

NORTH AMERICA TRANSMISSION INITIAL APPLICATION MATERIALS FOR EDIC TO FRASER COMPONENT

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1.1 OVERVIEW

The Edic to Fraser (“Edic-Fraser”) component of the Project consists of a new 345 kV single circuit overhead transmission line originating at the existing Edic Substation, located in the Town of Marcy, approximately two (2) miles north of the city of Utica in Oneida County, proceeding generally south, and terminating at the existing Fraser Substation, approximately two (2) miles northwest of the Hamlet of Fraser, in the Town of Delhi, Delaware County. Edic-Fraser would include series compensation at the Edic Substation site. The proposed alignment from Edic to Fraser is approximately 80 miles long.

While the routing and siting of the transmission line and series compensation station will be determined in coordination with stakeholders and through an alternatives analysis during the subsequent Part B Application process, the proposed route for Edic-Fraser, which parallels existing transmission lines for nearly its entire length, is illustrated in Figure 2-1 below and is shown in detail in Exhibit 2.

In addition to the proposed Edic-Fraser transmission line, in response to the guidance set forth in the Order Authorizing Modification of the Process to Allow for Consideration of Alternative Proposals issued and effective February 21, 2014 in Cases 12-T-0502 and 13-E-0488, North America presents the following alternative project components in the vicinity of Edic-Fraser that could enhance transfer capability without requiring any additional lands for rights-of-way:

- the addition of series compensation on the existing Fraser-Gilboa 345 kV circuit at Fraser Substation in the Town of Delhi;
- looping the existing Marcy-Coopers Corner 345 kV circuit to the existing Fraser Substation;
- the addition of series compensation on the existing Marcy-New Scotland 345 kV circuit near Marcy Substation in the Town of Marcy; and
- the addition of series compensation on the existing Edic-New Scotland 345 kV circuit near Edic Substation in the Town of Marcy.

If approved by the Commission, North America could construct all or any combination of the enhancements described above. Additionally, the enhancements could be constructed whether or not Edic-Fraser is ultimately approved.

1.2 ORGANIZATION OF INFORMATION WITH RESPECT TO ARTICLE VII REQUIREMENTS

This Application contains the items required for an initial application filing (or “Initial (Part A) Application”), as defined by the Commission’s Order Establishing Modified Procedures for Comparative Evaluation Issued and Effective December 16, 2014 (the “December 16 Order”). The elements of this application are organized as specified in the Article VII Part A Template provided in Appendix D of the Commission’s December 16 Order.

1.3 USE OF EXISTING ROW

The proposed Edic-Fraser line minimizes the acquisition of additional right-of-way (“ROW”) since it is sited parallel to existing road and transmission ROW to the maximum extent practicable. Based on this siting practice, the proposed Edic-Fraser route is parallel to existing ROW for over 90% of its path. In addition, where the route is parallel to an existing transmission ROW, North America proposes a narrow ROW, of only 80 feet, and only 100 feet elsewhere.

Typical widths for a 345-kV transmission ROW would be approximately 150 feet wide; however, North America is proposing significantly narrower ROW widths for the Project, which will result in a significantly lower requirement for new ROW. In the segments parallel to existing linear infrastructure, the ROW width will be only 80 feet. For segments not parallel to existing ROW, the proposed width would be only 100 feet. Therefore, North America’s proposed streamlined ROWs would reduce the need for new ROW by 47% for the vast majority of the route parallel to existing transmission or road ROW. For the remaining small portion of the route not parallel to existing ROW, the requirement for new ROW would still be reduced 33% versus the typical 150-foot ROW width. North America will evaluate during the Part B application phase whether electromagnetic field (“EMF”) easements would be needed that are wider than the 80 and 100-foot transmission ROWs.

In addition, by paralleling an existing transmission line the Edic-Fraser line will be in character with existing facilities already in the landscape. As can be seen in the design drawings in Exhibit 5, the addition of the line where there is an existing line for over 90% of the route will have less impacts than adding a new transmission for a 100% new route.

