

SOUTH DAKOTA PUBLIC UTILITIES COMMISSION

APPLICATION

FOR

CRANDALL 115 KV LINE TAP



A Touchstone Energy® Cooperative 

Prepared by:

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- 1 Project Proposed Line Route Map
- 2 Project Topographic Map
- 3 Brown County Land Use Map
- 4 Existing Transmission Facilities
- 5 Typical Tangent Structure Drawing
- 6 Typical Tangent Structure Double Circuit Drawing
- 7 Typical Small Angle Structure Drawing
- 8 Typical Clearance Structure
- 9 Typical Vertical Deadend Corner Structure Drawing
- 10 Typical Horizontal Corner Structure Drawing

ACRONYMS AND ABBREVIATIONS

69 kV	69,000 Volt
115 kV	115,000 Volt
345 kV	345,000 Volt
ACSR	Aluminum conductor steel reinforced
BPD	Barrels Per Day
East River	East River Electric Power Cooperative, Inc.
HP	Horse Power
Lake Region	Lake Region Electric Association, Inc.
MCM	Million Circular Mills
MW	Mega Watt
MWH	Mega Watt Hour
NESC	National Electric Safety Code
PUC	Public Utilities Commission
ROW	Right-of-way
RUS	Rural Utilities Service
SDAR	South Dakota Administrative Rule
SDCL	South Dakota Codified Law
Western	Western Area Power Administration

1.0 APPLICATION PREFACE

East River Electric Power Cooperative, Inc. (East River) is proposing to construct a 115,000 volt (115 kV) overhead electric transmission line to serve the TransCanada Keystone Pipeline pump station #20. This station is located in Section 17, T121N, R59W, Day County, SD.

This entire project is referred to in this application as the “Crandall Line Tap” or as the “Project”.

The Crandall Line Tap will include:

- Constructing approximately 13 miles of 115 kV overhead transmission line.

This application meets the requirements set forth in South Dakota Codified Law (SDCL) 49-41B and South Dakota Administrative Rule (SDAR) 20:10:22. The balance of this document includes the application, supporting exhibits, and supporting documents. In accordance with SDCL 49-41B-22, East River establishes that:

1. The proposed facilities comply with all applicable laws and rules;
2. The facilities will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area;
3. The facilities will not substantially impair the health, safety or welfare of the inhabitants; and
4. The facilities will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

East River requests the Public Utilities Commission (PUC) of South Dakota to make complete findings and render a decision to grant a permit to construct the transmission facilities upon such terms, conditions or modification of the construction, and operation or maintenance as the Commission may deem appropriate.

East River Electric Power Cooperative, Inc.

By: _____
Jim Edwards, P.E.

Title: _____
Assistant General Manager-Operations

Date: _____
March 31, 2008

2.0 APPLICATION

This East River PUC application was developed and organized to meet the requirements of the South Dakota PUC rules set forth in SDAR 20:10:22. This application is submitted to the South Dakota PUC and conforms to South Dakota statutes and rules governing energy conversion and transmission facilities.

2.1 NAME OF PARTICIPANTS (SDAR 20:10:22:06)

The applicant's name, address, and telephone number is:

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(605) 256-4536

The individuals authorized to receive communications relating to the application on the behalf of East River are:

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2.2 NAME OF OWNER AND MANAGER (SDAR 20:10:22:07)

The proposed transmission facilities will be owned by East River. The Project Manager for the Project is:

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Assistant General Manager-Operations
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2.3 DESCRIPTION OF THE NATURE AND LOCATION OF THE TRANSMISSION PROJECT (SDCL 49-41B-11 (2))

East River is proposing to construct a 115 kV transmission line (Exhibits 1 & 2) to allow Lake Region Electric Association (Lake Region), headquartered in Webster, South Dakota, to serve a pump station for the TransCanada Keystone Pipeline as well as other future loads that Lake Region may serve in the area. The entire Project is referred to in this application as the “Crandall Line Tap” or as the “Project”.

