conEdison


PROVIDING
DISPOSING
ENTITY
SERVICE
IT
PROCESS
ASSET
PROPERTY
FINANCIAL
COST
INTELLECTUAL
MONITORING
MANAGEMENT
LIFE CYCLE
FIXED
FACILITIES
INFRASTRUCTURE
UPGRADING
MAINTAINING
GOODWILL
OBJECTIVE
PHYSICAL
OPERATING
EQUIPMENT
GROUP
EFFECTIVELY
SYSTEM
DIGITAL
ENTERPRISE


www

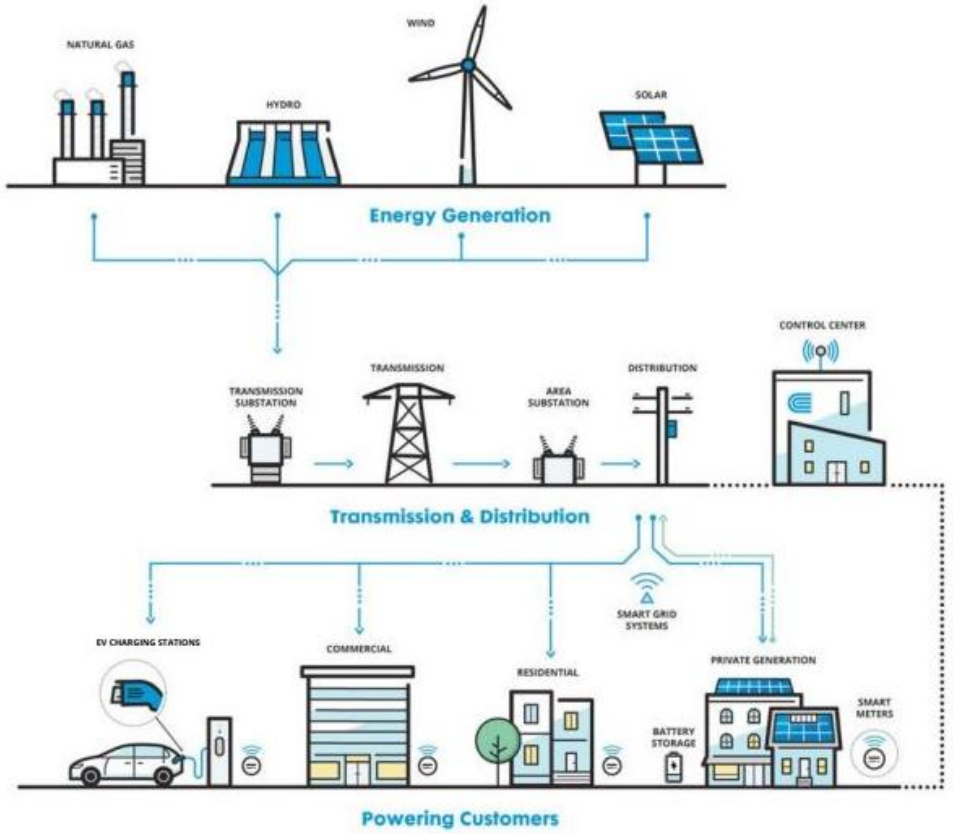
AGENDA:

- Overview of Con Edison
- Our Journey - Building an Asset Management Organization
- Our Asset Management Framework
- Ensuring Data Quality
- Leveraging Data
- Asset Management Plans
- Dashboards - - Building Visibility
- Asset Reliability Teams

Overview of Con Edison's Electric System

Con Edison's electric service territory includes both New York City and Westchester Country, covering 660 square miles and serving 3.6 million customers. Con Edison's grid is a delivery system that connects energy sources to customers.

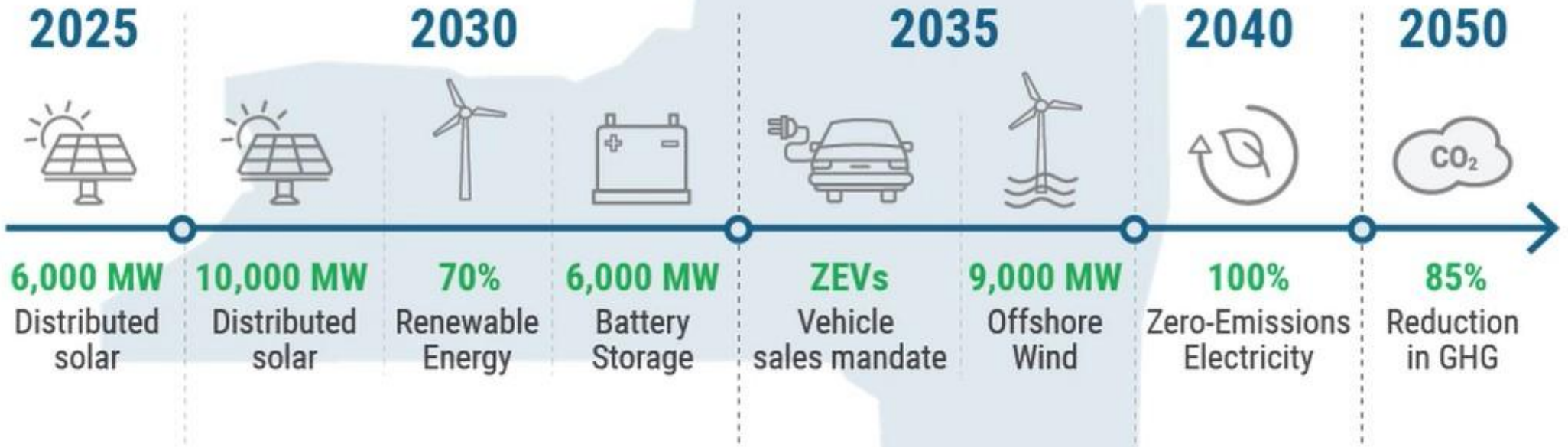
Energy produced by generating sources is delivered via the Con Edison transmission system, which includes 430 circuit-miles of overhead transmission lines and the largest underground transmission system in the United States, with 749 circuit-miles of underground cable. The system also includes 39 transmission substations. The high-voltage transmission lines bring power from generating facilities to transmission substations, which supply substations, where the voltage is stepped down to distribution levels, as shown in the diagram below.



Con Edison has two different distribution systems—the non-network *(primarily overhead)* system and the network *(primarily underground)* system.

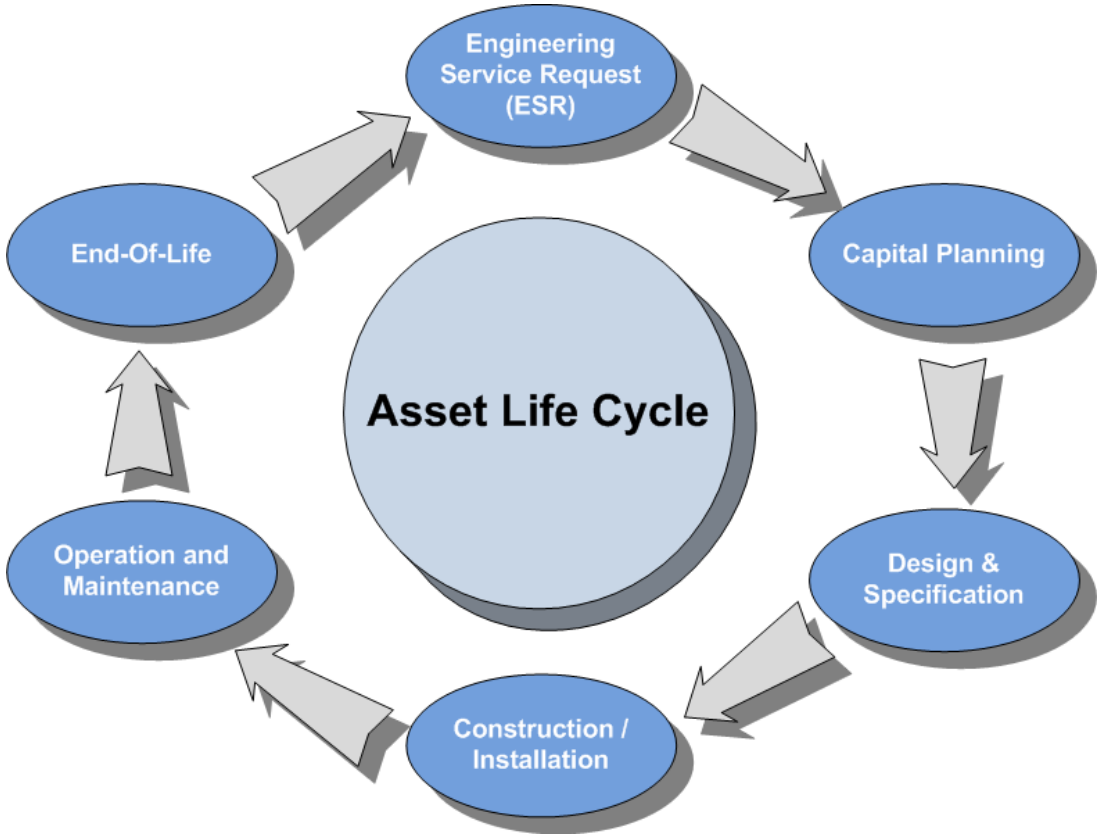
Con Edison Overview

Clean Energy Evolution NYS CLCPA Targets



What is Asset Management?

It's a Cycle intended to manage the equipment required to perform Critical Functions in delivering our products / services to our customers.



