



ATTACHMENT C: REQUIRED DATA SUBMISSION FOR SOLUTIONS TO RELIABILITY NEEDS

(Instructions)

(Remove any lines or items within parentheses that do not apply)

[Insert information within bracketed areas and remove brackets]

<input checked="" type="checkbox"/>	HV AC Transmission Project HV	<input checked="" type="checkbox"/>	Substation Project (115 kV or greater)
<input checked="" type="checkbox"/>	HVDC Transmission Project	<input checked="" type="checkbox"/>	FACTS
<input checked="" type="checkbox"/>	Underground Transmission Project	<input checked="" type="checkbox"/>	Underwater/Sea Project

(Check all that apply)

[Insert Title of Project]

(Title should be short and formatted as follows:)

(Transmission project description format, delete if not applicable)

[xx kV-Line #] – [Substation to Substation];[xx miles](lineal length of project), [Type of project] (Overhead, Underground, HVDC, ROW for new Transmission Line, Rebuild, Thermal Up-Rate, Relocation, etc)

(Substation project description format, delete if not applicable)

[xx kV] – [Substation Name];[Project Location](Name of closest city, Township, County, State, ZIP), [Type of project] (New Substation, Transformer Replacement or kV Change, Conversion to Ring Bus, etc)

Submitted in response to NYISO Solicitation for (insert Reliability Need being addressed)

Date: [xx/xx/xx] *(date submitted to NYISO)*

Proposal Made By: [name of Developer/company]

[street address of company]

[city, state, zip]

Contact Person: [name, title]

[phone #] Office [phone #] Cell

[email address]



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Technical Contacts

Project Manager: [name, office phone, cell phone, email]
(person responsible for schedule and budget tracking)

Project Engineer: [name, office phone, cell phone, email]
(person responsible for technical information)

Project Location

Project Zone(s): (NYISO regional area location)

Project County(ies):

Project State (if connecting outside NY):

(Select from the following two sentences, delete the sentence that does not apply)

This project will require that [Project Developer] file an Article VII application with the New York State Public Service Commission (PSC).

No PSC Article VII filing is required for this project.

NYISO Queue # [if any] Date Filed (or planned filing date): _____

Feasibility Study: [X] Completed Date Completed: _____

[X] Not Completed Expected Date: _____

System Impact Study: [X] Completed Date Completed: _____

[X] Not Completed Expected Date: _____

Facility Study: [X] Completed Date Completed: _____

[X] Not Completed Expected Date: _____

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Milestone Schedule

(Insert a milestone schedule, preferably in the sample format shown below. Aspects-Items to be considered for milestone schedule include: –: In-service date, outage availability, permitting requirements, construction duration, deadline for major equipment order, engineering and ROW procurement schedule, existing facility outage availability, or wetland issues. Add commentary under the milestone schedule discussion what you know about the scheduling requirements which need to be completed in order to meet the energization requirement. For example, in the case of wetlands, will the wetlands require winter-only construction? For a reconductoring or rebuild project, can the existing line be taken out of service or will the work need to be done on short outages or live line work?)

Activity	Start Date	Finish Date
Siting Activities	01/1/2015	01/01/XXXX
Engineering	01/01/2015	06/31/XXXX
Real Estate Acquisition	01/01/2015	01/01/XXXX
Construction	01/10/2016	10/01XXXX
In-Service Date	11/01/2016	-----

Outage Requirements

Write a description of the anticipated necessary outage requirements for this project and how customers will-would be supplied or service impacted.

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Work Plan Required:

Write a description of the overall work plan from start to finish; List items that will be done by in-house staff and list services that will be performed by consultants or contractors. Below is a list of probable project activities.

- ~~Project studies (e.g. Viability and Sufficiency, Evaluation)~~
- *Siting Activities (e.g. Locating line routing and substation site location options)*
- *Environmental Impact Studies (relative to siting options)*
- *Permitting and Regulatory Activities (e.g. Licensing and Permitting)*
- *Electrical Studies (e.g. Equipment sizing, protection, ground mat design)*
- *Surveying (relative to line and station layouts)*
- *Real Estate Acquisition*
- *Geotechnical Contractor (soil borings, soil resistivity)*
- *Engineering Consulting Services*
- *Site Work*
- *Below Grade*
- *Above Grade*
- *Electrical Construction (e.g. Control house and controls)*
- *Overhead Electric Construction (e.g. Current carrying Line and Substation equipment)*
- *Telco Construction (e.g. communications for protection and remote telemetry)*
- *Environmental Restoration*
- *Other*

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Project Overview

(from a high level, this section should discuss the needs and requirements for the project, what is the origin or deficiency the project will resolve, what will be technically involved in the project such as conductor type, wood vs. steel construction, required outage schedules and impacts, any live line work . Also relate the length of project to the total length of line.)

