Paul A. Colbert
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July 1, 2019

Hon. Kathleen H. Burgess
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 2020-2024 Corporate Capital Forecast

Dear Secretary Burgess

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 Paul Haering at (845)486-5351 or phaering@cenhud.com.

Respectfully submitted,

/s/*Paul A. Colbert*

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CENTRAL HUDSON GAS & ELECTRIC 2020-2024 CORPORATE CAPITAL FORECAST July 1st 2019

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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 2020 through 2024. This Capital Plan positions Central Hudson to continue to provide safe and reliable service to customers. 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 $547 million in the electric delivery system, $253 million in the gas delivery system and $318 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 is needed to deliver safe and reliable service to customers. 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. The Capital Plan is developed annually consistent with the Company's Capital Prioritization Process Guidelines.

The fine 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

	2020	2021	2022	2023	2024	TOTAL
ELECTRIC	$ 95,475	$ 104,100	$ 103,262	$ 101,772	$ 97,979	$ 502,588
GAS	55,395	59,693	41,121	43,097	44,959	244,264
COMMON	60,570	59,207	94,104	55,464	49,085	318,429
CORPORATE TOTAL	$ 211,439	$ 223,000	$ 238,486	$ 200,334	$ 192,023	$ 1,065,281

Capital Forecast – Removal

	2019	2020	2021	2022	2023	TOTAL
ELECTRIC	$ 8,759	$ 8,784	$ 9,240	$ 9,406	$ 8,395	$ 44,583
GAS	1,716	1,799	1,794	1,778	2,093	9,180
COMMON	(164)	(186)	(144)	(21)	132	(382)
CORPORATE TOTAL	$ 10,312	$ 10,397	$ 10,891	$ 11,163	$ 10,620	$ 53,381

Capital Forecast – Additions & Removal Totals

	2019	2020	2021	2022	2023	TOTAL
ELECTRIC	$ 104,234	$ 112,883	$ 112,502	$ 111,178	$ 106,374	$ 547,172
GAS	57,111	61,492	42,915	44,875	47,051	253,444
COMMON	60,406	59,021	93,959	55,443	49,217	318,047
CORPORATE TOTAL	$ 221,751	$ 233,396	$ 249,377	$ 211,496	$ 202,643	$ 1,118,663

Introduction

Central Hudson's Corporate Capital Forecast continues to increase at a modest rate and with the addition of several large multi-year capital initiatives being presented this year, the capital plan now totals $1,119 million in capital expenditures over the five year period 2020-2024. This forecast represents 2.0% compound average decrease rate (CAGR) over the 5-year period. The decrease is driven by the gas program forecast due to the reduction of the Leak Prone Pipe program expenditures.
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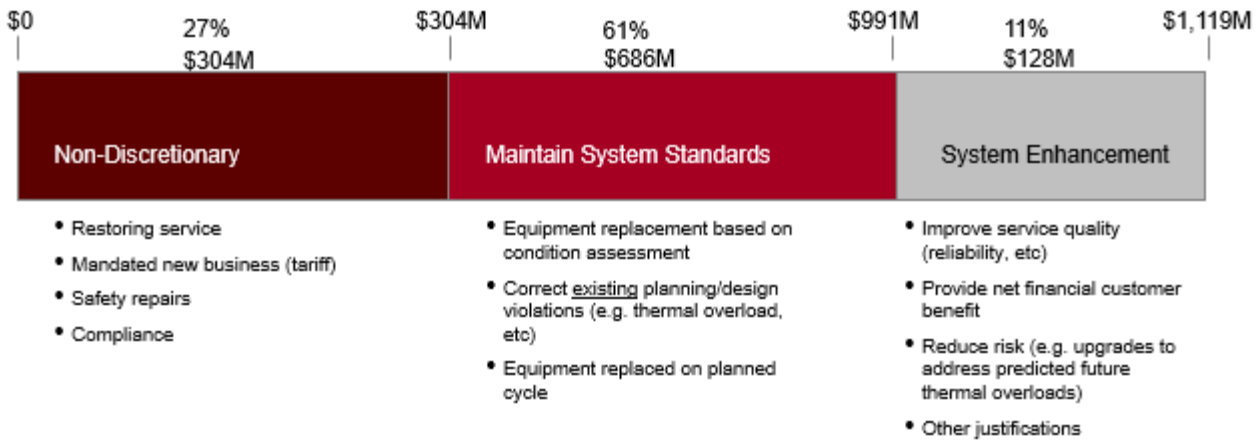
5-Year Corporate Capital Forecast Summary

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, or reducing operating costs.



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

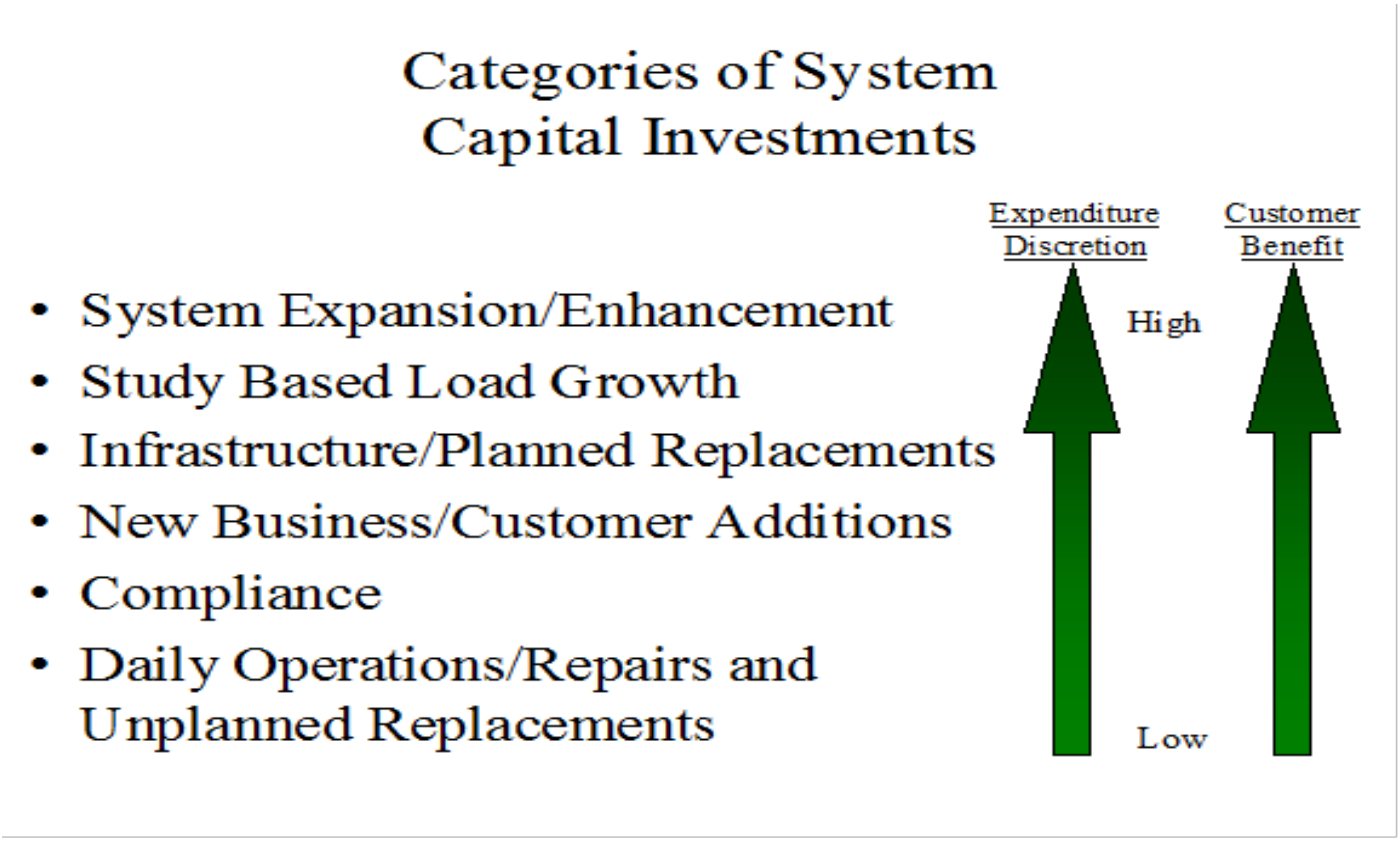
- **Projects that Improve Reliability**
  - Investment improves reliability at a cost that (we believe) customers are willing to pay
  - Demonstrate that increased cost is warranted by the improvement in service quality (benchmark and compare cost per customer outage avoided).

- **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)

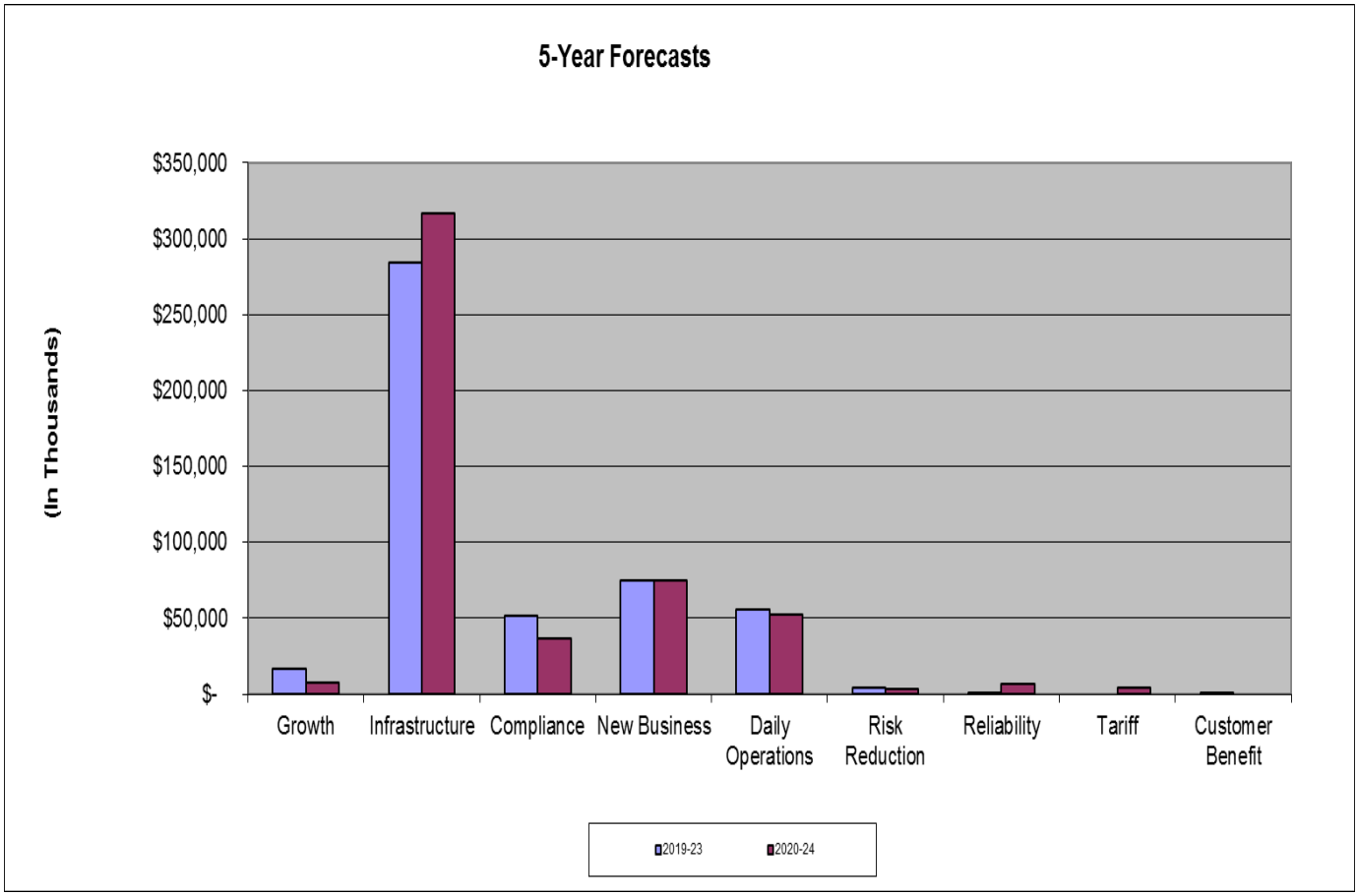
Each year, Central Hudson, through its planning and forecasting processes develops a recommended Capital Expenditures Budget for the upcoming fiscal year as well as a forecast for upcoming five-year period.

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 program.



On the electric side, the Distribution Automation Program is a major continuing initiative that has been included in the 5-year forecast. 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 to be used as the asset database. Intelligent Electronic Devices (e.g. electronic reclosers, switched capacitors, and voltage regulating devices) and sensors 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. Upon site acceptance testing, the system will consider the impact of Distributed Energy Resources (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 remaining 5-year cost of the Distribution Automation component of this program is $24 million.

The single largest component of the gas capital program is the Leak Prone Pipe (LPP) replacement projects. Central Hudson operates 1,287 miles of distribution main, which currently includes 159 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 it is projected that we will eliminate 21 miles LPP. 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 reduce the rate of leak prone pipe elimination to 5 miles per year for planned projects. This is in response to NYS energy policy and legislation that is sending a clear message to eliminate carbon and fossil based fuels including natural gas by 2050. Based on a 95 year depreciation life for plastic and protected steel gas mains continued elimination of leak prone pipe at the current rate would result in significant amount of stranded assets if the market for natural gas is eliminated by state policy in the next 30 years.

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 dramatically reducing its gas expansion program to be consistent with state energy policy.

The Common Capital Forecast consists of the following categories; Land and Buildings, Office Furniture, Tools & Equipment, Transportation, and Information & Technology. Land & Buildings capital forecast comprises of several significant projects including the South Rd office building, Newburgh office building, Kingston office space buildout, training, 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 base 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. 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 replacement of leak prone distribution piping, enhancements on the transmission system, and regulator station upgrades and replacements 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 quality installations occurring today.

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 300,000 electric customers in New York State's Mid-Hudson River Valley. Central Hudson 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 5.0 million kilovolt amps, a transmission system consists of 596 circuit miles and a distribution system consists of 7,175 pole miles of overhead lines and 1,582 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	266	0	305
	115 kV construction operating at 69 kV	39		
Total		592	4.1	596.1

The distribution system operates at voltages of 4.16 kilovolts, 4.8 kilovolts, 13.2 kilovolts, and 34.5 kilovolts. It also encompasses subtransmission systems that operate at 14.4 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.

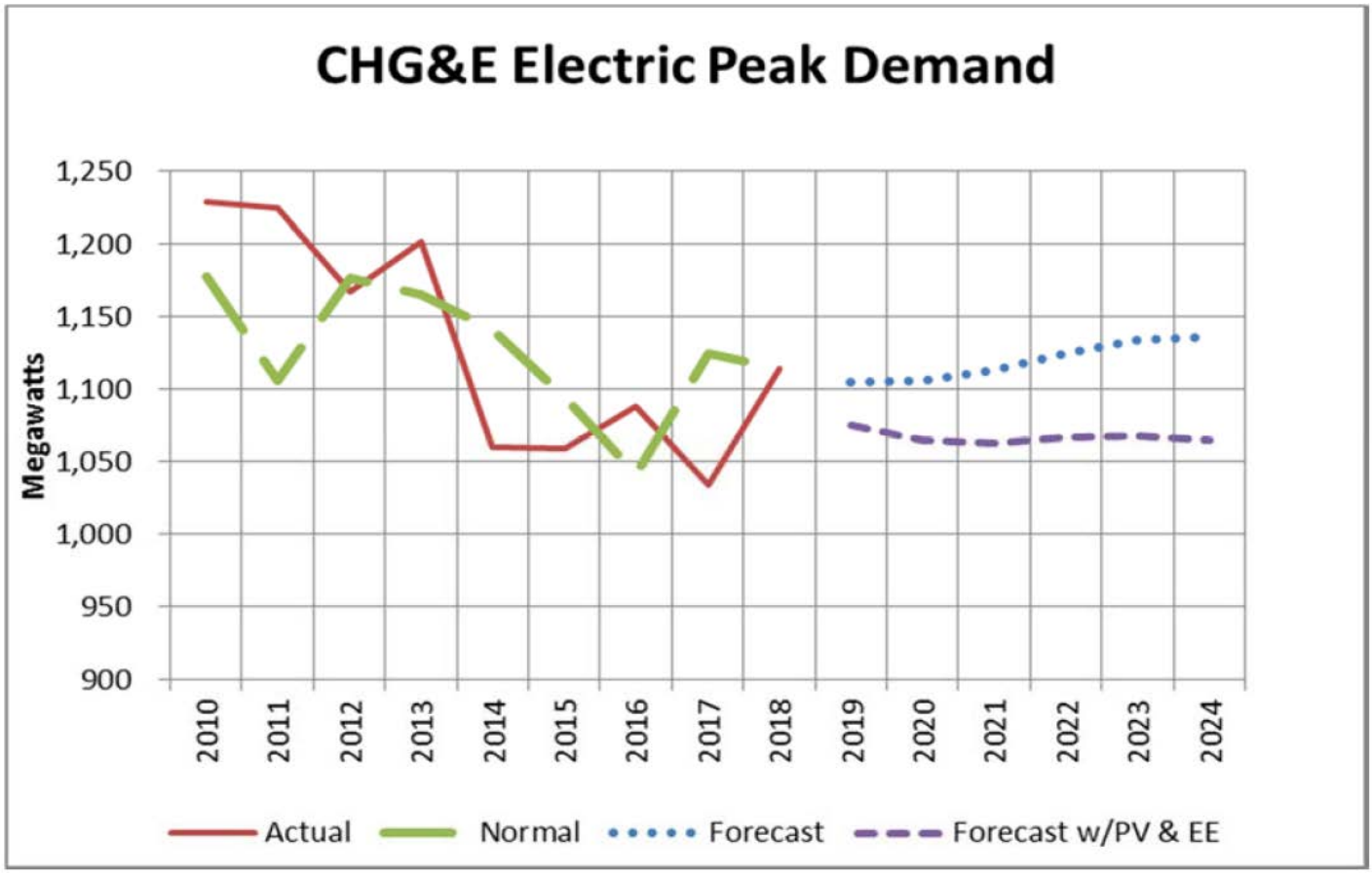
Conductor	Pole Miles of Line at Substation Exit
34.5 kV Overhead	209
13.2 kV Single Phase	4,555
13.2 kV Three Phase	2,355
5 kV or Under	56
Total	7,175

Central Hudson's roughly 75 electric substations contain the power transformers that change the voltage from one level to another.

Electric Forecast Overview

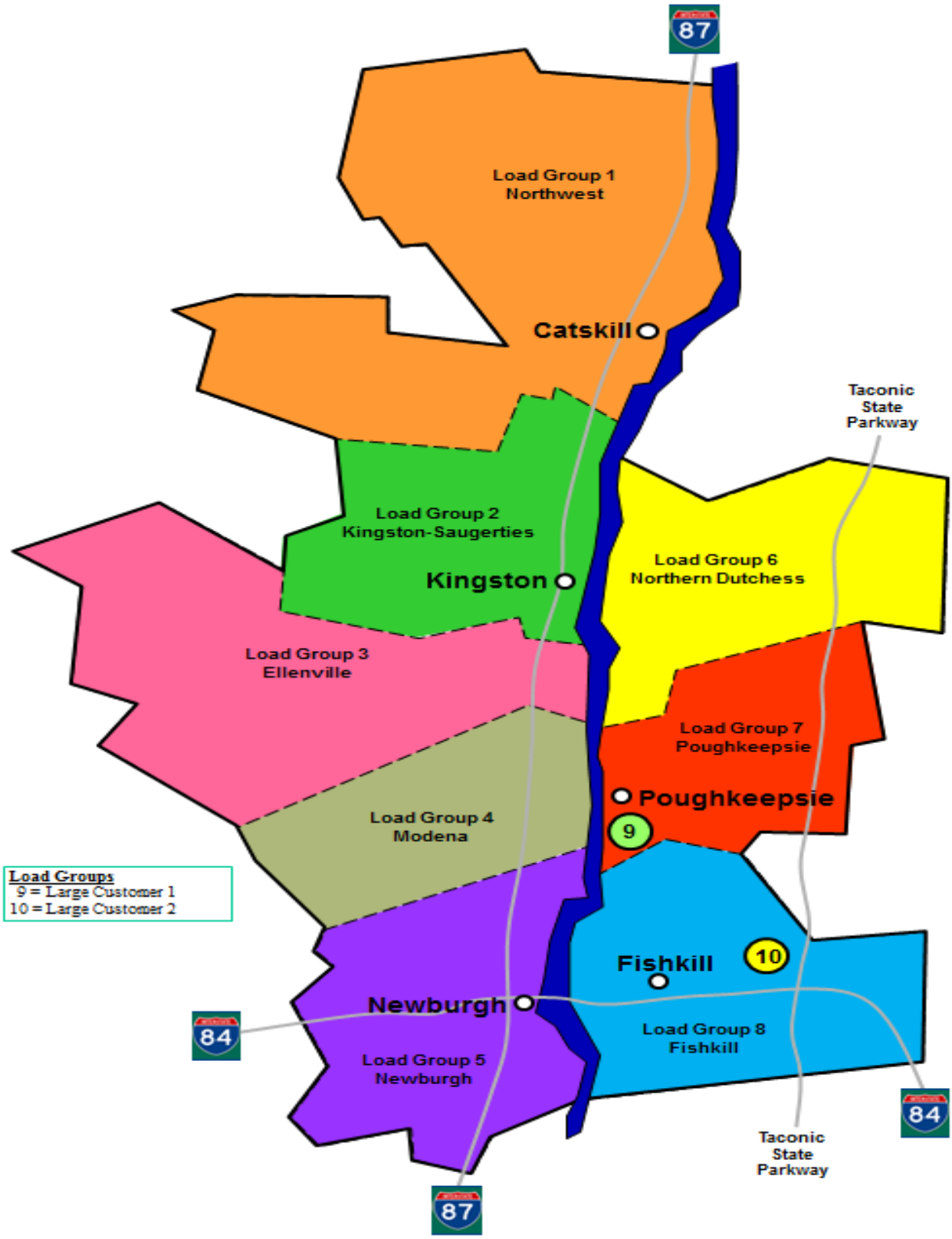
Central Hudson's electric capital forecast for the next five year period is developed each year using the most recent planning studies, customer and sales forecasts, corporate load forecasts, and other corporate trends. For the electric capital forecast, a weather adjusted peak electric demand 1,050 MW system load (demand) for 2017 was used as the base year.

The current system peak forecast is shown on the graph below. As can be seen on the graph Central Hudson's peak demand is showing a modest decline based primarily on the regional economy, and the effects of the Company's energy efficiency programs and demand management programs.



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

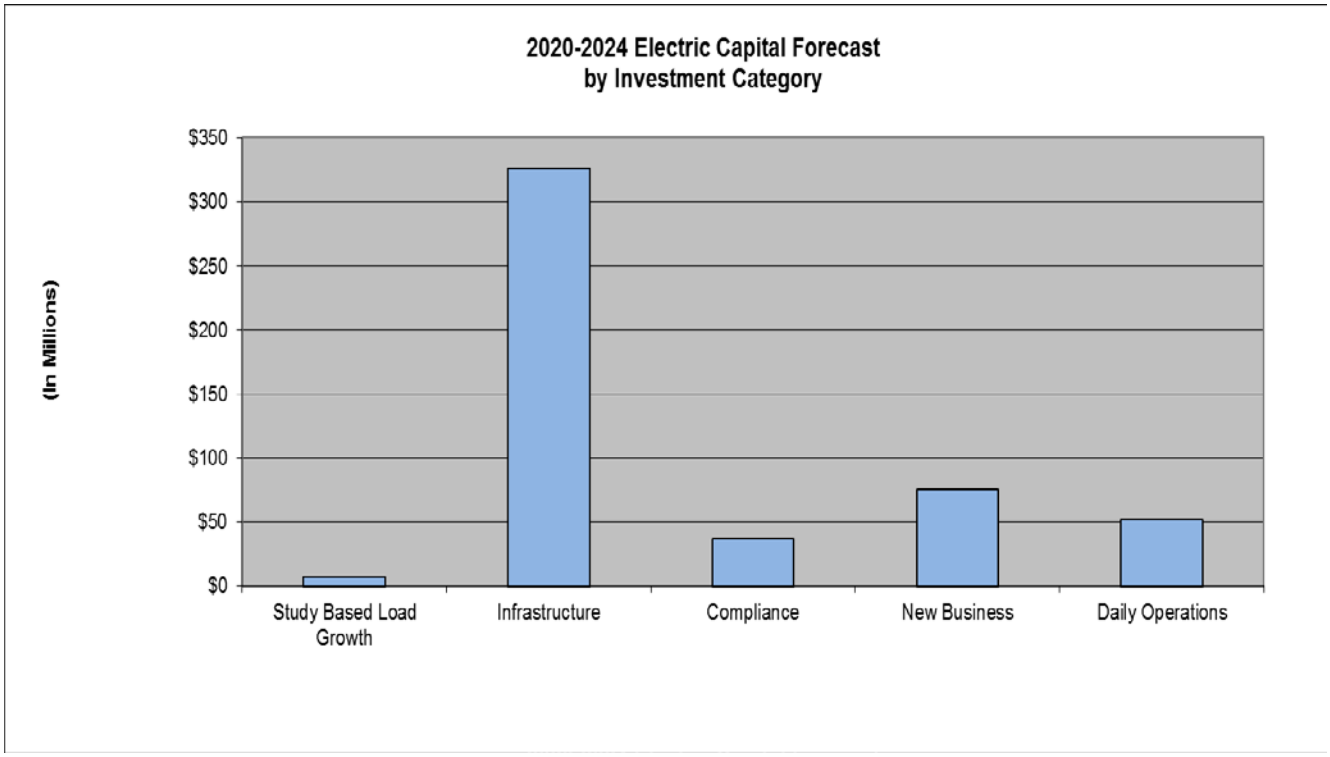
	2020	2021	2022	2023	2024	TOTAL
Production	$ 1,442	$ 2,356	$ 2,135	$ 2,317	$ 1,512	$ 9,761
Transmission	21,479	24,730	26,097	24,266	24,206	120,779
Substation	19,791	18,691	16,382	16,580	17,375	88,820
New Business	6,687	6,920	7,011	7,126	7,283	35,028
Distribution Improvements	37,493	42,234	42,432	42,066	37,805	202,031
Transformers	5,914	6,287	6,216	6,313	6,574	31,304
Meters	2,668	2,880	2,988	3,104	3,225	14,866
Total	$ 95,475	$ 104,100	$ 103,262	$ 101,772	$ 97,979	$ 502,588

Electric Capital Forecast – Removal

	2020	2021	2022	2023	2024	TOTAL
Production	$ 87	$ 214	$ 192	$ 33	$ 33	$ 559
Transmission	3,510	3,283	3,606	3,568	2,677	16,645
Substation	2,136	2,194	2,102	2,464	2,274	11,170
New Business	256	261	266	272	278	1,333
Distribution Improvements	2,351	2,404	2,637	2,622	2,677	12,692
Transformers	409	417	426	435	444	2,132
Meters	10	10	11	11	11	53
Total	$ 8,759	$ 8,784	$ 9,240	$ 9,406	$ 8,395	$ 44,583

A breakdown of the Electric Capital Forecast is shown below indicating the level of spending as they have been prioritized. Non-discretionary is the level 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, 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 115 kV HF line; rebuild of the 69kV CL line; rebuild of the 69kV KM & TV lines; rebuild of the Hurley Ave – Saugerties SB line for 115kV; and the rebuild of the Saugerties – North Catskill H line for 115kV. 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 "CL" line rebuild is intended to address significant infrastructure issues on the line identified through our inspection program. This line was constructed in the 1940's. The inspections identified that 69% of the structures on this 11.7 mile line would require replacement due to identified component defects in addition to another 23% of the structure having a significant number of minor defects. Based on the number of structures identified as needing replacement, a more comprehensive approach to the rebuild was evaluated. A full rebuild and reconductoring with 795 ACSR is planned with the increase in conductor size justified based on matching the thermal capability of the transmission loop and the portion of the line that was rebuilt in 2008. Expenditures for this project in the five year Capital Plan are currently estimated at $8.0M for 2019 and $3.0M for 2020 with a current anticipated in service date in 2020.