Involves many Organizations:

- Business Unit Operations & Maintenance
- System Operations
- Engineering
- Construction

Collectively OUR job is to:

- Get this done SAFELY
- Ensure Equipment RELIABILITY
- Strive for Lowest Possible Lifecycle Cost

Our Journey - Building an Asset Management Organization

- Incomplete asset registry
  - Missing assets and asset nameplate data
- Work management process not documented
  - Ad-hoc planning and scheduling
- Lack of standardized reporting
- Inadequate data collection requirements and processes
  - Paper-based maintenance records
- Poor user interface
  - Minimally used by most personnel
- Few Engineering/project work management tools

Our Journey - Building an Asset Management Organization

- Investment Strategy:
  - Prioritizes programs and projects to optimize the capital portfolio and performs advance planning for projects.
  - Development and maintenance of a Transmission Probabilistic Risk Assessment model for the transmission system.
- Field Engineering:
  - Provide direct support to the operating organizations for all maintenance and capital work.
- Equipment Engineering:
  - Subject Matter Experts (SMEs) for substation equipment
  - Provide the engineering standards, program requirements and guidance to maintain the reliability of the equipment on our system.

Our Journey - Building an Asset Management Organization

- Maximo Center of Excellence / Technical Development:
  - Develops and maintains the work management and database systems to collect information on equipment.
  - Administers the enterprise Maximo Work Management System along with peripheral systems - - DataSplice and ENGAGE
  - Facilitates Maximo consolidation projects and retirement of legacy systems
  - Provides SME guidance on best practices implementing and maintaining Maximo for new users both within and outside of Central Operations.
  - Develop Data Analytics dashboards with the information extracted from work management platforms to identify and highlight anomalies and provide equipment trending for failure modes and effect causality analysis.
  - Manages the Substation Technology Improvement Program projects funded by IT to create software functionality, develop, and implement new technology to support business needs and improve productivity.

Our Journey - Building an Asset Management Organization

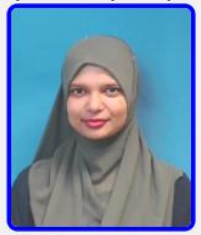
- Substation & Transmission Reliability Engineering:
  - CAP/OE
    - Facilitate Central Operations Corrective Action Program (CAP)
    - Coordinate Industry Operating Experience (OE) Program
    - Perform Causal Analysis associated with events to mitigate re-occurrences of failures.
    - Implement/Track Common Cause Corrective Action Plans
  - Asset Performance Transparency
    - Develop and Maintain Asset Management Plans
    - Leverage SCADA/PI as well as work management data in developing metrics
    - Develop and Maintain equipment health indexes used in the prioritizing proactive equipment replacements
    - Develop and Maintain remote monitoring systems to give real time asset health assessment
  - Facilitate Reliability Teams - -
    - Cross-ORG teams that ensure the reliability of equipment at the lowest possible life-cycle cost.
    - Teams collaborate in decision making to ensure Maintenance Strategies are effective and efficient
    - Teams oversee/direct Capital programs - - ensure capital infusion improves overall fleet condition

Substation & Transmission Reliability Engineering

Jozsef F Szabo (78803)
Section Manager
Con Edison Company of NY

Engineers

Zachary Mathews (43736)
Sr Engineer
Con Edison Company of NY



Fatyha T Ahad (34973)
Engineer
Con Edison Company of NY

Mohamed Elsayed (31863)
Sr Engineer
Con Edison Company of NY

Lina Cossio-Gonzalez (39593)
Sr Engineer
Con Edison Company of NY

Bao-Ngan Dang (24693)
Sr Engineer
Con Edison Company of NY

Wing K Wu (33175)
Sr Engineer
Con Edison Company of NY

Project Specialists

Rebecca S Azznara (38291)
Project Specialist
Con Edison Company of NY

Jarmal M Johnny (34979)
Sr Specialist
Con Edison Company of NY

Maximo Center of Excellence / Technical Development

Shaun Ramkishun (30172)
Section Manager
Con Edison Company of NY

Project Specialists

Bao-Yen T Dang (27694)
Project Specialist
Con Edison Company of NY

David Sanchez (00680)
Project Specialist
Con Edison Company of NY

Mark Lozina (24480)
Project Specialist
Con Edison Company of NY

Scott C Carol (01193)
Project Specialist
Con Edison Company of NY

Maximo Admins

Michael Stackhouse (15401)
Project Specialist
Con Edison Company of NY

Gary J Phillips (18373)
Project Specialist
Con Edison Company of NY

Andy R Lall (24950)
Operating Supervisor
Con Edison Company of NY

Shaojie Huang (47215)
Sr Specialist
Con Edison Company of NY

Thomas P Geisinger (45056)
Specialist
Con Edison Company of NY

Our Asset Management Framework

The Institute of Asset Management

Strategy & Planning

ISO 55000

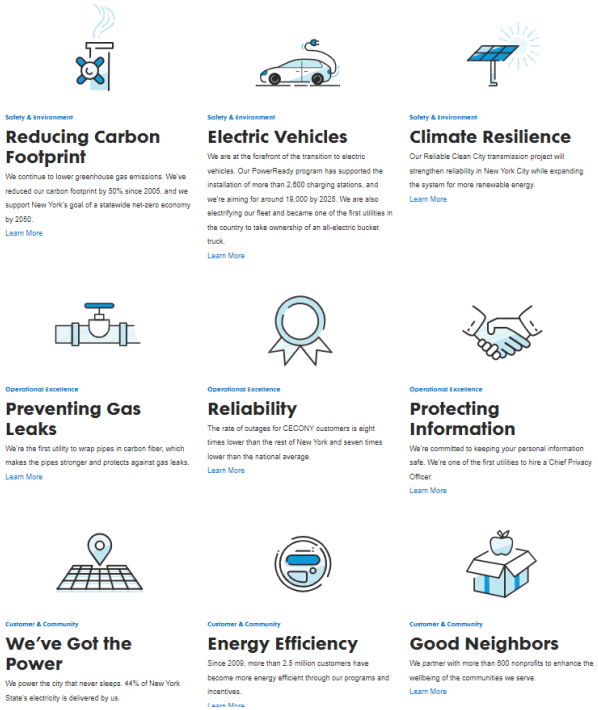
1. Asset Management Policy	This comprises the principles and mandated requirements derived from and consistent with the organisational plan, to provide a framework for the development and implementation of the strategic asset management plan (SAMP) and the setting of the asset management objectives.
2. Asset Management Strategy & Objectives	The strategic plan for the management of an organisation's assets to achieve the organisational objectives. ISO 55000 refers to this asset management strategy as the Strategic Asset Management Plan (SAMP). The Strategy describes the long-term approach to management of the physical assets, specifies how organisational objectives are to be converted into asset management objectives, the approach for developing asset management plan(s), and the role of the AMS in supporting achievement of the asset management objectives.
3. Demand Analysis	The processes an organisation uses to both assess and influence the demand for, and level of service from, an organisation's assets. It typically includes the analysis of future demand for the product or services being offered and the requirements this demand will place on the asset portfolio.
4. Strategic Planning	The processes an organisation uses to undertake strategic asset management planning, to establish asset management objectives and develop the asset management strategy (SAMP). It includes: how the organisation is to address the outputs from demand analysis; the processes for determining long-term renewal, enhancement and maintenance work volumes; and the associated risks and costs to meet the asset management objectives. Asset management strategic planning is usually undertaken as part of the overall organisational strategic planning process.
5. Asset Management Planning	The activities to develop the asset management plan(s) that specify the detailed activities, resources, responsibilities, timescales and risks for the achievement of the asset management objectives. Asset management planning follows on from the strategic planning process.

Our Asset Management Framework

Our Asset Management Framework

Strategic Asset Management Plan

2022 Sustainability Highlights



Safety & Environment

Reducing Carbon Footprint

We continue to lower greenhouse gas emissions. We've reduced our carbon footprint by 50% since 2005, and we support New York's goal of a statewide net-zero economy by 2050.

Learn More

Safety & Environment

Electric Vehicles

We are at the forefront of the transition to electric vehicles. Our PowerReady program has supported the installation of more than 2,600 charging stations, and we're aiming for around 19,000 by 2025. We are also electrifying our fleet and became one of the first utilities in the country to take ownership of an all-electric bucket truck.

Learn More

Safety & Environment

Climate Resilience

Our Reliable Clean City transmission project will strengthen reliability in New York City while expanding the system for more renewable energy.

Learn More

Operational Excellence

Preventing Gas Leaks

We're the first utility to wrap pipes in carbon fiber, which makes the pipes stronger and protects against gas leaks.

Learn More

Operational Excellence

Reliability

The rate of outages for CECONY customers is eight times lower than the rest of New York and seven times lower than the national average.

Learn More

Operational Excellence

Protecting Information

We're committed to keeping your personal information safe. We're one of the first utilities to hire a Chief Privacy Officer.

Learn More

Customer & Community

We've Got the Power

We power the city that never sleeps. 44% of New York State's electricity is delivered by us.

Customer & Community

Energy Efficiency

Since 2009, more than 2.5 million customers have become more energy efficient through our programs and incentives.

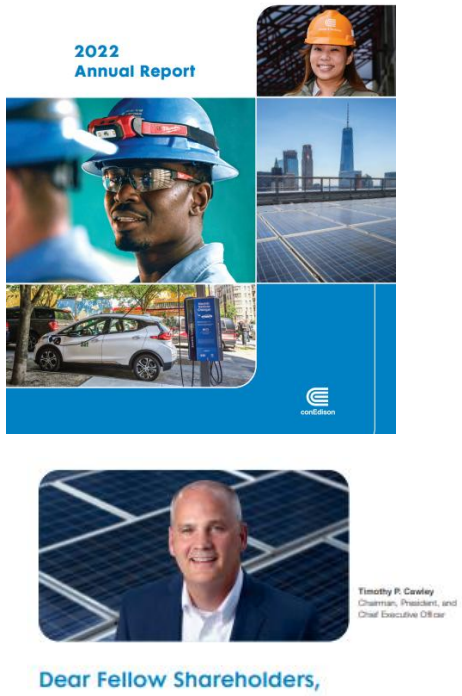
Learn More

Customer & Community

Good Neighbors

We partner with more than 800 nonprofits to enhance the wellbeing of the communities we serve.