The other elements of this proposal, such as series compensation on the existing Fraser-Gilboa 345 kV circuit, series compensation on the existing Marcy-New Scotland 345 kV circuit, series compensation on the existing Edic-New Scotland 345 kV and looping the existing Marcy-Coopers Corner 345 kV circuit to the existing Fraser Substation do not require any additional lands for rights-of-way.

In order to minimize the impacts that the Edic-Fraser line may have on local communities, North America proposes a significant amount of community impact mitigation funding.

1.4 USE OF ADVANCED TECHNOLOGIES

Edic-Fraser will incorporate a number of advanced and innovative technologies that will maximize the benefits of the proposed line.

First, as described in Section 1.3 above, North America will implement innovative siting practices to route the line parallel to existing transmission lines and roads, therefore reducing the ROW requirement by 47% for over 90% of the path.

The use of series compensation represents an advanced technology that enhances the transfer capability of the plan with minimal additional footprint. While series compensation alone will not provide the level of transfer capability to properly address the congestion on the transmission system, the addition of series compensation along with transmission line upgrades can provide more incremental transfer capability for a lower overall cost per MW of transfer. In addition, series compensation can increase transient stability.

Further, North America is willing to contract with an internet service provider to allow use of our fiber optic cables for providing internet service or allow mounting of antennas on our transmission structures, thus bringing high-speed internet service to areas and communities where it has previously been unavailable.

1.5 SIS/SRIS STUDIES

The System Reliability Impact Study (“SRIS”) for Edic-Fraser including series compensation on the Edic-Fraser line has been completed in draft form by NYISO. The Study Agreement for the Edic-Fraser SRIS has been executed. The SRIS scope for Edic – Fraser was also presented at NYISO Transmission Planning Advisory Subcommittee (TPAS) and the Operating Committee (OC) where it was approved without any changes. This section constitutes the notice by North America, required by the December 16 Order, stating that the SIS/SRIS studies for Edic-Fraser are in progress, that a study scope has been accepted and that work is underway pursuant to a Study Agreement with the NYISO².

No interconnection requests have been made for the other elements of this proposal, such as series compensation on the existing Fraser-Gilboa 345 kV circuit, series compensation on the existing Marcy-New Scotland 345 kV circuit, series compensation on the existing Edic-New Scotland 345 kV and looping the existing Marcy-Coopers Corner 345 kV circuit to the existing Fraser Substation. These elements were identified in response to the December 16 Order and it will not be possible to complete an SRIS prior to the Commission’s decision in this proceeding. In addition, it is likely, but not clear that these elements would be subject to Article VII, and therefore additional deliberation would be needed to determine whether the provisions regarding an SIS/SRIS would be applicable. However, to the extent a waiver

² December 16, 2014 Order at Appendix D, p. 3.

may be necessary for a requirement to have a completed SRIS, North America has requested such a waiver herein.

2. DESCRIPTION OF EDIC-FRASER COMPONENT (§85-2.8)

2.1 DESCRIPTION OF THE FACILITY (§ 85-2.8(A))

This section provides a (1) description of the Edic to Fraser 345 kV overhead AC transmission component of the proposed Project, (2) a statement of the location of the proposed location for the Edic-Fraser component, (3) a statement of the need for the proposed Edic-Fraser component, (4) a statement regarding the compatibility of the Edic-Fraser proposed facilities with the goals and benefits to ratepayers identified in the Blueprint, (5) a statement regarding the operating effects of the proposed Edic-Fraser component and (6) the anticipated schedule for project development, as required by 16 NYCRR § 85-2.8, as modified by the December 16 Order.

2.2 FACILITIES DESCRIPTION

The Edic-Fraser component is comprised of (a) modifications to the Edic Substation, (b) the addition of a new 345 kV overhead transmission line, (c) a new series compensation station, and (d) modifications to the Fraser Substation. These items are described in detail in the following subsections. Design drawings for select Project components are included in Exhibit 5 of this submittal.

