Paul A. Colbert
Associate General Counsel
Regulatory Affairs

July 1, 2020

Hon. Michelle L. Phillips
Secretary to the Commission
New York State Public Service Commission
Three Empire State Plaza
Albany, N.Y. 12223-1350

Re: Cases 17-E-0459 and 17-G-0460; Central Hudson Gas & Electric Corporation's Compliance Filing of its 2021-2025 Corporate Capital Forecast

Dear Secretary Phillips:

In compliance with Section V.A.5 of the Joint Proposal approved as part of the Commission's Order issued and effective June 14, 2018 in Cases 17-E-0459 and 17-G-0460, Central Hudson Gas & Electric Corporation hereby submits the annual filing of its five year capital investment plan.

Questions regarding the information above may be directed to Ryan Hawthorne at (845)486-5533 or rhawthorne@cenhud.com.

Respectfully submitted,

/s/*Paul A. Colbert*

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CENTRAL HUDSON GAS & ELECTRIC 2021-2025 CORPORATE CAPITAL FORECAST July 1st 2020

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EXECUTIVE SUMMARY

This document presents the comprehensive Capital Expenditure Plan (Capital Plan) for the electric and gas transmission and distribution systems and common program areas of Central Hudson Gas & Electric Corporation (Central Hudson or Company) for the period 2021 through 2025. This Capital Plan positions Central Hudson to continue to provide safe and reliable service to customers over the long term. This Capital Plan is consistent with the mission statement of the Company as shown below:

"Central Hudson's mission is to deliver electricity and natural gas to an expanding customer base in a safe, reliable, courteous and affordable manner; to produce growing financial returns for shareholders; to foster a culture that encourages employees to reach their full potential; and to be a good corporate citizen."

This Capital Plan outlines forecasted expenditures of $626 million in the electric delivery system, $308 million in the gas delivery system and $384 million in common program areas over the five year period. The projects and programs proposed in this Capital Plan are what the Company has determined as the highest priority over the forecast period to respond to the day-to-day non-discretionary needs of the systems, maintain those system's standards, and implement system enhancements to meet future performance and energy policy goals. The Company is continually re-evaluating and reprioritizing projects, and the latter years of this Capital Plan will likely change as a result of these reevaluations and assessments. Notably, the forecast reflects planning conducted prior to the COVID-19 pandemic and has not been adjusted for changes in near term priorities that may result from pandemic impacts. The Capital Plan is developed annually in accordance with the Company's Capital Prioritization Process Guidelines.

The five year Capital Plan contains projects which will help achieve Central Hudson's strategic objective of providing exceptional value to our Stakeholders by:

- Business Modernization: Modernizing our business through electric and natural gas system investments and process improvements.
- Operational Excellence: Continuously improving our performance while maintaining cost effective and efficient operations.
- Energy Leadership: Advocating on behalf of customers and other stakeholders.
- Organizational Development: Investing in programs and employee development to position the organization for continued success in the future.

Capital Forecast – Additions

	2021	2022	2023	2024	2025	TOTAL
ELECTRIC	$ 119,153	$ 129,833	$ 122,228	$ 133,263	$ 121,883	$ 626,359
GAS	60,824	61,755	61,534	61,677	62,097	307,887
COMMON	108,699	127,797	62,350	44,846	39,810	383,502
CORPORATE TOTAL	$ 288,676	$ 319,385	$ 246,112	$ 239,786	$ 223,790	$ 1,317,748

Capital Forecast – Removal

	2021	2022	2023	2024	2025	TOTAL
ELECTRIC	$ 12,119	$ 14,906	$ 13,714	$ 15,209	$ 18,462	$ 74,410
GAS	1,761	1,828	1,782	1,839	1,949	9,159
COMMON	516	111	128	(6)	(173)	575
CORPORATE TOTAL	$ 14,397	$ 16,844	$ 15,623	$ 17,042	$ 20,238	$ 84,143

Capital Forecast – Additions & Removal Totals

	2021	2022	2023	2024	2025	TOTAL
ELECTRIC	$ 131,272	$ 144,739	$ 135,941	$ 148,472	$ 140,345	$ 700,769
GAS	62,586	63,583	63,316	63,515	64,046	317,045
COMMON	109,215	127,907	62,478	44,840	39,637	384,077
CORPORATE TOTAL	$ 303,072	$ 336,229	$ 261,735	$ 256,827	$ 244,028	$ 1,401,892

Introduction

Central Hudson's Corporate Capital Forecast shows elevated levels of investment in 2021 through 2023 that are driven by several large multi-year capital information technology and facilities initiatives in the Common category. The capital plan totals $1,402 million in capital expenditures over the five year period 2021-2025. This forecast represents 1.2% compound average increase rate (CAGR) over the 5-year period off a base of $222 million in 2020.

5-Year Corporate Capital Forecast Summary

A breakdown of the Capital Forecast is shown below indicating the level of spending as they have been prioritized by their summary categories. Non-discretionary is the level of spending that is necessary to meet the minimum standards of service or compliance with Public Service Law. Maintaining System Standards is the level of spending required to maintain our current level of service reliability and safety or to meet obligations set through the rate proceedings. System Enhancement is capital spending aimed at improving our quality of service, reducing risk, reducing operating costs or implementing design and technology changes that are responsive to energy policy objectives.

The System Enhancement Capital Spending has been further segregated into the following categories:

- **Projects with a Net Financial Customer Benefit**
  - Projects Revenue requirement of the capital investment is lower than the net benefit (e.g. cost savings) for customers
  - Reduces customer bills in the long term (after next rate case)
  - Increases earnings both short term and long term

- **Projects that Reduce Risk**
  - Investment reduces the risk of a system failure that would:
    - Reduce potential public safety at risk
    - Result in widespread incident, impacting system integrity
    - Spur significant punitive regulatory action

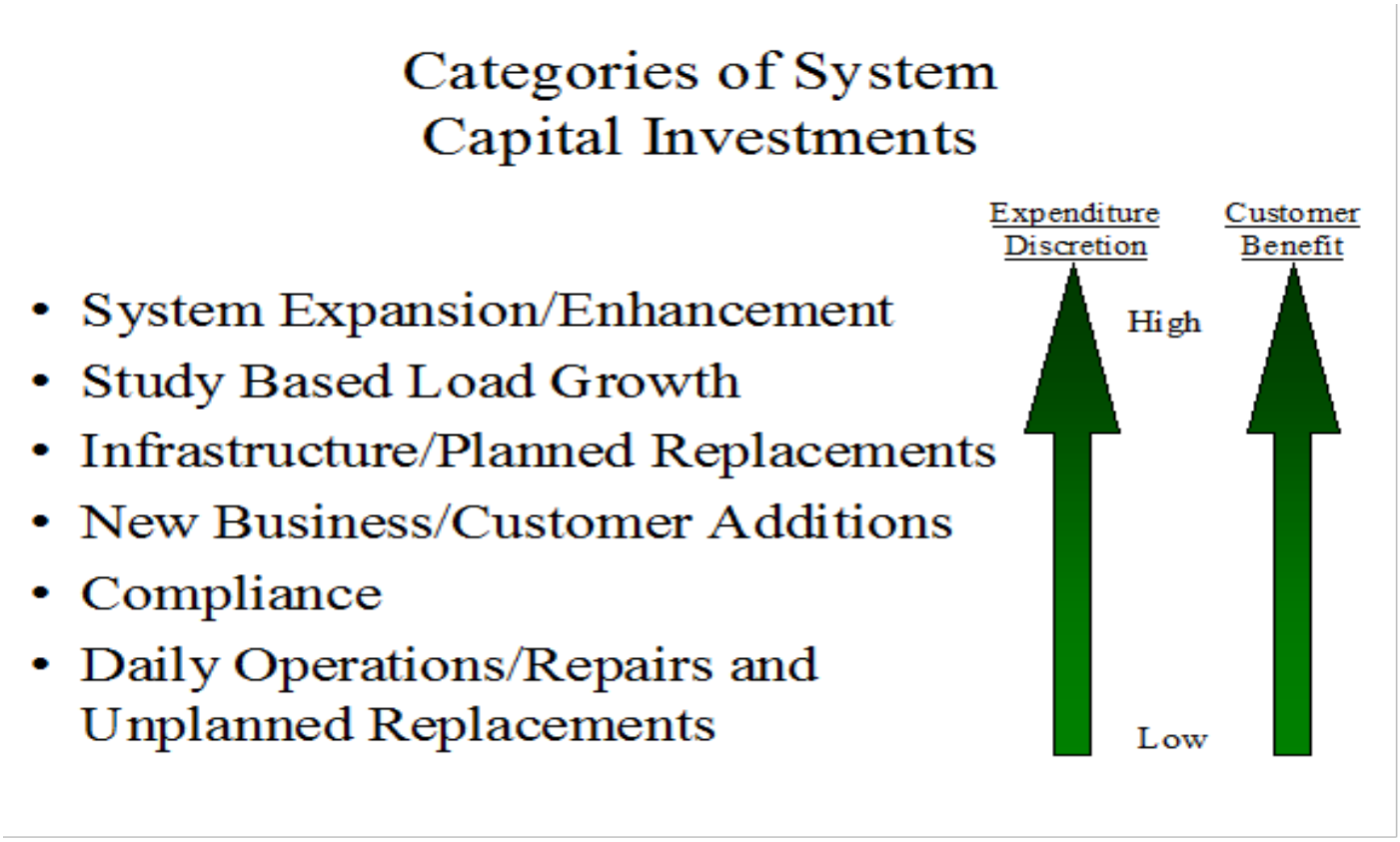
- **Projects that Improve Reliability**
  - Investment improves reliability at a cost that (we believe) customers are willing to pay
  - Demonstrate that increased cost is warranted by the improvement in service quality (benchmark and compare cost per customer outage avoided).

- **Other Projects**
  - Projects that do not clearly fit in the other categories, but can be justified for other reasons
  - Requires detailed individual business case
  - Demonstrate a clear strategic rationale
  - Show financial projections (customer bill impact and earnings impact)
  - Assess risks (regulatory disallowance, etc)

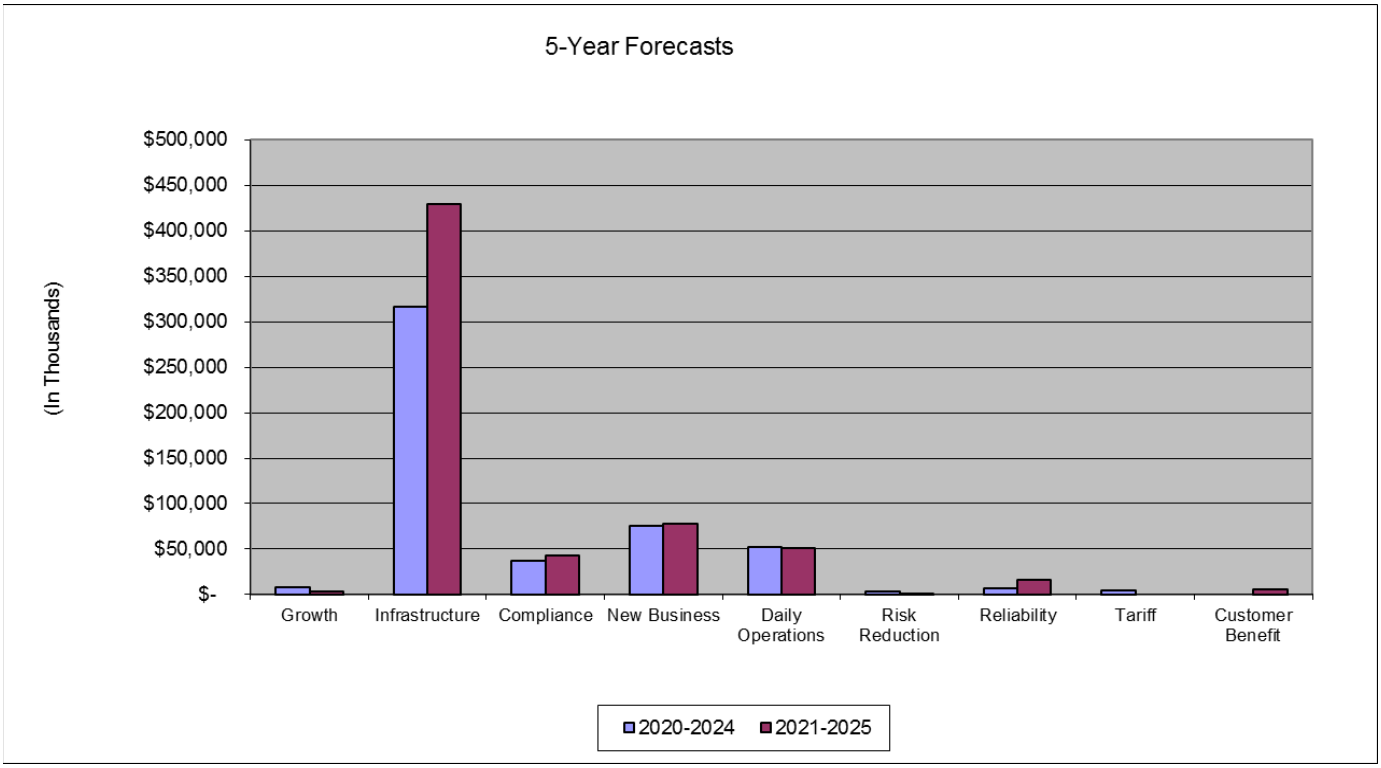
Each year, Central Hudson, through its planning and forecasting processes develops a recommended Capital Expenditures Budget for the upcoming fiscal year as well as a forecast for upcoming five-year period.

The corporate capital forecast is developed through a bottom up process where planning studies, infrastructure issues, compliance requirements, and other corporate initiatives identify specific capital needs. Following the Company's Capital Prioritization Process Guidelines, these needs are prioritized based on whether the need is non-discretionary (mandated or otherwise not optional), required to maintain the existing level of service or reliability, or a system or service enhancement. In addition to the costs of the projects, the timing of the projects is also analyzed to determine the most appropriate time for the capital investment to be made either due to load growth, risk of failure, or business need.

In addition to the summary categories, the needs are prioritized based on the investment categories shown below. It should be noted that those projects with the least amount of discretion also have the least amount of benefit for customers in terms of improving their level of service quality or reducing operating costs. It is important that we continue to develop sound justifications for the system enhancement projects since they do provide the most benefit to customers.



As can be seen in the comparative graph below load growth related projects represent a very small percentage of the expenditures in the Capital Plan. The major drivers of investment continues to be replacement of infrastructure based on condition with the most significant upticks are in Electric for; Distribution Improvement projects, Transmission line rebuilds and Substation upgrade projects, and in gas driven by the Leak Prone Pipe elimination program.



On the electric side, the number of distribution inspection driven pole replacements has shown an increasing trend in recent years. Based on the age demographic of our pole plant and this increasing trend, additional funding was included within the five year forecast to address pole replacements. In addition, as a result from investigations of the 2018 storms, a PSC order was released in 2019, Central Hudson developed a comprehensive storm hardening plan which included both vegetation management (expense) and capital components. The incremental funding for the capital portion of this program has been incorporated into our five-year plan. Central Hudson began implementing its integrated Smart Grid strategy in 2015. This program included the implementation of a Distribution Management System (DMS) to improve reliability, system safety, and system efficiency. We are creating detailed electric models in the ESRI Geographic Information System (GIS) to be used as the asset database. Intelligent Electronic Devices (e.g. electronic reclosers, switched capacitors, and voltage regulating devices) are being installed that will provide real time data to the DMS so that it can become a centralized decision maker based on current system conditions rather than anticipated peak loads, as well as predicted conditions in future hours. Concurrent with system wide implementation, there is a large infrastructure improvement plan to create robust mainline feeders that can be looped through switching to restore customers after an outage or optimize and balance feeders during normal operations as well as improve hosting capacity. Voltage control and switching restoration modules that will be included in the DMS are consistent with the REV policy goals of improving efficiency, reliability, and resiliency. The system will permit greater levels of Distributed Energy Resources (DER) to be integrated into our distribution system and will have the ability to consider the impact of DERs in switching and voltage optimization decisions utilizing generation profiles. The DMS is being developed so DERs can be integrated into the system for monitoring and control through additional modules as needed. The majority of the 5-year cost of the Distribution Automation component of this program is included in the first two years of the plan and is approximately $13.9 million.

The single largest component of the gas capital program is the Leak Prone Pipe (LPP) elimination projects. Central Hudson operates 1,300 miles of distribution main with 64,270 services (2019), which currently includes 138 miles of LPP. Over the three years period of 2013 – 2015 an average of 6.4 miles of leak prone pipe had been replaced annually. In 2016, 2017 and 2018 18, 19 and 21 miles of leak prone pipe were eliminated, respectively. For 2019 21 miles LPP was eliminated. This same level of miles eliminated is expected in 2020. The main replacement projects are identified and prioritized using the GL Main Replacement Prioritization Program (MRP) which develops a risk 'score' based on pipe and operating characteristics such as material, operating pressure, age, diameter, leak history, location (proximity to buildings, business district, flood prone areas) and, cathodic protection status. This risk score measures the relative likelihood and the consequences of a leak associated with each pipeline segment. In addition Subject Matter Expert (SME's) input review and planned highway rebuilds are taken into consideration when developing the proposed main replacement project listing. Starting in 2022 the Company plans to continue eliminating leak prone pipe at a rate of 15 miles per year.

The Gas New Business plan reflects a significant reduction from the prior five year forecasts and is in alignment with the most recent rate agreement, recognizing the fact that the Company has reduced its gas expansion program to customer requested service connections consistent with state energy policy.

The Common Capital Forecast consists of the following categories: Land and Buildings; Information and Operational Technology; Tools & Equipment; Communication; and Transportation. Land & Buildings capital forecast comprises of several significant projects including the South Rd office building, Newburgh office building, Kingston office space buildout, Training Academy, as well as a primary control center for transmission and distribution operations, and infrastructure replacement projects due to age or equipment failures. The Tools forecast consists of replacements driven by the modernizations of the vehicles they are utilized on, obsolescence and incompatibility, decreased reliability, discontinued manufacturer support, and conformance to changing OSHA or other regulations. Transportation capital forecast is built primarily on the replacement of vehicles and equipment based on industry standard replacement criteria. The IT Capital Budget consists of investments for business driven software implementations, upgrades to existing software solutions, and infrastructure or hardware lifecycle upgrades and ongoing extensions resulting from corresponding software updates or implementations. Significant detail regarding our IT expenditures plan is included in the Common program section.

Resource Needs of Future Program

Central Hudson will face the following opportunities and challenges as we implement this Capital Plan.

On the electric side, the Company will need to continue to develop enhanced competencies in both asset management as well as centralized distribution system operations. Improvements are being made to the System Planning Process with a transition in forecasting methodologies and application of a more probabilistic approach to integrate DERs into the risk and growth profiles. This process will encompass both how we determine asset replacements and the methods used to optimize the portfolio of projects and programs. In addition, in recognition of the State's aggressive renewable goals as identified in the Climate Leadership and Consumer Protection Act (CLCPA) and the Accelerated

Renewable Energy Growth and Community Benefit Act, the Company is modifying its planning process to better align with these goals. As noted, our electric capital plan is predominately comprised of condition based infrastructure type projects. A number of these existing projects provide incremental hosting capacity benefits. As new project needs are studied, renewable penetration levels and potential hosting capacity improvements are included in analysis to determine the recommended solution. Finally, study work has started to help identify additional potential projects that would facilitate the attainment of these goals based on system constraints and forecasted renewable penetration levels. To ensure that the Plan proceeds in the most optimal fashion, the Company will need to reassess the timing and reprioritize projects using both these improved asset management approaches and the understanding of system needs. Planning shall remain as a core competency for the Company.

On the gas side of the business, the elimination of leak prone distribution piping, integrity driven modifications to the transmission system, and regulator station modernization requires detailed project prioritization and system planning. Additionally, engineering design, permitting, estimating and field construction management and oversight resources will need to be held at current levels to maintain the high degree of safety, and ensure quality installations continue to occur.

With regard to construction, the Company will continue to utilize contract resources to perform the incremental electric and gas transmission and distribution construction. It is anticipated that sufficient contract resources are available to complete the planned work.

ELECTRIC PROGRAM SUMMARY

Electric System Overview

The Central Hudson electric system serves approximately 309,000 electric customers in New York State's Mid-Hudson River Valley. Central Hudson's electric service territory extends from the suburbs of metropolitan New York City north to the Capital District at Albany.

The Central Hudson system is comprised of substations having an aggregate transformer capacity of approximately 5.9 million kilovolt amps, a transmission system consists of 578 circuit miles and a distribution system consists of 7,167 pole miles of overhead lines and 1,612 trench miles of underground lines, as well as customer service lines and meters.

The transmission system operates at voltages of 69 kilovolts, 115 kilovolts and 345 kilovolts. The table below provides a more detailed breakdown of the transmission system.

Operating Voltage	Design Voltage	Overhead Circuit Miles	Pipe-Type Cable Circuit Miles	Total Circuit Miles
345 kV	345 kV	76	0	76
115 kV	115 kV	211	4.1	215.1
69 kV	69 kV	248	0	305
	115 kV construction operating at 69 kV	39		
Total		574	4.1	578.1

The distribution system operates at nominal voltages of 4.16 kilovolts, 4.8 kilovolts, 13.8 kilovolts, and 34.5 kilovolts. It also encompasses subtransmission systems that operate at 13.8 kilovolts in three urban areas of our service territory, feeding into secondary networks. The table below provides a more detailed breakdown of the overhead portion of the distribution system, based upon the voltage at which a feeder exits the substation.

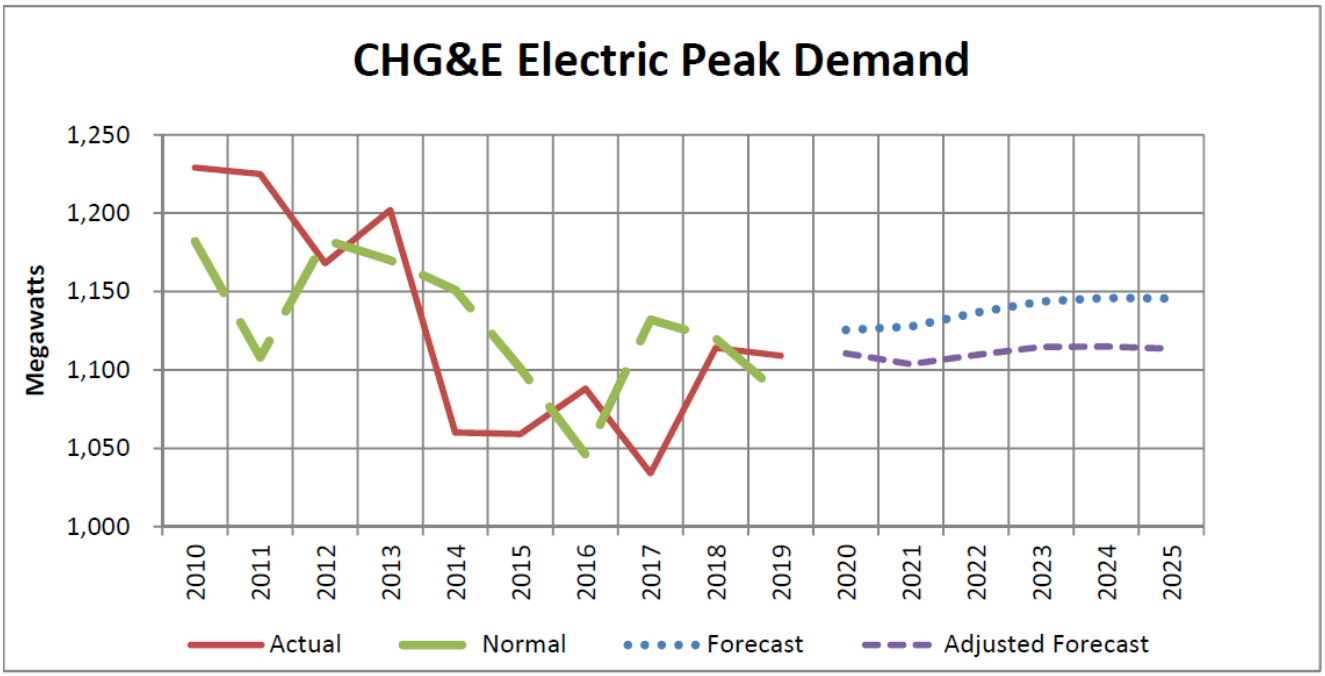
Conductor	Pole Miles of Line at Substation Exit
34.5 kV Overhead	208
13.8 kV Single Phase	4,541
13.8 kV Three Phase	2,373
5 kV or Under	45
Total	7,168

Central Hudson's roughly 77 electric substations contain the power transformers that change the voltage from one level to another.

Electric Forecast Overview

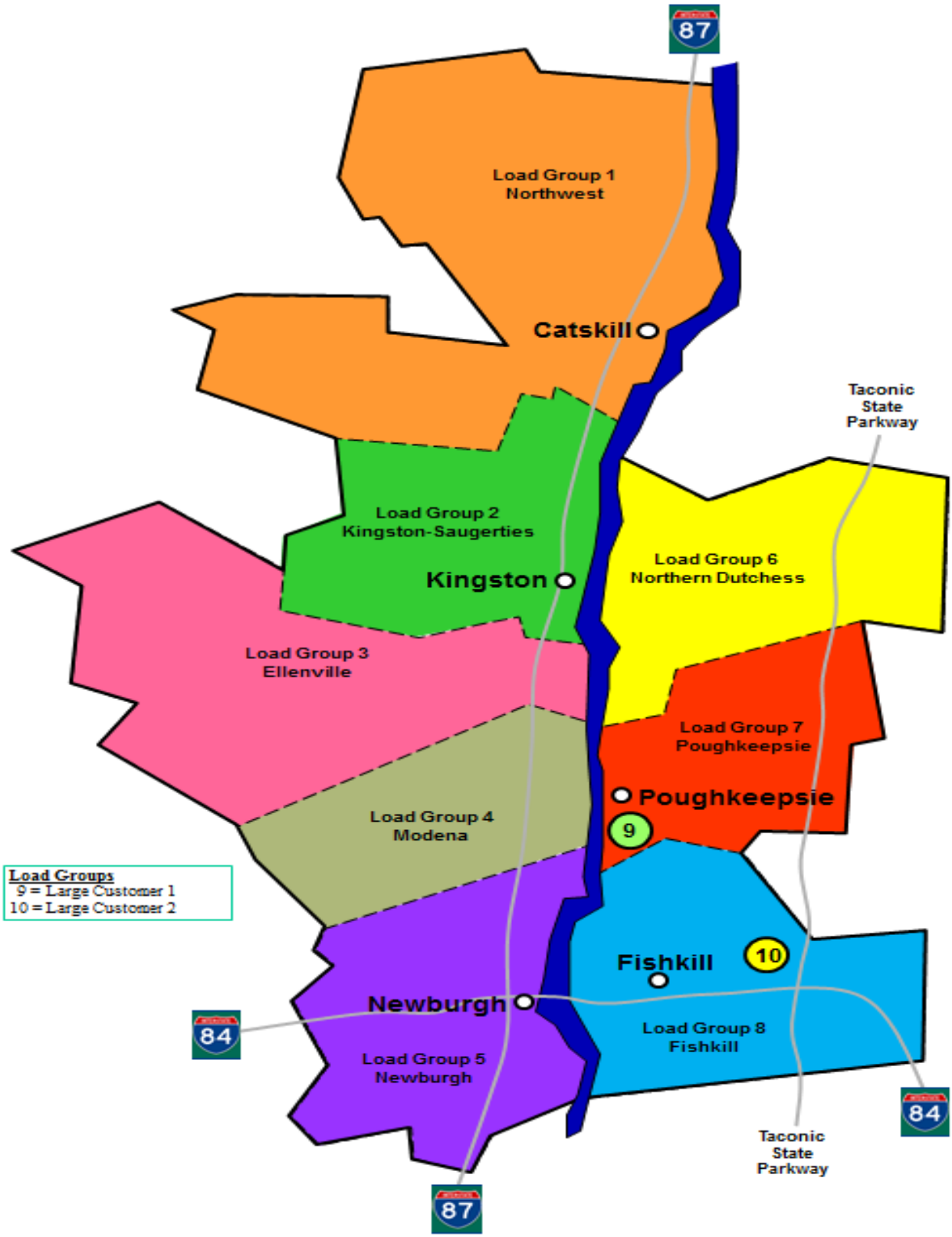
Central Hudson's electric capital forecast for the next five year period is developed each year using the most recent planning studies, customer and sales forecasts, corporate load forecasts, and other corporate trends.

The current system peak forecast is shown on the graph below. As can be seen on the graph Central Hudson's peak demand has shown a modest decline based primarily on the regional economy, and the effects of the Company's energy efficiency programs and demand management programs. Forecast demand also is showing a modest decline and then fairly flat for the next five-year period.



In addition, Central Hudson utilizes distribution planning areas to aid in the identification of needs, their timing, and the quantification of the risks, as well as assess the alternatives available to meet those needs. These distribution planning areas largely are based on where the ability exists to transfer load among area substations. The graphic on the next page shows the distribution planning area load groups.

CHGE Franchise Territory by Electric Load Group



Electric Program Detail

The Electric Capital Forecast is developed utilizing guidelines, planning standards and engineering judgment. The forecast is completed for each budget category and integrated into a comprehensive plan. The summaries below provide the annual forecasts for each of the electric program categories.

Electric Capital Forecast – Additions

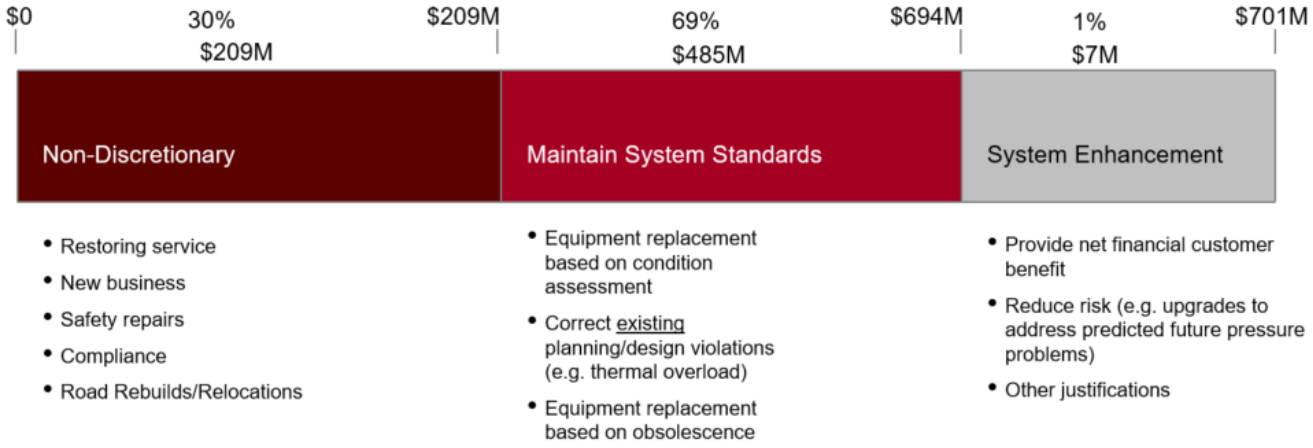
	2021	2022	2023	2024	2025	TOTAL
Production	$ 4,803	$ 7,846	$ 5,188	$ 4,812	$ 2,246	$ 24,895
Transmission	24,750	26,915	23,351	27,683	30,766	133,465
Substation	23,793	18,255	20,670	25,022	12,660	100,401
New Business	7,023	7,072	7,311	7,921	8,005	37,332
Distribution Improvements	46,956	60,538	56,026	57,635	57,507	278,662
Transformers	5,993	6,229	6,485	6,758	7,029	32,493
Meters	5,835	2,979	3,196	3,431	3,670	19,110
Total	$ 119,153	$ 129,833	$ 122,228	$ 133,263	$ 121,883	$ 626,359

Electric Capital Forecast – Removal

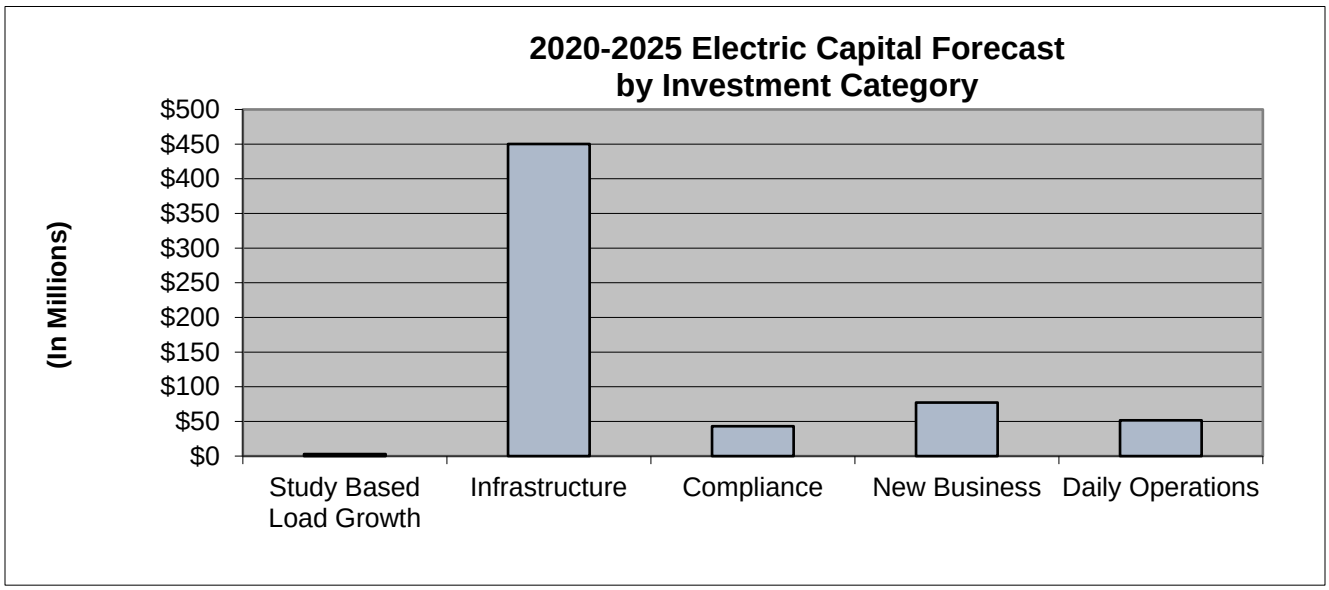
	2021	2022	2023	2024	2025	TOTAL
Production	$ 76	$ 161	$ 79	$ 81	$ 4,490	$ 4,887
Transmission	3,965	5,752	4,635	6,205	5,099	25,655
Substation	2,229	2,178	2,607	2,454	2,314	11,781
New Business	254	259	264	270	275	1,323
Distribution Improvements	5,179	6,131	5,695	5,758	5,833	28,596
Transformers	406	414	423	432	441	2,116
Meters	10	10	11	11	11	53
Total	$ 12,119	$ 14,906	$ 13,714	$ 15,209	$ 18,462	$ 74,410

A breakdown of the Electric Capital Forecast is shown below indicating the level of spending as it has been prioritized. Non-discretionary is the level of spending that is necessary to meet the minimum standards of service or compliance with public service law. Maintaining System Standards

is the level of spending required to maintain our current level of service reliability and to meet obligations set through the rate proceedings. System Enhancement is capital spending aimed at improving our level of service, reducing risk, or reducing operating costs.



In addition, the projects within the Electric Program are categorized by Investment Category as follows: growth (study based load growth); new business; compliance; day-to-day business management; and infrastructure replacement. The bar graph below shows the breakdown of the projects in our current five year forecast by these Investment Categories.



Electric Transmission

For the Electric Transmission System, the purpose is to serve the expected load by developing a rational program to maintain reliability, avoid unacceptable risks, strive for the most economical reinforcements, and allow for equipment maintenance.

The facilities need to be planned, designed, operated and maintained according to "Good Utility Practice." These are any of the practices, methods or actions required by FERC, NERC, NPCC, NYSRC, NYISO, PSC, applicable law, regulations, or policies and standards, or engaged in or approved by a significant portion of the electric utility industry. Electric Transmission Planning analyses are based on planning criteria where the transmission system is designed and operated to conform to applicable reliability rules: no electric transmission facility should be loaded beyond its normal rating prior to any contingency; no facility to be loaded beyond its applicable emergency rating following any contingency; and fault levels are to be within equipment ratings.

The thermal, voltage, and system stability performance is analyzed under the various customer/load scenarios to assess the load serving capability, identify alternatives to increase load serving capability where needed, and evaluate alternatives.

The significant Electric Transmission projects in the five year forecast are: rebuild of the Knapps Corners – Myers Corners 69kV KM line; rebuild of the Myers Corners – North Chelsea 69kV TV line; rebuild of the Hurley Ave – Saugerties SB line for 115kV; rebuild of the Saugerties – North Catskill H line for 115kV; rebuild of the Honk Falls - Neversink 69kV HG line; rebuild of the Pleasant Valley – Rhinebeck 69kV Q Line; and rebuild of the Knapps Corners – Spackenkill 115kV SK Line. All of these projects are driven by infrastructure conditions. A project that appeared in previous five year forecasts, the Northwest Reinforcement Project (which adds a 345 kV interconnection to the Catskill District 115kV system), has been deferred due to the Targeted Demand Response (DR) Program; this DR program is expected to delay the Northwest Reinforcement in service date until at least 2029.

The rebuild of the 69kV KM & TV lines is intended to address significant infrastructure issues on the lines identified through our inspection program. Inspections have identified 58% and 53%, respectively, of each line's wood pole structures needing replacement. These lines originally were constructed in the 1920's and 1930's**.** In addition to addressing known infrastructure issues, potential benefits of the KM & TV line rebuilds include an increase of the transmission supply to the Myers Corners Substation. The main concern impacting the rebuild is the proximity to the Dutchess County Airport. These projects are expected to be constructed in 2021- 2022 at a total cost of approximately $14.1M.

KM Line Condition

		Structures to		
Section	**Miles**	**Replace**	**Repair**	**Probable Replacement Percentage**
Knapps Corners – P33581	1.0	10	5	65.2%
P33581 – P33591	0.5	9	5	60.8%
P33591 – P140218	0.35	0	0	0
P140218 - Myers Corners	1.0	9	2	64.7%
Totals	2.85	28	12	58.0%

TV Line Condition				
		Structures to		
Section	**Miles**	**Replace**	**Repair**	**Probable Replacement Percentage**
Myers Corners – P46006	1.0	8	2	58.8%
P46006 – North Chelsea	5.3	42	24	52.4%
Totals	6.3	50	26	53.1%

Rebuilding the 69kV H & SB lines is identified in the five year forecast. This transmission path is another of Central Hudson's oldest (c. 1919); its towers are steel lattice construction. Inspections have shown 32% of structures needing replacement with another 36% in need of significant repair. These findings initiated a review of the line to develop the most economical alternative to rebuild the line, improve reliability, and (if possible) improve load-serving capability for the Northwest Area. Each line will be rebuilt for 115kV but continue to be operated at 69kV for the foreseeable future. This project is expected to be constructed from 2021 through 2024 at a total cost of approximately $58.5M.