Additionally, rebuilding the KM & TV lines is identified in the five year forecast. Inspections have identified 58% and 53%, respectively, of the 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 lines rebuild 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. This project is expected to be constructed in 2021- 2022 at a total cost of approximately $11.3M.

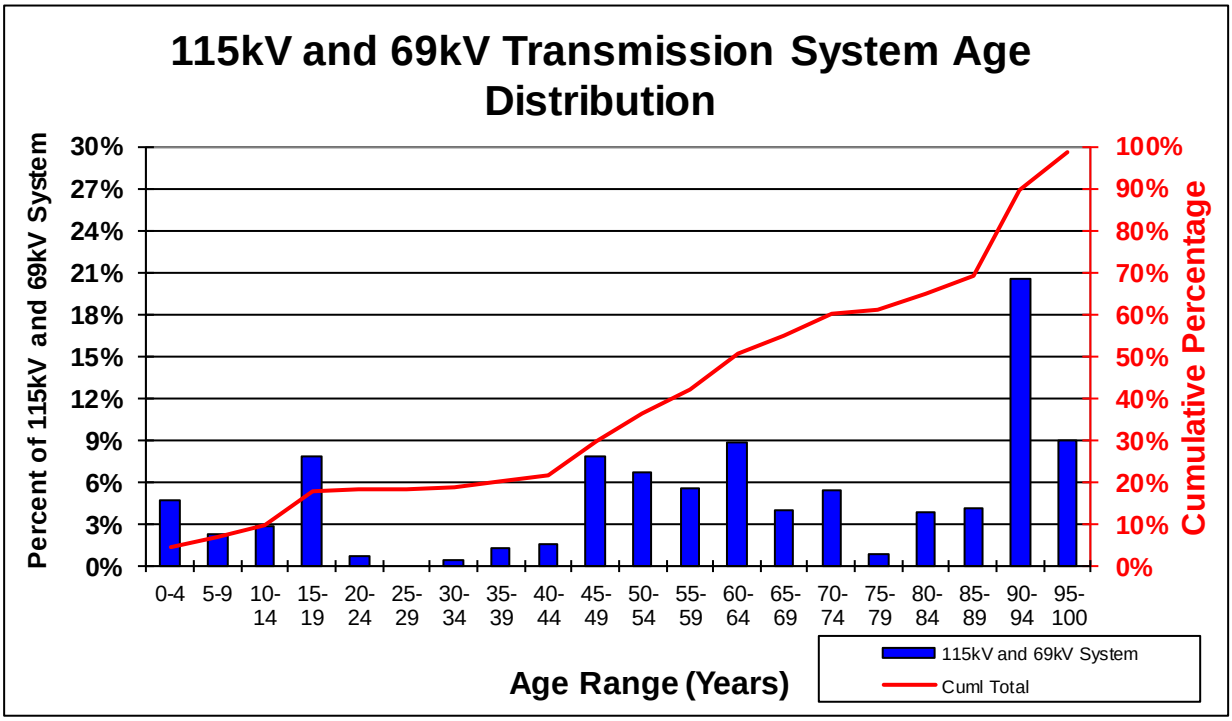
KM Line Condition				
		Structures to		
Section	**Miles**	**Replace**	**Repair**	**Probable Replacement Percentage**
Knapps Corners – P33581	1.0	10	5	65.2%
P33581 – P33591	0.5	9	5	60.8%
P33591 – P140218	0.35	0	0	0
P140218 - Myers Corners	1.0	9	2	64.7%
Totals	2.85	28	12	58.0%

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 line also is identified in the five year forecast. This transmission path is another of Central Hudson's oldest (c. 1919); it is steel lattice construction. Inspections have shown 32% of structures needing replacement with another 36% in need of significant repair. These findings have 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 2020 through 2022 at a total cost of approximately $43M.

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%

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 graph directly below indicates the approximate Transmission System Age Distribution. 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.



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

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 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.

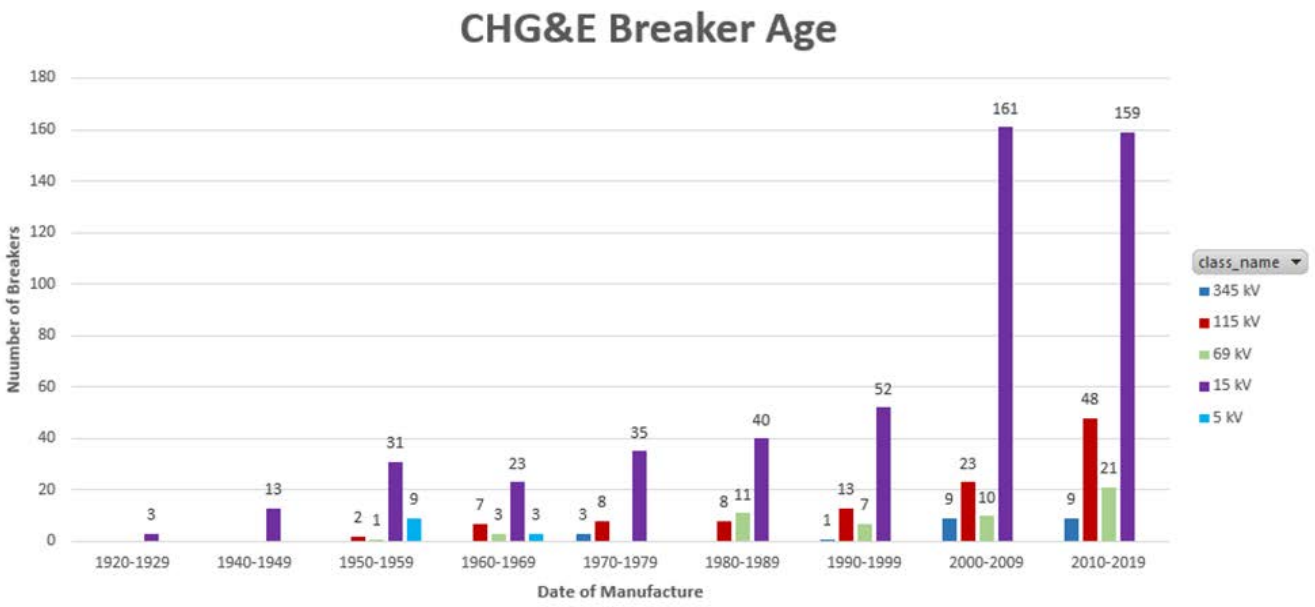
$74.9M is allocated to infrastructure-related substation programs and projects within the five year forecast. Major substation rebuilds or partial rebuilds due to infrastructure considerations include work/upgrades at the following substations: North Catskill, Pleasant Valley, Hurley Avenue 115kV, Rock Tavern 115kV, Stanfordville, Knapps Corners, Kerhonkson, Modena 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.

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.

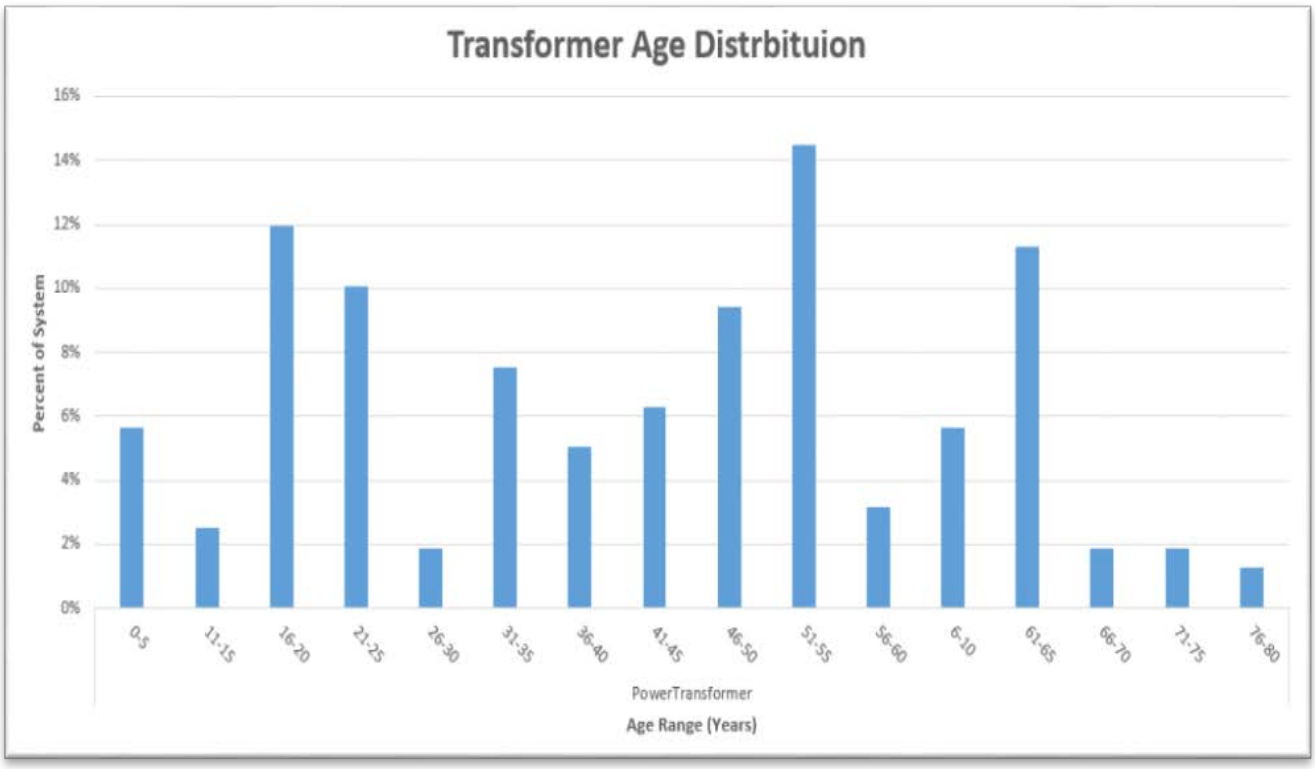
The Breaker Replacement Program has been in place since 2009, all of the originally identified 196 breakers have been replaced. As a continuation of this program, 75 breakers have been identified for planned replacement in the five year forecast horizon, with a cost of $7.5M. Many of these breakers targeted for replacement will be combined with other identified work at stations to create larger projects, as was the case with the 37 breakers identified for replacement in 2018. Reference Breaker graph on the next page.



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 switch (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 $14.8M 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 five substation transformer projects in the five year forecast associated with the condition based replacement of aging transformers totaling $22.4M. These projects include transformer replacements at the following substations: Stanfordville, North Chelsea, Converse St., North Catskill 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.



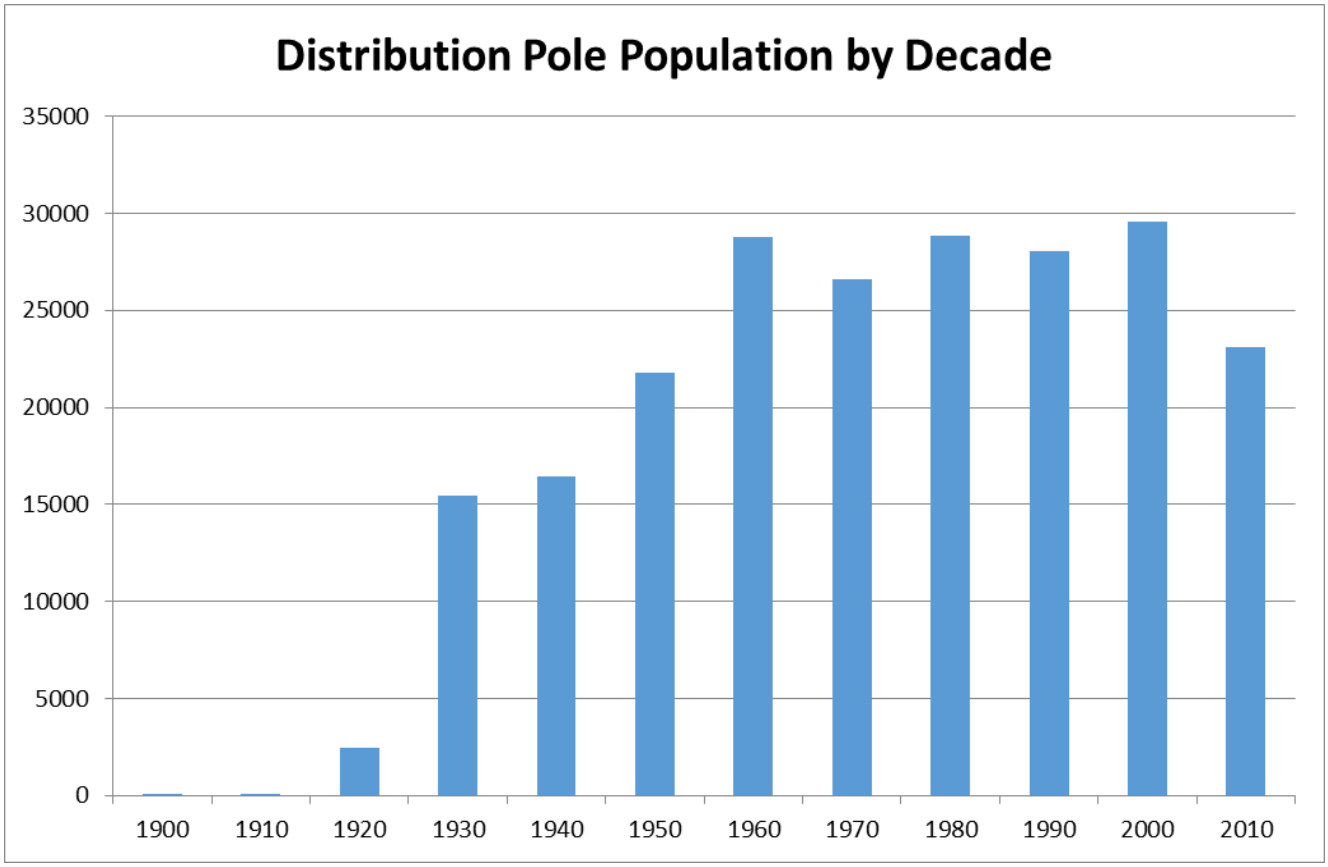
A condition based program has been created to identify and replace switchgear units that are in poor or deteriorating condition. There is $4.9M in the five year forecast allotted to start these replacements. The following substations have been included in the switchgear replacement projects in the five year forecast; Coxsackie, Woodstock, Myers Corners, Sturgeon Pool Generator Breakers, Montgomery Street, Converse Street 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 $8.2M in the five year forecast allotted to these replacements.

The Distribution projects are identified as thermal, growth, and voltage related projects (approximately $4.9M of growth related projects in the five year forecast, plus a $3M project that is being evaluated for a non-wires alternative), 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, 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 replace proactively 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.



Due to the New York State Broadband Program and other initiatives, there has been a significant 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 $3.7 million in the 5-year capital plan allocated to make-ready costs. This represents a 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. Central Hudson will continue with the Automatic Load Transfer (ALT) switch and recloser replacement programs. This program 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. There also is a large infrastructure improvement aspect of this project which will alter the design of the electric distribution system by creating robust mainline feeders that can be looped through switching to restore customer after an outage or optimize and balance feeders during normal operations.

To accomplish this, there also will be an increased number of switched capacitors, electronic reclosers, and voltage regulators, all of which will be tied back to the DMS to optimize system operation as well as improve reliability and power quality. The cost of this program within the five year forecast, including the additional ALTs, reclosers, capacitors and DMS/DSCADA system is approximately $31.1 million and is estimated to have a positive cost/benefit ratio primarily due to the reduced energy usage (supply savings) and capital deferral. Much of the costs are related to the rebuilding and reconductoring of electric distribution mainline, some of which would need to be replaced as part of the normal asset replacement program. Additional benefits will include reduced system losses, improved switching safety, and improved restoration times through the use of manual switching when an ALT is not available. Since a portion of these costs are related to the replacement of aging infrastructure, these costs would be required to maintain system standards and are not included as system enhancement projects.

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 has developed a plan outlining incremental storm hardening measures. Although the storm hardening measures included within the plan are outlined below, the projects and programs described and their associated funding levels are not included within this five year Capital Plan. The proposed plan is 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 includes both an expense component associated with incremental vegetation management programs and capital components associated with incremental distribution improvements designed to improve system resiliency. This Storm Hardening Plan consists of $42.85 million in Vegetation Management and $100 million in Capital Investment over 8 years. Pending incremental funding, Central Hudson is prepared to commence implementation of the Vegetation Management plan immediately, with the Capital investment following in 2020. Both the vegetation management (expense related work) and the incremental capital programs are described in more detail below.

Vegetation Management - To improve storm resiliency from tree related outages within its service territory, the Company is proposing a phased in approach to danger tree removals over all of its distribution circuitry over an 8 year period, with an estimated total of 100,000 trees removed. This phased in approach would allow for two trimming cycles to pass and allow enough time for the EAB and other diseases/insect infestations to work their way through the service territory. It will also allow for deeper penetration into off ROW areas (greater than 10 feet from center line) in order to get those trees that may have died after our first round of tree trimming or may have succumbed to other insect or disease infestations. The overall cost (expense dollars) for this program is estimated at $37.45 million over 8 years.

In addition, there is a similar transmission component also focusing on danger trees. The current backlog of danger trees for transmission is approximately 1,400 trees and growing. The

recommended approach would allow Central Hudson's Line Clearance Department to stay current with all its danger trees identified during its ground and aerial patrol inspections. The estimated cost (expense dollars) of this program is $600,000 per year or $5.4 million over 8 years.

Capital Investments - 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, 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 will be piloting a first zone of protection circuit hardening project by the first quarter of 2020 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 tubs 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 Table X 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. The overall capital cost for this program is estimated at $66 million over 8 years.

Table X – 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 an average of 8-10 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. The overall capital cost for this program is estimated at $66 million over 8 years.

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 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. Voltage and fault current sensors will be added 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 overall capital cost for this program is estimated at $14 million over 8 years.

The above plan outlines a resiliency program for storm hardening including both vegetation management and capital improvement initiatives. These programs are incremental to our existing capital and expense programs which are predominately infrastructure replacement/reliability based. These programs will significantly 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. As indicated, the storm hardening measures included within the plan described above and their associated funding levels are not included within this five year Capital Plan and would require incremental funding for implementation.

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.

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, Kingston, 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.

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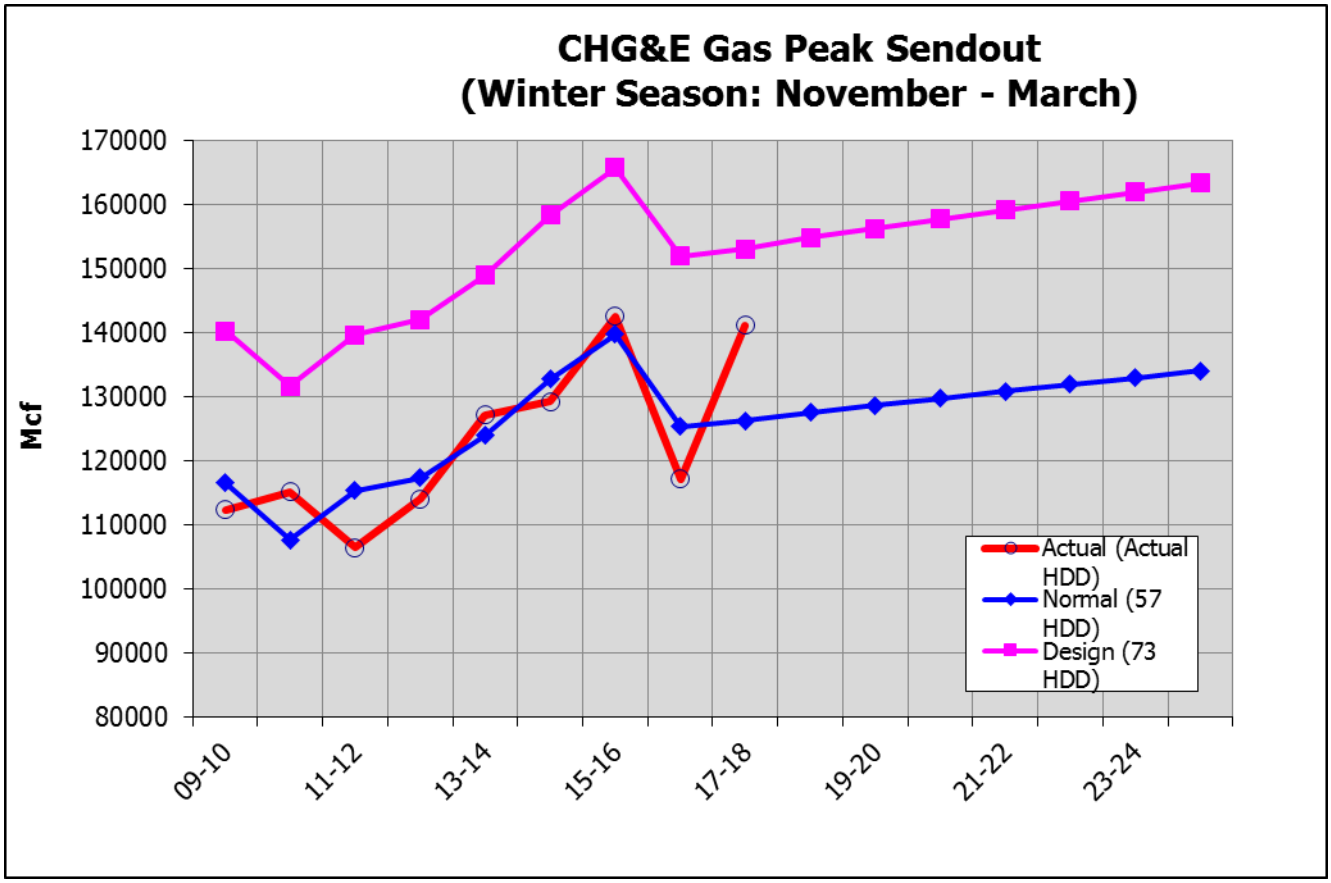
Gas Forecast Overview

Central Hudson's gas capital forecast for the next five year period is developed each year 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 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. The New Business plan reflects a significant reduction from the prior forecast recognizing the fact that the Company has dramatically reducing its gas expansion program.

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. Pressures below 50% could result in loss of gas service to individual customers and a significant public safety issue.

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 standard 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.