(Edit these sentences below as appropriate)

This project consists of [].

The driver of, or reliability need for, this project is [].

The in-service date for both the line and substation work is [].

The conductor MVA ratings are: Summer - Normal [], LTE [], STE []

Winter - Normal [], LTE [], STE []

The circuit MVA ratings would be: Summer - Normal [], LTE [], STE []

Winter - Normal [], LTE [], STE []

One-Line Diagram:

(Briefly discuss any changes to the existing one-line diagram as a result of this project.)

Attachment 1A: ~~Current Existing~~ One-Line Diagram of Integrated Facilities

Attachment 1B: ~~Ultimate-Proposed~~ One-Line of Final Configuration

Data Requirements:

Refer to NYISO Manual 24 – Reliability Analysis Data Manual for appropriate data requirements

[http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals and Guides/Manuals/Planning/rel_anl_data_mnl.pdf](http://www.nyiso.com/public/webdocs/markets_operations/documents/Manuals_and_Guides/Manuals/Planning/rel_anl_data_mnl.pdf)

Route Information

Refer to Attachment 2 ~~for to provide~~ a map of the line route or corridor.

The land adjacent to the project corridor ~~breaks down consists of~~ approximately as follows:

Commercial / Industrial / Urban	[] miles
Residential	[] miles
Open Field/Fallow Land	[] miles

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Crop Land	[] miles
Forested Land	[] miles
<u>Wetland</u>	<u>[] miles</u>
Total	[] miles

- [] miles of the line run parallel to Interstate Highways.
- [] miles of the line run parallel to rural state, county, or town roads.
- [] miles of the line run parallel to city or village streets.
- [] miles of the line run parallel to adjacent utilities & utility corridors

Design Criteria

Design Standards shall meet the [interconnecting TO(s)] standard Transmission Line Design Criteria. If no [interconnecting TO(s)] or applicable local standard exists, then, the applicable industry standard or good utility practice will be used. (*List all organizations' design standards which will be used and any exceptions to Design Criteria which are being proposed.*)

Right-of-Way Requirements

(Information to be provided by Project Developer)

Multiple ROW width calculations-requirements may be required-necessary if the line has several varying structure types, span lengths, etc. Details of Right-of-Way calculations should be included in Attachment 6.

Transmission Drawings

The following drawings are generally developed for a transmission projects. ~~Depending on T~~the state of development of the project will generally determine when the drawings are needed: (*delete any of the following that do not apply*) title sheet, route map, plan and profile, phasing diagram, structures, foundations, hardware, plan of work drawings at the endpoints, assembly drawings including connections to substation dead-ends. (*If this project only covers a partial segment of a transmission line, clarify whether plan and profiles and phasing diagrams will be created/modified for only the entire line or just the segment area.*) Existing drawings will be updated where applicable. See Attachment 3 for the standard structure drawings that will be included or modified with this project.

Environmental Requirements

The following environmental requirements shall apply to this project.

(Information to be provided by [Project Developer] Environmental Consultant)

Permitting Requirements

(List the following subheadings that are applicable to the project and determine which of these permits are necessary. The Project Developer will-should identify and assess one or more of the

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most challenging of the Article ~~7~~VII siting requirements for this particular project and why/how they would be met by the applicant. ~~[Project Developer] Real Estate, Environmental, and Construction will provide input into this section):~~

Environmental: (~~DNR, Fish & Wildlife, etc~~NYSDEC, Adirondack Park, ACE, etc.)

Real Estate: (~~DOT, Agriculture, Historic Preservation, Railroad, FAA, Municipalities, etc~~)

Construction: (NYSDOT, Road closure permits, temporary road crossing permits)

Removal of Existing Transmission Line Facilities

(State the type(s), miles of line and number of structures and switches to be removed)

Risk Register

(List any potential risks to the proposed project and potential mitigations. Detailed ed Risk Register should be provided in Attachment 7)

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Estimated Project Cost Detail:

(Project Developer is encouraged to also attach their own project estimating forms or tools to offer reference and background as to the Project Developer methodology and logic for cost estimating. At a minimum the form data below should be filled out completely and as accurately as possible with the intent that the information will allow for a +/- 25% project cost estimate. If the Developer estimate calls for other than +/-25%, so state and explain. All cost categories should be rounded to the nearest \$1,000. Contingency % should be adjusted as necessary to make the Total Cost round appropriately. Add a contingency % and explain the contingency % you are adding and what factors went into the contingency percentage)

~~See~~ Provide Attachments C.4.x for a detailed Project Cost estimates

- All assumptions in developing the estimate should be listed.
- Facilities required by proposed project but not owned by [Project Developer], if any, should be shown at zero cost to [Project Developer] but itemized, explained, and included shown in the submitted total cost estimate.
- Estimates need to include distribution underbuild costs as appropriate if applicable.
- State what ROW costs are included in the estimate such as new ROW purchases or easements, supplemental easement costs, and whether or not existing available easement or ROW already exists?