2.2.1 INTERCONNECTION AND SUBSTATION MODIFICATIONS

Edic-Fraser will connect the Niagara Mohawk Power Corporation d/b/a National Grid-owned Edic 345 kV Substation, located in Marcy, Oneida County, to the New York State Electric and Gas-owned Fraser 345 kV Substation, located in Delhi, Delaware County.

The Edic-Fraser component will consist of approximately 80 miles of 2-1590 ACSR “Falcon” bundled conductor with Normal and Emergency Ratings of 1788/2074 MVA respectively. The series compensation equipment would be installed at the terminal within the existing Edic Substation.

The Point of Interconnection (POI) at the Edic Substation requires that a new 345 kV circuit breaker be installed between existing breakers R110 and R160 in order to utilize an open bay and provide separation from the existing #16 Line (Edic-Clay ckt. 1). The POI at the Fraser Substation requires the expansion of the current breaker-and-a-half station to accommodate a new bay. Two new 345 kV breakers will be needed to separate the new line from the #8 and #4 buses.

2.2.2 TRANSMISSION LINE

North America has performed preliminary review of design options for the Edic-Fraser 345 kV transmission line and has determined that a “Vertical” monopole configuration would be appropriate for Edic-Fraser where it is parallel to existing infrastructure and a “Delta” configuration on the limited new right-of-way. The foundations will typically be a combination of steel and concrete reinforced foundations for the tangent monopoles, the angle and deadend structures. North America proposes an approach to structure design that allows for easy modifications to the structures and foundations that allows for deployment in most any type of soil conditions and provides for very efficient installation methods.

North America intends to perform a Transmission Line Structure and Foundation Type Selection Study to validate the initial assumptions. The results of this study will be incorporated into the final line design and updated in North America’s Part B Application.

North America proposes Edic-Fraser to be constructed as a monopole configuration, but recognizes the Commission may see benefits in designing and constructing Edic-Fraser to include a double-circuit capable tower, with only one circuit initially installed. North America would be willing to do so if directed by the Commission.

2.2.2.1 DESIGN VOLTAGE AND VOLTAGE OF INITIAL OPERATION

Edic-Fraser is designed to operate at a nominal system voltage of 345 kV, alternating current (“AC”). The voltage of initial operation will be 345 kV.

2.2.2.2 TYPE, SIZE, NUMBER, AND MATERIALS OF CONDUCTORS

The proposed conductor type for Edic-Fraser is 1590 kcmil 54/19 ACSR “Falcon” conductor. Edic-Fraser is designed for a two conductor bundle per phase for the entire 80 circuit miles from the Edic Substation to the Fraser Substation. Special consideration will be given to the conductor design for the long span crossings of rivers, streams, ponds, wetlands or other geographic features.

The aerial shield wire on Edic-Fraser will be a DNO-8696 or equivalent Optical Ground Wire (“OPGW”) that will provide line shielding as well as a communication path between the substation communication facilities.

2.2.2.3 INSULATOR DESIGN

Insulator design for Edic-Fraser will be suspension type, polymer insulator with ball and wye-clevis connections. In all suspension applications, regardless of structure type, insulators will consist of two polymer insulators configured in a V-string formation. Dead-end and angle structures will utilize two polymer insulators configured in a parallel formation placed in a strain condition with associated dead-ending hardware. Where required, vertical polymer jumper post insulators will be utilized to provide proper clearance to grounded portions of the structures and to restrict jumper loop movement due to wind loading.

2.2.2.4 LENGTH OF TRANSMISSION LINE

The length of the proposed route is approximately 80 miles. The Scoping and Schedule section details further routing analysis to take place prior to the filing of Part B of the application.

