Operations Project Authorization Form

Date Prepared: February 24, 2021	Project Title: ES Momentary Outage & Reliability Tool
Company/ies: CT Distribution, NH Distribution, Eastern MA Distribution, Western MA Distribution	Project ID Number: 30441: 21299 , CLPMOAR, WMAMOAR, NHMOAR
Organization: Distribution Engineering	Class(es) of Plant:
Project Initiator: [redacted]	Project Category:
Project Manager: [redacted]	Project Type: *Specific / Annual / Prelim Project / Parent*
Project Sponsor: [redacted]	Project Purpose: part of regulatory tracked program? Requested by DPU during MA Rate Case.
Estimated in service date: December 31, 2021	If Transmission Project: PTF / Non-PTF / NA
Eng. /Constr. Resources Budgeted? N	Capital Investment Part of Original Operating Plan? Y
Authorization Type: Initial Funding / Full Funding	O&M Expenses Part of the Original Operating Plan? N/A
Total Request: $965,000	

Financial Requirements:

Project Authorization

Project authorization must be in accordance with the approval levels included in the Delegation of Authority Policy (DOA).

If Subsidiary Board approval is required, document the review by Enterprise Risk Management (ERM) and Financial Planning and Analysis (FP&A)

ERM: _____

FP&A: _____

Executive Summary

Eversource Distribution Engineering's operations in Connecticut, Western Massachusetts, & New Hampshire are currently unable to identify and document relationships between circuits and equipment across multiple systems to identify momentary outages and identify circuit and equipment issues. This project will work with over 300 million rows of data and leverage the work done in a 2020 pilot for NSTAR Electric, building and implementing a custom business reporting tool to aggregate circuit data and generate new momentary outage insights for all remaining Eversource electric entities (CT, WMA & NH).

This project will decrease the manual research required to generate existing reporting – which provides only partial service reliability insights – and create an automated structure for obtaining comprehensive insights going forward. The increased accuracy will also introduce efficiency to improving system reliability and optimize how MA, NH, & CT Distribution Engineering teams allocate reliability funds while positioning Eversource to satisfy Department of Public Utilities, Public Utilities Commission & Public Utilities Regulatory Authority requests for providing these insights.

Project Costs Summary

See APS3 and APS8 requirements and consult with Plant Accounting for capital/O&M determination. Use published loaders for benefits, materials, and invoices, maintained by the Director, Budget and Internal Reporting.
Note: Dollar values are in thousands

	Prior Authorized	2021	2022	2023	Totals
Capital Additions - Direct	$ -	$ -	$ -	$ -	$ -
Less Customer Contribution	-	-	-	-	-
Removals net of Salvage ____%	-	-	-	-	-
Total - Direct Spending	$ -	$ -	$ -	$ -	$ -
Capital Additions - Indirect	-	-	-	-	-
Subtotal Request	$ -	$ -	$ -	$ -	$ -
AFUDC	-	-	-	-	-
Total Capital Request	$ -	$ 965,000	$ -	$ -	$ 965,000
O&M	-	-	-	-	-
Total Request	$ -	$ 965,000	$ -	$ -	$ 965,000

Financial Evaluation

Provide the following financial information (attach additional detail if summarized items are significant or additional information is needed). Note: Dollar values are in thousands

Direct Capital Costs	Year 1	Year 2	Year 3+	Total
Straight Time Labor				
Overtime Labor				
Outside Services	800,000			
Materials	35,000			
Other, including contingency amounts (15% contingency)	130,000			
Total	$965,000			

Indirect Capital Costs	Year 1	Year 2	Year 3+	Total
Indirects/Overheads (including benefits)				
Capitalized interest or AFUDC, if any				
Total	$0.00			

Total Capital Costs	965,000			
Less Total Customer Contribution				
Total Capital Project Costs	$965,000			

Total O&M Project Costs	$0.00			

Note: Explain unique payment provisions, if applicable

If this is a new business project, is a customer contribution required? No. *If yes, please note the contribution amount.*

In addition, for all electric and gas growth / new business projects, please attach the CIAC calculation

Provide other financial documentation as warranted by management and / or regulatory precedent. When performing financial analysis, use appropriate discount rate by company (can be provided by Budgeting and Internal Reporting or Financial Planning and Analysis).