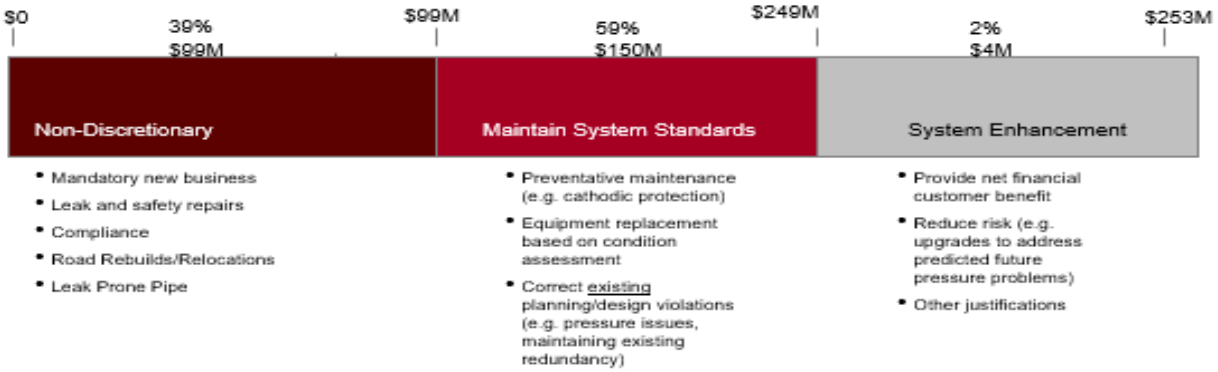
Gas Capital Forecast – Additions

	2020	2021	2022	2023	2024	TOTAL
Production	$ -	$ -	$ -	$ -	$ -	$ -
Transmission	1,591	2,421	2,430	2,352	2,517	11,312
Regulating Stations	2,559	2,798	2,666	2,283	2,585	12,891
New Business	9,789	9,834	10,280	10,496	10,697	51,096
Distribution Improvements	38,746	41,865	22,910	25,063	26,184	154,767
Meters	2,709	2,776	2,834	2,903	2,975	14,197
Total	$ 55,395	$ 59,693	$ 41,121	$ 43,097	$ 44,959	$ 244,264

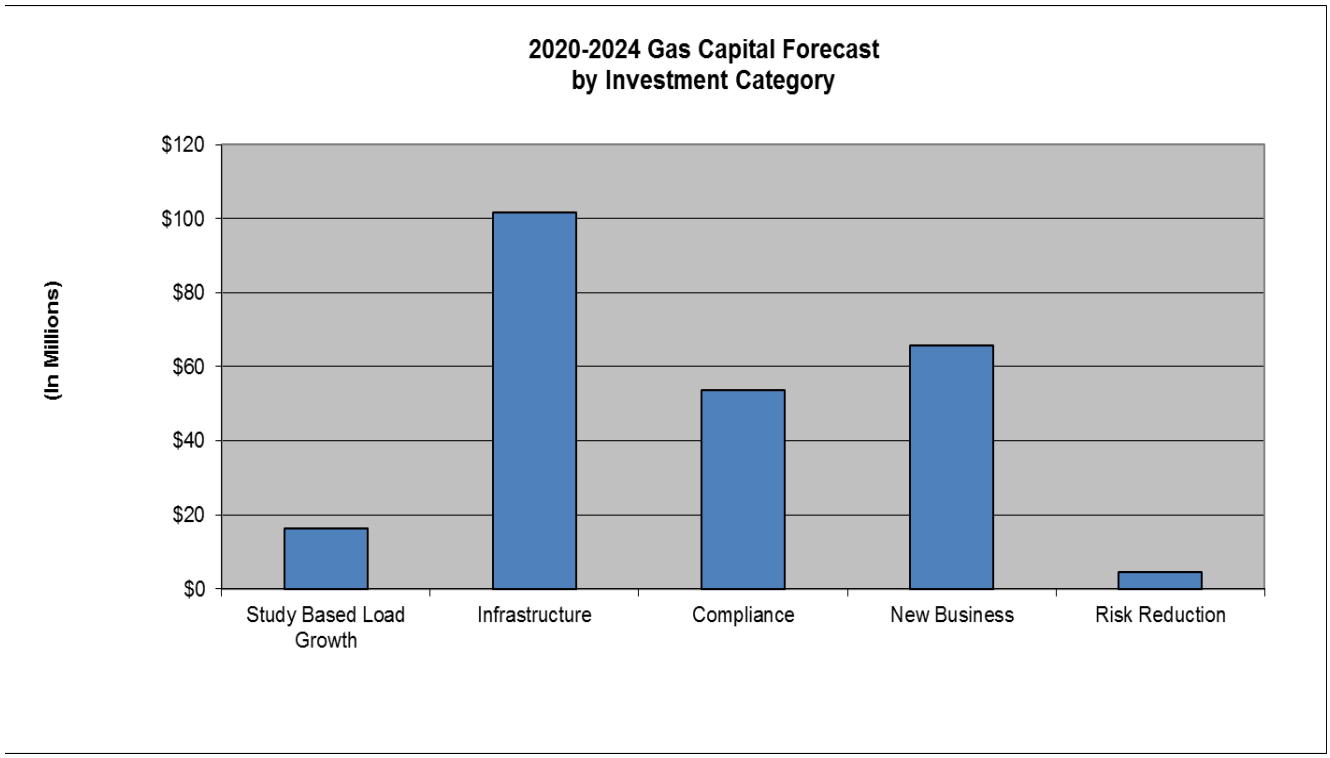
Gas Capital Forecast – Removal

	2020	2021	2022	2023	2024	TOTAL
Production	$ -	$ -	$ -	$ -	$ -	$ -
Transmission	61	104	85	87	300	638
Regulating Stations	118	125	107	54	122	526
New Business	204	209	213	218	222	1,066
Distribution Improvements	1,329	1,357	1,385	1,414	1,444	6,929
Meters	4	4	4	4	4	21
Total	$ 1,716	$ 1,799	$ 1,794	$ 1,778	$ 2,093	$ 9,180

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 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 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, 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.



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, upgrade/replacement of gate station flow control equipment, etc. The development of the Gas Transmission five year Capital Forecast is derived from the following inputs:

- Load Growth

- Transmission Integrity Management Program (TIMP)
- Regulatory Requirements
- Equipment Obsolescence/Performance
- Inspection Results
- Municipal Projects

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:

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

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 reconfiguration and upsizing 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 infrastructure and compliance due to regulatory requirements, equipment obsolescence, maintenance issues, improved/remote pressure control, retirements, and relocations. In addition a number of regulator and relief valves have been identified for replacement since they are no longer supported by the manufacturer and are considered obsolete.

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:

- Load Growth

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

The Gas Distribution five year Capital Forecast is driven primarily by the mandated replacement of Leak Prone Pipe (LPP). As detailed in its current rate agreement the Company is required to eliminate a minimum of 15 miles of leak prone pipe each year until its expiration in 2021. It is the Company's intent to reduce this level to 5 planned miles thereafter due to the clear direction of the state's energy policy to eliminate carbon emissions and the use of fossil based fuels.

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. The total budget for LPP replacement is $98 million in the five year forecast (average annual expenditure of $24.5M). The current replacement program after 2021 with a rate 5 miles per year would result in the elimination of all leak prone pipe by 2037.

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 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 forecast over $51 million over the five year period for residential and commercial additions.

The Gas Meters capital forecast is based on the projected customer growth from the corporate forecast. The forecasted expenditure level is based on the updated forecasted customer growth rates. The meter forecast is based on the annual needs for non-load related meter installations (Meter Testing Program or ERT meter requests) approximately 2,800 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 Land and Buildings, Office Furniture, Tools & Equipment, Transportation, and the Information & Technology Capital Budget Forecasts. The following is a summary of the five year capital forecast for each of these categories.

Common Capital Forecast – Additions

	2020	2021	2022	2023	2024	TOTAL
Lands and Buildings	$ 18,465	$ 11,005	$ 43,686	$ 17,600	$ 11,543	$ 102,299
Office Equipment	23,834	31,952	36,070	24,984	24,321	141,161
Tools	1,479	1,455	1,485	1,517	1,548	7,484
Communication	7,019	5,014	2,883	1,175	1,200	17,292
Transportation	9,773	9,781	9,979	10,188	10,472	50,192
Removal	(164)	(186)	(144)	(21)	132	(382)
Total	$ 60,406	$ 59,021	$ 93,959	$ 55,443	$ 49,217	$ 318,047

Common Capital Forecast – Removal

	2020	2021	2022	2023	2024	TOTAL
Lands and Buildings	$ 285	$ 263	$ 305	$ 428	$ 581	$ 1,862
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	$ (164)	$ (186)	$ (144)	$ (21)	$ 132	$ (382)

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) and multiple larger facility projects. The first large project is the rebuilding/expansion of office space (808/809) and parking at our South Road headquarters. Several alternatives were evaluated to increase office space, including building a new facility or leasing space. The proposed project will also address improvements needed in the vehicle maintenance facility at our headquarters. The current estimated cost of this project during the five year forecast period (2020-2024) is $6.6M with the majority of expenditures in 2019 and project completion anticipated by 2020.

The second project is the buildout of remaining office space at the Company's Kingston headquarters. There is existing unoccupied space at the Kingston facility and the buildout will leverage available space for staffing additions/flexibility coupled with a new disaster recovery site for our IT assets (which have outgrown the space available at our current site located at our Newburgh headquarters). The estimated build out costs for the Kingston project over the five year forecast period is $3.0M with the majority of expenditures occurring in 2019 and 2020. The final significant project is the establishment of a dedicated training facility and integrated transmission and distribution system operations centers. The training center is a multiphase initiative which recognizes that with the significant amount of new technology and substantial turnover occurring in the work force new facilities are required. The estimated costs in the five year forecast for this facility is $27M. As part of the design of this planned facility is the future buildout of an integrated transmission and distribution system operations center and a backup call center location to supplement our existing Newburgh site (which has insufficient space). Coupled with the Company's grid modernization efforts is a need to move to 24/7 monitoring and control of the distribution system. The plan is to create a fully integrated transmission and distribution system operations center on the campus of the training center. Other large projects in the later years of this five year forecast include the rebuild of the transformer shop and new Newburgh HQ facility. The "Lands and Buildings" category also includes capital improvements for energy efficiency improvements at existing Company facilities.

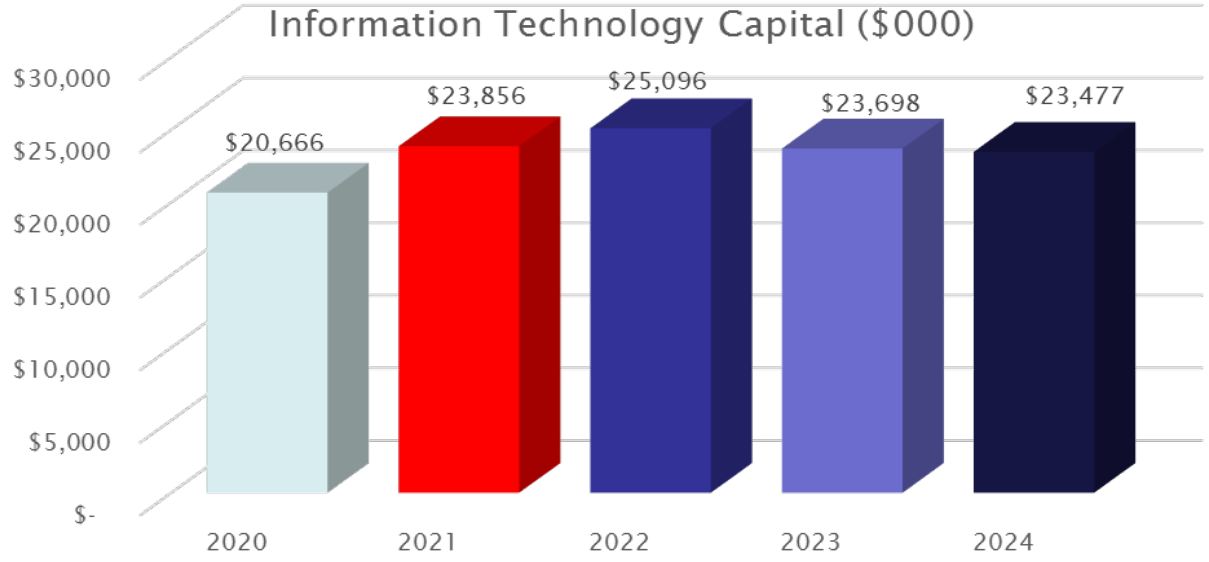
The Office Furniture Capital Budget consists of normal replacements due to wear and tear and those driven by office upgrades or changes requiring additions to meet the new use of the space.

Information Technology / Communications

Central Hudson is continuing to make strategic investments in Information Technology (IT) in order to meet rapidly expanding customer, industry, regulatory, business, and employee needs. Its mission, strategic imperatives, and key initiatives are illustrated graphically below.

The IT strategy combined with establishing partnerships with all other areas of the business ensures Central Hudson is able to meet changing regulatory and customer expectations, translating these needs to the most optimal and effective technology solutions while continuing to ensure the reliability, availability, usability, and overall security of the IT technology portfolio.

The rapid pace of technology change compounds the level of disruptions in the utility industry. The IT investment portfolio aims to modernize multiple business functions and their associated systems while continuing to focus on extending customer digital offerings, further automating and optimizing business functions, and confronting ongoing cybersecurity threats. See the chart below that represents the forecasted 2020-2024 plan:



The IT Capital Budget consists of foundational investments to maintain, secure, and modernize systems and investments to enrich the customer experience. These modernization efforts aim to address aging applications, non-optimal business processes, anticipated business requirements gaps, digitization of manual processes, and optimization of technology architecture. The foundational investments fall into two categories: 1) meeting expanding customer, regulatory, business, and industry driven demands; and 2) investments core to running the business. The foundational investments necessary to meet expanding customer, regulatory, business, and industry driven demands can be further broken down into: those that have a direct impact on our ability to serve our customers and to meet industry or regulatory demands, those ensuring overall security of business and customer information, and those supporting internal business processes. The foundational investments that are core to running the business relate to; upgrades and enhancements to existing systems and infrastructure or hardware lifecycle upgrades and ongoing extensions resulting from corresponding software updates or implementations. The investments related to enriching customer experience are investments necessary to provide customers with more personalized information combined with new products and services offerings, extended self-service options, and ongoing investments to optimize our digital (Web/Mobile/Social) channels. These investments aim to meet the experience customers have come to expect based on their interactions with other industries and service companies. All investments are evaluated through the IT Steering Committee with alignment to strategy and financial analysis used as the criteria for approving the project. See below for some highlight initiatives:

Key Business Initiatives

- **CIS Modernization** – Customer Information System (CIS) Modernization aims to address anticipated industry, regulatory, and customer expectation advancements combined with resource attrition and diminishing technical and business knowledge with an aging, complex application. CIS is core to the majority of business operations supporting key functions in customer billing and collections, payment processing, rate configuration, service orders, load profiles, meter inventory and processing, revenue reporting, and many other critical business processes. Modernization will translate to a significant multi-year effort spanning across multiple groups where resource management, organizational change management, and communication among key leadership roles will be critical to the project's success.
- **DICE** – Digital Initiatives for Customer Engagement (DICE) is comprised of three focus areas: New Products and Services, Extending Self-Service, and Digital Channels Optimization. The initiatives consist of bundled service enhancements across each focus area, as prioritized by the business need.
- **HRIS** – Human Resources Information System (HRIS) replaces an aging and disjointed set of HR processes and applications with a new system for all core processes, including but not limited to payroll, benefits administration, management of training activities, performance management, and recruiting. This will also enable the implementation of a critically important Learning Management System (LMS) to centrally track and manage all aspects of employee training and development.
- **Clarity Replacement** – This budgeting and forecasting application requires replacement as IBM is no longer providing product updates or support to Clarity.
- **IAM** – Identity Access Management (IAM) is part of a layered approach within the Cybersecurity program, implementing a centralized system that automates the provisioning of end user system access. IAM is a key cybersecurity control domain with a high-risk profile and this system will enable a controlled and auditable solution ensuring the appropriate access is authorized to the right resources in the right systems.
- **SOA** – Services Oriented Architecture (SOA) fully supports all other investment areas, including CIS. SOA provides the vital middle layer that sits between source systems and contains the data and business logic that is required to integrate systems and third parties. The implementation continues with the redesign of application interfaces from a legacy based point-to-point architecture, to a services-oriented approach with application logic and synchronization of data occurring in a middle layer vs. within each application. This approach provides a more efficient, flexible, scalable, and agile approach to application integration.

The ongoing investments with our IT infrastructure include our networks, servers, computers, mobile devices, security devices, and all of the components that link these devices, altogether spanning more than 2,500 devices. The infrastructure investments include recurring device lifecycle upgrades and replacements along with the implementation of new devices to support new business solutions.

For planning purposes, the life cycle of the IT infrastructure is anticipated to be between 5 and 8 years on average, but varies depending upon the type of equipment. The useful life largely depends on usage, environment, technology obsolescence and incompatibility, decreased reliability and discontinued manufacturer support:

- Mainframe, peripherals, storage and printers - 8 years
- PC & laptops – 5 years
- Mobile Computers – 3 years
- Network Printers – 3 years
- Network devices – 5 years
- Telephone systems – 10 to 12 years

Within the communication budget is funding for the Company's Network Strategy project. The Network Strategy project is an enterprise solution to address communication needs among the company's fixed assets and was justified based on a business case in our 2014 rate filing to move away from costly, unreliable third party communication providers. These fixed assets include corporate offices, gas gate and regulator stations, electric substations, electric distribution automation devices, mobile radio tower and large customer meters, the two-way network is being built with a high speed backbone and medium bandwidth mesh radio network to communicate to more dispersed assets. The five year forecast includes $17.3M for this project.

Transportation and Tools

The Tools budget consists of equipping new vehicles with tools, 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, 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:

- $50M spend 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 2020-2024 FORECAST

2020- 2024 Construction Forecast ($000's)
INSTALLATION W/ AFUDC
(with inflation & OH adjustment)

		Expenditures with AFUDC										
		2019 Budget	2020 Proposed Budget (1st Half)	2020 Proposed Budget (2nd Half)	2020 Proposed Budget	2021 Proposed Budget (1st Half)	2021 Proposed Budget (2nd Half)	2021 Proposed Budget	2022 Proposed Budget	2023 Proposed Budget	2024 Proposed Budget	2019-2024 Proposed Budget Total
ELECTRIC PROGRAM												
Hydro & Gas Turbines	**11**	2,019	715	727	1,442	1,178	1,178	2,356	2,135	2,317	1,512	9,761
Transmission	**12**	19,340	8,376	13,103	21,479	11,475	13,256	24,730	26,097	24,266	24,206	120,779
Substations	**13**	19,312	6,147	13,645	19,791	7,625	11,066	18,691	16,382	16,580	17,375	88,820
New Business	**14**	6,670	3,344	3,344	6,687	3,460	3,460	6,920	7,011	7,126	7,283	35,028
Dist. Improvements	**15**	41,291	18,954	18,540	37,493	18,751	23,483	42,234	42,432	42,066	37,805	202,031
Transformers	**16**	5,696	2,918	2,996	5,914	3,143	3,143	6,287	6,216	6,313	6,574	31,304
Meters	**17**	2,493	1,601	1,067	2,668	1,440	1,440	2,880	2,988	3,104	3,225	14,866
Total Electric Program		96,820	42,053	53,421	95,475	47,073	57,026	104,100	103,262	101,772	97,979	502,588
GAS PROGRAM												
Production	**21**	-	-	-	-	-	-	-	-	-	-	-
Transmission	**22**	1,707	452	1,139	1,591	679	1,742	2,421	2,430	2,352	2,517	11,312
Regulator Stations	**23**	2,100	1,232	1,327	2,559	687	2,111	2,798	2,666	2,283	2,585	12,891
New Business	**24**	9,559	4,874	4,915	9,789	4,917	4,917	9,834	10,280	10,496	10,697	51,096
Dist. Improvements	**25**	40,363	15,400	23,346	38,746	16,640	25,225	41,865	22,910	25,063	26,184	154,767
Meters	**27**	3,029	1,355	1,355	2,709	1,388	1,388	2,776	2,834	2,903	2,975	14,197
Total Gas Program		56,758	23,313	32,082	55,395	24,310	35,383	59,693	41,121	43,097	44,959	244,264
COMMON PROGRAM												
Buildings	**41**	16,280	9,305	9,160	18,465	3,944	7,061	11,005	43,686	17,600	11,543	102,299
Buildings Minors		4,280	2,079	2,047	4,126	2,083	2,075	4,156	4,477	4,844	5,761	23,364
Major Expansion		12,000	7,226	7,113	14,338	1,861	4,986	6,849	39,209	12,756	5,782	78,935
Office Equipment	**42**	25,164	11,830	12,004	23,834	13,032	18,920	31,952	36,070	24,984	24,321	141,161
General	**421**	163	153	153	307	104	104	209	320	272	289	1,396
EMS	**423**	4,168	1,124	1,124	2,249	1,070	6,191	7,261	10,191	416	56	20,172
EDP	**4222**	2,986	1,570	1,570	3,139	1,601	1,601	3,202	3,338	2,865	2,984	15,528
Software	**4220**	17,238	8,625	8,901	17,526	9,891	10,763	20,654	21,758	20,833	20,493	101,265
Security	**424**	608	358	256	613	365	261	626	464	598	500	2,801
Tools	**43**	1,313	740	740	1,479	727	727	1,455	1,485	1,517	1,548	7,484
Communication	**44**	9,209	3,509	3,509	7,019	3,934	1,080	5,014	2,883	1,175	1,200	17,292
Transportation	**45**	9,119	4,886	4,886	9,773	4,890	4,890	9,781	9,979	10,188	10,472	50,192
Total Common Program		61,085	30,271	30,299	60,570	26,528	32,679	59,207	94,104	55,464	49,085	318,429
CORPORATE TOTAL		214,663	95,637	115,802	211,439	97,911	125,088	223,000	238,486	200,334	192,023	1,065,281
REMOVALS		9,235	5,581	4,731	10,312	5,198	5,198	10,397	10,891	11,163	10,620	53,381
TOTAL CAPITAL		223,897	101,217	120,533	221,751	103,110	130,287	233,396	249,377	211,496	202,643	1,118,663

2020- 2024 Construction Forecast ($000's)
REMOVAL
(with inflation)

		Expenditures								
		2019 Budget	2020 Proposed Budget (1st Half)	2020 Proposed Budget (2nd Half)	2020 Proposed Budget	2021 Proposed Budget	2022 Proposed Budget	2023 Proposed Budget	2024 Proposed Budget	2019-2024 Proposed Budget Total
ELECTRIC PROGRAM										
Hydro & Gas Turbines	**11**	204	77	10	87	214	192	33	33	559
Transmission	**12**	2,642	2,574	936	3,510	3,283	3,606	3,568	2,677	16,645
Substations	**13**	1,786	641	1,495	2,136	2,194	2,102	2,464	2,274	11,170
New Business	**14**	255	128	128	256	261	266	272	278	1,333
Dist. Improvements	**15**	2,350	1,176	1,176	2,351	2,404	2,637	2,622	2,677	12,692
Transformers	**16**	409	204	204	409	417	426	435	444	2,132
Meters	**17**	10	5	5	10	10	11	11	11	53
Total Electric Program		7,658	4,804	3,955	8,759	8,784	9,240	9,406	8,395	44,583
GAS PROGRAM										
Production	**21**	-	-	-	-	-	-	-	-	-
Transmission	**22**	102	31	31	61	104	85	87	300	638
Regulator Stations	**23**	107	59	59	118	125	107	54	122	526
New Business	**24**	204	102	102	204	209	213	218	222	1,066
Dist. Improvements	**25**	1,328	664	664	1,329	1,357	1,385	1,414	1,444	6,929
Meters	**27**	4	2	2	4	4	4	4	4	21
Total Gas Program		1,746	858	858	1,716	1,799	1,794	1,778	2,093	9,180
COMMON PROGRAM										
Buildings	**41**	280	143	143	285	263	305	428	581	1,862
Buildings Minors		280	143	143	285	263	305	428	470	1,751
Major Expansion		-	-	-	-	-	-	-	111	111
										-
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		(169)	(82)	(82)	(164)	(186)	(144)	(21)	132	(382)
CORPORATE TOTAL		9,235	5,581	4,731	10,312	10,397	10,891	11,163	10,620	53,381

ELECTRIC PROGRAM INDIVIDUAL PROJECT SUBMITTAL

Budget Submittal Form for Electric Projects

Project Name: Coxsackie Major Overhaul

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 time the units were overhauled was about 40 years ago. Despite he low run time, age still comes into consideration with the health of the unit. Inspection have noted some fatigue and the units should be considered for a major overhaul in 2023.

Solution

Send unit out for a shop overhaul.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,072,000	$0	$0	$0	$1,072,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Plant received capacity payments that are directly transfered to the customer
- [ ] 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: South Cairo Major Overhaul

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 time the units were overhauled was about 40 years ago. Despite he low run time, age still comes into consideration with the health of the unit. Inspection have noted some fatigue and the units should be considered for a major overhaul in 2024.

Solution

Send unit out for a shop overhaul.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,089,0000	0	0	0	0	$1,089,000	$983,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [x] Reduced Customer Bill — Plant received capacity payments that are directly transfered to the customer
- [ ] 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: 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	25,478,000	6,027,000	4,986,000	4,478,000	5,259,000	4,728,000	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 larger scope projects
- [ ] 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

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

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [x] Failure Rates — Reduce the risk of increased failure rates due to aged infrastructure
- [ ] Obsolete/ Unserviceable Equipment
- [x] 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	$1,355,000	$245,000	$284,000	$257,000	$284,000	$284,000	$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
- [x] Public Safety — Mitigate any unsafe condition as result of equipment failures
- [ ] Other Program Type

Compliance

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

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [x] Failure Rates — Improve this through preventative replacement
- [ ] Obsolete/ Unserviceable Equipment
- [x] 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.

- MK or HK Line (Honk Falls - Kerhonkson)
- FK Line (Kerhonkson - High Falls)

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,519,000	948,000	571,000				
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
- [x] NESC Codes
- [ ] Other Program Type

Infrastructure

- [ ] Average Age of Infrastructure years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement Conduct High Priority Replacement Projects with this work
- [x] 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: Risk Reduction

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 has identified easement deficiencies along its 69kV, 115kV and 345kV transmission line corridors. The adjacent property owners have been identified and, if haven't already, will be contacted in an attempt to acquire the additional ROW. 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	2,985,000	501,000	420,000	732,000	631,000	702,000	300,000
Expense							

Cost Risks

- [ ] Environmental
- [x] 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
- [x] Public Safety — Provide sufficient buffer to help prevent against encroachments
- [ ] Other Program Type

Compliance

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

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [x] Accessibility (Off Road, underground) — Improves Access to Structures
- [x] 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: CL Line Rebuild - 69kV

Form submitted by: K.Bragg

Budget Group: 12 - Transmission

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

In 2015, a field inspection of the 11.7 mile 69kV "CL" Line (North Catskill - Lawrenceville - South Cairo) showed that 69% of the existing structure plant would require replacement due to component defects. There were also an additional 23% of structures that showed a significant number of minor defects indicating an overall poor structure condition.

Solution

Given the level of replacement needed to repair the identified component defects, it has been proposed to rebuild 10.16 miles of the existing 11.7 mile line. The 1.54 mile section of line immediately outside of the North Catskill Substation was recently replaced with new steel structures in 2008. The rebuild will include the replacement of all structures, conductors and overhead ground wire in the designated 10.16 mile section of line. The line voltage is planned to remain at 69kV.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	3,025,000	3,025,000					
Expense							

Cost Risks

- [x] Environmental — Matting for equipment access, most likely will require SWPPP
- [x] Timing/Permitting — Local permitting with (2) towns, Outage restrictions related to load at Hunter Mountain
- [ ] Manpower
- [x] Other — Outage timing must be coordinated to provide for reliable service to customers in the northwestern service area. Project start pending completion of HPR / Insulator replacement projects on FW and CN lines.