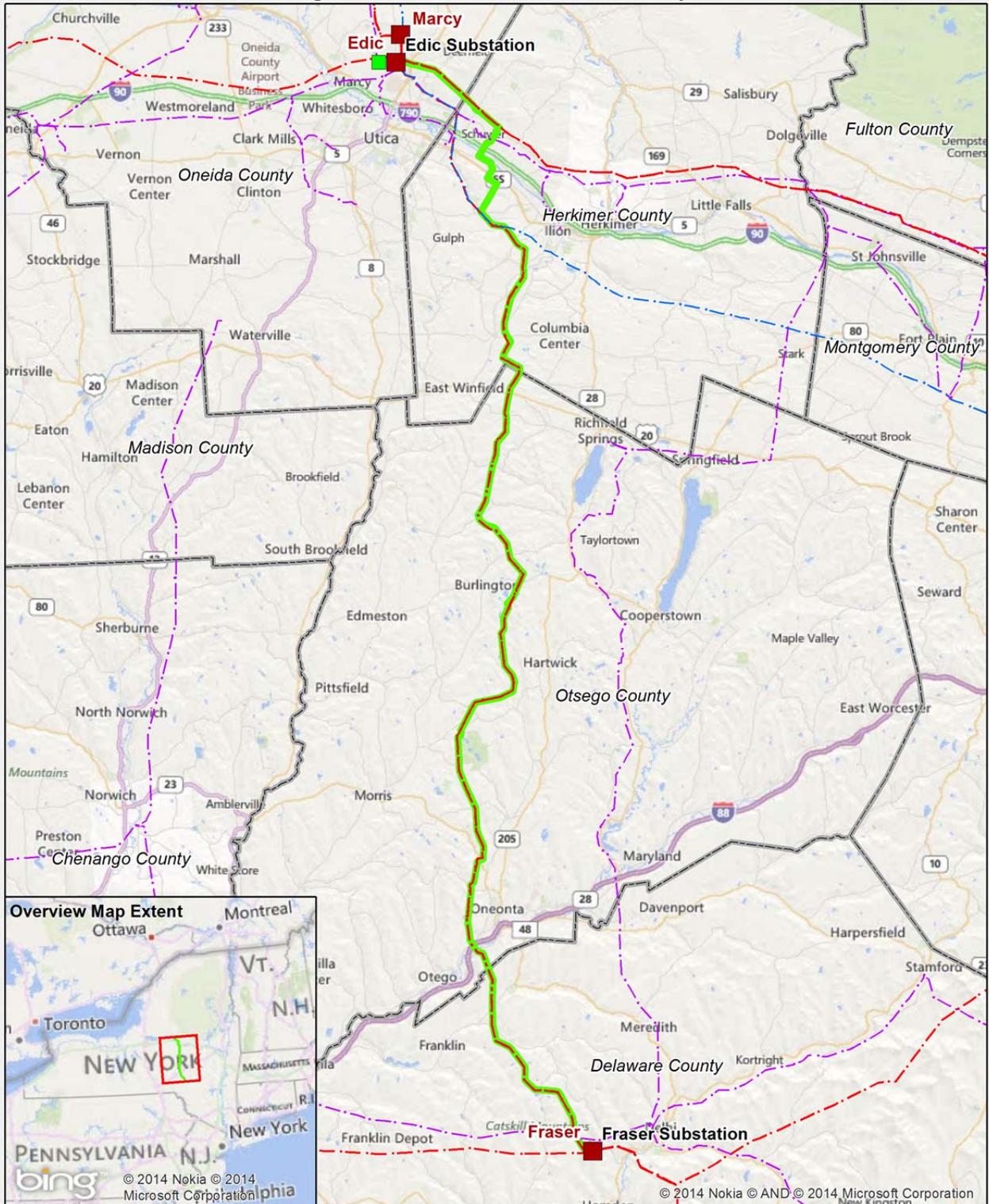
2.2.3 SERIES COMPENSATION STATION

A series compensation station will be constructed in the Edic-Fraser line at Edic Substation. The station will consist of circuit breaker, communication equipment, and series compensation that will allow for up to 25% of switchable compensation on the line. The station will be an approximately ten (10) acre site with four (4) acres fenced and the remainder allowing for access and stormwater management. If NYISO determines that 25% compensation is not the optimal level of compensation, North America will adjust the design specifications accordingly to achieve the preferred level identified.