The Project will provide for electrical transmission service necessary to meet the electrical demand for the pump station and other loads that may develop in the area.

The transmission line is located in rural croplands (Exhibit 3). The 13 miles of transmission line involved in the Project are proposed to be constructed in public and private Right Of Way (ROW). Where the transmission line will be constructed on private ROW easements have been acquired.

2.4 PURPOSE OF FACILITY (SDAR 20:10:22:08)

East River is a consumer-owned, regional power supply cooperative headquartered in Madison, South Dakota. It transmits wholesale electricity to 21 member electric distribution systems in Minnesota and South Dakota. These member systems, in turn, distribute electricity to approximately 86,000 consumer accounts.

The pump station is located in the certified service area of Lake Region and TransCanada has requested electric service from Lake Region for the pump station. Lake Region is a member/owner of East River and has an "All Requirements" contract with East River for East River to provide all of the power and energy requirements of Lake Region. East River also provides all of the transmission facilities required to deliver this power and energy to Lake Region's distribution system.

2.5 ESTIMATED COST OF FACILITY (SDAR 20:10:22:09)

The estimated total cost of the Crandall Line Tap is \$1,930,000.

East River will either utilize its internal work force or contract with private transmission line contractors to construct the Project. Cost estimates for the Project are based on construction cost histories accumulated during recent construction projects.

2.6 DEMAND FOR FACILITY (SDAR 20:10:22:10)

TransCanada has informed East River that the Keystone Pipeline will initially operate at 435,000 barrels per day (BPD) but will ultimately be operated at 591,000 BPD. At the initial operation of 435,000 BPD, the pump station will have two 5,000 Horse Power (HP) electric drive pumps and will have an estimated peak demand of 7.8 MW and annual energy usage of approximately 50,000 MWH. At the ultimate operation of 591,000 BPD, the pump station will have four 5,000 HP electric drive pumps and will have an estimated peak demand of 15 MW and an annual energy usage of approximately 87,000 MWH's.

If this facility is not constructed or is delayed, then TransCanada will not be able to operate their pipeline facility until this project or a similar project would be completed.

2.7 GENERAL SITE DESCRIPTION (SDAR 20:10:22:11)

The proposed 13 mile 115 kV transmission line will originate at Western Area Power Administration's (Western) Groton Substation (Exhibit 1) located in the SW ¼ Section 18, T122N, R60 W in Brown County. The line will be double

circuited with an existing East River 69 kV line for approximately 0.75 of a mile running east to the point where the proposed 115 kV line turns south. The line would then be constructed as a single 115 kV circuit using a single wooden pole structure. From where the line turns south, it will run south along the east side of 407th Avenue for 1 mile in public ROW. The line will then turn east along the south ROW line of 140th St for 1 mile in private ROW, then south along 408th Avenue approximately 1.25 miles in private ROW, then continuing south in public ROW for approximately 2.25 miles, then continuing south for 0.5 mile in private ROW, and then east along 144th Street for approximately 5.5 miles in private ROW. The line will then terminate at a new East River substation constructed adjacent to the pump station site.

2.8 PROJECT ALTERNATIVES (SDAR 20:10:22:12)

Due to the location of the pump station, the magnitude of the load and the size of the motors, East River evaluated several options for serving the load at both 115 kV and 69 kV transmission voltage levels.

Two high voltage transmission sources in the vicinity of the pump station exist to serve the pump station load at either 115 kV or 69 kV. One is from Western's Groton 345/115/69kV substation located 4.5 miles south of Groton, SD. The other is from East River's Bristol 115/69 kV substation located 1 mile north and 3 miles east of Bristol, SD. (Exhibit 4)

2.8.1 115 kV Transmission Service

To serve the pump station at 115 kV from the Bristol substation, a new transmission line of approximately 19 miles in length would need to be built. To serve the pump station from the Groton substation, a new transmission line of approximately 12.25 miles in length would need to be built and $\frac{3}{4}$ mile of existing East River transmission line would need to be rebuilt to a double circuit configuration.