Learn More



Timothy P. Cawley
Chairman, President, and Chief Executive Officer

Dear Fellow Shareholders,

Con Edison's mission statement is "To provide energy services to our customers safely, reliably, efficiently, and in an environmentally sound manner; to provide a workplace that allows employees to realize their full potential; to provide a fair return to our investors; and to improve the qualit of life in the communities we serve."

This Strategic Asset Management Plan (SAMP) applies to all transmission and substation assets and establishes the approach Consolidated Edison (Con Edison) Central Operations is taking to manage physical transmission and substation assets through their life cycle to achieve the desired future performance. This asset management strategy has been derived from the asset management policy and is aligned to both corporate and Central Operations guiding principles and core objectives.

Our three guiding principles are safety, operational excellence, and enhancing the customer experience.

- Safety is the foundation of all we do. We continue to strive for a zero-harm workplace. Simultaneously, we remain committed to keeping the public safe.
- Operational excellence is at our core. It is the rigor and procedures we use to design, build, operate and maintain our energy systems.
- Customer experience is our sightline. Seeing from the perspective of our customers allows us to create the best customer experiences.

Our core objectives strive to:

- Provide energy to our customers safely, reliably, and sustainably
- Cultivate a workplace that allows employees to realize their full potential
- Provide a fair return to our investors
- Improve the quality of life in the communities we serve
- Drive toward a clean energy, resilient electric grid

Our asset management vision is to attain the optimal performance balance of asset risk, performance, and cost. This vision is accomplished through an engaged workforce, a clear understanding of asset condition based on high quality data and a spirit of continual learning and improvement.

The Asset Management System (AMS) represents the management system (e.g., roles, responsibilities, processes, business practices, technologies) used to achieve the vision and strategic objectives for asset management.

This document was developed in a collaborative manner by Central Engineering Asset Management leadership with support from an external professional asset management consulting firm. This SAMP will be reviewed on an annual basis and updated as necessary by the Asset Management Department to remain aligned with company goals and objectives.

Our Asset Management Framework

Asset Management Policy Document

Central Operations Transmission and Substations Asset Management Policy

Our Commitment
This Asset Management Policy applies to all transmission and substation assets and associated activities. Central Operations leadership commits to applying an effective management system over the entire life cycle of these assets to meet the organization's business objectives. Our team members will be responsible for understanding and committing to this policy and will be supported, resourced, and trained to follow it.

Our Vision
The Asset Management Program is aligned with the Company's three guiding principles: safety, operational excellence, and enhancing the customer experience. Our core objectives strive to:
- Provide energy to our customers safely, reliably, and sustainably
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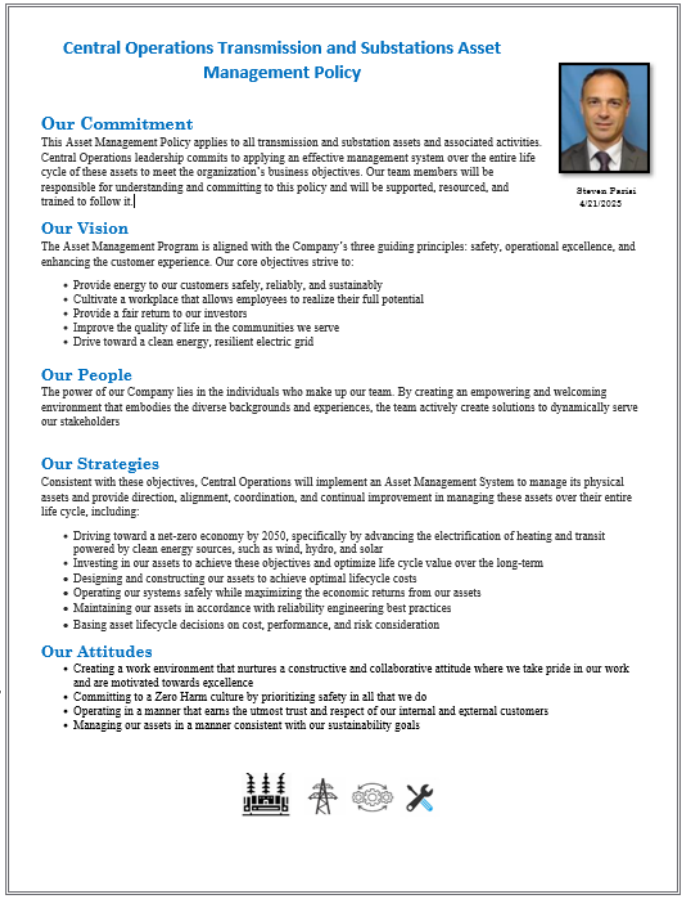
Our People
The power of our Company lies in the individuals who make up our team. By creating an empowering and welcoming environment that embodies the diverse backgrounds and experiences, the team actively create solutions to dynamically serve our stakeholders

Our Strategies
Consistent with these objectives, Central Operations will implement an Asset Management System to manage its physical assets and provide direction, alignment, coordination, and continual improvement in managing these assets over their entire life cycle, including:
- Driving toward a net-zero economy by 2050, specifically by advancing the electrification of heating and transit powered by clean energy sources, such as wind, hydro, and solar
- Investing in our assets to achieve these objectives and optimize life cycle value over the long-term
- Designing and constructing our assets to achieve optimal lifecycle costs
- Operating our systems safely while maximizing the economic returns from our assets
- Maintaining our assets in accordance with reliability engineering best practices
- Basing asset lifecycle decisions on cost, performance, and risk consideration

Our Attitudes
- Creating a work environment that nurtures a constructive and collaborative attitude where we take pride in our work and are motivated towards excellence
- Committing to a Zero Harm culture by prioritizing safety in all that we do
- Operating in a manner that earns the utmost trust and respect of our internal and external customers
- Managing our assets in a manner consistent with our sustainability goals


Central Operations Transmission and Substations Asset Management Policy

Steven Parisi
4/21/2025

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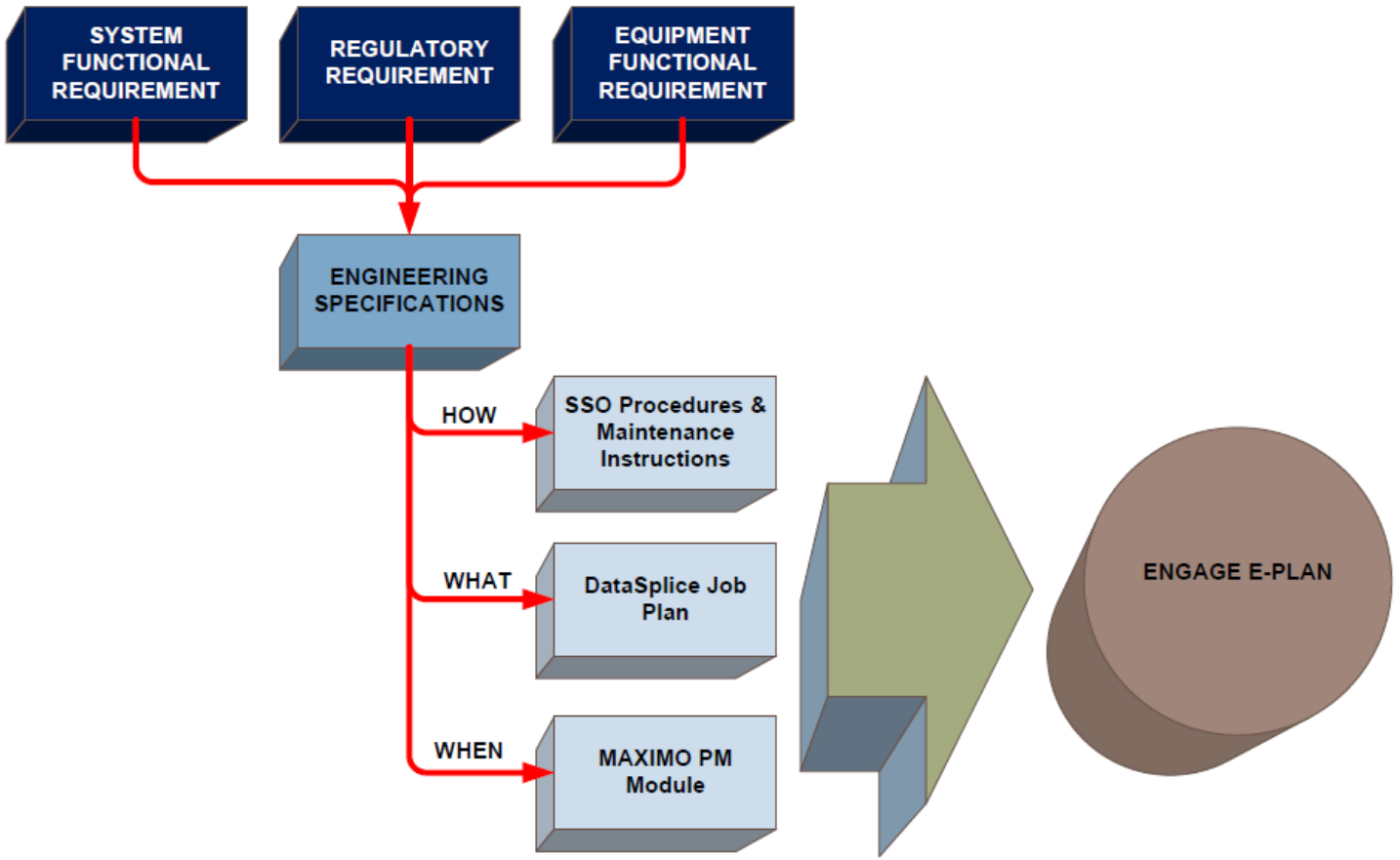
Our Asset Management Framework

