Project Authorization Form

Date Prepared: 5/11/2017	Project Title: Black Rock 11H Network Monitoring System
Company/ies: Eversource CT	Project ID Number: CD00661
Organization: Asset Strategy & Performance	Class(es) of Plant: Underground Distribution
Project Initiator: [redacted]	Project Category: UG Network Automation
Project Owner/Manager: [redacted]	Project Type: *Specific*
Project Sponsor: [redacted]	Project Purpose: Install network monitoring.
Estimated in service date: 12/01/2019	If Transmission Project: N/A
Supplement to Existing Authorization? No	Capital Investment Part of Original Operating Plan? Yes
Eng./Constr. Resources Budgeted? Yes	O&M Expenses Part of the Original Operating Plan? Yes

Project Authorization

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

If Chief Executive Officer or 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 CT has begun monitoring our network transformers and protectors in some of our major networks. It started with a pilot project in Stamford using the Digital Grid network communication system. From there it spread to the entire Stamford network in 2015. A network monitoring system will provide the Company with a convenient method to measure and record many different aspects of the underground secondary distribution grid. It will provide Distribution Engineering the data necessary to build and validate an accurate load flow model with real time network protector data which can be used for capacity planning and maintenance operations. It will also supply invaluable information to System Operators responding to network events. The network communication system data for Eversource CT networks is made available via a web based portal. Eversource CT personnel will be able to access, view and retrieve network data via this custom web site. This project is being established for the line portion of the network communication system for the [redacted] network located in New Britain, CT. Install DigitalGrid network protector relays on [redacted] units fed by the [redacted] feeders out of [redacted] Substation in New Britain.

Associated substation project CS00169 will install feeder coil sensors, control conduits and wiring, and a control house receiver cabinet at [redacted] Substation.

This project was ENG approved through the OCRC process on 9/30/2015 for $409.9K.
Project CD00661 is approved in PowerPlan for $409.9K.
We are requesting ACT CPAC approval for $141.6K; a variance of ($268.3K) or 34.5% of ENG.

Reason for Variance:
([redacted]) The project was initially estimated with contractor labor costs using actuals from the ongoing Stamford network communication project [redacted]). Consequently, the ACT estimate was estimated after the completion of the Stamford project with actuals substantially lower than previously estimated [redacted] = [redacted]).

($102.9K) The ENG estimate included switching time and traffic control. The ACT estimate does not include switching time or traffic control since installation of the Digital Grid relay is performed during normal scheduled network maintenance. Switching and traffic control are requested when the circuit is scheduled to be taken out of service as part of the normal network maintenance cycle.

Total project request: $141.6K.

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*	2017	2018	2019	Totals
Capital Addtions - Direct		$ 57.2	$ 40.0	$ 11.4	$ 108.6
Less Customer Contribution		$ -	$ -	$ -	$ -
Removals net of Salvage		$ 2.3	$ 1.6	$ 0.5	$ 4.3
Total - Direct Spending	$ -	$ 59.4	$ 41.6	$ 11.9	$ 112.9
Capital Addtions - Indirect					$ -
AFUDC		$ 8.5	$ 5.9	$ 1.7	$ 16.1
Total - Capital Request	$ -	$ 67.9	$ 47.6	$ 13.6	$ 129.1
O & M		$ 6.6	$ 4.6	$ 1.3	$ 12.5
Total Request	$ -	$ 74.5	$ 52.2	$ 14.9	$ 141.6

** To be completed if supplemental authorization is required.*

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	2.8	1.9	0.6	5.3
Overtime Labor	0.0	0.0	0.0	0.0
Outside Services	1.1	0.8	0.2	2.1
Materials	48.0	33.6	9.6	91.2
Other, including contingency amounts (describe)	7.5	5.3	1.5	14.3
Total	59.4	41.6	11.9	112.9

Indirect Capital Costs	**Year 1**	**Year 2**	**Year 3+**	**Total**
Indirects/Overheads (including benefits)	8.5	5.9	1.7	16.1
Capitalized interest or AFUDC, if any				0.0
Total	8.5	5.9	1.7	16.1