2.8.2 69 kV Transmission Service

To serve the pump station at 69 kV from the Bristol substation, a new transmission line of approximately 19 miles in length would need to be built. To serve the pump substation at 69 kV from the Groton substation, two options exist. First, a new transmission line of approximately 12.25 miles in length and 0.75 mile of a double circuit line with an existing East River 69 kV transmission line. Second, a new transmission line of approximately 7 miles in length to an existing East River 69 kV transmission line and the rebuilding of approximately 9.5 miles of the existing transmission line between the point of the interconnection and the Groton substation. Rebuild of the existing line is necessary as a larger conductor is needed to carry the higher electric load due to the pump station.

In addition to the 69 kV transmission line additions described previously, in order to serve the pump station load at 69 kV, the existing 115/69 kV transformer at the either Groton or Bristol substations would have to be upgraded. Additionally, the pump station would need to have additional more expensive variable frequency drives installed in order to start the motors.

2.8.3 Alternatives Evaluation

Transmission service at 115 kV rather than 69 kV was chosen for the proposed Project due to the additional costs for the transformer upgrades and motor drives that would be required.

Transmission service from the Groton substation was selected because the needed transmission line would be six miles shorter in length than the line would be from the Bristol substation. Additionally, the Groton substation has more redundancy for back up delivery and more electrical capacity.

2.8.4 Line Route Selection

In determining the best route for the transmission line, multiple routes were evaluated. Some considerations used in the route determination included separation from existing electric facilities, cooperation of land owners, topographic features, cost, environmental concerns and regulations, and engineering.

The preferred route for the proposed 115 kV transmission line begins on the east side of Western's Groton substation and extend directly south for approximately 0.25 mile, where it will intersect an existing East River 69 kV transmission line that has an east-west orientation. Approximately 0.75 mile of the existing 69 kV line, extending east to a point located in the east side of 407th Avenue's public ROW will be rebuilt, utilizing the existing easement, to support both the existing 69 kV circuit and the new 115 kV circuit. At that point the proposed 115 kV transmission line would part from the 69 kV line and turn south for 1 mile. The proposed 115 kV transmission line would turn east and extend 1 mile east to 408th Avenue. The 115 kV line would then turn south and extend for 4 miles to 144th Street. The 115 kV line would then turn east for approximately 5.5 miles to a point directly north of the pump station where the line will then run south onto the pump station site.

2.9 ENVIRONMENTAL INFORMATION (SDAR 20:10:22:13)

The proposed Project will have minimal environmental impact both during and after construction. The Project follows existing road right of ways and existing transmission facilities.

Because the Project follows existing road ROW and transmission facilities, the Project should not alter the existing environment of the land around the transmission line. It also should not cause any increased hazards to the health and welfare of human, plant, and animal communities around the lines.

The transmission facilities involved in the Project will be designed to meet or exceed the United States Department of Agriculture's Rural Utilities Service (RUS) Standards or Approvals and the National Electric Safety Code (NESC).

2.10 EFFECT ON PHYSICAL ENVIRONMENT (SDAR 20:10:22:14)

This section provides information on the effect of the proposed transmission line on the physical environment.

2.10.1 Regional Land Forms

The Project lies in the Glacial Lakes and Drift Plains ecoregions. The Glacial Lake Basins were once occupied by Lake Souris, Devils Lake, and Lake Dakota. These proglacial lakes were formed when major stream or river drainages were blocked by glacial ice during the Pleistocene. The smooth topography of the Glacial Lake Basins, even flatter than the surrounding drift plains resulted from the slow buildup of water-laid sediments. The level, deep soils on the lake plains are intensively cultivated. In the north, the primary crops are spring wheat, other small grains, and sunflowers; in the Lake Dakota basin of South Dakota, corn and soybeans are more prevalent.