Primary Initiatives and Roadmap

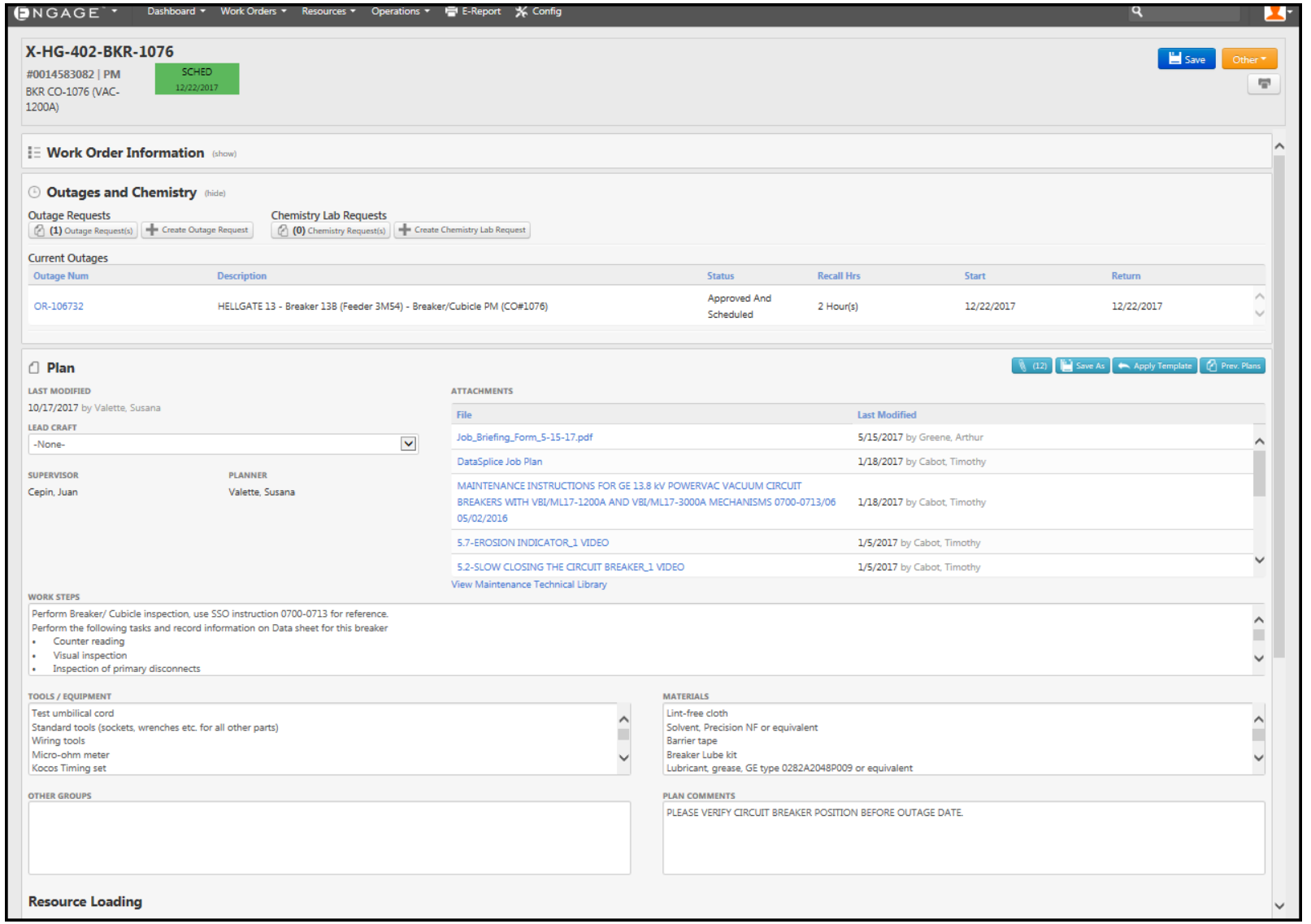
Description and high-level Roadmap showing the Asset Management domains, initiatives and the overall plan for achieving success in executing the Asset Management objectives.

#	Group	Initiatives	Deliverable(s)	2023	2024	2025	2026	2027
1	Strategy & Planning	Complete the Policy	Asset Management Policy					
		Complete the SAMP	Strategic Asset Management Plan (SAMP)					
		Develop AMPs	Asset Management Plans (AMPs) for critical asset categories					
2	Decision-Making	Complete the Value Framework	Updated Capital Investment Planning Processes					
		Develop performance management structure, metrics, improvement processes	Performance Management Framework					
3	Lifecycle Delivery	Create Asset Health Dashboards in PI	Developed Asset Health Indices					
4	Asset Information	Create Data Governance document for Maximo Administration	Developed Maximo Administration Procedure					
5	Organization & People	Review Roles & Responsibilities	RACI charts					
		Identify training requirements for AM department Personnel	Developed Training Matrix					
6	Risk & Review	Long term Asset replacement strategies	Updated AMPs with 5 -year look ahead					

Ensuring Data Quality: How did this work get to me?

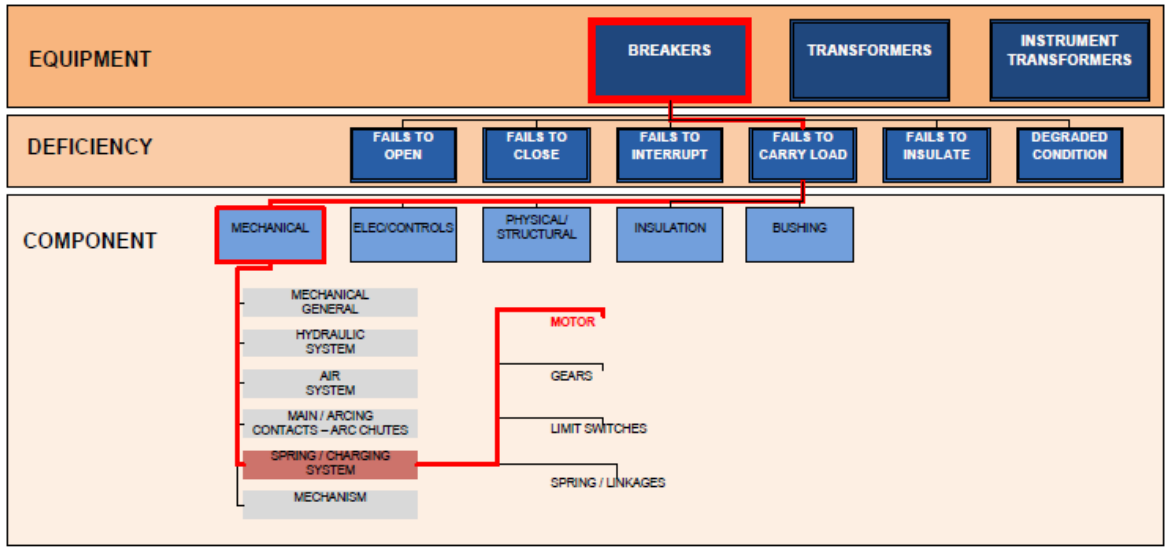


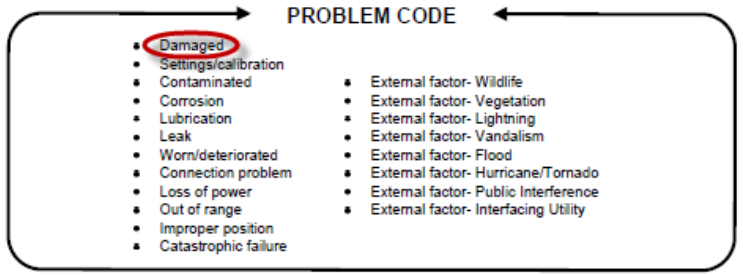
Ensuring Data Quality: ENGAGE Work Packages



Ensuring Data Quality: FMECA Failure Coding Structure

- **Example:** At 1641 hours, 69 kV Breaker 29 at Little River Substation opened automatically. No oscillograph operations were recorded. At 1810 hours Breaker 29 was cut back in restoring Feeder 54321. Hydraulic motor found to be failed (burned out). NOTE: As a follow-up to this, Engineering determined that the motor was replaced with an undersized motor in the recent past.





