Project Authorization Form

Date Prepared: 8/25/17	Project Title: [redacted] Smart Switch Project
Company/ies: Eversource CT	Project ID Number: CD00384 – Segment 3
Organization: Distribution Design	Class(es) of Plant: Distribution
Project Initiator: [redacted]	Project Category: Smart Switch Project
Project Owner/Manager: [redacted]	Project Type: *Specific*
Project Sponsor: [redacted]	Project Purpose: System Resiliency PURA Docket 12-07-06RE01
Estimated in service date: 12/30/17	If Transmission Project: NA
Supplement to Existing Authorization? Yes	Capital Investment Part of Original Operating Plan? No
Eng./Constr. Resources Budgeted? No	O&M Expenses Part of the Original Operating Plan? No

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

[redacted] Smart Switch Project is part of a multiyear program created to improve circuit reliability by adding automatic sectionalizing devices on overhead distribution circuits. This program focuses on breaking up customer zones and lowering the average number of customers impacted by a backbone interruption. This program was approved as part of the System Resiliency PURA Docket 12-07-06RE01.

Ranked 56 in the prioritization list, the 15L6[redacted]

An ENG estimate of $283,890 was presented at TRC on 4/20/17. This project was approved for $28,389 for engineering. Due to the accelerated schedule of this project, it was presented at CPAC on 5/24/17 to request funding totaling $79,817 for engineering and project equipment, including approximately $51K in long-lead time materials (see chart below).

Following detailed design, **the total project request is: $221,326**

Major Equipment List (Approved 5/24/17)

Equipment Name	Quantity	Unit Price	Total Price
Nulec 15kV Recloser	2	$17,391.32	$34,782.64
Recloser Control ADVC2	2	$8,322.60	$16,645.20
		Total:	$51,427.84

Project Costs Summary

	Prior Authorized*	Additional Request	2017**	2018+	Total
Capital Additions Direct	0	0	$ 137,571	0	$137,571
Less Customer Contribution	0	0	$ -	0	$0
Removals Net of Salvage	0	0	$ 893	0	$893
Total - Direct Spending	$0	$0	$ 138,464	$0	$138,464
Capital Additions - Indirect	0	0	$ 69,140	0	$69,140
AFUDC	0	0	$ 839	0	$839
Total Capital Request	$27,083	$ 181,360	$ 208,443	$0	$208,443
O&M	1,306	$ 11,576	$ 12,882	0	$12,882
Total Request	**$28,389**	**$ 192,937**	**$ 221,326**	**$0**	**$221,326**
* Current amount authorized in PowerPlan					
** Total amount needed for authorization in PowerPlan based on ACT					

Financial Evaluation

Direct Capital Costs	2017	2018	2019	Total
Straight Time Labor	$ 21,105	0	0	$ 21,105
Overtime Labor		0	0	
Outside Services	$ 12,308	0	0	$ 12,308
Materials	$ 105,051	0	0	$ 105,051
Other, including contingency amounts	$ -	0	0	$ -
Total	$ 138,464	0	0	$ 138,464

Indirect Capital Costs	$ 2,017	2018	2019	Total
Indirects/Overheads (including benefits)	$ 69,140	0	0	$ 69,140
Capitalized interest or AFUDC, if any	$ 839	0	0	$ 839
Total	$ 69,979	0	0	$ 69,979

Total Capital Costs	$ 208,443	0	0	$ 208,443
Less Total Customer Contribution	$ -	0	0	$ -
Total Capital Project Costs	$ 208,443	0	0	$ 208,443
Total O&M Project Costs	$ 12,882	0	0	$ 12,882
Total Project Cost	$ 221,326	0	0	$ 221,326

One-Line Drawing



Technical Authorization Form

Date Prepared: 4/14/2017	Project Title: Eversource CT Smart Switch Program
Company/ies: Eversource CT	Project ID Number: Multiple (see below for details)
Organization: Distribution Design	Class(es) of Plant: Distribution
Project Initiator: [redacted]	Project Category: Smart Switch Program
Project Owner/Manager: TBD	Project Type: *Specific*
Project Sponsor: [redacted]	Project Purpose: System Resiliency PURA Docket 12-07-06RE01
Estimated in service date: 12/31/17	If Transmission Project: *NA*
Authorization Type: Engineering	Authorization Amount: $452,354

Project Need Statement

This TAF is prepared for the projects identified under the proposed 2018 Smart Switch Program to be accelerated into 2017 System Resiliency. The Smart Switch Program is a continuation of an initiative that was approved as part of the System Resiliency PURA Docket 12-07-06RE01 which is a multiyear program to improve circuit reliability by adding automatic sectionalizing devices on overhead distribution circuits. The Smart Switch Program focuses on breaking up customer zones and lowering the average number of customers impacted by a backbone interruption.