The Drift Plains, the retreating Wisconsinan glaciers left a subtle undulating topography and a thick mantle of glacial till. A greater proportion of temporary and seasonal wetlands are found on the drift plains than in the coteau areas, where semipermanent wetlands are numerous. Because of the productive soil and level topography, this ecoregion is almost entirely cultivated, with many wetlands drained or simply tilled and planted. However, valuable waterfowl habitat still remains concentrated in state and federally sponsored duck production areas. The historic grassland on the Drift Plains was a transitional mix of tallgrass and shortgrass prairie. The prairie grasses have been largely replaced by fields of spring wheat, barley, sunflowers, and alfalfa.

The Project will not involve any new roads, grading, filling, or other changes to the topography or regional landforms. As a result, no direct, indirect, or cumulative impacts to regional land forms are anticipated by the project.

2.10.2 Topography

Regional topography is generally characterized by rolling hills and plains. Topographic maps of the Project are provided in Exhibit 2.

2.10.3 Geologic Features

The proposed Project is located in two ecoregions, the Glacial Lakes comprised of glacial lakes deposits and the Drift Plains comprised of glacial till over Cretaceous Pierre Shale and Fox Hills Formations.

2.10.4 Economic Deposits

There are no commercially important sources of coal, oil and gas, or metals in the region.

2.10.5 Soil Type

The soil types in the area of the Project are of Mollisols (Argiaquolls, Calciaquolls, Endoaquolls, Haploborolls, Natriborolls).

2.10.6 Potential for Erosion and Sedimentation

It is not anticipated that the construction of this transmission line will cause erosion or sedimentation problems during the construction and in the future.

2.10.7 Seismic Risks, Subsidence Potential, and Slope Instability

The electric transmission line involved in the Project will be designed and constructed to meet utility standards. As a result, no issues relating to seismic risks, subsidence, and slope instability have been identified. Any potential difficulties due to seismic activities, subsidence and slope instability will be avoided through proper design and construction.

2.10.8 Geological Constraints

No geological constraints have been identified along the transmission line routes and it is not anticipated that any geological constraints will impact the Project.

2.11 HYDROLOGY (SDAR 20:10:22:15)

This section provides information on the hydrology of the Project area and the effect of the proposed Project on surface and groundwater.

2.11.1 Hydrologic Map

The topographic map (Exhibit 2) shows the terrain and drainage patterns in the areas around the Project. As this Project does not involve any new roads, grading, filling, deforestation, or significant vegetation removal, there will be no changes to the current drainage patterns.

Construction would be conducted in accordance with a plan for control of sediment and erosion. After construction, no direct, indirect, or cumulative impacts to surface water quality resulting from the proposed project are anticipated.

2.11.2 Effect on Current Planned Water Uses

The proposed transmission line will not use either municipal or private water and therefore, will have no impacts on any planned water uses by communities, agriculture, recreation, fish, or wildlife.

2.11.3 Surface and Groundwater Use by Proposed Facility

The proposed transmission line will not require consumptive use of or discharge to any surface water body or groundwater.

2.11.4 Aquifer Use by Proposed Facility

The proposed transmission line will not require the use of groundwater as a source of potable water supply or process water.

2.11.5 Water Storage, Reprocessing, and Cooling by Proposed Facility

No water storage, reprocessing, or cooling will be required for the construction or operation of the proposed transmission line.

2.11.6 Deep Well Injection Use by Proposed Facility

No deep well injection would be required for the construction or operation of the proposed transmission line.

2.12 EFFECT ON TERRESTRIAL ECOSYSTEMS (SDAR 20:10:22:16)

The proposed Project follows existing roads and should have no adverse long term impact on the vegetation and wildlife composition within the Project area. No permanent service road will be required that would result in vegetation removal and unauthorized access. Vegetation removal or habitat loss resulting from pole and anchor placement is insignificant. The transmission project will not displace or adversely affect wildlife or aquatic species. The Project will not impact ecologically unique or sensitive habitats including wetlands and aquatic habitats.

2.12.1 Effect on Wildlife

The proposed Project should have minimal impact and disruption of any wildlife within the Project area. It should also only cause an insignificant, if any, change or loss of any wildlife habitat or vegetation in the area.