H & SB Line Condition						
				Structures to		
Line	Section	Miles	# of Structures	Replace/Add mid-span pole	Repair	% of structures that require work
H	Saugerties – N. Catskill	12.061	138	41	66	78%
SB	Hurley Ave. - Saugerties	11.11	118	41	25	56%
	Total	**23.171**	256	82	91	68%

Rebuild of the Honk Falls - Neversink 69kV HG line is identified in the five year forecast. This transmission path is another of Central Hudson's oldest (the oldest section was built in 1937); it is wood pole construction with 43 structures replaced in 2017 due to their poor condition. Of the 239 not replaced in 2017, 54% of structures have severity level 3, 4, or 5 deficiencies. These findings initiated a review of the line to develop the most economical alternative to rebuild the line, improve reliability, and (if possible) improve hosting capability for the Neversink Area. The rebuild will eliminate the existing sag limits and allow full hydro generation with certain portions of the WH line out of service. This project is expected to be constructed in 2023 at a total cost of approximately $24.3M.

HG Line Condition						
CH Severity Level	1	2	3	4	5	Total Structures
Structures with Defects	0	27	82	35	11	155

Rebuild of the Knapps Corners – Spackenkill 115kV SK Line is identified in the five year forecast. This line was built in 1965 with wood poles. There are 37 structures on the SK Line. Of the 32 wood structures, 14 have severity 5 defects (requiring mitigation within one year of discovery), and 14 have severity 4 defects (requiring mitigation within three years of discovery). Replacements or repairs are required for over 75% of the line's structures with an additional 5% containing significant defects, justifying a complete line rebuild. The project will be constructed in 2025 at a total cost of approximately $4.4M.

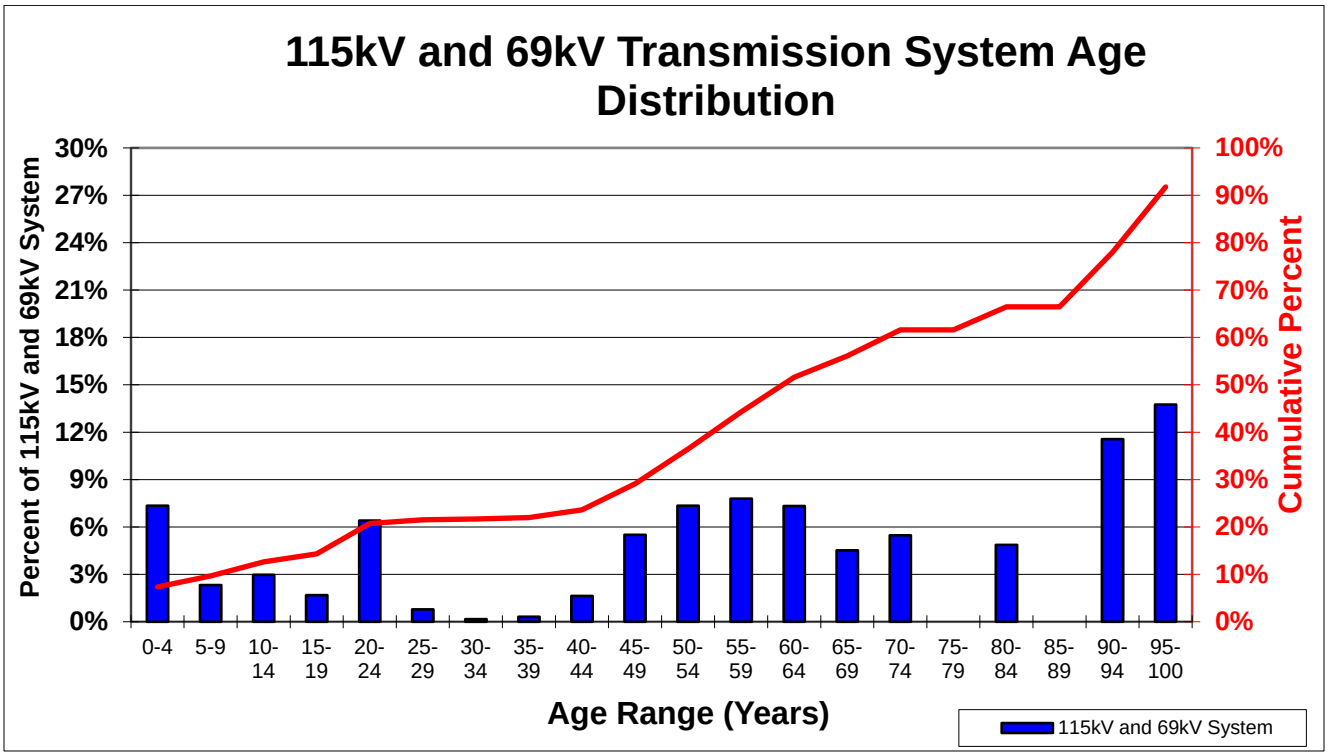
Rebuild of the Pleasant Valley – Rhinebeck 69kV Q Line is identified in the five year forecast. Analysis is underway to determine the most appropriate and economic rebuild alternative. The Q Line provides a link between the Northern Dutchess area and Pleasant Valley. The line was constructed in the late 1950s and is comprised of a 4 mile section of 40 lattice towers and a 16.5 mile section of 211 wood pole structures. The 40 lattice towers are double circuit towers shared with the 115 kV "X" Line from Pleasant Valley to Inwood Avenue. Despite conducting numerous maintenance projects on the line, inspection findings indicate that approximately 65% of the wood pole line section is still in need of replacement or repair as a result of aging infrastructure and poor overall condition. The vast majority of both the static wire and phase conductor is of the original line vintage. The project will be constructed in 2025 at a total cost of approximately $28.8M.

69 kV Q Line Structure Summary

Section	Miles	Total Structures	Actionable Repairs / Replacements		Probable Future Repairs / Replacements		% of structures that require work
			Structures	%	Structures	%	
Pleasant Valley to East Park Tap (common tower with X line)	4	40	0	0%	3	8%	8%
East Park Tap to East Park	4.5	54	29	54%	6	11%	65%
East Park to Staatsburg	4.25	56	29	52%	4	7%	59%
Staatsburg to Rhinebeck	7.75	101	70	69%	6	6%	75%
Total	20.5	251	128	51%	19	7.6%	59%

In addition to the above capital expenditures, there are several programs in Electric Transmission designed to reduce risk and improve infrastructure. The "High Priority Replacements" (HPR) Program under the Electric Transmission Budget provides funding to respond to results of the inspections completed each year. High Priority Replacement projects address infrastructure issues that will reduce the risk of system failure, contact incidents, or loss of reliability. The replacement work is prioritized based upon whether it is part of the 345 kV or underlying system and whether the feed is radial or networked. When an inspection severity of 4 or 5 has been indicated, structures, insulators,

and other capital items are replaced according to a specified timeline. The graph directly below indicates the approximate Transmission System Age Distribution.



Electric Substation & Distribution

Central Hudson Electric Substation and Distribution capital programs are developed based on our current planning criteria and address load serving capability, infrastructure, compliance and reliability/operating issues. For infrastructure based issues, Central Hudson utilizes its asset management process, including field inspections, condition monitoring, periodic testing and more in-depth analysis and studies to identify trends, equipment issues and ultimately recommend replacement programs. Infrastructure based replacements also will be reviewed to determine whether to replace units in-kind or pursue an alternative solution. Load serving capability projects related to substation equipment or distribution circuits are identified through our planning process. For each area and substation, the capacity and operability of the system under the various load forecast scenarios is analyzed. This analysis includes a review of the Substation and Distribution facilities, requiring a full understanding of the limiting components. For any areas or substations where load serving capability has been identified as a potential problem, plans and alternatives by area are evaluated to develop the best solution considering all costs, benefits, and long-range growth potential. The solutions sets for these projects include both traditional utility projects and the use of Non-Wires Alternative solutions to replace or defer the potential capital upgrades.

The planning criteria are based on a combination of economic factors, current industry practice, design and practical considerations, reliability and judgment. Influencing Factors are:

- Infrastructure Condition – If infrastructure must be replaced because it has reached the end of its life, consider the most effective means to replace it
- Thermal limits - related to the ability of the facility to withstand load related heating without damage
- Protection– minimum fault current levels need to be maintained to ensure safe operation
- Power Quality - provide adequate voltage to customer premise ANSI C84.1, +/- 5.0% range during normal conditions (lower voltage in Conservation Voltage Reduction), +5.8% to – 8.3% under emergency conditions; eliminate stray voltage
- Reliability/Operational Flexibility – proximity of solutions to load / $/Customer Outage Avoided, $/Customer Minute Interrupted, and integration of Distribution Automation
- Regulatory Requirements - NESC, NYPSC
- Renewable penetration levels and forecast
- Hosting capacity limitations/system congestion

From this process, substation upgrades, equipment replacement programs and projects establishing new substations or the addition of circuits and transformers in existing substations are identified. Due to the projected declining or flat load forecast in the majority of our planning areas, there are a very limited number of growth driven major substation and distribution projects that have been identified through the planning process in this five year forecast. Based on the age and the continuing condition assessment of our major substation and distribution infrastructure, there are a number of projects and programs to proactively replace equipment prior to the development of age/condition related operating issues. The addition of a new substation in the Beekman/Phillips Road area of our service territory due to load growth and transmission/substation upgrades to reinforce and increase the load serving capability in the Northwest Area of our system have been deferred outside of our five year forecast due to Non-Wires Alternative solutions.

Electric Substation

$100.4M is allocated to infrastructure-related substation programs and projects within the five year forecast. Major substation rebuilds or partial rebuilds due to infrastructure considerations include work/upgrades at the following substations: Pleasant Valley; Hurley Avenue 115kV; Rock Tavern 115kV; Knapps Corners; Kerhonkson; Modena; Converse Street; Greenfield Road; Myers Corners; Coxsackie; and Woodstock. Additional major substation projects include: the addition of a second transformer for reliability and operational flexibility at the New Baltimore Substation in addition to avoiding otherwise required distribution system infrastructure work; and the installation of a new tapped 115kV-69kV substation at the Tilcon site to continue to provide service to this larger industrial customer while allowing for the retirement of approximately 2.5 miles of a poor condition transmission line that runs through a residential neighborhood.

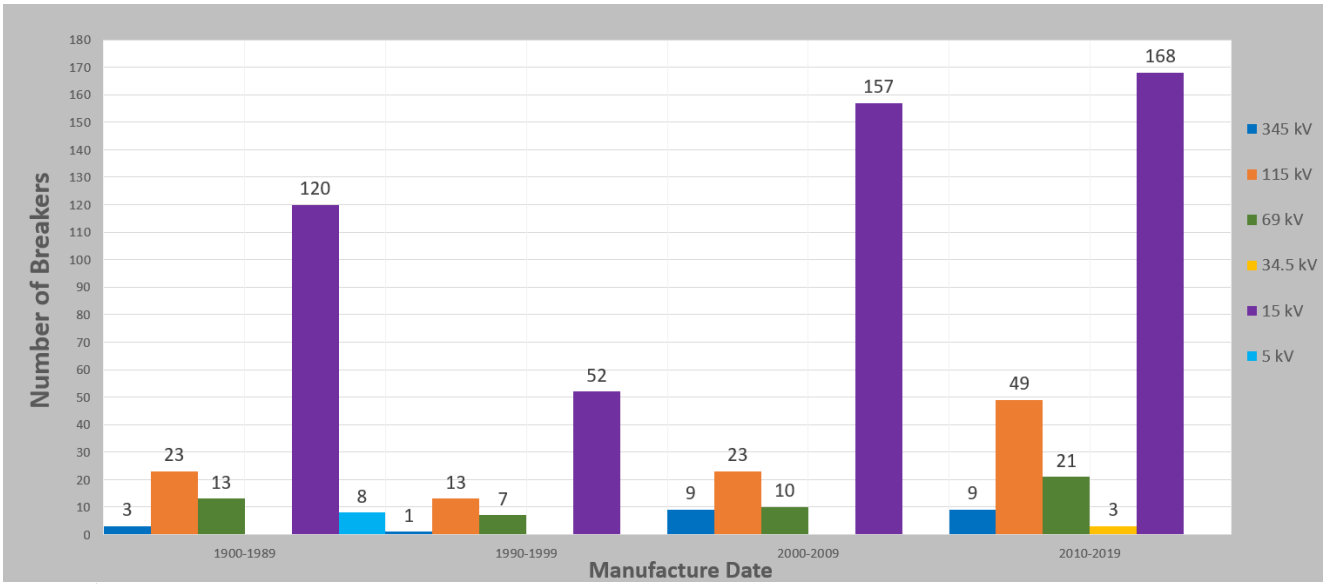
$16.1M is included for upgrades at the Coxsackie and South Cairo Substations due to the retirement of combustion turbines (CTs) at these locations. Central Hudson submitted a compliance filing to the New York State Department of Environmental Conservation in March 2020 in response to its recently promulgated 6 NYCRR Subpart 227-3 “Ozone Season Oxides of Nitrogen (NOx) Emission Limit for Simple Cycle and Regenerative Combustion Turbines” which imposes more stringent emission standards for these units which makes the CTs at these locations uneconomic. As these units are currently required for local transmission and distribution reliability needs, capital

projects are necessary to address these needs prior to the retirement of the CTs. New transformers will be installed at both the Coxsackie and South Cairo substations to provide reserve capability and Dynamic VAR units/capacitor banks will be installed to provide voltage support to the local transmission loop.

A major substation infrastructure program included in the five year forecast is the continuation of our Breaker Replacement Program. This program was initiated to improve infrastructure and maintain system reliability through a planned prioritized equipment replacement program. The assessment process for the selection and prioritization of the breakers included in the replacement program is as follows:

- Breaker Duty: All power circuit breakers with breaker duties greater than 85 % with highest priority given for breakers with duties greater that 100%.
- Condition: All of the power circuit breakers identified based upon the recommendations from our Operations Services Division. These recommendations are based upon reports of failures or reports of poor testing results.
- Obsolescence: Several of the circuit breakers on our system still employ outdated technology, specifically relating to interrupter design. Others suffer from extended service lives and parts are no longer available for many others.
- Other Factors: Other power circuit breakers on our system meet the above breaker duty or condition selection criteria, but they have not been selected for this replacement program because they will be replaced with new breakers as part of new substation construction projects.

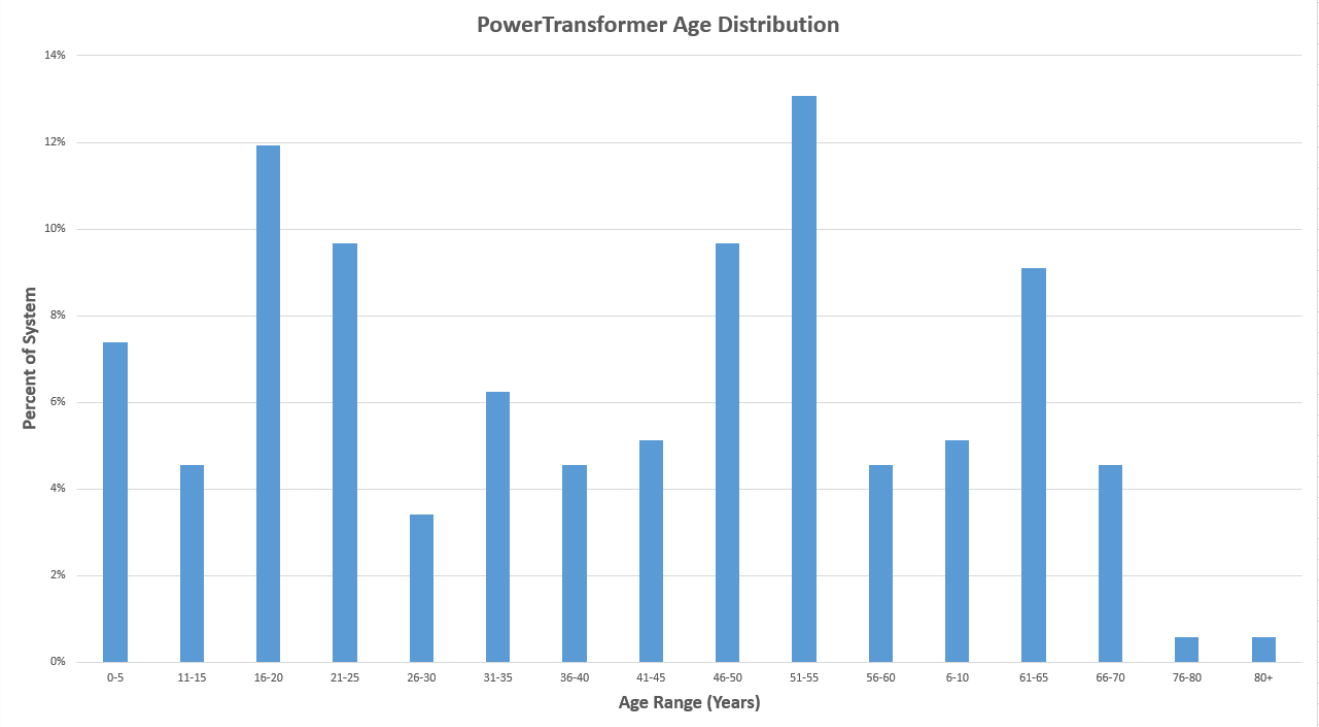
The Breaker Replacement Program has been in place since 2009; all of the originally identified 196 breakers have been replaced. As a continuation of this program, 102 breakers have been identified for planned replacement in the five year forecast horizon, with a cost of $8.9M. Many of these breakers targeted for replacement will be combined with other identified work at stations to create larger projects, as was the case with the 16 breakers identified for replacement in 2019. The graph below indicates the approximate Breaker Age Distribution.



Additional major infrastructure replacement programs associated with substation equipment include the continued condition assessment and replacement of protective relaying equipment and substation power transformers. Targeted replacement programs for circuit switchers, disconnect switches, and motor-operated switches (MOS), have commenced based on feedback and maintenance trends from Substation Operations.

The comprehensive relay and metering modernization program included in the five year forecast identifies outdated meters, relays, and communications infrastructure. There is $16.1M in the five year forecast to complete the current program. Many of these items will be integrated into comprehensive substation rebuilds or major upgrades to take advantage of construction efficiencies.

With regard to the substation power transformers, the condition of the power transformers varies and the ability to maintain them is tied closely to their age. Recent focused replacement of poor performing transformers has reduced the average age of our substation transformer fleet to approximately 35 years old; however, some transformers remain that are up to 80 years old and are in deteriorating condition. The transformers are monitored using: dissolved gas analysis; oil screen/testing; and Doble power factor testing at an interval based on voltage level and equipment criticality. Transformers are replaced based on this testing and overall condition assessment. There are four substation transformer projects in the five year forecast associated with the condition based replacement of aging transformers totaling $6.9 M. These projects include transformer replacements at the following substations: Coxsackie; Converse St.; Ancram; and Knapps Corners. Additionally, there is the planned installation of two 115/69 kV transformers at the Kerhonkson Substation coordinated with the retirement of the Modena 115/69kV transformer and the upgrade of the P and MK Lines to 115kV operation and the planned installation of transformers at the Coxsackie and South Cairo Substations due to the retirement of the CTs at these locations. The graph below provides an overview of the age of the Company's Power Transformers.



A condition based program has been created to identify and replace switchgear units that are in poor or deteriorating condition. There is $13.8M in the five year forecast allotted to start these replacements. The following substations have been included in the switchgear replacement projects in the five year forecast: Coxsackie; Woodstock; Myers Corners; Sturgeon Pool Generator Breakers; Montgomery Street; Converse Street; Tioronda; and Lincoln Park.

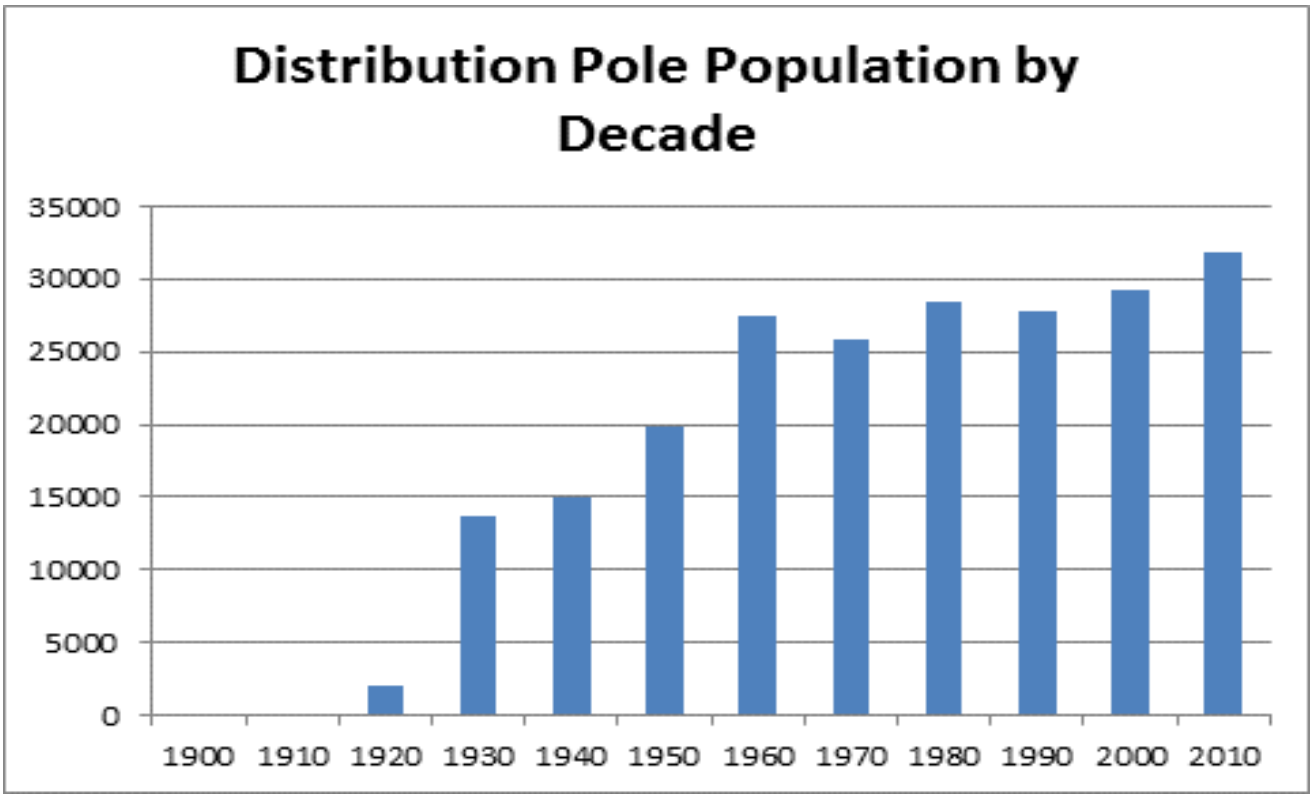
Similar to the breaker replacement program, programs have been created to address concerns with the remaining life of substation circuit switchers, disconnect switches, and motor operated switches. Replacement programs have been created to replace proactively these devices subject to potential failure. Recent problems have been identified with certain style switches, and there are limited to no replacement parts available. There is $9.5M in the five year forecast allotted to these replacements.

As previously indicated, new items in this year's forecast include the installation of transformers and D-VAR/capacitor systems at the Coxsackie and South Cairo or other area Substations. These projects are due to the planned December 2024 retirement of the CTs at these locations associated with the DEC "Peaker" rule (Part 227-3). Currently, the CTs provide reserve capacity for the substations and are used for voltage support in the local transmission loop; it is planned to replace this voltage support function with the DVAR systems. While analysis is underway, $16.1M has been included in the capital forecast for the transformers and DVAR systems with an in service date of 2024.

Distribution

The Distribution projects are identified as thermal, growth, and voltage related projects, reliability improvement projects justified on a cost per outage avoided basis, and operating improvements allowing flexibility in restoration. In addition to these projects, there are several more specific Distribution Improvement programs or initiatives that are related to infrastructure or reliability issues that are in the capital forecast. These major programs include the Customer Experiencing Multiple Interruptions/Worst Circuit program, resiliency program, the 14.4kV cable rejuvenation program, the secondary network replacement program, the 5kV aerial cable replacement program, the overhead secondary replacement program, the 4800V conversion program, the copper wire replacement program, the oil switch and network protector replacement programs, and the URD replacement program.

With regard to the distribution infrastructure, there are ongoing programs designed to proactively replace aging or failing equipment. In addition to the Operating/Infrastructure program, the replacement of distribution poles identified through the inspection program is one of those programs. The graph below provides an overview of the age of the Company's Distribution pole plant.



The number of distribution inspection driven pole replacements has shown an increasing trend in recent years. Based on the age demographic of our pole plant and this increasing trend, additional funding was included with the five year forecast to address pole replacements.

Due to the New York State Broadband Program and other initiatives, there has been an increase in make-ready work to ensure NESC clearances are maintained and poles are not overloaded with these additional attachments. While the Attacher is responsible for these incremental costs, if a pole is already in poor condition, the Company must cover those costs. There is $3.14M in the 5-year capital plan allocated to make-ready costs. This represents a slight decrease from prior expenditure levels.

The Distribution Automation Program is a major initiative that commenced in 2015 and continues to be included in the five year forecast. By the end of 2022, the majority of the installation of DA devices in our five districts will have been completed and planned expenditures for DA are significantly reduced in the 2023-2025 timeframe. Central Hudson will continue with the Automatic Load Transfer (ALT) switch and recloser replacement programs. These programs will be integrated with DMS to improve reliability, system safety, and system efficiency, enhancing the capability of ALTs to include more complex Fault Location, Isolation and Service Restoration (FLISR), while providing for Volt-VAr Optimization.

Resiliency/Storm Hardening

One of the recommendations in the New York State Public Service Commission's Order Instituting Proceeding and to Show Cause issued April 18, 2019 in Case 19-E-019 required that all

electric utilities submit an actionable plan by July 1, 2019 which details future storm hardening measures including a budget, timeline, and major performance benchmarks. In response to this recommendation, Central Hudson developed a plan outlining incremental storm hardening measures. The proposed plan was designed to cover approximately eight years, maximizing resiliency impacts while balancing resource and capital requirements. In addition, the plan will also include an investigation of historical outage information and distribution circuitry to identify potential investments that will increase reliability to critical facilities that counties consider essential.

The overall storm hardening plan included both an expense component associated with incremental vegetation management programs and a capital component associated with incremental distribution improvements designed to improve system resiliency. This Storm Hardening Plan consisted of $42.85 million in Vegetation Management and $100 million in Capital Investment over 8 years.

While our five year capital plan includes numerous items to improve system reliability that also have resiliency benefits, the areas impacted by storms may not always be prioritized based upon the Company's benefit/cost analysis metrics. The areas hardest hit by major storms are often located in the remote areas and/or on the edges of our service territory with low population density. Therefore, based on our storm hardening plan filed in July, 2019, Central Hudson proposes to supplement its capital investment plan with additional investment to improve storm hardening of its system. The plan includes three major programs as detailed below:

1. Circuit Hardening

   To reduce the frequency of outages, Central Hudson has piloted a first zone of protection circuit hardening project to improve SAIFI on the 3012 circuit. Fed by the Woodstock Substation near the edge of the service territory, the 3012 circuit is susceptible to interruptions caused by large danger trees and infrastructure that does not adhere to today's construction standards. With some minor enhancements and expansion to a wider range of circuits and zones, the program is also applicable to the Storm Hardening plan. The following is a list of items that would be reviewed and addressed through a Storm Circuit Hardening program:

   - Vegetation Management: Remove vines and danger trees and complete trimming, if not recently completed.
   - Equipment condition and type:
     - Conductor (type): Consider reconductoring bare wire with covered wire or spacer cable in areas with significant tree coverage. Alternatively, consider reconductoring covered wire with bare wire in open air areas that are susceptible to lightning.
     - Conductor (slack): Address any excess slack in conductor (primary and neutral) by either adding a mid-span pole, pulling slack or installing spacers.
     - Connectors: Verify no copper hotline clamps installed on aluminum phase wire and vice versa. Ampact hotline clamps on the main line.
     - Cutouts: Change out porcelain cutouts with polymer, including those feeding conventional transformers and capacitor banks.

    - Poles: Replace all rotten and woodpecker-compromised poles with at least 45' Class 2 poles. Evaluate the potential for composite or Class 1 poles. Ensure proper clearances where joint use facilities exist.
    - Cross arms: Replace all rotten cross arms and braces with new wood cross arms and appropriate braces. Use fiberglass arms if an entire line segment requires pole replacements, as well as at dead ends.
    - Tie wires: Replace broken tie wires.
    - Insulators: Replace porcelain insulators with polymer, including dead-ends.
    - Terminators: Replace pothead terminators with current standard terminators.
    - Secondary wire: Convert open wire secondary to triplex/multiplex.
- Flashover: Perform a visual inspection of zone for any evidence of previous flashover and replace equipment as appropriate.
- Protection:
    - Verify that all laterals are fused.
    - Ensure proper lightning protection is available (lighting arresters and down grounds at least every ¼ mile).
- Construction audit:
    - Verify that alley arms are installed per the standard (no partial offsets).
    - Confirm that all poles are guyed properly, including take-off poles (check for leaning poles resulting from lack of proper guying).
    - Check for proper lead length of anchors to support loading (short leads on corners and take-offs).
    - Verify grounding is achieved per Construction Standards, including on control boxes at the beginning of the next downstream zone of protection.
    - Verify or install animal protection on transformers, reclosers, regulators and riser poles.

Central Hudson proposes to harden mainline zones of protection that impact 500 customers or more and are located on the 25 Worst Performing circuits when storm-related interruptions are considered. These 25 circuits contribute 35% to System SAIFI including storms. Please see the Table below for a complete list of circuits. In addition, reconductoring associated with circuit hardening will improve the ability to perform switching and reduce the duration of outages when they do occur. Approximately 219 miles of circuitry serving 51,602 customers will be addressed through this program. The cost per mile is anticipated to range from $150,000 per mile where limited pole and conductor replacements are required, to $600,000 per mile where double circuits and/or composite pole replacements are required.

Table: Circuit List for Storm Circuit Hardening

Rank	Circuit	Two-Year Average System SAIFI for 2017 & 2018	Cumulative % of Average System SAIFI for 2017 & 2018	Total Circuit Miles	Total Miles in Zones >500 Customers	Danger Tree Removal Status (Completed, Planned, None)	Critical Customers: Level 1 + Life Support Equipment
1	3012	0.0725	3.521%	129.4	12.84	Completed	14
2	3003	0.0537	6.129%	98.92	6.98	Completed	7
3	3011	0.0420	8.171%	100.7	16.00	Completed	18
4	3091	0.0367	9.954%	174.9	8.58	Completed	15
5	2094	0.0329	11.548%	116.9	12.95	Planned	21
6	3001	0.0291	12.960%	24.3	3.14	Planned	18
7	3013	0.0290	14.369%	55.42	3.94	Completed	8
8	3024	0.0273	15.693%	135	15.55	Completed	19
9	8087	0.0267	16.990%	35.45	10.25	Planned	26
10	8015	0.0263	18.266%	18.18	5.69	Planned	13
11	1011	0.0263	19.541%	35.09	5.25	Completed	7
12	2016	0.0257	20.789%	69.75	3.52	Planned	20
13	6057	0.0255	22.028%	97.89	9.51	Planned	16
14	1071	0.0253	23.256%	90.81	7.48	None	14
15	4013	0.0242	24.431%	23.15	3.36	Planned	9
16	2005	0.0241	25.603%	59.71	3.82	Planned	25
17	3082	0.0236	26.749%	125.7	12.96	Completed	7
18	3002	0.0224	27.836%	85.7	7.43	Completed	25
19	3014	0.0221	28.906%	68.7	4.90	Completed	14
20	2389	0.0217	29.961%	121.6	11.61	None	10
21	2385	0.0216	31.007%	80.37	14.37	Completed	15
22	8066	0.0206	32.009%	72.38	17.80	Planned	11
23	5041	0.0204	32.997%	60.23	6.57	Planned	12
24	1024	0.0189	33.917%	22.37	3.60	None	17
25	7025	0.0184	34.811%	109.5	10.75	Planned	22

2. Lateral Line Rebuilds

   The vast majority of restoration efforts in a major storm event are focused on laterals in remote areas and/or the edges of the service territory. Strategically hardening pockets that are prone to outages during major events and using construction such as tree wire or spacer cable will make these areas more resilient. These are primarily single phase lines, but may include two and three phase lines as well.

   The Company will identify projects in each of the five Operating Districts. Most of the projects identified will be single phase laterals, although some three-phase construction may be included. A $/Customer Outage Avoided ("$/COA") metric will be used to prioritize projects, along with repair times and critical customer information where applicable.

3. Incremental Distribution Automation

   As described previously, Central Hudson is in the process of implementing a Distribution Automation program across the entire service territory. One aspect of that program is Fault Location, Isolation & Supply Restoration (FLISR). As a part of the FLISR program design, there are locations throughout the service territory that do not meet the $/COA threshold for electronic recloser installation when blue sky day reliability alone is considered, but would be great candidates when considering the improved ability to benefit from FLISR implementation during storms. These locations may require hardening and reconductoring or the development of a strong distribution tie for automation to be successful. Additionally, single phase automation may be identified.

   There is also additional opportunity to gain real time information on the status of borderline customers fed by distribution feeders owned and operated by neighboring electric utilities. There are 408 borderline customers fed by 30 locations. Central Hudson will investigate the use of smart devices (voltage and fault current sensors/select AMI data) to recognize whether a Central Hudson repair is required without a field visit. If feasible, the installation of a remote controlled switch or recloser also may be considered for the largest pockets of these customers.

The above plan outlines the capital component of our storm hardening program. This program represents incremental spend from prior years' capital program which was predominately infrastructure replacement/reliability based. Storm hardening efforts will reduce the impact that severe weather events have on our service territory having a secondary effect of improving our reliability performance and our ability to withstand less severe weather events. The capital storm hardening measures included within the plan described above and their associated funding are included within this five year Capital Plan and represents approximately $59.5M of incremental funding from our historic levels.

New Business, Transformer, and Meters

The remainder of the Electric Capital Budget, the New Business, Transformers, and Meters capital forecast is based on the projected customer growth from the corporate forecast. A regression analysis of the prior five years capital expenditures and growth rates is performed for these categories to predict the capital expenditures for the upcoming five years given the various growth scenarios. In addition any specifically identified transformer or meter replacement programs are included in the forecast. For Transformers, there is an increase in the five year forecast due to equipment (capacitors

and regulators) associated with our DA program described above. In addition, there is $3M included in the Meter forecast for a proposed AMI pilot program.

GAS PROGRAM SUMMARY

The Central Hudson gas system contains well over 2,000 miles of pipeline facilities ranging in age from new to over 100 years. It supplies gas service to approximately 84,000 customers in communities near the Mid-Hudson River Valley from Woodbury in the south to Coxsackie in the north and ranges from Carmel in the east to as far west as Montgomery.

The Company's gas transmission system consists of 165 miles of steel piping ranging from 6-16" in diameter, four gate stations and 3 flow control stations. The Maximum Allowable Operating Pressure (MAOP) is between 325-750 PSIG. The majority (81%) of the transmission system was installed during the 1950's and 1960's. The MPI and MPR transmission lines were the last to be installed (1990's) and account for 12.8% of the total transmission pipeline inventory. Three of the four gate stations date to the 1950's and early 1960's. The last gate station, Pleasant Valley, was constructed in the early 1990's to take gas from the then-new Iroquois gas transmission line.

A total of 139 gas regulator stations are utilized to supply the distribution system. The stations either reduce transmission pressure to distribution pressure, or further reduce distribution pressure to a lower pressure.

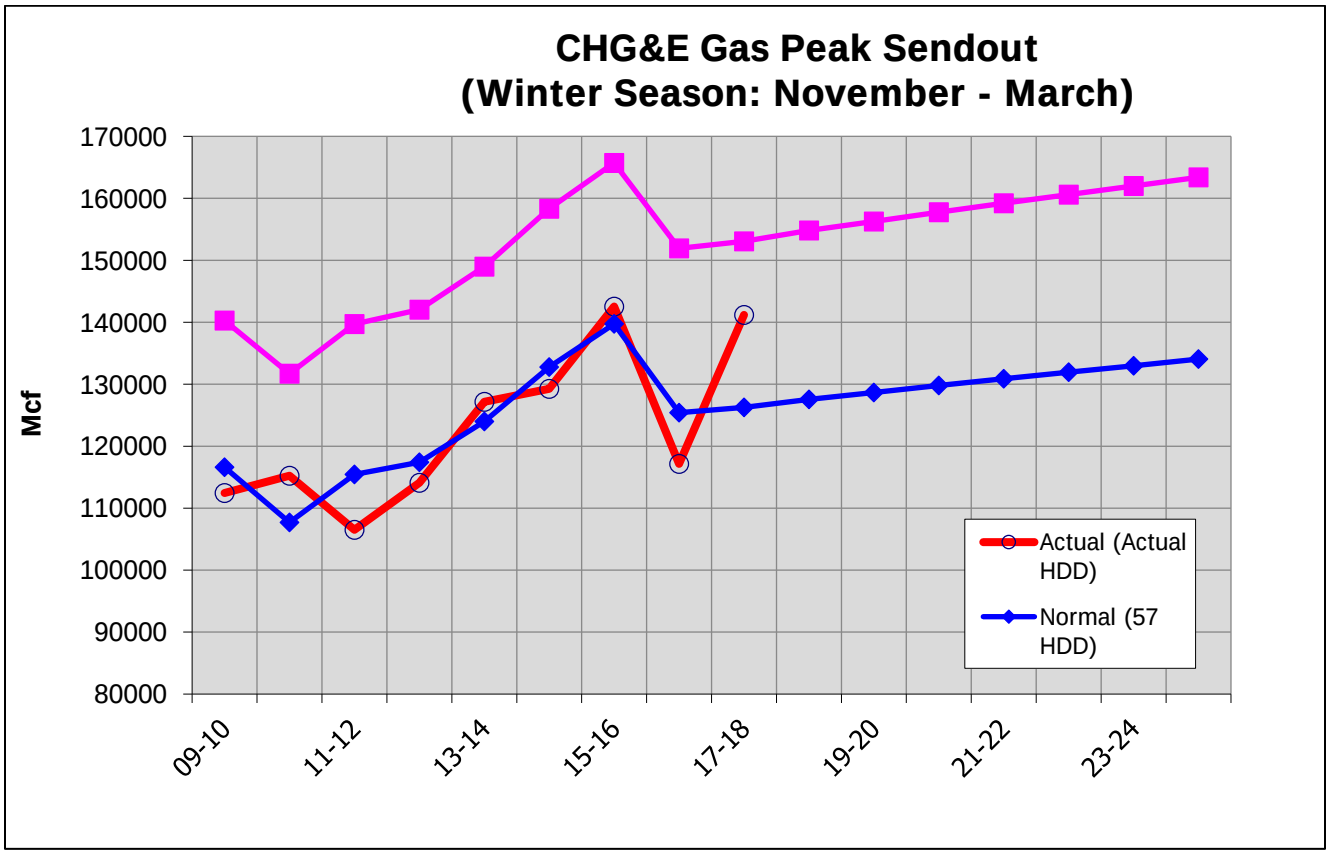
The gas distribution system is comprised of 1,297 miles of distribution main that operates at pressures from utilization (inches of water column) to 120 psig. Nominal pipe diameters range from ½" to 16 inch in size and are comprised of plastic, steel, wrought iron, and cast iron. The predominant material is plastic, which makes up 771 miles of the total inventory, and cathodically protected steel, which accounts for an additional 366 miles. Currently Central Hudson defines leak prone pipe (LPP) as cast iron, wrought iron and unprotected steel. This represents a total of 159 miles or 12% of the total distribution main inventory. The Company's gas service inventory totals 63,690 services, of which 44,905 are plastic, 9,066 are protected steel, and 60 are copper. The remainder are considered leak prone.