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

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

Infrastructure

- [x] Average Age of Infrastructure: 60+ years
- [x] Failure Rates: Reduce failure rates through preemptive replacement
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition: Most of the line is of the original vintage and at the end of its service life
- [ ] Accessibility (Off Road, underground)
- [ ] Strategic Replacement
- [x] 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 E.P.#2017-011

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	3,471,000	220,000	218,000	3,033,000			
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

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

Infrastructure

- [x] Average Age of Infrastructure 60+ years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] 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 | KM & TV Line Rebuild and EP2005-010 5-16inch Steel Static Wire Assessment

Or

Project Alternatives Considered

Internal project alternatives analysis in progress

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	7,853,000	981,000	6,662,000	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

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

Infrastructure

- [x] Average Age of Infrastructure 60+ years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] 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	19,269,000	7,954,000	7,479,000	3,836,000			
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
- [x] Public Safety
- [ ] Other Program Type

Compliance

- [x] Inspections Address existing Sev.4 and Sev.5 Findings
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [x] NESC Codes
- [ ] Other Program Type

Infrastructure

- [ ] Average Age of Infrastructure 90+ years
- [x] Failure Rates Improve this through preventative replacement
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement Optimize structure placement through new design
- [x] 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	23,741,000	1,013,000	3,354,000	11,695,000	7,679,000		
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
- [x] Public Safety
- [ ] Other Program Type

Compliance

- [x] Inspections Address existing Sev.4 and Sev.5 Findings
- [ ] Road Rebuild
- [ ] Joint Facilities/CATV Agreement
- [x] NESC Codes
- [ ] Other Program Type

Infrastructure

- [x] Average Age of Infrastructure 90+ years
- [x] Failure Rates Improve this through preventative replacement
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement Optimize structure placement through new design
- [x] 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 16.17 miles in length. The line was constructed in two pieces, one in the late 1930's and the other in the early 1950'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 60% 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 16.17 miles of the 69kV "HG" Line from the Honk Falls Substation to the Neversink Substation. A planning memo is in-progress and will be available later in 2018.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	15,286,000	100,000	262,000	1,203,000	8,415,000	5,306,000	
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

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

Infrastructure

- [x] Average Age of Infrastructure: 80+ years
- [x] Failure Rates: Reduced rate of failure through preemptive replacements
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition: Most of the line is of the original vintage and at the end of its service life
- [x] 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: 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	15,656,000	0	105,000	418,000	1,999,000	13,134,000	5,500,000
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

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

Infrastructure

- [x] Average Age of Infrastructure: 60+ years
- [x] Failure Rates: Reduced rate of failure through preemptive replacements
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition: Most of the line is of the original vintage and at the end of its service life
- [x] 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: 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	$9,777,000	$818,000	$532,000	$2,153,000	$2,824,000	$3,450,000	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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 years
- [x] Failure Rates Reviews of history of equipment failure.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] 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	$2,577,000	$60,000	$62,000	$808,000	$1,646,000		
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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 years
- [x] Failure Rates Reviews of history of equipment failure.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] 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	$2,255,000	$751,000	$769,000	$735,000	$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

- [x] Average Age of Infrastructure 40 years
- [x] Failure Rates Breakers replaced based on failure rates.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Breakers replaced based on deteriorated condition.
- [ ] Accessibility (Off Road, underground)
- [x] 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 2020-2024 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	$5,239,000	$0	$225,000	$389,000	$2,161,000	$2,464,000	$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

- [x] Average Age of Infrastructure 40 years
- [x] Failure Rates Breakers replaced based on failure rates.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Breakers replaced based on deteriorated condition.
- [ ] Accessibility (Off Road, underground)
- [x] 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 2020-2024 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	$3,467,000	$556,000	$633,000	$598,000	$823,000	$857,000	$2,400,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] Average Age of Infrastructure 40 years
- [x] Failure Rates Reviews of history of equipment failure.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Switches replaced based on deteriorated condition.
- [ ] Accessibility (Off Road, underground)
- [x] 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	$4,744,000	$505,000	$557,000	$747,000	$926,000	$2,009,000	$3,214,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] Average Age of Infrastructure 40 years
- [x] Failure Rates Reviews of history of equipment failure.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Switches replaced based on deteriorated condition.
- [ ] Accessibility (Off Road, underground)
- [x] 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	$7,617,000	$0	$0	$0	$2,367,000	$5,250,000	$3,600,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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

- [x] Average Age of Infrastructure 55+ years
- [ ] Failure Rates
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Varying transformer health.
- [ ] Accessibility (Off Road, underground)
- [x] 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
Lincoln Park Substation
Montgomery Street Substation

Solution

Replace switchgears and any associated relaying as appropriate.

Form Revision Date - May 2015

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,941,000	$0	$0	$1,051,000	$1,801,000	$2,089,000	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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

- [x] Average Age of Infrastructure 60 years
- [ ] Failure Rates
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Switchgear deterioration.
- [ ] Accessibility (Off Road, underground)
- [x] 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: North Catskill 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

Based on condition assessment, age and risk, the 115/69kV transformers at North Catskill require replacement. In addition, the H & SB lines are in poor condition and in need of reinforcement due to numerous upcoming high priority repairs and sag issues. Their continued aging likely will result in additional infrastructure based costs. In order to replace these lines, Transformers #4 and #5 would need to be taken out of service one at a time. These transformers cannot support the current loading for an extended period of time. Therefore, the replacement of the 115/69kV transformers should be scheduled prior to the H & SB Line rebuilds.

Much of the equipment at the North Catskill Substation has been identified for replacement on the following programs: RTU Replacement Program and the ESP Infrastructure Replacement Program.

Solution

Replace existing 115/69 kV Transformer #4 and Transformer # 5 with three phase 115/69 kV 56 MVA autotransformers. 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	$2,007,000	$2,007,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement To facilitate the upgrade of the H Line to 115 kV.
- [ ] 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.: “H & SB Lines”. E.P. #2015-003. August 4, 2015.

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: Pleasant Valley 115kV Substation Modernization

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 Pleasant Valley 115 kV Substation has been identified for replacement on the following programs: Breaker Replacement Program, 115 kV Disconnect Replacement Program, and the ESP Infrastructure Replacement Program.

Solution

The various programs above have been combined into one 115 kV substation modernization project. Five 115 kV circuit breakers will be replaced along with Bus #1 and Bus #2 relays and all associated electromagnetic breaker relays. Twenty-four 115 kV Disconnect Switches will be replaced on Bus #1 and Bus #2.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

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

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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
- [x] 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: Rock Tavern 115kV Substation Modernization

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 Rock Tavern 115 kV Substation has been identified for replacement on the following programs: Breaker Replacement Program and the ESP Infrastructure Replacement Program.

Solution

The various programs above have been combined into one 115 kV substation modernization project. Three 115 kV circuit breakers and one 69 kV circuit breaker will be replaced along with Bus #1 and Bus #2 relays, Transformer #2 relays, and all associated electromagnetic breaker relays.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,606,000	$1,606,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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
- [x] 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: Stanfordville Substation 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

As part of the ongoing review of the substation power transformer fleet, Operations Services completes a condition-based assessment of those transformers that are 55 years old or greater. This assessment is based on routine testing and monitoring to determine an overall condition and condition-trend of the transformer. Based on this assessment, the existing Standfordville Substation transformer has reached the end of its useful life and requires replacement.

Solution

Replace the existing transformer at the Stanfordville Substation with a 11.2 MVA 69/13.8kV bank.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,204,000	$1,204,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] Average Age of Infrastructure 62 years
- [ ] Failure Rates
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence in the station.
- [x] Condition Dissolved Gas Analysis indicating overheating in the transformer insulation.
- [ ] Accessibility (Off Road, underground)
- [x] Strategic Replacement Reinforcement of the Northeast 69 kV area.
- [ ] 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	$1,556,000	$1,556,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] 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

- [x] Average Age of Infrastructure 70 years
- [x] Failure Rates — RTU is unreliable.
- [x] Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- [x] 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: Kerhonkson Substation Autotransformers

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: System Enhancement

Investment Category: Reliability

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	$4,250,000	$1,907,000	$2,343,000	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [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: 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	$6,998,000	$3,837,000	$3,161,000	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] Average Age of Infrastructure 61 years
- [x] Failure Rates Reviews of history of equipment failure.
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] 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: Tilcon Tap Station

Form submitted by: Brett Arteta

Budget Group: 13 - Substations

Summary Category: Non-Discretionary

Investment Category: Tariff

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	$4,228,000	$602,000	$3,626,000	$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: 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	$2,014,000	$129,000	$1,834,000	$50,000	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] 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

- [x] Average Age of Infrastructure 38 years
- [ ] Failure Rates
- [x] Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- [x] 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: 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	$1,836,000	$247,000	$306,000	$1,262,000	$21,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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 years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [ ] Accessibility (Off Road, underground)
- [x] 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: System Enhancement

Investment Category: Reliability

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	$1,185,000	$20,000	$306,000	$808,000	$51,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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 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: Greenfield Road - 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

As part of the ongoing review of the substation power transformer fleet, Operations Services completes a condition-based assessment of those transformers that are 55 years old or greater. This assessment is based on routine testing and monitoring to determine an overall condition and condition-trend of the transformer. Based on this assessment, the existing 69-4.16kV Greenfield Road Substation transformers have reached the end of their useful life and require replacement.

Solution

Retire all of the 4 kV equipment including Transformers #1 and #3 and all other associated equipment. Two existing 69-13.8kV three phase transformers will be utilized (current plans are to use the Modena Substation spare and the retired Kerhonkson Substation transformers).

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,170,000	$20,000	$383,000	$746,000	$21,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] Average Age of Infrastructure 79 years
- [ ] Failure Rates
- [x] Obsolete/ Unserviceable Equipment Reviews of equipment obsolescence.
- [x] Condition Elevated power factor measurements above acceptable limit.
- [ ] 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 EP2016-012 Spare 10_12MVA Transformer Relocations.pdf

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	$1,907,000	$0	$306,000	$1,581,000	$21,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] 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

- [x] Average Age of Infrastructure 80 years
- [x] Failure Rates — RTU is unreliable.
- [x] Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- [x] 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: 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	$1,776,000	$50,000	$489,000	$1,237,000	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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

- [x] 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

- [x] Average Age of Infrastructure 64 years
- [x] Failure Rates — RTU is unreliable.
- [x] Obsolete/ Unserviceable Equipment — Reviews of equipment obsolescence.
- [x] 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: 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	$1,184,000	$50,000	$306,000	$808,000	$21,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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 years
- [ ] Failure Rates
- [x] 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: 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	$3,382,000	$0	$0	$1,633,000	$1,749,000	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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
- [x] 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: 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	$1,160,000	$0	$0	$202,000	$926,000	$32,000	$0
Expense							

Cost Risks

- [ ] Environmental
- [ ] 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 years
- [ ] Failure Rates
- [x] 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: 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	$1,050,000	$0	$0	$0	$513,000	$537,000	$3,000,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] 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
- [x] 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: 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	$4,000,000	$4,000,000	$0	$0	$0	$0	$0
Expense							

Cost Risks

- [ ] Environmental
- [x] 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
- [x] 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: Distribution Improvement Blankets

Form submitted by: Kevin Post

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 2020

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.

Form Revision Date - May 2015

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$47,773,000	$9,254,000	$9,439,000	$9,516,000	$9,688,000	$9,876,000	$45,000,000
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting
- [x] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] Reduced O&M — Distribution improvement projects typically 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
- [ ] 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

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

Infrastructure

- [ ] Average Age of Infrastructure years
- [ ] Failure Rates
- [x] 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: Relocation Blankets

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 2020

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	$1,062,000	$206,000	$210,000	$211,000	$215,000	$219,000	$1,000,000
Expense							

Cost Risks

- [ ] Environmental
- [x] 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

- [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

- [x] Employee Safety — These projects often relocate facilities to improve employee access
- [x] Public Safety — These projects often relocate facilities to improve public safety
- [ ] Other Program Type

Compliance

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

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment — Often the relocations replace aging equipment
- [x] Condition
- [x] 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: Distribution Improvement Minors

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 2020

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	$3,185,000	$617,000	$629,000	$634,000	$646,000	$658,000	$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 Conversions

Form submitted by: Kevin Post

Budget Group: 15 - Distribution Improvements

Summary Category: Non-Discretionary

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2020

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	$1,592,000	$308,000	$315,000	$317,000	$323,000	$329,000	$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: 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 2020

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	$3,981,000	$771,000	$787,000	$793,000	$807,000	$823,000	$3,750,000
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting — These projects are often on strict time constraints due to customer needs and compliance
- [x] 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
- [x] 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

- [x] Employee Safety — These projects often relocate facilities to improve employee access
- [x] Public Safety — These projects often relocate facilities to improve public safety
- [ ] Other Program Type

Compliance

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

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment — Often the relocations replace aging equipment
- [x] Condition
- [x] 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: CATV Make-Ready

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 2020

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	$3,693,000	$1,028,000	$1,049,000	$529,000	$538,000	$549,000	$2,500,000
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting
- [x] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] Reduced O&M — Work typically replaces aged poles which reduces 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

- [ ] 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

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

Infrastructure

- [ ] Average Age of Infrastructure years
- [ ] Failure Rates
- [x] 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 Improvement - Thermal/Voltage

Form submitted by: Kevin Post

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 2020

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	$7,579,000	$1,136,000	$784,000	$1,057,000	$3,229,000	$1,372,000	$7,500,000
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] Reduced O&M — Mitigating loading concerns typically reduces O&M 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

- [ ] 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 Improvement - Reliability

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 2020

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	$9,280,000	$1,873,000	$944,000	$2,115,000	$2,153,000	$2,195,000	$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

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

Infrastructure

- [x] Average Age of Infrastructure years
- [x] Failure Rates Engineering analysis determines equipment with a high failure rate
- [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: 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 2020

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	$8,580,000	$165,000	$1,670,000	$1,586,000	$2,691,000	$2,469,000	$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

- [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

- [x] Average Age of Infrastructure years
- [x] Failure Rates The program typically replaces antiquated infrastructure
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [x] Accessibility (Off Road, underground) Infrastructure is often made more accessible
- [ ] 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: 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 2020

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	$2,521,000	$278,000	$472,000	$793,000	$484,000	$494,000	$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: Overhead Secondary 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 2020

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	$1,062,000	$206,000	$210,000	$211,000	$215,000	$219,000	$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

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

Non-Storm Operating

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

Customer Satisfaction

- [x] 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: Distribution Pole 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 2020

Project ID (District-YYYY-ID)

Description of Problem

Central Hudson currently owns over 220,000 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	$27,567,000	$4,609,000	$6,292,000	$6,344,000	$5,382,000	$4,938,000	$22,500,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] Reduced O&M — Pro-active replacement of equipment greatly reduces the O&M 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
- [x] Public Safety — Larger, stronger poles decreases public exposure
- [ ] Other Program Type

Compliance

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

Infrastructure

- [x] Average Age of Infrastructure ____ years
- [x] Failure Rates
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition — Replaces failure prone poles
- [x] 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: 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 2020

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	$3,068,000	$447,000	$655,000	$661,000	$646,000	$658,000	$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: 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 2020

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	$15,386,000	$2,166,000	$2,704,000	$2,908,000	$3,768,000	$3,841,000	$17,500,000
Expense							

Cost Risks

- [ ] Environmental
- [x] 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
  - [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: Secondary Network Upgrade Program

Form submitted by: H. Wilson-Sowah

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 2020

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	$2,196,000	$206,000	$210,000	$529,000	$538,000	$713,000	$2,500,000
Expense							

Cost Risks

- [x] 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
- [x] 5 Year Average # Outages Avoided

Non-Storm Operating

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

Customer Satisfaction

- [ ] Complaints
- [x] Critical Customers
- [ ] LSA Customers
- [x] 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
- [x] Public Safety: manhole covers blowing
- [ ] Other Program Type

Compliance

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

Infrastructure

- [x] Average Age of Infrastructure 100 years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] 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: 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 2020

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 2020 (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 2020.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,532,000	$514,000	$787,000	$1,057,000	$1,076,000	$1,097,000	$5,000,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

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

- [x] $/CMA: 19.55
- [x] 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

- [x] Average Age of Infrastructure 30+ years
- [x] Failure Rates 1 per year
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition Aging URD cables are inaccessible and experiencing increased failures
- [x] Accessibility (Off Road, underground)
- [x] 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 Automation 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 2020

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	$21,414,000	$7,712,000	$7,656,000	$4,970,000	$1,076,000		
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — Extensive work efforts are involved, but additional resources are assigned to assist
- [ ] Other

Primary Project Objective

Service

Benefits

Economic

- [x] Reduced O&M — Distribution Automation will reduce O&M costs
- [x] Reduced Customer Bill — VVO reduces customer bills
- [ ] 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

- [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: Recloser 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 2020

Project ID (District-YYYY-ID)

Description of Problem

Transient protection on the distribution system has always been provided by distribution reclosers. Historically, the reclosers were of the hydraulic type. Although these devices work well, they require extensive maintenance after several years, provide no remote control or status and the extent of the transient protection is limited.

Solution

The Central Hudson Recloser Replacement program is designed to replace hydraulic reclosers with electronic. Development of this program used quantifiable attributes including a decrease in maintenance costs as well as the additional information provided by the electronic controllers and the ability to prevent outages through improved transient protection.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,097,000	$360,000	$367,000	$370,000			
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Service

Benefits

Economic

- [x] Reduced O&M — With no maintenance of the units required, O&M costs should decrease
- [ ] 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
- [ ] 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: Cutout Replacement

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 2020

Project ID (District-YYYY-ID)

Description of Problem

The failure of porcelain cutouts is one of the primary equipment failure causes in the Central Hudson service territory. Typically, when a cutout fails, all customers downstream, as well as between the cutout and upstream protective device, experience an interruption.

Solution

Central Hudson continues to pro-actively monitor and address cutout replacements as necessary at the district level. Cutouts housing fuses and solid blades impacting greater than 500 customers were replaced through an earlier program, but conventional transformers and capacitors were frequently excluded, and some circuits have grown to exceed this threshold. In addition, there is a positive reliability benefit to reducing the threshold below 500 customers.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,050,000	$100,000	$100,000	$100,000	$250,000	$250,000	$1,250,000
Expense							

Cost Risks

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

Primary Project Objective

Service

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
- [ ] 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 Cutouts are one of most common equipment failures
- [x] Obsolete/ Unserviceable Equipment
- [x] Condition replaces failure prone cutouts
- [ ] 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: First Zone Circuit 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 2020

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. Aged infrastructure in the first zone of protection poses an especially great risk to reliability as any failure has the potential to lock out the circuit breaker, in many cases affecting thousands of customers. Some of the worst-performing circuits on the Central Hudson system are those where the pole plant, insulators, conductor and animal protection are not up to par in the first zone.

Solution

For circuits with a history of outages due to issues in the first zone, inspect each pole and identify needed upgrades such as for pole replacement, cutout replacement, unfused spur lines, lightning protection, reconductoring and animal protection. Many of these projects will 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	$4,500,000	$450,000	$450,000	$450,000	$450,000	$450,000	$2,250,000
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
- ☑ 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: URD Replacement - OTHER/IMCORP Testing

Form submitted by: N. Conza

Budget Group: 15 - Distribution Improvements

Summary Category: System Enhancement

Investment Category: Infrastructure

Number of Customers Affected: Varies

For Category 15 only: Budget Year Submitted 2020

Project ID (District-YYYY-ID) P-2020-05

Description of Problem

IMCORP partial discharge cable testing technology has been proven through R&D to be an effective way to identify cable defects, allowing for proactive repair before they develop into failures and cause customer outages. Distribution Engineering and the Electric T&D group worked together to identify URD's that have consistently experienced cable failures over the past 5 years.

Per a 2009 FERC ruling, the cost of underground cable assessment may be capitalized when it is used in connection with rehabilitation projects to extend the useful life of an underground cable system. The purpose of the capitalized cable assessments would be to determine the specific location of underground cable or accessory defects that need to be repaired or replaced.

The partial discharge testing requires a means to safely isolate the cable section being tested while still feeding all URD customers. This means that any live-front padmount transformers will need to be replaced with dead-front transformers to facilitate completing the testing in each URD.

Solution

Three URD's (Spook Hill Estates/Pondview SubdivisionF-49/F-111, Wicoppee F-142, and Park Heights P-36) have been selected for testing and repairs based on an average cable failure rate of 1 per year over the past 5 years, as well as age and accessibility. Based on the proven test results from the R&D project and IMCORP's 20 years of empirical data, 1980's and 1990's vintage cable would give us the most value for assessment and targeted repairs. A total of 59 cable sections will be tested for partial discharge and potential repairs. Per discussion with Plant Accounting, three separate work orders (one for each URD) are to be created under this budget line item. Partial and Tentative work orders shall be written first for the testing phase and any preliminary capital work needed in preparation, and the work order will go to CARE for additional funding to cover identified locations in need of repair. Replaced lengths of cable shall be captured in the work order for capitalization.

Replacement of 9 live-front padmount transformers is needed to facilitate testing in the chosen URD's. The labor for these replacements should be charged to expense in Plant Accounting upon closeout of the WO.

Additional URD's may be added in future years based on failure rates and age of cable.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,423,000	$223,000	300,000	300,000	300,000	300,000	
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

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

It costs $7,000/day to test approximately 8 sections (roughly 500 FT. each). Targeted repairs and retesting can cost an additional $7,000 in total. Wholesale replacement of those same 8 sections (some of which may not need repairs) at an estimated $75/FT could cost up to $300,000.

Service

Non-Storm Reliability

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

Non-Storm Operating

- [x] $/CMA 19.55
- [x] 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

- [x] Average Age of Infrastructure 30+ years
- [x] Failure Rates 1 per year
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition Aging URD cables are inaccessible and experiencing increased failures
- [x] Accessibility (Off Road, underground)
- [x] 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 | URD Cable Life Extension Assessment - IMCORP Technology R&D Closeout

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 2020

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	$4,500,000	$500,000	$500,000	$500,000	$500,000		2,500,000
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: 2061/1071 - Rebuild Route 26

Form submitted by: Lawrence Saltis

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 1,179

For Category 15 only: Budget Year Submitted 2015

Project ID (District-YYYY-ID) C-2015-01a

Description of Problem

The 12 mile double circuit both on and off road along Route 26 was originally constructed in the mid 1930's. The top circuit operated at 14.4 kV and was part of the 14.4 transmission system that predated the current 69 kV system. The lower circuit fed the customers in the area. The double circuit feeds 863 customers from Freehold circuit 2061 and 316 customers from Coxsackie circuit 1071. The existing pole plant is in very poor condition and needs to be rebuilt. In addition, numerous stray voltage problems exist along many of the single phase spurs fed off the three phase mainline.

Solution

Rebuild the 12 mile mainline over 6 years utilizing 336 MCM WR and a 3/0 neutral and eliminate the need for a double circuit. The improved neutral path should alleviate the stray voltage problems along the single phase spurs fed off the three phase mainline

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,600,000	$600,000	$600,000	$600,000	$600,000	$600,000	$600,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Obtaining easements to relocate to the road.

Primary Project Objective

Service

Benefits

Economic

- [x] Reduced O&M: Relocating portions of the circuitry on road will reduce the future trimming costs
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [x] $/COA: 1,266
- [x] 5 Year Average # Outages Avoided: 2.5

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
- [x] Voltage (Stray, Low, High) stray
- [ ] 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 70 years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition poor
- [ ] 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: 1071 - Rebuild Route 81 3 Phase Mainline.

Form submitted by: Larry Saltis

Budget Group: 15 - Distribution Improvements

Summary Category: System Enhancement

Investment Category: Infrastructure

Number of Customers Affected: 503

For Category 15 only: Budget Year Submitted 2015

Project ID (District-YYYY-ID) Catskill-2015-02

Description of Problem

The circuit 1071 three phase mainline along Route 81 feeds 505 customers. The circuitry was built in late 1940's and is in poor condition. The #2 Ba conductor is also in poor condition. The aluminum is very brittle and the steel core has been found to have significant corrosion when repairs have been required. Circuit 1071 was included on the 2017 Worst Performing Circuit Listing mainly because of outages along the 6 mile portion of circuit 1071 on Route 81.

Solution

Rebuild the 6 mile mainline over 3 years utilizing 336 MCM Wr. and a 3/0 neutral.

Completion of this project is expected to significantly improve the circuit 1071 reliability and ultimately keep it from being included in on the Worst Performing Circuit Listing in the future.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Select Estimate Type

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,800,000	$600,000	$600,000	$600,000			
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Obtaining easements to relocate to the road.

Primary Project Objective

Select Primary Project Objective

Benefits

Economic

- [x] Reduced O&M: Relocating portions of the circuitry on road will reduce the future trimming costs.
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [x] $/COA: 1,101
- [x] 5 Year Average # Outages Avoided: 3.25

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: Reliability Improvement

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 75 years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition poor
- [ ] 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: Circuit 2006 - Rebuild and Polyphase Route 9w - Schoharie Turnpike to Plank Road in Coxsackie, 3.3 Miles

Form submitted by: Lawrence Saltis

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted 2017

Project ID (District-YYYY-ID) C-2017-01

Description of Problem

The CSX access road to the double circuit parallel to the railroad tracks from Coxsackie to the Schoharie Turnpike in Athens will be eliminated when a second rail is installed during 2018. This will make patrolling and repairing of the circuitry difficult and time consuming.

Solution

North Catskill circuit 2006 will be extended north along Route 9W from Leeds-Athens Road to the Schoharie Turnpike during 2018. Circuit 2006 can be extended an additional 3.3 miles north along Route 9W to Plank Road. This will provide the flexibility needed to switch should an outage occur to the double circuit parallel to the railroad tracks from Coxsackie to the Schoharie Turnpike in Athens.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,020,000	$1,020,000					
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
- [ ] Obsolete/ Unserviceable Equipment
- [ ] Condition
- [x] Accessibility (Off Road, underground) Elimination of CSX access road along off-road line
- [ ] Strategic Replacement
- [ ] Other Program Type

Resilience

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

Other

302

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Electric Projects

Project Name: 3002L - Route 9W and Cementon Conversion

Form submitted by: Lawrence Saltis

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 226

For Category 15 only: Budget Year Submitted 2019

Project ID (District-YYYY-ID) Catskill-2019-01

Description of Problem

The Route 9W feed to Cementon operates at 2400 volts (3002L). The pole plant and copper conductor is in very poor condition. The Route 9W three phase conductor is #4 Cu. The conductor on the single phase spurs in Cementon is #6 Cu. The pole plant was built in 1939. In addition, stray voltage problems exist in the area. Two neutral isolators were recently installed.