Project Objectives

The goal of the Smart Switch Program is to reduce the number of customers exposed to an outage event. The projects break up large customer zones by creating automated loops and adding sectionalizing reclosers in various settings profiles to isolate outages. The target of each project is to decrease customer zones to below 500. A zone that is broken in half with a tie to another source can improve the zone's reliability by 50%. Adding an additional device in a radial zone can improve the zone's reliability by 30%. Projects may include breaking up large customer zones with several devices and multiple ties.

Project Scope

The Smart Switch Program directly targets SAIDI and SAIFI improvements, thus improving the overall MBI metric. To prioritize the projects, a list of large customer zones was reviewed by a team of Circuit Owner leads, System Resiliency, Protection and Controls, and Distribution Planning. The prioritization analysis was completed on customer zones larger than 500 that experienced at least 1 outage in the previous 4 years, including storm events. Circuit Owners considered all three phase sectionalizing techniques utilizing reclosers to break up customer zones with a zone size design goal of 500 customers or less. After prioritization, each project was reviewed for scope, cost, thermal limitations and possible coordination issues.

2018 Project Totals

The Program includes [redacted] projects (project numbers and segments are identified in the

table below) and [redacted] device installations.

2018 Projects				
	Western	Central	Eastern	Total
# of Projects	[redacted]			
# of Devices				
				$4,523,536

AIMs Project	Division	AWC	Town	Circuit	Customers in Zone	# of Devices	4 year Total events	Rank	Project Cost	TRC Approval Request Amount	Approval Status
[redacted]									$ 210,177	$ 21,018	TRC needed
									$ 70,691	$ 7,069	TRC needed
									$ 151,037	$ 15,104	TRC needed
									$ 133,918	$ 13,392	TRC needed
									$ 1,203,492	$ 120,349	need ERC
									$ 65,565	$ 6,557	TRC needed
									$ 187,201	$ 18,720	TRC needed
									$ 264,724	$ 26,472	TRC needed
									$ 206,639	$ 20,664	TRC needed
									$ 65,099	$ 6,510	TRC needed
									$ 242,333	$ 24,233	TRC needed
									$ 124,606	$ 12,461	TRC needed
									$ 283,890	$ 28,389	TRC needed
									$ 562,729	$ 56,273	need ERC
									$ 817,000	$ 81,700	need ERC

NOTE: Projects noted as “need ERC” approval will be brought to TRC separately. Projects noted as “TRC needed” are being requested for approval on 4-20-17.

Cost Estimate and Assumptions:

Projects are estimated using ENG estimating units in AIMs with 24% contingency.

Background / Justification

The Smart Switch Program is an initiative that was approved as part of the System Resiliency PURA Docket 12-07-06RE01 which is a multiyear program to improve circuit reliability by adding automatic sectionalizing devices on overhead distribution circuits. The 2018 Program is a continuation of the existing program outside of the PURA Docket and is being accelerated into the 2017 System Resiliency Program year. The Smart Switch Program provides low cost per customer minutes saved and a low O&M solution to large customer zones affected during an outage event by directly targeting SAIDI and SAIFI.

Business Process and / or Technical Improvements:

Projects within the Smart Switch Program will increase the number of SCADA controlled devices on the system. This upgrade allows for better system visibility, faster restoration,

outage isolation and reconfiguration of the system during planned and unplanned switching events.

Alternatives Considered with Cost Estimates:

Alternatives to each project can be found within each Project Need Statement. All projects were separately screen and reviewed within a Smart Switch review team which included Protection and Controls, Circuit Owner leads, System Resiliency, and System Planning. Each project was screened for scope, cost, and design.

Project Schedule

Milestone/Phase Name	Estimated Completion Date
Detail Design	6/30/2017
ACT Approval	7/03/2017
Construction & Close Out	12/31/2017

Risks and Risk Mitigation Plans

Risk is very limited with these projects for the following reasons: there are only one to two pole replacements per device installation, long lead time materials are identified ahead of time, and P6 is utilized to avoid P&C FTE shortages.

Risk Event	Risk Horizon	Likelihood of Occurrence	Risk Mitigation
Actual cost higher than estimated due to scope changes.	2017	Low	Included contingency costs in the funding request. Perform detailed Field Analysis and walk down in project development to avoid potential issues.
Internal construction resources not available to perform the work.	2017	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost if necessary.
Internal engineering resources not available to perform the work.	2017	Low	Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost if necessary.
Materials shortage or long lead times	2017	Medium	Pre-order long lead time material; minimize the use of non-standard and non-stocked material.
Storm delays	2017	Low	If storm activity delays work, we may be forced to use external resources.

System abnormal configuration	2017	Medium	Schedule work to minimize system abnormal time. Install temporary bypasses/equipment if system will be abnormal for extended periods
Technological risks involving integration of new technology	2017	Low	Before use of new technology ensure support of standards and manufacture. Schedule project to accommodate for extra time or ensure new technology is not on the critical path.

One-Line Diagrams, Attachments, and Images

See SP&AM data base

All project needs statements and one-lines are also contained here:
\\nu.com\data\SharedData\UG Energy Delivery Shared\System Resiliency Smart Switch Program\2018 Smart Switch Program\Circuit Owner Design Proposals