Low pressure systems exist in each of the larger Cities of Beacon, Newburgh, Poughkeepsie, and Kingston, and Villages of Saugerties and Catskill. Construction on these systems started in the early 1900s and piping has been added and replaced regularly since that time. These systems contain significant lengths of cast iron, bare steel, and wrought iron piping. Portions of the piping must be replaced in order to maintain a manageable leak inventory. These older communities have transformed from residential/ commercial and industrial centers into primarily residential, light commercial and governmental centers and gas loads have generally stabilized or slightly declined over the years.

Gas Forecast Overview

Central Hudson's gas capital forecast for the next five year period is developed using a number of inputs such as planning studies, econometric forecasts, corporate load forecasts, facility inspection results, integrity recommendations, field operations feedback as well as others.

Central Hudson's gas peak load forecast is allocated into planning areas to identify system capacity needs and the timing of those needs, quantify the risks of the load growth outpacing our ability to serve that load, and assess the alternatives, historical pipe solution or non-pipes alternative, available to meet that load. As a result of these efforts, capital needs are identified, timing determined, and alternatives developed from planning studies.



The New Business and Meters capital forecast is based on the projected customer growth from the corporate forecast.

For the Gas System, the primary evaluation criteria for area studies are load serving capability, based on system configuration, capacity, and the resulting pressures during design day. The planning criteria are based on AGA Engineering Practices. The minimum operating pressures which are allowed under these planning criteria are 50% of the local system set pressure.

The planning criterion is single contingency with no reserved load. The planning process evaluates the risk associated with load growth uncertainties, the risk of pressure falling below required minimums, the number of customers impacted, and the time associated with restoration of service.

Gas Program Detail

The Gas Capital forecast is developed utilizing guidelines, planning standards, and engineering judgment. The forecast is completed for each budget category and integrated into a comprehensive plan. The following is a summary of the five year capital forecast for each of the categories.

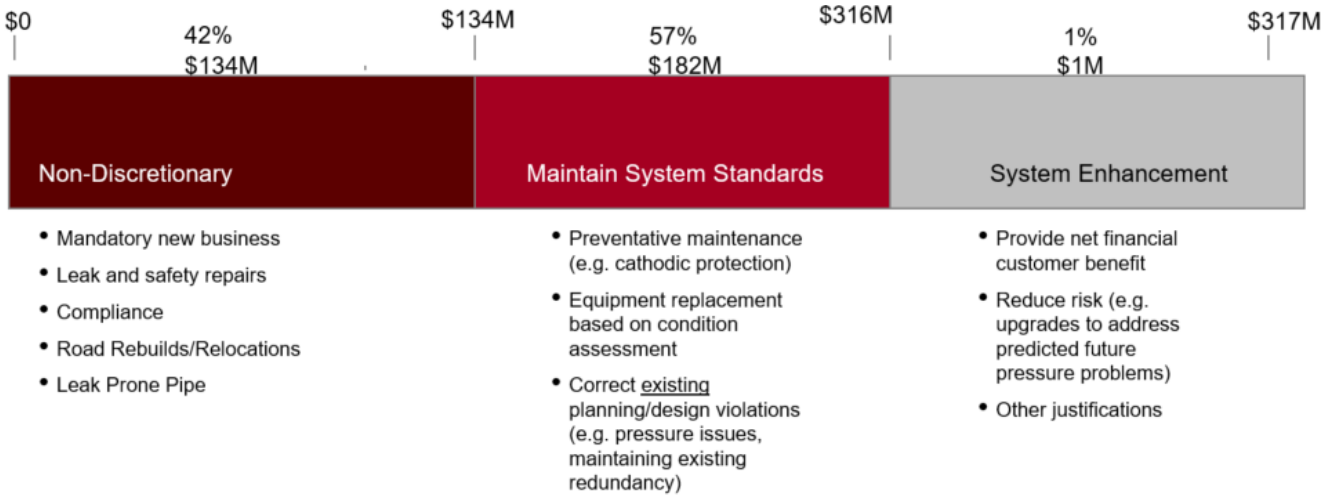
Gas Capital Forecast – Additions

	2021	2022	2023	2024	2025	TOTAL
Production	$ -	$ -	$ -	$ -	$ -	$ -
Transmission	1,965	2,117	2,134	2,276	2,237	10,729
Regulating Stations	2,876	3,057	2,933	3,020	3,381	15,268
New Business	9,815	9,749	9,679	9,916	9,625	48,784
Distribution Improvements	43,161	43,661	43,430	42,887	43,085	216,224
Meters	3,007	3,171	3,358	3,576	3,769	16,881
Total	$ 60,824	$ 61,755	$ 61,534	$ 61,677	$ 62,097	$ 307,887

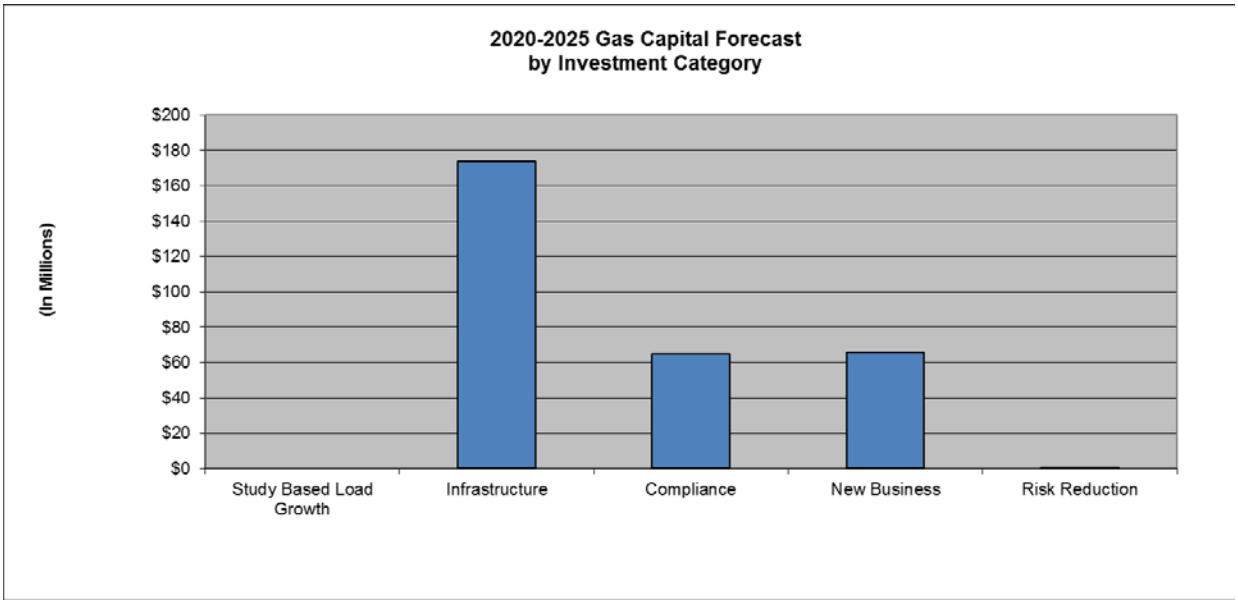
Gas Capital Forecast – Removal

	2021	2022	2023	2024	2025	TOTAL
Production	$ -	$ -	$ -	$ -	$ -	$ -
Transmission	81	83	74	65	105	408
Regulating Stations	152	187	116	151	187	794
New Business	203	207	212	216	220	1,058
Distribution Improvements	1,321	1,347	1,375	1,403	1,432	6,878
Meters	4	4	4	4	4	21
Total	$ 1,761	$ 1,828	$ 1,782	$ 1,839	$ 1,949	$ 9,159

A breakdown of the Gas Capital Forecast is shown below indicating the level of spending as they have been prioritized. Non-discretionary is the level of spending that is necessary to meet the minimum standards of service or compliance with public service law. Maintaining System Standards is the level of spending required to maintain our current level of service regarding safety and reliability and to meet obligations set through the rate proceedings. System Enhancement is capital spending aimed at improving our level of service, reducing risk, or reducing operating costs.



In addition, the projects within the Gas Program are categorized by Investment Category as follows: growth (study based load growth), new business, compliance, risk reduction, and infrastructure replacement. The bar graph below shows the breakdown of the projects in our current five-year forecast by these Investment Categories.



Gas Transmission

The Gas Transmission category consists of gate station and transmission capital projects. Sample projects may include transmission line replacement/relocations, transmission valve replacements, modernization of gate station flow control equipment, etc. The development of the Gas Transmission five year Capital Forecast is derived from the following inputs:

- Transmission Integrity Management Program (TIMP)
- Regulatory Requirements
- Equipment Obsolescence/Performance

- Inspection Results
- Municipal Projects
- Load Growth

The Gas Transmission projects are designed to provide necessary capacity, reduce risk and improve infrastructure. Gas Transmission Capital Projects are primarily a mix of compliance, risk reduction and infrastructure. They may stem from System Load Studies or studies performed as part of the Pipeline Integrity Program. These studies result in selected pipeline projects such as casing removals or the installation of remotely operated valves (ROV's). The transmission flow control equipment such as remote terminal units (RTU's) is evaluated to determine useful remaining life. The Gas Transmission five year Capital forecast addresses a number of infrastructure and integrity issues. The remainder of the capital forecast focuses on the following areas for system improvement: TIMP related projects, flow control system upgrades, and remote operated valves.

Gas Regulator Stations

The Gas Regulator Station category consists of regulator station capital projects. The projects range from the installation of new stations to the replacement/upgrade of station equipment. The development of the Gas Regulator Station five year Capital Forecast is driven by the following inputs:

- Regulatory Requirements
- Equipment Obsolescence/Performance
- Inspection Results
- Load Growth

The Gas Regulator Station projects consist primarily of a mix of capacity, compliance and infrastructure projects. The main replacements associated with the LPP Elimination Program result in changes in the low and medium pressure system flows. As a result modifications will be made to existing stations as needed to account for increased flow due to the modification of distribution system piping. In some cases stations will be eliminated due to these elimination projects. The remainder of the Gas Regulator Station capital forecast is related to regulatory requirements, equipment obsolescence, maintenance issues, improved/remote pressure control, retirements, and relocations.

Gas Distribution Improvements

The Gas Distribution Improvement category consists primarily of new or replacement main and valve projects as well as service replacements. Projects in this category include LPP main replacements, main reinforcements, additional valve installations, etc. The development of the Gas Distribution five year Capital Forecast is derived from the following inputs:

- Distribution Integrity Management Program (DIMP)
- Risk Assessment (including leak history, material type, location, etc.)
- Regulatory Updates/Mandates
- Inspection Results
- Municipal Projects
- Load Growth

The Gas Distribution five year Capital Forecast is driven primarily by the mandated elimination of Leak Prone Pipe (LPP). At this time the Company defines leak prone pipe as cast iron, wrought iron and steel pipe. As detailed in its current rate agreement the Company is required to eliminate a minimum of 15 miles of leak prone pipe each year through 2021. It is the Company's intent to continue at this level.

The LPP replacement projects are identified and prioritized using the GL Main Replacement Prioritization Program (MRP) which develops a risk 'score' based on pipe and operating characteristics such as material, operating pressure, age, diameter, leak history, location (proximity to buildings, business district, flood prone areas) and, cathodic protection. This risk score measures the relative likelihood and the consequences of a leak associated with each pipeline segment. In addition Subject Matter Expert (SME's) review is taken into consideration when developing the proposed main replacement project listing. Based on industry best practice LPP projects consist of 1- 2 mile 'neighborhood' projects which result in limited disruption to customers and more economical replacement of LPP. While this methodology does result in the replacement of existing short sections (< 100 feet) of plastic and protected steel previously replaced due to undermines or leak repairs the overall efficiencies gained through bypassing and elimination of prolonged customer interruption are significantly more cost effective. As part of the LPP elimination program the Company is identifying locations where beneficial electrification of customer's natural gas appliances and equipment may be converted to electric. This will eliminate the need to replace a portion of LPP main that serves limited customers and is not detrimental to maintaining current levels of service to other customers on the system. Based on an LPP elimination rate of 15 miles year all identified LPP will be eliminated by 2029.

Included in the Gas Distribution capital budget is funding for main replacements or relocations associated with municipal projects such as road rebuilds. The actual project cost is included when the actual project is known, otherwise the budgeted amounts are trended from past year expenditures.

New Business & Meters

The New Business section of the Gas Capital Budget is based primarily on the projected customer driven growth from the corporate forecast. The forecasted expenditure level is significantly reduced from the prior 5 year forecasts based on the changing strategy of less focus on gas expansion. The Gas New Business has forecasted over $48 million over the five year period for residential and commercial customer driven additions.

The Gas Meters capital forecast is based on the projected customer growth from the corporate forecast. The meter forecast is based on the annual needs for non-load related meter installations (Meter Testing Program or ERT meter requests), approximately 1,600 meters during the forecast period, and the forecast level based on the customer growth, peak, and sales forecast.

COMMON PROGRAM SUMMARY

The Common Capital Forecast consists of the following categories: Land and Buildings; Information and Operational Technology; Tools & Equipment; Communication; and Transportation. The following is a summary of the five year capital forecast for each of these categories.

Common Capital Forecast – Additions

	2021	2022	2023	2024	2025	TOTAL
Lands and Buildings	$ 45,494	$ 45,416	$ 10,474	$ 8,872	$ 4,441	$ 114,697
Office Equipment	48,756	66,145	35,036	21,155	19,557	190,648
Tools	1,416	1,560	1,624	1,690	1,760	8,051
Communication	3,167	4,419	4,536	2,003	2,478	16,604
Transportation	9,866	10,257	10,680	11,126	11,574	53,503
Total	$ 108,699	$ 127,797	$ 62,350	$ 44,846	$ 39,810	$ 383,502

Common Capital Forecast – Removal

	2021	2022	2023	2024	2025	TOTAL
Lands and Buildings	$ 965	$ 560	$ 577	$ 442	$ 275	$ 2,819
Office Equipment	-	-	-	-	-	-
Tools	0	0	0	0	0	1
Communication	1	1	1	1	1	5
Transportation	(450)	(450)	(450)	(450)	(450)	(2,250)
Total	$ 516	$ 111	$ 128	$ (6)	$ (173)	$ 575

Land and Building

The Common Capital Program includes the Lands and Buildings and Office Equipment categories. The forecast for the Lands and Buildings and Office Equipment categories is typically associated with the replacement of existing minor capital components. However in this forecast, the Lands and Buildings category includes some major capital replacements at our facilities (roofs, windows, and HVAC equipment) as well as a few larger facility projects.

There are three larger facility projects planned during the five-year forecast period. The first project consists of the completion of the buildout of the Training Academy. This project was previously proposed and approved in our most recent rate filing and has progressed through the prescribed milestones of that order. Regularly scheduled updates have been shared with DPS Staff.

Although design and portions of the construction and funding is currently occurring, $32.2M of facilities related funding will be required through 2023 to complete this project.

The second project is the establishment of an integrated transmission and distribution system operations center. This project addresses the Company's need to move to 24/7 monitoring and control of the distribution system as a result of the Company's grid modernization efforts. The plan is to create a fully integrated transmission and distribution Primary Control Center ("PCC") on the campus of the Training Academy. The estimated Facility costs within the five year forecast for the build-out of this facility is $32.3M.

The third project is the relocation of the Newburgh District Operating Headquarters. Several alternatives have been evaluated to increase the functionality of the headquarters and also mitigate risk associated with its general low lying location and close proximity to the Lake Washington Dam. The proposed project will address safety and congestion issues at the current site while also relocating critical operational activities to a more geographically secure location. The current estimated cost of this project during the five year forecast period is approximately $14.4M, with the majority of expenditures and project completion anticipated in 2022-2023.

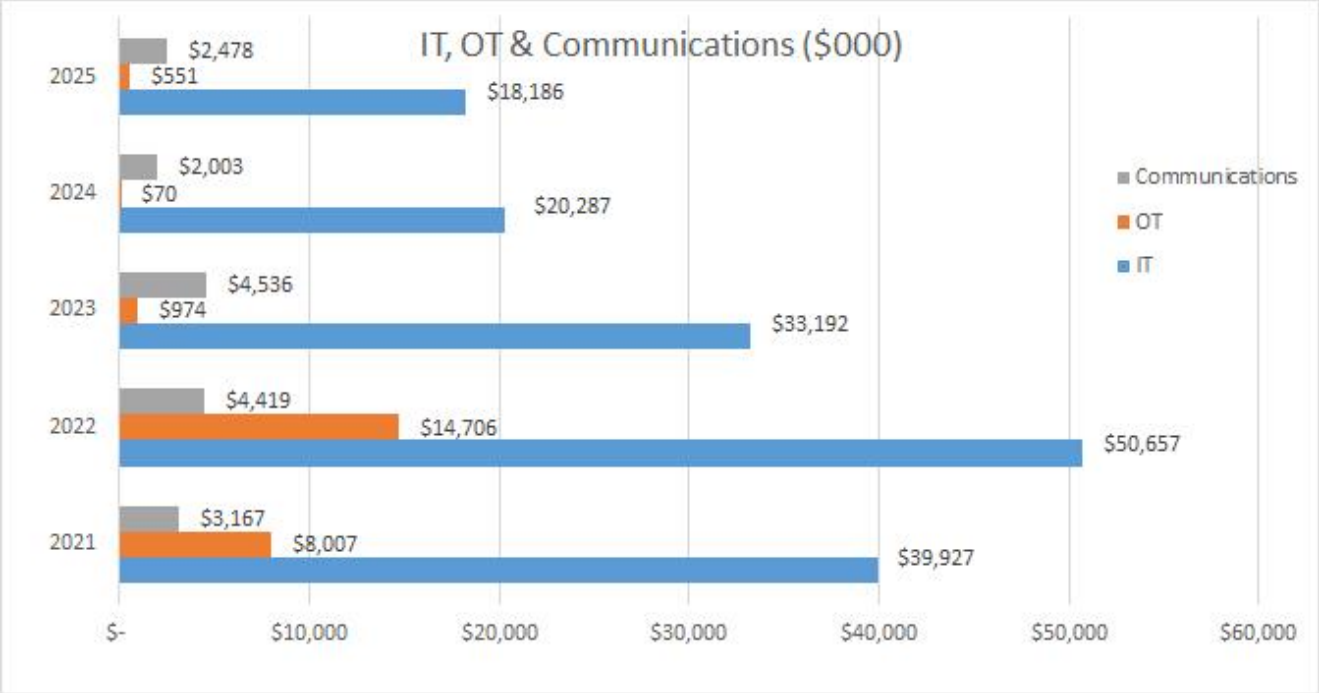
Information & Operational Technology / Communications

Central Hudson is continuing to make strategic investments in Information Technology ("IT") and Operational Technology ("OT") in order to meet rapidly increasing demands of our customers, industry, regulators, workforce and technological changes.

OT's Five Year Capital Plan, $24.3M, reflects continued investment in the upgrade and enhancement of the Distribution Management System ("DMS"). Additionally, $12.5M of OT's Capital Expenditures are allocated for the technological build-out of the Primary Control Center.

IT's Five Year Capital Plan, $162.2M, reflects continued investments in IT systems. Overall, IT's projects and initiatives are grouped into 2 primary categories: Foundational Investments, aligned to the sustainment of the security and maintenance of our systems which enables the continuous support of our business processes; and Transformational Investments in IT systems to modernize and digitize our Company's operations. IT's Foundational Investments make up $49.3M of the total Five Year Capital Plan. The remaining $112.9M is allocated with IT's Transformational Investments. A subset of the transformational investments, amounting to $51.8M, are planned for the transformation of the Mainframe ERP solution to SAP S/4 Hana ERP solution and all related business processes.

The graph below outlines the Five Year IT, OT & Communications Capital Plan for 2021-2025:



IT's Foundational Investments, in line with recent years' trends, are focused on the sustainment of current technology infrastructure and business applications. Such investments include; hardware infrastructure upgrades & refreshes, bolstering the Company's cybersecurity posture, and continued upgrades and enhancements of business process supporting applications. The cybersecurity investments will align the Company with the best practices using the National Institute of Standards and Technology (NIST) as its framework. This framework is designed to identify, protect, detect, respond, and recover cybersecurity activities.

IT's Transformational investments are focused primarily on the completion of the CIS Project and of the transformation of the Mainframe ERP solution.

The ERP Transformation will include the migration of existing business processes currently on the ERP Mainframe to the SAP S/4 ERP solution. The SAP S/4 ERP solution is currently being implemented by the CIS Project and is scheduled to go-live mid-2021. By investing and further leveraging the SAP S/4 solution, this will enable the business to deliver on implementing best practices and running those processes more efficiently and in a cost-effective manner. The current ERP Mainframe presents the Company with 3 key areas of risk: increasingly complex system design, restrictive Cybersecurity and Disaster Recovery, and the decreasing availability of the technical workforce. By migrating the business processes to the SAP S/4 ERP solution, this will mitigate the risk currently present in the business and leverage the economies of scale by using the ERP platform that CIS is being built out on.

In addition to the ERP Transformation, investment is planned for several other initiatives that are designed to transform the business processes and enable efficiencies across the Company. Initiatives include; development of a robust analytics platform the enables efficient data-driven-decisions and self-service capabilities, deployment of a user-friendly content management and collaboration platform, transformation of platforms that support digital customer interactions,

enhanced Human Resource system capabilities and updated Corporate network. Outlined below are the other major transformative initiatives during the coming years:

- **Enterprise Analytics & Reporting** – Deployment of a robust Analytics and Reporting platform that enables employee self-service and data driven, real-time, business decisions.
- **Enterprise Content Management** – Deployment of a robust collaboration and content management platform that will enable employees to work anywhere, anytime from any device while ensuring the necessary compliance and records retentions policies are adhered to.
- **Digital Customer Experience Investments (Previously DICE)** – Investments in digital customer interaction channels to enhance and develop seamless customer interactions. The channels in focus include, but are not limited to: voice, mobile, and web. Investments in these channels will allow customers to interact with the Company how they please, and on their timetable.
- **ERP Transformation (Enterprise Work & Asset Management & Finance Transformation)** – As is described above, the transformation of the Mainframe ERP solution is the foundation for the IT Strategy & Roadmap over the next 5 years. The transformation of the Mainframe ERP solution to the SAP S/4 ERP solution will enable business and technology efficiencies by fully leveraging the integrated enterprise solution.
- **Communications** - Within the Communication budget is funding for the completion of the Company's Network Strategy project and several other initiatives focused on the Company's Land Mobile Radio System. The Network Strategy project is an enterprise solution to address communication needs among the company's fixed assets and is nearing completion. The completion of this initiative is $6.3M. Additional funding for the continued enhancements equal $3.4M. Funding is also included for the enhancement and upgrade of the Company's mission critical Land Mobile Radio system. This system provides communication between dispatchers and field crews. Funding for this initiative is $6.9M. Funding for the total Communications budget is $16.6M within the Five Year Capital Program.

Transportation and Tools

The Tools budget consists of equipping new vehicles with tools, and addressing obsolescence and incompatibility, decreased reliability, discontinued manufacturer support, and conformance to changing OSHA or other regulations. Specialized tools required to accomplish new tasks or support the application of new techniques are typically purchased after a trial use period.

The Transportation Capital Forecast is based primarily on the replacement of equipment. Historically, light duty vehicles were replaced every 10 years/150k miles, medium duty trucks every 12 years/150k miles, and power operated equipment (bucket trucks) every 12 yrs. /13,000 engine hours. In 2015, new replacement criteria were implemented based on industry benchmarking information for each class of vehicle. This resulted in an updated fleet replacement schedule that replaces light/medium duty units at 7 years / 120k miles and heavy duty units at 10 years / 9,500 engine hours. The changes in criteria were designed to increase fleet reliability and availability, and

control expense and O&M costs as vehicles and equipment neared the end of their lifecycle. In addition, the expanded capital construction program and in some cases the type of work (i.e., off-road) were factored into the forecast. Results of the analysis and implementation of new methodology resulted in the following:

- $53M to be spent over the next 5 years to align with the updated useful lives ("flush the fleet");
- Reduces average fleet age and *"caps"* fleet age at 10 years
- More levelized spend over the next 5 years;
- With new mileage and hour tracking systems being installed, fleet can be managed on utilization – most vehicles will be replaced before they reach 10 years old

SUMMARY SCHEDULES 2021-2025 FORECAST

2020- 2025 Construction Forecast ($000's)
INSTALLATION W/ AFUDC
(with inflation & OH adjustment)

		Expenditures with AFUDC										
		2020 Budget	2021 Proposed Budget (1st Half)	2021 Proposed Budget (2nd Half)	2021 Proposed Budget	2022 Proposed Budget (1st Half)	2022 Proposed Budget (2nd Half)	2022 Proposed Budget	2023 Proposed Budget	2024 Proposed Budget	2025 Proposed Budget	2021-2025 Proposed Budget Total
ELECTRIC PROGRAM												
Hydro & Gas Turbines	**11**	1,442	680	4,123	4,803	3,923	3,923	7,846	5,188	4,812	2,246	24,895
Transmission	**12**	21,677	11,370	13,381	24,750	12,483	14,432	26,915	23,351	27,683	30,766	133,465
Substations	**13**	19,791	10,189	13,604	23,793	7,403	10,852	18,255	20,670	25,022	12,660	100,401
New Business	**14**	6,687	3,532	3,491	7,023	3,557	3,515	7,072	7,311	7,921	8,005	37,332
Dist. Improvements	**15**	37,493	20,303	26,652	46,956	26,835	33,703	60,538	56,026	57,635	57,507	278,662
Transformers	**16**	5,914	2,996	2,996	5,993	3,114	3,114	6,229	6,485	6,758	7,029	32,493
Meters	**17**	2,668	1,672	4,162	5,835	1,489	1,489	2,979	3,196	3,431	3,670	19,110
Total Electric Program		95,673	50,743	68,410	119,153	58,805	71,028	129,833	122,228	133,263	121,883	626,359
GAS PROGRAM												
Production	**21**	-	-	-	-	-	-	-	-	-	-	-
Transmission	**22**	1,591	471	1,494	1,965	1,073	1,044	2,117	2,134	2,276	2,237	10,729
Regulator Stations	**23**	2,559	1,103	1,773	2,876	1,529	1,529	3,057	2,933	3,020	3,381	15,268
New Business	**24**	9,789	4,885	4,930	9,815	4,874	4,874	9,749	9,679	9,916	9,625	48,784
Dist. Improvements	**25**	38,746	17,226	25,935	43,161	17,425	26,236	43,661	43,430	42,887	43,085	216,224
Meters	**27**	2,709	1,503	1,503	3,007	1,585	1,585	3,171	3,358	3,576	3,769	16,881
Total Gas Program		55,395	25,188	35,636	60,824	26,487	35,268	61,755	61,534	61,677	62,097	307,887
COMMON PROGRAM												
Buildings	**41**	18,465	22,426	23,068	45,494	22,708	22,708	45,416	10,474	8,872	4,441	114,697
Buildings Minors		4,126	5,010	5,153	10,163	3,418	3,418	6,835	5,509	5,509	2,697	30,712
Major Expansion		14,338	17,417	17,915	35,331	19,290	19,290	38,581	4,966	3,362	1,745	83,985
Office Equipment	**42**	23,834	19,366	29,390	48,756	33,073	33,073	66,145	35,036	21,155	19,557	190,648
General	**421**	307	106	106	212	166	166	331	288	312	325	1,467
EMS	**423**	2,249	1,849	6,158	8,007	7,353	7,353	14,706	974	70	551	24,309
EDP	**4222**	3,139	1,314	2,416	3,730	1,838	1,838	3,675	3,966	2,944	3,380	17,695
Software	**4220**	17,526	15,741	20,456	36,197	23,491	23,491	46,982	29,225	17,343	14,806	144,554
Security	**424**	613	356	254	610	225	225	451	582	486	496	2,623
Tools	**43**	1,479	708	708	1,416	780	780	1,560	1,624	1,690	1,760	8,051
Communication	**44**	7,019	612	2,555	3,167	2,339	2,080	4,419	4,536	2,003	2,478	16,604
Transportation	**45**	9,773	4,933	4,933	9,866	5,128	5,128	10,257	10,680	11,126	11,574	53,503
Total Common Program		60,570	48,045	60,654	108,699	64,028	63,769	127,797	62,350	44,846	39,810	383,502
CORPORATE TOTAL		211,637	123,976	164,700	288,676	149,320	170,065	319,385	246,112	239,786	223,790	1,317,748

2020- 2025 Construction Forecast ($000's)
REMOVAL
(with inflation)

		Expenditures								
		2020 Budget	2021 Proposed Budget (1st Half)	2021 Proposed Budget (2nd Half)	2021 Proposed Budget	2022 Proposed Budget	2023 Proposed Budget	2024 Proposed Budget	2025 Proposed Budget	2021-2025 Proposed Budget Total
ELECTRIC PROGRAM										
Hydro & Gas Turbines	**11**	87	28	48	76	161	79	81	4,490	4,887
Transmission	**12**	3,510	924	3,040	3,965	5,752	4,635	6,205	5,099	25,655
Substations	**13**	2,136	909	1,320	2,229	2,178	2,607	2,454	2,314	11,781
New Business	**14**	256	127	127	254	259	264	270	275	1,323
Dist. Improvements	**15**	2,351	2,240	2,939	5,179	6,131	5,695	5,758	5,833	28,596
Transformers	**16**	409	203	203	406	414	423	432	441	2,116
Meters	**17**	10	5	5	10	10	11	11	11	53
Total Electric Program		8,759	4,437	7,682	12,119	14,906	13,714	15,209	18,462	74,410
GAS PROGRAM										
Production	**21**	-	-	-	-	-	-	-	-	-
Transmission	**22**	61	41	41	81	83	74	65	105	408
Regulator Stations	**23**	118	76	76	152	187	116	151	187	794
New Business	**24**	204	102	102	203	207	212	216	220	1,058
Dist. Improvements	**25**	1,329	660	660	1,321	1,347	1,375	1,403	1,432	6,878
Meters	**27**	4	2	2	4	4	4	4	4	21
Total Gas Program		1,716	881	881	1,761	1,828	1,782	1,839	1,949	9,159
COMMON PROGRAM										
Buildings	**41**	285	483	483	965	560	577	442	275	2,819
Buildings Minors		285	483	483	965	560	333	70	72	2,000
Major Expansion		-	-	-	-	-	243	372	204	819
										-
Office Equipment	**42**	-	-	-	-	-	-	-	-	-
General	**421**	-	-	-	-	-	-	-	-	-
EMS	**423**	-	-	-	-	-	-	-	-	-
EDP	**4222**	-	-	-	-	-	-	-	-	-
Software	**4220**	-	-	-	-	-	-	-	-	-
Security	**424**	-	-	-	-	-	-	-	-	-
Tools	**43**	0	0	0	0	0	0	0	0	1
Communication	**44**	1	1	1	1	1	1	1	1	5
Transportation	**45**	(450)	(225)	(225)	(450)	(450)	(450)	(450)	(450)	(2,250)
Total Common Program		(164)	258	258	516	111	128	(6)	(173)	575
CORPORATE TOTAL		10,312	5,576	8,821	14,397	16,844	15,623	17,042	20,238	84,143

ELECTRIC PROGRAM INDIVIDUAL PROJECT SUBMITTAL

Budget Submittal Form for Electric Projects

Project Name: DASHVILLE RUBBER GATE AND HEAD GATE REPLACEMENT

Form submitted by: Michael Hogan

Budget Group: 11 - Hydro & Gas Turbines

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: ALL

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

A Bridgestone rubber gate system was installed in 2000. It has been developing cracks/dry rote over the years and has undergone a few repairs due to damage from large trees that hit and rips a hole in the gate. By 2022 the product will be 22 years old and is reaching the end of its useful life. It has perform well and has eliminated a large portion of time the RMO had to work in a hazardous environment.

This project requires the construction of a coffer dam. That will limit the water to the dam and headworks. The head-gate at the head-works is laking and the wood material is getting soft. Since this is the only thing holding back the water when the unit needs to be shut down due to equipment failure or maintenance, maintaining and insuring its structural integrity is very important. Since is it leaking, the wood is getting soft and it has been in service for 22 years, it needs to be replaced for both unit and employee safety.

Solution

Install the following:

- Plates that hold the gate in place
- Rubber Gate for main spillway
- Rubber Gate at Sluice
- New Head Gate

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,125,000	$259,000	$1,866,000	$0	$0	$0	$0
Expense							

Cost Risks

- [x] Environmental — High water conditions can cause delays in schedule and increase costs.
- [x] Timing/Permitting — Approval of DEC permit applicaion could delay project
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — Eliminates time employees are out on dam and holds back water to plant.
- ☑ Public Safety — Could avoid dam failure
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Dashville Major Overhaul #1

Form submitted by: Michael Hogan

Budget Group: 11 - Hydro & Gas Turbines

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: ALL

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

In 2010, O'Connell Electric Co. Inc. tested this unit. When compared to test data from October 29, 1998, the Doble power factor test data for both the ground and inter-phase tests have increased significantly. Comparison of the megohmeter test data also indicates deterioration. The average of the Polarization index tests is 1.75. The P1 is the 10 minute megohmeter reading divided by the one minute reading. This is outside the acceptable range since a minimum value of two (2) is needed for satisfactory insulation results.

The recommendation was to rewind the unit. It was last rewound in 1974 and scheduling this for 2023 makes it 49 years old and 13 years past the last test that were borderline at best.

Solution

The project will involve the removal of the rotor, a rewinding of all poles, and reinstalling the rotor. It will also include investigating and repairing, as necessary, the stator section of the generator.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,905,000	0	$536,000	$4,369,000	0	0	0
Expense							

Cost Risks

- [x] Environmental — High Water conditions and cold weather can cause delays in schedule and increase costs.
- [x] Timing/Permitting — Schedule ties to manufacture's shop schedule
- [ ] Manpower
- [ ] Other

Primary Project Objective Economic

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Plant saves customers $600/yr in avoided ISO market costs
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Dashville Major Overhaul #2

Form submitted by: Michael Hogan

Budget Group: 11 - Hydro & Gas Turbines

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: ALL

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The unit was last overhauled in 1999. The generator and wet section both had work performed on them but were not rewound or replaced. In 2010, O'Connell Electric Co. Inc. tested this unit and found the Doble power factor to ground and inter-phase test data increasing from previous years, but at that time it was within acceptable limits. The winding resistance, DC resistance to ground (Megohmmeter) and Polarization Index test data was also within acceptable limits at that time. By 2024, this unit will have over 20 years of operations since the last overhaul and over 40 years since any rewind work. The wet section had the runner refurbished during the last major. Since that will have reached 25 years of operation and based on visual inspections of the runner, the runner appears that it may also need to be replaced in 2024.

Solution

The unit will be tested, disassembled, inspected and parts needing to be replaced will be identified and replaced. Based on the time in service and the test and inspection data, this project will likely involve the removal of the rotor, a rewind of all rotor poles, and reinstalling the rotor onto the old shaft, unless there is a problem discovered with the shaft inspection. A new runner will also be required. The runner will be removed from the shaft and a new one manufactured and placed back on the old shaft.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,996,000	$0	$0	$546,000	$4,450,000	$0	$0
Expense							

Cost Risks

- [x] Environmental — High Water conditions and cold weather can cause delays in schedule and increase costs.
- [x] Timing/Permitting — Schedule ties to manufacture's shop schedule
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Plant saves custom $600/yr in avoided capacity and energy costs
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Sturgeon Pool Major Overhaul #2

Form submitted by: Michael Hogan

Budget Group: 11 - Hydro & Gas Turbines

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: ALL

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The last major overhaul on unit #2 was back in 1991 for the wet sections and 1995 for the generator. Good practice is to overhaul the unit at least every 20 years or sooner if the units appears to be deteriorating. It has been over 25 years since any major work has been done on this unit. Generator test results for this unit have indicated that the insulation is starting to fail. For example, rotor resistance for other units are around 3 ohms while this unit is close to 100 ohms. Inspection of the wet section also indicate that the unit's runner has significant erosion. There are three sister units at this location and Unit #1 had an electric failure and also had a runner that needed to be replace. Based on this, the unit requires a major overhaul. When the unit is ultimately taken apart, the full scope of work will be refined but the data indicates that the 26 rotor poles will need to be sent out to be rewound and the runner replaced.

Solution

The unit will be tested, disassembled, inspected and parts needing to be replaced will be identified and replaced. Based on the inspections to date, this project will likely involve the removal of the rotor, a rewind of all poles, and reinstalling the rotor onto the old shaft, unless there is a problem discovered with the shaft inspection. A new runner will also be required. The runner will be removed from the shaft and a new one manufactured and placed back on the old shaft.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$5,877,000	$703,000	$5,175,000	$0	$0	$0	$0
Expense							

Cost Risks

- [x] Environmental — High Water conditions and cold weather can cause delays in schedule and increase costs.
- [x] Timing/Permitting — Schedule ties to manufacture's shop schedule
- [ ] Manpower
- [x] Other — Full scope is unknown until the unit is fully dissembled.

Primary Project Objective Economic

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Plant has just over $3m/yr in avoided capacity and energy costs to customers
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Sturgeon Pool Major Overhaul #3

Form submitted by: Michael Hogan

Budget Group: 11 - Hydro & Gas Turbines

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: ALL

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The last major overhaul on unit #3 was back in 1991 for the wet sections and 1983 for the generator. Good practice is to overhaul the unit at least every 20 years or sooner if the units appears to be deteriorating. It has been 29 years since any major work has been done on this unit, so this unit is past due to an overhaul. Generator test results indicate that electrically the unit's insulation is holding up but cannot be confirmed until the unit is dismantled and inspected. Partial inspections of the wet section indicates that the runner is showing signs of significant erosion but the full extent canot be determined untilt he unit is fully dismantled. There are three sister units at this location and Unit #1 had an electric failure and also had a runner that needed to be replace. Based on this, the unit requires a major overhaul. When the unit is ultimately taken apart, the full scope of work will be refined but the assumption is that the rotor poles will not have to be replaced but the runner will need to be replaced.

Solution

The unit will be tested, disassembled, inspected and parts needing to be replaced will be identified and replaced. Based on the inspections to date, this project will likely involve a new runner. The runner will be removed from the shaft and a new one manufactured and placed back on the old shaft.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,428,000	$3,428,000		$0	$0	$0	$0
Expense							

Cost Risks

- [x] Environmental — High Water conditions and cold weather can cause delays in schedule and increase costs.
- [x] Timing/Permitting — Schedule ties to manufacture's shop schedule
- [ ] Manpower
- [x] Other — Full scope is unknown until the unit is fully dissembled.

Primary Project Objective Economic

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Plant has just over $3m/yr in avoided capacity and energy costs to customers
- [x] Other — Full scope is unknown until the unit is fully dissembled

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Sturgeon Pool Building Windows

Form submitted by: Michael Hogan

Budget Group: 11 - Hydro & Gas Turbines

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: ALL

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The windows are very rusted and will begin to come under question on their structural integrity. Planned replacement is needed to maintain the facility in a safe and functional condition. The existing windows contain asbestos and is the main reason for the high cost estimate.

Solution

Remove old windows with asbestos and replace with new frame and windows

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,098,000	$0	$0	$0	$0	$1,098,000	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Keep building dry and help with safe lighting levels.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — Failure could result in injury or death or death
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: High Priority Repair (HPR) Program

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Non-Discretionary

Investment Category: Compliance

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Transmission lines are inspected on a cyclical basis with varying methods ranging from aerial patrols to comprehensive ground patrols. Inspection results are stored in a searchable database, currently the Wagner NextGrid System. This database contains data recorded from all types of inspection methods including aerial patrol, comprehensive aerial inspection, comprehensive ground inspection, ground line testing and treatment, climbing inspection, corona camera inspection, infrared inspection, and other types of inspection as well. Inspection data is recorded for all transmission assets including poles, insulators, guy wires and anchors, structure hardware, foundations, grounding, conductors, static wires, suspect clearances, and right of ways (including encroachments, vegetation, access, etc). After the completion of each inspection cycle, results are analyzed and condition assessments are assigned to the appropriate component of each structure. These conditions are rated on a scale from "1" to "6" with "6" being in the most need of repair. Components with ratings of either "6", "5" or "4" must be repaired or replaced within 2 weeks, 1 year and 3 years, respectively, after the date of the assessment.

