation will terminate at Duke Energy's Shaker Run substation at a new terminal.

- **Generation/Transmission outages required for construction, proposed coordination with Generation/Transmission owner.**

An outage of the Todhunter to Foster 345 kV line will be required to tap the line and make the termination into the new Shaker Run substation. This outage is expected to last less than one week. An outage of the Warren to Nickel 138 kV line will be required to tap the line and make the termination into the new Shaker Run Substation. This outage is expected to last less than one week.

Following the termination of the existing lines, and outage of the 138 kV bus at the existing Shaker Run substation would be required to terminate the new Shaker Run 138 kV Tie line. This outage is expected to last 2-3 days.

- **Total cost of project and total cost for each major component (e.g. new transmission line, modification work at substation A, and modification at Substation B). If the cost for certain work is assumed to be provided by others and is not included in the total cost, indicate that scope as not included and to be estimated by other(s). This should include a breakdown of costs including but not limited to: Labor, Materials, Risk and Contingency, environmental mitigation costs.**

See Appendix 6.

- **Identification of construction responsibility of each component (e.g. Entity proposes to construct the new line from Substation A to B and upgrade work to interconnect new line at Substations A and B is assumed to be constructed by the substation owners.)**

Mid-Atlantic MCN proposes to construct the entirety of the new Shaker Run substation. Mid-Atlantic MCN proposes to construct the 345 kV tap of the Todhunter to Foster 345 kV line into the new substation.

Mid-Atlantic MCN proposes to construct the 1-mile double circuit transmission line to bring the Warren to Nickel 138 kV line in and out of the new substation. Mid-Atlantic MCN proposes to construct the 138 kV tie between the new substation and existing Shaker Run substation with a new 138 kV terminal in the existing Shaker Run substation to be provided by the owner.

#### D. ANALYTICAL ASSESSMENT

- **Detailed analysis report on proposed solutions, including:**
  - **Breaker one-line diagrams to illustrate system topology and substation configuration**  
See Appendix 1.
  - **Spreadsheets (e.g. Output of analysis showing solution to identified issue)**  
See Appendix 1.
- **Equipment parameters and assumptions**
  - **All parameters (Ratings, impedances, mileage, etc.)**  
See Appendix 2.
  - **For reactive devices, settings and outputs**  
Not applicable
  - **For synchronous machines, MW and MVAR output assumptions**  
Not applicable
- **All necessary PSS/E ideo files or appropriate data to model upgrade**  
See Appendix 2.
- **Any other supporting documentation required by PJM to perform verification review, that isn't explicitly stated in this document**  
See Appendix 1.
- **Proposal Template spreadsheet (in excel format) including which flowgates your project is addressing, general scope, detailed solution components, total cost**  
See Appendix 5.
- **Additional benefits of your proposal**  
Mid-Atlantic MCN has not identified any additional benefits of this Project.

#### E. COST

- **All cost estimates shall include the following**

- **Total cost in current year dollars**
- **Total cost in In-Service year dollars**
- **Yearly cash flow including escalation, taxes and financing costs**
- **Detailed explanation of real and inflation components of escalation rates used**  
See Appendix 6 for cost estimates of this Project.
- **Detailed breakdown of cost of each element (Transmission and Substation)**
  - **Cost of materials and equipment**
  - **Cost of engineering and design**
  - **Cost of construction and commissioning**
  - **Cost of permitting/routing/siting**
  - **Cost of ROW/Land Acquisition**
  - **Cost of construction management**
  - **Company overheads or other miscellaneous costs**
  - **Cost of contingency**
  - **Assumptions of costs to be performed by incumbent TO**
  - **Planned return on equity (ROE), including any incentive adders the proposing entity intends seek**  
Mid-Atlantic MCN intends to seek a 9.8% ROE for the project and will also request a 50 basis point adder for RTO participation.
  - **Estimated monthly AFUDC for the project, even if the Proposing Entity intends to pursue a current cash return on CWIP during the construction period**  
The estimated monthly AFUDC for the Project is [REDACTED]
  - **Detailed breakdown of annual operation and maintenance (O&M) costs**  
See Appendix 6 for detailed breakdown of costs of this Project and annual operations and maintenance estimates.
- **Clearly defined cost commitment**
  - **No “conditional upon other proposal” cost commitment**
  - **If proposing a cost commitment, you must provide a detailed scope of work that is subject to the cost commitment. Cost commitment can only be provided for work which the proposing entity may be designated**
  - **If proposing a cap on capital expenditures, provide the proposed cap on capital expenditures in present year dollars and year of occurrence dollars**
  - **If the Proposing Entity is proposing a cap on ROE, describe any conditions under which this ROE cap would not apply**
  - **Terms and conditions of the cost commitment, including any conditions under which the cost cap would not apply**

- **Estimated Annual Transmission Revenue Requirement with Assumptions is suggested but not required. If provided, include the complete buildup of the annual revenue requirement including, at least: depreciation, cost of debt, return on equity, federal and state income tax, property tax, and other costs**
- **Changing the scope of the cost commitment is considered a change to the proposal and will not be allowed**

Mid-Atlantic MCN's cost containment committed is to cap the capital cost for which it will seek rate recovery of to \$28.5 million in 2016 dollars and \$29.1 million in year of occurrence dollars.