There is no tie available to reserve Cementon and West Camp in northern Saugerties. The ultimate goal is to establish a three phase tie along Route 9W such that North Catskill circuit 2001 can reserve these areas . For this reason, the conductor on Route 9W feeding to Cementon should be reconductored utilizing 336 MCM Wr. The underground portion by the two Railroad tunnels on Route 9W have already been replaced with three phases of 500 MCM copper cable.

Solution

Reconductor and convert to 7.62kV operation 3.0 miles of existing three phase circuitry on Route 9W utilizing 336 MCM Wr. conductor. Reconductor and convert to 7.62kV operation 1.75 miles of single phase circuitry utilizing 1/0 al. Wr. conductor. Rebuilding and converting will replace the aged infrastructure with new facilities. Converting the area to 7.62 kV operation will help mitigate the stray voltage problems. The project should be completed in two phases.

Utilizing 336 MCM Wr. conductor on Route 9W will facilitate constructing a three phase tie to the Cementon and West Camp in northern Saugerties in the future.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,250,000	$625,000	$625,000				
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Obtaining easements to relocate to the road.

Primary Project Objective

Service

Benefits

Economic

- [x] Reduced O&M: Relocating portions of the circuitry on road will reduce the future trimming costs
- [ ] Reduced Customer Bill
- [ ] Other

Service

Non-Storm Reliability

- [x] $/COA: 2,253
- [x] 5 Year Average # Outages Avoided: 2.75

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
- [x] Voltage (Stray, Low, High) stray
- [ ] 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 80 years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition poor
- [ ] Accessibility (Off Road, underground)
- [ ] Strategic Replacement
- [x] Other Program Type Copper Wire Replacement Program

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: Extend Circuitry 1.6 Miles Underground Along Rt. 17K

Form submitted by: Angelo Onevelo

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Growth

Number of Customers Affected: 147

For Category 15 only: Budget Year Submitted 2017

Project ID (District-YYYY-ID) N-2017-06

Description of Problem

The area around Rt. 17K and Rt. 300 in the Town of Newburgh has seen substantial load growth in recent years. The Bethlehem Road 4092 circuit is the primary circuit that feeds this load pocket along Rt. 300. In 2013, the 4092 circuit peaked at 5.37 MVA. Switching options are greatly limited during peak times. The Coldenham 4027 circuit is the circuit that feeds down Rt. 17K on both the east and west sides of I-87. This circuit has consistently peaked over its 6/9 MVA design criteria in 2013, 2014 and 2015 at 8.62 MVA, 7.29 MVA and 7.10 MVA respectively. A budget project currently scheduled for 2017 (N-2017-01) will offload 3 MW from the Coldenham 4027 circuit. Once this work is completed, the 4027 circuit will peak at approximately 4.5 MW. With the additional load from Amerisource (Matrix) in 2017, the circuit will peak at approximately 5.9 MVA. With this additional loading from Amerisource (Matrix), additional load growth will be limited due to available circuit capacity in the area.

Solution

In order to meet the demand of future expected load growth, it is proposed to extend the 4025 circuit from Governor's Drive to the intersection of Rt. 17K and Rt. 300. This circuit extension would be comprised of underground conduit construction and would run for approximately 1.6 miles. This will allow of utilization of the lightly loaded Coldenham 4025 circuit. This will also allow for the development of expected load growth in the Rt. 17K and Rt. 300 area.

This project will fall within the criteria for non-wires alternatives.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	3,000,000	3,000,000					
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
  - [x] Equipment Type Conductor
  - [ ] 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: B, F, & R Cables

Form submitted by: N. Conza

Budget Group: 15 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected:

For Category 15 only: Budget Year Submitted 2020

Project ID (District-YYYY-ID) N-2017-08

Description of Problem

The B, F & R cables that feed the Montgomery Street Substation are mostly comprised of PILC cables. Sections of these cables were installed between 1928 and 1956. Numerous repairs have been made to these cables over the years due to leaking lead splices. In 2015, a major repair was performed on 3 simultaneous leaks in the same manhole. The infrastructure is just as old as the cables and is in poor condition. The 4" fiber duct configuration has resulted in the lead cables being stacked on each other in each manhole. A major failure of one of the cables could potentially result in loss of all three cables. Of the 3 spare ducts in this duct bank, only 2 are available due to a collapse and failed cable pull. The structural integrity of these aging fiber ducts cannot and should not be relied on for new cables.

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.

Cost estimate (include AFUDC if appropriate)

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$3,200,000	$750,000	$750,000				$1,700,000
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

- [x] $/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

- [x] Average Age of Infrastructure 88 years
- [ ] Failure Rates
- [ ] Obsolete/ Unserviceable Equipment
- [x] Condition Cables and ducts are aging and in poor condition. Leaks found during inspections.
- [ ] 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

Or

Project Alternatives Considered

Decision criteria for alternative selection

Project: P-11-29

Title: 7061/7071 – Close gap, relocate circuitry on-road to create 13.2kV tie (Ph 2)

History:

Cablevision has recently purchased the franchise rights to the Milan Township and as a result, significant make-ready CATV work has been completed on the south side of Rt. 199 in 2010. The Milan side of Milan Hollow Rd. is now fed by the 7061 circuit, and portions have been converted to 13.2kV operation. New poles were set and spanned to accommodate a future 3-phase tie using 336 AA conductor. All new wire installed along Milan Hollow was 336 AA conductor.

Solution: (refer to the attached circuit maps)

Close the 0.4 mile gap between the 7061 and 7071 circuits along Milan Hollow Rd. Move the existing 7071 circuitry out of the swamp and on-road. Polyphase and convert the remaining portions of the 7061 side of Milan Hollow Rd. This will create a strong 13.2kV tie between the two circuits, and can allow for offloading Stanfordville Substation in the future should the load in the area continue to grow.

Phase II: Polyphase 1.7 miles of circuitry along Milan Hollow Rd. using 336 WR AA conductors. Convert to 13.2kV operation and polyphase an additional 1.4 miles of circuitry along Milan Hollow Rd. using 336 WR AA conductors. Convert all spurs to 13.2kV operation

Cost: (refer to the attached circuit maps)

- Polyphase 1.7 miles of circuitry along Milan Hollow Rd..... $510,000
- Convert to 13.2kV operation & polyphase 1.4 miles of circuitry along Milan Hollow Rd..... $420,000
- Convert all spurs to 13.2kV operation..... $220,000

Total Cost (Capital) = $1,150,000

Summary:

Polyphase 1.7 miles of circuitry, and convert and polyphase an additional 1.4 miles of circuitry using 336 WR AA conductor along Milan Hollow Rd. This will allow for the creation of a strong three-phase tie between the 7061 and 7071 circuits. Should load growth continue in the Town of Stanfordville, this tie can also then be used to offload Stanfordville Substation in the future.

GAS PROGRAM INDIVIDUAL PROJECT SUBMITTAL

Budget Submittal Form for Gas Projects

Project Name: Service Replacement and Minor Projects

Form submitted by: K. Reer

Recommended In-Service Year: 2019 to 2024

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 77,000

Description of Problem

Gas system: Low, Medium and High Pressure Systems -

Gas pressure: Various

Existing pipe size and material: Funding program is for minor main projects and service replacements system-wide

Proposed length replacement: N/A

Central Hudson has approximately 60,000 gas service lines and 1250 miles of gas distribution pipe. Minor property unit replacement projects for mains and service line replacements 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) $1.895 million per mile for 2019; (2) $2.010 million per mile for 2020; and $2.125 million per mile for 2021)." "Effective in 2022, the Company will replace or eliminate, at a minimum, 5 miles of LPP per year."

Solution

Proposed size: This funding project is for Blankets and Service Replacement Limited Terms.

2020: Service replacements - normal operational needs: $2,500, Service replacements - associated with pipeline replacement work (LPP): $7,300, Unidentified Road Rebuilds $2,600, Blanket work orders - minor units; $2,300. Total 2020 funding; $14,600.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$76,710,000	$14,736,000	$14,626,000	$18,406,000	$14,120,000	$14,822,000	$73,000,000
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [x] Reduced O&M — New pipe reduces leak repair costs
- [x] 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
- N/A — Number of hazardous (Class 1, 2A and 2)
- 100+ — 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

Infrastructure year installed

1000/yr 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 service lines outdoors wherever possible, install EFVs on pounds pressure service lines, reduce or eliminate the approximately 17000 LPP services in inventory and 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

Budget Submittal Form for Gas Projects

Project Name: Leak Prone Pipe Replacement Projects

Form submitted by: K. Reer

Recommended In-Service Year: 2019 to 2024

Budget Group: 25 - Distribution Improvements

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Number of Customers Affected: 77,000

Description of Problem

Gas system: Low, Medium and High Pressure 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 2020, 2021, 5 Miles/Year 2022 - 2024

Central Hudson has an inventory of approximately 154 miles of gas distribution pipe considered "leak prone". This piping has been identified the the most recent rate case as requiring replacement. The settlement order set aside funding per the following race case order excerpt:

"The allowed per-mile cost includes....and is set as follows: (1) $1.895 million per mile for 2019; (2) $2.010 million per mile for 2020; and $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 project is for Neighborhood LPP Project specific work orders.

2020: Broome Neighborhood Catskill $1.7M, Uptown Fair Wall John $2.5M, South Highland $2.7M, Cornwall 4- Main St/ Hudson St $1.9M, MNG South $2.4M, NLP- South St Neighborhood $1.6M, Village of Fishkill - SE $0.9M, Main Street Poughkeepsie Area $3.6M, South Wall Street Area $2.0M

2021: Fairview and Quarry Street $2.6M,Clifton/East Chester Neighborhood $2.8M, Sharon Drive and Route 9 $3.2M, West Newburgh swing to 60 psig $4.4M, Hudson View Development $1.6M,Mountain Avenue and WP Line $2.2M, SW Poughkeepsie Hooker Hamilton $3.3M

Projects for years 2022 to 2024, Company is planning on reducing LPP replacement to 5 mile/year. Projects 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	$39,336,000	$19,155,000	$20,181,000	TBD	TBD	TBD	$200,000,000
Expense	$1,500,000	$750,000	$750,000	TBD	TBD	TBD	$7,500,000

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective

Risk Reduction

Benefits

Economic

- [ ] Reduced O&M
- [x] 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
- N/A — Number of hazardous (Class 1, 2A and 2)
- 100+ — Number of active leaks
- 14.0 — Length of leak prone pipe eliminated
- 0 — 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

1000/yr 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

COMMON PROGRAM INDIVIDUAL PROJECT SUBMITTAL

Budget Submittal Form for Common Projects

Project Name: Poughkeepsie Headquarters – Build new parking area and office bldg.

Form submitted by: Stefanie Pola

Budget Group: 41 - Buildings

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Due to the growth in headcount there is a lack of office space and parking at the Poughkeepsie headquarters. There is also a need for expanded vehicle maintenance. The existing Poughkeepsie garage area is inadequate for some equipment which then requires equipment to be moved up to Kingston garage.

Solution

This project will build a new office building and parking area for approximately 300 people on the South Ave. facility. Office and conference space is needed to conduct business operations. This project would also accommodate parking which is limited at the site. The new building facility will provide the opportunity to relocate large groups of employees to improve workflow and production. It will also provide space for a modernizing garage area for Transportation.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	13,445,000	6,889,000	6,556,000				
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other Provide needs space at the most cost in the effective way

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: Kingston- Disaster Recovery

Form submitted by: Stefanie Pola

Budget Group: 41 - Buildings

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

This project will build a disaster recovery site in the Kingston headquarters. This space will need to house IT related equipment and cash processing area.

Solution

The new bldg. facility will provide the opportunity to relocate large groups of employees to improve workflow and production. It will alleviate safety related vehicle issues with improved circulation throughout the property. It will allow T&D operations to work more efficiently. It will also provide needed office space and well as an alternate location for large group meetings.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	3,451,000	1,586,000	0	0	1,865,000	0	0
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting
- [ ] Manpower
- [ ] Other

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
- [ ] Other Program Type

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [x] Condition
- [ ] Strategic Replacement
- [x] Other Program Type alternative planning and recovery

Other

Alternatives Analysis

Reference Report or Study

in progress

Or

Project Alternatives Considered

Put this into the new training center

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Kingston - Office Space Build Out - 1st Fl

Form submitted by: Stefanie Pola

Budget Group: 41 - Buildings

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

Inadequate office space, restrooms, and operations space for daily operations at district offices.

Solution

Build out of the open office space, including restrooms, will create additional office space for new employees and a back up of systems currently located at the Poughkeepsie headquarters. This will increase the efficiency of the office as well as accommodate teams for restoration and recovery making corporate process more efficient.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,586,000	1,586,000	0	0	0	0	0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other Increased office space and additional restoration and recovery areas will increase efficiency of back up processes

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: Newburgh - New Facility

Form submitted by: Stefanie Pola

Budget Group: 41 - Buildings

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

This project will build a new office bldg. with garage and storeroom space as well as parking for approximately 100 people. Office space is needed to conduct daily business operations, due to the addition of manpower and vehicles and equipment to conduct field operations. We also need to accommodate parking for these employees.

Solution

The new bldg. facility will provide the opportunity to relocate large groups of employees to improve workflow and production. It will alleviate safety related vehicle issues with improved circulation throughout the property. It will allow T&D operations to work more efficiently. It will also provide needed office space and well as an alternate location for large group meetings.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	11,157,000	0	0	11,157,000	0	0	0
Expense							

Cost Risks

- [ ] Environmental
- [x] 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
- [x] Condition Aging facilities not efficient for operations
- [ ] Strategic Replacement
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

in progress

Or

Project Alternatives Considered

Renovation of existing bldg and additional build on adjacent property

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: Training and System Operation Facilities

Form submitted by: Stefanie Pola

Budget Group: 41 - Buildings

Summary Category: System Enhancements

Investment Category: Daily Operations

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

The proposed combined Employee Safety, Training and Development Academy and a System Operations facility. This new facility would 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. While also providing space for a combined Distribution and Transmission System Operations primary control center. The facility has been designed to provide flexibility for other corporate uses and to facilitate collaboration with emergency services, municipalities, and other outside agencies.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	49,973,000	4,610,000	6,849,000	28,047,000	9,022,000	1,445,000	0
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other A centralized training facility and combine System Operations facility

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: EAM - Enterprise Asset Mgmt

Form submitted by: Surekha Jadhav

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The current version of GL Essentials software will be outdated and potentially go out of support. In addition it'll lack some of the new features the software will likely introduce by the time we upgrade.

Solution

Upgrade the s/w to a newer version available.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$9,629,000	$347,000	$0	$3,415,000	$3,982,000	$1,885,000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — Some of the key resources needed for the project might not be available
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] 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: Financial System Modernization

Form submitted by: Surekha Jadhav

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Daily Operations

Description of Problem

Our current Financial System is based on an older (Mainframe) platform. Other Mainframe based systems are being modernized which will make it difficult to integrate with the older Financial system.

Solution

Modernize the Financial Management system to be compatible with other critical systems we use.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$5000	$	$	$	$	$5000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — Some of the key resources needed for the project might not be available
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] 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: Powerplan Upgrade

Form submitted by: Surekha Jadhav

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Daily Operations

Description of Problem

Current version of PowerPlan s/w will go out of support from the vendor in 2020. After which we'll not be able to receive patches, fixes, etc. from them.

Solution

Upgrade the s/w to a newer version of the s/w.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1400	$650	$	$	$	$750	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — Some of the key resources needed for the project might not be available
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] 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 Intelligence (Cognos)

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The BI program was set up about 5 years ago mainly to address the data silo'd in the mainframe and also provide a solution for numerous reports that required various input sources and therefore were compiled manually into massive spreadsheets. It started out very small with only one full-time resource and an informal project management and request submission process. Now it is a formal program with a defined team and a formal project management process along with IT Steering Committee review and approval of the projects to be undertaken.

Solution

We purchased Cognos and a single Netezza box in December 2011. We hired a skilled contract resource (still on the team today) to start rolling out reports in 2012. Over time, we have built up the team to 3 contract resources and one full time CH PM and a part time Program Manager. in 2016 a second, DR/Test Netezza box was purchased. Many reports and dashboards have been implemented that provide the business areas with way more information than they have ever had before in terms of managing their work and getting visibility into patterns etc; we cannot keep up with the demand for more. The 5 year plan will be established later this year and include rolling some of the reporting up into corporate wide KPIs, pushing data out to mobile devices, creating a enterprise data framework, near real-time data updates and exploring predictive analytics.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,263,000	$855,000	$915,000	$736,000	$748,000	$1,010,000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — resource availability due to additional workload, changing priorities
- [x] Other — funding availability due to changing priorities/competing projects

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other — improved business processes, data management, visibility

Risk Reduction

Safety

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

Compliance

- [x] Inspections — Projects implemented to monitor and manage gas inspections and
- [x] Code Requirement/PSC — Various projects to monitor & manage code & PSC requirements
- [x] 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: CIS / REV Modernization

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Infrastructure

Description of Problem

The CIS system is a custom built mainframe application that has been in service since 1984. It handles all of the possible interactions with a customer, not just billing, A/R, payments etc. As such it is the hub for just about all other applications in use, both mainframe and otherwise. It has grown in size and complexity over the years, and requires that changes be made by analysts with a significant number of years experience dealing with the system. Most of the original programmers are no longer with Central Hudson and the few remaining are at risk of retiring in the not too distant future. Making changes to CIS can be a long process, mostly in terms of testing through everything to make sure nothing was impacted downstream and unexpectedly.

REV (Reforming the Energy Vision) came into the picture recently, and is changing the utility business. There is more regulatory activity and requirements now than ever before This means the CIS has to change along with it. Due to the points mentioned above, that is not a very agile process and can take more time than we have. For example, our REV demonstration project by the end of 2016 is going to allow customers to choose to have a smart meter installed to provide them with detailed energy analytics. It seems very likely that complex, variable time of use billing rates could come shortly thereafter, in order to allow customers to take full advantage of their new smart meters. With all of the other regulatory requirements that have been stacked up waiting for us to roll out monthly billing on July 1, 2016, it could be some time before we are able to program in house any new complex billing rates.

Solution

For the last year or so, we have been bringing in various vendors to demo their solutions to help us investigate other CIS options that would allow us to increase our CIS billing flexibility:
1. a 'bolt on' rate engine that could calculate a new complex rate value for a meter reading and pass all the info back to the existing CIS. This could include a hosted solution by another Fortis utility.
2. a new billing CIS that could store account data, process all the billing functions for the accounts with those new rates and interface with the existing CIS to pass over any required data to book.
3. a new fully functional CIS that could take certain accounts and perform all CIS processes required for that account - in effect having 2 parallel CIS systems with the assumption that all accounts would eventually over time wind up in the new CIS. At which time the existing CIS would be sunsetted.

All of these options require significant interfacing with the existing CIS so it is still unclear at this point which solution could be the best fit for us. We continue to research and bring various vendors in to perform demo's of their products. At some point in the near future we will likely select one of the vendors to come in and perform a requirements gathering workshop with us to dive more in depth into what solution(s) have the most pros and the least cons for our situation.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$35,496,000	$8,509,000	$11,332,000	$9,514,000	$4,439,000	$1,702,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — resource availability due to additional workload, changing priorities, retirements
- [x] Other — funding availability due to changing priorities/competing projects

Primary Project Objective Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other — improved agility & time to market with regulatory and other billing modifications to 32 yr old CIS

Risk Reduction

Safety

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

Compliance

- [ ] Inspections
- [ ] Code Requirement/PSC
- [x] Other Program Type — new rate design requirements from Public Service Commission

Infrastructure

- [ ] Average Age of Infrastructure ____ years
- [ ] Failure Rates
- [ ] Obsolete/Unserviceable Equipment
- [x] Condition — CIS custom software increasingly complex (mainframe HW it runs on very current)
- [x] Strategic Replacement — Aging CIS (1984) will need full/partial replacement eventually
- [ ] Other Program Type

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

so far: Itron's rate engine, Nexant's rate engine, Oracle's CC&B (multiple vendors), hosted solution with TEP, Hansen's Nirvanasoft, an SAP hosted solution (multiple vendors).
Still in progress.

Decision criteria for alternative selection

not laid out yet.

Budget Submittal Form for Common Projects

Project Name: Increase Quality & Speed of Delivery of Application Testing

Form submitted by: Jordan Randall

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	$1,236,000	$160,000	$164,000	$294,000	$301,000	$316,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower
- [x] Other: conflicting priorities.

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M
- [ ] Reduced Customer Bill
- [x] 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: Clarity Replacement/Upgrades Enhancements

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Clarity- our planning system has reached End Of Life. IBM, who developed and supported Clairty has announced that it's discontinuing the support. We need to replace the system so that the business is not disrupted.

Solution

Implement newer product like IBM Cognos TM1 which provides similar 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	$1,534,000	$0	$0	$762,000	$772,000	$0	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower
- [x] Other: Conflicting priorities

Primary Project Objective: Service

Benefits:

Economic

- [x] Reduced O&M
- [ ] Reduced Customer Bill
- [x] 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
- [x] 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: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain Standards

Investment Category: Compliance

Description of Problem

Currently we do not have an efficient way to grant or revoke access from authorized individuals leaving us vulnerable to have users with elevated level of access where not needed. Also we need to have better oversight and governance over the process.

Solution

Implement an Identity and Access Management tool. This is a multi-phased project. In Phase 1, the project will develop workflows that will replace current manual process of on-boarding and off-borading of employees and contractors. In the subsequent phases the workflows for access control at the application level will be implemented.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,819,000	$780,000	$489,000	$508,000	$515,000	$527,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — resource availability due to additional workload, changing priorities
- [x] Other — funding availability due to changing priorities/competing projects

Primary Project Objective Safety/Security

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other — improved identity and access control and better oversight and governance over the process.

Risk Reduction

Safety

- [ ] Employee Safety
- [ ] Public Safety
- [x] 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: Emergent Software Package/Upgrades

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Technology and customer expectations are changing fast. IT needs to prepared to understand these trends and be prepared to implement changes wherever necessary.

Solution

Ongoing emerging IT related capital spend from unknown, but expected IT requests that fall outside of the planning windows to misc. upgrades, etc.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,477,000	$568,000	$1,151,000	$895,000	$920,000	$943,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower
- [x] Other: conflicting priorities

Primary Project Objective: Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] 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
- [x] Strategic Replacement: existing mainframe system 20+ years old
- [ ] 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: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain Standards

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	$2,387,000	$460,000	$377,000	$508,000	$515,000	$527,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower
- [x] Other

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M
- [ ] Reduced Customer Bill
- [x] 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
- [x] 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: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Compliance

Description of Problem

Records Management for electronic documents and email had been a challenge for Central Hudson for some years due to the proliferation of documents on various share drives. 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 primary 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 then the ECM Program was set up to implement various basic functionality in different Phases, guided by the original objectives and a 5 year plan.

Solution

The ECM Program got underway in 2012 with the purchase of the OpenText Content Server software and related modules. Phases 1-3 were completed by December 31, 2015 to install the basic software, roll it out across the entire company and then start implementing various RM functionality as well as a major software upgrade. Phase IV is scheduled up through Dec 31, 2016. The ECM 5 year plan for 2017-2021 is currently being updated and will include another major software upgrade (to Content Suite 16), Email management, Dispositioning, Physical Objects, Groups & Permissions redesign, new functionality enhancements, etc. Each calendar year is typically another Phase, starting up with Phase V in 2017 (Year 1 below). Our strategic partner for ECM implementations is currently Cognizant, and we have no plans to replace them.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$5,929,000	$1,465,000	$1,557,000	$953,000	$965,000	$988,000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — resource availability due to additional workload, changing priorities
- [x] Other — funding availability due to changing priorities/competing projects

Primary Project Objective Risk Reduction

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other — Compliance; improved business processes

Risk Reduction

Safety

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

Compliance

- [ ] Inspections
- [ ] Code Requirement/PSC
- [x] Other Program Type — Records Management

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: Wiki/CentralHudson.com Redesign - WCM (Web Content Management)

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

The implementation will provide the foundation to extending customer self-services, REV related services, and the REV driven customer portal:
o Provides the foundation for a scalable Wiki and Website
o Enables analytics across our web properties including customer self service
o Combined with Portal solution provides the platform for overall customer engagement growth

This project is directly related to enabling our group mission and supports our strategic imperatives - 'Enrich Customer & Business Partner Experience'.

Solution

Software solution purchased, preliminary planning done in 2015. Incorporates a redesign of the Wiki & CentralHudson.com leveraging a WEB Content Management solution that will provide a single development platform for both Web & Mobile enablement of the Wiki and CentralHudson.com. Intent is to drive personalization and provide the ability to have tracking of usage for channel analytics leveraged to see where employees & customers are transacting, dropping off, etc in order to identify where to focus and to ensure focused employee & customer adoption.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,424,000	$632,000	$153,000	$318,000	$322,000	$0	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] Manpower — resource availability due to additional workload, changing priorities
- [x] Other — funding availability due to changing priorities/competing projects

Primary Project Objective Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other — improved web presence and visibility into customer/employee use of the web (and wiki)

Risk Reduction

Safety

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

Compliance

- [ ] Inspections — Projects implemented to monitor and manage gas inspections and
- [ ] 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
- [x] Strategic Replacement — wiki is old; cumbersome; little external website analytics capability
- [ ] 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: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: System Enhancement

Investment Category: Daily Operations

Description of Problem

This project is an initial investment to keep momentum going forward on digital initiatives as prioritized by the Digital Interactive Working Group. Ongoing investment in Digital (Web/Mobile/Social) customer enablement via extending self service capabilities, growing adoption of existing self service offerings, and aligning customer experience across all channels.

Solution

Expanded investment in digital will enable significant progress in development, translating to more customer engagement and satisfaction. Identification of potential productivity and/or hard savings through reductions in costs of other customer touchpoints will need to be estimated and measured.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$11,504,000	$1,069,000	$1,344,000	$1,656,000	$5,105,000	$2,330,000	TBD
Expense	$0	$0	$0	$0	$0	$0	TBD

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] 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: Business Agility with Enterprise SOA

Form submitted by: Jordan Randall

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) project 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, and to how we build the foundation for our future with mobile application solutions, cloud, and modernization vs. mass replacement. By making foundational investments, we will enable a flexible, scalable, secure, and reliable environment. This environment will be poised for current and anticipated information and technology demands across the enterprise coupled with a continued focus on digital (web, mobile, social, IVR), self-service oriented offerings to increase overall customer engagement.

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.