Solution

There is a need to provide funding to respond to the results of the inspection process described above. In some instances components can simply be replaced while in other instances an entire structure might need to be replaced. The design work is then completed and materials ordered. Aside from emergency replacements, HPR driven replacements are typically grouped in packages by line and location to efficiently utilize field resources.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	25,460,000	4,786,000	4,470,000	5,170,000	5,535,000	5,500,000	25,000,000
Expense							

Cost Risks

- [x] Environmental — Matting may be needed for equipment access in swampy areas
- [x] Timing/Permitting — Long lead time permitting may prolong project construction start
- [ ] Manpower
- [x] Other — Outage availability has potential to affect construction schedule

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Repair of conditions within the proper timeframes
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☑ Failure Rates — Reduce the risk of increased failure rates due to aged infrastructure
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition — Mitigation of aged infrastructure
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Transmission Minor Projects

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Non-Discretionary

Investment Category: Daily Operations

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Minor Transmission projects arise throughout the year. These projects are not large enough to warrant a line item in the capital budget/forecast. Typically these jobs include the need to update/replace equipment installed on a transmission lines such as:

Failed/Damaged:

- Insulators
- Conductor
- Poles
- Structure members
- Other Equipment that fails and is beyond repair
- Minor Pole Relocations

Solution

Install new and update existing equipment as required during the course of a year that is not specifically tied to a major project. Budget projections include for (9) basic single pole replacements annually based on historical project data.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,405,000	273,000	257,000	279,000	299,000	297,000	1,250,000
Expense							

Cost Risks

- [x] Environmental — If matting required, could be costly given immediate and depending on availability
- [x] Timing/Permitting — May require immediate repair depending on severity of the damage.
- [ ] Manpower
- [x] Other — May advance adjacent HPR Related replacement work depending on the level of access need to reach the priority structures

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety — Mitigate any unsafe condition as result of equipment failures
- ☐ Other Program Type

Compliance

- ☑ Inspections — Addressing high risk findings from the inspection program
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☑ Other Program Type — Completed in parallel with HPR Program

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☑ Failure Rates — Improve this through preventative replacement
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition — Address conditions indicating imminent failure
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Network Strategy

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

In 2015, Central Hudson's Network Strategy Group created a comprehensive plan to install various communication systems throughout the service territory. These communication systems would be placed strategically to allow for efficient and secure company communications between various critical facilities.

Solution

The Network Strategy Group has identified several existing transmission lines which provide existing pathways that can be utilized for communication connections as part of the overall system communication plan. Central Hudson will be installing fiber optic communication on these existing electric transmission pole plants over the course of the next 5 years.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,206,000	1,206,000					
Expense							

Cost Risks

- [x] Environmental — Requires access to every structure on the line which may require matting / extensive permits
- [x] Timing/Permitting — Public Service Commision Milestone Target Dates
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Justified by business case
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Conduct High Priority Replacement Jobs in conjunction with this work
- ☑ Other Program Type Communication upgrades utilizing existing pole plant

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: ROW Repair Project

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: System Enhancement

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson had committed voluntarily to obtain additional right of way as follow up to the Northeast Blackout of 2003. The report to the PSC stated that we would identify easements that were deficient from the standard of 100 foot on 69kV and 115kV lines and 150 foot on 345kV lines.

Solution

Central Hudson is identifying easement deficiencies along its 69kV, 115kV and 345kV transmission line corridors. The adjacent property owners are being identified and, if not already, will be contacted in an attempt to acquire the additional ROW as needed to mitigate the deficiencies. A vendor will be chosen to provide all of the required work and services to document and obtain additional easement agreements throughout the service territory.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	2,835,000	403,000	522,000	620,000	739,000	550,000	
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — Negotiation with land owners may vary and in some cases may not be possible.
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety — Provide sufficient buffer to help prevent against encroachments
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☑ Accessibility (Off Road, underground) — Improves Access to Structures
- ☑ Strategic Replacement — Acquire ROW essential to maintenance of existing facilities
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 69kV KM Line Rebuild - Knapps Corners to Myers Corners - 102C

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The 2.85 mile 69 kV KM line from Knapps Corners to Myers Corners was built in the 1920's with wood pole construction. Inspection results indicate that approximately 58% of the structures are in need of replacement due to the poor condition. Additionally, portions of the static wire are 5/16" steel, which has been been identified as problematic and is in need of replacement/upgrade. The additional load from the upgraded static wire requires the replacement of additional structures (the number remains to be determined).

Solution

Central Hudson will be rebuilding the KM Line for 69kV from the Knapps Corners Substation to the Myers Corners Substation with OPGW to support the expansion of the fiber network and to maintain reliability.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	3,320,000	209,000	3,111,000				
Expense							

Cost Risks

- [x] Environmental — Potential for Matting and scheduling constraints due to clearing restrictions
- [x] Timing/Permitting — Local approvals needed to begin work, Project may require PSC Part 102C report
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Mitigate Existing Sev.4 and Sev. 5 HPR Conditions on the Line
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 60+ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition — Most of the line is of the original vintage and at the end of its service life
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: EP2017-010 and EP2005-010

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 69kV TV Line Rebuild - Myers Corners to North Chelsea - 102C

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The 6.3 mile 69 kV TV line from Myers Corners to North Chelsea was built in the 1920's with wood pole construction. Inspection results indicate that approximately 53% of the structures are in need of replacement due to the poor condition. The transmission supply to Meyers Corners Substation currently is limited by the area transmission (North Chelsea 115/69 kV transformer). Myers Corners Substation currently is operating at 69 kV and is designed for 115 kV operation.

Solution

In order to maintain reliability and to provide sufficient load serving capability to the Myers Corners area, Central Hudson will be rebuilding the TV Line for 69kV from the Myers Corners Substation to the North Chelsea Substation with OPGW to support the expansion of the fiber network.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	7,322,000	7,113,000	209,000				
Expense							

Cost Risks

- [x] Environmental — Potential for Matting and scheduling constraints due to clearing restrictions
- [x] Timing/Permitting — Local approvals needed to begin work, Project may require PSC Part 102C report
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections: Mitigate Existing Sev.4 and Sev. 5 HPR Conditions on the Line
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure: 60+ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition: Most of the line is of the original vintage and at the end of its service life
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | E.P#2017-010 |

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: SB Line New 115kV Line Hurley Ave to Saugerties

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The 69 kV H & SB Lines connect the North Catskill, Saugerties & Hurley Avenue Substations. Together, the lines are approximately 23.4 miles in length. The 11.1 mile portion of the line from Hurley Avenue to Saugerties is designated as the SB Line. The majority of structures and conductor on this line were built in 1919 and are close to reaching the end of their useful life. There are also a number of spans identified on this line as part of Central Hudson's SAG Mitigation program.

Solution

To address the aging infrastructure and provide the potential for additional area load serving capability to the Northwest Area, the chosen course of action is to rebuild the SB Line for 115 kV. The 115 kV SB line rebuild and an additional 115 kV reinforcement in the Northwest Area will also help maintain system reliability. The budgetary cost estimates below reflect the conceptual estimates found in the relevant planning memo (EP2015-003) as well as additional adjustments based on similar in-progress article VII actual expenditures.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	23,426,000	8,891,000	13,823,000	547,000	111,000	55,000	
Expense							

Cost Risks

- [x] Environmental — Lead paint containment associated with existing tower removals
- [x] Timing/Permitting — Permitting completion of Article VII required before start of project
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Address existing Sev.4 and Sev.5 Findings
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure 90+ years
- ☑ Failure Rates — Improve this through preventative replacement
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement — Optimize structure placement through new design
- ☑ Other Program Type — Address SAG Spans deferred from the 2007 SAG Program

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: EP2015-003

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: H Line New 115kV Saugerties to North Catskill

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The 69 kV H & SB Lines connect the North Catskill, Saugerties & Hurley Avenue Substations. Together, the lines are approximately 23.4 miles in length. The 12.3 mile portion of the line from North Catskill to Saugerties is designated as the H Line. The majority of structures and conductor on this line were built in 1919 and are close to reaching the end of their useful life. There are also a number of spans identified on this line as part of Central Hudson's SAG Mitigation program.

Solution

To address the aging infrastructure and potentially provide additional area load serving capability to the Northwest Area, the chosen course of action is to rebuild the H Line for 115 kV. The 115 kV H line rebuild and an additional 115 kV reinforcement in the Northwest Area will also help maintain system reliability. The budgetary cost estimates below reflect the conceptual estimates found in the relevant planning memo (EP2015-003) as well as additional adjustments based on similar in-progress article VII actual expenditures.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	23,606,000	504,000	2,756,000	12,908,000	7,328,000	110,000	
Expense							

Cost Risks

- [x] Environmental — Lead paint containment associated with existing tower removals
- [x] Timing/Permitting — Permitting completion required before start of project
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Address existing Sev.4 and Sev.5 Findings
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 90+ years
- ☑ Failure Rates — Improve this through preventative replacement
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement — Optimize structure placement through new design
- ☑ Other Program Type — Address SAG Spans deferred from the 2007 SAG Program

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: EP2015-003

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: HG Line 69kV Rebuild (Honk Falls - Neversink)

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The 69kV "HG" Line is 16.25 miles in length. The line was constructed in two pieces, one in the late 1930's and the other in the early 1940's. The line is a vital piece of Central Hudson's 69kV Electric Transmission loop in the Ellenville area and provides service to (3) hydro-generation facilities. Despite conducting numerous maintenance projects on the line, inspection findings indicate that approximately 54% of the line is still in need of replacement as a results of aging infrastructure and poor overall condition. In addition to the required structure work, Central Hudson has also experienced several in-service failures of the conductor which resulted in outages. The vast majority of the conductor is of the original line vintage and has required numerous repairs over the past several years.

Solution

Given the amount of structures requiring repair or replacement and the age / condition of the conductor, Central Hudson is proposing a complete rebuild of the entire 16.25 miles of the 69kV "HG" Line from the Honk Falls Substation to the Neversink Substation per CHG&E Planning Memo EP2018-009.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	23,857,000	151,000	261,000	3,464,000	11,291,000	8,690,000	
Expense							

Cost Risks

- [x] Environmental — Matting for Access, difficult terrain may require comprehensive road improvements for access
- [x] Timing/Permitting — Part 102C may be required as well as numerous local and environmental permits
- [ ] Manpower
- [x] Other — Outage constraints involving the NYC DEP and ability of hydro-generation facilities to operate during critical time periods throughout the year.

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [x] Critical Customers — NYC Board of Water Supply - Hydro Generation Facilities
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Mitigate Existing Sev.4 and Sev. 5 HPR Conditions on the Line
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure — 80+ years
- ☑ Failure Rates — Reduced rate of failure through preemptive replacements
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition — Most of the line is of the original vintage and at the end of its service life
- ☑ Accessibility (Off Road, underground) — establish permanent long-term access
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | EP2018-009

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Q Line 69kV Rebuild (Pleasant Valley - Rhinebeck)

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The 69kV "Q" Line is 20.5 miles in length. The line was constructed in the late 1950's and is comprised of a 4 mile section of 40 lattice towers and a 16.5 mile section of 215 pole structures. The line is a vital piece of Central Hudson's 69kV Electric Transmission infrastructure in Dutchess County and provides a link between the Northern Dutchess area and Pleasant Valley. Despite conducting numerous maintenance projects on the line, inspection findings indicate that approximately 65% of the wood pole line section is still in need of replacement or repair as a results of aging infrastructure and poor overall condition. In addition to the required structure work, Central Hudson has also experienced several in-service failures of the static wire which has resulted in outages. The vast majority of the both the static and conductor wire is of the original line vintage and has required numerous repairs over the past several years.

Solution

Given the amount of structures requiring repair or replacement and the age / condition of the conductor and static, Central Hudson is proposing a complete rebuild of the entire 16.5 mile pole section of the 69kV "Q" Line and re-conductor of the tower line section. This Project Sheet is intended as a placeholder with a conceptual level estimate. A planning memo is in-progress and will be available later in 2020.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	14,169,000	101,000	157,000	258,000	2,214,000	11,439,000	12,400,000
Expense							

Cost Risks

- [x] Environmental — Matting for Access, difficult terrain may require comprehensive road improvements for access
- [x] Timing/Permitting — Part 102C may be required as well as numerous local and environmental permits
- [ ] Manpower
- [x] Other — Specific construction sequencing and construction techniques may be needed to ensure acceptable system reliability during installation.

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [x] Critical Customers — NYC Board of Water Supply - Hydro Generation Facilities
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Mitigate Existing Sev.4 and Sev. 5 HPR Conditions on the Line
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 60+ years
- ☑ Failure Rates — Reduced rate of failure through preemptive replacements
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition — Most of the line is of the original vintage and at the end of its service life
- ☑ Accessibility (Off Road, underground) — establish permanent long-term access
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: Planning Memo in-progress

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: SK Line Rebuild - 115kV

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

Summary Category: Non-Discretionary

Investment Category: Compliance

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Field inspection findings on the 2.4 mile 115kV "SK" Line (Knapp's Corners Substation - Spackenkill Road Substation) showed that over 75% of the existing structure plant would require replacement due to component defects with an additional 5% of structures exhibiting significant defects. Recent Right of Way deficiency surveys have also indicated that the line is currently offset within the existing 100ft-wide easement corridor creating a deficiency to one side.

Solution

Given the level of replacement needed to repair the identified component defects, as well as the need to address the identified deficiencies, it has been proposed to rebuild all 2.4 miles of the existing 115kV "SK" Line. This would include replacement of all structures, conductor and overhead ground wire while allowing the re-alignment of the centerline to the middle of the existing R.O.W to correct the identified deficiencies without the need to pursue additional easement rights from private landowners. The voltage is planned to remain at 115kV with increases in conductor size. OPGW (fiber optic ground wire) will be installed as part of the rebuild project in accordance with the needs of the Network Strategy Group. Details of the rebuild parameters can be found in the referenced Planning Memo below.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	4,391,000		52,000	103,000	111,000	4,125,000	
Expense							

Cost Risks

- [x] Environmental — Potential need for matting and restrictions on tree clearing
- [x] Timing/Permitting — Outage restrictions associated with connection into IBM Poughkeepsie
- [x] Manpower — Additional Manpower may be required support construction
- [x] Other — Local Municipal approval can be unpredictable in scope and effort and has the potential to affect schedule.

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [x] Critical Customers — IBM Poughkeepsie
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections — Mitigate Existing Sev.4 and Sev. 5 HPR Conditions on the Line
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☑ Failure Rates — Reduce failure rate through preemptive replacement
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition — Most of the line is of the original vintage and at the end of its service life
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement — Incorporation of Network Strategy OPGW Installation
- ☑ Other Program Type — Driven by HPR Condition findings.

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | EP#2020-001

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Hurley Avenue Smart Wires

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The NYISO conducted a System Deliverability Study that found that the UPNY-SENY interface was constrained. NYISO proposed 21% of Series Compensation on the 345 kV Leeds-Hurley Avenue 301 Line to make all the Class Year projects' capacity deliverable. Due to this constraint, Central Hudson is obligated to initiate a System Delivery Upgrade (SDU) project.

Solution

Based on Central Hudson's experience with Marcy South Series Compensation, traditional series compensation systems will likely cause significant impacts on area protection schemes. Central Hudson has evaluated the use of the Smart Valve solution in lieu of traditional series compensation. Smart Wires Smart Valve solution will have significantly less system impacts in lower costs and provide other benefits as compared to the original proposed series compensation. Smart Wires developed a deployment at Hurley Avenue Substation that will utilize existing land with a modular design for quick expansion (up to 51% compensation).

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,013,000	$3,013,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — Require town board approval.
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☑ Other Program Type NYISO System Deliverability Study

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: Smart Wires: "Hurley Avenue SDU Update", February 13, 2018

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Jansen Avenue Substation Upgrade

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Much of the equipment at the Jansen Avenue Substation has been identified for replacement on the following programs: Breaker Replacement Program, DA/LTC Replacement Program, and the ESP Infrastructure Replacement Program.

Solution

The various programs above have been combined into one substation modernization project.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,865,000	$0	$0	$499,000	$853,000	$513,000	$3,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment is required to be maintained at a lower rate than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Substation Minor Projects

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Non-Discretionary

Investment Category: Daily Operations

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Minor Substation projects are completed throughout the year based on failures and equipment condition assessments. These are smaller scale projects and typically based on the need to update/replace substation equipment including:
Battery Chargers
Meters
Controls
Communications
Other Equipment that fails and is unrepairable

Solution

Install new and update existing equipment as required during the course of a year that is not specifically tied to a major project upgrade.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,764,000	$520,000	$514,000	$560,000	$597,000	$573,000	$2,500,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☑ Failure Rates Reviews of history of equipment failure.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: ESP Infrastructure Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

A variety of equipment exists in Central Hudson substations, including protective relays, meters, recloser controls, and other control & communications equipment such as Remote Terminal Units (RTUs). Each of these components serves an integral role in contribution to the overall, integrated substation protection, control, and monitoring function.

The need for upgraded infrastructure has been made evident through the inclusion of new substations and through various targeted replacement programs, all in the Category 13 Capital Forecast. These programs include the RTU Retrofit Program, the Breaker Replacement Program, and the Generation 1 Relay Replacement Program. These programs only address a sample of individual concerns without giving consideration to remaining equipment in the station that should be upgraded on an integrated basis. Without an integrated program, the remaining outdated equipment in the substations is replaced through attrition solely: an accelerated replacement schedule is recommended that takes advantage of the savings that can be realized by performing incremental work at the same time as previously identified and justified capital work.

Solution

Install new and update existing equipment as required during the course of a year that is not specifically tied to a major project upgrade. These upgrades, when coupled with existing projects in a location, can take advantage of construction efficiencies to reduce overall costs of performing the work separately.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$16,053,000	$904,000	$2,830,000	$2,743,000	$5,225,000	$4,351,000	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☑ Failure Rates Reviews of history of equipment failure.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Replace equip. in order to supply protection & metering options.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | SR#2011-07

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: RTU Replacement Program

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The first and second generation of Remote Terminal Units (RTU's) require more extensive maintenance due to age-related component failures. Many of these RTU's are now unsupported by the manufacturers and have limited or no parts availability for maintenance and repair.

Solution

Planned replacement of first and second generation of RTU's located at Substations, see attached RTU Replacement Table.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,333,000	$122,000	$793,000	$1,599,000	$0	$819,000	$3,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☑ Failure Rates Reviews of history of equipment failure.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Reviews of current conditions of RTUs.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: Central Hudson's "RTU Replacement Table"

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Circuit Breaker Replacement Program (345kV)

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson has on-going condition based circuit breaker replacement program. The majority of power circuit breakers on the Central Hudson System have been in operation for over 40 years. Some of the breakers have operating issues and others are obsolete and do not have spare parts available for repair or maintenance.

Solution

Selective replacement of specific breakers as specified by the program. (This represents the continuation of our on-going circuit breaker replacement program).

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,228,000	$751,000	$749,000	$728,000	$0	$0	$0
Expense							

Cost Risks

- [x] Environmental — Replacement of Old Oil Circuit Breakers.
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [x] Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 40 years
- ☑ Failure Rates Breakers replaced based on failure rates.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Breakers replaced based on deteriorated condition.
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Breakers replaced based on infrastructure upgrades.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | Central Hudson's "BRP 2021-2025 Five Year Forecast"

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Circuit Breaker Replacement Program (115, 69, 34.5, 13.8 kV)

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson has on going condition based circuit breaker replacement program. The majority of power circuit breakers on the Central Hudson System have been in operation for over 40 years. Some of the breakers have operating issues and others are obsolete and do not have spare parts available for repair or maintenance.

Solution

Selective replacement of specific breakers as specified by the program. (This represents the continuation of our on-going circuit breaker replacement program).

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,023,000	$222,000	$382,000	$2,099,000	$320,000	$0	$0
Expense							

Cost Risks

- [x] Environmental — Replacement of Old Oil Circuit Breakers and/or asbestos arc chutes.
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [x] Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [ ] $/COA
- [ ] 5 Year Average # Outages Avoided

Non-Storm Operating

- [ ] $/CMA
- [ ] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 40 years
- ☑ Failure Rates Breakers replaced based on failure rates.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Breakers replaced based on deteriorated condition.
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Breakers replaced based on infrastructure upgrades.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | Central Hudson's "BRP 2021-2025 Five Year Forecast"

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 345 kV Switch Replacement Program

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Problems have been identified with the TTT-7, EA, VR2 and VT-1 style motor operated 345kV air disconnects at the Roseton, Rock Tavern and Hurley Ave substations. Limited to no replacement parts are available for these style switches. These disconnects have reached the end of their useful lives, are problematic, and have resulted in extended time trouble-shooting problems and result in increased callouts. There have been several failures in recent times and due to frequency of operation and general condition.

Solution

With the developing trend of problems and consideration given to the criticality of the bulk 345kV system, a multi-year systematic 345kV disconnect replacement program has been developed.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,682,000	$624,000	$587,000	$799,000	$853,000	$819,000	$2,400,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 40 years
- ☑ Failure Rates Reviews of history of equipment failure.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Switches replaced based on deteriorated condition.
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Switches replaced based on infrastructure upgrades.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | E. Schultz: “Operations Services Infrastructure Projects”, May 10, 2013.

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 115 kV Switch Replacement Program

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Based on condition, age and criticality, Operations Services has identified 115kV disconnect switches as candidates for targeted replacements.
The 115kV Switch Replacement Program will operate similar to our on-going Breaker Replacement Program. Switches will be identified by condition, criticality, age, use, availability of parts, and maintenance issues in order to create a prioritized list for replacement.

Solution

Development of a 115kV switch replacement program.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$5,784,000	$232,000	$734,000	$899,000	$1,999,000	$1,920,000	$3,214,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 40 years
- ☑ Failure Rates Reviews of history of equipment failure.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Switches replaced based on deteriorated condition.
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Switches replaced based on infrastructure upgrades.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Transformer Condition-Based Replacements

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Several existing power transformers have been identified for potential replacement due to condition and are on the above 55 years of age listing. These transformers include:

Smithfield Transformer #1 (69/13.8 kV)
Forgebrook Transformers #1 & #2 (115/13.8 kV)
Pulvers Corners Transformer #4 (69/13.8 kV)
Union Avenue Transformers #1 & #2 (115/13.8 kV)
Tinkertown Transformers #1 & #2 (69/13.8 kV)
Converse Street Transformer #2 (14/4 kV)
East Park Transformer #1 (69/13.8 kV)
Grimley Road Transformer #2 (69/13.8 kV)
Neversink Transformers #3 & #6 (69/13.8 kV)
Ohioville Transformers #1 & #2 (115/13.8 kV)
South Cairo Transformer #1 (69/13.8 kV)

Solution

Replace transformers and any associated relaying as appropriate.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,536,000	$0	$0	$0	$0	$1,536,000	$10,100,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment is required to be maintained at a lower rate than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 55+ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Varying transformer health.
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Prioritized replacements.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Switchgear Condition-Based Replacements

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Several existing switchgears have been identified for replacement due to age and condition. These switchgears are located in the following substations:

Converse Street Substation
Sturgeon Pool Generator
Tioronda Substation
Lincoln Park Substation
Montgomery Street Substation
Forgebrook Substation

Solution

Replace switchgears and any associated relaying as appropriate.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,829,000	$0	$1,032,000	$1,749,000	$0	$2,048,000	$5,900,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment is required to be maintained at a lower rate than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 61 years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Switchgear deterioration.
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Modernization of relaying equipment.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Kerhonkson Substation Autotransformers 115/69kV (2 - 56MVA) T-Sustaining

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing Modena Substation 115kV/69kV single phase autotransformers have reached the end of their useful life. These units are part of a group of sister transformers installed at the Ohioville, North Chelsea and Modena Substations. Based on condition, age and several failures of these single phase units, these transformers are all planned for replacement. Based on a review of the Ellenville Transmission Area, it is recommended that following the retirement of the Modena 115kV/69kV autotransformers, new autotransformers be installed at the Kerhonkson Substation. This work will need to be completed in conjunction with the upgrade of the P and MK Lines to 115kV operation.

In addition to addressing the infrastructure issues, this work will increase the load serving capability within the Ellenville Area. It is recommended to replace the autotransformers and convert the P and MK lines to 115kV operation by 2021. The majority of the work required for the line conversion has been completed previously based predominately on infrastructure issues (rebuild of the P & MK Lines, rebuild of the High Falls, Galeville, Kerhonkson and Sturgeon Pool Substations).

Solution

Install two new 115/69kV autotransformers at the Kerhonkson Substation and reconfigure the 69kV bus at the Honk Falls Substation.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,009,000	$2,009,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- [x] Thermal/Load Serving Capability
  - [ ] Equipment Type
  - [ ] Current % loaded
- [ ] Voltage (Stray, Low, High)
- [ ] Power Quality

Other

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement Part of P & MK area study.
- [ ] Other Program Type

Resilience

- [ ] $/COA (with storm)
- [ ] $/CMA (with storm)
- [ ] Customer Cost of Outage (ICE Calculator)
- [ ] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | Chan, R.: “P & MK Area Study”. E.P. #2010-008. May 2, 2011.

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Myers Corners Substation Switchgear Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing external switchgear has reached the end of its useful life and replacement parts are difficult to obtain or no longer available. The switchgear roof has been repaired over the years but water ingress has damaged much of the inner ceiling.

Solution

It is recommended that the external switchgear be replaced with a new switchgear. The switchgear will contain two bus's with a normally closed tie breaker, 15kV breakers rated 2000A and 1200A, protective relaying, interconnection cabinet, PT's, and station service transformers. The switchgear will contain provisions for future expansion.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,858,000	$1,808,000	$50,000	$0	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — Reduction of the risk of an equipment failure and flash over.
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 39 years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- ☑ Condition — Current conditions of switchgears make it impossible to upgrade equipment.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Woodstock Substation Switchgear Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing external switchgear and control house switchgear has reached the end of its useful life and replacement parts are difficult to obtain or no longer available. Maintenance issues have been experienced with racking the 1947 vintage breakers in the external switchgear. Replacement parts for the racking mechanisms are no longer available.

The external switchgear and control house switchgear have separate DC voltage supplies, a 24 volt and a 48 volt battery system, respectively. There is no room to upgrade either battery system, and maintenance of the system is problematic.

Solution

It is recommended that the external switchgear and control house switchgear be replaced with a new Power Control Center (PCC). The PCC will contain two bus's with a normally open tie breaker, 15kV breakers rated 2000A and 1200A, protective relaying, interconnection cabinet, PT's, station service transformers, RTU, and DC battery system. The PCC will contain provisions for future expansion.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,506,000	$1,506,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — Reduction of the risk of an equipment failure and flash over.
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 71 years
- ☑ Failure Rates — RTU is unreliable.
- ☑ Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- ☑ Condition — Current conditions of switchgears make it impossible to upgrade equipment.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Knapps Corners Substation

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing Knapps Corners Substation was built in 1941 and later expanded in 1953. Based on condition and age, the major substation equipment (power transformers, circuit breakers, disconnect switches, control house, relaying and control equipment) requires replacement.

Solution

Replace the existing Knapps Corners Substation with a new Substation on adjacent property. The existing substation cannot be removed from service during construction and the existing footprint is constrained. This creates difficulties, impacts reliability and increases the cost of rebuilding the substation in the same location. Based on these factors, a new substation will be constructed adjacent to the existing one, and the existing substation will be retired/removed.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,110,000	$2,812,000	$298,000	$0	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 62 years
- ☑ Failure Rates Reviews of history of equipment failure.
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☑ Condition Reviews of current conditions of existing substation equipment.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study: See below.

Or

Project Alternatives Considered

Loeven, E.A.: “Knapps Corners 15 kV Bus Reconfiguration”, S.R.2012-01. June 1, 2012.
Paull, J.: “Knapps Corners Substation Breaker Study”, E.P. # 2009-01. December, 2, 2009.
"New Knapps Corners Substation Justification 20160630". June 30, 2016.

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Milan Substation PLC Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Part of a newly established Programmable Logic Controller (PLC) replacement program. Due to the obsolescence of our existing Programmable Logic Controllers and replaceable components, Central Hudson has determined that for long term longevity, the removal of the PLCs with physical traditional control logic and lock out relays are required.

Solution

The PLC and Human Machine Interface (HMI) at Milan Substation will be removed and traditional control switches and lock out relays will be installed. This includes the installation of new SEL Axion RTU and Annunciator, new control panels with standard W-2 Type Control Switches, and mimic bus.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,114,000	$301,000	$793,000	$20,000	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: New Baltimore Transformer Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Due to their proximity, the Coxackie and New Baltimore Substations provide reserve capability and operating flexibility between the two substations. The existing distribution infrastructure between the substations is aging, in poor condition and has access limitations due to CSX railroad expansion. To maintain reliability and operating flexibility in this area, the distribution infrastructure requires replacement. A review of the area determined that a more cost effective solution is to install a second transformer and associated circuit positions at the New Baltimore Substation.

Solution

Add an additional 12 MVA transformer and associated distribution feeders to the New Baltimore Substation.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,561,000	$301,000	$1,240,000	$20,000	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Provide operational flexibility.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 115KV Terminal Upgrades for High Falls, Galeville and Modena

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing Modena Substation 115kV/69kV single phase autotransformers have reached the end of their useful life. These units are part of a group of sister transformers installed at the Ohioville, North Chelsea and Modena Substations. Based on condition, age and several failures of these single phase units, these transformers are all planned for replacement. Based on a review of the Ellenville Transmission Area, it is recommended that following the retirement of the Modena 115kV/69kV autotransformers, new autotransformers be installed at the Kerhonkson Substation. This work will need to be completed in conjunction with the upgrade of the P and MK Lines to 115kV operation. The majority of the work required for the line conversion has been completed (rebuild of the P & MK Lines, rebuild of the High Falls, Galeville, Kerhonkson and Sturgeon Pool Substations).

To meet our current protection standards, remaining work for the upgrade of the P&MK Lines to 115kV will include protection upgrades, including pilot protection (high speed coverage of 100% of the line) and direct transfer trip for the lines upgrading to 115kV operation.

Solution

Relay pilot schemes will be installed at the High Falls, Galeville, Kerhonkson, and Modena Substations for primary line protection and direct transfer trip.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,144,000	$301,000	$793,000	$50,000	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☑ Strategic Replacement Part of P & MK area study.
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | Chan, R.: “P & MK Area Study”. E.P. #2010-008. May 2, 2011.

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Montgomery Street Substation Switchgear Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing internal switchgear has reached the end of its useful life and replacement parts are difficult to obtain or no longer available. Maintenance issues have been experienced with racking the vintage breakers in the internal switchgear. Replacement parts for the racking mechanisms are no longer available.

Solution

It is recommended that the internal switchgear be replaced with a new switchgear. The switchgear will contain three bus's with normally closed tie breakers, 15kV breakers rated 2000A and 1200A, protective relaying, interconnection cabinet, PT's, and station service transformers. The switchgear will contain provisions for future expansion.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,873,000	$301,000	$1,552,000	$20,000	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety: Reduction of the risk of an equipment failure and flash over.
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure: 81 years
- ☑ Failure Rates: RTU is unreliable.
- ☑ Obsolete/ Unserviceable Equipment: Reviews of equipment obsolescence.
- ☑ Condition: Current conditions of switchgears make it impossible to upgrade equipment.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Tilcon Tap Station

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Based on infrastructure issues determined by inspections and a condition based assessment, the 69kV TR needs to be rebuilt. This line is the sole supply to a quarry limiting the ability to obtain outages during a rebuild of the line. A review has determined that the most economical solution is to build a new substation tapped off of the 115kV SC line to supply the quarry and to retire the TR Line.

Solution

Install a new 115/69 kV Substation to serve Tilcon. Additionally, install a new 115 kV breaker at the Sand Dock Substation to limit exposure to IBM resulting from a fault at the new tap on the SC Line.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,979,000	$1,004,000	$2,975,000	$0	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☑ Critical Customers: Tilcon Quarry
- ☐ LSA Customers
- ☑ Public Relations Considerations: The line runs through a residential area; its retirement will remove the infrastructure from customers' property.

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

An alternative considered was to rebuild the TR Line in kind. Construction would be costly and lengthy due to the restrictions from the quarry on the allowable outage durations to perform the work.

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Modena Substation PLC Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Part of a newly established Programmable Logic Controller (PLC) replacement program. Due to the obsolescence of our existing Programmable Logic Controllers and replaceable components, Central Hudson has determined that for long term longevity, the removal of the PLCs with physical traditional control logic and lock out relays are required.

Solution

The PLC and Human Machine Interface (HMI) at Modena Substation will be removed and traditional control switches and lock out relays will be installed. This includes the installation of new SEL Axion RTU and Annunciator, new control panels with standard W-2 Type Control Switches, and mimic bus.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,631,000	$502,000	$198,000	$899,000	$32,000	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Lincoln Park Substation Switchgear Replacement

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

The existing internal switchgear has reached the end of its useful life and replacement parts are difficult to obtain or no longer available. Maintenance issues have been experienced with racking the vintage breakers in the internal switchgear. Replacement parts for the racking mechanisms are no longer available.

Solution

It is recommended that the internal switchgear be replaced with a new switchgear. The switchgear will contain two bus's with a normally closed tie breaker, 15kV breakers rated 2000A and 1200A, protective relaying, interconnection cabinet, PT's, and station service transformers. The switchgear will contain provisions for future expansion.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,700,000	$0	$476,000	$1,224,000	$0	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment requires less maintenance than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — Reduction of the risk of an equipment failure and flash over.
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 65 years
- ☑ Failure Rates — RTU is unreliable.
- ☑ Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- ☑ Condition — Current conditions of switchgears make it impossible to upgrade equipment.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Shenandoah Substation Upgrade

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

Much of the equipment at the Shenandoah Substation has been identified for replacement on the following programs: Breaker Replacement Program, DA/LTC Replacement Program, and the ESP Infrastructure Replacement Program.

Solution

The various programs above have been combined into one substation modernization project.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,528,000	$0	$99,000	$1,616,000	$1,813,000	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment is required to be maintained at a lower rate than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Coxsackie DEC Peaker Regulation Project

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

New York State DEC has passed a stricter emissions standard over the next few years. In preparation for this standard, Central Hudson has determined to retire the Gas Turbines at Coxsackie and South Cairo Substations while adding necessary equipment to compensate for the Gas turbine retirements.

Solution

A second transformer will be added to Coxsackie Substation in order to make it a half breaker station. Dynamic Volt-Amp Reactive (D-VAR) Compensation Solution will also be installed to provide stability and regulate voltage and power factor by injecting leading or lagging reactive power at opportune times.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$7,900,000	$0	$0	$3,997,000	$3,903,000	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment is required to be maintained at a lower rate than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☑ Other Program Type: Lower emissions from Gas Turbine

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment: Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: South Cairo DEC Peaker Regulation Project

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted

Project ID (District-YYYY-ID)

Description of Problem

New York State DEC has passed a stricter emissions standard over the next few years. In preparation for this standard, Central Hudson has determined to retire the Gas Turbines at Coxsackie and South Cairo Substations while adding necessary equipment to compensate for the Gas turbine retirements.

Solution

A second transformer will be added to South Cairo Substation in order to make it a half breaker station. Dynamic Volt-Amp Reactive (D-VAR) Compensation Solution will also be installed to provide stability and regulate voltage and power factor by injecting leading or lagging reactive power at opportune times.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$8,208,000	$0	$0	$999,000	$7,209,000	$0	$0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Newer equipment is required to be maintained at a lower rate than existing equipment.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☑ Other Program Type: Lower emissions from Gas Turbine

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment: Reviews of equipment obsolescence.
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 5kV Aerial Cable Replacement Program

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Much of the 5kV aerial cable in the Central Hudson service territory is from as early as the 1930s. The cable is aged and prone to failure. The cable has also been the cause of many voltage issues on the system. Additionally, the cable typically contain lead and asbestos which adds an environmental concern to the issues. And repairs can be difficult and lengthy as well.

Solution

A 5kV aerial replacement program was installed to mitigate all of the reliability, loading, environmental, and safety concerns associated with this cable. Additionally when cable is replaced, the typical practice to convert the customers over to the 13.2kV voltage class. This aids in Central Hudson's goal to move away from 4kV operation to flatten the voltage profile, better enabling CVR and increasing hosting capacity of DERs.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,497,000	$275,000	$771,000	$471,000	$489,000	$492,000	$2,250,000
Expense							

Cost Risks

- [x] Environmental — 5kV cable typically contains environmentally harmful material such as lead and asbestos
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [x] $/COA [ ]
- [x] 5 Year Average # Outages Avoided [ ]

Non-Storm Operating

- [x] $/CMA
- [x] 5 Year Average Duration of Outages

Customer Satisfaction

- [ ] Complaints
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- [x] Thermal/Load Serving Capability
  - [ ] Equipment Type
  - [ ] Current % loaded
- [ ] Voltage (Stray, Low, High)
- [ ] Power Quality

Other

Risk Reduction

Safety

- [x] Employee Safety: 5kV aerial cable has several environmental safety concerns
- [x] Public Safety: 5kV aerial cable has several environmental safety concerns
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure: 70+ years
- [x] Failure Rates: High probability of failure
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition: Much of the infrastructure is in poor condition
- [ ] Accessibility (Off Road, underground)
- [ ] Strategic Replacement
- [ ] Other Program Type

Resilience

- [ ] $/COA (with storm)
- [ ] $/CMA (with storm)
- [ ] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other: increased hosting capacity of DERs

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 14.4kV Cable Rejuvenation Program

Form submitted by: N. Conza

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

The 14.4kV Rejuvenation program was initiated in 2009, with the replacement of the Poughkeepsie PO, PK and PU PILC network feeder main lines, as well as the majority of the WN cable feed to the Montgomery Street substation.

The remaining Newburgh 14.4kV feeds to the Montgomery Street Substation are the B, F and R cables. Just as in Poughkeepsie, these cables are in need of replacement due to age and condition. The underground infrastructure, which is nearly 90 years old is also in need of replacement. The final portion of the WN cable is also in need or replacement due to cable age. The infrastructure is nearly 100 years old and all spare conduits have collapsed. The conduits are currently inaccessible due to a library being built over them in 1973.

The Poughkeepsie PO, PK and PU feeders have lateral section off their main lines that are partially PILC. Plans to address these have been developed for implementation in 2020.

Underground inspections have consistently identified numerous locations in the underground network system in need of cable replacement and infrastructure repair. The majority of the 14.4kV infrastructure is close to 100 years old and is in need of regular maintenance and repairs. Funding has been allocated in the 14.4kV Rejuvenation Program to address inspection findings in the underground system.

Solution

Replace the three remaining Newburgh 14.4kV PILC cables with two overhead feeds. The first feed will be brand 556 spacer cable and run south on Rt. 9W and is being planned for construction in 2020 and 2021. The second feed will be the WN upgraded with 556 spacer cable, which is planned for future years and dependent on load growth. Complete the WN infrastructure and cable replacement to bypass the tile ducts under the Newburgh Library in 2020.

Replace the remaining Poughkeepsie network feeder PILC cable lateral spurs. This became the preferred plan once the Market St. infrastructure was replaced in 2020. See Engineering Memo ECS 20-003.