• Example Estimated Transmission Line Project Cost Detail:

Line kV	General Type of Construction	Line Miles	Ruling Span	Amps/MVA	Comment	
[voltage]kV	[mono-pole,H-Frame,Steel, Lattice, etc.]		[length] [units]			
Pre-Construction Costs		Description	Cost	Unit Cost	Sub Totals	Comment
Studies	(Total typically 1% of installed cost)	[1% of Cost Project]				
(List Studies Separately)	[Environmental, EMF, Cost Benefit, etc]					
Engineering (internal)	(Typically 2% of installed cost)	[2% of Cost Project]				
Engineering (Consultant)	(Typically 6% of installed cost)	[7% of Construction Cost]				
+/- Engineering Cost Adder	(+/- % adder for economy of scale)	[+/- %]				
Land Survey Costs	[LiDAR, Boundary, Stake-out]					
Geotechnical Costs	[subsurface investigation, borings, etc.]					
[add additional items]						
Land Aquisitions Cost Item	Description	Quantity	Unit Cost	Sub Totals	Comment	
Commercial/Industrial	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]			
Residential	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]			



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Fallow Land	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]		
Farm Crop Land	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]		
Forested Area	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]		
Wetlands	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]		
Crop Damages	Line Mileage +/- Cost Adder	[miles]	[+/- \$ Adder/mile]		
[add additional items]					
Material Cost Item	Description	Quantity	Unit Cost	Sub Totals	Comment
Type of Conductor	[kcmil,ACSR/ACSS, etc.,1/2/4/5 Bundle]	[total]			
Shield Wire	[1 or 2], [size] EHS, OPGW	[total]			
Number of Deadends	[number] Wood, [number] Steel	[total]			
Number of Running Angle	[number] Wood, [number] Steel	[total]			
Number of Tangents	[number] Wood, [number] Steel	[total]			
Number of Foundations	[number] direct bury, [number] concrete	[total]			
[add additional items]					
Construction Cost Item	Description	Quantity	Unit Cost	Sub Totals	Comment
Avg General Labor Costs/mile	[765kv,500kv,230kv,161kv, etc.]	[miles]	[\$\$\$/mile]		
Underground/Under Sea	Line Mileage +/- Cost Adder	[miles]	[+/- Adder/mile]		
Live Line Work	Live Line +/- Cost Adder	[miles]	[+/- Adder/mile]		
Matting	Matting for Wetland & Sensitive Areas	[miles]	[\$\$\$/mile]		
Restoration		[miles]	[\$\$\$/mile]		
Adjustment for Economy of Scale	Line Mileage +/- Cost Adder	[miles]	[+/- Adder/mile]		
[add additional items]					
				[Total]	Total T-Line Cost
Contingency (Unknown Issues)					
[Contingency Item]	[Explanation of Contingency]	[%]	[T-line Cost]	[Total]	(with contingency)
Potential Risk Items Adders (Known Issues)					
[add risk items as necessary]	[Description of risk item]				
				[Total]	(with Risk Items)
Associated Substation Costs					
[Substation #1]	[Project Title/Description of work]				
[Substation #2]	[Project Title/Description of work]				
				[Total]	(with Substation Project Costs)
Make Ready Work or Work Necessary by Others that Own Facilities Affected by this Project					
[add items as necessary]	[Description]			[Cost]	

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Attachment C.1.1: One-Line Diagram, Existing (Including one line of connecting substations)

Attachment C.1.2: One-Line Diagram, ~~Future-Proposed~~ at completion of project (Including one line of connecting substations)

Attachment C.2: Proposed Line Route (presented on a _____ map with minimum scale of _____ and displaying a centerline and corridor width of _____ feet.)

(this route should include any structure numbers that are specifically called out at any point)

Attachment C.3: Typical Structure Drawings for Project

(insert typical structure type drawings to be used on this project, tangent, running angle, and deadend structures. Insert other structures drawings, such as ROW cross sections, as to be helpful to understand project costs)

Attachment C.4.1: Detailed Estimated Cost Breakdown Sheet

(insert project Developer's estimating spreadsheet or other project costing method used to develop project costs.