Total Capital Costs	67.9	47.6	13.6	129.1

Less Total Customer Contribution	0.0	0.0	0.0	0.0

Total Capital Project Costs	67.9	47.6	13.6	129.1

Total O&M Project Costs	6.6	4.6	1.3	12.5

Total Project Costs	74.5	52.2	14.9	141.6

Note: Explain unique payment provisions, if applicable

ACT Snapshot

		Total Project [A]	Segment 01	Segment 02	Segment 03	Segment 04
CURRENT ENG ESTIMATE	=	**$409,912.00**	**$118,478.00**	**$70,478.00**	**$118,478.00**	**$102,478.00**
Eversource Direct Eng/Supv	=	$675.36	$202.54	$179.68	$97.71	$195.43
Eversource Labor	=	$6,257.85	$1,936.67	$1,631.51	$896.55	$1,793.12
Eversource Labor Overtime	=	$0.00	$0.00	$0.00	$0.00	$0.00
Per Diem [B]	=	$0.00	$0.00	$0.00	$0.00	$0.00
Eversource Equipment	=	$363.00	$99.00	$93.00	$57.00	$114.00
Material	=	$104,724.39	$30,786.20	$27,993.98	$15,191.90	$30,752.31
Contractor Labor	=	$716.23	$151.26	$225.99	$112.99	$225.99
Tree Trimming	=	$0.00	$0.00	$0.00	$0.00	$0.00
Traffic Control	=	$19,000.00	$4,000.00	$6,000.00	$3,000.00	$6,000.00
Contractor Additional [C]	=	$0.00	$0.00	$0.00	$0.00	$0.00
Contractor Other [D]	=	$0.00	$0.00	$0.00	$0.00	$0.00
Other Costs	=	$0.00	$0.00	$0.00	$0.00	$0.00
E&S	=	$0.00	$0.00	$0.00	$0.00	$0.00
MDEC	=	$0.00	$0.00	$0.00	$0.00	$0.00
AS&E	=	$0.00	$0.00	$0.00	$0.00	$0.00
AFUDC	=	$0.00	$0.00	$0.00	$0.00	$0.00
Sub-Total	=	$131,736.83	$37,175.67	$36,124.16	$19,356.15	$39,080.85
Contingency [E]	=	$9,880.27	$2,788.18	$2,709.32	$1,451.71	$2,931.06
TOTAL PROJECT COST	=	**$141,617.10**	**$39,963.85**	**$38,833.48**	**$20,807.86**	**$42,011.91**
Reimbursable Costs	=	$0.00	$0.00	$0.00	$0.00	$0.00
CL&P PROJECT BUDGET	=	**$141,617.10**				
ACT / ENG (%)		**34.5%**				

ENG Approval

Meeting Date: 01/14/2016
Category: Project Presented
Project #: CD00661
Project Name: [redacted]Network Monitoring System
Presenter: [redacted]
ApprovalSought: ENG
ApprovalGranted: ENG as presented
Description/Discussion: Digital Grid Inc. (DGI) is a turnkey designer and provider of reliable power line carrier (PLC) communication systems for underground network distribution systems. Digital Grid supplies equipment and expertise to NSTAR in Boston. This proposed monitoring system would provide Eversource CT with a convenient and necessary method to control and measure many different aspects of the underground secondary distribution system. This includes data collection of the network protector's current, voltage and power factor. Other options include monitoring protector pressure, water, transformer temperature and oil level as well as the capability of remotely controlling a network protector, all in real time. This data is invaluable for load flow modeling and long term planning. The greatest savings will be gained through network feeder switching using the new Digital Grid network protector relays when that technology is available. Install DigitalGrid network protector relays on all [redacted] network units fed by the [redacted]network feeders out of [redacted]ubstation in New Britain. Associated substation project #CS00169 will install feeder coil sensors, control conduits and wiring, and a control house receiver cabinet at [redacted]Manager's Comments/Conditions: Approved as presented Project Released (Y/N): Y Environmental Impact:. Water Pollution: No Change
Soil Contamination: No Change
Natural Habitats: No Change
Oil Spill Risks: No Change ISD: 12/29/2017
Cost: $410K
Major Materials: None
New Materials/Construction Methods: None

New Materials/Construction Methods: None