Annual inspection-related repairs of the 14.4kV and network underground cables and associated infrastructure.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$6,891,000	$1,170,000	$1,747,000	$1,779,000	$1,847,000	$437,000	$2,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☑ Critical Customers ☐
- ☐ LSA Customers
- ☑ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety: manholes
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure: 100 years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition: Collapsed and abandoned ducts, leaking lead cables over 70 years old.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study | E.P. #2011-001; ECS No. 19-004

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 4800V Conversion/Infrastructure Program

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

An infrastructure concern in the Central Hudson territory is the 4800V circuitry. These 4800V pockets limit the operational flexibility, load serving capability, and hosting capacity for DERs. Another concern with the 4800V circuitry is the age. Central Hudson abandoned the practice of installing 4800V circuitry in the 1940s. Much of the area infrastructure is over 70 years old and has exceeded its useful life. Central Hudson has well over 100 miles of 4800V circuitry remaining.

Solution

A conversion program was developed to the eliminate 4800V aging infrastructure. The program focuses on upgrading 4800V mainline circuitry to 13.2kV operation. A particular focus is placed on developing projects that eliminate overloaded step-down transformer banks in order mitigate thermal and infrastructure concerns, as well as remove any of the other potential hazards associated with 4800V circuitry.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$16,070,000	$2,174,000	$2,607,000	$3,663,000	$3,802,000	$3,823,000	$17,500,000
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA ☐
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type
  - [x] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [x] Employee Safety — Upgrading to a 13.2kV Wye system minimizes associated risks
- [x] Public Safety — Upgrading to a 13.2kV Wye system minimizes associated risks
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition
- [x] Accessibility (Off Road, underground)
- [x] Strategic Replacement
- [ ] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other — Increased hosting capacity of DERs

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: CATV Make-Ready

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Compliance

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

As the communication companies continue to expand their infrastructure, the proper NESC clearances between communication and electric facilities must be maintained and the poles must have sufficient capability to carry the additional facilities. If the infrastructure is aged, the utility is responsible for the cost of the upgrades. With the governor's broadband initiative, the volume of these projects is increasing significantly.

Solution

Develop work orders to address any emerging CATV work.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,144,000	$1,017,000	$514,000	$523,000	$543,000	$546,000	$2,500,000
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting
- ☑ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Work typically replaces aged poles which reduces operating and maintenance costs
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages ☐

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections
- ☐ Road Rebuild
- ☑ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☑ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: CEMI / Worst Circuit Reliability Program

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson maximizes its reliability improvement efforts through continuous analysis and planning. Reliability improvement projects are generally prioritized using a $/customer outage avoided criteria. This program allows us to address specific circuits and "pockets" of customers that tend to experience a significantly higher frequency of outages than average or are fed from a Worst Performing Circuit, where $/customer outage avoided criteria is used as an acceptance and prioritization criteria but would not enable projects to be over the cut line for the general Reliability program.

Solution

The CEMI (customers experiencing multiple interruptions) and Worst Performing Circuits program have been designed to help identify and develop reliability improvements for these customers. Projects are similar to projects identified in the Reliability program. The customers experiencing the poorest of reliability are identified, and improvement projects are developed annually.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$10,431,000	$1,496,000	$2,359,000	$2,219,000	$2,173,000	$2,185,000	$10,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ☐ years
- ☑ Failure Rates The program typically replaces antiquated infrastructure
- ☐ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☑ Accessibility (Off Road, underground) Infrastructure is often made more accessible
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☑ $/COA (with storm)
- ☑ $/CMA (with storm)
- ☑ Customer Cost of Outage (ICE Calculator)
- ☑ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Copper Wire Replacement Program

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

There is a proliferation of primary copper wire on Central Hudson's distribution system. These conductors are not only antiquated and prone to failure; they are frequently undersized (#4 and #6) for modern operational needs, such as CVR and FLISR. They are also susceptible to burndown during reclose operations.

Solution

The copper wire replacement program was developed to begin to phase out all of the undersized, antiquated, copper conductors. The wire is typically replaced with new, higher capacity ACSR wire. The new conductors are rated for 13.2kV operation, are stronger, and can handle additional loading.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,642,000	$1,038,000	$642,000	$654,000	$652,000	$655,000	$3,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Proactive replacement of this equipment lowers the O&M costs
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type: Conductors
  - [x] Current % loaded:
- [x] Voltage (Stray, Low, High):
- [x] Power Quality:

Other:

Risk Reduction

Safety

- [x] Employee Safety: Failure hazards are mitigated
- [x] Public Safety: Failure hazards are mitigated
- [ ] Other Program Type:

Compliance

- [ ] Inspections:
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type:

Infrastructure

- [x] Average Age of Infrastructure: ____ years
- [x] Failure Rates: High failure rate with older copper wire
- [x] Obsolete/ Unserviceable Equipment:
- [x] Condition:
- [ ] Accessibility (Off Road, underground):
- [ ] Strategic Replacement:
- [ ] Other Program Type:

Resilience

- [x] $/COA (with storm):
- [x] $/CMA (with storm):
- [x] Customer Cost of Outage (ICE Calculator):
- [x] Grade B Construction

Other:

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Automation Program

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: System Enhancement

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

An aging infrastructure, inefficient grid, rising energy costs, increased demand for uninterrupted service, and increased adoption of distributed energy resources, as well as availability of more sophisticated technology, have driven the need for a reformation of the electric distribution system.

Solution

The Electric Distribution Automation program was developed in order to address these growing concerns. Through the implementation of a Distribution Management System (DMS), Central Hudson will be able to implement programs such as Volt-Var optimization (VVO), Conservation Voltage Reduction (CVR), and Fault Location Isolation and Service Restoration (FLISR). Programs such as these are aimed to lower customer energy usage, defer transmission investments, replace aging assets, incorporate modern technology, improve customer reliability, and facilitate integration of distributed energy resources.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$14,180,000	$6,364,000	$6,432,000	$961,000	$226,000	$197,000	$6,250,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — Extensive work efforts are involved, but additional resources are assigned to assist
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☑ Reduced O&M — Distribution Automation will reduce O&M costs
- ☑ Reduced Customer Bill — VVO reduces customer bills
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type
  - [x] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [x] Other Program Type: Reforming the Energy Vision (REV)

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement
- [ ] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other: increased hosting capacity of DERs

Alternatives Analysis

Reference Report or Study | E.P. #2015-12, E.P. #2016-05, E.P. #2016-14, EP #2017-16, EP #2018-11

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Improvement Blankets

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Non-Discretionary

Investment Category: Daily Operations

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Newly emerging, operational work on the distribution system must be addressed on a routine basis, such as emergency work and compliance related issues.

Solution

Develop work orders to address emerging operational work.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$47,436,000	$9,157,000	$9,251,000	$9,419,000	$9,778,000	$9,830,000	$45,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting
- ☑ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Distribution improvement projects typically reduce operating and maintenance costs
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages ☐

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections
- ☐ Road Rebuild
- ☑ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment
- ☐ Condition
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☑ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Improvement Conversions

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Customers fed from a lower than standard distribution voltage class (13.2kV) can often have low or errant voltages. Hosting capacity for distributed energy resources is also limited. Despite significant planning efforts, some of these problems emerge based upon changes in customer behaviors.

Solution

Conversion from 4kV to 13.2kV operation often is recommended where customers are experiencing low or errant voltage or a step-down transformer is overloaded. Polyphasing, reconductoring, or installation of mitigating equipment also are examples of projects that could fall under this line item on an emerging basis.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,581,000	$305,000	$308,000	$314,000	$326,000	$328,000	$1,500,000
Expense							

Cost Risks

- [x] Environmental — Aging 4kV infrastructure often contains various environmentally harmful materials
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [x] $/COA [ ]
- [x] 5 Year Average # Outages Avoided [ ]

Non-Storm Operating

- [x] $/CMA
- [x] 5 Year Average Duration of Outages

Customer Satisfaction

- [x] Complaints — Voltage complaints are typically mitigated
- [ ] Critical Customers
- [ ] LSA Customers
- [ ] Public Relations Considerations

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type
  - [x] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [x] Employee Safety
- [x] Public Safety — Environmental hazards are often removed during these projects
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition
- [ ] Accessibility (Off Road, underground)
- [ ] Strategic Replacement
- [ ] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [ ] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Improvement Minors

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Newly emerging, operational work on the distribution system is often unforeseen and must be addressed in a timely manner.

Solution

Develop work orders for minor, newly emerging operational work, which are then classified as minor units of property or locals according to the latest Central Hudson Accounting Rules.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,162,000	$610,000	$617,000	$628,000	$652,000	$655,000	$3,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Distribution improvement projects typically reduce operating and maintenance costs
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- [x] Thermal/Load Serving Capability
  - [ ] Equipment Type
  - [ ] Current % loaded
- [ ] Voltage (Stray, Low, High)
- [ ] Power Quality

Other

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition
- [x] Accessibility (Off Road, underground)
- [x] Strategic Replacement
- [x] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Improvement Operating/Infrastructure

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

One of the primary focuses of the Category 15 Capital Budget plan is to improve the reliability of the Central Hudson customers. Operational limitations in the distribution circuitry is a primary driver in the overall duration that the average customer experiences. In addition, aged infrastructure in poor condition may create operational limitations and/or future risk of an increase in outages.

Solution

Operating projects are developed with the primary goal being of reducing the duration of outages. Typical projects involve developing a tie between feeders, or reconductoring the lines to make the tie stronger so more load can be reenergized through switching. Many of these projects also address failing infrastructure that does not fall under a specific program.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$25,401,000	$2,825,000	$5,730,000	$5,493,000	$5,674,000	$5,680,000	$25,600,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☑ Reduced O&M — Operational improvements can dramatically reduce O&M costs.
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages ☐

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ☐ years
- ☑ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment
- ☑ Condition
- ☑ Accessibility (Off Road, underground)
- ☑ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☑ $/COA (with storm)
- ☑ $/CMA (with storm)
- ☑ Customer Cost of Outage (ICE Calculator)
- ☑ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Improvement - Reliability

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

One of the primary focuses of the Category 15 Capital Budget plan is to improve the reliability of electric service for Central Hudson's customers.

Solution

Projects are developed and prioritized according to a 5 year historical average $/COA (customer outage avoided), but ancillary benefits to customer satisfaction and resiliency also are considered. Examples of improvement projects include relocating circuitry from off-road to on-road, closing gaps (i.e., new circuit ties), installing electronic reclosers, and replacing failure prone equipment.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$10,926,000	$1,701,000	$2,146,000	$2,721,000	$2,173,000	$2,185,000	$10,000,000
Expense							

Cost Risks

- [x] Environmental — Reliability projects must still protect environmental factors such as vegetation and wildlife
- [x] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits

Economic

- [x] Reduced O&M — Reliability improvement can dramatically reduce operating and maintenance costs.
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [x] $/COA
- [x] 5 Year Average # Outages Avoided

Non-Storm Operating

- [x] $/CMA
- [x] 5 Year Average Duration of Outages

Customer Satisfaction

- [x] Complaints
- [x] Critical Customers
- [x] LSA Customers
- [x] Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☑ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ☐ years
- ☑ Failure Rates Engineering analysis determines equipment with a high failure rate
- ☑ Obsolete/ Unserviceable Equipment
- ☑ Condition
- ☑ Accessibility (Off Road, underground)
- ☑ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☑ $/COA (with storm)
- ☑ $/CMA (with storm)
- ☑ Customer Cost of Outage (ICE Calculator)
- ☑ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Improvement - Thermal/Voltage

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Growth

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Although the overall system peak load is declining, load growth in a particular area may cause equipment to exceed its thermal ratings or load serving capabilities. Additionally, overloaded equipment has a tendency to fail which can be a safety concern and compromises customer reliability. Voltage levels may also fall outside of standard allowable ranges without thermal limitations being exceeded.

Solution

Load or voltage relief projects are often recommended to mitigate the loading, thermal, and voltage concerns. Polyphasing, reconductoring, voltage conversions or building new lines also are examples of projects that could fall under this line item.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,996,000				$1,358,000	$1,638,000	$7,500,000
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting
- ☐ Manpower
- ☐ Other ☐

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Mitigating loading concerns typically reduces O&M costs
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type
  - [x] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [x] Employee Safety — Properly sized equipment mitigates safety concerns with overloads
- [x] Public Safety — Properly sized equipment mitigates safety concerns with overloads
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [ ] Strategic Replacement
- [ ] Other Program Type

Resilience

- [ ] $/COA (with storm)
- [ ] $/CMA (with storm)
- [ ] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Distribution Pole Replacement Program

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Non-Discretionary

Investment Category: Compliance

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson currently owns over 211,000 distribution poles. All but a few are made of wood materials. Much of this pole plant is antiquated and undersized. The average age of the pole plant is over 40 years old with nearly 100,000 poles installed in the 1960's and earlier (50+ years old). Many of these poles have been exposed to rot, woodpeckers and other weather related decay. As the poles weaken, their likelihood of failure increases.

Solution

The facility inspections program helps determine if poles are in need of replacement due to conditions such as broken poles, severe pole lean, pole rot, wash out, evidence of flashover and woodpecker holes. Recent improvements in Central Hudson's testing procedures helped identify over four times as many defective poles from years past.

As a result of the Inspections program, defective poles are identified and replaced based on the severity rating of the deficiency. Projects are evaluated for other incremental system benefits, such as relocating poles on road or designing to NESC Grade B construction. Additionally, other poles may be replaced due to a violation of Central Hudson Electric Construction Standards, NESC, IEEE and other national and international standards. The replacement of weak and failing poles is a key driver to improve customer reliability.

Cost estimate (include AFUDC if appropriate)

Type of estimate: ☐ Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$44,383,000	$6,105,000	$9,251,000	$9,419,000	$9,778,000	$9,830,000	$45,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — Pro-active replacement of equipment greatly reduces the O&M costs
- ☐ Reduced Customer Bill ☐
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA ☐
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety — Larger, stronger poles decreases public exposure
- ☐ Other Program Type

Compliance

- ☑ Inspections — Pole inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ____ years
- ☑ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment
- ☑ Condition — Replaces failure prone poles
- ☑ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☑ $/COA (with storm)
- ☑ $/CMA (with storm)
- ☑ Customer Cost of Outage (ICE Calculator)
- ☑ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Overhead Secondary Replacement Program

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: System Enhancement

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Many secondary wires serving older homes in the Central Hudson service territory are open, bare conductor. This design is antiquated and prone to failure. Also, the bare conductors provide no insulation from foreign contact and contribute to decreased reliability. There is also a tendency for one leg or the neutral to fail, resulting in partial power or voltage swings that damage customer equipment.

Solution

The overhead secondary replacement program was developed to begin to phase out all of the antiquated, open wire secondary. The wire is typically replaced with new, triplex cable. The conductors are stronger, more resistant to contact faults and can handle additional loading.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,054,000	$203,000	$206,000	$209,000	$217,000	$218,000	$1,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- [x] Thermal/Load Serving Capability
  - [ ] Equipment Type
  - [ ] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [x] Employee Safety — Hazards are mitigated with covered triplex
- [x] Public Safety — Hazards are mitigated with covered triplex
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates — High failure rate with open wire
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition
- [ ] Accessibility (Off Road, underground)
- [ ] Strategic Replacement
- [ ] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [ ] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Relocation Blankets

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Compliance

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID) 15BL-02

Description of Problem

Central Hudson commonly experiences unforeseen issues with the location of existing infrastructure. Some examples are interference with new construction and new business and minor road and bridge rebuilds. These issues require Central Hudson to relocate its facilities.

Solution

Create work orders to relocate facilities to a new location. The new location should be designed for optimal present and future operation.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,054,000	$203,000	$206,000	$209,000	$217,000	$218,000	$1,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — These projects are often on strict time constraints due to customer needs and compliance
- ☐ Manpower
- ☐ Other

Primary Project Objective

Service

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — These projects often relocate facilities to improve employee access
- ☑ Public Safety — These projects often relocate facilities to improve public safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☑ Road Rebuild
- ☑ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ____ years
- ☑ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment — Often the relocations replace aging equipment
- ☑ Condition
- ☑ Accessibility (Off Road, underground) — Many relocations simplify facility access
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Resiliency Program

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Resilient capital expenditures are investments made to reduce the probability, magnitude and/or duration of disruptive outage events. The effectiveness of resilient infrastructure depends on its ability to anticipate, absorb, adapt to, and/or rapidly recover from a potentially disruptive event.

Solution

Examples of projects which would fit into this program may include any of the following:

• Use of technology: Microgrids, R&D, resiliency studies, weather early warning systems

• Hardening or replacement of assets to improve operational reliability: Rebuild infrastructure to new code/standards (i.e. installing concrete or steel poles, underground power lines, installing more temperature-resistant overhead lines)

• Power system flexibility: battery storage connected to distribution infrastructure for system support (i.e. balancing, frequency response, voltage support) purposes, balancing the impact of renewables

• Power system recovery capabilities: Real-time analytics, advanced distribution management systems, distributed energy resource management systems

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,017,000	$509,000	$514,000	$523,000	$652,000	$819,000	$3,800,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type
  - [x] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition
- [x] Accessibility (Off Road, underground)
- [x] Strategic Replacement
- [ ] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Road Rebuild Relocation Projects

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Non-Discretionary

Investment Category: Compliance

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID) 1531-0X

Description of Problem

Central Hudson commonly experiences unforeseen issues with the location of existing infrastructure during road and bridge rebuilds. These issues require Central Hudson to relocate its facilities.

Solution

Central Hudson coordinates with the local municipalities and the Department of Transportation for highway rebuild and road paving projects. The highway rebuilds and road paving projects usually consist of relocation and replacement of existing infrastructure. The infrastructure is optimally designed for both present and projected use through engineering studies.

Cost estimate (include AFUDC if appropriate)

Type of estimate: ☐ Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,378,000	$763,000	$874,000	$890,000	$923,000	$928,000	$4,250,000
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — These projects are often on strict time constraints due to customer needs and compliance
- ☑ Manpower — The time constraints can often place stresses on manpower
- ☐ Other ☐

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☐ $/CMA
- ☐ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☑ Public Relations Considerations — Central Hudson collaborates with local municipalities and the DOT

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☑ Employee Safety — These projects often relocate facilities to improve employee access
- ☑ Public Safety — These projects often relocate facilities to improve public safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☑ Road Rebuild
- ☑ Joint Facilities/CATV Agreement
- ☑ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ____ years
- ☑ Failure Rates
- ☑ Obsolete/ Unserviceable Equipment — Often the relocations replace aging equipment
- ☑ Condition
- ☑ Accessibility (Off Road, underground) — Many relocations simplify facility access
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Secondary Network Upgrade Program

Form submitted by: N. Conza

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

The secondary network infrastructure in Poughkeepsie, Kingston, and Newburgh is nearly 100 years old. Many of the ducts in the secondary network system have either collapsed or have been abandoned. Pull box and manholes are in poor condition and are in need of new roofs and in some cases, need to be completely rebuilt.

Underground inspections have consistently identified numerous locations in the underground secondary network system in need of cable replacement and infrastructure repair. Funding has been allocated in the Secondary Network Program to address inspection findings in the underground system.

Solution

Annual inspection-related repairs of the secondary network underground cables and associated infrastructure, including duct bank, pull boxes and manholes identify projects requiring immediate upgrades. In addition, project portfolios have been developed for each network system.

Cost estimate (include AFUDC if appropriate)

Type of estimate: ☐ Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,708,000	$254,000	$514,000	$523,000	$706,000	$710,000	$2,250,000
Expense							

Cost Risks

- ☑ Environmental: challenges with old tie duct work
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective: Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☐ $/COA
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☐ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☐ Complaints
- ☑ Critical Customers
- ☐ LSA Customers
- ☑ Public Relations Considerations: risk of failing cables/structure

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety: manhole covers blowing
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure: 100 years
- ☐ Failure Rates
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition: Collapsed and abandoned ducts, leaking lead cables over 70 years old.
- ☐ Accessibility (Off Road, underground)
- ☐ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Storm Hardening Program

Form submitted by: Jennifer Paull

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

In response to the New York State Public Service Commission's Order Instituting Proceeding and to Show Cause issued April 18, 2019 in Case 19-E-0109 ("Storm Order"), Central Hudson filed an Implementation Plan addressing recommendations within the Order to institute storm hardening measures and improve reliability to critical facilities that counties consider essential. The areas commonly impacted by storms may not always be prioritized based upon Central Hudson's benefit/cost analysis metrics. The areas hardest hit by major storms are often located in the remote areas and/or on the edges of Central Hudson's service territory with low population density.

Solution

Per the Implementation Plan, the following investment categories have been identified to improve storm hardening of Central Hudson's system:

• Circuit Hardening - Harden mainline zones of protection that impact 500 customers or more and are identified on the 25 Worst Performing circuits list when storm-related interruptions are considered by performing additional vegetation management, replacing failure-prone equipment, ensuring proper fusing/animal/lightning protection and verifying that all equipment is built to the current Electric Construction Standards.

• Lateral Line Rebuilds - Reconductor spur lines in remote areas or at the edges of Central Hudson service territory experiencing frequent storm outages with spacer cable or tree wire to improve reliability.

• Incremental Distribution Automation - Add additional electronic reclosers in strategic locations throughout the service territory that don't meet the criteria for the FLISR program but could provide significant reliability impact during storms.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$59,524,000	$6,359,000	$12,848,000	$13,083,000	$13,580,000	$13,653,000	$43,750,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Service

Non-Storm Reliability

- ☑ $/COA ☐
- ☑ 5 Year Average # Outages Avoided ☐

Non-Storm Operating

- ☑ $/CMA
- ☑ 5 Year Average Duration of Outages

Customer Satisfaction

- ☑ Complaints
- ☑ Critical Customers ☐
- ☑ LSA Customers
- ☑ Public Relations Considerations ☐

Service Standards

- [x] Thermal/Load Serving Capability
  - [x] Equipment Type
  - [x] Current % loaded
- [x] Voltage (Stray, Low, High)
- [x] Power Quality

Other

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [ ] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition
- [x] Accessibility (Off Road, underground)
- [x] Strategic Replacement
- [ ] Other Program Type

Resilience

- [x] $/COA (with storm)
- [x] $/CMA (with storm)
- [x] Customer Cost of Outage (ICE Calculator)
- [x] Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: URD Replacement - OTHER/IMCORP Testing

Form submitted by: N. Conza

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2021

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson's underground residential development (URD) cables are aging and are experiencing failures. Although the impact to reliability so far has been relatively small, the utility industry as a whole recognizes the potential larger impact these aging cables will have on reliability in the future. Pro-active measures are needed to curb these failures and improve system reliability.

Solution

Central Hudson conducted a successful R&D project in 2017 with IMCORP that proved the technology to detect partial discharge in cables and pinpoint the location of defects that will eventually result in a fault and customer outage. This allows for cable health assessment that would help target specific problems and coordinate repairs, rather than replace or rejuvenate older cable wholesale. Central Hudson will develop a program to target high risk URDs that meet testing eligibility criteria. Where testing is not a fit, more traditional replacement is required. Testing and targeted repairs are to commence in 2021 (P-2020-05).

In conjunction with the targeted IMCORP testing, there will be wholesale replacement of specific URD cables that have already been identified as in extremely poor condition. These URDs have been determined to be outside the scope of a partial discharge test, due to the numerous failures over the years. Corlies Manor URD has been identified for equipment and cable replacement in 2022.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,472,000	$610,000	308,000	$1,047,000	$1,086,000	$1,420,000	$5,000,000
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill ☐
- ☑ Other A repair of a failed URD cables can reach or exceed $10,000 depending on various circumstances

Service

Non-Storm Reliability

- ☐ $/COA
- ☐ 5 Year Average # Outages Avoided

Non-Storm Operating

- ☑ $/CMA 19.55
- ☑ 5 Year Average Duration of Outages 5.8 Hours

Customer Satisfaction

- ☐ Complaints
- ☐ Critical Customers
- ☐ LSA Customers
- ☐ Public Relations Considerations

Service Standards

- ☐ Thermal/Load Serving Capability
  - ☐ Equipment Type
  - ☐ Current % loaded
- ☐ Voltage (Stray, Low, High)
- ☐ Power Quality

Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Road Rebuild
- ☐ Joint Facilities/CATV Agreement
- ☐ NESC Codes
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 30+ years
- ☑ Failure Rates 1 per year
- ☐ Obsolete/ Unserviceable Equipment
- ☑ Condition Aging URD cables are inaccessible and experiencing increased failures
- ☑ Accessibility (Off Road, underground)
- ☑ Strategic Replacement
- ☐ Other Program Type

Resilience

- ☐ $/COA (with storm)
- ☐ $/CMA (with storm)
- ☐ Customer Cost of Outage (ICE Calculator)
- ☐ Grade B Construction

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

GAS PROGRAM INDIVIDUAL PROJECT SUBMITTAL

Budget Submittal Form for Gas Projects

Project Name: Replace 1 mile of PN line pipe - New Pipe to IBM

Form submitted by: Karl Reer

Recommended In-Service Year: 2024

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 6000

Description of Problem

Gas system: Poughkeepsie-Newburgh (PN) line

Gas pressure: 60 PSIG

Existing pipe size and material: Gas Welded 1929 8 inch steel

Proposed length replacement: 5280 feet

Central Hudson has an inventory of approximately 5 miles of large diameter (8"+) steel pipe operating at 60 PSIG that is located in or near high consequence areas and which was joined using gas weld technology. Welds on this pipe are susceptible to circumferential cracks. This section of the line runs through a high traffic commercial area under a State highway.

Solution

Proposed size: Replacement of 1 mile of 8 inch steel with 12 inch plastic.

Replacement of 1 mile of steel pipeline along and under US Route 9 with 12 inch plastic at a cost of approximately $455/Foot

Applies to funding account 2-2512-00-24

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,598,000				$2,598,000		
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — State highway permits required
- ☐ Manpower
- ☑ Other — High traffic area - may require night work.

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — New pipe reduces leak repair costs
- ☑ Replacement — Elimination of risk and reduction of operating expense
- ☐ Reinforcement
- ☐ Road Rebuild
- ☐ Other

Service

Reliability

- ☐ Radial feed
- ☑ Loop tie

Gas Safety

- D Pipeline type
- 9 Number of closed leaks in past 10 years
- 1 Number of hazardous (Class 1, 2A and 2)
- 0 Number of active leaks
- Length of leak prone pipe eliminated
- Number of high pressure service replacement
- Number of isolated service replacement

Customer Impact

- [ ] Complaints
- [ ] Critical Customers Wappinger Falls Reg Sta
- [ ] Public Relations Considerations

Other

Risk Reduction

Safety

- [x] Reduce risk of incident
- [ ] Employee Safety
- [x] Public Safety
- [ ] Other Benefits

Compliance

- [ ] Central Hudson Inspections
- [x] Elimination of Integrity Related Issues
- [ ] Other Program Type

Infrastructure

1929 Infrastructure year installed

15 Number of Services

- [ ] Indoor meter sets
- [x] Metallic

- [ ] Obsolete/ Unserviceable Equipment
- [ ] Strategic Replacement
  - [ ] Flood zone
  - [ ] Main feeder route
  - [ ] Low pressure system
- [ ] Other Program Type

Other Contributing factor in an incident in Wappinger Falls (1994) and Marple Road (2013)

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Gas Projects

Project Name: Replace 1 mile of PN line pipe - PN Line 9D Wappinger Creek North

Form submitted by: Karl Reer

Recommended In-Service Year: 2023

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 6000

Description of Problem

Gas system: Poughkeepsie-Newburgh (PN) line

Gas pressure: 60 PSIG

Existing pipe size and material: Gas Welded 1929 8 inch steel

Proposed length replacement: 5280 feet

Central Hudson has an inventory of approximately 5 miles of large diameter (8"+) steel pipe operating at 60 PSIG that is located in or near high consequence areas and which was joined using gas weld technology. Welds on this pipe are susceptible to circumferential cracks. This section of the line runs through a Village commercial area with wall to wall paving, under a State highway.

Solution

Proposed size: Replacement of 1 mile of 8 inch steel with 12 inch plastic.

Replacement of 1 mile of steel pipeline along and under US Route 9D with 12 inch plastic at a cost of approximately $751/Foot

Applies to funding account 2-2512-00-23

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,219,000	$0	$0	$4,219,000			
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — State highway permits required
- ☐ Manpower
- ☑ Other — Extra depth of trench and high traffic area - likely will require night work.

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — New pipe reduces leak repair costs
- ☑ Replacement — Elimination of risk and reduction of operating expense
- ☐ Reinforcement
- ☐ Road Rebuild
- ☐ Other

Service

Reliability

- ☐ Radial feed
- ☑ Loop tie

Gas Safety

- D Pipeline type
- 5 Number of closed leaks in past 10 years
- 3 Number of hazardous (Class 1, 2A and 2)
- 0 Number of active leaks
- Length of leak prone pipe eliminated
- Number of high pressure service replacement
- Number of isolated service replacement

Customer Impact

- [ ] Complaints
- [ ] Critical Customers Wappinger Falls Reg Sta
- [ ] Public Relations Considerations

Other

Risk Reduction

Safety

- [x] Reduce risk of incident
- [ ] Employee Safety
- [x] Public Safety
- [ ] Other Benefits

Compliance

- [ ] Central Hudson Inspections
- [x] Elimination of Integrity Related Issues
- [ ] Other Program Type

Infrastructure

1929 Infrastructure year installed

26 Number of Services

- [ ] Indoor meter sets
- [x] Metallic

- [ ] Obsolete/ Unserviceable Equipment
- [ ] Strategic Replacement
  - [ ] Flood zone
  - [ ] Main feeder route
  - [ ] Low pressure system
- [ ] Other Program Type

Other

Contributing factor in an incident in Wappinger Falls (1994) and Marple Road (2013)

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Gas Projects

Project Name: Replace 1 mile of PN line pipe - South Road

Form submitted by: Karl Reer

Recommended In-Service Year: 2021

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 6000

Description of Problem

Gas system: Poughkeepsie-Newburgh (PN) line

Gas pressure: 60 PSIG

Existing pipe size and material: Gas Welded 1929 8 inch steel

Proposed length replacement: 5280 feet

Central Hudson has an inventory of approximately 5 miles of large diameter (8"+) steel pipe operating at 60 PSIG that is located in or near high consequence areas and which was joined using gas weld technology. Welds on this pipe are susceptible to circumferential cracks. This section of the line runs through a busy commercial area and is located under a high traffic commercial highway.

Solution

Proposed size: Replacement of 1 mile of 8 inch steel with 12 inch plastic.

Replacement of 1 mile of steel pipeline along and under US Route 9 with 12 inch plastic at a cost of approximately $475/Foot

Applies to funding account 2-2512-00-21

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,577,000	$2,577,000	$0				
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — State highway permits required
- ☐ Manpower
- ☐ Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — New pipe reduces leak repair costs
- ☑ Replacement — Elimination of risk and reduction of operating expense
- ☐ Reinforcement
- ☐ Road Rebuild
- ☐ Other

Service

Reliability

- ☐ Radial feed
- ☑ Loop tie

Gas Safety

- D Pipeline type
- 9 Number of closed leaks in past 10 years
- 4 Number of hazardous (Class 1, 2A and 2)
- 0 Number of active leaks
- Length of leak prone pipe eliminated
- Number of high pressure service replacement
- Number of isolated service replacement

Customer Impact

- [ ] Complaints
- [ ] Critical Customers Poughkeepsie Plaza, IBM
- [ ] Public Relations Considerations

Other

Risk Reduction

Safety

- [x] Reduce risk of incident
- [ ] Employee Safety
- [x] Public Safety
- [ ] Other Benefits

Compliance

- [ ] Central Hudson Inspections
- [x] Elimination of Integrity Related Issues
- [ ] Other Program Type

Infrastructure

1929 Infrastructure year installed

7 Number of Services

- [ ] Indoor meter sets
- [x] Metallic

- [ ] Obsolete/ Unserviceable Equipment
- [ ] Strategic Replacement
  - [ ] Flood zone
  - [ ] Main feeder route
  - [ ] Low pressure system
- [ ] Other Program Type

Other Contributing factor in and incident in Wappinger Falls (1994) and Marple Road (2013)

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Gas Projects

Project Name: Replace 1 mile of PN line pipe - PN Line 9D Wappinger South

Form submitted by: Karl Reer

Recommended In-Service Year: 2022

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Cusstomers Affected: 6000

Description of Problem

Gas system: Poughkeepsie-Newburgh (PN) line

Gas pressure: 60 PSIG

Existing pipe size and material: Gas Welded 1929 8 inch steel

Proposed length replacement: 5280 feet

Central Hudson has an inventory of approximately 5 miles of large diameter (8"+) steel pipe operating at 60 PSIG that is located in or near high consequence areas and which was joined using gas weld technology. Welds on this pipe are susceptible to circumferential cracks. This section of the line runs through a Village commercial/residential area.

Solution

Proposed size: Replacement of 1 mile of 8 inch steel with 12 inch plastic.

Replacement of 1 mile of steel pipeline along and under US Route 9D with 12 inch plastic at a cost of approximately $570/Foot

Applies to funding account 2-2512-00-21

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,122,000	$0	$3,122,000	$0			
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — State highway permits required
- ☐ Manpower
- ☐ Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — New pipe reduces leak repair costs
- ☑ Replacement — Elimination of risk and reduction of operating expense
- ☐ Reinforcement
- ☐ Road Rebuild
- ☐ Other

Service

Reliability

- ☐ Radial feed
- ☑ Loop tie

Gas Safety

- D Pipeline type
- 6 Number of closed leaks in past 10 years
- 4 Number of hazardous (Class 1, 2A and 2)
- 0 Number of active leaks
- Length of leak prone pipe eliminated
- Number of high pressure service replacement
- Number of isolated service replacement

Customer Impact

- [ ] Complaints
- [ ] Critical Customers Wappinger Falls Reg Sta
- [ ] Public Relations Considerations

Other

Risk Reduction

Safety

- [x] Reduce risk of incident
- [ ] Employee Safety
- [x] Public Safety
- [ ] Other Benefits

Compliance

- [ ] Central Hudson Inspections
- [x] Elimination of Integrity Related Issues
- [ ] Other Program Type

Infrastructure

1929 Infrastructure year installed

41 Number of Services

- [ ] Indoor meter sets
- [x] Metallic

- [ ] Obsolete/ Unserviceable Equipment
- [ ] Strategic Replacement
  - [ ] Flood zone
  - [ ] Main feeder route
  - [ ] Low pressure system
- [ ] Other Program Type

Other

Contributing factor in an incident in Wappinger Falls (1994) and Marple Road (2013)

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Gas Projects

Project Name: Laek Prone Pipe Replacement Projects

Form submitted by: Karl Reer

Recommended In-Service Year: 2021 through 2025

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Cusstomers Affected: 77,000

Description of Problem

Gas system: Low, Medium and High Pressure Distribution Systems

Gas pressure: various

Existing pipe size and material: Program applies to all bare steel, wrought iron, and cast iron piping materials

Proposed length replacement: 15.0 Miles/Year - 2021 through 2025

Central Hudson has an inventory of approximately 138 miles of gas distribution pipe considered "leak prone". This piping has been identified in recent rate cases as requiring replacement. The settlement order set aside funding per the following rate case order excerpt:

"The allowed per-mile cost includes....and is set as follows: ($1.895 million per mile for 2019; (2) $2.010 million per mile for 2020; and (3) $2.125 million per mile for 2021." "Effective in 2019 the company will replace or eliminate, at a minimum, 15 miles of LPP per year."

Applies to funding account 2-2580-00-YY

Solution

Proposed size: This funding is for neighborhood LPP project specific work orders.

2021: SW Kingston - $1,841,000; Clifton Reg Station Area - $3,042,000; North Highland - $2,067,000; Mansion, North Hamilton, Violet area - $3049,000; Hudson View Development - $1,803,000; Mill Street Cornwall area - $1,481,000; Washington Street area - $3,636,000; Village of Montgomery - north half - $2,399,000

2022: Uptown Fair,John, and Wall area - $2,222,000; South Walls Street area - $1,972,000; Central Poughkeepsie area - $3,355,000; South Highland - $3,048,000; Fleetwood Manor area - $1,548,000; NLP North - Carpenter Avenue area - $2,998,000; NLP Fullerton to West - $2,767,000.

Projects for years 2023 to 2025 have been tentatively identified and required funding detail provided in the spreadsheet.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$127,282,000	$23,782,000	$22,538,000	$25,993,000	$27,461,000	$27,508,000	$75,000,000
Expense	$6,750,000	$750,000	$750,000	$750,000	$750,000	$750,000	$3,000,000

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☐ Reduced O&M
- ☑ Replacement — Per rate case orders, elimination of risk and reduction of operating expense
- ☐ Reinforcement
- ☐ Road Rebuild
- ☐ Other

Service

Reliability

- ☐ Radial feed
- ☐ Loop tie

Gas Safety

- D — Pipeline type
- N/A — Number of closed leaks in past 10 years
- ☐ Number of hazardous (Class 1, 2A and 2)
- 75+ — Number of active leaks
- 12.0/yr — Length of leak prone pipe eliminated
- ☐ Number of high pressure service replacement
- ☐ Number of isolated service replacement

Customer Impact

- [ ] Complaints
- [ ] Critical Customers
- [ ] Public Relations Considerations

Other: Pressure recording charts help Gas Operating Engineers analyze systems' performance.

Risk Reduction

Safety

- [x] Reduce risk of incident
- [ ] Employee Safety
- [x] Public Safety
- [ ] Other Benefits

Compliance

- [ ] Central Hudson Inspections
- [x] Elimination of Integrity Related Issues
- [ ] Other Program Type

Infrastructure

1875+ Infrastructure year installed

1500+ Number of Services

- [ ] Indoor meter sets
- [x] Metallic

- [ ] Obsolete/ Unserviceable Equipment
- [ ] Strategic Replacement
  - [ ] Flood zone
  - [x] Main feeder route
  - [x] Low pressure system
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Gas Projects

Project Name: Service Replacement and Minor Projects

Form submitted by: Karl Reer

Recommended In-Service Year: 2021 through 2025

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Cusstomers Affected: 77,000

Description of Problem

Gas system: Low, Medium and High Pressure Distribution Systems

Gas pressure: various

Existing pipe size and material: Funding program is for minor main projects and servcie replacements system-wide

Proposed length replacement: N/A

Central Hudson has an inventory of approximately 60,000 gas service lines and over 1250 miles of distribution main pipe. Minor property unit replacement projects for mains and service lines are performed as a normal part of operations. Significant numbers of service lines are replaced as an integral part of the LPP replacement program, the requirements for which are set forth in the following excerpt:

"The allowed per-mile cost includes....and is set as follows: ($1.895 million per mile for 2019; (2) $2.010 million per mile for 2020; and (3) $2.125 million per mile for 2021." "Effective in 2019 the company will replace or eliminate, at a minimum, 15 miles of LPP per year."

Applies to funding account 2-251L-00-YY

Solution

Proposed size: This funding is for blankets and service replacement limited terms.

2021: Service replacements - normal operational needs - $2,500,000; service replacements associated with pipeline replacement work (LPP and unident road rebuilds) - $11,088,000; main replacements - unidentified highway rebuilds - $3,000,000; Blanket work orders and minor units/projects - $1,625,000.

2022: Service replacements - normal operational needs - $2,400,000; service replacements associated with pipeline replacement work (LPP and unident road rebuilds) - $9,801,000; main replacements - unidentified highway rebuilds - $3,000,000; Blanket work orders and minor units/projects - $1,675,000.