Attachment C.4.2: [Project Developer] Associated Assets

(list major assets the project requestor will own at the end of the project)

Attachment C.4.3: Facilities Assets not owned by [Project Developer] *(list assets that will be owned by others at the end of the project) (delete if not applicable)*

Attachment C.4.4: Cost Estimate Assumptions & Clarifications

Attachment C.5: Project Milestone Schedule *(Project Developer ~~format is ok~~ may use own format)*

Attachment C.6: ROW Width Calculations & Drawings

Attachment C.7: Risk Matrix *(template provided if Project Developer does not have one)*



[INSERT
PROJECT REQUESTOR
LOGO HERE]

TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT 1AC.1.1

INITIAL ONE-LINE DIAGRAM

(One line diagram INITIAL goes here)

DRAFT



[INSERT
PROJECT REQUESTOR
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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT **1BC.1.2**

FINAL/ULTIMATE ONE LINE DIAGRAM

(One line diagram FINAL/ULTIMATE goes here.)

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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.2

PROPOSED LINE ROUTE

(Line Route Map goes here.)

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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.3

TYPICAL STRUCTURE DRAWINGS

(Typical Structure Drawings go here.)

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[INSERT
PROJECT REQUESTOR
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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.4.2

COST ESTIMATE – [Project RequestorDeveloper] ASSETS

(Insert cost estimate here)

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[INSERT
PROJECT REQUESTOR

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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.4.3

COST ESTIMATE – Other FACILITIES ASSETS

(Other facilities estimates go here.)

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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.4.4 (continued)

COST ESTIMATE ASSUMPTIONS AND CLARIFICATIONS

(Review the following Assumptions & Clarifications. Delete those that do not apply and add others as required)

1. This estimate contains [___%] (20% is typical) contingency amounts. [Project Requestor] does not require contractor bonds or liquidated damages, so the costs for bonds and liquidated damages have not been included.
2. All costs are estimated in (year) dollars, and then escalated at a rate of ~~X.Xx.x~~% per year to the year of expenditure. Engineering costs are assumed to be incurred in (year). All construction and material costs are escalated to a rate of ~~X.Xx.x~~% and assumed to be incurred in (year). The percentages will be provided in the requests for solutions
3. A cost for miscellaneous equipment and materials, which is assumed to be [x%] (5% is typical) of the total cost of the equipment and materials, is included. Miscellaneous construction costs, which are assumed to be [x%] (5% is typical) of the total construction labor cost (excluding engineering and construction inspection), are also included. These costs are listed as sundries in the estimates.
4. The transmission line will be constructed entirely in the State of New York. Therefore, New York State sales and use taxes have been added. The tax rate is based on Publication 718 (4.0% - 8 7/8%) , and is applied to material and the applicable labor categories.
5. All transmission line construction will be performed by “contract labor.”
6. All ~~poles and~~ materials removed for this project are assumed to be scrapped. No salvage value is assumed for the existing structures, conductors and hardware during removal/modification of the existing lines.
7. The quantities of materials and labor shown are those estimated to be actually required (no extras) for the design and construction of the line except for the purchase of conductor and shield wire. The conductor and shield wire contains [] percent extra (3-5% typical).
8. The estimate is based on the existing transmission line being [energized / de-energized] and distribution circuits being [energized / de-energized] during the construction period.
9. New structures will be located as close as possible to existing structures along the line route ~~(use for pole for pole replacement or spot replacement projects if true)~~.
10. No restrictions were used on placement of structures in wetlands. No mitigation costs are included for the wetland areas.

TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.4.4 (continued)

COST ESTIMATE ASSUMPTIONS AND CLARIFICATIONS

11. It is assumed that []% of the existing right-of-way will require [light / medium / heavy] clearing for line rebuild.
12. OPGW termination equipment [is / is not] included in any estimate.
13. Approximately [] ground rods will be installed at each structure to achieve a target ground resistance of less than 40 ohms.
14. The need for protective matting during construction is based on input from [Contractor].
15. This estimate includes the assumption that [Location] will be used for pole and material delivery and laydown.



TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.5

PROJECT MILESTONE SCHEDULE

(Attach Project Milestone Schedule Here)

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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.6

ROW WIDTH CALCULATIONS WITH ASSOCIATED DRAWINGS

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TRANSMISSION LINE PROPOSED PROJECT SCOPE DOCUMENT

ATTACHMENT C.7

RISK REGISTER

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