Ensuring Data Quality: Quality Documentation

The work that our crews do is IMPORTANT and VALUED

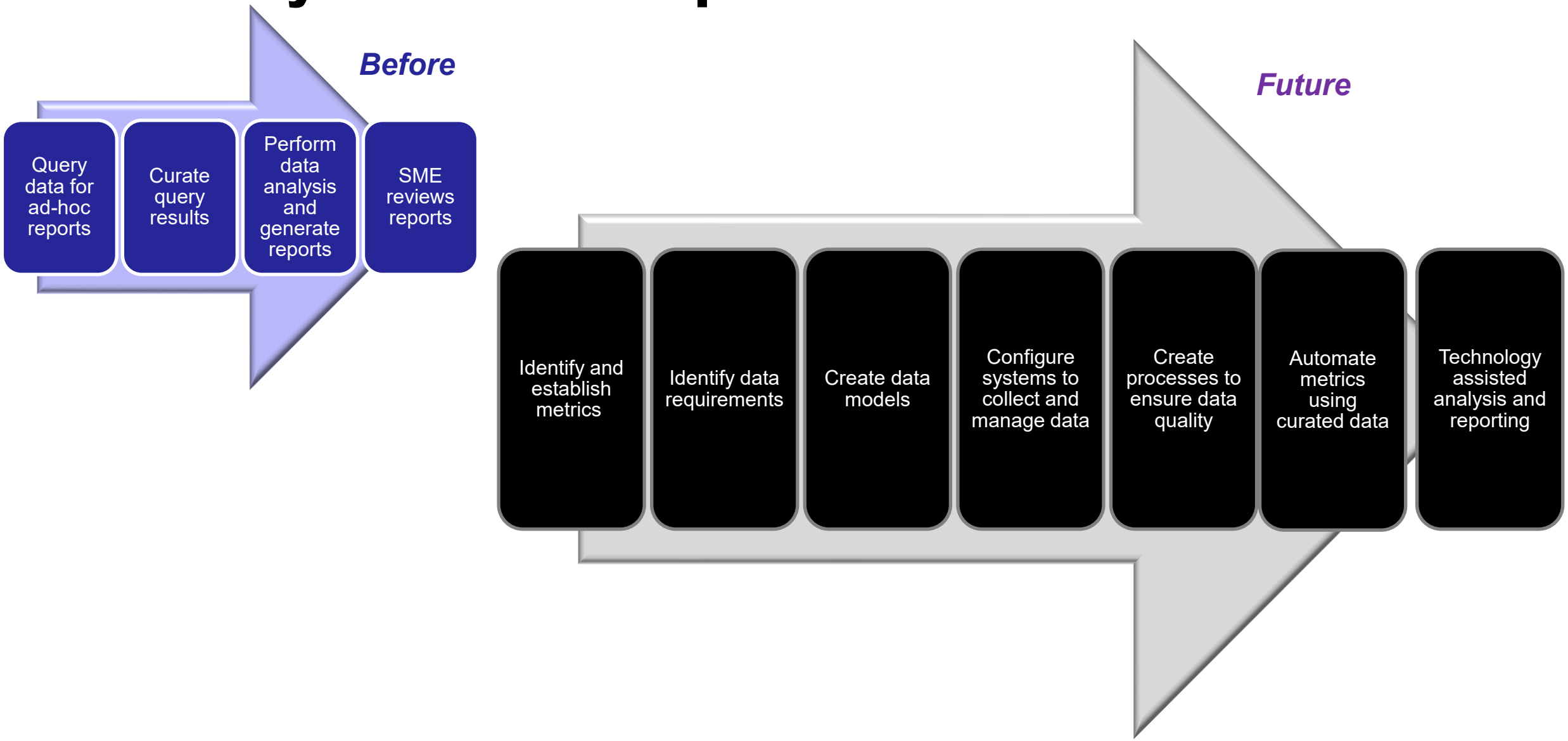
- Perform Work per Procedure / Instruction
- Provide Accurate and Detailed documentation
  - Clear / Complete details in Compliances
  - Detailed descriptions of deficiencies in new work orders

Inspection Detail Report

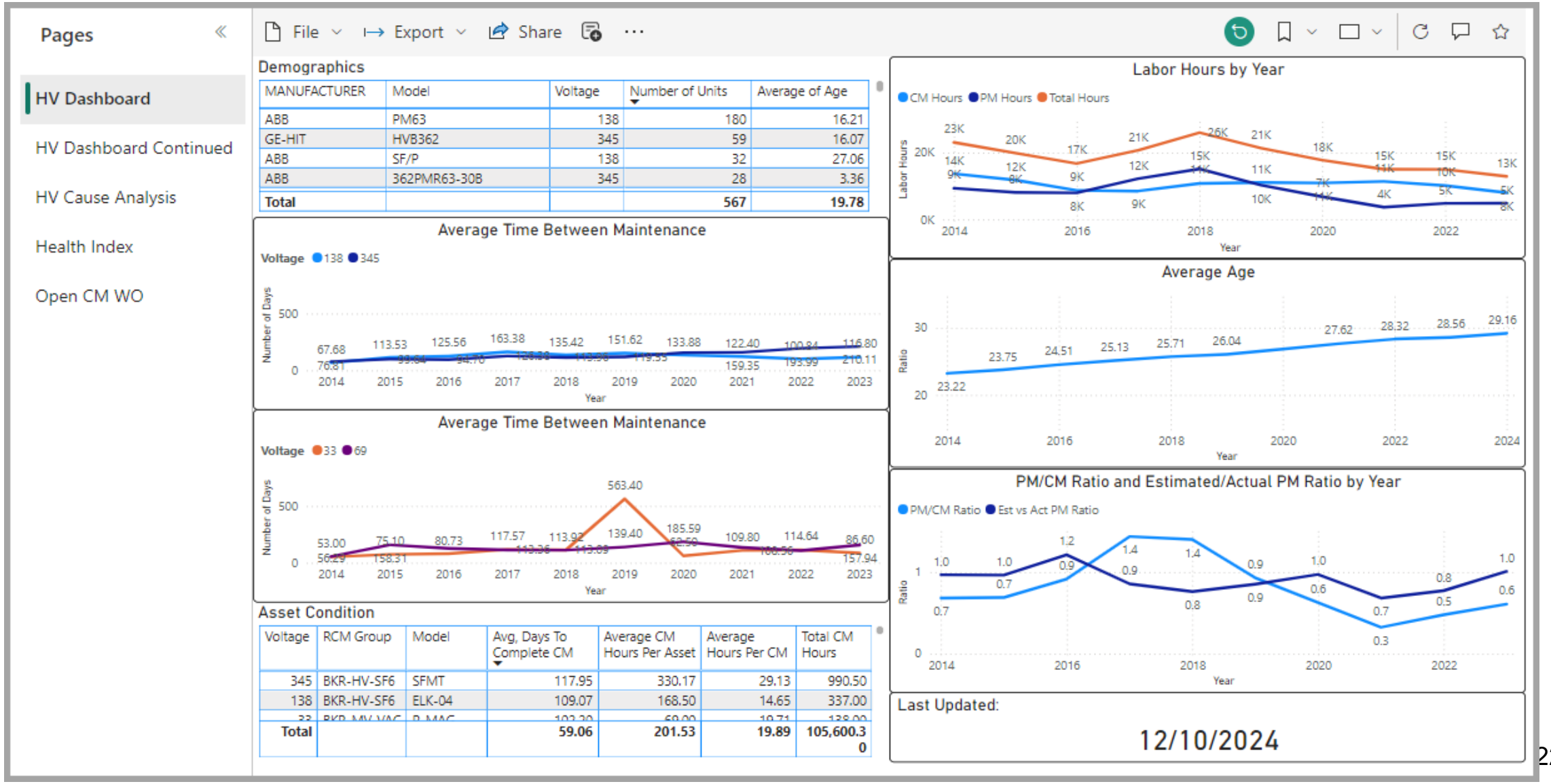
Work Order:	**0015412276** POS.BUS GROUND AND NEG.BUS GROUND ALARM UP	*Round/Job Plan:*	**SSO-DS-DFLT**
Responsible Person:	**Nova, Mark C**	*Inspection Date:*	**1/22/2018 4:27:37 PM - 1/22/2018 4:28:31 PM**
Work Type:	DCGRD	*Status:*	COMPFLD
Asset:	**DCS-0010682** FARR-D. C. SYSTEMS-#2-125V	*Location:*	**B-FAR-43-LB-DC-125-2** FARRAGUT DC LOAD BOARD #2 125V
Failure Class:			
Asset Category:	LOADBOARD *Model #:* LOADBOARD		

Name	Description	Reading
As Found	Enter the As Found condition: *Asset:**DCS-0010682 / FARR-D. C. SYSTEMS-#2-125V***	pulsating ground from zero to positive 6
Work Performed	Enter Work performed: *Asset:**DCS-0010682 / FARR-D. C. SYSTEMS-#2-125V***	The investigation of the ground on breaker 11W closing circuit led us to F house panel P61 and P62. We found that the cable between the two panel had a 100 ohms ground. A temperary jumper was applied and the -9 mA ground on the load board was reduce to -3mA. Maintenance then pulled a permanent cable and breaker tested ok from the mimic,the relay house and XA21
Parts Replaced	Enter any parts replaced: *Asset:**DCS-0010682 / FARR-D. C. SYSTEMS-#2-125V***	cable

Data Analysis Process Improvement



Leveraging Data: Asset Health Dashboards



Leveraging Data: Asset Health Dashboards

PM And CM Hours by Year And Model

Year	2019		2020		2021		2022		2023		Total	
Model	urs	CM Hours	PM Hours	CM Hours	PM Hours	CM Hours	PM Hours	CM Hours	PM Hours	CM Hours	PM Hours	CM Hours
PM63	761.50	2,350.00	2,151.00	1,325.50	476.00	2,276.50	489.00	1,921.50	1,073.00	1,623.00	6,950.50	9,496.50
HVB362	177.00	1,567.00	1,845.00	1,985.50	1,121.50	2,001.50	1,349.50	1,772.50	1,163.00	1,755.00	8,656.00	9,081.50
SF/P	327.00	478.50	94.00	608.50	200.00	1,115.00	443.50	1,333.50	528.00	1,646.50	1,592.50	5,182.00
PMC	162.00	800.50	499.00	1,507.00	108.00	290.00	0.00	1,467.50	264.00	159.50	1,033.00	4,224.50
PK4C	872.00	840.50	0.00	768.50	328.00	1,125.50	0.00	647.00	127.00	418.50	1,327.00	3,800.00
Total	**286.00**	**11,063.30**	**6,836.50**	**10,931.50**	**3,670.00**	**11,374.00**	**4,837.00**	**10,134.50**	**4,880.50**	**8,041.00**	**30,510.00**	