The investment aims to fully implement SOA across the entire application portfolio. In 2017, we continue with limited incremental progress. The investment in outer years allow us to increase progress through full implementation and continuous extension of portfolio.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Definitive Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,622,000	$107,000	$56,000	$386,000	$406,000	$667,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting — Timing with other ongoing IT projects
- [x] 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
- [x] Other Program Type — Strategic cornerstone of IT future projects & initiatives

Other

Alternatives Analysis

Reference Report or Study

Or

Project Alternatives Considered

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: HRIS - TotalHR Replacement

Form submitted by: Nicole Tancredi

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

TotalHR system has been upgraded and kept up to date but lacks features such as Performance Management, Employee Self Service portal, etc.

Solution

Replacement of TotalHR with a full featured solution will provide a more robust solution for the HR department and for employees.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,656,000	$575,000	$306,000	$254,000	$257,000	$263,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [x] 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
- [x] Strategic Replacement — Full featured HR system
- [x] 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: Emergency Management Software Upgrade

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

The existing EMS s/w is approaching end of life phase where the vendor stop supporting the current version we're on. This will leave us with unsupported version of this critical s/w.

Solution

Various software upgrades, enhancements, and/or other software needs for this domain.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,787,000	$259,000	$366,000	$381,000	$386,000	$395,000	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
- [x] 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: Electric GIS Upgrades and Enhancements

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain Standards

Investment Category: Infrastructure

Description of Problem

Existing Electric GIS solution lacks capability of estimating design and underground manholes.

Solution

Upgrade GIS.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,306,000	$290,000	$977,000	$318,000	$322,000	$400,000	TBD
Expense							

Cost Risks

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

Primary Project Objective Economic

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: IT Strategic Initiatives Hardware

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Support continuous growth of IT and Corporate related Hardware projects.

Solution

Replace aging Hardware and upgrading when needed to more efficient standards.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,680,000	$545,000	$556,000	$579,000	$0	$0	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Need to make sure the scope is controlled

Primary Project Objective Economic

Benefits:

Economic

- [x] 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
- [x] 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: Mobile (Pen) Computing Replacements

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Mobile computing becomes outdated and runs its useful life.

Solution

Maintaining a continuous mobile replacement cycle is critical for the company to operate

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$1,455,000	$273,000	$278,000	$290,000	$301,000	$313,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Need to make sure the scope is controlled

Primary Project Objective Service

Benefits:

Economic

- [x] 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
- [x] 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: Network Infrastructure Upgrades/Replacements

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Maintaining a constant upgrade and replacement system is essential for the company and the IT to grow and maintain standards held against us internally and externally.

Solution

Continuously replacing Network Infrastructure is essential for the company and the IT to grow.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,036,000	$382,000	$389,000	$406,000	$421,0000	$439,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Need to make sure the scope is controlled

Primary Project Objective: Economic

Benefits:

Economic

- [x] 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
- [x] 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: PC and Laptop Replacements

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

PC and Laptops run a useful course - when they slow down or break it interferes with the business and could consist of missing critical deadlines.

Solution

Maintaining a continuous PC and Laptop replacement cycle is critical for the company to operate.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$2,909,000	$545,000	$556,000	$579,000	$602,000	$627,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Need to make sure the scope is controlled

Primary Project Objective: Service

Benefits:

Economic

- [x] 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
- [x] 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: Server Replacements and Storage Upgrades

Form submitted by: Jordan Randall

Budget Group: 42 - Office Equipment

Summary Category: Maintain System Standards

Investment Category: Infrastructure

Description of Problem

Maintaining a constant upgrade system is essential for the company and the IT to grow and maintain standards held against us internally and externally.

Solution

Continuously replacing Servers and upgrading them is essential for the company and the IT to grow.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	$4,945,000	$927,000	$945,000	$985,000	$1,023,000	$1,066,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: Need to make sure the scope is controlled

Primary Project Objective Economic

Benefits:

Economic

- [x] 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
- [x] 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 Completion

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: Non-Discretionary

Investment Category: Daily Operations

Description of Problem

The Distribution Management System v3.6 (DMS) was purchased from Schneider Electric (SE) in 2014.

The upgrade from v3.6 to v3.8 SP1 is expected to being in 2019 with a budget of $2,049,000 and will continue to completion in 2020.

The version upgrade was initiated to address Windows Server and Workstation end of life deadlines while also implementing the latest DMS functionality and minimizing the scope of data migration from the v3.6 system.

Solution

The Distribution Management System (DMS) Phase IV Project includes necessary upgrades to Windows Operating Systems based on Microsoft's End of Life schedule and new and improved application and modeling features.

As recommended by the vendor, DMS will be upgraded to the latest release and existing data migrated over to the new version. Design sessions began in 2019 and the commissioning is expected to occur in 2020.

The upgrade addresses replacement of end of life Windows operating systems and includes additional Work Order Management module, interfaces to common external historians and migration of all existing data and customizations.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Conceptual Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	2,044,000	2,044,000					
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: This work is subject to coordination with system operations.

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M: Less data migration between versions.
- [ ] 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

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.

Decision criteria for alternative selection

Budget Submittal Form for Common Projects

Project Name: DMS Phase 5 (OMS), PCC EMS, PCC Video Wall

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: Non-Discretionary

Investment Category: Daily Operations

Description of Problem

The Energy Management System (EMS), Distribution Management System (DMS) and Network Strategy (NS) require a 24/7 Control Operations Center within a secured Physical Security Perimeter. Projected staffing levels has exceeded the available work space within the existing secured area that is necessary for these control systems in 2021 when full staffing of Distribution System Operations is reached.

Central Hudson is working on the the planning and design of a new Training Center and Primary Control Center, which is a separate project.

Solution

The following line items are included for the new Primary Control Center for Transmission and Distribution System Operations.

DMS Phase 5 (OMS Implementation)
PCC EMS - New or upgraded EMS at the new PCC to be added as a third Control Center with a corresponding situational awareness video wall. 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	12,087,000		7,088,000	5,000,000			
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] Other: This work is subject to coordination with system operations.

Primary Project Objective Service

Benefits:

Economic

- [ ] Reduced O&M
- [ ] Reduced Customer Bill
- [x] Other: Increased situational awareness for Transmission and Distribution System Operators at the new PCC.

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: EMS Software Upgrade (Non-JUMP)

Form submitted by: Erica Tyler

Budget Group: 4230 - EMS

Summary Category: Non-Discretionary

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	5,620,000		121,000	5,138,000	361,000		
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [x] 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: Land Mobile Radio System Enhancements

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.

Solution

Unspecified emergent minor capital improvements for the existing Land Mobile Radio 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	1,870,000	0	261,000	530,000	534,000	546,000	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

- [x] Average Age of Infrastructure 20 years
- [x] Failure Rates high failure rates with existing equipment
- [x] Obsolete/Unserviceable Equipment existing equipment obsolete/difficult to maintain
- [ ] Condition
- [x] Strategic Replacement New system will provide higher reliability
- [ ] 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 Enhancements

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."

This project addresses unspecified emergent minor capital improvements for the existing Network Strategy infrastructure.

Solution

Perform unspecified emergent minor capital improvements for the existing Network Strategy 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	1,496,000	0	209,000	424,000	427,000	437,000	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
- [ ] 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	11,846,000	5,792,000	4,336,000	1,718,000			
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] Reduced O&M — operational costs are projected to decrease
- [x] 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

- [x] Average Age of Infrastructure 20 years
- [x] Failure Rates — high failure rates with existing TELCO equipment
- [x] Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- [ ] Condition
- [x] 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	1,057,000	204,000	209,000	212,000	214,000	218,000	TBD
Expense							

Cost Risks

- [ ] Environmental
- [ ] Timing/Permitting
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] 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

- [x] Average Age of Infrastructure 20 years
- [x] Failure Rates — high failure rates with existing equipment
- [x] 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

Budget Submittal Form for Common Projects

Project Name: Network Strategy Mahopac Gate Station to Tuxedo Gate Station Loop

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. As part of this project, a communication link must be established between the two southern most natural gas gate stations, the Tuxedo Gate Station and the Mahopac Gate Station. Various options need to be analyzed to obtain a cost effective solution achieving a secure link.

Solution

At this time, it is intended the Tuxedo Gate Station will be served by fiber optic. While the loop to the Mahopac Gate Station will involve microwave radio links between West Point then to Piano Mtn. then onto Mahopac.

Cost estimate (include AFUDC if appropriate):

Type of estimate: Preliminary Estimate

	Total	Year 1	Year 2	Year 3	Year 4	Year 5	Future
Capital	1,022,000	$1,022,000	$0	$0	$0	$0	
Expense							TBD

Cost Risks

- [ ] Environmental
- [x] Timing/Permitting — Permitting may be required for specific components based on the chosen design.
- [ ] Manpower
- [ ] Other

Primary Project Objective Service

Benefits:

Economic

- [x] 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

- [x] Average Age of Infrastructure 20 years
- [x] Failure Rates — high failure rates with existing TELCO equipment
- [x] Obsolete/Unserviceable Equipment — existing equipment obsolete/difficult to maintain
- [ ] Condition
- [x] 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

DETAIL SCHEDULES 2020-2024 FORECAST

	ELECTRIC ADDITIONS				W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Investment Type	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Production	Sturgeon Pool Major Overhaul Unit#2	Maintain Standards	Infrastructure	12/31/2020	638	-	-	-	-	638
Production	Sturgeon Pool Major Overhaul Unit#3	Maintain Standards	Infrastructure	12/31/2021	104	873	-	-	-	977
Production	Dashvillel Major Overhaul #1	Maintain Standards	Infrastructure	12/31/2022	-	27	889	-	-	916
Production	Dashvillel Major Overhaul #2	Maintain Standards	Infrastructure	12/31/2023	-	27	-	910	-	936
Production	Dashville Rubber Gate Replacement	Maintain Standards	Infrastructure	12/31/2021	26	927	-	-	-	952
Production	Dashville Remote Start	Non Discretionary	Compliance	12/31/2024	-	-	-	-	83	83
Production	Sturgeon Pool Window Replacements	Maintain Standards	Infrastructure	12/31/2022	-	-	701	-	-	701
Production	GT Minor Overhaul - Coxsackie	Maintain Standards	Infrastructure	6/30/2020	104	-	-	-	-	104
Production	GT Major Overhaul - South Cairo	Maintain Standards	Infrastructure	12/31/2020	104	-	-	-	-	104
Production	High Falls Facility Camera System	Non Discretionary	Daily Operations	12/31/2020	156	54	-	-	-	209
Production	Dashville Facility Camera Suystem	Non Discretionary	Daily Operations	12/31/2022	-	-	218	-	-	218
Production	Hydro SCADA - New Com Link	Non Discretionary	Daily Operations	12/31/2021	-	129	-	-	-	129
Production	GT Major Overhaul - Coxsackie	Maintain Standards	Infrastructure	12/31/2023	-	-	-	1,072	-	1,072
Production	GT Major Overhaul - South Cairo	Maintain Standards	Infrastructure	12/31/2024	-	-	-	-	1,089	1,089
Production	Hydro Minor Projects	Maintain Standards	Infrastructure	On-going	156	161	164	167	170	817
Production	GT Minor Projects	Maintain Standards	Infrastructure	On-going	156	161	164	167	170	817
Production	**Subtotal - Electric Production**				**1,442**	**2,356**	**2,135**	**2,317**	**1,512**	**9,761**
Transmission	High Priority Replacements	Non Discretionary	Compliance	On-going	6,027	4,986	4,478	5,259	4,728	25,478
Transmission	Transmission Minor Projects	Non Discretionary	Daily Operations	On-going	245	284	257	284	284	1,355
Transmission	- FK Line (Kerhonkson - High Falls)	Maintain Standards	Infrastructure	12/31/2020	948	-	-	-	-	948
Transmission	- MK or HK Line (Honk Falls - Kerhonkson)	Maintain Standards	Infrastructure	12/31/2021	-	571	-	-	-	571
Transmission	ROW Repair Project (Deficiencies)	System Enhancements	Risk Reduction	On-going	501	420	732	631	702	2,985
Transmission	HF Line: 115kV Line Rebuild - Fishkill Plains - East Fishkill	Maintain Standards	Infrastructure	12/1/2019	55	-	-	-	-	55
Transmission	HR/DR Bulkhead	Maintain Standards	Infrastructure	12/1/2018	256	-	-	-	-	256
Transmission	CL Line: 69kV Line Rebuild - North Catskill - Cairo	Maintain Standards	Infrastructure	12/1/2019	3,025	-	-	-	-	3,025
Transmission	Honk Falls Substation Tie-in (Kerhonkson Autotransformers)	Maintain Standards	Infrastructure	12/1/2020	50	216	-	-	-	266
Transmission	Knapps Corners Substation Tie-in (115kV KB & SK Lines)	Maintain Standards	Infrastructure	6/1/2021	103	173	-	-	-	276
Transmission	Trap Rock Substation Tie-in and TR Line retirement	Maintain Standards	Infrastructure	6/1/2022	-	-	235	-	-	235
Transmission	69kV KM Line Rebuild - Knapps to Myers - 102C	Maintain Standards	Infrastructure	12/1/2021	220	218	3,033	-	-	3,471
Transmission	69kV TV Line Rebuild - Myers to North Chelsea - 102C	Maintain Standards	Infrastructure	8/1/2021	981	6,662	209	-	-	7,853
Transmission	SB Line: New 115kV Line - Hurley Ave. to Saugerties - Article VII: 11.1	Maintain Standards	Infrastructure	12/1/2021	7,954	7,479	3,836	-	-	19,269
Transmission	H Line: New 115kV Line - Saugerties to N.Catskill - Article VII: 12.25 n	Maintain Standards	Infrastructure	12/1/2022	1,013	3,354	11,695	7,679	-	23,741
Transmission	HG Line: New 69kV Line - Honk Fallls to Neversink - Part 102C	Maintain Standards	Infrastructure	12/1/2023	100	262	1,203	8,415	5,306	15,286
Transmission	Q Line: New 69kV Line - Pleasant Valley - Rhinebeck	Maintain Standards	Infrastructure	12/1/2024	-	105	418	1,999	13,134	15,656
Transmission	69kV GM Line: Retirement of Clinton Avenue Tap Section	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	53	53
Transmission	**Subtotal - Electric Transmission**				**21,479**	**24,730**	**26,097**	**24,266**	**24,206**	**120,779**
Substation	Substation Minor Projects	Non Discretionary	Daily Operations	On-going	481	528	523	576	600	2,708
Substation	Substation Battery Replacement Program	Non Discretionary	Compliance	On-going	25	71	39	82	86	304
Substation	ESP Infrastructure Repl. (relays, meters, data transfer equip, etc.).	Maintain Standards	Infrastructure	On-going	818	532	2,153	2,824	3,450	9,777
Substation	RTU / PLC Replacement Program	Maintain Standards	Infrastructure	On-going	60	62	808	1,646	-	2,577
Substation	Breaker Replacement Program (345kV)	Maintain Standards	Infrastructure	On-going	751	769	735	-	-	2,255
Substation	Breaker Replacement Program (115kV, 69kV, 13.8kV)	Maintain Standards	Infrastructure	On-going	-	225	389	2,161	2,464	5,239
Substation	345kV Switch Replacement Program	Maintain Standards	Infrastructure	On-going	556	633	598	823	857	3,467
Substation	115kV Switch Replacement Program	Maintain Standards	Infrastructure	On-going	505	557	747	926	2,009	4,744
Substation	Transformer Condition-based Replacements	Maintain Standards	Infrastructure	12/1/2024	-	-	-	2,367	5,250	7,617
Substation	Switchgear Condition-based Replacements	Maintain Standards	Infrastructure	12/1/2024	-	-	1,051	1,801	2,089	4,941
Substation	North Catskill Substation Upgrade	Maintain Standards	Infrastructure	3/30/2020	2,007	-	-	-	-	2,007
Substation	Coldenham Upgrade (J & CW Lines; 13.8kV relays)	Maintain Standards	Infrastructure	6/1/2020	401	-	-	-	-	401
Substation	Rock Tavern J Line (DLP Replacement)	Maintain Standards	Infrastructure	6/1/2020	50	-	-	-	-	50

	ELECTRIC ADDITIONS				W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Investment Type	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Substation	East Walden CW Line (DLP & E/M Replacements)	Maintain Standards	Infrastructure	6/1/2020	50	-	-	-	-	50
Substation	Coxsackie New Switchgear	Maintain Standards	Infrastructure	6/1/2020	201	-	-	-	-	201
Substation	West Balmville Upgrade	Maintain Standards	Infrastructure	6/1/2020	20	-	-	-	-	20
Substation	Sand Dock - Add Breaker For Tilcon	Maintain Standards	Infrastructure	6/1/2020	281	-	-	-	-	281
Substation	Hurley Ave 115kV Substation Modernization	Maintain Standards	Infrastructure	6/1/2020	502	-	-	-	-	502
Substation	North Chelsea - Single Phase 115/69kV AutoTransformers Replacem	Maintain Standards	Infrastructure	6/1/2020	100	-	-	-	-	100
Substation	Bethlehem Road - RD Line Relay Upgrade	Maintain Standards	Infrastructure	6/1/2020	502	-	-	-	-	502
Substation	Pleasant Valley 115kV Modernization (5 - 115kV Breakers and Relays	Maintain Standards	Infrastructure	6/1/2020	1,004	-	-	-	-	1,004
Substation	Rock Tavern 115kV Modernization (6 -115kV Breakers and Relays)	Maintain Standards	Infrastructure	6/1/2020	1,606	-	-	-	-	1,606
Substation	Stanfordville Substation Upgrade (new 12MVA transformer; ESP Infra	Maintain Standards	Infrastructure	12/1/2020	1,204	-	-	-	-	1,204
Substation	Woodstock - Switchgear Replacement	Maintain Standards	Infrastructure	12/1/2020	1,556	-	-	-	-	1,556
Substation	Kerhonkson 115/69kV Autotransformers (2 - 56MVA)	System Enhancements	Reliability	6/30/2021	1,907	2,343	-	-	-	4,250
Substation	Knapps Corners - New Substation	Maintain Standards	Infrastructure	6/1/2021	3,837	3,161	-	-	-	6,998
Substation	Tilcon - Tap Station	Non Discretionary	Tariff	6/1/2021	602	3,626	-	-	-	4,228
Substation	Bethlehem Road - UB Line Relay Upgrade & Breaker Replacement	Maintain Standards	Infrastructure	12/1/2021	50	815	-	-	-	865
Substation	Converse St. Upgrade (14/4kV Transformer, relays, and RTU)	Maintain Standards	Infrastructure	12/1/2021	30	733	-	-	-	764
Substation	Myers Corners Switchgear Upgrade & 69kV Breaker TV-399-KM Repl	Maintain Standards	Infrastructure	12/1/2021	129	1,834	50	-	-	2,014
Substation	New Baltimore Upgrade (New 12MVA Transformer, relays, and 15kV	Maintain Standards	Infrastructure	6/30/2022	247	306	1,262	21	-	1,836
Substation	Modena - Add 3rd Bkr to complete 115kV Ring Bus (see P&MK memo	System Enhancements	Reliability	6/30/2022	149	224	-	-	-	373
Substation	Terminal upgrade work for 115kV (High Falls, Galeville, Sturgeon Poo	System Enhancements	Reliability	6/30/2022	20	306	808	51	-	1,185
Substation	P Line moved to 115kV Bus (Included in Minors and Terminal Upgrad	System Enhancements	Reliability	6/30/2022	-	51	707	51	-	809
Substation	Greenfield Rd. - Substation Upgrade (Reuse Kerhonkson & Modena T	Maintain Standards	Infrastructure	6/30/2022	20	383	746	21	-	1,170
Substation	Montgomery St. 14kV Switchgear Upgrade	Maintain Standards	Infrastructure	6/30/2022	-	306	1,581	21	-	1,907
Substation	Smithfield Relay Modernization	Maintain Standards	Infrastructure	12/1/2022	-	433	303	-	-	736
Substation	Lincoln Park Switchgear Upgrade & Relay Upgrade	Maintain Standards	Infrastructure	12/1/2022	50	489	1,237	-	-	1,776
Substation	Milan PLC Replacement	Maintain Standards	Infrastructure	12/1/2022	50	306	808	21	-	1,184
Substation	Shenandoah Upgrade (26 - 15kV Roll ins and Relay Replacements)	Maintain Standards	Infrastructure	6/1/2023	-	-	1,633	1,749	-	3,382
Substation	Modena PLC Replacement	Maintain Standards	Infrastructure	12/1/2023	-	-	202	926	32	1,160
Substation	Honk Falls Breaker Replacements (GM & HG) & Bus Tie (69kV Bus R	System Enhancements	Reliability	12/1/2020	20	-	-	-	-	20
Substation	Jansen Ave Substation Upgrade	Maintain Standards	Infrastructure	Future	-	-	-	513	537	1,050
Substation	**Subtotal - Electric Substation**				**19,791**	**18,691**	**16,382**	**16,580**	**17,375**	**88,820**
New Business	New Business	Non Discretionary	New Business	On-going	1,788	1,850	1,875	1,905	1,947	9,366
New Business	New Business - Blanket OH	Non Discretionary	New Business	On-going	4,043	4,183	4,239	4,308	4,403	21,175
New Business	New Business - Blanket URD Combo	Non Discretionary	New Business	On-going	746	772	782	795	812	3,907
New Business	New Business - Blanket URD	Non Discretionary	New Business	On-going	111	114	116	118	120	579
New Business	**Subtotal - Electric New Business**				**6,687**	**6,920**	**7,011**	**7,126**	**7,283**	**35,028**
Distribution	Distribution Improvement Blankets (15BL-01)	Non Discretionary	Daily Operations	On-going	9,254	9,439	9,516	9,688	9,876	47,773
Distribution	Relocation Blankets (15BL-02)	Non Discretionary	Compliance	On-going	206	210	211	215	219	1,062
Distribution	Distribution Improvement Minors (1511-0X)	Maintain Standards	Infrastructure	On-going	617	629	634	646	658	3,185
Distribution	Distribution Improvement Conversions (1521-0X)	Non Discretionary	Infrastructure	On-going	308	315	317	323	329	1,592
Distribution	Road/Bridge Rebuild Relocation Projects (1531-0X)	Non Discretionary	Compliance	On-going	771	787	793	807	823	3,981
Distribution	CATV Make-ready	Non Discretionary	Compliance	On-going	1,028	1,049	529	538	549	3,693
Distribution	Distribution Improvement (1551-0X) - Thermal / Voltage	Maintain Standards	Growth	On-going	1,136	784	1,057	3,229	1,372	7,579
Distribution	Distribution Improvement (1551-0X) - Reliability	Maintain Standards	Infrastructure	On-going	1,873	944	2,115	2,153	2,195	9,280
Distribution	CEMI/Worst Circuit Reliability Program	Maintain Standards	Infrastructure	On-going	165	1,670	1,586	2,691	2,469	8,580
Distribution	Distribution Improvement (1551-0X) - Operating/ Infrastructure Conditi	Maintain Standards	Infrastructure	On-going	2,579	3,439	4,266	4,585	4,390	19,257
Distribution	5kV Aerial Cable Replacement Program	Maintain Standards	Infrastructure	On-going	278	472	793	484	494	2,521
Distribution	Overhead Secondary Replacement Program	Maintain Standards	Infrastructure	On-going	206	210	211	215	219	1,062
Distribution	Distribution Pole Replacement Program	Maintain Standards	Infrastructure	On-going	4,609	6,292	6,344	5,382	4,938	27,567

	ELECTRIC ADDITIONS				W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Investment Type	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Distribution	Copper Wire Replacement Program	Maintain Standards	Infrastructure	On-going	447	655	661	646	658	3,068
Distribution	4800 V Conversion/Infrastructure Program	Maintain Standards	Infrastructure	On-going	2,166	2,704	2,908	3,768	3,841	15,386
Distribution	14.4 kV Cable Rejuvination	Maintain Standards	Infrastructure	On-going	1,182	1,783	1,692	2,691	2,173	9,521
Distribution	Oil Switch Replacement	Maintain Standards	Infrastructure	On-going	103	105	106	108	110	531
Distribution	CE Mesh / Protector Relays	Maintain Standards	Infrastructure	On-going	123	126	127	129	132	637
Distribution	Secondary Network Upgrade Program (All Districts)	Maintain Standards	Infrastructure	On-going	206	210	529	538	713	2,196
Distribution	URD replacement	Maintain Standards	Infrastructure	On-going	514	787	1,057	1,076	1,097	4,532
Distribution	Montgomery Substation Circuit Exits	Maintain Standards	Infrastructure	6/1/2020	108	-	-	-	-	108
Distribution	Stanfordville Integration	Maintain Standards	Infrastructure	6/1/2020	411	-	-	-	-	411
Distribution	Greenfield Road Substation Integration	Maintain Standards	Infrastructure	6/1/2022	-	-	952	-	-	952
Distribution	Clinton Avenue Retirement	Maintain Standards	Infrastructure	2023	-	-	-	431	-	431
Distribution	Knapps Corners circuit exits	Maintain Standards	Infrastructure	6/1/2021	-	839	-	-	-	839
Distribution	New Baltimore Circuit Exits	Maintain Standards	Infrastructure	6/1/2022	-	-	476	-	-	476
Distribution	Lincoln Park reconfiguration	Maintain Standards	Infrastructure	12/1/2020	514	-	-	-	-	514
Distribution	Woodstock Substation Circuit Exits	Maintain Standards	Infrastructure	6/1/2020	411	-	-	-	-	411
Distribution	111 & 112 - Retire South Wall Street Substation	Maintain Standards	Infrastructure	12/1/2023	-	-	-	323	-	323
Distribution	8054/8056/8044 - TV Line Underbuild	Maintain Standards	Infrastructure	2021	-	555	-	-	-	555
Distribution	Distribution Automation - Major Program ($2.7M carryover)	Maintain Standards	Infrastructure	On-going	7,712	7,656	4,970	1,076	-	21,414
Distribution	Electronic Recloser Replacement Program	System Enhancements	Infrastructure	On-going	360	367	370	-	-	1,097
Distribution	Distribution Automation - ALT Program/Switched Capacitors	Maintain Standards	Infrastructure	On-going	206	210	211	-	-	627
Distribution	Routine Device/Scadamate Replacement	System Enhancements	Infrastructure	On-going	-	-	-	323	549	872
Distribution	**Subtotal - Electric Distribution Improvements**				**37,493**	**42,234**	**42,432**	**42,066**	**37,805**	**202,031**
Transmformer	Transformers - New Business	Non Discretionary	New Business	On-going	4,930	5,205	5,454	5,735	5,972	27,296
Transmformer	Capacitors	Non Discretionary	Infrastructure	On-going	147	150	158	166	173	794
Transmformer	Regulators	Non Discretionary	Infrastructure	On-going	792	887	558	362	377	2,976
Transmformer	Network Protectors	Non Discretionary	Infrastructure	On-going	44	45	47	50	52	238
Transmformer	**Subtotal - Electric Transformers**				**5,914**	**6,287**	**6,216**	**6,313**	**6,574**	**31,304**
Meter	X041A - Special Meter Installations	Non Discretionary	Compliance	On-going	158	162	165	168	172	825
Meter	X042A - Instrument Transformers	Non Discretionary	Compliance	On-going	261	266	271	277	283	1,357
Meter	X043A - Electric Meters	Non Discretionary	New Business	On-going	2,249	2,452	2,552	2,659	2,771	12,683
Meter	**Subtotal - Electric Meters**				**2,668**	**2,880**	**2,988**	**3,104**	**3,225**	**14,866**
	Total - Electric				**95,475**	**104,100**	**103,262**	**101,772**	**97,979**	**502,588**