2023 through 2025: required financing is largely tied to LPP main replacement funding but is not expected to deviate significantly from 2021 and 2022 funding levels.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$76,426,000	$16,802,000	$18,002,000	$13,217,000	$12,828,000	$15,577,000	$
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- ☑ Reduced O&M — New pipe reduces leak repair costs
- ☑ Replacement — Per rate case orders, elimination of risk and reduction of operating expense
- ☐ Reinforcement
- ☑ Road Rebuild — Tied to business franchise agreements
- ☐ Other

Service

Reliability

- ☐ Radial feed
- ☐ Loop tie

Gas Safety

- D — Pipeline type
- N/A — Number of closed leaks in past 10 years
- ☐ Number of hazardous (Class 1, 2A and 2)
- 75+ — Number of active leaks
- ☐ Length of leak prone pipe eliminated
- ☐ Number of high pressure service replacement
- ☐ Number of isolated service replacement

Customer Impact

- [ ] Complaints
- [ ] Critical Customers
- [ ] Public Relations Considerations

Other

Risk Reduction

Safety

- [x] Reduce risk of incident
- [ ] Employee Safety
- [x] Public Safety
- [ ] Other Benefits

Compliance

- [ ] Central Hudson Inspections
- [x] Elimination of Integrity Related Issues
- [ ] Other Program Type

Infrastructure

1875+ Infrastructure year installed

2000+ Number of Services

- [ ] Indoor meter sets
- [x] Metallic

- [ ] Obsolete/ Unserviceable Equipment
- [ ] Strategic Replacement
  - [ ] Flood zone
  - [ ] Main feeder route
  - [ ] Low pressure system
- [ ] Other Program Type

Other

Move indoor sets outdoors wherever possible; install EFVs on pressure service lines, reduce or eliminate approximately 15,500 LPP services in inventory, reduce leak survey and repair costs, reduce risk, improve system capacity.

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

COMMON PROGRAM INDIVIDUAL PROJECT SUBMITTAL

Budget Submittal Form for Common Projects

Project Name: EC- Rebuild Transportation Shop

Form submitted by: RJ Scandariato

Budget Group: 41 - Buildings

Summary Category: Maintain System Standards

Investment Category: Daily Operations

Description of Problem

The current Transportation shop at the Eltings Corners facility was previously used as the main Transportation facility. Since the department re-located to Kingston, this garage has only been used for the fleet in EC and is under utilized in that capacity. There is large equipment that is only able to be stored outdoors at the EC facility in the current format which increases the wear and required maintenance on those vehicles.

Solution

Convert the current transportation shop to garage storage for larger vehicles used by Operations Services.

Build a new transportation shop at the EC facility that is more appropriately sized for the work that is done there and provides a better layout for the employees to work safer and more efficiently.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,681,000	0	0	0	1,681,000	0	0
Expense							

Cost Risks

- [x] Environmental — Work at an existing facility could have environmental remediation costs
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M — New Facility should have less repair/maintenance costs.
- [ ] Reduced Customer Bill
- [x] Other — Storage of vehicles indoors should reduce maintenance cost.

Risk Reduction

Safety

- [x] Employee Safety — improved layout and modern equipment
- [x] Public Safety — eliminate snow piling on vehicles that could come off on the road
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Code Requirement/PSC
- [x] Other Program Type — will ensure up to date with current building codes

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [x] Condition
- [ ] Strategic Replacement
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: EV Charging Infrastructure

Form submitted by: Ralph Scandariato

Budget Group: 41 - Buildings

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

As electric vehicles that meet the needs of Central Hudson work groups become available and cost effective, more of these are planned to be added to the vehicle fleet. The current quantity of EV charging stations at Central Hudson locations will not support adding many of these vehicles. Adding additional EV charging stations will match the plan for purchasing electric vehicles.

Solution

Construct EV charging stations at various Central Hudson locations to meet the charging needs of the electric vehicle fleet as it grows.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,405,000	266,000	269,000	300,000	280,000	290,000	0
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting
- [ ] Manpower
- [x] Other — need to ensure distribution circuits can support charging infrastructure

Primary Project Objective Risk Reduction

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Code Requirement/PSC
- [x] Other Program Type — less emissions and consumption of fossil fuels

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [ ] Condition
- [x] Strategic Replacement — incorporates more EV into the fleet.
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Fishkill- Rebuild Bulter Building and Transportation Shop

Form submitted by: RJ Scandariato

Budget Group: 41 - Buildings

Summary Category: Maintain System Standards

Investment Category: Daily Operations

Description of Problem

The current Transportation shop at the Fishkill Operating District is within the Butler building. The Bulter building is an older steel building that is experiencing corrosion and damage from birds penetrating the exterior. The building is multi function and is home to the gas welding shop, the transportation shop, vehicle storage and material/equipment storage.
-The fumes from the weld shop travel throughout the entire building.
-The Transportation shop is undersized, (the mechanic uses 1 bay outside of his shop) and if not replaced would require a retro-fit of the ceiling and overhead door so the shop can accommodate the larger trucks in the current fleet. The area also lacks space for the mechanic's office and proper organization for material and equipment storage.
-The depth of the garage does not allow for a dump truck and trailer to be housed inside while connected which is best practice in other areas during the winter months.

Solution

Rebuild this building that better meets the needs of the organization and operating groups.

-Consider replacing one building with two or more if that better addresses the needs of the group and the utilization of the property.
-Design the Transportation shop to provide the necessary space for vehicles, parts, tools and equipment.
-Consider adding a restroom so the employees in this building has more convenient access to it.
-Improve ventilation and pipe storage for the gas welding shop.
-Increase the depth of the garage space to allow for a dump truck and trailer with an excavator to fit. Also consider overhead doors on opposite ends to allow drive in, drive out for the bay where a truck/trailer combination will park.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	3,423,000	0	0	0	1,681,000	1,742,000	0
Expense							

Cost Risks

- [x] Environmental — Demo of an existing building could have environmental remediation costs
- [x] Timing/Permitting — The Town of Fishkill has an extensive permitting process
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M — New Facility should have less repair/maintenance costs.
- [ ] Reduced Customer Bill
- [ ] Other

Risk Reduction

Safety

- [x] Employee Safety — improved ventilation, space and and drive in/drive out design
- [ ] Public Safety
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Code Requirement/PSC
- [x] Other Program Type — will ensure up to date with current building codes

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [x] Condition
- [ ] Strategic Replacement
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Newburgh - New Facility

Form submitted by: Ralph Scandariato

Budget Group: 41 - Buildings

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The Newburgh District Operating Headquarters is located in a general low lying location and in close proximity to the Lake Washington Dam. This facility has a history of environmental mitigation performed on it and it currently has ongoing monitoring be performed (associated with groundwater quality and indoor air quality). Additionally, the Newburgh District Headquarters has congestion issues which at times pose safety concern for both employees and customers accessing the facility.

Solution

Construct a new facility specifically suited to meet the operational needs of a district headquarters. This new facility will be sited on a larger parcel of property located in an area that will allow for safer access for both employees and customers. It will be located in a more geographically secure location to ensure that, as an emergency response center, it will not be in peril from inundation in the event of a prolonged, catastrophic rain event. Relocation of this facility to an optimal location while also incorporating modern improvements will allow for the highest customer satisfaction through effective mitigation of operational risks associated with this Operating Headquarters.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	14,365,000	0	10,770,000	3,595,000	0	0	0
Expense							

Cost Risks

- [x] Environmental
- [x] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Risk Reduction

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [ ] Other

Risk Reduction

Safety

- [x] Employee Safety — Improved ingress/egress for employees; eliminate environmental exposure
- [x] Public Safety — Improved ingress/egress for customers
- [x] Other Program Type — Protection from catastrophic flood event

Compliance

- [ ] Inspections
- [x] Code Requirement/PSC — Removal of risk associated with indoor air quality
- [x] Other Program Type — Brownfield Cleanup Program

Infrastructure

- [x] Average Age of Infrastructure 50+ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [x] Condition — Improved functionality and reduced employee risk
- [x] Strategic Replacement — Mitigate risk associated with potential failure of nearby dam
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study: in progress

Or

Project Alternatives Considered

Renovation of existing building and also expansion of facility onto adjacent property

Decision criteria for alternative selection

Engineering evaluation and recommendation by third party consultant (Architectural/Engineering Firm).

Budget Submittal Form for Common Projects

Project Name: Paving

Form submitted by: RJ Scandariato

Budget Group: 41 - Buildings

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Asphalt breaks down and will fail over time causing various issues including tripping hazards, pot holes, dips to collect water and others. The winter weather and heavy truck traffic that our locations see contribute to the deterioration of the asphalt.

Solution

Prioritize areas (driveways and parking lots) each year that are past their useful life and are creating issues for repaving.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,976,000	266,000	269,000	300,000	560,000	581,000	0
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting — ashpalt costs are driven by market oil prices
- [ ] Manpower
- [ ] Other

Primary Project Objective Safety/Security

Benefits:

Economic

- [x] Reduced O&M — less maintenance on new asphalt
- [ ] Reduced Customer Bill
- [ ] Other

Risk Reduction

Safety

- [x] Employee Safety — safer grounds for employees
- [x] Public Safety — safer grounds for visitors
- [ ] Other Program Type

Compliance

- [ ] Inspections
- [ ] Code Requirement/PSC
- [ ] Other Program Type

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [x] Condition — improves the condition of asphalt surfaces
- [ ] Strategic Replacement
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Training Academy and Primary Control Center

Form submitted by: RJ Scandariato

Budget Group: 41 - Buildings

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Central Hudson does not presently have a dedicated, centrally located training facility at which we can prepare our entire employee population with all the necessary skills to perform their duties. Central Hudson also does not have office facilities for the addition of a Distribution System Operation either with the existing Transmission System Operations or in any other facilities without the need for major renovations.

Solution

Construct a Training Academy for employee training and development and a Primary Control Center for both transmission and distribution System Operations. This new facility will host both functions but will ensure all security measures are taken.

The Training Academy will enable scenario-based training. This will allow for repeatability, practice of procedures in a real life situation as well as in the face of adversity – while simultaneously performing in a safe and controlled environment. The facility has been designed to provide flexibility for other corporate uses and to facilitate collaboration with emergency services, municipalities, and other outside agencies.

The Primary Control Center (phase 2) will provide a modern space for a combined Distribution and Transmission System Operations facility.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	64,502,000	35,331,000	27,805,000	1,366,000	0	0	0
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Safety/Security

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill ☐
- ☑ Other Better trained employees will be more productive and efficient

Risk Reduction

Safety

- ☑ Employee Safety Better trained employees
- ☑ Public Safety Better trained employees to respond to emergencies
- ☐ Other Program Type ☐

Compliance

- ☐ Inspections
- ☑ Code Requirement/PSC Meeting all FERC/NERC requirements for the PCC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: ECM Program

Form submitted by: Tim Hayes

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Compliance

Description of Problem

Records Management for electronic documents has been a challenge for Central Hudson for many years due to the proliferation of documents on our shared drives and other content repositories. In 2012 an RFP was sent out to various software vendors for ECM (Enterprise Content Management) solutions and OpenText was selected. The first phase, to roll out the software to all areas of the company, was guided by the following objectives:

1. Increase compliance with Central Hudson's Records Management policy, and
2. Improve the efficiency of the Company's execution of legal and regulatory holds and discovery.

Since 2012, Central Hudson has made an annual capital investment in the OpenText platform to upgrade and incorporate additional functionality. Based on the current road map for content management, we anticipate the need to remain current with OpenText software functionality until the we become comfortable with the Records Management capabilities of another platform, such as SharePoint / Office 365.

Even with the introduction of our ECM system, we continue to store a significant volume of content on our shared drives, the Exchange server, and on local hard drives.

Solution

The ultimate need for the OpenText software is directly related to our intended usage of other repositories, primarily SharePoint / Office 365. We are evaluating multiple alternatives for the OpenText platform that range from sunsetting it in 2023, to the continued usage of OpenText for specific content for the foreseeable future. Either way, as the SharePoint / Office 365 road map is finalized, it is anticipated that CapEx dedicated to OpenText enhancement will diminish. However, in the short term, Central Hudson must continue to remain current, or near current, with the upgrades that are offered by OpenText.

Since 2012, Central Hudson has paid for annual maintenance on OpenText functionality that we have not implemented. It is our intention to discontinue paying for a portion of that maintenance in 2021.

To address the content that remains on repositories other than ECM, in 2020 additional Records Management software (ActiveNavigation) will be implemented to enhance our ability to evaluate and govern content on our shared drives. In 2021, we will implement RM controls in the Exchange software to automate the email disposition process and in 2022, we will replace local hard drive storage with private shares.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$6,053,000	$1,517,000	$1,358,000	$908,000	$1,033,000	$1,236,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — A significant percentage of the resources assigned to the ECM project are contracted.
- ☑ Other — Changes to the Microsoft / Office 365 road map will affect the timing and level of ECM spending.

Primary Project Objective Risk Reduction

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill ☐
- ☑ Other — Compliance; improved business processes

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections ☐
- ☐ Code Requirement/PSC
- ☑ Other Program Type — Records Management

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Software maintenance expenses are shown in years 1 - 5 for OpenText and years 3 - 5 for ActiveNavigation. They are calculated with a 5% annual increase (the stated amount in the OpenText MSA). Microsoft enhancements are budgeted elsewhere.

Alternatives Analysis

Reference Report or Study

Office 365 / SharePoint road map

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Enterprise Analytics & Reporting

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Currently the Company does not have a unified approach as it pertains to Enterprise Analytics and Reporting. The Company does currently leverage IBM's Cognos BI for reporting capabilities, but self-service capabilities are not present within the system. As more systems are implemented, the business will demand more self-service reporting and analytics to support data driven decisions within the business. A unified approach to analytics and reporting will be developed and implemented.

Solution

Develop an enterprise-wide robust analytics and reporting approach that enables the end users to develop reports and analytical dashboards via self-service capabilities. Solution to be determined.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,844,000	$975,000	$652,000	$695,000	$806,000	$716,000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — resource availability due to additional workload, changing priorities
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other — improved business processes, data management, visibility

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections ☐
- ☑ Code Requirement/PSC — Various projects to monitor & manage code & PSC requirements
- ☑ Other Program Type — Various projects to monitor & manage operational compliance

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Increase Quality & Speed of Delivery of Application Testing

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Currently there's no standard and automated way of testing software functionality. So the results are not consistent and it takes longer to validate the functionality.

Solution

Continuation to design test scripts across all systems coupled with the automation of testing wherever effective. This will save time and make testing more consistent. It'll also help in validating functionality (in the form of regression testing) whenever code changes are made.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,134,000	$178,000	$217,000	$232,000	$269,000	$239,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other: conflicting priorities.

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other: improved business processes, data management

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Cyber Security

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Compliance

Description of Problem

Due to the increasing technological landscape & the tools associated with cybersecurity posture, investments in Cybersecurity tools and programs are required to ensure compliance and mitigation of risks wherever possible.

Solution

Implementation of cybersecurity tools and solutions that remediate risks and provide additional layers of security are necessary to bolster the cybersecurity posture year over year.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,664,000	$921,000	$598,000	$426,000	$258,000	$1,461,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — resource availability due to additional workload, changing priorities
- ☑ Other — funding availability due to changing priorities/competing projects

Primary Project Objective Safety/Security

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other — improved cybersecurity posture and program to remediate risks.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☑ Other Program Type — Cyber Safety

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: PowerPlan System Enhancements and Upgrades

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

The Company leverages PowerPlan to manage and plan the capital budget, as well as harness other capabilities. In order to ensure that the system remains up to date and can support changing business and technological needs, upgrades and enhancements are necessary.

Solution

Upgrade and Expand functionality of the PowerPlan software to meet changing business needs.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,672,000	$986,000	$0	$0	$0	$1,686,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other — Conflicting priorities

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Business Agility with Enterprise SOA

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The Business Agility with an Enterprise SOA (Service Oriented Architecture) program will establish the foundation and tools to allow Central Hudson to be more agile in business process implementation by exposing core business logic and enabling the integration of key processes and information. SOA will be key to how fast we deliver, how we can leverage existing business functions across our portfolio.

Solution

In 2014, the software tools were purchased for Oracle SOA Suite and in 2015, together with our Strategic Partners, we installed and configured these tools. In 2016, we have deployed several services within SOA. The continued investment in SOA is a necessity in order to reduce complexity and costs. It will bring flexibility, interoperability, discoverability, reusability, and shared services, allowing us to leverage new and existing business logic via exposed services.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Definitive Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,146,000	$390,000	$399,000	$425,000	$493,000	$438,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — Resource Availability due to additional workload and projects.
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☑ Other Program Type — Strategic integration platform development

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Tagetik System Enhancements and Upgrades

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Central Hudson has replaced its expense planning tool, previously Clarity, that had reached end of life. The new solution, Tagetik was implemented late 2019, and requires system version upgrades and enhancements to keep current with system versions and support business processes and needs.

Solution

Upgrade and Expand functionality of the Budget planning software to meet changing business needs.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,647,000	$542,000	$543,000	$0	$0	$562,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other — Conflicting priorities

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other — Better insight into financial planning

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Unified Comm. VOIP, IVR Upgrades/Enhancements & Extending Collaboration

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Our existing communication tools do not provide a seamless experience over different types of communications like instant messaging, voice, video conferencing.

Solution

Extension, upgrades, and enhancements of UC collaboration solutions.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,357,000	$134,000	$276,000	$292,000	$340,000	$315,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement Provide strategic collaboration platform
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Intranet (Wiki) Redesign & Replacement

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The current platform for the internal Intranet system is running on a legacy platform and faces support issues. This platform is a central location for the Company's employees to find information on different processes and groups throughout the company.

Solution

Implement a software solution, to be determined, that provides the company's employees with a collaborative content and site management platform.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,055,000	$709,000	$345,000				TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — resource availability due to additional workload, changing priorities
- ☑ Other — funding availability due to changing priorities/competing projects

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other — improved system performance and collaborative platform

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement — Internal Intranet is old, outdated and cumbersome to support
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Workday Enhancements

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

At the end of 2019, our new HRIS solution, Workday, was implemented for core HR and payroll functionaltiy. As the business needs changes, and additional features and capabilities within the platform are available and needed for our business, implementation will be required.

Solution

Implement additional modules for support of HR and other company functionality.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,646,000	$331,000	$380,000	$292,000	$340,000	$302,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — Availability of workforce.
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement — Extend strategic platform to meet changing business needs
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Digital Initiatives for Customer Engagement (DICE)

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

This program is in-line with the continued investments in the Digital Customer Interactive channels within the company. This is inclusive of investments within the Mobile, Web and Voice channels. Currently all 3 forms of communications with the Company have disparate experiences and different functionalities within. The Company's customers are demanding a streamlined approach and increased self-service options when interacting with the Company.

Solution

This program will look to further develop and enhance all channels of interaction with the customer - Web, Mobile and Voice. The investments will streamline and further develop the self-service functionality offered, as well as harmonize the channels.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$8,007,000	$1,456,000	$1,489,000	$1,587,000	$1,841,000	$1,635,000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — Resource Availablity due to additional workload and projects.
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: AMI Pilot

Form submitted by: Barbara Colurciello

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Currently, half of Central Hudson's meters are manual meters that are read manually by a meter reader. This directly impacts customer service, drives contact volumes, causes customer dissatisfaction, impacts productivity and the accuracy of reads to our customers. It subjects the company to damage claims and puts our employees at risk when entering customer property and driving approximately 55,000 miles/year. It increases the risk for error.

Solution

AMI metering (Advanced Metering Infrastructure) technology allows both operational efficiency and performance in the field. It allows meters to be read remotely so that meter readers do not have to drive or enter our customers property. These meters are accurate, which decreases inaccurate billing and customer calls to our contact center. As part of Central Hudson's future, AMI will bring a direct focus to customer experience allowing customers to be more energy efficient, receive bill alerts and directly engage in their energy usage. In addition, AMI improves our outage response and allows us to lock/unlock remotely. It decreases theft of service and reduces truck rolls. Installing AMI meters in our service territory allows Central Hudson to track behavioral usage. More importantly it increases safety for our field personnel.

AMI provides 15 minute interval data which enables a better understanding of customer patterns; grid optimization, outage confirmation and development of new products and services.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,170,000	$1,084,000	$1,087,000				
Expense							

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — Pilot project will depend on Project Phoenix completion
- ☑ Manpower — determined at time of implementation
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — reduce field forces for meter reading
- ☑ Reduced Customer Bill — decrease billing inquiries
- ☑ Other

Risk Reduction

Safety

- ☑ Employee Safety — Increases safety by reduces employees in field
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 20 years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

We currently have 51% AMR Meters which are read remotely but do not provide the additional benefits that AMI brings to Outage Management and Customer Experience.

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: CIS Modernization

Form submitted by: Jeffery Doane

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Central Hudson Gas & Electric Corporation (the Company) is making a foundational investment to modernize and improve customer experience by replacing its 36-year-old legacy Customer Information System (CIS). This investment is necessary for Central Hudson to meet: (1) evolving customer expectations, (2) regulatory changes including more dynamic and complex billing formulations, and (3) changing business expectations as more systems and business processes are modernized. The SAP S/4 HANA platform will allow the company to transform its antiquated customer interactions to meet these key considerations and enable the Company to more effectively operate with modern customer information technology.

Solution

SAP's S/4 HANA Customer Relationship & Billing (CR&B) platform. The SAP S/4 HANA platform will allow the company to transform its antiquated customer interactions to meet these key considerations and enable the Company to more effectively operate with modern customer information technology.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Definitive Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$20,861,000	$18.228,000	$558,000	$650,000	$754,000	$671,000	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other: unforeseen scope adjustments resulting in change orders

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M: Efficiency gains
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Improve Customer Experience/Relationship, better response to regulatory requests, and better user efficiencies.

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Four CIS Modernization options were evaluated with research: live product demonstrations, networking with other utilities that have recently modernized their CIS, and conference calls with product vendors and peer utilities. The four options evaluated were: 1) Status Quo, 2) Rearchitect, 3) Bolt On, and 4) Replace with commercial software. each option was rated according to Strategy Alignment, Buy-In & Support, Risks & Viability, Capability Attainment, and Total Cost of Ownership. Ultimately, option #4 for a full replacement was selected.

Decision criteria for alternative selection

Using a weighting methodology developed by our contracted consultant, EY, with the Company's Executive CIS Steering Committee input, each option was rated according to Strategy Alignment, Buy-In & Support, Risks & Viability, Capability Attainment, and Total Cost of Ownership. At the conclusion of researching the four options, the Company's project team and CIS Executive Steering Committee completed a scoring of the four options and the ability to meet the desired future state capabilities. The weighted average scoring yielded a 69% score for replacement.

Budget Submittal Form for Common Projects

Project Name: CIS - Customer Relationship Management (CRM)

Form submitted by: Anthony S. Campagiorni

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Customer relationship management (CRM) is a technology for managing the customer relationship life cycle with the intent of growing business relationships with current customers and prospects. A CRM system helps companies stay connected to customers, streamline processes, and improve profitability.

Central Hudson's mainframe system does not cost effectively enable a CRM solution, and the CIS functionality that our new business team uses for this purpose (JREQ) will be left in place when the Company migrates to a SAP environment in 2021. This is not a long term solution. Having a better tool to support customer sales opportunities, next best actions to deepen the customer relationship (based on data) and new business expansion is critical.

Solution

Specific software solution and how to best leverage SAP software to be determined.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$6,300,000			$1,135,000	$5,164,000		
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other — CRM design and integration has cost risks that have not yet been fully vetted. Capital budget amounts are high level estimates at this time.

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — Efficiency gains
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other | Improve Customer Experience/Relationship

Alternatives Analysis

Reference Report or Study | None completed yet.

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Emergency Management Software - Upgrades & Ehancements

Form submitted by: Ryan Hawthorne

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

This project consists of investments to software systems utilized during an electric or gas emergency event (Avineonics, myWorld, Notifi/StormCentral, Municipal Portal, etc). Ongoing investment in Emergency Management systems to keep systems up to date, capitalize on process improvements, and continue to meet PSC-issued orders.

Solution

Investment in emergency management systems to ensure the business is adequately prepared to respond to, and report on, electric and gas emergency activities. Ongoing capital spend to perform necessary upgrades and configuration changes as deemed by the business.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,818,000	$352,000	$348,000	$250,000	$452,000	$416,000	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower — Resource Availablity due to additional workload and projects.
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☑ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☑ Code Requirement/PSC — Compliance with future issued PSC Orders
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ____ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☑ Other Program Type — Keeping systems current and up to date

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Software Emergent Funding (CIS/CX, EWAM, ERP, IT Engineering Initiatives, Application Services)

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Technology and customer expectations are rapidly changing, and the Company will need to pivot to ensure alignment with these expectations. Due to the unforeseen possibilities and demands in future years, Emergent Packages are difficult to plan for.

Solution

Based on the level of spending and transformation throughout the remainder of the capital IT Portfolio, Emergent Software Packages are projected year-over-year to enable the IT department to adapt to the changing demands within the technology environment.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$12,581,000	$3,420,000	$3,511,000	$2,559,000	$1,773,000	$1,317,000	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other — Conflicting Priorities

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other — Ability to implement technology solutions demanded by the changing environment of the company.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement — Aging Technology Platforms within the Portfolio
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Estimating Design SBS AUD Software

Form submitted by: Frank Bailey

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Daily Operations

Description of Problem

Central Hudson's estimating design to as-built process has several inefficiencies and opportunities for modernization.

Currently all distribution design projects are drawn up in detail with work locations, details of installations/removals/transfers and bills of material in AutoCAD utilizing a printed set of electric or gas distribution construction standards. After drawing and keying in this information into the AutoCAD design once an Estimator then has to again manually key in the information to our FOS mainframe system which contains the costing information for the material and labor required and kicks off the required financial approval process and ultimate assignment of a work order number.

Once approvals are obtained, the package is printed and transmitted to the T&D groups for scheduling, material ordering and ultimately construction. After construction is completed, a paper as-built package is routed for close out to Drafting/GIS for mapping/asset database updates which are again drawn and keyed in manually. Next the asset package is routed to the OMS group for similar updates to the outage management electric model and finally on to Plant Accounting for financial closeout.

Solution

Spatial Business Systems offers an extension to AutoCAD that automates a number of these duplicated tasks for estimating as well as apply automated standards checks against the design being created for both gas and electric. In addition the software extension can also import the existing facilities to be upgraded/repaired/replaced from a GIS asset model so that and Estimator does not have to spend time sketching up the existing facilities. Last the software also has the ability to integrate with the FOS mainframe system and export the completed bill of material and labor costing estimate information into FOS in the necessary format to complete the estimating process and kick off the financial approvals and work order creation.
With the system is integrated toGIS at the beginning of the process, change sets are also created that can be used to update the GIS during the as-built recording process after construction is completed. This allows the GIS technicians to simply import the changes including all the ancillary asset information into the GIS. The only manual entry of data required will be any information that was not available during the design process such as serial numbers for equipped that was installed, any settings information, fuse sizes and any construction deviations from the design.
Overall the project will help streamline the estimating process, improve the quality of the designs produced,save time and improve productivity for the Estimating and GIS staff.
(This is an in-flight project that will go in service in 2020. Year 1 costs shown here are the license subscription 3 year renewal costs for the SBS AUD Extension and AutoCAD licenses that come due in 2021 and again in Year 4, 2024.)

Cost estimate (include AFUDC if appropriate):

Type of estimate: Bid Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,187,000	$542,000	$0	$0	$646,000	$0	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Risk Reduction

Benefits:

Economic

- ☑ Reduced O&M Productivity improvements for Estimating and GIS
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

GeoSpatial Innovations GIS based design solution and Schneider Electric's GIS based ArcFM Designer solution were both evaluated.

Decision criteria for alternative selection

Selecting an AutoCAD based solution provided an easier transition/training for Estimators at Central Hudson that already use this software on a daily basis. The SBS AUD solution also offered more features than the other solutions and had ready integrations to engineering pole modeling software that the company is currently investigating (SpidaCalc).

Budget Submittal Form for Common Projects

Project Name: Enterprise Work and Asset Management (EWAM) Implementation

Form submitted by: Donald L. DuBois, Jr.

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Central Hudson currently utilizes Legacy Mainframe applications for the data associated with both Asset Management and Work Management but the various operating areas have also introduced software solutions to assist in completing the work and asset management functions as well as internal and/or compliance reporting requirements. This has resulted in a siloed and fragmented application landscape that would benefit from a more holistic approach to streamline standardize, and introduce transformational improvements through the implementation of an Enterprise Work and Asset Management (EWAM) solution. A project was initiated in 2019 based on the need and desire to evaluate our current state processes and systems utilized for work planning, work management, and asset management to identify the challenges and opportunities for improvement as inputs to developing the catalog of future state business requirements.

A Request for Proposal (RFP) was developed in April to obtain assistance from a Professional Services Vendor for the EWAM project which included the following three phases or objectives:

1) Performing an assessment of the existing Work Management and Work Planning tools as well as mainframe and/or software systems utilized for Asset Management to create a Current State Summary with identified Challenges and Opportunities for Improvement.

2) Creating a catalog of Business Requirements to reflect the current state and future state business architecture for Work Planning, Work Management, and Asset Management.

3) Development of a Business Case and Implementation Road Map to meet near term and future business needs associated with Work Planning, Work Management, and Asset Management on an enterprise basis in a cost effective manner.

Solution

The results of the assessment that was completed as part of phase 1 identified over 225 challenges and over 165 opportunities for improvement. There were over 1,600 business requirements compiled and prioritized as part of phase 2. There were two options evaluated to address the future state EWAM requirements. The first option was a tactical approach that included extending and integrating the current applications and streamlining some of the current processes. The tactical solution assessment revealed that only 18 percent of the identified Business Requirements could be satisfied by extending the existing mainframe and software systems. For this reason, the tactical approach was eliminated from further consideration. The decision was made to implement a new EWAM solution that would enable the standardization of processes, consolidation of software and mainframe systems, and application of a standard data model across business functions. The Implementation Road Map considered a Big Bang approach as well as a Phased approach to implementation. Although the Big Bang approach was the shortest path to full scope delivery, had a lower overall cost of implementation, and included design and test efficiencies due to optimization, the Business Case Analysis identified a higher net benefit over the next ten years for the Phased approach to implementation because the cost savings were realized sooner as each phase was implemented.

Implementation of the EWAM solution is projected to take twenty-five months and is scheduled to commence after the first quarter of 2022 and is anticipated to be completed in the second quarter of 2024.

Cost estimate (include AFUDC if appropriate):

Type of estimate: ☐ Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$34,421,000	$258,000	$18,738,000	$14,636,000	$513,000	$276,000	Licenses & Upgrades
Expense	$5,417,333		$1,416,735	$1,733,956	$1,283,433	$983,209	On-going Support Costs

Cost Risks

Environmental

☑ Timing/Permitting — Commencing EWAM is contingent of the completion of the CIS Modernization Project.

☑ Manpower — Internal Resource Availability due to additional workload and projects.

☐ Other

Primary Project Objective — Service

Benefits:

Economic

☑ Reduced O&M — The Business Case Analysis results were positive which supports the project.

☐ Reduced Customer Bill

☑ Other — Reduced Capital: The Business Case Analysis identified capital savings as well as O & M savings associated with implementation of the EWAM solution.

Risk Reduction

Safety

☑ Employee Safety — Company PPE, MSP and O&M requirements can be attached to each order

☑ Public Safety — Same as above, reducing risk of incident.

☐ Other Program Type

Compliance

☑ Inspections — Standardization and centralization of inspection programs

☑ Code Requirement/PSC — Standardization and centralization of compliance documentation

☑ Other Program Type — Application to track DIMP associated work, reducing manual tracking.

Infrastructure

☐ Average Age of Infrastructure ____ years

☑ Failure Rates — Allow for standard and consistent approach for failure analysis and metrics

☑ Obsolete/Unserviceable Equipment — Ease of identification and tracking

☑ Condition — Standard & consistent process for condition and risk analysis - data driven approach

☑ Strategic Replacement — Allow for standard & consistent equip. replacement based on cond.

☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

See Solution Section above.

Decision criteria for alternative selection

See Solution Section above.

Budget Submittal Form for Common Projects

Project Name: Finance Implementation

Form submitted by: Donald L. DuBois, Jr.

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Central Hudson currently utilizes Legacy Mainframe applications for the data associated with Finance but software solutions and spreadsheets are also being leveraged to assist in completing the Finance functions as well as internal and/or compliance reporting requirements. This has resulted in a siloed and fragmented application landscape that would benefit from a more holistic approach to streamline, standardize, and introduce transformational improvements through the implementation of a Finance solution. An assessment of Finance will need to be completed to evaluate our current state processes and systems utilized for Finance to identify the challenges and opportunities for improvement as inputs to developing the catalog of future state business requirements.

Utilizing assistance from a Professional Services Vendor the Finance Assessment will include the following three phases or objectives:

1) Performing an assessment of the existing mainframe and/or software systems utilized for Finance to create a Current State Summary with identified Challenges and Opportunities for Improvement.

2) Creating a catalog of Business Requirements to reflect the current state and future state business architecture for Finance.

3) Development of a Business Case and Implementation Road Map to meet near term and future business needs associated with Finance in a cost effective manner.

Solution

The results of the assessment that was completed for EWAM indicated that implementation of a Finance solution should also be considered at the same time to take advantage of the synergy between Finance and EWAM for product evaluation and implementation. The implementation of Finance coincident with EWAM would also provide for integration and configuration optimization and eliminate the need for expensive and inefficient integrations of the new solution with the mainframe for financial processes. Similar to the EWAM assessment, it is anticipated that the majority of the identified Business Requirements for Finance will not be satisfied by extending the existing mainframe and software systems to provide the required functionality. For this reason, implementation of a new Finance solution that would enable the standardization of processes, consolidation of software and mainframe systems, and application of a standard data model across business functions while eliminating the risk associated with the nearly 40 year old mainframe system is the recommended course of action.

It is anticipated that implementation of the Finance solution will take eighteen months to complete including the assessment which is scheduled to commence during the second half of 2021. The Finance solution is projected to go into service during the first quarter of 2023.

Cost estimate (include AFUDC if appropriate):

Type of estimate: ☐ Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$17,411,000	$0	$12,226,000	$4,258,000	$646,000	$281,000	Licenses & Upgrades
Expense	$6,669,113	$0	$1,573,023	$2,089,167	$1,838,840	$1,168,083	On-going Support Costs

Cost Risks

- ☐ Environmental
- ☑ Timing/Permitting — Commencing Finance contingent of the completion of the CIS Modernization Project.
- ☑ Manpower — Internal Resource Availability due to additional workload and projects.
- ☐ Other

Primary Project Objective — Service

Benefits:

Economic

- ☑ Reduced O&M — The Business Case Analysis is anticipated to identify some O & M savings.
- ☐ Reduced Customer Bill ☐
- ☑ Other — Reduced Capital: The Business Case Analysis is anticipated to identify capital savings as well as O & M savings associated with implementation of the Finance solution.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☑ Code Requirement/PSC — Simplified compliance with Financial and Regulatory reporting
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement — Eliminate the cost/risk associated with the aging mainframe system
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

See Solution Section above.

Decision criteria for alternative selection

See Solution Section above.

Budget Submittal Form for Common Projects

Project Name: Transformation of Integrated Energy Accounting System

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The current Integrated Energy Accounting system that supports the Energy Resources department in their operations of electric and gas commodity purchases currently resides on the ERP Mainframe platform.

Solution

Identify a future state solution that will satisfy the current business capabilities and processes and implement within. This is in-line with the IT Strategy of migrating away from the Mainframe ERP solution.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,163,000	$325,000	163,000			674,000	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other — Conflicting Priorities & availability of alternative solutions.

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other — Migration of current business processes within Mainframe ERP solution to alternate solution / technology.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement — Aging Technology Platforms
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: IT Hardware

Form submitted by: Zachary P. Miller

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

IT Hardware reaches its end of life around 5 years after initial implementation and purchase. In order to support the operations of the systems that run on those devices, hardware refresh is necessary on a regular cycle. The IT Hardware budget category includes budgetary figures for regular replacements of aging hardware and infrastructure; Phone Replacements, PC & Laptop Replacements, Mobile Field Device Replacements, Device Peripherals Replacements, Server Replacements & Storage Replacements, Network Infrastructure Upgrade & Replacements, Cybersecurity related hardware, and copiers.

Solution

Regular replacement of aging infrastructure and hardware.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$17,695,000	$3,730,000	$3,675,000	$3,966,000	$2,944,000	$3,380,000	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☑ Manpower
- ☑ Other: Conflicting Priorities, ability to source hardware

Primary Project Objective: Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other: Ability to implement current hardware solutions.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☑ Strategic Replacement: Aging Hardware Replacements
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: IVR Replacement

Form submitted by: Jay Rocco

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Our current IVR has a complex design with narrow functionality and restrictive business rules that limit self service. Customers encounter a maze of IVR legs that are the result of add ons to an old system, busy signals due to the lack of capacity and system issues. The management team is unable to extract the analytics necessary for customer call arrival patterns, granular call data and VoC data. In addition, management is limited with the information provided to properly forecast staffing to better anticipate customer's calling needs thus creating large volumes of availability and hold patterns. The Company relies heavily on a contracted outside resource to program the IVR and improve customer experience, and Openscape fixes and new features often disrupt the IVR.

Solution

From a customer perspective, the IVR architecture we currently have is lacking the self-service options and predictive analytics necessary to mitigate the customer's need to speak with a live agent. In addition, an IVR with predictive analytics would be able to anticipate the reason for the customer's call in some cases and satisfy them more quickly. From a company perspective, an updated IVR would mitigate customer contacts by improving our containment percentages. This would be achieved by having more website based analytics that would allow Contact Center management to identify IVR pain points from a customer perspective and correct those issues. In addition, an IVR with this analytics framework would provide accurate customer and call data enabling the Contact Center management team to update their staffing model by interval allowing for a leaner staffing model. Pairing a new phone system with a new IVR will create a much more reliable and comprehensive customer experience and ensure the merging of data from both products to create a comprehensive analytics suite.

Software solutions still need to be fully vetted.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	4,341,000	$2,167,000	$2,174,000	$0	$0	$0	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Forrester was engaged to analysis our current system and future needs and they determined that our current vendor doesn't have the capacity to provide us with better tools to serve our customer. As a result the decision has been made with the assistance of Forrester and their knowledge in the field to identify potential new vendors and begin an RFP process.

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: RPA - Contact Center Customer Supporting Automation

Form submitted by: Jay Rocco

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Central Hudson's Contact Center has off phone activities that require approximately 18 FTEs dedicated to processing exceptions, closing work in various orders and other manual work required due to system or business process constraints. Some of this work requires the intervention of a trained CSR but much of this work could be automated. When this backlog of work is not completed in a timely manner, it creates pain points for the customer and drives unnecessary repeat phone or other contact volume.

Solution

Instituting an RPA program in the Contact Center would enable our trained staff to focus on inbound contacts and other more complicated value added work. Assigning and designing simpler but timely tasks to a "Bot" would create more efficient processing of work during off hours and reduce repeat customer contacts.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	2,021,000	$406,000	$408,000	$0	$646,000	$562,000	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: DMS Phase 4

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: Maintain System Standards

Investment Category: Daily Operations

Description of Problem

The Distribution Management System v3.6 (DMS) was purchased from Schneider Electric (SE) in 2014. The current system architecture is dependent upon Windows Operating Systems which are currently at or facing Microsoft's End of Life.

The v3.6 to v3.8 SP1 upgrade was reviewed in 2019 and it was determined that the cost and timeline aligned with a replacement strategy and not an upgrade strategy. Therefore, it was recommended to do a continued evaluation in 2020 to see if a possibility to replace the DMS and align with more mature EMS vendors was appropriate.

Solution

The upgrade/replacement of the DMS addresses replacement of end of life Windows operating systems and includes an additional Work Order Management module, interfaces to common external historians and migration of all existing data and customizations. Regardless of upgrade or replacement strategy, existing work put in to the DMS project is not wasted as it will be migrated into the upgraded or new system.