Oldest Breakers

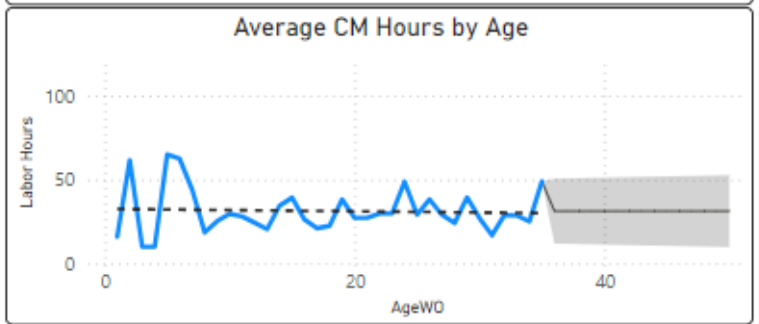
MANUFACTURER	Model	Voltage	ASSETNUM	LOCATION	INSTALLDATE	Age
ITE	KS	33	BKR-0003206	S-FH-76-BKR-11S	1/1/1961	63.00
ITE	KM	33	BKR-0003220	S-FH-76-BKR-3S	1/1/1962	62.00
SI	SP-38	33	BKR-0003203	S-FH-76-BKR-1S	1/1/1962	62.00
ITE	KM	33	BKR-0003223	S-FH-76-BKR-4S	1/1/1965	59.00
ITE	KM	33	BKR-0003256	S-FH-76-BKR-9S	1/1/1965	59.00
DE	PK4C	345	BKR-0000878	WN-BUC-696-BKR-7	7/1/1973	51.00
ITE	KB	33	BKR-0003140	S-FK-68-BKR-5S	1/1/1973	51.00
ITE	KB	33	BKR-0003143	S-FK-68-BKR-6S	1/1/1973	51.00
ITE	KB	33	BKR-0003155	S-FK-68-BKR-8S	1/1/1973	51.00
ITE	KB	33	BKR-0003164	S-FK-68-BKR-9S	1/1/1973	51.00
ITE	KSB	33	BKR-0003110	S-FK-68-BKR-10S	1/1/1973	51.00
Total						**52.59**

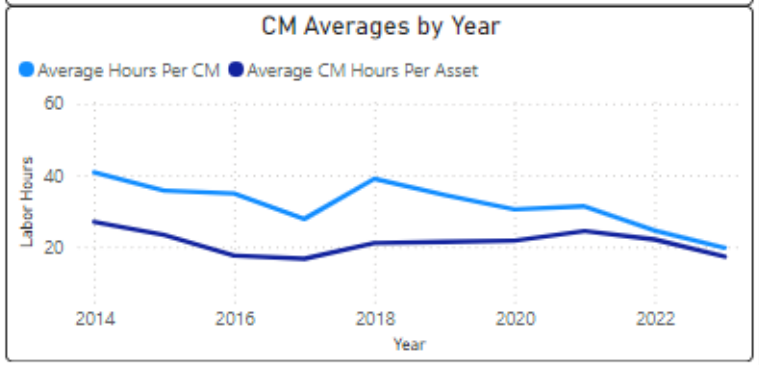
Maintenance Group Stats

Voltage	Maintenance Group	Average CM Hours Per Asset	Average Hours Per CM	Total CM Hours	Time Between Maintenance
33	BKR-ITE-KM	82.17	5.60	246.50	48.56
345	BKR-ABB-362PMR63-30B	57.95	21.93	1,622.50	52.57
33	BKR-ABB-R-MAG	69.00	19.71	138.00	55.40
345	BKR-DE-PK4C	677.33	30.79	2,032.00	66.64
33	BKR-ITE-KS	65.83	15.19	197.50	70.64
Total		**202.71**	**19.88**	**105,002.30**	**141.14**

Last Updated:

12/10/2024



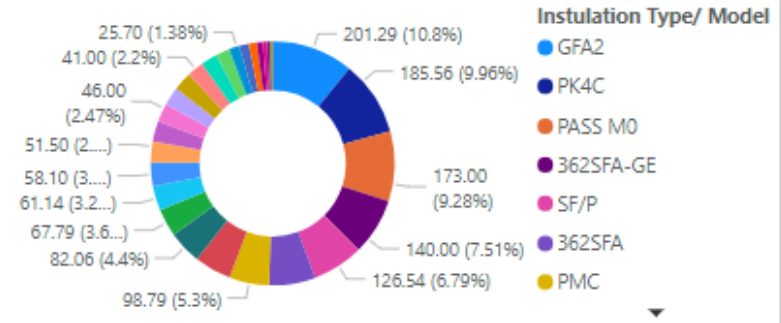


Leveraging Data: Asset Common Causes

Number of DataSplice Events by Component

Model	AC/DC Power	Aux/Relay Contacts	Cable / Wiring (General)	Cable / Wiring - Control Wiring	Control Cabinet	Heaters	Hydraulic System (General)	Insulation - SF6	Mechanism (General)	Pressure Switch	Total
PM63	3	5	11	7	5		15	138	4	4	**192**
SF/P	2	3	1	4		3	24	62	7	2	**108**
HVB362	7	9	7	3	4	15		39	3	5	**92**
Total	**17**	**39**	**28**	**21**	**16**	**46**	**54**	**371**	**21**	**20**	**633**

CM Hours Per Breaker by Model and Location



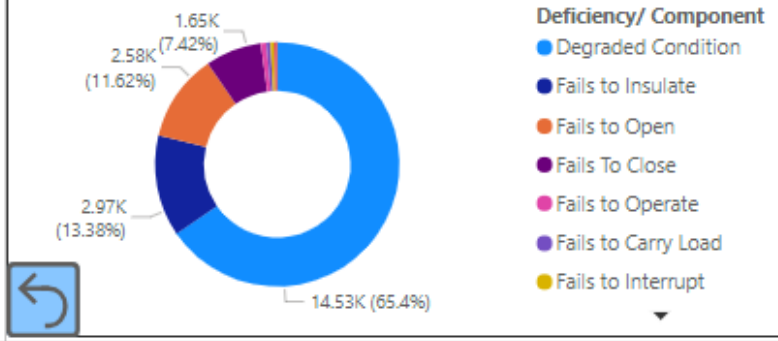
Last Updated:

12/10/2024

DataSplice Events For Top Ten Models by Component Category

Model	Bushing	Elec / Controls	Insulation	Mechanical	Physical / Structural	Total
362SFA			5	1		**6**
362SFA-GE			4			**4**
FX-22D		16	27	5	2	**50**
GFA2		5	7	3	3	**18**
HVB145		7	9	2		**18**
HVB362	1	55	39	23	5	**123**
PASS M0		3				**3**
PK4C		13	1	12	2	**28**
PMC		8	21	2		**31**
SF/P	2	21	64	42	1	**130**
Total	**3**	**128**	**177**	**90**	**13**	**411**

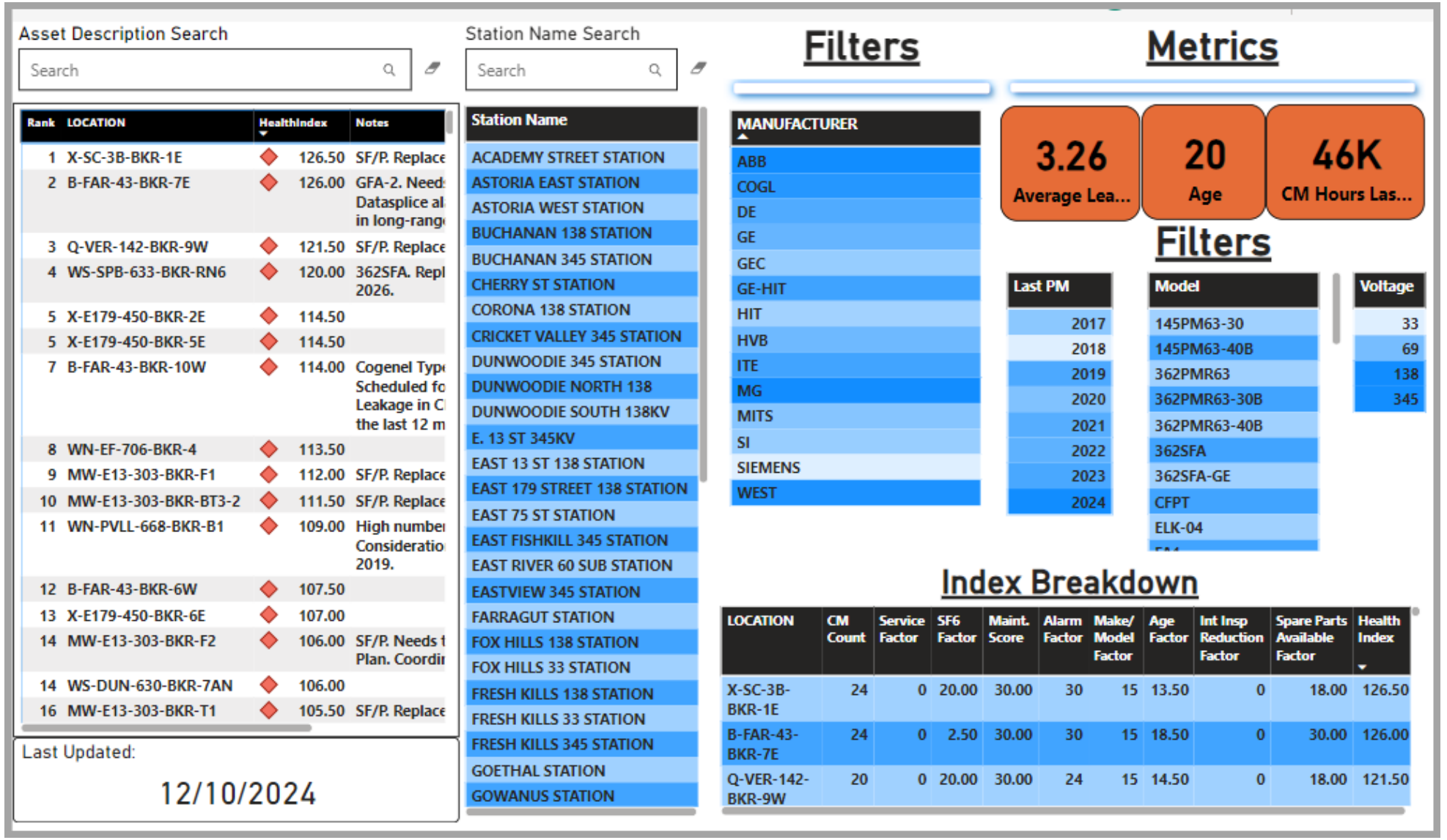
Total CM Hours by DataSplice Deficiency and Component