The area around the Project is dominated by agricultural lands. The transmission lines involved in the Project are located on road/public ROW, cropland, and pastures. Wildlife in this area is made up of waterfowl and pheasants.

The Project does not involve any new roads, grading, or deforestation. Vegetation clearing will be restricted to areas immediately around the poles. As a result, the Project should not impact wildlife composition, abundance, or habitat.

2.12.2 Effect on Vegetation

The impact to vegetation in the Project area should be minimal. As stated in 2.12.1, the transmission line is located on road/public ROW, croplands, and pastures. The Project does not include any new roads, buildings, grading, water uses, or other changes to the land that may have a long term negative impact to vegetation. Also, the Project should not cause any future erosion problems which could impact vegetation.

Construction of the Project will have a short term impact on vegetation as a result of vehicle and equipment accessing the structures, material delivery, structure assembly and erection, and stringing of conductors and static wire. Also, there will be some vegetation removal to maintain adequate safety clearances with the overhead lines.

2.13 EFFECT ON AQUATIC ECOSYSTEMS (SDAR 20:10:22:17)

The proposed Project should not adversely impact any aquatic ecosystems. The Project does not directly change or impact any wetlands, streams, or rivers. Also, the Project does not require any new roads, grading filling, or other changes to the existing terrain that could cause erosion or sedimentation problems or would change any existing drainage patterns.

2.14 LAND USE (SDAR 20:10:22:18)

This section provides information concerning the present and anticipated use or condition of the land in the area of the Project.

2.14.1 Land Use Map

The Brown County Land Use Map (Exhibit 3) depicts land use within the proposed Project corridor. Day County currently does not have a comprehensive land use management program. The proposed Project crosses a landscape with a predominantly agriculture land use.

2.14.2 Homes and Persons Displaced

There will be no homes or persons displaced as a result of the construction, operation, or maintenance of the transmission facilities that are part of this Project.

2.14.3 Land Use Compatibility

The proposed transmission line is compatible with the present land uses of the surrounding area. The majority of the proposed transmission line traverses private land that is zoned agricultural. The addition of the power line to the area would have minimal direct or indirect impacts on the already linear features of the landscape, as existing roads, fencing and power lines transect the area. Construction would temporarily alter the area.

2.14.4 Effect on Land Use

The land in the public and private ROW can be used for the same purpose as prior to this Project. The land will be subject to the restrictions as stated in the easements. These restrictions include that trees and structures that might interfere with the safety, operation or maintenance of the line may not be permitted in the ROW.

2.15 LOCAL LAND USE CONTROLS (SDAR 20:10:22:19)

The proposed Project will comply with all applicable zoning requirements. No existing land use controls by any of the governing bodies restrict the use of the land within the proposed Project area for the purpose of constructing and maintaining the transmission line.

2.16 WATER QUALITY (SDAR 20:10:22:20)

This Project should not impact any wetlands, streams or rivers. The Project will comply with all applicable federal, state and local rules and regulations required for alteration of wetlands, streams, or rivers resulting from the Project. The following are specific measures that would be taken to protect water quality in the proposed Project corridor:

- Best management practices would be implemented to minimize erosion and sedimentation, runoff, and surface instability during construction.
- Construction would be conducted to minimize disturbances around surface water bodies to the extent possible.
- Current drainage patterns in areas affected by construction will be maintained.
- Staging areas for project-related construction equipment would be located in areas that are not environmentally sensitive to control erosion.
- Staging and laydown yards for project-related construction would be established at least 59 feet from waterways or wetlands, if permitted by topography. No vegetation would be cleared between the yard and the waterway or wetland.
- Construction equipment would not be serviced within 25 feet of waterways or wetlands. Equipment would not be fueled within 100 feet of the waterways or wetlands.
- Any spills of fuels or other hazardous materials during construction or system maintenance would be promptly contained and cleaned up.
- Any herbicides used in ROW maintenance would be approved by U.S. Environmental Protection Agency and applied by licensed professions. Application of herbicides would be limited to the extent necessary for regular maintenance of the transmission line.