Consideration will be given to moving to a common platform with the current/future EMS.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,524,000	1,524,000					
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☑ Other — This work is subject to coordination with Distribution System Operations.

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — Less data migration between versions.
- ☐ Reduced Customer Bill ☐
- ☑ Other — Work on Phase 4 including the GIS model and development of critical policies and procedures is beneficial to the Phase 5 project which includes implementation of the OMS.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Based on the recommendation from the vendor, the upgrade will allow for a reliable Distribution Management System and also address aging software and hardware support issues. By maintaining an up-to-date system, there are reduced risks of threats to control system networks.

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Continue to run under v3.6 until new Primary Control Center is built. This would make for a much larger database migration and data conversion from v3.6 to v3.8 SP1 or possible replacement DMS.

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: DMS Phase 5 (OMS)

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

To maintain reliable and secure operations of the Distribution Management System (DMS) and integrate Outage Management System (OMS) into DMS and move away from existing end-of-life OMS.

Solution

This is a placeholder for the next required upgrade of the existing DMS system and implementation of OMS into the DMS. This upgrade will replace aging DMS software and hardware and implement the OMS in the existing system.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	3,627,000		3,627,000				
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☑ Other — This work is subject to coordination with Distribution System Operations and is dependent upon the GIS model development.

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☑ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Provide a reliable Distribution Management System to monitor and operate the Electric and Gas Distribution systems and maintain strict compliance for system security. Also provide a reliable Outage Management System to replace the current end-of-life OMS.

Consideration will be given to moving to a common platform with the EMS.
The schedule of this project may be modified to coincide with the new Primary Control Center.

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: EMS Software Upgrade

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

To maintain reliable and secure operations of the Energy Management System (EMS).

Solution

This is a placeholder for the next required upgrade of the existing EMS system. This upgrade will replace aging GE PowerOn Reliance software and hardware or replace existing EMS with a new system vendor.

Decision is dependent upon the direction of the EMS software now that the GE/Alstom merger is complete.

Evaluation of possible EMS systems will be completed in 2021 with the system updated or new EMS implemented in 2022 and finalized in 2023.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	5,829,000	123,000	5,324,000	382,000			
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☑ Other — Depending on the reliability and functionality of the future hybrid GE/Alstom system, CH may choose to move forward with an EMS system replacement. This could impact cost of the project.

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Provide a reliable Energy Management System for operations to monitor and operate the Electric and Gas Transmission systems and maintain strict compliance for system security.

Consideration will be given to moving to a common platform with the DMS.

The schedule of this project may be modified to coincide with the new Primary Control Center.

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: OT New Primary Control Center (NS NOC, OT Supporting Systems)

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Projected staffing levels has exceeded the available work space within the existing secured area that is necessary for the Energy Management System (EMS), Distribution Management System (DMS) and Network Strategy (NS) which require a 24/7 Control Operations Center within a secured Physical Security Perimeter.

Central Hudson is working on the the planning and design of a new Training Center and Primary Control Center facilities, which is a separate project.

Solution

The OT New Primary Control Center includes the establishment of the NS NOC at the new PCC and all supporting systems required for operations and compliance at the new PCC. This includes network infrastructure, situational awareness video walls and controllers, DAC hardware, required peripherals (printers, monitors,) compliance management systems, physical access control systems, data historians and all NERC CIP compliance assessments required by the implementation and certification of a new PCC.

The following projects are aligned with the new PCC time line, but are independent:

DMS Phase 5 (OMS Implementation) - New or upgraded DMS at the new PCC to be added with OMS

EMS Upgrade - New or upgraded EMS at the new PCC to be added as a third Control Center. The existing PCC will become the Alternate Control Center (ACC) once the move to the new PCC location is complete and the existing ACC in Newburgh will be retired.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	12,535,000	6,307,000	5,699,000	529,000			
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☑ Other: This work is subject to coordination with transmission and distribution system operations.

Primary Project Objective Service

Benefits:

Economic

- ☐ Reduced O&M
- ☐ Reduced Customer Bill ☐
- ☑ Other: Increased situational awareness for Transmission and Distribution System Operators at the new PCC with the addition of video wall technologies.

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☐ Average Age of Infrastructure ☐ years
- ☐ Failure Rates
- ☐ Obsolete/Unserviceable Equipment
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study: Plans for the Training Center and PCC are being developed separately

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Land Mobile Radio System Enhancements

Form submitted by: Tera Stoner

Budget Group: 44 - Communication

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

Central Hudson owns, operates and maintains a Land Mobile Radio system for mission critical communication between Dispatch to field crews and between field crews themselves. Sites are currently linked by multiple methods such as third-party TELCO and fiber optic services. This system and sites experience high rates of failure.

Solution

This work includes the continuation of the console replacement project and migration of existing sites onto the company's internal Operational Technology Communication network (Network Strategy.) This migration includes the analysis of existing sites and migration to new sites or additional sites needed to strengthen the reliability of this critical system using the existing technologies in place and the eventual migration of consoles from the IT network onto the segregated OT network.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,036,000	$406,000	$928,000	$946,000	$756,000	0	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — operational costs are projected to decrease
- ☑ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 20 years
- ☑ Failure Rates — high failure rates with existing TELCO equipment
- ☑ Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- ☐ Condition
- ☑ Strategic Replacement — New system will provide higher reliability,speed and security
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Land Mobile Radio System Upgrade

Form submitted by: Tera Stoner

Budget Group: 44 - Communication

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

Central Hudson currently owns, operates, and maintains a land mobile radio system for mission critical communication between Dispatch to field crews and between field crews themselves. Equipment currently employed within base radio sites is nearing end of life service and options for direct replacement are limited.

Solution

New technology will be explored ensuring compatibility at existing radio sites and portable fleet radios and utilizing OT Communications infrastructure (Network Strategy.) A study of new technology options will be conducted in 2023, followed by a pilot program in 2024, and construction starting in 2025.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,688,000	$254,000	$258,000	0	$540,000	$1,636,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — operational costs are projected to decrease
- ☑ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 20 years
- ☑ Failure Rates — end-of-life service for existing radio equipment
- ☑ Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- ☐ Condition
- ☑ Strategic Replacement — New system will provide higher reliability,speed and security
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Network Strategy Project - Network Strategy Enhancements

Form submitted by: Tera Stoner

Budget Group: 44 - Communication

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

Central Hudson constructed an internal network for communication with its fixed assets. This project was referred to as the Network Strategy Project. The Network Strategy Project was approved in the Order Approving Rate Plan issued by the New York State Public Service Commission on June 17, 2015. Building off of the existing system will be needed to continue the mission of the project, “... to leverage technologies for current and future communication needs..." and to maintain our "...robust systems that provide reliable and secure communications.”

Solution

Projects within this category include fiber optic construction between substations and NS Junction Box locations, NS Junction Box implementations, fiber IRUs and additional substation equipment to support fiber optic and microwave radio installations. These projects will build upon the existing robust systems that provide reliable and secure communications to fixed assets that we control, monitor and maintain 24x7x365.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,498,000	$212,000	$952,000	$1,262,000	$472,000	$600,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — operational costs are projected to decrease
- ☑ Reduced Customer Bill — Project supports the DMS/DA implementation and resulting cost reductions.
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 20 years
- ☑ Failure Rates — high failure rates with existing TELCO equipment
- ☑ Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- ☐ Condition
- ☑ Strategic Replacement — New system will provide higher reliability,speed and security
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Network Strategy Project

Form submitted by: Tera Stoner

Budget Group: 44 - Communication

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

Central Hudson is in the process of constructing an internal network for communication with its fixed assets. This project is referred to as the Network Strategy Project. The Network Strategy Project was approved in the Order Approving Rate Plan issued by the New York State Public Service Commission on June 17, 2015. The Network Strategy Team developed the following problem statement. "A well-defined plan to leverage technologies for current and future communication needs does not exist. This absence has led to a patchwork of infrastructure and technologies that lacks adequate documentation and results in poor reliability for some applications. A long term, cost effective strategy is needed to establish robust systems that provide reliable and secure communications."

Solution

Network Strategy is a well-defined plan to leverage technologies for current and future communication needs. This is a long-term cost effective strategy to establish robust systems that provide reliable and secure communications that we can control, monitor and maintain 24x7x365. The scope of Network Strategy is communication with Central Hudson's fixed assets. Central Hudson's fixed assets included in the scope are corporate offices, gas gate and regulator stations, electric substations, electric system distribution automation equipment, mobile radio towers, and large customer meter installations. Central Hudson's planned topology is a tiered network. Tier 1 is the high bandwidth backbone connecting our most critical sites, including our most critical substations. Tier 1 will be a combination of existing and new fiber optic cables and microwave connections. Most of the sites on the Tier 1 network will also serve as gateways for connection to the Tier 2 network. Tier 2 is the medium bandwidth network. Tier 2 will be a mesh radio network for communication with distribution automation equipment, electric substations, gas regulator stations and large customer meter installations. Provision would be made available for a future Tier 3 low bandwidth network that could reach further into our territory for future needs.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$6,250,000	$2,084,000	$2,062,000	$2,103,000	$0	$0	
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — operational costs are projected to decrease
- ☑ Reduced Customer Bill — Project supports the DMS/DA implementation and resulting cost reductions.
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 20 years
- ☑ Failure Rates — high failure rates with existing TELCO equipment
- ☑ Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- ☐ Condition
- ☑ Strategic Replacement — New system will provide higher reliability,speed and security
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study: 2015 Business as Usual vs DA/NS/DMS Cost Justification Analysis

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Radio Minor

Form submitted by: Tera Stoner

Budget Group: 44 - Communication

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

Unspecified emergent minor capital improvements for the existing Land Mobile Radio System base stations and tower sites.

Solution

Unspecified emergent minor capital improvements for the existing Land Mobile Radio System base stations and tower sites.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,132,000	$211,000	$219,000	$225,000	$235,000	$242,000	TBD
Expense							

Cost Risks

- ☐ Environmental
- ☐ Timing/Permitting
- ☐ Manpower
- ☐ Other

Primary Project Objective Service

Benefits:

Economic

- ☑ Reduced O&M — Reduced O&M as aged infrastructure is replaced.
- ☐ Reduced Customer Bill
- ☐ Other

Risk Reduction

Safety

- ☐ Employee Safety
- ☐ Public Safety
- ☐ Other Program Type

Compliance

- ☐ Inspections
- ☐ Code Requirement/PSC
- ☐ Other Program Type

Infrastructure

- ☑ Average Age of Infrastructure 20 years
- ☑ Failure Rates — high failure rates with existing equipment
- ☑ Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- ☐ Condition
- ☐ Strategic Replacement
- ☐ Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

DETAIL SCHEDULES 2021-2025 FORECAST

	Electric Addition			W/ AFUDC, Inflated, & OH Adjustment					
CAT.	**Description**	**Discretion Level**	**Preliminary In-Service Date**	**2021**	**2022**	**2023**	**2024**	**2025**	**5-Year Total**
Production	Sturgeon Pool Major Overhaul Unit#3	Maintain System Standards	12/31/2021	3,428	-	-	-	-	3,428
Production	Sturgeon Pool Major Overhaul Unit#2	Maintain System Standards	12/31/2022	703	5,175	-	-	-	5,877
Production	Dashville Rubber Gate & Head Gate Replacements	Maintain System Standards	12/31/2022	259	1,866	-	-	-	2,125
Production	Dashville Major Overhaul #1	Maintain System Standards	12/31/2024	-	536	4,369	-	-	4,905
Production	Dashville Major Overhaul #2	Maintain System Standards	12/31/2023	-	-	546	4,450	-	4,996
Production	Dashville Remote Start	System Enhancements	12/31/2024	-	-	-	84	-	84
Production	Sturgeon Pool Window Replacements	Maintain System Standards	12/31/2025	-	-	-	-	1,098	1,098
Production	Hydro SCADA - New Com Link	Maintain System Standards	12/31/2025	-	-	-	-	135	135
Production	Sturgeon Pool Dam Camera System (need network upgrade 1st)	System Enhancements	12/31/2025	-	-	-	-	225	225
Production	High Falls Facility Camera System (need network upgrade 1st)	System Enhancements	12/31/2025	-	-	-	-	788	788
Production	Sturgeon Pool Plant Roof Replacement	Maintain System Standards	Ongoing	155	-	-	-	-	155
Production	GT Minor Projects	Maintain System Standards	Ongoing	259	268	273	279	-	1,079
Production	**Subtotal - Electric Production**			**4,803**	**7,846**	**5,188**	**4,812**	**2,246**	**24,895**
Transmission	High Priority Replacements	Non-Discretionary	On-going	4,786	4,470	5,170	5,535	5,500	25,460
Transmission	Transmission Minor Projects	Non-Discretionary	On-going	273	257	279	299	297	1,405
Transmission	- FK Line (Kerhonkson - High Falls)	Maintain System Standards	12/31/2021	1,206	-	-	-	-	1,206
Transmission	- MK or HK Line (Honk Falls - Kerhonkson)	Maintain System Standards	12/31/2022	-	568	-	-	-	568
Transmission	ROW Repair Project (Deficiencies)	Maintain System Standards	On-going	403	522	620	739	550	2,835
Transmission	Honk Falls Substation Tie-in (Kerhonkson Autotransformers)	Maintain System Standards	6/1/2021	207	-	-	-	-	207
Transmission	Knapps Corners Substation Tie-in (115kV KB & SK Lines)	Maintain System Standards	12/1/2021	906	-	-	-	-	906
Transmission	Trap Rock Substation Tie-in and TR Line retirement	Maintain System Standards	12/1/2022	-	731	-	-	-	731
Transmission	69kV KM Line Rebuild - Knapps to Myers - 102C	Maintain System Standards	12/1/2022	209	3,111	-	-	-	3,320
Transmission	69kV TV Line Rebuild - Myers to North Chelsea - 102C	Maintain System Standards	12/1/2021	7,113	209	-	-	-	7,322
Transmission	SB Line: New 115kV Line - Hurley Ave. to Saugerties - Article VII: 11.11 miles	Maintain System Standards	12/1/2022	8,891	13,823	547	111	55	23,426
Transmission	H Line: New 115kV Line - Saugerties to N.Catskill - Article VII: 12.25 miles	Maintain System Standards	12/1/2024	504	2,756	12,908	7,328	110	23,606
Transmission	HG Line: New 69kV Line - Honk Fallls to Neversink - Part 102C	Maintain System Standards	12/1/2025	151	261	3,464	11,291	8,690	23,857
Transmission	Q Line: New 69kV Line - Pleasant Valley - Rhinebeck	Maintain System Standards	12/1/2026	101	157	258	2,214	11,439	14,169
Transmission	115kV SK Line Rebuild	Maintain System Standards	12/1/2025	-	52	103	111	4,125	4,391
Transmission	69kV GM Line: Retirement of Clinton Avenue Tap Section	Maintain System Standards	12/1/2024	-	-	-	55	-	55
Transmission	**Subtotal - Electric Transmission**			**24,750**	**26,915**	**23,351**	**27,683**	**30,766**	**133,465**
Substation	Substation Minor Projects	Non-Discretionary	On-going	520	514	560	597	573	2,764
Substation	Substation Battery Replacement Program	Non-Discretionary	On-going	70	39	80	85	82	356

Substation	ESP Infrastructure Repl. (relays, meters, data transfer equip, etc.).	Maintain System Standards	On-going	904	2,830	2,743	5,225	4,351	16,054
Substation	RTU / PLC Replacement Program	Maintain System Standards	On-going	122	793	1,599	-	819	3,333
Substation	Breaker Replacement Program (345kV)	Maintain System Standards	On-going	751	749	728	-	-	2,227
Substation	Breaker Replacement Program (115kV, 69kV, 13.8kV)	Maintain System Standards	On-going	222	382	2,099	320	-	3,022
Substation	345kV Switch Replacement Program	Maintain System Standards	On-going	624	587	799	853	819	3,682
Substation	115kV Switch Replacement Program	Maintain System Standards	On-going	232	734	899	1,999	1,920	5,784
Substation	Transformer Condition-based Replacements	Maintain System Standards	On-going	-	-	-	-	1,536	1,536
Substation	Switchgear Condition-based Replacements	Maintain System Standards	Future	-	1,032	1,749	-	2,048	4,829
Substation	Substation D-Sustaining Projects	Maintain System Standards	1/0/1900	1,352	1,130	20	-	-	2,501
Substation	Substation T-Sustaining Projects	Maintain System Standards	1/0/1900	2,009	-	-	-	-	2,009
Substation	Coxsackie New Switchgear & 22MVA Transformer	Maintain System Standards	2/1/2021	201	-	-	-	-	201
Substation	Rock Tavern 115kV Modernization (6 -115kV Breakers and Relays)	Maintain System Standards	2/1/2021	502	-	-	-	-	502
Substation	Bethlehem Road - UB Line Relay Upgrade & Breaker Replacement	Maintain System Standards	12/1/2021	803	-	-	-	-	803
Substation	Union Avenue - UB Line Relay Upgrade	Maintain System Standards	12/1/2021	201	-	-	-	-	201
Substation	Converse St. Upgrade (14/4kV Transformers, relays, and RTU)	Maintain System Standards	12/1/2021	723	-	-	-	-	723
Substation	Myers Corners Switchgear Upgrade & 69kV Breaker TV-399-KM Repl	Maintain System Standards	12/1/2021	1,808	50	-	-	-	1,857
Substation	Woodstock - Switchgear Replacement	Maintain System Standards	12/1/2021	1,506	-	-	-	-	1,506
Substation	Knapps Corners - New Substation	Maintain System Standards	12/1/2021	2,812	298	-	-	-	3,110
Substation	Modena - Add 3rd Bkr to complete 115kV Ring Bus (see P&MK memo)	Maintain System Standards	12/1/2021	221	-	-	-	-	221
Substation	Milan PLC Replacement	Maintain System Standards	12/1/2021	301	793	20	-	-	1,115
Substation	New Baltimore Upgrade (New 12MVA Transformer, relays, and 15kV breakers)	Maintain System Standards	6/30/2022	301	1,240	20	-	-	1,561
Substation	Terminal upgrade work for 115kV (High Falls, Galeville, Sturgeon Pool, and Modena)	Maintain System Standards	6/30/2022	301	793	50	-	-	1,145
Substation	P Line moved to 115kV Bus (Included in Minors and Terminal Upgrade work)	Maintain System Standards	6/30/2022	50	694	50	-	-	794
Substation	Montgomery St. 14kV Switchgear Upgrade	Maintain System Standards	6/30/2022	301	1,552	20	-	-	1,873
Substation	Smithfield Relay Modernization	Maintain System Standards	12/1/2022	427	298	-	-	-	724
Substation	Tilcon - Tap Station	Non-Discretionary	12/1/2022	1,004	2,975	-	-	-	3,979
Substation	Modena PLC Replacement	Maintain System Standards	12/1/2023	502	198	899	32	-	1,632
Substation	Lincoln Park Switchgear Upgrade & Relay Upgrade	Maintain System Standards	12/1/2023	-	476	1,224	-	-	1,700
Substation	Shenandoah Upgrade (26 - 15kV Roll ins and Relay Replacements)	Maintain System Standards	6/1/2024	-	99	1,616	1,813	-	3,528
Substation	Jansen Ave Substation Upgrade	Maintain System Standards	Future	-	-	499	853	513	1,865
Substation	Coxsackie - DEC Peaker Regulation Project	Maintain System Standards	12/31/2024	-	-	3,997	3,903	-	7,900
Substation	South Cairo - DEC Peaker Regulation Project	Maintain System Standards	12/31/2024	-	-	999	7,209	-	8,208
Substation	Hurley Avenue - SDU (Smart Wires)	System Enhancements	12/1/2021	3,013	-	-	-	-	3,013
Substation	Four Corners Micro Grid (Collect Cost)	System Enhancements	3/1/2022	2,009	-	-	-	-	2,009
Substation	Unidentified Equipment Failure	Maintain System Standards	12/1/2024	-	-	-	2,133	-	2,133
Substation	**Subtotal - Electric Substation**			**23,793**	**18,255**	**20,670**	**25,022**	**12,660**	**100,401**
New Business	New Business	Non-Discretionary	On-going	2,402	2,435	2,527	2,732	2,756	12,852
New Business	New Business - Blanket OH	Non-Discretionary	On-going	3,519	3,519	3,580	3,795	3,843	18,256
New Business	New Business - Blanket URD Combo	Non-Discretionary	On-going	958	971	1,008	1,090	1,099	5,126

New Business	New Business - Blanket URD	Non-Discretionary	On-going	144	146	197	305	307	1,099
New Business	**Subtotal - Electric New Business**			**7,023**	**7,072**	**7,311**	**7,921**	**8,005**	**37,332**
Distribution	Distribution Improvement Blankets (15BL-01)	Non-Discretionary	On-going	9,157	9,251	9,419	9,778	9,830	47,436
Distribution	Relocation Blankets (15BL-02)	Non-Discretionary	On-going	203	206	209	217	218	1,054
Distribution	Distribution Improvement Minors (1511-0X)	Non-Discretionary	On-going	610	617	628	652	655	3,162
Distribution	Distribution Improvement Conversions (1521-0X)	Non-Discretionary	On-going	305	308	314	326	328	1,581
Distribution	Road/Bridge Rebuild Relocation Projects (1531-0X)	Non-Discretionary	On-going	763	874	890	923	928	4,378
Distribution	CATV Make-ready	Non-Discretionary	On-going	1,017	514	523	543	546	3,144
Distribution	Distribution Improvement (1551-0X) - Thermal / Voltage	Non-Discretionary	On-going	-	-	-	1,358	1,638	2,996
Distribution	Distribution Improvement (1551-0X) - Reliability	Maintain System Standards	On-going	1,701	2,146	2,721	2,173	2,185	10,926
Distribution	CEMI/Worst Circuit Reliability Program	Maintain System Standards	On-going	1,496	2,359	2,219	2,173	2,185	10,431
Distribution	Resiliency Program	Maintain System Standards	On-going	509	514	523	652	819	3,017
Distribution	Distribution Improvement (1551-0X) - Operating/ Infrastructure Condition	Maintain System Standards	On-going	2,825	5,730	5,493	5,674	5,680	25,401
Distribution	5kV Aerial Cable Replacement Program	Maintain System Standards	On-going	275	771	471	489	492	2,497
Distribution	Overhead Secondary Replacement Program	Maintain System Standards	On-going	203	206	209	217	218	1,054
Distribution	Distribution Pole Replacement Program	Maintain System Standards	On-going	6,105	9,251	9,419	9,778	9,830	44,383
Distribution	Copper Wire Replacement Program	Maintain System Standards	On-going	1,038	642	654	652	655	3,642
Distribution	4800 V Conversion/Infrastructure Program	Maintain System Standards	On-going	2,174	2,607	3,663	3,802	3,823	16,070
Distribution	14.4 kV Cable Rejuvenation	Maintain System Standards	On-going	1,170	1,747	1,779	1,847	437	6,981
Distribution	Oil Switch Replacement	Maintain System Standards	On-going	102	103	105	109	109	527
Distribution	CE Mesh / Protector Relays	Maintain System Standards	On-going	122	123	126	130	131	632
Distribution	Secondary Network Upgrade Program (All Districts)	Maintain System Standards	On-going	254	514	523	706	710	2,708
Distribution	URD replacement	Maintain System Standards	On-going	610	308	1,047	1,086	1,420	4,472
Distribution	Converse Street Transformer and Switchgear Replacement	Maintain System Standards	On-going	509	514	-	-	-	1,023
Distribution	8054/8056/8044 - TV Line Underbuild	Maintain System Standards	On-going	1,475	-	-	-	-	1,475
Distribution	New Baltimore Circuit Exits	Maintain System Standards	On-going	538	463	-	-	-	1,001
Distribution	Greenfield Road Circuit Exits	Maintain System Standards	On-going	-	925	-	-	-	925
Distribution	Clinton Avenue Retirement Conversions	Maintain System Standards	On-going	509	-	419	-	-	927
Distribution	111 & 112 - Retire South Wall Street Substation	Maintain System Standards	On-going	-	-	314	-	-	314
Distribution	Storm Hardening	Maintain System Standards	On-going	6,359	12,848	13,083	13,580	13,653	59,524
Distribution	Distribution Automation - Major Program ($2.7M carryover)	Maintain System Standards	On-going	6,364	6,432	961	226	197	14,180
Distribution	Distribution Automation - Other	Maintain System Standards	On-going	560	565	314	543	819	2,801
Distribution	**Subtotal - Electric Distribution Improvements**			**46,956**	**60,538**	**56,026**	**57,635**	**57,507**	**278,662**
Transformer	Transformers - New Business	Non-Discretionary	On-going	4,996	5,193	5,407	5,634	5,860	27,090
Transformer	Capacitors	Non-Discretionary	On-going	149	155	161	168	175	809
Transformer	Regulators	Non-Discretionary	On-going	803	834	869	905	942	4,353
Transformer	Network Protectors	Non-Discretionary	On-going	45	46	48	50	52	242
Transformer	**Subtotal - Electric Transformers**			**5,993**	**6,229**	**6,485**	**6,758**	**7,029**	**32,493**
Meter	X041A - Special Meter Installations	Non-Discretionary	On-going	173	184	197	212	226	992

Meter	X042A - Instrument Transformers	Non-Discretionary	On-going	381	407	436	467	500	2,191
Meter	X043A - Electric Meters	Non-Discretionary	On-going	2,234	2,387	2,563	2,752	2,944	12,880
Meter	AMI Pilot	Non-Discretionary	On-going	3,047	-	-	-	-	3,047
Meter	**Subtotal - Electric Meters**			**5,835**	**2,979**	**3,196**	**3,431**	**3,670**	**19,110**
	Total - Electric			**119,153**	**129,833**	**122,228**	**133,263**	**121,883**	**626,359**

Electric Removal

CAT.	Description	Discretion Level	2021	2022	2023	2024	2025	5-Year Total
Production	Sturgeon Pool Major Overhaul Unit#3	Maintain System Standards	56	-	-	-	-	56
Production	Sturgeon Pool Major Overhaul Unit#2	Maintain System Standards	-	57	-	-	-	57
Production	Dashville Rubber Gate & Head Gate Replacements	Maintain System Standards	-	104	-	-	-	104
Production	Dashville Major Overhaul #1	Maintain System Standards	-	-	-	81	-	81
Production	Dashville Major Overhaul #2	Maintain System Standards	-	-	79	-	-	79
Production	Sturgeon Pool Window Replacements	Maintain System Standards	-	-	-	-	83	83
Production	GT Major Overhaul/Water Injunction - Coxsackie	Maintain System Standards	-	-	-	-	2,203	2,203
Production	GT Major Overhaul/Water Injection - South Cairo	Maintain System Standards	-	-	-	-	2,203	2,203
Production	Sturgeon Pool Plant Roof Replacement	Maintain System Standards	20	-	-	-	-	20
Production	**Subtotal - Electric Production**		**76**	**161**	**79**	**81**	**4,490**	**4,887**
Transmission	High Priority Replacements	Non-Discretionary	1,125	1,036	1,164	1,187	1,212	5,723
Transmission	Transmission Minor Projects	Non-Discretionary	55	59	63	65	66	308
Transmission	- FK Line (Kerhonkson - High Falls)	Maintain System Standards	130	-	-	-	-	130
Transmission	- MK or HK Line (Honk Falls - Kerhonkson)	Maintain System Standards	-	66	-	-	-	66
Transmission	Honk Falls Substation Tie-in (Kerhonkson Autotransformers)	Maintain System Standards	54	-	-	-	-	54
Transmission	Knapps Corners Substation Tie-in (115kV KB & SK Lines)	Maintain System Standards	102	-	-	-	-	102
Transmission	Trap Rock Substation Tie-in and TR Line retirement	Maintain System Standards	-	688	-	-	-	688
Transmission	69kV KM Line Rebuild - Knapps to Myers - 102C	Maintain System Standards	-	363	-	-	-	363
Transmission	69kV TV Line Rebuild - Myers to North Chelsea - 102C	Maintain System Standards	617	-	-	-	-	617
Transmission	SB Line: New 115kV Line - Hurley Ave. to Saugerties - Article VII: 11.11 miles	Maintain System Standards	1,223	1,871	63	-	-	3,158
Transmission	H Line: New 115kV Line - Saugerties to N.Catskill - Article VII: 12.25 miles	Maintain System Standards	-	373	1,757	2,741	75	4,946
Transmission	HG Line: New 69kV Line - Honk Fallls to Neversink - Part 102C	Maintain System Standards	-	-	-	1,295	1,322	2,617
Transmission	Retirement of O & OB Line Section from Dashville Tap to Ohioville	Maintain System Standards	51	52	317	324	331	1,074
Transmission	Q Line: New 69kV Line - Pleasant Valley - Rhinebeck	Maintain System Standards	-	-	-	-	1,653	1,653
Transmission	Removal of SL / SD , SJ and WM Tap Lines	Maintain System Standards	610	1,243	1,270	-	-	3,122
Transmission	115kV SK Line Rebuild	Maintain System Standards	-	-	-	-	441	441
Transmission	69kV GM Line: Retirement of Clinton Avenue Tap Section	Maintain System Standards	-	-	-	593	-	593
Transmission	**Subtotal - Electric Transmission**		**3,965**	**5,752**	**4,635**	**6,205**	**5,099**	**25,655**
Substation	Substation Minor Projects	Non-Discretionary	102	104	219	237	237	898
Substation	Substation Battery Replacement Program	Non-Discretionary	10	7	24	26	13	81

Substation	ESP Infrastructure Repl. (relays, meters, data transfer equip, etc.).	Maintain System Standards	41	210	190	318	573	1,333
Substation	RTU / PLC Replacement Program	Maintain System Standards	20	41	169	-	165	396
Substation	Breaker Replacement Program (345kV)	Maintain System Standards	51	52	53	-	-	155
Substation	Breaker Replacement Program (115kV, 69kV, 13.8kV)	Maintain System Standards	30	41	222	108	-	402
Substation	345kV Switch Replacement Program	Maintain System Standards	203	52	106	216	220	797
Substation	115kV Switch Replacement Program	Maintain System Standards	102	73	95	216	220	705
Substation	Transformer Condition-based Replacements	Maintain System Standards	-	-	212	593	364	1,169
Substation	Switchgear Condition-based Replacements	Maintain System Standards	-	104	212	270	463	1,048
Substation	Substation D-Sustaining Projects	Maintain System Standards	157	135	5	-	-	297
Substation	Substation T-Sustaining Projects	Maintain System Standards	102	-	-	-	-	102
Substation	Coxsackie New Switchgear & 22MVA Transformer	Maintain System Standards	20	-	-	-	-	20
Substation	Rock Tavern 115kV Modernization (6 -115kV Breakers and Relays)	Maintain System Standards	51	104	-	-	-	154
Substation	Bethlehem Road - UB Line Relay Upgrade & Breaker Replacement	Maintain System Standards	81	103	-	-	-	184
Substation	Union Avenue - UB Line Relay Upgrade	Maintain System Standards	20	-	-	-	-	20
Substation	Converse St. Upgrade (14/4kV Transformers, relays, and RTU)	Maintain System Standards	41	10	11	-	-	62
Substation	Myers Corners Switchgear Upgrade & 69kV Breaker TV-399-KM Repl	Maintain System Standards	102	-	212	-	-	313
Substation	Woodstock - Switchgear Replacement	Maintain System Standards	102	104	-	-	-	205
Substation	Knapps Corners - New Substation	Maintain System Standards	102	104	-	-	-	205
Substation	Knapps Corners - Retire Old Substation	Retirement	-	314	317	-	-	631
Substation	Modena - Add 3rd Bkr to complete 115kV Ring Bus (see P&MK memo)	Maintain System Standards	81	-	-	-	-	81
Substation	Milan PLC Replacement	Maintain System Standards	30	83	11	-	-	124
Substation	New Baltimore Upgrade (New 12MVA Transformer, relays, and 15kV breakers)	Maintain System Standards	30	83	4	-	-	118
Substation	Terminal upgrade work for 115kV (High Falls, Galeville, Sturgeon Pool, and Modena)	Maintain System Standards	30	83	5	-	-	119
Substation	P Line moved to 115kV Bus (Included in Minors and Terminal Upgrade work)	Maintain System Standards	5	73	5	-	-	83
Substation	Montgomery St. 14kV Switchgear Upgrade	Maintain System Standards	30	83	5	-	-	119
Substation	Smithfield Relay Modernization	Maintain System Standards	51	31	-	-	-	82
Substation	Tilcon - Tap Station	Non-Discretionary	102	-	-	-	-	102
Substation	Modena PLC Replacement	Maintain System Standards	51	21	106	5	-	183
Substation	Lincoln Park Switchgear Upgrade & Relay Upgrade	Maintain System Standards	-	52	127	-	-	179
Substation	Shenandoah Upgrade (26 - 15kV Roll ins and Relay Replacements)	Maintain System Standards	-	10	212	302	-	524
Substation	Jansen Ave Substation Upgrade	Maintain System Standards	-	-	85	162	58	305
Substation	Conway - Retire Substation	Retirement	81	-	-	-	-	81
Substation	Balmville - Retire Substation	Retirement	81	-	-	-	-	81
Substation	Maryland Ave - Retire Substation	Retirement	95	-	-	-	-	95
Substation	Clinton Ave. - Retire Substation	Retirement	102	-	-	-	-	102
Substation	Removals at SD, SJ (Sugarloaf)	Retirement	122	-	-	-	-	122
Substation	South Wall Street	Retirement	-	104	-	-	-	104
Substation	**Subtotal - Electric Substation**		**2,229**	**2,178**	**2,607**	**2,454**	**2,314**	**11,781**
New Business	New Business	Non-Discretionary	109	111	114	116	118	569

New Business	New Business - Blanket OH	Non-Discretionary	102	104	106	108	110	529
New Business	New Business - Blanket URD Combo	Non-Discretionary	22	22	22	23	23	112
New Business	New Business - Blanket URD	Non-Discretionary	22	22	22	23	23	112
New Business	**Subtotal - Electric New Business**		**254**	**259**	**264**	**270**	**275**	**1,323**
Distribution	Distribution Improvement Blankets (15BL-01)	Non-Discretionary	1,010	937	957	977	997	4,878
Distribution	Relocation Blankets (15BL-02)	Non-Discretionary	22	21	21	22	22	108
Distribution	Distribution Improvement Minors (1511-0X)	Non-Discretionary	67	62	64	65	66	325
Distribution	Distribution Improvement Conversions (1521-0X)	Non-Discretionary	34	31	32	33	33	163
Distribution	Road/Bridge Rebuild Relocation Projects (1531-0X)	Non-Discretionary	84	88	90	92	94	450
Distribution	CATV Make-ready	Non-Discretionary	112	52	53	54	55	327
Distribution	Distribution Improvement (1551-0X) - Thermal / Voltage	Non-Discretionary	-	-	-	136	166	302
Distribution	Distribution Improvement (1551-0X) - Reliability	Maintain System Standards	188	217	277	217	222	1,120
Distribution	CEMI/Worst Circuit Reliability Program	Maintain System Standards	165	239	226	217	222	1,068
Distribution	Resiliency Program	Maintain System Standards	56	52	53	65	83	310
Distribution	Distribution Improvement (1551-0X) - Operating/ Infrastructure Condition	Maintain System Standards	312	580	558	567	576	2,593
Distribution	5kV Aerial Cable Replacement Program	Maintain System Standards	30	78	48	49	50	255
Distribution	Overhead Secondary Replacement Program	Maintain System Standards	22	21	21	22	22	108
Distribution	Distribution Pole Replacement Program	Maintain System Standards	673	937	957	977	997	4,542
Distribution	Copper Wire Replacement Program	Maintain System Standards	114	65	66	65	66	378
Distribution	4800 V Conversion/Infrastructure Program	Maintain System Standards	240	264	372	380	388	1,644
Distribution	14.4 kV Cable Rejuvenation	Maintain System Standards	129	177	181	185	44	716
Distribution	Oil Switch Replacement	Maintain System Standards	11	10	11	11	11	54
Distribution	CE Mesh / Protector Relays	Maintain System Standards	13	12	13	13	13	65
Distribution	Secondary Network Upgrade Program (All Districts)	Maintain System Standards	28	52	53	71	72	276
Distribution	URD replacement	Maintain System Standards	67	31	106	109	144	458
Distribution	Converse Street Transformer and Switchgear Replacement	Maintain System Standards	56	52	-	-	-	108
Distribution	8054/8056/8044 - TV Line Underbuild	Maintain System Standards	163	-	-	-	-	163
Distribution	New Baltimore Circuit Exits	Maintain System Standards	59	47	-	-	-	106
Distribution	Greenfield Road Circuit Exits	Maintain System Standards	-	94	-	-	-	94
Distribution	Clinton Avenue Retirement Conversions	Maintain System Standards	56	-	43	-	-	99
Distribution	111 & 112 - Retire South Wall Street Substation	Maintain System Standards	-	-	32	-	-	32
Distribution	Storm Hardening	Maintain System Standards	701	1,301	1,330	1,357	1,385	6,074
Distribution	Distribution Automation - Major Program ($2.7M carryover)	Maintain System Standards	702	651	98	23	20	1,494
Distribution	Distribution Automation - Other	Maintain System Standards	62	57	32	54	83	288
Distribution	**Subtotal - Electric Distribution Improvements**		**5,179**	**6,131**	**5,695**	**5,758**	**5,833**	**28,596**
Transformer	Transformers - New Business	Non-Discretionary	406	414	423	432	441	2,116
Transformer	**Subtotal - Electric Transformers**		**406**	**414**	**423**	**432**	**441**	**2,116**
Meter	X041A - Special Meter Installations	Non-Discretionary	10	10	11	11	11	53
Meter	**Subtotal - Electric Meters**		**10**	**10**	**11**	**11**	**11**	**53**

	Total - Electric		**12,119**	**14,906**	**13,714**	**15,209**	**18,462**	**74,410**

	Gas Addition			W/ AFUDC, Inflated, & OH Adjustment					
CAT.	**Description**	**Discretion Level**	**Preliminary In-Service Date**	**2021**	**2022**	**2023**	**2024**	**2025**	**5-Year Total**
Transmission	Cathodic Test Stations	Maintain System Standards	12/1/2021	36	-	-	-	-	36
Transmission	Gas Chromatographs	System Enhancements	12/1/2021	102	-	-	-	-	102
Transmission	Transmission ROW Capital Improvements	Maintain System Standards	12/1/2021	102	-	-	-	-	102
Transmission	Prior Year Projects	Maintain System Standards	12/1/2021	25	-	-	-	-	25
Transmission	Remote Operated Valves	Non-Discretionary	12/1/2021	300	-	-	-	-	300
Transmission	AH Line Valve (AH-11) Replacement	Maintain System Standards	12/1/2021	398	-	-	-	-	398
Transmission	Mahopac Gate Station Filter and Heater	Maintain System Standards	12/1/2021	703	-	-	-	-	703
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain System Standards	12/1/2021	300	-	-	-	-	300
Transmission	Cathodic Test Stations	Maintain System Standards	12/1/2022	-	36	-	-	-	36
Transmission	Transmission ROW Capital Improvements	Maintain System Standards	12/1/2022	-	104	-	-	-	104
Transmission	Prior Year Projects	Maintain System Standards	12/1/2022	-	26	-	-	-	26
Transmission	Remote Operated Valves	Non-Discretionary	12/1/2022	-	719	-	-	-	719
Transmission	AH Line Valve (AH-12, 13, 14) Replacement	Maintain System Standards	12/1/2022	-	823	-	-	-	823
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain System Standards	12/1/2022	-	408	-	-	-	408
Transmission	Cathodic Test Stations	Maintain System Standards	12/1/2023	-	-	42	-	-	42
Transmission	Transmission ROW Capital Improvements	Maintain System Standards	12/1/2023	-	-	105	-	-	105
Transmission	Prior Year Projects	Maintain System Standards	12/1/2023	-	-	26	-	-	26
Transmission	AH Line Valve (AH-10) Replacement	Maintain System Standards	12/1/2023	-	-	358	-	-	358
Transmission	AH Line Valve (AH-9) Replacement	Maintain System Standards	12/1/2023	-	-	411	-	-	411
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain System Standards	12/1/2023	-	-	413	-	-	413
Transmission	Remote Operated Valves	Non-Discretionary	12/1/2023	-	-	779	-	-	779
Transmission	Cathodic Test Stations	Maintain System Standards	12/1/2024	-	-	-	49	-	49
Transmission	Transmission ROW Capital Improvements	Maintain System Standards	12/1/2024	-	-	-	109	-	109
Transmission	Prior Year Projects	Maintain System Standards	12/1/2024	-	-	-	27	-	27
Transmission	AH Line Valve (AH-7) Replacement	Maintain System Standards	12/1/2024	-	-	-	426	-	426
Transmission	AH Line Valve (AH-6) Replacement	Maintain System Standards	12/1/2024	-	-	-	371	-	371
Transmission	Remote Operated Valves	Non-Discretionary	12/1/2024	-	-	-	865	-	865
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain System Standards	12/1/2024	-	-	-	428	-	428
Transmission	Cathodic Test Stations	Maintain System Standards	12/1/2025	-	-	-	-	50	50
Transmission	Transmission ROW Capital Improvements	Maintain System Standards	12/1/2025	-	-	-	-	110	110
Transmission	Prior Year Projects	Maintain System Standards	12/1/2025	-	-	-	-	28	28
Transmission	AH Line Valve (AH-5) Replacement	Maintain System Standards	12/1/2025	-	-	-	-	429	429