Future Financial Impacts:

Provide below the estimated future costs that will result from the project:
Note: Dollar values are in thousands:

Future Costs	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Costs
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other costs noted above:
N/A

What functional area(s) will these future costs be funded in?_____
A representative from the respective functional area is required to be included as a project approver.
N/A

If this is other than a Reliability Project, please complete the section below:

Provide below the estimated financial benefits that will result from the project:
Note: Dollar values are in thousands:

Future Benefits	Year 20__	Year 20__	Year20__	Year 20__+	Total Future Project Benefits
Capital	$ -	$ -	$ -	$ -	$ -
O&M	-	-	-	-	-
Other	-	-	-	-	-
TOTAL	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**

Describe the estimated future Capital, O&M and/or Other benefits noted above:

What functional area(s) will these benefits be reflected in? N/A – Reliability Project
A representative from the respective functional area is required to be included as a project approver.

Asset Retirement Obligation (ARO) and/ or Environmental Cleanup Costs (Environmental Liabilities):

An ARO is a current legal obligation to remove or retire property, plant or equipment at some point in the future. Please refer to APS8 or contact Plant Accounting for further detail.

Is there an ARO associated with this project? No. If yes, please provide details:

Are there other environmental cleanup costs associated with this project? If yes, please provide details.

Operations Technical Authorization Form

Technical Justification:

Project Need Statement *(Description of Issue)*

Eversource needs greater power reliability insights to improve customer satisfaction and to satisfy regulatory requests for providing momentary outage reporting. Root cause analyses of circuit faults are inefficient as distribution personnel spend unproductive time on finding and reconciling data to provide partial insights.

Project Objectives

The deliverable will consist of a custom business intelligence warehouse that enables Power BI visualizations which include the momentary outage, high risk circuit and high fault impact reports mentioned above. An executive summary PowerPoint slide or Word presentation will also be developed that outlines the steps used in calculating momentary outages and potential recommendations for improvement. The visualizations will be “static” in that they represent momentary outages, high risk circuits and faults at a point in time based on the data extracts provided.

Project Scope

The scope of this project is to establish new data relationships, analyze data and develop logic and algorithms in a custom business analytics and reporting tool that will be owned by Eversource to identify distribution momentary outages and build reports in Power BI to display momentary outages for all of Eversource. The following reports (some of which were developed for NStar Electric during the 2020 Pilot) will be designed and developed for the other regions using Power BI:

1. **Momentary outage report (CT/WMA/NH):**

   Identify circuits with increasing trends
   Include circuits that have momentary outages that contribute to bottom 10% in CKAIFI and CKAIDI
   Include high momentary activity
   Incorporate weather data to overlay momentary and sustained outage views
   Develop data quality analysis and a process to remediate issues

2. **High risk circuit report at the segment/zone level (CT/WMA/NH):**

   Includes fault activity level between/beyond devices

Includes high concentrations of high customer impact

3. **High fault impact report (CT/WMA/NH)**:

   Includes circuit zones with highest fault activity that then also affect downstream customers

4. **Reliability Indices (CT/EMA/WMA/NH):**

   Include calculation & visualizations for MAIFI and other reliability indices

5. **Migration from Focal Point to OUA (CT/EMA/WMA/NH):**

   Ensure the momentary outage tool can be supported by OUA, assuming that project is completed in 2021.

6. **Infrastructure Hardening (CT/EMA/WMA/NH):**

   Use a new engine to extract, transform and load data for all Eversource circuits, assets, customers and sustained outage events, including 3 years of available historical data for the new regions.