This cap applies to the construction applies to the following portions of the project:

- New Shaker Run substation
- Tap of Todhunter to Foster 345 kV line into new substation
- Transmission line to bring the Warren to Nickel 138 kV line in and out of new substation
- Transmission tie between the new substation and existing Shaker Run substation

This cap does not include the portions of the project that are proposed to be constructed by others for the new 138 kV terminal at the existing Shaker Run substation.

Mid-Atlantic MCN considers this a binding cost commitment that should be applied to the evaluation of this Project subject to the following conditions:

- The project will be awarded to Mid-Atlantic MCN as proposed within twelve months of submission.
- Commodity prices (steel, aluminum, and copper), will not outpace typical inflation by more than two percent. Indexes will be negotiated.
- Typical inflation will not exceed four percent.
- No change in state, federal, or local law that will adversely affect Mid-Atlantic MCN's ability to obtain permits to construct or operate the Project, as submitted.
- Materials to construct the project will be readily available within historical timeframes.
- Labor markets will be functioning within typical norms (i.e. no strikes that would prevent Mid-Atlantic MCN from supplying construction resources).
- No adverse weather events will occur during the construction of the facilities that would require Mid-Atlantic MCN to re-construct the facilities
- Legal costs for defending Mid-Atlantic MCN's rightful selection to construct the project are not included.

- **Detailed conceptual schedule for proposed project**

See Appendix 4.

- **Environmental/routing/permitting**

See Appendix 3.

## **G. OPERATIONS/MAINTENANCE**

- **Overview of plans for operations and maintenance**

- **Previous experience**

As described above, the management team of Mid-Atlantic MCN includes years of proven experience in the maintenance and operations of transmission facilities throughout the US including startup of new transmission owning utilities. Further, coupling the experience of the Mid-Atlantic MCN management team with qualified and experienced third party contractors, consultants and suppliers, the combined team will be some of the best and most experienced in the industry.

Mid-Atlantic MCN intends to utilize the experience of [REDACTED] a specialized service provider truly capable of delivering a comprehensive and integrated set of transmission construction, maintenance and operations services, including key asset management and program management capabilities available on a 24/7 basis.

The Mid-Atlantic MCN project team will develop solutions grounded in technical best practices and practical experience resulting in the following benefits.

- Enhanced planning and decision making
- Optimized capital budgets
- Improved asset reliability
- Minimized life cycle costs
- Reduced TCO (total cost of ownership)

Mid-Atlantic MCN's detail-oriented management approach, dedication to safety excellence and commitment to total quality management provides an effective and efficient way to manage the program process. Experienced, certified project managers with proven track records for managing complex programs and projects are a critical part of our success in delivering a quality project on time and within budget.

The key differentiator of successful projects lies in effective communication and clear understanding of the goals of the project. Each member of the team brings their expertise, experience and the resources necessary to bring the project to a successful completion. The team jointly develops a set of guidelines and procedures that outline

the duties and responsibilities for each team member in the planning, construction, and close-out phases of the project.

The foundation for a successful project starts with early program planning. Early involvement at the preplanning phase of the program will enable Mid-Atlantic MCN to provide value with pre-construction planning, subcontracting services, cost control, scheduling coordination, quality assurance and safety.

Mid-Atlantic MCN's project management program will be a combination of the best practices and standards collected from both the experience and expertise from within its organization and those of its third party contractors, consultants, and suppliers. Our approach is different from other approaches in that it focuses on implementation and results rather than on technology.

- **Intentions for control center**

GridLiance is in the process of acquiring and/or constructing a control center to operate its assets. It is expected that such facilities will be operational well in advance of the 2021 target in-service date for this Project. Until such time as the new facilities are in operation Mid-Atlantic MCN intends to leverage existing relationships with development partners or ██████████ to provide control center services for its facilities.

- **Maintenance contracts**

Mid-Atlantic MCN currently does not have assets in the eastern region of the PJM and therefore does not yet have maintenance resources identified for the projects in this proposal. However, Mid-Atlantic MCN has a long standing relationship with ██████████ ██████████ and plans to leverage that relationship to provide the maintenance resources required for day to day, long-term and emergency restoration maintenance activities. Once awarded this project Mid-Atlantic MCN will begin the process of negotiating maintenance contracts with regional and national third party contractors. Mid-Atlantic MCN will have agreements in place well in advance of the 2021 target in-service date for this Project.