2.17 AIR QUALITY (SDAR 20:10:22:21)

No significant or long-term impacts to air quality will occur as a result of this Project. Construction traffic may generate some local dust for short duration. However, the use of construction vehicles involved in this Project will be short term at each part of the Project. The Project will comply with all federal, state and local air quality standards and regulations.

2.18 TIME SCHEDULE (SDAR 20:10:22:22)

The current estimated time schedule for the Project is to start construction in the fall of 2008 and complete construction by May 2009.

2.19 COMMUNITY IMPACT (SDAR 20:10:22:23)

This section reviews the effects the construction, operation, and maintenance of the Project will have on socioeconomic, taxation, agricultural production, population and community, transportation, and cultural resources.

2.19.1 Forecast of Socioeconomic Impact

This project will provide additional electrical infrastructure in the area to serve the pump station and would be available to serve future electrical needs. No other significant socioeconomic impacts to the local communities and governmental facilities or services are anticipated as a result of this Project.

2.19.2 Property and Other Tax Impacts

The taxing jurisdictions will receive, as a result of the Project, additional Property and Gross Receipt Tax which will be paid by East River and/or Lake Region for the electric service provided to the pump station.

2.19.3 Forecast of Agricultural Impacts

The transmission line in the Project is sited along ROW and property lines. As a result, the Project is not expected to interfere with agricultural operations or result in the loss of croplands. Should damage occur to crops during construction of this Project, landowners are reimbursed for damages as a normal part of easement costs.

2.19.4 Forecast of Population and Community Impacts

The proposed transmission Project is not expected to impact the population, income, and occupational distribution of the region.

2.19.5 Forecast of Transportation Impacts

No significant direct, indirect, or cumulative impacts are expected to the transportation systems of cities, counties, and the state as a result of the Project. Short-term impacts may include minor traffic delays caused when wires are strung across roadways. Any such short-term roadway closings would be scheduled with appropriate authorities and marked clearly, and detour routes would be provided as necessary. Construction of the proposed Project would be expected to cause only insignificant and temporary adverse transportation effects to public access as a result of roadway congestion from work vehicles.

2.19.6 Forecast of Cultural Resource Impacts

The transmission line in the Project is sited along ROW and property lines. As such, there are no anticipated impacts to cultural resources as a result of the Project.

2.20 EMPLOYMENT ESTIMATES (SDAR 20:10:22:24)

This Project may utilize contractors hired by East River during the construction phase. No permanent additional employment is expected as a result of the Project.

2.21 FUTURE ADDITIONS AND MODIFICATIONS (SDAR 20:10:22:25)

At this time, East River does not anticipate any future additions or modifications to this Project that would need to be approved under this permit application.

2.22 RIGHT-OF-WAY ACCESS, CLEARING, WEED CONTROL, AND RESTORATION (SDAR 20:10:22:34)

This section includes information on East River's policies concerning route clearing, restoration, revegetation and weed control.

2.22.1 Vegetation Clearing

The proposed Project is located in public and private ROW. Some vegetation may need to be cleared to provide adequate clearances to the transmission line. East River annually trims vegetation away from its transmission lines for this purpose. It is expected that some additional vegetation will be removed for the Project.

2.22.2 Soils

Any soils removed during borings for the transmission line structures would be used for backfill. Any remaining material would be spread and mounded near the base of the transmission line structures. After construction is complete, any compacted soil would be tilled and the area would be reseeded with native grasses.

2.22.3 Herbicides and Sterilants (Weed Control)

It is East River's policy to use mechanical and manual methods to clear the ROW. However, where the use of mechanical or hand methods are impractical, the selective use of herbicides may be necessary. In these instances, the

appropriate Federal and state agencies will be notified, only approved herbicides will be used, and all recommended precautions will be taken.

2.22.4 Construction Site Access

All line segments are either built in ROW with easements that allow access for construction and maintenance purposes, or are built in public ROW along public roads that provide access for construction and maintenance purposes.