Transmission	AH Line Valve (AH-4) Replacement	Maintain System Standards	12/1/2025	-	-	-	-	429	429
Transmission	Remote Operated Valves	Non-Discretionary	12/1/2025	-	-	-	-	872	872
Transmission	Pipeline Integrity	Maintain System Standards	12/1/2025	-	-	-	-	319	319
Transmission	**Subtotal Transmission**			**1,965**	**2,117**	**2,134**	**2,276**	**2,237**	**10,729**
Regulator Stations	Pressure Control Improvements	Maintain System Standards	12/1/2021	155	-	-	-	-	155
Regulator Stations	Pressure Recording Chart Replacements	Maintain System Standards	12/1/2021	206	-	-	-	-	206
Regulator Stations	Pilot Heater Installs	Maintain System Standards	12/1/2021	103	-	-	-	-	103
Regulator Stations	Regulator Station SCADA Implementation	System Enhancements	12/1/2021	206	-	-	-	-	206
Regulator Stations	Prior Year Projects	Maintain System Standards	12/1/2021	26	-	-	-	-	26
Regulator Stations	Central Valley Heater Install	Maintain System Standards	12/1/2021	200	-	-	-	-	200
Regulator Stations	Highland Mills Heater Install	Maintain System Standards	12/1/2021	200	-	-	-	-	200
Regulator Stations	Poughkeepsie Receival Heater, Filter, Inlet Valves Rebuild	Maintain System Standards	12/1/2021	761	-	-	-	-	761
Regulator Stations	Monument Square Property Purchase	Maintain System Standards	12/1/2021	203	-	-	-	-	203
Regulator Stations	Cannon St. Regulator Station Rebuild	Maintain System Standards	12/1/2021	815	-	-	-	-	815
Regulator Stations	Pressure Control Improvements	Maintain System Standards	12/1/2022	-	157	-	-	-	157
Regulator Stations	Pressure Recording Chart Replacements	Maintain System Standards	12/1/2022	-	210	-	-	-	210
Regulator Stations	Regulator Station SCADA Implementation	System Enhancements	12/1/2022	-	210	-	-	-	210
Regulator Stations	Prior Year Projects	Maintain System Standards	12/1/2022	-	26	-	-	-	26
Regulator Stations	Blue Point Heater Install	Maintain System Standards	12/1/2022	-	234	-	-	-	234
Regulator Stations	Poughkeepsie Receival Low and Medium Pressure Rebuild	Maintain System Standards	12/1/2022	-	644	-	-	-	644
Regulator Stations	Monument Square Station Rebuild	Maintain System Standards	12/1/2022	-	513	-	-	-	513
Regulator Stations	North Grand Regulator Station Rebuild	Maintain System Standards	12/1/2022	-	434	-	-	-	434
Regulator Stations	Clark St. Regulator Station Rebuild	Maintain System Standards	12/1/2022	-	527	-	-	-	527
Regulator Stations	Glasco Regulator Station Property Purchase	Maintain System Standards	12/1/2022	-	102	-	-	-	102
Regulator Stations	Pressure Control Improvements	Maintain System Standards	12/1/2023	-	-	214	-	-	214
Regulator Stations	Pressure Recording Chart Replacements	Maintain System Standards	12/1/2023	-	-	214	-	-	214
Regulator Stations	Regulator Station SCADA Implementation	System Enhancements	12/1/2023	-	-	214	-	-	214
Regulator Stations	Prior Year Projects	Maintain System Standards	12/1/2023	-	-	27	-	-	27
Regulator Stations	Broadway Regulator Station Property Purchase	Maintain System Standards	12/1/2023	-	-	211	-	-	211
Regulator Stations	Vail Road Heater Install	Maintain System Standards	12/1/2023	-	-	265	-	-	265
Regulator Stations	Mill Street Heater Install	Maintain System Standards	12/1/2023	-	-	265	-	-	265
Regulator Stations	South Street Property Purchase	Maintain System Standards	12/1/2023	-	-	214	-	-	214
Regulator Stations	Glasco Regulator Station Regulator Station Rebuild	Maintain System Standards	12/1/2023	-	-	522	-	-	522
Regulator Stations	Saugerties Station Rebuild	Maintain System Standards	12/1/2023	-	-	789	-	-	789
Regulator Stations	Pressure Control Improvements	Maintain System Standards	12/1/2024	-	-	-	221	-	221
Regulator Stations	Pressure Recording Chart Replacements	Maintain System Standards	12/1/2024	-	-	-	221	-	221
Regulator Stations	Regulator Station SCADA Implementation	System Enhancements	12/1/2024	-	-	-	221	-	221
Regulator Stations	Prior Year Projects	Maintain System Standards	12/1/2024	-	-	-	28	-	28
Regulator Stations	Regulator Station Rebuild/Build New Distribution Improvement	Maintain System Standards	12/1/2024	-	-	-	650	-	650

Regulator Stations	South Street Regulator Station Build	Maintain System Standards	12/1/2024	-	-	-	650	-	650
Regulator Stations	Cochecton Heater Install	Maintain System Standards	12/1/2024	-	-	-	274	-	274
Regulator Stations	North Cornwall Station Rebuild CW Feed	Maintain System Standards	12/1/2024	-	-	-	650	-	650
Regulator Stations	South Gates Estates Property Purchase	Maintain System Standards	12/1/2024	-	-	-	107	-	107
Regulator Stations	Pressure Control Improvements	Maintain System Standards	12/1/2025	-	-	-	-	224	224
Regulator Stations	Pressure Recording Chart Replacements	Maintain System Standards	12/1/2025	-	-	-	-	224	224
Regulator Stations	Regulator Station SCADA Implementation	System Enhancements	12/1/2025	-	-	-	-	224	224
Regulator Stations	Prior Year Projects	Maintain System Standards	12/1/2025	-	-	-	-	28	28
Regulator Stations	KS System Additional Feed, New Regulator Station	Maintain System Standards	12/1/2025	-	-	-	-	434	434
Regulator Stations	Broadway Regulator Station Build	Maintain System Standards	12/1/2025	-	-	-	-	657	657
Regulator Stations	Regulator Station Rebuild/Build New Distribution Improvement	Maintain System Standards	12/1/2025	-	-	-	-	657	657
Regulator Stations	South Gates Estates Rebuild	Maintain System Standards	12/1/2025	-	-	-	-	657	657
Regulator Stations	Catskill Heater Replacement	Maintain System Standards	12/1/2025	-	-	-	-	276	276
Regulator Stations	**Subtotal Regulator Stations**			**2,876**	**3,057**	**2,933**	**3,020**	**3,381**	**15,268**
New Business	Local & Service Blanket	Non-Discretionary	Multiple	6,227	6,195	6,224	6,434	6,338	31,418
New Business	New Business Specifics	Non-Discretionary	Multiple	1,846	1,830	1,781	1,797	1,700	8,953
New Business	Commercial Specifics	Non-Discretionary	Multiple	1,741	1,724	1,674	1,685	1,588	8,413
New Business	**Subtotal New Business**			**9,815**	**9,749**	**9,679**	**9,916**	**9,625**	**48,784**
Distribution	Corrosion Control	Maintain System Standards	Multiple	309	312	316	325	330	1,593
Distribution	Unidentified Road Rebuild - Includes Paving Proj	Maintain System Standards	Multiple	3,093	3,122	3,165	3,247	2,749	15,376
Distribution	Unident Cast Iron	Non-Discretionary	Multiple	155	156	158	162	165	796
Distribution	Unident Leaking - Includes Active Corrosion	Maintain System Standards	Multiple	773	780	791	812	825	3,981
Distribution	Service Replacement Blankets - Emergent	Non-Discretionary	Multiple	2,577	2,497	2,215	2,165	2,089	11,544
Distribution	Service Partial Replacement Identified DIPS	Non-Discretionary	Multiple	3,234	2,522	3,466	2,778	2,863	14,865
Distribution	Svce Repl Blankets DIPS	Non-Discretionary	Multiple	4,990	6,115	4,582	5,666	5,346	26,698
Distribution	Isolated Service Replacement Blankets	Non-Discretionary	Multiple	1,856	1,561	1,266	1,299	1,320	7,301
Distribution	Local Orders -	Maintain System Standards	Multiple	361	416	369	433	385	1,964
Distribution	Port Ewen - PK Line	Maintain System Standards	2019	-	-	-	-	3,079	3,079
Distribution	PN Line Next Mile South	Maintain System Standards	2020	2,577	-	-	-	-	2,577
Distribution	PN Line - 9D Wappingers South	Maintain System Standards	2021/2022	-	3,122	-	-	-	3,122
Distribution	PN Line - New Pipe to IBM	Maintain System Standards	2023	-	-	-	2,598	-	2,598
Distribution	PN Line - Wappingers Creek North	Maintain System Standards	2023	-	-	4,219	-	-	4,219
Distribution	TV Line	Maintain System Standards	2020	3,320	-	-	-	-	3,320
Distribution	Westwood/Windwood	Maintain System Standards	2021/2022	-	2,601	-	-	-	2,601
Distribution	Downing West of Grand	Maintain System Standards	2021	-	1,821	-	-	-	1,821
Distribution	Marys Avenue Tie - Reserve for Spring Street	Maintain System Standards	2021/2022	-	-	844	-	-	844
Distribution	North Highland	Maintain System Standards	2021	2,131	-	-	-	-	2,131
Distribution	Kingston and Wilbur	Maintain System Standards	2023	-	-	2,457	-	-	2,457

Distribution	Fleetwood Manor	Maintain System Standards	2022	-	1,611	-	-	-	1,611
Distribution	Uptown Fair Wall John	Maintain System Standards	2022	-	2,312	-	-	-	2,312
Distribution	South Highland	Maintain System Standards	2022	-	3,172	-	-	-	3,172
Distribution	MNG South	Maintain System Standards	2020	-	-	-	2,509	-	2,509
Distribution	South Wall Street Area	Maintain System Standards	2022	-	2,051	-	-	-	2,051
Distribution	Hudson View Development	Maintain System Standards	2021	1,858	-	-	-	-	1,858
Distribution	Mountain Avenue and WP Line	Maintain System Standards	2021	-	-	-	-	3,189	3,189
Distribution	Clifton Reg Station Neighborhood	Maintain System Standards	2021	3,137	-	-	-	-	3,137
Distribution	Cornwall 1- Mailler Ave/ Mill St	Maintain System Standards	2021	1,527	-	-	-	-	1,527
Distribution	MNG North	Maintain System Standards	2021	2,473	-	-	-	-	2,473
Distribution	Eastern Broadway Kingston	Maintain System Standards	2024	-	-	-	4,410	-	4,410
Distribution	BN Line Replacement	Maintain System Standards	2023	-	-	5,018	-	-	5,018
Distribution	SW Kingston	Maintain System Standards	2021	1,898	-	-	-	-	1,898
Distribution	Parker Ave	Maintain System Standards	2024	-	-	-	1,885	-	1,885
Distribution	Village of Fishkill - NW	Maintain System Standards	2023	-	-	937	-	-	937
Distribution	Washington Street Neighborhood	Maintain System Standards	2021	3,748	-	-	-	-	3,748
Distribution	Mansion, N. Hamilton, Violet	Maintain System Standards	2021	3,143	-	-	-	-	3,143
Distribution	Central Poughkeepsie	Maintain System Standards	2022	-	3,491	-	-	-	3,491
Distribution	NLP North - Carpenter Ave Area	Maintain System Standards	2022	-	3,120	-	-	-	3,120
Distribution	FNLP - Fullerton to West	Maintain System Standards	2022	-	2,879	-	-	-	2,879
Distribution	Lower Broadway and Spring Street	Maintain System Standards	2023	-	-	3,401	-	-	3,401
Distribution	East Saugerties	Maintain System Standards	2023	-	-	3,725	-	-	3,725
Distribution	Main Main Street Pok PLP	Maintain System Standards	2023	-	-	2,910	-	-	2,910
Distribution	Stewart Avenue System	Maintain System Standards	2023	-	-	695	-	-	695
Distribution	South St north of Fullerton - NLP	Maintain System Standards	2023	-	-	2,895	-	-	2,895
Distribution	Midtown Kingston	Maintain System Standards	2024	-	-	-	2,722	-	2,722
Distribution	Central West Pok	Maintain System Standards	2024	-	-	-	3,017	-	3,017
Distribution	Randolph,Ferris, Beachwood	Maintain System Standards	2024	-	-	-	3,456	-	3,456
Distribution	North NLP Newburgh	Maintain System Standards	2024	-	-	-	1,661	-	1,661
Distribution	Nbg Business District	Maintain System Standards	2024	-	-	-	3,742	-	3,742
Distribution	Uptown Kingston	Maintain System Standards	2025	-	-	-	-	2,388	2,388
Distribution	Fournier	Maintain System Standards	2025	-	-	-	-	4,586	4,586
Distribution	Mid Wall Fair	Maintain System Standards	2025	-	-	-	-	2,812	2,812
Distribution	Fairview Station	Maintain System Standards	2025	-	-	-	-	2,460	2,460
Distribution	SW Poughkeepsie Hamilton West	Maintain System Standards	2025	-	-	-	-	4,141	4,141
Distribution	PN Line IBM area	Maintain System Standards	2025	-	-	-	-	3,104	3,104
Distribution	Lacy Field	Maintain System Standards	2025	-	-	-	-	1,254	1,254
Distribution	**Subtotal Distribution Improvements**			**43,161**	**43,661**	**43,430**	**42,887**	**43,085**	**216,224**
Meter	X081A - Gas Meters	Non-Discretionary	Various	2,218	2,367	2,536	2,731	2,908	12,760

Meter	X084A - Special Meter Installation	Non-Discretionary	Various	761	774	789	810	823	3,957
Meter	2712-00-18 - Specific Work Orders	Non-Discretionary	Various	27	30	33	36	38	164
Meter	**Subtotal Gas Meters**			**3,007**	**3,171**	**3,358**	**3,576**	**3,769**	**16,881**
	Total Gas			**60,824**	**61,755**	**61,534**	**61,677**	**62,097**	**307,887**

	Common Addition			W/ AFUDC, Inflated, & OH Adjustment					
CAT.	**Description**	**Discretion Level**	**Preliminary In-Service Date**	**2021**	**2022**	**2023**	**2024**	**2025**	**5-Year Total**
Land & Buildings	Daily Operations - Electric	Maintain System Standards	on going	106	108	120	112	116	562
Land & Buildings	Daily Operations - Flooring	Maintain System Standards	on going	106	108	120	112	116	562
Land & Buildings	Daily Operations - HVAC	Maintain System Standards	on going	106	108	120	112	116	562
Land & Buildings	Daily Operations - Unidentified	Maintain System Standards	on going	532	539	599	560	581	2,811
Land & Buildings	EV Charging Infrastructure	Maintain System Standards	on going	266	269	300	280	290	1,405
Land & Buildings	Paving	Maintain System Standards	on going	266	269	300	560	581	1,976
Land & Buildings	Pave Center Portion of Parking Lot (+$100k)	Maintain System Standards	on going	160	-	-	-	-	160
Land & Buildings	Lighting Upgrade - Storeroom	Maintain System Standards	on going	43	-	-	-	-	43
Land & Buildings	Replace/Upgrade 803 RTU CHAZ Unit Main Floor	Maintain System Standards	on going	213	-	-	-	-	213
Land & Buildings	Replace Training Room HVAC Unit hook up to new controls	Maintain System Standards	on going	64	-	-	-	-	64
Land & Buildings	Call Center redesign	Maintain System Standards	on going	213	-	-	-	-	213
Land & Buildings	CallCenter Upfit	Maintain System Standards	on going	798	-	-	-	-	798
Land & Buildings	Replace roof Electrician garage	Maintain System Standards	on going	133	-	-	-	-	133
Land & Buildings	Bldg. 803 S3 HVAC fix	Maintain System Standards	on going	160	-	-	-	-	160
Land & Buildings	Bldg 810 - Replace Leibert units in Computer Room	Maintain System Standards	on going	192	-	-	-	-	192
Land & Buildings	Bldg 803 - Replace HVAC Units S1 & S2 level	Maintain System Standards	on going	266	-	-	-	-	266
Land & Buildings	Bldg 801 - Replace Windows 2nd Floor & Executive wing	Maintain System Standards	on going	372	-	-	-	-	372
Land & Buildings	Transformer dock replacement	Maintain System Standards	on going	479	-	-	-	-	479
Land & Buildings	Connect to municipal sewer	Maintain System Standards	on going	80	-	-	-	-	80
Land & Buildings	Bldge 803 - Call Center break room renovation	Maintain System Standards	on going	59	-	-	-	-	59
Land & Buildings	Replace pedestrian doors main building and garage	Maintain System Standards	on going	37	-	-	-	-	37
Land & Buildings	Facilities service drive	Maintain System Standards	on going	213	-	-	-	-	213
Land & Buildings	pole barn for facilities storage	Maintain System Standards	on going	106	-	-	-	-	106

Land & Buildings	Bldg. 800 Freight elevator replacement	Maintain System Standards	on going	745	-	-	-	-	745
Land & Buildings	Controls System HVAC	Maintain System Standards	on going	319	-	-	-	-	319
Land & Buildings	Bldg - 800 men's restroom renovation	Maintain System Standards	on going	133	-	-	-	-	133
Land & Buildings	Building 800 - Create Women's Rest Room 1st Floor	Maintain System Standards	on going	64	-	-	-	-	64
Land & Buildings	Building 803 - Replace Asbestos Tile	Maintain System Standards	on going	53	-	-	-	-	53
Land & Buildings	Building 805 Resurface and Restripe Garage Floors	Maintain System Standards	on going	64	-	-	-	-	64
Land & Buildings	Building 806 - Roof Replacement	Maintain System Standards	on going	266	-	-	-	-	266
Land & Buildings	Bldg 806 - Expand transformer storage area	Maintain System Standards	on going	69	-	-	-	-	69
Land & Buildings	Bldg 807 - Credit Union Roof Replacement	Maintain System Standards	on going	266	-	-	-	-	266
Land & Buildings	Record Retention design	Maintain System Standards	on going	53	-	-	-	-	53
Land & Buildings	Replace Carpeting - Main Bldg and Training Room (Fishkill)	Maintain System Standards	on going	87	-	-	-	-	87
Land & Buildings	Paving, drainage and sidewalk south parking lot	Maintain System Standards	on going	372	-	-	-	-	372
Land & Buildings	Transformer dock crane	Maintain System Standards	on going	80	-	-	-	-	80
Land & Buildings	Pave Front parking lot	Maintain System Standards	on going	160	-	-	-	-	160
Land & Buildings	Replace Sidewalks	Maintain System Standards	on going	59	-	-	-	-	59
Land & Buildings	Pave Pole & Equipment area	Maintain System Standards	on going	85	-	-	-	-	85
Land & Buildings	Replace Carpet in Auditorium with VCT	Maintain System Standards	on going	53	-	-	-	-	53
Land & Buildings	Replace Sloped Roof - Front Annex Bldg (+$100K A, +$180k R)	Maintain System Standards	on going	266	-	-	-	-	266
Land & Buildings	Replace lighting in the garage areas	Maintain System Standards	on going	32	-	-	-	-	32
Land & Buildings	Exterior lighting upgrades	Maintain System Standards	on going	106	-	-	-	-	106
Land & Buildings	Pole Racks	Maintain System Standards	on going	160	-	-	-	-	160
Land & Buildings	Office Renovation (foreman, crews & storeroom)	Maintain System Standards	on going	798	-	-	-	-	798
Land & Buildings	Renovate Restrooms	Maintain System Standards	on going	213	-	-	-	-	213
Land & Buildings	Exterior Door Replacements	Maintain System Standards	on going	106	-	-	-	-	106
Land & Buildings	Renovate conference room, remainder of building	Maintain System Standards	on going	319	-	-	-	-	319
Land & Buildings	Architectural Design	Maintain System Standards	on going	266	-	-	-	-	266
Land & Buildings	Bldg 802 - install awning @ drafting	Maintain System Standards	on going	-	11	-	-	-	11
Land & Buildings	Bldg 807 - Install awning @ customer service	Maintain System Standards	on going	-	11	-	-	-	11
Land & Buildings	Bldg 810 - Install awning @back entrance	Maintain System Standards	on going	-	11	-	-	-	11
Land & Buildings	Replace lighting throughout Electricians Area	Maintain System Standards	on going	-	215	-	-	-	215

Land & Buildings	Bldg 806 - Restroom Renovation	Maintain System Standards	on going	-	92	-	-	-	92
Land & Buildings	Bldg 805 Replace Roof	Maintain System Standards	on going	-	108	-	-	-	108
Land & Buildings	Replace HVAC Units	Maintain System Standards	on going	-	162	-	-	-	162
Land & Buildings	Replace Storeroom roof	Maintain System Standards	on going	-	539	-	-	-	539
Land & Buildings	Renovate Restrooms in Storeroom	Maintain System Standards	on going	-	162	-	-	-	162
Land & Buildings	Replace Roof - Linemens Bldg	Maintain System Standards	on going	-	519	-	-	-	519
Land & Buildings	Restroom Renovations	Maintain System Standards	on going	-	242	-	-	-	242
Land & Buildings	Raise Roof Height Fishkill Transportation	Maintain System Standards	on going	-	248	-	-	-	248
Land & Buildings	Hook up to municipal sewer	Maintain System Standards	on going	-	242	-	-	-	242
Land & Buildings	Expand parking lot	Maintain System Standards	on going	-	108	-	-	-	108
Land & Buildings	Replace Fuel pump, provide fueling station/slab	Maintain System Standards	on going	-	43	-	-	-	43
Land & Buildings	Misc. paving sidewalks	Maintain System Standards	on going	-	377	-	-	-	377
Land & Buildings	Record Retention build	Maintain System Standards	on going	-	162	-	-	-	162
Land & Buildings	Mailroom driveway, lift, dock, dumpster compaction	Maintain System Standards	on going	-	323	-	-	-	323
Land & Buildings	Replace Sidewalks	Maintain System Standards	on going	-	108	-	-	-	108
Land & Buildings	Ingress/Egress Improvements for Kingston Headquarters	Maintain System Standards	on going	-	377	-	-	-	377
Land & Buildings	Remove CNG Building/Pumps	Maintain System Standards	on going	-	11	-	-	-	11
Land & Buildings	Install plantings along fence line	Maintain System Standards	on going	-	54	-	-	-	54
Land & Buildings	Outdoor picnic patio/Executive lot	Maintain System Standards	on going	-	81	-	-	-	81
Land & Buildings	Security Card readers- mechanical rooms	Maintain System Standards	on going	-	54	-	-	-	54
Land & Buildings	Exterior Door Replacements	Maintain System Standards	on going	-	108	-	-	-	108
Land & Buildings	Mail Room dock & driveway	Maintain System Standards	on going	-	808	-	-	-	808
Land & Buildings	Architectural Design	Maintain System Standards	on going	-	269	-	-	-	269
Land & Buildings	Bldg 802 - Replace Windows	Maintain System Standards	on going	-	-	180	-	-	180
Land & Buildings	Replace Carpet - Contact Center	Maintain System Standards	on going	-	-	120	-	-	120
Land & Buildings	Renovate Sys Ops Restrooms	Maintain System Standards	on going	-	-	180	-	-	180
Land & Buildings	Replace Window - Bldg 805/806	Maintain System Standards	on going	-	-	120	-	-	120
Land & Buildings	Pave Portion of parking and roadway	Maintain System Standards	on going	-	-	360	-	-	360
Land & Buildings	Replace Roof Linemen's Garage	Maintain System Standards	on going	-	-	360	-	-	360
Land & Buildings	Renovate Restrooms	Maintain System Standards	on going	-	-	180	-	-	180

Land & Buildings	Install New Carpet	Maintain System Standards	on going	-	-	60	-	-	60
Land & Buildings	Install New HVAC Unit	Maintain System Standards	on going	-	-	120	-	-	120
Land & Buildings	Install New Roof Training Center	Maintain System Standards	on going	-	-	240	-	-	240
Land & Buildings	Architectural Design	Maintain System Standards	on going	-	-	300	-	-	300
Land & Buildings	Replace Rezner heater in Metershop	Maintain System Standards	on going	-	-	60	-	-	60
Land & Buildings	Paving	Maintain System Standards	on going	-	-	599	-	-	599
Land & Buildings	Bldg 803 - Replace Elevator	Maintain System Standards	on going	-	-	360	-	-	360
Land & Buildings	Renovate conference room, remainder of building	Maintain System Standards	on going	-	-	419	-	-	419
Land & Buildings	Freight Elevator loading dock & Driveway	Maintain System Standards	on going	-	-	180	-	-	180
Land & Buildings	Exterior Door Replacements	Maintain System Standards	on going	-	-	120	-	-	120
Land & Buildings	Replace Windows Front Bldg	Maintain System Standards	on going	-	-	-	280	-	280
Land & Buildings	Replace Carpet Tiles	Maintain System Standards	on going	-	-	-	112	-	112
Land & Buildings	Build Maintenance Shop	Maintain System Standards	on going	-	-	-	140	-	140
Land & Buildings	Bldg 801 - Replace Windows 1st Floor	Maintain System Standards	on going	-	-	-	224	-	224
Land & Buildings	Bldg 803 - Replace Carpet on S1 level	Maintain System Standards	on going	-	-	-	112	-	112
Land & Buildings	Bldg 802 - Replace HVAC Units	Maintain System Standards	on going	-	-	-	196	-	196
Land & Buildings	Bldg 807 - Replace tile flooring basement level	Maintain System Standards	on going	-	-	-	84	-	84
Land & Buildings	Bldg 807 - Upper Roof Replacement	Maintain System Standards	on going	-	-	-	196	-	196
Land & Buildings	Boiler Room - Office Build out	Maintain System Standards	on going	-	-	-	112	-	112
Land & Buildings	Replace siding on lodge and office	Maintain System Standards	on going	-	-	-	168	-	168
Land & Buildings	Newburgh - Replace Flooring	Maintain System Standards	on going	-	-	-	168	-	168
Land & Buildings	Install New HVAC Unit	Maintain System Standards	on going	-	-	-	112	-	112
Land & Buildings	Roof Replacement	Maintain System Standards	on going	-	-	-	157	-	157
Land & Buildings	Replace Generator	Maintain System Standards	on going	-	-	-	84	-	84
Land & Buildings	Pave Portion of parking and roadway	Maintain System Standards	on going	-	-	-	336	-	336
Land & Buildings	Architectural Design	Maintain System Standards	on going	-	-	-	280	-	280
Land & Buildings	Renovate S3 Call Center	Maintain System Standards	on going	-	-	-	560	-	560
Land & Buildings	Kingston traffic study implementations	Maintain System Standards	on going	-	-	-	336	-	336
Land & Buildings	Exterior Door Replacements	Maintain System Standards	on going	-	-	-	112	-	112
Land & Buildings	Rebuild Material Bins	Maintain System Standards	on going	-	-	-	-	116	116

Land & Buildings	Replace Windows- upper building	Maintain System Standards	on going	-	-	-	-	406	406
Land & Buildings	Exterior Door Replacements	Maintain System Standards	on going	-	-	-	-	116	116
Land & Buildings	Bldg. 805 Replace Gas Garage doors	Maintain System Standards	on going	-	-	-	-	58	58
Land & Buildings	Renovate Restroom Sys. Ops	Maintain System Standards	on going	-	-	-	-	203	203
Land & Buildings	Newburgh Facility	Maintain System Standards	8/31/2023	-	10,770	3,595	-	-	14,365
Land & Buildings	Transportation Shop Fishkill	Maintain System Standards	12/1/2024	-	-	-	1,681	-	1,681
Land & Buildings	Transportation Shop EC	Maintain System Standards	12/1/2024	-	-	-	1,681	-	1,681
Land & Buildings	Butler Building Rebuild	Maintain System Standards	12/1/2025	-	-	-	-	1,742	1,742
Land & Buildings	Training Academy	System Enhancements	8/31/2021	21,628	377	-	-	-	22,005
Land & Buildings	Training Annex	System Enhancements	8/31/2021	9,784	377	-	-	-	10,161
Land & Buildings	Phase 2 Primary Control Center	System Enhancements	10/31/2022	3,919	27,051	1,366	-	-	32,336
Land & Buildings				**45,494**	**45,416**	**10,474**	**8,872**	**4,441**	**114,697**
Office Equipment	South Road - Daily Operations - Larger Projects	Maintain System Standards	on going	69	72	75	78	81	375
Office Equipment	South Road - Misc. Furniture	Maintain System Standards	on going	42	44	46	48	50	230
Office Equipment	South Road - Office Chair Replacement Program	Maintain System Standards	on going	37	39	40	42	44	202
Office Equipment	Additional Cubicles - Lake Katrine	Maintain System Standards	on going	64	66	69	72	75	346
Office Equipment	Newburgh - New Facility	Maintain System Standards	2022	-	110	-	-	-	110
Office Equipment	Disaster Recovery	Maintain System Standards	2023	-	-	58	-	-	58
Office Equipment	Transformer Shop	Maintain System Standards	2024	-	-	-	36	37	73
Office Equipment	Butler Bldg	Maintain System Standards	2024	-	-	-	36	37	73
Office Equipment				**212**	**331**	**288**	**312**	**325**	**1,467**
EMS	Miscellaneous Hardware and Software Failures	Maintain System Standards	on-going	53	57	63	70	551	794
EMS	DMS Phase 4	Maintain System Standards	6/1/2021	1,524	-	-	-	-	1,524
EMS	DMS Phase 5 (OMS)	Maintain System Standards	12/31/2022	-	3,627	-	-	-	3,627
EMS	OT New Primary Control Center (NS NOC, OT Supporting Systems, Video Walls)	Maintain System Standards	12/31/2022	6,307	5,699	529	-	-	12,535
EMS	EMS Upgrade	Maintain System Standards	12/31/2022	123	5,324	382	-	-	5,829
EMS				**8,007**	**14,706**	**974**	**70**	**551**	**24,309**
Hardware	Green Café Technology Infrastructure	System Enhancements	Annual	1,016	-	-	-	-	1,016
Hardware	Phone Replacements	Maintain System Standards	Annual	117	16	16	16	331	495
Hardware	PC and Laptop Replacements	Maintain System Standards	Annual	565	587	612	637	663	3,063

Hardware	Mobile Field Devices Computing Replacements	Maintain System Standards	Annual	282	294	306	318	331	1,532
Hardware	Monitors, Network Printers-Adds/Repl.	Maintain System Standards	Annual	141	147	153	159	166	766
Hardware	Server Replacements and Storage Upgrades	Maintain System Standards	Annual	1,129	1,175	1,224	1,273	1,326	6,127
Hardware	Network Infrastructure Upgrades/Replacements	Maintain System Standards	Annual	305	317	330	344	358	1,653
Hardware	Disaster Recovery Relocation & Build-Out	Maintain System Standards	Annual	-	674	-	-	-	674
Hardware	Mainframe Replacements and Storage Upgrades	Maintain System Standards	Annual	-	284	554	-	-	838
Hardware	Cyber Security - Hardware	Maintain System Standards	Annual	113	117	122	127	133	613
Hardware	Copiers	Maintain System Standards	Annual	62	65	67	70	73	337
Hardware	Business Intelligence Hardware - Netezza Upgrade	Maintain System Standards	Annual	-	-	582	-	-	582
Software	Analytics Platform - New Development	System Enhancements	Annual	975	652	695	806	716	3,844
Software	Enterprise Content Management	Maintain System Standards	Annual	1,517	1,358	908	1,033	1,236	6,053
Software	Cyber Security - Software	Maintain System Standards	Annual	921	598	426	258	1,461	3,664
Software	Wiki Replacement	Maintain System Standards	Annual	709	345	-	-	-	1,055
Software	Increase the Quality & Speed of Delivery of Application Testing	Maintain System Standards	Annual	178	217	232	269	239	1,134
Software	Emergent Software Packages (Application Services)	Maintain System Standards	Annual	542	489	341	452	450	2,273
Software	Unified Communications, VoIP, IVR - Upgrades & Enhancements	Maintain System Standards	Annual	134	276	292	340	315	1,357
Software	Collaboration Software - Implementation, Upgrade & Enhancements	Maintain System Standards	Annual	108	110	-	-	-	218
Software	Business Agility with an Enterprise SOA Framework	Maintain System Standards	Annual	390	399	425	493	438	2,146
Software	CIS / REV Modernization	System Enhancements	Annual	18,228	558	650	754	671	20,861
Software	CIS - CRM	System Enhancements	Annual	-	-	1,135	5,164	-	6,300
Software	Digital Initiatives for Customer Engagement (DICE)(Includes all Web, Mobile, Social initiatives as prioritized by the DIWG)	System Enhancements	Annual	1,456	1,489	1,587	1,841	1,635	8,007
Software	CIS / Customer Experience Emergent Demand	System Enhancements	Annual	2,309	422	337	751	237	4,056
Software	IVR Replacement & Speech Analytics Platform	Maintain System Standards	Annual	2,167	2,174	-	-	-	4,341
Software	RPA (Bots) - Contact Center Back Office Automation	System Enhancements	Annual	406	408	-	646	562	2,021
Software	AMI Pilot - Costs TBD (assume software and configuration $2M)	System Enhancements	Annual	1,084	1,087	-	-	-	2,170
Software	Enterprise Work & Asset Management Emergent Demand	Maintain System Standards	Annual	297	1,930	1,664	313	131	4,335
Software	MWM Managed Services	Maintain System Standards	Annual	163	163	-	-	-	326
Software	Emergency Management Software - Upgrades & Enhancements	Maintain System Standards	Annual	352	348	250	452	416	1,818
Software	ARCOS Upgrades & Enhancements	Maintain System Standards	Annual	82	110	52	98	52	394
Software	WorkDay - Enhancements & Upgrades	Maintain System Standards	Annual	331	380	292	340	302	1,646

Software	Enterprise Resource Management Emergent Demand	Maintain System Standards	Annual	227	637	200	99	450	1,612
Software	EmpCenter Upgrades & Enhancements	Maintain System Standards	Annual	-	190	-	-	225	415
Software	Digital Circuit Mapping	Maintain System Standards	Annual	-	-	511	-	-	511
Software	Electric GIS- Estimating Design SBS AUD Software	Maintain System Standards	Annual	542	-	-	646	-	1,187
Software	Electric GIS - Upgrades & Enhancements	Maintain System Standards	Annual	-	-	-	-	562	562
Software	UG Network Management GIS Solution	Maintain System Standards	Annual	314	332	-	-	-	646
Software	IT Engineering Initiatives Emergent Demand	Maintain System Standards	Annual	46	33	17	159	51	305
Software	Interconnection Portal	Maintain System Standards	Annual	199	109	34	-	-	341
Software	Gas Transmission Integrity Management Software	Maintain System Standards	Annual	-	-	-	387	-	387
Software	CYME	Maintain System Standards	Annual	-	217	114	-	-	331
Software	Control Room Management (CRM - Time Reporting)	Maintain System Standards	Annual	66	-	-	111	-	176
Software	TOA Upgrades & Enhancements	Maintain System Standards	Annual	195	-	-	-	225	420
Software	EWAM - Enterprise Work Asset Mgmt	System Enhancements	Annual	258	18,738	14,636	513	276	34,421
Software	Chevin - Fleetwave Upgrades & Enhancements	Maintain System Standards	Annual	66	138	146	-	-	350
Software	CDM - Financial Reporting	Maintain System Standards	Annual	-	87	23	-	-	110
Software	PowerPlan - Upgrades & Enhancements	Maintain System Standards	Annual	986	-	-	-	1,686	2,672
Software	Tagetik Upgrade & Enhancements	Maintain System Standards	Annual	542	543	-	-	562	1,647
Software	Safety Management Software Implementation	Maintain System Standards	Annual	81	54	-	-	-	136
Software	Financial System Modernization	System Enhancements	Annual	-	12,226	4,258	646	281	17,411
Software	Integrated Energy Accounting System Modernization	Maintain System Standards	Annual	325	163	-	-	674	1,163
Software	Document Inventory System Modernization	Maintain System Standards	Annual	-	-	-	-	674	674
Software	Gas Regulator Station Control & System Pressure Monitoring	Maintain System Standards	Annual	-	-	-	775	281	1,056
Hardware & Software				**39,927**	**50,657**	**33,192**	**20,287**	**18,186**	**162,249**
Security	Electric Substation Security Enhancement	Maintain System Standards	Ongoing	152	155	159	162	165	794
Security	Gas Substation Security Enhancement	Maintain System Standards	Ongoing	152	155	159	162	165	794
Security	PTZ Camera Upgrades - District Office	Maintain System Standards	Ongoing	102	104	106	-	-	311
Security	NVR Server Upgrades - Substations	Maintain System Standards	Ongoing	102	36	159	162	165	624
Security	Security Upgrades TBD	Maintain System Standards	Ongoing	102	-	-	-	-	102
Security				**610**	**451**	**582**	**486**	**496**	**2,623**
Tools	Small Tools	Maintain System Standards	Annual	1,416	1,560	1,624	1,690	1,760	8,051

Tools	**Tools**			**1,416**	**1,560**	**1,624**	**1,690**	**1,760**	**8,051**
Communications	Network Strategy Project	System Enhancements	Ongoing	2,084	2,063	2,103	-	-	6,250
Communications	Radio Minor	Maintain System Standards	Ongoing	211	219	225	235	242	1,132
Communications	Land Mobile Radio System Enhancements	Maintain System Standards	Ongoing	406	928	946	756	-	3,036
Communications	Network Strategy Enhancements	System Enhancements	Ongoing	212	952	1,262	472	600	3,498
Communications	Land Mobile Radio System Upgrade	Maintain System Standards	Ongoing	254	258	-	540	1,636	2,688
Communications	**Communication**	Communication	Various	**3,167**	**4,419**	**4,536**	**2,003**	**2,478**	**16,604**
Transportation	**Transportation**	Maintain System Standards	Various	**9,866**	**10,257**	**10,680**	**11,126**	**11,574**	**53,503**
	Total			**108,699**	**127,797**	**62,350**	**44,846**	**39,810**	**383,502**