Most Common Problem Codes

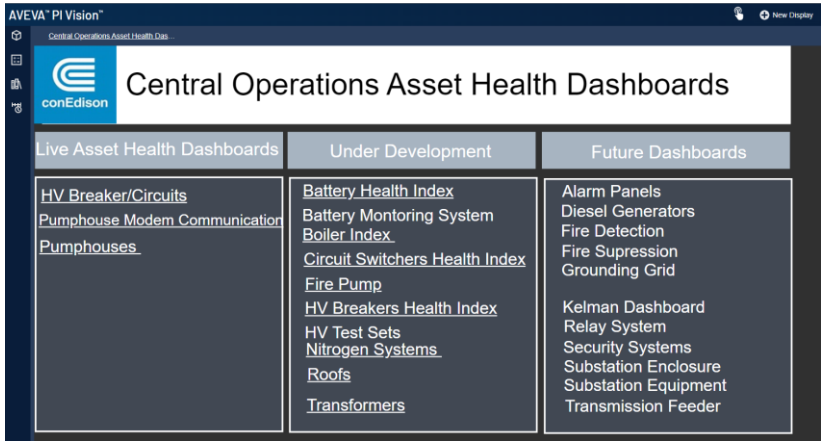
Model	Damaged	Leak	Out of Range/Calibration	Settings	Worn/Deteriorated	Total
PM63	18	116	34	15	16	**199**
SF/P	8	76	13	5	10	**112**
HVB362	24	16	21	9	16	**86**
FX-22D	3	21	5	3	7	**39**
FA2	4	12	11	2	7	**36**
PMC	2	15	7		1	**25**
GB MODEL C	6	7	4	3	4	**24**
PK4C	4	4	4		9	**21**
Total	**96**	**311**	**120**	**46**	**92**	**665**

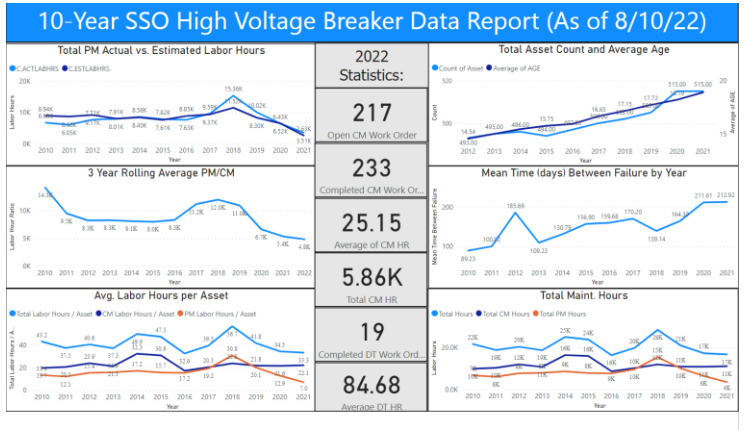
Leveraging Data: Asset Health Indexes



Asset Management Plans

Asset Management Plan	AM&TD	Capital Strategy	Equipment & Field Engineering	SSO
High Voltage Breakers	Zach Matthews	Erick Diaz	Joseph Feretti - John Bruff - Siarhei Stupakou	John Murphy - Gregory Jimenez
Medium Voltage Breaker	Zach Matthews	Erick Diaz - JinMing Liu	Amadou Diallo - Stephen Samaroo - Sergio Tapias	John Murphy - Duane George
Cap Banks	Wing Wu	Erick Diaz - JinMing Liu	Vincent Coulehan - Joseph Feretti	John Murphy - Vincent Tarantino
Transformers	Dana Dang- Scott Carol - Jarmal Johnny	Erick Diaz - JinMing Liu	Anastasia O'Malley - Duane Leslie - Amit Kumar Singh	Paul Panico - Joby Geevarghese - Shahar
DC Systems	Lina Cossio	Erick Diaz	Joseph Feretti - John Bruff - Rico Saint Juste	Alex Waisman
Circuit Switchers	Wing Wu	Erick Diaz	Stephen Samaroo - Vincent Coulehan	John Murphy - Gregory Jimenez
Disconnect Switches	Mohamed Elsayed	Erick Diaz - Razib Hasan	Stephen Samaroo - Duane Leslie - Amadou Diallo	John Murphy - Gregory Jimenez
GIS - W49th & Dunwoodie	Wing Wu	Erick Diaz - JinMing Liu	Stephen Samaroo - Rupert Wade - John Bruff - Siarhei Stupakou	Steve Bryan - Dominic Slockbower - John Murphy
Syn Bus	Lina Cossio	Erick Diaz - JinMing Liu	Stephen Samaroo - Rupert Wade	Juan Otero - Vincent Tarantino - Brian Brush
OSME Equipment	Mohamed Elsayed - Pamal Ramrup	Erick Diaz	Dave Isaacs - Amjad Merchant (SPEED)	Vincent Tarantino - Susana Valette
Relay Systems	Zach Matthews – Jarmal Johnny	Erick Diaz - Razib Hasan	Benny Varughese - Naveen Manikarnika (Relay Performance)	Grey Kingsley - Tabitha Rivera - Diego Pichardo
Dielectric Facilities	Mohamed Elsayed	Erick Diaz - Alexandra M Owensby	Lloyd Blackwood - Sisenandi M Tobias	Vincent Tarantino - Chris Galban - Vernon Schaefer
Diesel Generators	Zach Matthews	Erick Diaz	Adnan Baksh	Vincent Tarantino - Chris Galban





Asset Management Plans

Table of Contents

Welcome to our High Voltage Breaker Asset Management Plan, a comprehensive and strategic document designed to optimize the performance, reliability, and longevity of high voltage (HV) breakers within our electrical power infrastructure.

The purpose of this Asset Management Plan is to outline a systematic approach to effectively manage substation HV breakers throughout their entire life cycle. By implementing best practices, leveraging innovative technologies, and adhering to industry standards, this plan seeks to maximize the value of HV breaker assets.

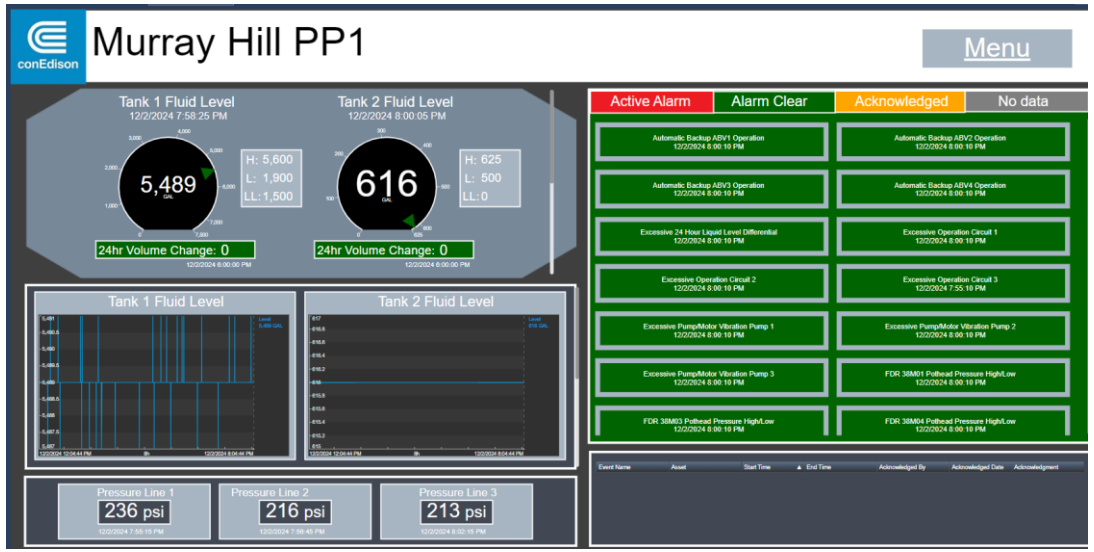
In this document, we will provide an in-depth overview of our HV breaker asset inventory, including classification based on ratings, configurations, and operational locations. We will detail the maintenance and testing strategies employed to ensure the optimal operation and performance of HV breakers, minimizing downtime and preventing untimely failures.