2.22.5 Waste Disposal

Vegetation that may be removed from the ROW and debris resulting from the work will be disposed of in a manner approved by local authorities.

2.22.6 Restoration and Revegetation

Those areas requiring revegetation will be reseeded with vegetation recommended by the Soil Conservation Service.

2.23 TRANSMISSION FACILITY DESIGN AND CONSTRUCTION (SDAR 20:10:22:35)

This section includes information on: (1) configuration of poles; (2) line switches, (3) conductor configuration; (4) proposed transmission site and major alternatives; (5) reliability and safety; (6) ROW or condemnation requirements; (7) necessary clearing activities; and (8) underground utility details.

2.23.1 Configuration of Poles

Six basic structure types would be used for the transmission line. The height of the poles, dependent upon clearance of other objects, will range between 65 feet and 95 feet in height.

1. A single pole wood pole structure configured with three horizontal line post insulators that are staggered supporting the three phase conductors and one suspension clamp mounted at the top of the structure supporting the shield wire. (Exhibit 5)
2. A single wood pole structure with six horizontal line post insulators that will support a 69/115 kV double circuit transmission line. The shield wire will be supported with a suspension clamp at the top of the structure. (Exhibit 6)
3. A single wood pole structure configured with three horizontal line post insulators mounted on one side will be utilized for small

angles. The shield wire will be supported with a suspension clamp. (Exhibit 7)

4. A single wood pole structure configured with a three horizontal line post insulators for supporting the three phase conductors. The middle and bottom insulators would be mounted at the same height to obtain additional ground clearances. The shield wire will be suspended from the top of the structure with a suspension clamp. (Exhibit 8)
5. A single wood structure with suspension/strain insulators utilized to support the phase conductors for large angles. The shield wire will be supported with deadend clamps at the top of the pole. (Exhibit 9)
6. A three pole wood structure with suspension/strain insulators to support the phase conductors on large angles. The shield wire will be supported on one of the wood poles with deadend clamps. This structure will be utilized to transition from a vertical configuration to a horizontal (flat) configuration when crossing an existing transmission line at the Groton substation. (Exhibit 10)

2.23.2 Line Switches

No line switches will be installed in this Project.

2.23.3 Conductor Configuration

This section includes information on the conductor configuration and size, length of span between structures and number of circuits per pole for the Project.

As proposed, the Project will utilize a 477 MCM Aluminum Conductor Steel Reinforced (ACSR) conductor with a 3/8 extra high strength steel shield wire using 300 foot ruling spans.

2.23.4 Proposed Transmission Site and Major Alternatives

The transmission line that is proposed in this Project is described in Section 2.7. Alternatives are identified in Section 2.8.

2.23.5 Reliability and Safety

The proposed transmission line will be designed and constructed in full compliance with all applicable NESC electrical performance and safety codes and, as a result, would not present significant impacts posed by safety or electrical hazard to the general public.

2.23.6 Right-of-way or Condemnation Requirements

All easements for the transmission line have been obtained. Where private easements cannot be obtained the transmission line will be installed in the public ROW. No condemnations are anticipated.

2.23.7 Necessary Clearing Activities

Some tree clearing activities will need to be completed to maintain the proper safety clearances.

2.23.8 Configuration of Underground Facilities

No underground 115 kV facilities will be required as a part of the proposed Project. Existing overhead distribution lines will be placed underground to allow ROW clearance for the proposed line

2.24 ADDITIONAL INFORMATION IN APPLICATION (SDAR 20:10:22:36)

This application contains all information necessary for the local review committees to assess the effects of the proposed facilities pursuant to SDCL 49-41B-7 and 49-41B-11. This application also contains all information necessary to meet the burden of proof specified in SDCL 49-41B-22.

2.25 TESTIMONY AND EXHIBITS (SDAR 20:10:22:39)

List of Preparers

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This document is intended to represent the entire application, including all narratives, analysis, and exhibits.