	ELECTRIC REMOVAL								
CAT.	Description	Discretion Level	Investment Type	2020	2021	2022	2023	2024	5-Year Total
11	Sturgeon Pool Major Overhaul Unit#2	Maintain Standards	Infrastructure	77	-	-	-	-	77
11	Dashvillel Major Overhaul #1	Maintain Standards	Infrastructure	-	78	-	-	-	78
11	Dashvillel Major Overhaul #2	Maintain Standards	Infrastructure	-	-	80	-	-	80
11	Dashville Rubber Gate Replacement	Maintain Standards	Infrastructure	-	104	-	-	-	104
11	Sturgeon Pool Window Replacements	Maintain Standards	Infrastructure	-	-	80	-	-	80
11	Hydro Minor Projects	Maintain Standards	Infrastructure	5	21	21	22	22	91
11	GT Minor Projects	Maintain Standards	Infrastructure	5	10	11	11	11	48
11	**Subtotal - Electric Production**			**87**	**214**	**192**	**33**	**33**	**559**
12	High Priority Replacements	Non Discretionary	Compliance	1,237	1,155	592	1,197	1,222	5,403
12	Transmission Minor Projects	Non Discretionary	Daily Operations	53	56	61	65	67	302
12	- FK Line (Kerhonkson - High Falls)	Maintain Standards	Infrastructure	131	-	-	-	-	131
12	- MK or HK Line (Honk Falls - Kerhonkson)	Maintain Standards	Infrastructure	-	67	-	-	-	67
12	- WH Line (Neversink Tap - Neversink)	Maintain Standards	Infrastructure	-	-	-	95	-	95
12	CL Line: 69kV Line Rebuild - North Catskill - Cairo	Maintain Standards	Infrastructure	435	-	-	-	-	435
12	Honk Falls Substation Tie-in (Kerhonkson Autotransformers)	Maintain Standards	Infrastructure	54	-	-	-	-	54
12	ACSR Conductor Replacement Program, FV - Part 102C	Maintain Standards	Infrastructure	-	-	-	362	-	362
12	Knapps Corners Substation Tie-in (115kV KB & SK Lines)	Maintain Standards	Infrastructure	54	-	-	-	-	54
12	Trap Rock Substation Tie-in and TR Line retirement	Maintain Standards	Infrastructure	-	-	708	-	-	708
12	69kV KM Line Rebuild - Knapps to Myers - 102C	Maintain Standards	Infrastructure	26	-	639	-	-	665
12	69kV TV Line Rebuild - Myers to North Chelsea - 102C	Maintain Standards	Infrastructure	26	633	-	-	-	659
12	SB Line: New 115kV Line - Hurley Ave. to Saugerties - Article VII: 11.11 miles	Maintain Standards	Infrastructure	805	1,005	-	-	-	1,811
12	H Line: New 115kV Line - Saugerties to N.Catskill - Article VII: 12.25 miles	Maintain Standards	Infrastructure	54	366	1,606	-	-	2,026
12	HG Line: New 69kV Line - Honk Fallls to Neversink - Part 102C	Maintain Standards	Infrastructure	-	-	-	1,850	-	1,850
12	Retirement of O & OB Line Section from Dashville Tap to Ohioville	Maintain Standards	Infrastructure	635	-	-	-	-	635
12	Q Line: New 69kV Line - Pleasant Valley - Rhinebeck	Maintain Standards	Infrastructure	-	-	-	-	1,388	1,388
12	**Subtotal - Electric Transmission**			**3,510**	**3,283**	**3,606**	**3,568**	**2,677**	**16,645**
13	Substation Minor Projects	Non Discretionary	Daily Operations	202	212	221	239	239	1,113
13	Substation Battery Replacement Program	Non Discretionary	Compliance	-	7	25	26	13	71
13	ESP Infrastructure Repl. (relays, meters, data transfer equip, etc.).	Maintain Standards	Infrastructure	-	-	149	385	555	1,090
13	RTU / PLC Replacement Program	Maintain Standards	Infrastructure	-	-	27	174	167	367
13	Breaker Replacement Program (345kV)	Maintain Standards	Infrastructure	-	78	80	82	-	240
13	Breaker Replacement Program (115kV, 69kV, 13.8kV)	Maintain Standards	Infrastructure	-	-	53	107	555	715
13	345kV Switch Replacement Program	Maintain Standards	Infrastructure	55	56	58	59	50	278
13	115kV Switch Replacement Program	Maintain Standards	Infrastructure	55	56	58	131	222	522
13	Transformer Condition-based Replacements	Maintain Standards	Infrastructure	-	-	-	141	305	447
13	Switchgear Condition-based Replacements	Maintain Standards	Infrastructure	-	-	-	120	111	231
13	North Catskill Substation Upgrade	Maintain Standards	Infrastructure	256	-	-	-	-	256
13	Coldenham Upgrade (J & CW Lines; 13.8kV relays)	Maintain Standards	Infrastructure	17	-	-	-	-	17
13	Rock Tavern J Line (DLP Replacement)	Maintain Standards	Infrastructure	5	-	-	-	-	5
13	East Walden CW Line (DLP & E/M Replacements)	Maintain Standards	Infrastructure	5	-	-	-	-	5
13	Coxsackie New Switchgear	Maintain Standards	Infrastructure	204	-	-	-	-	204
13	West Balmville Upgrade	Maintain Standards	Infrastructure	87	-	-	-	-	87
13	Sand Dock - Add Breaker For Tilcon	Maintain Standards	Infrastructure	36	-	-	-	-	36
13	Hurley Ave 115kV Substation Modernization	Maintain Standards	Infrastructure	153	-	-	-	-	153
13	North Chelsea - Single Phase 115/69kV AutoTransformers Replacement (56MVA)	Maintain Standards	Infrastructure	151	-	-	-	-	151
13	Bethlehem Road - RD Line Relay Upgrade	Maintain Standards	Infrastructure	102	-	-	-	-	102
13	Pleasant Valley 115kV Modernization (5 - 115kV Breakers and Relays)	Maintain Standards	Infrastructure	102	157	-	-	-	259
13	Rock Tavern 115kV Modernization (6 -115kV Breakers and Relays)	Maintain Standards	Infrastructure	153	209	-	-	-	362
13	Stanfordville Substation Upgrade (new 12MVA transformer; ESP Infra; RTU)	Maintain Standards	Infrastructure	102	104	-	-	-	207

	ELECTRIC REMOVAL								
CAT.	Description	Discretion Level	Investment Type	2020	2021	2022	2023	2024	5-Year Total
13	Woodstock - Switchgear Replacement	Maintain Standards	Infrastructure	102	313	-	-	-	415
13	Kerhonkson 115/69kV Autotransformers (2 - 56MVA)	System Enhancements	Reliability	-	313	245	-	-	558
13	Knapps Corners - Retire Old Substation	0	0	-	-	533	-	-	533
13	Bethlehem Road - UB Line Relay Upgrade & Breaker Replacement	Maintain Standards	Infrastructure	-	103	-	-	-	103
13	Converse St. Upgrade (14/4kV Transformer, relays, and RTU)	Maintain Standards	Infrastructure	-	10	11	-	-	21
13	Myers Corners Switchgear Upgrade & 69kV Breaker TV-399-KM Repl	Maintain Standards	Infrastructure	-	-	213	-	-	213
13	New Baltimore Upgrade (New 12MVA Transformer, relays, and 15kV breakers)	Maintain Standards	Infrastructure	-	-	85	22	-	107
13	Modena - Add 3rd Bkr to complete 115kV Ring Bus (see P&MK memo)	System Enhancements	Reliability	-	21	-	-	-	21
13	Terminal upgrade work for 115kV (High Falls, Galeville, Sturgeon Pool, and Modena)	System Enhancements	Reliability	-	-	-	120	-	120
13	Greenfield Rd. - Substation Upgrade (Reuse Kerhonkson & Modena Transformers)	Maintain Standards	Infrastructure	-	-	32	131	-	163
13	Montgomery St. 14kV Switchgear Upgrade	Maintain Standards	Infrastructure	-	-	160	174	-	334
13	Smithfield Relay Modernization	Maintain Standards	Infrastructure	-	-	128	65	-	193
13	Lincoln Park Switchgear Upgrade & Relay Upgrade	Maintain Standards	Infrastructure	-	-	27	174	-	201
13	Shenandoah Upgrade (26 - 15kV Roll ins and Relay Replacements)	Maintain Standards	Infrastructure	-	-	-	98	56	153
13	Modena PLC Replacement	Maintain Standards	Infrastructure	-	-	-	218	-	218
13	Montgomery Substation Upgrade	Maintain Standards	Infrastructure	111	-	-	-	-	111
13	Honk Falls Breaker Replacements (GM & HG) & Bus Tie (69kV Bus Reconfiguration)	System Enhancements	Reliability	41	-	-	-	-	41
13	Ohioville - Retire 69 kV	0	0	51	-	-	-	-	51
13	Beacon - Retire Substation	0	0	102	-	-	-	-	102
13	Conway - Retire Substation	0	0	41	63	-	-	-	104
13	Napanoch - Retire Substation	0	0	-	52	-	-	-	52
13	Balmville - Retire Substation	0	0	-	104	-	-	-	104
13	Maryland Ave - Retire Substation	0	0	-	104	-	-	-	104
13	Clinton Ave. - Retire Substation	0	0	-	104	-	-	-	104
13	Removals at SD, SJ (Sugarloaf)	0	0	-	125	-	-	-	125
13	**Subtotal - Electric Substation**			**2,136**	**2,194**	**2,102**	**2,464**	**2,274**	**11,170**
14	New Business	Non Discretionary	New Business	110	112	115	117	119	573
14	New Business - Blanket OH	Non Discretionary	New Business	102	104	107	109	111	533
14	New Business - Blanket URD Combo	Non Discretionary	New Business	22	22	23	23	24	113
14	New Business - Blanket URD	Non Discretionary	New Business	22	22	23	23	24	113
14	**Subtotal - Electric New Business**			**256**	**261**	**266**	**272**	**278**	**1,333**
15	Distribution Improvement Blankets (15BL-01)	Non Discretionary	Daily Operations	403	370	407	417	489	2,086
15	Relocation Blankets (15BL-02)	Non Discretionary	Compliance	14	13	14	15	17	73
15	Distribution Improvement Minors (1511-0X)	Maintain Standards	Infrastructure	43	39	43	44	52	220
15	Distribution Improvement Conversions (1521-0X)	Non Discretionary	Infrastructure	21	20	21	22	26	110
15	Road/Bridge Rebuild Relocation Projects (1531-0X)	Non Discretionary	Compliance	53	49	54	55	64	275
15	CATV Make-ready	Non Discretionary	Compliance	71	65	36	37	43	251
15	Distribution Improvement (1551-0X) - Thermal / Voltage	Maintain Standards	Growth	78	49	72	220	107	526
15	Distribution Improvement (1551-0X) - Reliability	Maintain Standards	Infrastructure	129	59	143	147	172	650
15	CEMI/Worst Circuit Reliability Program	Maintain Standards	Infrastructure	11	104	107	183	193	599
15	Distribution Improvement (1551-0X) - Operating/ Infrastructure Condition	Maintain Standards	Infrastructure	178	213	289	312	344	1,336
15	5kV Aerial Cable Replacement Program	Maintain Standards	Infrastructure	19	29	54	33	39	174
15	Overhead Secondary Replacement Program	Maintain Standards	Infrastructure	14	13	14	15	17	73
15	Distribution Pole Replacement Program	Maintain Standards	Infrastructure	318	390	430	367	387	1,892
15	Copper Wire Replacement Program	Maintain Standards	Infrastructure	31	41	45	44	52	212
15	4800 V Conversion/Infrastructure Program	Maintain Standards	Infrastructure	149	168	197	257	301	1,072
15	14.4 kV Cable Rejuvination	Maintain Standards	Infrastructure	82	111	115	183	170	660
15	Oil Switch Replacement	Maintain Standards	Infrastructure	7	7	7	7	9	37
15	CE Mesh / Protector Relays	Maintain Standards	Infrastructure	9	8	9	9	10	44

	ELECTRIC REMOVAL								
CAT.	Description	Discretion Level	Investment Type	2020	2021	2022	2023	2024	5-Year Total
15	Secondary Network Upgrade Program (All Districts)	Maintain Standards	Infrastructure	14	13	36	37	56	156
15	URD replacement	Maintain Standards	Infrastructure	35	49	72	73	86	315
15	Montgomery Substation Circuit Exits	Maintain Standards	Infrastructure	7	-	-	-	-	7
15	Stanfordville Integration	Maintain Standards	Infrastructure	28	-	-	-	-	28
15	Greenfield Road Substation Integration	Maintain Standards	Infrastructure	-	-	64	-	-	64
15	Clinton Avenue Retirement	Maintain Standards	Infrastructure	-	-	-	29	-	29
15	Knapps Corners circuit exits	Maintain Standards	Infrastructure	-	52	-	-	-	52
15	New Baltimore Circuit Exits	Maintain Standards	Infrastructure	-	-	32	-	-	32
15	Lincoln Park reconfiguration	Maintain Standards	Infrastructure	35	-	-	-	-	35
15	Woodstock Substation Circuit Exits	Maintain Standards	Infrastructure	28	-	-	-	-	28
15	111 & 112 - Retire South Wall Street Substation	Maintain Standards	Infrastructure	-	-	-	22	-	22
15	8054/8056/8044 - TV Line Underbuild	Maintain Standards	Infrastructure	-	34	-	-	-	34
15	Distribution Automation - Major Program ($2.7M carryover)	Maintain Standards	Infrastructure	532	475	337	73	-	1,417
15	Electronic Recloser Replacement Program	System Enhancements	Infrastructure	25	23	25	-	-	73
15	Distribution Automation - ALT Program/Switched Capacitors	Maintain Standards	Infrastructure	14	13	14	-	-	42
15	Routine Device/Scadamate Replacement	System Enhancements	Infrastructure	-	-	-	22	43	65
15	**Subtotal - Electric Distribution Improvementa**			**2,351**	**2,404**	**2,637**	**2,622**	**2,677**	**12,692**
16	Transformers - New Business	Non Discretionary	New Business	409	417	426	435	444	2,132
16	**Subtotal - Electric Transformers**			**409**	**417**	**426**	**435**	**444**	**2,132**
17	X041A - Special Meter Installations	Non Discretionary	Compliance	10	10	11	11	11	53
17	**Subtotal - Electric Meters**			**10**	**10**	**11**	**11**	**11**	**53**
	Total - Electric			**8,759**	**8,784**	**9,240**	**9,406**	**8,395**	**44,583**

	GAS ADDITIONS				W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Investment Type	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Transmission	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2020	26	-	-	-	-	26
Transmission	Cathodic Test Stations	Maintain Standards	Infrastructure	12/1/2020	36	-	-	-	-	36
Transmission	Pipeline Integrity	Maintain Standards	Infrastructure	12/1/2020	305	-	-	-	-	305
Transmission	Remote Operated Valves	System Enhancements	Risk Reduction	12/1/2020	510	-	-	-	-	510
Transmission	Gas Chromatographs	System Enhancements	Customer Benefit	12/1/2020	103	-	-	-	-	103
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain Standards	Infrastructure	12/1/2020	305	-	-	-	-	305
Transmission	AH Line Valve (AH-5) Replacement	Maintain Standards	Infrastructure	12/1/2020	307	-	-	-	-	307
Transmission	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2021	-	26	-	-	-	26
Transmission	Cathodic Test Stations	Maintain Standards	Infrastructure	12/1/2021	-	37	-	-	-	37
Transmission	Pipeline Integrity	Maintain Standards	Infrastructure	12/1/2021	-	313	-	-	-	313
Transmission	Remote Operated Valves	System Enhancements	Risk Reduction	12/1/2021	-	313	-	-	-	313
Transmission	AH Line Valve (AH-15) Replacement	Maintain Standards	Infrastructure	12/1/2021	-	342	-	-	-	342
Transmission	AH Line Valve (AH-16) Replacement	Maintain Standards	Infrastructure	12/1/2021	-	342	-	-	-	342
Transmission	Mahopac Gate Station Filter and Heater	System Enhancements	Risk Reduction	12/1/2021	-	734	-	-	-	734
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain Standards	Infrastructure	12/1/2021	-	313	-	-	-	313
Transmission	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2022	-	-	27	-	-	27
Transmission	Cathodic Test Stations	Maintain Standards	Infrastructure	12/1/2022	-	-	38	-	-	38
Transmission	Pipeline Integrity	Maintain Standards	Infrastructure	12/1/2022	-	-	320	-	-	320
Transmission	Remote Operated Valves	System Enhancements	Risk Reduction	12/1/2022	-	-	763	-	-	763
Transmission	AH Line Valve (AH-12, 13, 14) Replacement	Maintain Standards	Infrastructure	12/1/2022	-	-	853	-	-	853
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain Standards	Infrastructure	12/1/2022	-	-	429	-	-	429
Transmission	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2023	-	-	-	27	-	27
Transmission	Cathodic Test Stations	Maintain Standards	Infrastructure	12/1/2023	-	-	-	44	-	44
Transmission	Pipeline Integrity	Maintain Standards	Infrastructure	12/1/2023	-	-	-	324	-	324
Transmission	Remote Operated Valves	System Enhancements	Risk Reduction	12/1/2023	-	-	-	816	-	816
Transmission	AH Line Valve (AH-6) Replacement	Maintain Standards	Infrastructure	12/1/2023	-	-	-	354	-	354
Transmission	AH Line Valve (AH-7) Replacement	Maintain Standards	Infrastructure	12/1/2023	-	-	-	354	-	354
Transmission	Pig Launching Station(s) for Internal Line Inspection	Maintain Standards	Infrastructure	12/1/2023	-	-	-	434	-	434
Transmission	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	28	28
Transmission	Cathodic Test Stations	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	50	50
Transmission	Pipeline Integrity	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	331	331
Transmission	AH Line Valve (AH-17) Replacement	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	385	385
Transmission	AH Line Valve (AH-18) Replacement	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	385	385
Transmission	Remote Operated Valves	System Enhancements	Risk Reduction	12/1/2024	-	-	-	-	891	891
Transmission	Transmission ROW Capital Improvements	Maintain Standards	Risk Reduction	12/1/2024	-	-	-	-	223	223
Transmission	Transmission Line Casing Removal	Maintain Standards	Risk Reduction	12/1/2024	-	-	-	-	223	223
Transmission	**Subtotal Tranmission**				**1,591**	**2,421**	**2,430**	**2,352**	**2,517**	**11,312**
Regulator Stations	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2020	26	-	-	-	-	26
Regulator Stations	Pressure Control Improvements	Maintain Standards	Time Based Replacements	12/1/2020	154	-	-	-	-	154
Regulator Stations	Pressure Recording Chart Replacements	Maintain Standards	Time Based Replacements	12/1/2020	154	-	-	-	-	154
Regulator Stations	Regulator Station SCADA Implementation	Maintain Standards	Infrastructure	12/1/2020	204	-	-	-	-	204
Regulator Stations	Coxsackie Regulator Station Rebuild	Maintain Standards	Infrastructure	12/1/2020	499	-	-	-	-	499
Regulator Stations	Cannon St. Regulator Station Rebuild	Maintain Standards	Infrastructure	12/1/2020	807	-	-	-	-	807
Regulator Stations	Monument Square Property Purchase	Maintain Standards	Infrastructure	12/1/2020	204	-	-	-	-	204

	GAS ADDITIONS				W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Investment Type	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Regulator Stations	Lake Katrine Heater Install	Maintain Standards	Infrastructure	12/1/2020	204	-	-	-	-	204
Regulator Stations	Marist College Heater Install	Maintain Standards	Infrastructure	12/1/2020	204	-	-	-	-	204
Regulator Stations	Pilot Heater Installs	Maintain Standards	Infrastructure	12/1/2020	103	-	-	-	-	103
Regulator Stations	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2021	-	26	-	-	-	26
Regulator Stations	Pressure Control Improvements	Maintain Standards	Time Based Replacements	12/1/2021	-	158	-	-	-	158
Regulator Stations	Pressure Recording Chart Replacements	Maintain Standards	Time Based Replacements	12/1/2021	-	158	-	-	-	158
Regulator Stations	Regulator Station SCADA Implementation	Maintain Standards	Infrastructure	12/1/2021	-	209	-	-	-	209
Regulator Stations	Clark St. Regulator Station Rebuild	Maintain Standards	Infrastructure	12/1/2021	-	531	-	-	-	531
Regulator Stations	Central Valley Heater Install	Maintain Standards	Infrastructure	12/1/2021	-	209	-	-	-	209
Regulator Stations	Highland Mills Heater Install	Maintain Standards	Infrastructure	12/1/2021	-	209	-	-	-	209
Regulator Stations	KS System Additional Feed, New Regulator Station	Maintain Standards	Infrastructure	12/1/2021	-	410	-	-	-	410
Regulator Stations	Poughkeepsie Receival Heater, Filter, Inlet Valves Rebuild	Maintain Standards	Infrastructure	12/1/2021	-	781	-	-	-	781
Regulator Stations	Pilot Heater Installs	Maintain Standards	Infrastructure	12/1/2021	-	106	-	-	-	106
Regulator Stations	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2022	-	-	27	-	-	27
Regulator Stations	Pressure Control Improvements	Maintain Standards	Time Based Replacements	12/1/2022	-	-	160	-	-	160
Regulator Stations	Pressure Recording Chart Replacements	Maintain Standards	Time Based Replacements	12/1/2022	-	-	160	-	-	160
Regulator Stations	Regulator Station SCADA Implementation	Maintain Standards	Infrastructure	12/1/2022	-	-	213	-	-	213
Regulator Stations	Cochecton Heater Install	Maintain Standards	Infrastructure	12/1/2022	-	-	240	-	-	240
Regulator Stations	Blue Point Heater Install	Maintain Standards	Infrastructure	12/1/2022	-	-	240	-	-	240
Regulator Stations	Poughkeepsie Receival Low and Medium Pressure Rebuild	Maintain Standards	Infrastructure	12/1/2022	-	-	659	-	-	659
Regulator Stations	Monument Square Station Rebuild	Maintain Standards	Infrastructure	12/1/2022	-	-	524	-	-	524
Regulator Stations	North Grand Regulator Station Rebuild	Maintain Standards	Infrastructure	12/1/2022	-	-	444	-	-	444
Regulator Stations	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2023	-	-	-	27	-	27
Regulator Stations	Pressure Control Improvements	Maintain Standards	Time Based Replacements	12/1/2023	-	-	-	217	-	217
Regulator Stations	Pressure Recording Chart Replacements	Maintain Standards	Time Based Replacements	12/1/2023	-	-	-	217	-	217
Regulator Stations	Regulator Station SCADA Implementation	Maintain Standards	Infrastructure	12/1/2023	-	-	-	216	-	216
Regulator Stations	Regulator Station Rebuild/Build New Distribution Improvement	Maintain Standards	Infrastructure	12/1/2023	-	-	-	641	-	641
Regulator Stations	Broadway Regulator Station Property Purchase	Maintain Standards	Infrastructure	12/1/2023	-	-	-	205	-	205
Regulator Stations	Mill Street Heater Install	Maintain Standards	Infrastructure	12/1/2023	-	-	-	271	-	271
Regulator Stations	Vail Road Heater Install	Maintain Standards	Infrastructure	12/1/2023	-	-	-	271	-	271
Regulator Stations	South Street Property Purchase	Maintain Standards	Infrastructure	12/1/2023	-	-	-	218	-	218
Regulator Stations	Prior Year Projects	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	28	28
Regulator Stations	Pressure Control Improvements	Maintain Standards	Time Based Replacements	12/1/2024	-	-	-	-	169	169
Regulator Stations	Pressure Recording Chart Replacements	Maintain Standards	Time Based Replacements	12/1/2024	-	-	-	-	169	169
Regulator Stations	Regulator Station SCADA Implementation	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	224	224
Regulator Stations	Regulator Station Rebuild/Build New Distribution Improvement	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	665	665
Regulator Stations	Broadway Regulator Station Build	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	665	665
Regulator Stations	South Street Regulator Station Build	Maintain Standards	Infrastructure	12/1/2024	-	-	-	-	665	665
Regulator Stations	**Subtotal Regulator Stations**				**2,559**	**2,798**	**2,666**	**2,283**	**2,585**	**12,891**
New Business	Residential Conversion	Maintain Standards	New Business	Multiple	3,452	3,523	3,550	3,625	3,694	17,845
New Business	Commercial Conversion	Maintain Standards	New Business	Multiple	1,030	1,052	1,060	1,082	1,103	5,327
New Business	Traditional NB Res/Comm	Non Discretionary	New Business	Multiple	1,958	2,103	2,120	2,164	2,206	10,551
New Business	URD	Non Discretionary	New Business	Multiple	3,349	3,155	3,550	3,625	3,694	17,374
New Business	**Subtotal New Business**				**9,789**	**9,834**	**10,280**	**10,496**	**10,697**	**51,096**