Background / Justification

The current lack of visibility into momentary outages impacts customers, especially the larger customers. To improve system reliability and the customer experience, having momentary outage insights is crucial (this was also requested during MA Rate Case hearings).

We have attempted identifying momentary outages previously using a technology/software-based approaches that failed to achieve results because of the significant manual updates required and the design did not take advantage of the data relationships that exist within the data sources.

The business-centric approach of this project starts with a definition of data relationships across multiple systems and the processing and organization of this data within a business tool that will provide a consistently up to date view of momentary outages. The knowledge gained from this project will be documented and shared with other groups to leverage for other electric operations and engineering initiatives.

Business Process and / or Technical Improvements:

Quantitative and qualitative project benefits, including assumptions used to estimate benefits and customer impacts; describe the changes in performance to the business process or technology performance metrics that can be expected as a result of this project

- Decreases manual research required to generate existing reporting by >6,000 hours annually
- Creates a structure for obtaining momentary outage information and comprehensive insights (by eliminating the inconsistency and error-prone ad hoc reports)
- Increases accuracy while introducing efficiency to improving system reliability while optimizing how Distribution Engineering allocates reliability funds

- Positions Eversource to satisfy DPU rate case request for providing momentary outage insights (breakers and reclosers at the circuit and customer level)
- Provides insights on optimal ways to consider investments that improve reliability and CX (*Based on 2017 findings from Eversource's Customer Outage Journey, faulty equipment was attributed to customer outages 27% and 18% for EMA and WMA, respectively.)*
- Provides insights to help decrease outage duration for sustained outages
- Provides insights to help reduce restoration costs related to faulty asset-related outages
- Provides insights that will help Eversource determine causation or correlation of momentary outages to weather conditions (which could serve as a basis for investment in weather-mitigating improvements)
- Data quality insights will allow us to ensure Eversource identifies and obtains sensor data from all reporting devices while also verifying that SCADA devices are configured properly and reporting data accurately.
- Allows Eversource to better engineer the system for continuous improvement of system reliability

Cost Estimate and Assumptions

See table on Page 2.

By Company breakdown

	Entity 21	Entity 11	Entity 41	Entity 06	Totals
Capital Additions - Direct	$ 144,749	$ 273,417	$ 273,417	$ 273,417	$ 965,000
Capital Additions - Indirect					$ -
Contingency					$ -
Subtotal Request	**$ 144,749**	**$ 273,417**	**$ 273,417**	**$ 273,417**	$ 965,000
O&M	$ -				$ -
Total Request	**$ 144,749**	**$ 273,417**	**$ 273,417**	**$ 273,417**	**$ 965,000**

The table above reflects a reduced allocation (~15%) for Entity 21 as a result of work completed during the NSTAR Electric 2020 pilot. The remaining costs would be allocated equally (~28.3%) to 06, 11 and 41

Alternatives Considered with Cost Estimates

Prior to the 2020 NSTAR Electric Pilot, we attempted identifying Momentary Outages using technology-centric approaches that did not account for the changing nature of our distribution network.

Building upon the model created for NSTAR Electric will guarantee we have a consistent business-centric tool for use by Distribution Engineering.

Project Schedule

Describe the project schedule and milestones. Include estimated start and end dates.

Milestone/Phase Name	Estimated Completion Date
Phase A	2/22/21 – 4/15/21
Phase B	~4/16/21 – 8/31/21
Phase C	~9/01/21 – 12/22/21

Regulatory Approvals

N/A

Risks and Risk Mitigation Plans

Describe the applicable risks and associated risk mitigation plans: e.g., construction, customer, reputational, schedule, financial, regulatory, environmental and IT risks. Indicate discussions with relevant subject matter experts.

N/A

References

N/A

One-Line Diagrams, Attachments, and Images

This project will concentrate on data from Connecticut, Western MA and New Hampshire to establish reliability visualizations (green below) that accurately reflect the momentary outages within these regions and the impacts on customers.