2.3 LOCATION OF PROPOSED SITE OR RIGHT-OF-WAY (§85-2.8(b))

The proposed route for the Project, which parallels existing transmission lines for nearly its entire length, is illustrated in **Figure 2-1** and is shown in detail in the map sets included in Exhibit 2.

Figure 2-1. Edic-Fraser Overview Map



Legend

- Proposed Route
- - - Proposed Series Compensation
- - - 345 kV
- - - 115 kV
- - - 230
- County Boundaries
- Substations



The proposed right-of-way is generally expected to be 80 feet wide where parallel to existing linear infrastructure and 100 feet wide at other locations. The line originates at the existing Edic Substation located in the Town of Marcy, north of the City of Utica in Oneida County, then runs southeast into Herkimer County, where it turns generally south and runs approximately two (2) miles west of the Village of Frankfort. The ROW traverses south through rural portions of Otsego County and passes approximately one mile west of the city of Oneonta before entering Delaware County, where it proceeds south and east to terminate at the existing Fraser Substation located approximately four miles southwest of population center in the Town of Delhi. The exact width of the ROW will be determined after electromagnetic field (EMF) calculation studies are completed and detailed structure design and placement have been performed.

In developing the proposed ROW route, North America's objective was to parallel existing ROWs to the maximum extent practicable, while minimizing impacts on wetlands and streams and proximity to schools, churches, airports and residences.

2.4 NEED FOR PROPOSED EDIC-FRASER FACILITIES (§ 85-2.8(d))

The Edic to Fraser transmission line will serve to increase transmission capability between upstate New York and downstate New York, and thereby address one of the key recommendations of the New York Energy Highway Blueprint (the "Blueprint"). The new 345 kV line will relieve well-established energy transfer limitations on the NY electric transmission system and ensure efficient transmission of clean renewable energy from upstate NY to consumers in downstate NY. North America's proposed Project (which includes the Edic-Fraser transmission line as one component) will provide an incremental transmission capability of at least 1,000 MW on the UPNY-SENY interface as well as a significant increase in the energy transfer capability on the Central-East interface. The proposed 345 kV transmission upgrades, including the proposed Edic-Fraser facilities, will lead to significant congestion relief for downstate energy consumers, enhance efficient working of the NY electricity market by connecting lower-cost sources of energy with loads and improve system reliability state-wide.

The need for the Edic to Fraser component of the Project may also be established pursuant to the Congestion Assessment and Resource Integration Study ("CARIS") process administered under the New York Independent System Operator ("NYISO") tariff, in the event Edic to Fraser meets all requirements under that process including beneficiary approval.

2.5 COMPATIBILITY OF PROPOSED FACILITY WITH GOALS AND BENEFITS TO RATEPAYERS IDENTIFIED IN THE BLUEPRINT

The proposed Project is consistent with the goals set forth in the Blueprint and would bring significant benefits to ratepayers. Additional information pursuant to §85-2.8 regarding the

compatibility of the proposed facility with the goals and benefits to New York's ratepayers identified in the Blueprint is provided in Exhibit E-4.

2.6 DEVELOPMENT SCHEDULE (APRIL 22, 2013 ORDER, APPENDIX B AT 3)

Planned development activities include the Article VII process, public outreach, and federal permitting. The anticipated development schedule is shown in Figure 2-2 below. As reflected in the schedule, the time required for completing the development and permitting activities after submittal of the Part B application is estimated at approximately 25 months.

Figure 2-2. Development Schedule