	GAS ADDITIONS				W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Investment Type	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Distribution	Corrosion Control	Maintain Standards	Infrastructure	Multiple	153	156	160	165	167	802
Distribution	Unidentified Road Rebuild - Includes Paving Proj	Maintain Standards	Infrastructure	Multiple	2,552	2,606	2,674	3,295	3,341	14,468
Distribution	Unident Cast Iron	Non Discretionary	Compliance	Multiple	204	182	160	165	139	851
Distribution	Unident Leaking - Includes Active Corrosion	Maintain Standards	Infrastructure	Multiple	1,021	1,042	1,896	1,098	1,114	6,171
Distribution	Service Replacement Blankets - Emergent	Non Discretionary	Compliance	Multiple	2,552	2,501	2,386	2,251	2,215	11,905
Distribution	Service Partial Replacement Identified DIPS	Non Discretionary	Compliance	Multiple	2,611	2,182	3,009	2,096	2,074	11,972
Distribution	Svce Repl Blankets DIPS	Non Discretionary	Compliance	Multiple	4,776	5,070	7,211	4,117	4,826	25,999
Distribution	Isolated Service Replacement Blankets	Non Discretionary	Compliance	Multiple	510	521	535	549	557	2,672
Distribution	Local Orders -	Maintain Standards	Infrastructure	Multiple	357	365	374	384	390	1,871
Distribution	PN Line Next Mile South	Maintain Standards	Infrastructure	2020	2,552	-	-	-	-	2,552
Distribution	PN Line - 9D Wappingers South	Maintain Standards	Infrastructure	2021/2022	-	3,127	3,209	-	-	6,336
Distribution	PN Line - New Pipe to IBM	Maintain Standards	Infrastructure	2023	-	-	-	2,335	-	2,335
Distribution	PN Line - Wappingers Creek North	Maintain Standards	Infrastructure	2023	-	-	-	6,411	-	6,411
Distribution	Place Holder	Maintain Standards	Infrastructure	2024	-	-	-	-	5,012	5,012
Distribution	TV Line	Maintain Standards	Study Based Load Growth	2020	2,304	1,165	-	-	-	3,469
Distribution	Westwood/Windwood	Maintain Standards	Study Based Load Growth	2021/2022	-	421	-	-	-	421
Distribution	Downing West of Grand	Maintain Standards	Study Based Load Growth	2021	-	782	-	-	-	782
Distribution	Marys Avenue Tie - Reserve for Spring Street	Maintain Standards	Study Based Load Growth	2021/2022	-	1,563	535	-	-	2,098
Distribution	TV Line - Lourdes to PN	Maintain Standards	Study Based Load Growth	2022/2023	-	-	760	2,197	-	2,956
Distribution	Reinforcement Place Holder	Maintain Standards	Study Based Load Growth	2024	-	-	-	-	6,350	6,350
Distribution	Broome Neighborhood Catskill	Maintain Standards	Infrastructure	2020	1,705	-	-	-	-	1,705
Distribution	Uptown Fair Wall John	Maintain Standards	Infrastructure	2020	2,481	-	-	-	-	2,481
Distribution	South Highland	Maintain Standards	Infrastructure	2020	2,674	-	-	-	-	2,674
Distribution	Cornwall 4- Main St/ Hudson St	Maintain Standards	Infrastructure	2020	1,856	-	-	-	-	1,856
Distribution	MNG South	Maintain Standards	Infrastructure	2020	2,446	-	-	-	-	2,446
Distribution	NLP- South St Neighborhood	Maintain Standards	Infrastructure	2020	1,625	-	-	-	-	1,625
Distribution	Village of Fishkill - SE	Maintain Standards	Infrastructure	2020	839	-	-	-	-	839
Distribution	Main Street Poughkeepsie Area	Maintain Standards	Infrastructure	2020	3,552	-	-	-	-	3,552
Distribution	South Wall Street Area	Maintain Standards	Infrastructure	2020	1,975	-	-	-	-	1,975
Distribution	Fairview and Quarry Street	Maintain Standards	Infrastructure	2021	-	2,594	-	-	-	2,594
Distribution	Clifton/East Chester Neighborhood	Maintain Standards	Infrastructure	2021	-	2,789	-	-	-	2,789
Distribution	Sharon Drive and Route 9	Maintain Standards	Infrastructure	2021	-	3,241	-	-	-	3,241
Distribution	West Newburgh swing to 60 psig	Maintain Standards	Infrastructure	2021	-	4,421	-	-	-	4,421
Distribution	Hudson View Development	Maintain Standards	Infrastructure	2021	-	1,628	-	-	-	1,628
Distribution	Mountain Avenue and WP Line	Maintain Standards	Infrastructure	2021	-	2,205	-	-	-	2,205
Distribution	SW Poughkeepsie Hooker Hamilton	Maintain Standards	Infrastructure	2021	-	3,303	-	-	-	3,303
Distribution	**Subtotal Distribution Improvements**				**38,746**	**41,865**	**22,910**	**25,063**	**26,184**	**154,767**
Meters	X081A - Gas Meters	Non Discretionary	New Business		1,943	1,993	2,038	2,090	2,146	10,210
Meters	X084A - Special Meter Installation	Non Discretionary	New Business		767	783	796	812	829	3,987
Meters	**Subtotall Gas Meters**				**2,709**	**2,776**	**2,834**	**2,903**	**2,975**	**14,197**
	Total - Gas				**55,395**	**59,693**	**41,121**	**43,097**	**44,959**	**244,264**

	COMMON ADDITIONS			W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Land & Buildings	Daily Operations - Electric	Non Discretionary	on going	53	55	56	62	72	298
Land & Buildings	Daily Operations - Flooring	Non Discretionary	on going	53	55	56	62	72	298
Land & Buildings	Daily Operations - HVAC	Non Discretionary	on going	53	55	56	62	72	298
Land & Buildings	Daily Operations - Unidentified	Non Discretionary	on going	529	546	558	622	722	2,976
Land & Buildings	Repave Parking Lot (Multi Year) (Kingston)	Maintain Standards	on going	264	273	279	311	361	1,488
Land & Buildings	Repave Parking Lots (Multi Year)	Maintain Standards	on going	264	273	279	311	361	1,488
Land & Buildings	Pave Portion of Parking Lot	Maintain Standards	2020	159	-	-	-	-	159
Land & Buildings	Install Backup Generator	System Enhancements	2020	53	-	-	-	-	53
Land & Buildings	Lighting Upgrade - Storeroom	Maintain Standards	2020	42	-	-	-	-	42
Land & Buildings	Replace Exhaust Fan in lineman's garage	Maintain Standards	2020	26	-	-	-	-	26
Land & Buildings	Replace Pavillion & Bath House Roof	Maintain Standards	2020	74	-	-	-	-	74
Land & Buildings	Lighting Upgrade - Storeroom	Maintain Standards	2020	42	-	-	-	-	42
Land & Buildings	Replace/Upgrade 803 RTU CHAZ Unit Main Floor	Maintain Standards	2020	211	-	-	-	-	211
Land & Buildings	Replace Training Room HVAC Unit hook up to new controls	Maintain Standards	2020	63	-	-	-	-	63
Land & Buildings	Pave Pole & Equipment area	Maintain Standards	2020	85	-	-	-	-	85
Land & Buildings	Replace Carpeting - Call Centers	Maintain Standards	2020	79	-	-	-	-	79
Land & Buildings	Bldg 810 - Install fire protection under raised floor	Maintain Standards	2020	97	-	-	-	-	97
Land & Buildings	Bldg 806 - Restroom Renovation	Maintain Standards	2020	79	-	-	-	-	79
Land & Buildings	Replace Roof - 1/3 Back Building	Maintain Standards	2020	539	-	-	-	-	539
Land & Buildings	Install fire protection @ EC Lineman's, Transformer, Storeroom	Maintain Standards	2020	190	-	-	-	-	190
Land & Buildings	Renovate Restrooms	Maintain Standards	2020	211	-	-	-	-	211
Land & Buildings	Bldg 810 - Replace leibert units in Computer Room	Maintain Standards	2020	190	-	-	-	-	190
Land & Buildings	Bldg 803 - Replace HVAC Units S1 & S2 level	Maintain Standards	2020	264	-	-	-	-	264
Land & Buildings	Bldg 801 - Replace Windows 2nd Floor	Maintain Standards	2020	238	-	-	-	-	238
Land & Buildings	Architectural Design	Maintain Standards	2020	264	-	-	-	-	264
Land & Buildings	Controls System HVAC	Maintain Standards	2021	-	327	-	-	-	327
Land & Buildings	Renovate Restrooms	Maintain Standards	2021	-	109	-	-	-	109
Land & Buildings	Building 803 - Replace Asbestos Tile	Maintain Standards	2021	-	55	-	-	-	55
Land & Buildings	Building 800 - Create Women's Rest Room 1st Floor	Maintain Standards	2021	-	65	-	-	-	65
Land & Buildings	Building 805 Resurface and Restripe Garage Floors	Maintain Standards	2021	-	65	-	-	-	65
Land & Buildings	Building 806 - Roof Replacement	Maintain Standards	2021	-	273	-	-	-	273
Land & Buildings	Bldg 807 - Credit Union Roof Replacement	Maintain Standards	2021	-	273	-	-	-	273
Land & Buildings	Replace Carpeting - Main Bldg and Training Room (Fishkill)	Maintain Standards	2021	-	90	-	-	-	90
Land & Buildings	Replace Sidewalks	Maintain Standards	2021	-	60	-	-	-	60
Land & Buildings	Replace Roof Front Bldg	Maintain Standards	2021	-	153	-	-	-	153
Land & Buildings	Replace Carpet in Auditorium with VCT	Maintain Standards	2021	-	55	-	-	-	55
Land & Buildings	Replace Sloped Roof - Front Annex Bldg	Maintain Standards	2021	-	382	-	-	-	382
Land & Buildings	Replace lighting in the garge areas	Maintain Standards	2021	-	33	-	-	-	33
Land & Buildings	Pole Racks	Maintain Standards	2021	-	164	-	-	-	164
Land & Buildings	Replace Roof Transportation Garage	Maintain Standards	2021	-	524	-	-	-	524
Land & Buildings	Architectural Design	Maintain Standards	2021	-	273	-	-	-	273
Land & Buildings	Replace lighting throughout Electricians Area	Maintain Standards	2022	-	-	223	-	-	223
Land & Buildings	Bldg 805 Replace Roof	Maintain Standards	2022	-	-	112	-	-	112

	COMMON ADDITIONS			W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Land & Buildings	Replace HVAC Units	Maintain Standards	2022	-	-	167	-	-	167
Land & Buildings	Roof Replacement	Maintain Standards	2022	-	-	145	-	-	145
Land & Buildings	Replace Storeroom roof	Maintain Standards	2022	-	-	558	-	-	558
Land & Buildings	Renovate Restrooms in Storeroom	Maintain Standards	2022	-	-	167	-	-	167
Land & Buildings	Replace Roof - Linemens Bldg	Maintain Standards	2022	-	-	538	-	-	538
Land & Buildings	Restroom Renovations	Maintain Standards	2022	-	-	251	-	-	251
Land & Buildings	Raise Roof Height Fishkill Transportation	Maintain Standards	2022	-	-	257	-	-	257
Land & Buildings	Hook up to municipal sewer	Maintain Standards	2022	-	-	251	-	-	251
Land & Buildings	Replace Windows	Maintain Standards	2022	-	-	251	-	-	251
Land & Buildings	Architectural Design	Maintain Standards	2022	-	-	279	-	-	279
Land & Buildings	Building 807 Relocate Transformers and Replace Steps	Maintain Standards	2023	-	-	-	373	-	373
Land & Buildings	Bldg 802 - Replace Windows	Maintain Standards	2023	-	-	-	186	-	186
Land & Buildings	Replace Carpet - Contact Center	Maintain Standards	2023	-	-	-	124	-	124
Land & Buildings	Renovate Sys Ops Restrooms	Maintain Standards	2023	-	-	-	186	-	186
Land & Buildings	Replace Window - Bldg 805/806	Maintain Standards	2023	-	-	-	124	-	124
Land & Buildings	Install new freight Elevator	Maintain Standards	2023	-	-	-	497	-	497
Land & Buildings	Install Additional Parking Area behind bldg	Maintain Standards	2023	-	-	-	249	-	249
Land & Buildings	Pave Portion of parking and roadway	Maintain Standards	2023	-	-	-	373	-	373
Land & Buildings	Replace Roof Linemen's Garage	Maintain Standards	2023	-	-	-	373	-	373
Land & Buildings	Renovate Restrooms	Maintain Standards	2023	-	-	-	186	-	186
Land & Buildings	Install New Carpet	Maintain Standards	2023	-	-	-	62	-	62
Land & Buildings	Install New HVAC Unit	Maintain Standards	2023	-	-	-	124	-	124
Land & Buildings	Install New Roof Training Center	Maintain Standards	2023	-	-	-	249	-	249
Land & Buildings	Architectural Design	Maintain Standards	2023	-	-	-	311	-	311
Land & Buildings	Replace Windows Front Bldg	Maintain Standards	2024	-	-	-	-	361	361
Land & Buildings	Replace Carpet Tiles	Maintain Standards	2024	-	-	-	-	144	144
Land & Buildings	Build Maintenance Shop	Maintain Standards	2024	-	-	-	-	181	181
Land & Buildings	Bldg 801 - Replace Windows 1st Floor	Maintain Standards	2024	-	-	-	-	289	289
Land & Buildings	Bldg 803 - Replace Carpet on S1 level	Maintain Standards	2024	-	-	-	-	144	144
Land & Buildings	Bldg 802 - Replace HVAC Units	Maintain Standards	2024	-	-	-	-	253	253
Land & Buildings	Bldg 807 - Replace tile flooring basement level	Maintain Standards	2024	-	-	-	-	108	108
Land & Buildings	Bldg 807 - Upper Roof Replacement	Maintain Standards	2024	-	-	-	-	253	253
Land & Buildings	Boiler Room - Office Build out	Maintain Standards	2024	-	-	-	-	144	144
Land & Buildings	Replace siding on lodge and office	Maintain Standards	2024	-	-	-	-	217	217
Land & Buildings	Install Pole Racks	Maintain Standards	2024	-	-	-	-	144	144
Land & Buildings	Install Pole Racks	Maintain Standards	2024	-	-	-	-	144	144
Land & Buildings	Transformer Shop Roof Replacement	Maintain Standards	2024	-	-	-	-	217	217
Land & Buildings	Electrician Shop New OH Doors and Openers	Maintain Standards	2024	-	-	-	-	58	58
Land & Buildings	Newburgh - Replace Flooring	Maintain Standards	2024	-	-	-	-	217	217
Land & Buildings	Catskill - Renovate Office areas	Maintain Standards	2024	-	-	-	-	289	289
Land & Buildings	Install New HVAC Unit	Maintain Standards	2024	-	-	-	-	144	144
Land & Buildings	Pave Portion of parking and roadway	Maintain Standards	2024	-	-	-	-	433	433
Land & Buildings	Architectural Design	Maintain Standards	2024	-	-	-	-	361	361

	COMMON ADDITIONS			W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Land & Buildings	Kingston Build Out - 1st Floor	Maintain Standards	2020	1,586	-	-	-	-	1,586
Land & Buildings	Linemen and Gas Training Centers	System Enhancements	2024	3,553	3,166	13,389	5,594	1,445	27,146
Land & Buildings	Phase 2 Primary Control Center	System Enhancements	2024	1,057	3,683	14,658	3,428	-	22,827
Land & Buildings	Parking Lot & Office Bldg	Maintain Standards	2020	6,556	-	-	-	-	6,556
Land & Buildings	Newburgh - New Facility	Maintain Standards	2022	-	-	11,157	-	-	11,157
Land & Buildings	Disaster Recovery Site	Maintain Standards	2020	1,586	-	-	1,865	-	3,451
Land & Buildings	Transformer Shop Rebuild	Maintain Standards	2023	-	-	-	1,865	-	1,865
Land & Buildings	Rebuild - Transportation Shop and Butler Bldg Welding shop	Maintain Standards	2024	-	-	-	-	2,167	2,167
Land & Buildings	Rebuild - Transportation Shop	Maintain Standards	2024	-	-	-	-	2,167	2,167
Land & Buildings				**18,465**	**11,005**	**43,686**	**17,600**	**11,543**	**102,299**
Office Equipment	South Road - Daily Operations - Larger Projects	Maintain Standards	on going	66	68	69	71	72	346
Office Equipment	South Road - Misc. Furniture	Maintain Standards	on going	41	42	43	44	44	213
Office Equipment	South Road - Office Chair Replacement Program	Maintain Standards	on going	36	37	37	38	39	187
Office Equipment	Additional Cubicles - Lake Katrine	Maintain Standards	on going	41	63	64	65	67	299
Office Equipment	Bldg 807 - Dispatch Office	Maintain Standards	2020	20	-	-	-	-	20
Office Equipment	New Line & Gas Training Facility	Maintain Standards	2020	102	-	-	-	-	102
Office Equipment	Newburgh - New Facility	Maintain Standards	2022	-	-	107	-	-	107
Office Equipment	Disaster Recovery	Maintain Standards	2023	-	-	-	54	-	54
Office Equipment	Transformer Shop	Maintain Standards	2024	-	-	-	-	33	33
Office Equipment	Butler Bldg	Maintain Standards	2024	-	-	-	-	33	33
Office Equipment				**307**	**209**	**320**	**272**	**289**	**1,396**
EMS	Miscellaneous Hardware and Software Failures	Non Discretionary	on-going	51	52	53	54	56	267
EMS	DMS Phase 4	Non Discretionary	12/1/2020	2,044	-	-	-	-	2,044
EMS	DMS Phase 5 (OMS), PCC EMS, PCC Video Wall	Non Discretionary	12/1/2021	-	7,088	5,000	-	-	12,087
EMS	EMS Windows Server/Workstation Replacement	Non Discretionary	6/1/2020	153	-	-	-	-	153
EMS	EMS Software Upgrade (non-JUMP)	Non Discretionary	6/1/2023	-	121	5,138	361	-	5,620
EMS				**2,249**	**7,261**	**10,191**	**416**	**56**	**20,172**
Hardware	Hardware Minors	Maintain Standards	Annual	164	167	174	181	188	873
Hardware	PC and Laptop Replacements	Maintain Standards	Annual	545	556	579	602	627	2,909
Hardware	Mobile (Pen) Computing Replacements	Maintain Standards	Annual	273	278	290	301	313	1,455
Hardware	Monitors, Network Printers-Adds/Repl.	Maintain Standards	Annual	136	139	145	150	157	727
Hardware	Server Replacements and Storage Upgrades	Maintain Standards	Annual	927	945	985	1,023	1,066	4,945
Hardware	Network Infrastructure Upgrades/Replacements	Maintain Standards	Annual	382	389	406	421	439	2,036
Hardware	Cyber Security	Maintain Standards	Annual	109	111	116	120	125	582
Hardware	Copiers (new budget line item requested by Tim B)	Maintain Standards	Annual	60	61	64	66	69	320
Hardware	IT Strategic Initiatives Hardware	Maintain Standards	12/31/2019	545	556	579	-	-	1,680
Software	Business Intelligence (Cognos) - Upgrades & Enhancements	Maintain Standards	Annual	-	244	508	515	412	1,679
Software	Business Intelligence (Cognos) - New Development	Maintain Standards	Annual	855	670	228	233	597	2,584
Software	Enterprise Content Management	Maintain Standards	Annual	1,465	1,557	953	965	988	5,929
Software	Cyber Security	Maintain Standards	Annual	780	489	508	515	527	2,819
Software	Mainframe Bundled Releases	Maintain Standards	Annual	172	92	171	181	114	730
Software	Wiki/CentralHudson.com Redesign - WCM	Maintain Standards	12/31/2016	632	153	318	322	-	1,424
Software	Increase the Quality & Speed of Delivery of Application Testing	Maintain Standards	Bundled Releases	160	164	294	301	316	1,236

	COMMON ADDITIONS			W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Software	Emergent Software Packages/Upgrades	Maintain Standards	Annual	568	1,151	895	920	943	4,477
Software	Unified Communications, VoIP, IVR - Upgrades & Enhancements	Maintain Standards	Annual	-	122	254	257	263	897
Software	Unified Communications, VoIP, IVR - Extenting Collaboration	Maintain Standards	Annual	460	377	508	515	527	2,387
Software	Business Agility with an Enterprise SOA Framework	Maintain Standards	Bundled Releases	107	56	386	406	667	1,622
Software	CIS / REV Modernization	System Enhancements	Annual	8,509	11,332	9,514	4,439	1,702	35,496
Software	Digital Initiatives for Customer Engagement (DICE)(Includes all Web, Mobile, Social init	Maintain Standards	Bundled Releases	1,069	1,344	1,656	5,105	2,330	11,504
Software	Mobility Upgrade	Maintain Standards	12/1/2017	-	489	-	-	-	489
Software	Emergency Management Software - Upgrades & Enhancements	Maintain Standards	Annual	259	366	381	386	395	1,787
Software	ARCOS Upgrades & Enhancements	Maintain Standards	6/1/2016	46	183	-	-	143	372
Software	HRIS - TotalHR Replacement	Maintain Standards	12/31/2019	575	306	254	257	263	1,656
Software	EmpCenter Upgrades & Enhancements	Maintain Standards	12/31/2015	172	-	-	-	-	172
Software	Electric GIS- Estimating Design	Maintain Standards	6/1/2017	-	-	-	-	400	400
Software	Electric GIS - Upgrades & Enhancements	Maintain Standards	12/31/2022	-	610	318	322	-	1,250
Software	UG Network Management GIS Solution	Maintain Standards	12/31/2021	290	306	-	-	-	595
Software	Field Modeling for ESRI/GIS	Maintain Standards	Annual	-	61	-	-	-	61
Software	Interconnection Portal	Maintain Standards	Annual	173	183	-	-	-	356
Software	Gas Transmission Integrity Management Software	Maintain Standards	12/31/2019	-	-	-	-	782	782
Software	Control Room Managmeent (CRM - Time Reporting)	Maintain Standards	12/31/2018	-	92	-	-	86	178
Software	TOA Upgrades & Enhancements	Maintain Standards	12/31/2018	-	183	-	-	200	383
Software	GL Essentials Upgrades & Enhancements	Maintain Standards	Annual	77	-	309	313	-	698
Software	EAM - Enterprise Asset Mgmt	Maintain Standards	12/31/2019	347	-	3,415	3,982	1,885	9,629
Software	Chevin - Fleetwave Upgrades & Enhancements	Maintain Standards	12/31/2015	115	61	127	129	-	432
Software	Claims System Replacement	Maintain Standards	multiple	-	61	-	-	-	61
Software	CDM - Financial Reporting	Maintain Standards	12/31/2020	-	-	-	-	69	69
Software	AP Automation System Upgrade	Maintain Standards	12/1/2015	-	-	-	-	314	314
Software	PowerPlan - Upgrades & Enhancements	Maintain Standards	12/1/2018	695	-	-	-	857	1,552
Software	Clarity Replacement/Upgrade & Enhancements	Maintain Standards	12/31/2019	-	-	762	772	-	1,534
Software	Financial System Modernization	Maintain Standards	12/31/2024	-	-	-	-	5,712	5,712
Hardware & Software				**20,666**	**23,856**	**25,096**	**23,698**	**23,477**	**116,792**
Security	Electric Substation Security Enhancement	Maintain Standards	2020	153	-	-	-	-	153
Security	Gas Substation Security Enhancement	Maintain Standards	2020	153	-	-	-	-	153
Security	PTZ Camera Upgrades - District Office	Maintain Standards	2020	102	-	-	-	-	102
Security	NVR Server Upgrades - Districts	Maintain Standards	2020	102	-	-	-	-	102
Security	Security Upgrades TBD	Maintain Standards	2020	102	-	-	-	-	102
Security	Electric Substation Security Enhancement	Maintain Standards	2021	-	157	-	-	-	157
Security	Gas Substation Security Enhancement	Maintain Standards	2021	-	157	-	-	-	157
Security	PTZ Camera Upgrades - District Office	Maintain Standards	2021	-	104	-	-	-	104
Security	NVR Server Upgrades - Substations	Maintain Standards	2021	-	104	-	-	-	104
Security	Security Upgrades TBD	Maintain Standards	2021	-	104	-	-	-	104
Security	Electric Substation Security Enhancement	Maintain Standards	2022	-	-	160	-	-	160
Security	Gas Substation Security Enhancement	Maintain Standards	2022	-	-	160	-	-	160
Security	PTZ Camera Upgrades - District Office	Maintain Standards	2022	-	-	107	-	-	107

	COMMON ADDITIONS			W/ AFUDC, Inflated & OH Adjustments					
CAT.	Description	Discretion Level	Preliminary In-Service Date	2020	2021	2022	2023	2024	5-Year Total
Security	Security Upgrades TBD	Maintain Standards	2022	-	-	37	-	-	37
Security	Electric Substation Security Enhancement	Maintain Standards	2023	-	-	-	163	-	163
Security	Gas Substation Security Enhancement	Maintain Standards	2023	-	-	-	163	-	163
Security	PTZ Camera Upgrades - District Office	Maintain Standards	2023	-	-	-	109	-	109
Security	Security Upgrades TBD	Maintain Standards	2023	-	-	-	163	-	163
Security	Electric Substation Security Enhancement	Maintain Standards	2024	-	-	-	-	167	167
Security	Gas Substation Security Enhancement	Maintain Standards	2025	-	-	-	-	167	167
Security	Security Upgrades TBD	Maintain Standards	2026	-	-	-	-	167	167
Security				**613**	**626**	**464**	**598**	**500**	**2,801**
Tools	Small Tools	Maintain Standards	0	1,479	1,455	1,485	1,517	1,548	7,484
Tools	**Tools**			**1,479**	**1,455**	**1,485**	**1,517**	**1,548**	**7,484**
Communications	Network Strategy Project	System Enhancements	Ongoing	5,792	4,336	1,718	(0)	(0)	11,846
Communications	South Loop Project (Mahopac and Tuxedo)	System Enhancements	6/1/2019	1,022	-	-	-	-	1,022
Communications	Radio Minor	Maintain Standards	Ongoing	204	209	212	214	218	1,057
Communications	Land Mobile Radio System Enhancements	Maintain Standards	Ongoing	-	261	530	534	546	1,870
Communications	Network Strategy Enhancements	Maintain Standards	Ongoing	-	209	424	427	437	1,496
Communications	**Communication**			**7,019**	**5,014**	**2,883**	**1,175**	**1,200**	**17,292**
Transportation	Transportaion	Maintain Standards	0	9,773	9,781	9,979	10,188	10,472	50,192
Transportation	**Transportation**			**9,773**	**9,781**	**9,979**	**10,188**	**10,472**	**50,192**
	Total - Common			**60,570**	**59,207**	**94,104**	**55,464**	**49,085**	**318,429**