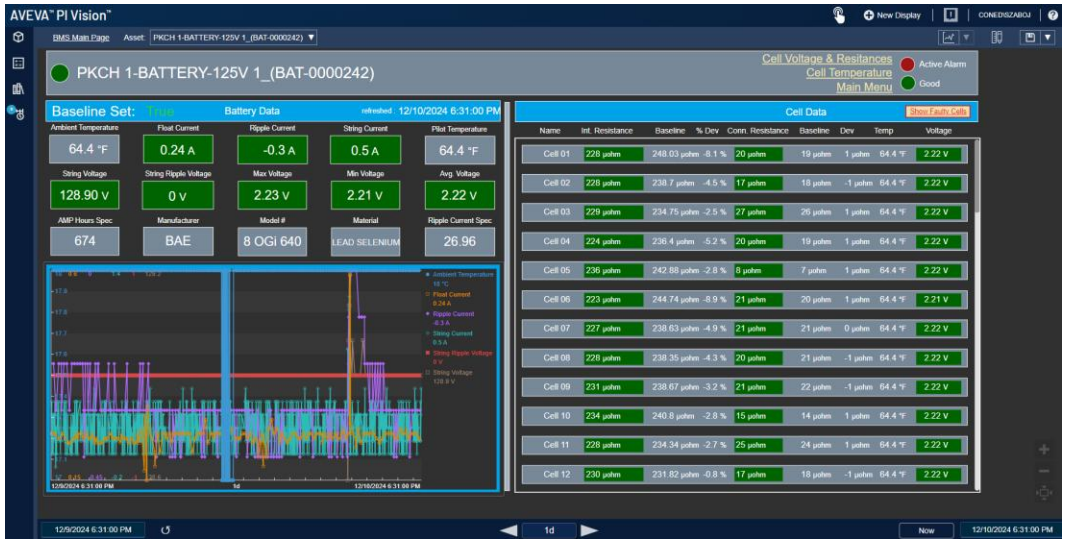
This document emphasizes data-driven decision-making to assess the health of HV breakers in real-time. This enables predictive maintenance, risk-based interventions, and timely responses to potential issues, ensuring the continuous and reliable operation of our electrical power infrastructure.

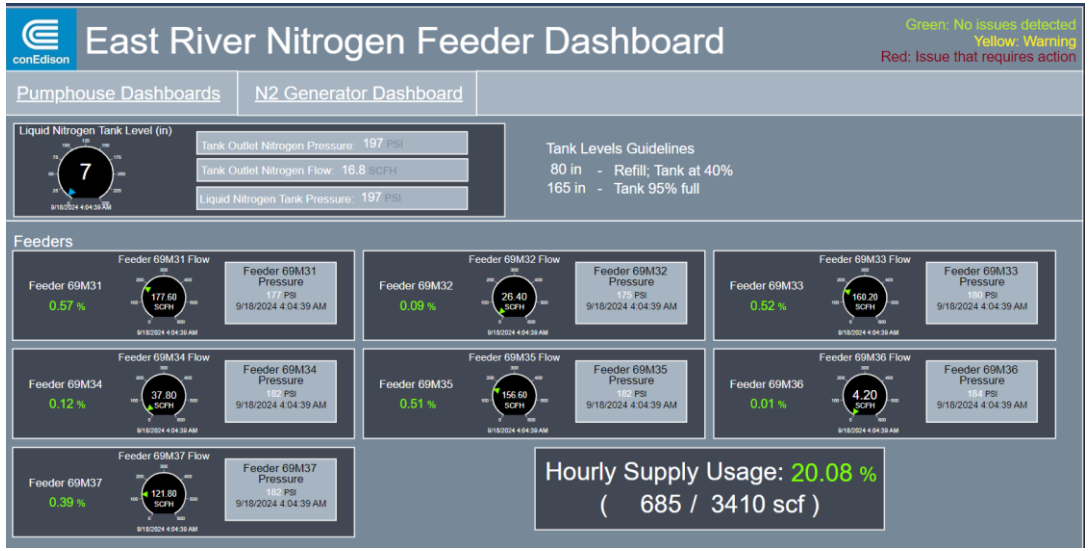
As technology and industry standards evolve, this Asset Management Plan will be regularly reviewed and updated to incorporate the latest advancements and best practices. Our commitment to continuous improvement will enable us to maintain a reliable and resilient electrical power system.

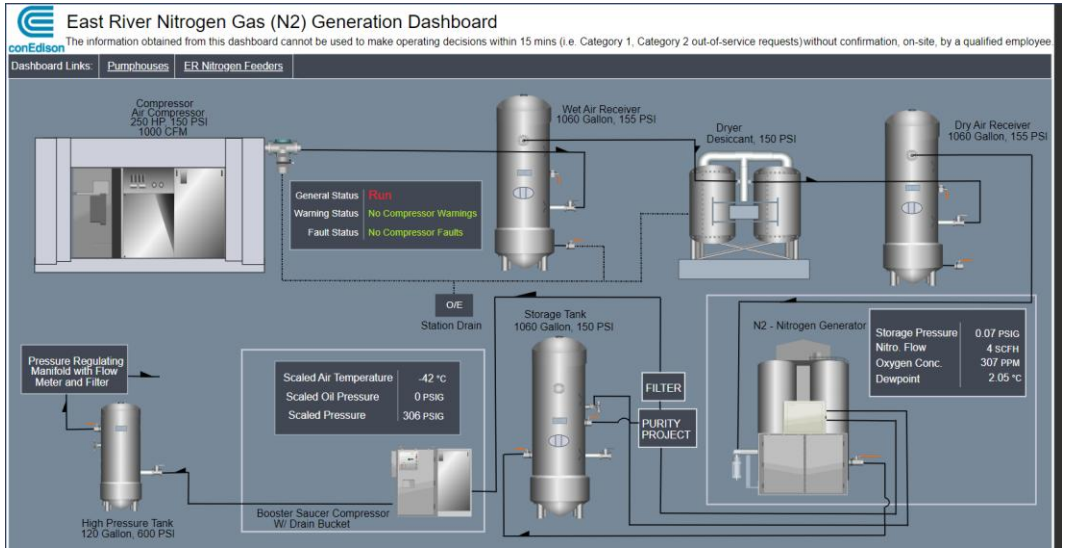
The goals of the HV breaker asset management plan can be located further in this document (link).

Dashboards - - Building Visibility









Implementing Innovations: Leveraging Machine Learning

Maintenance Scheduling Optimization with AI

Minimize the weighted sum of:

- The time from backlog entry to completion for all non-PM jobs
- The time between completion and target deadline for PM jobs

$$\underset{\mathbf{x},\,\mathbf{z},\,t^c}{\text{minimize}} \sum_J h_J n_J 10^{6-p_J}\left[\left(1-y_J^{PM}\right)\left((1.000J')t_J^c - d_J^e\right) + y_J^{PM}\left(d_J^d - (1.000J')t_J^c\right)\right]$$

J = job number

J' = number of jobs $- J$

Input Parameters

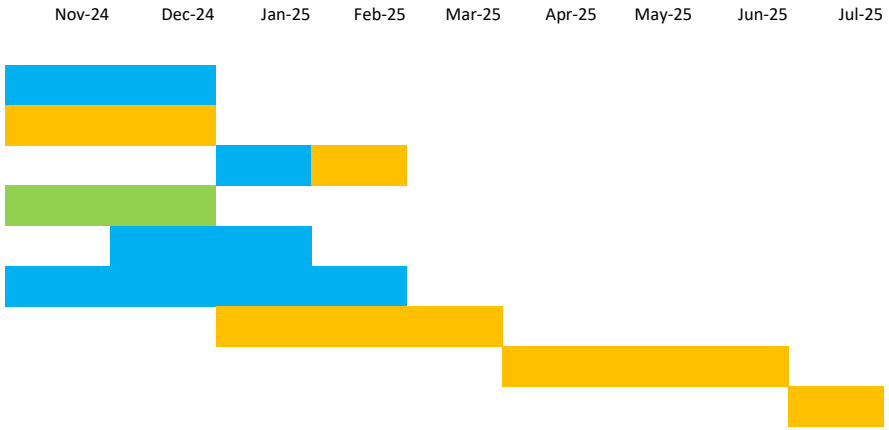
p_J = job priority
h_J = job duration
n_J = crew size
d_J^e = entry date of job
d_J^d = due date of PM job
y_J^{PM} = 1 if preventive maintenance (priority 4); 0 otherwise

Implementing Innovations: Leveraging Machine Learning

Capital Portfolio Optimization

- Reduced Switching to complete Capital and O&M Work
- Efficiency attaining outages for Capital Work
- Reduction of Corrective Maintenance Backlog
- Incorporating a Value Framework for Capital Work
- Meeting our PSC commitment
- Identifying Capital Project bundling opportunities

Steps	
Establish Value Framework	Done
Incorporate Network Reliability Index from TPRA	Pending Cap Strategy - December 24
Build module in Engage TEST	Currently building in Lower Environment December 24
Test functionality and build module in Engage PROD	After Dev build, weekly workshop meetings to test. Migration to PROD Feb 24
Input sources for Optimization	Had multiple Data Gathering Sessions December 24
Requesting establishing Outage Requests on all Outage constraint Projects	Meeting with System Operations on January 25
Project Administration house keeping	Commmnicate expectations to Project/Program Managers for completion by February 24
Optimization Phase I	Optimize Projects with Existing Outage Requests
Optimization Phase II	Optimize Projects for all Projects in 5 - year portfolio
Update Project Management COP	TBD



Questions / Comments / Concerns

Shaun Ramkishun

Section Manager
conEdison – Central Operations
Asset Management - Maximo COE / Technology Development
Cell: (646) 740-7477

Joe Szabo

Section Lead
conEdison - Central Operations
Asset Management - Reliability Engineering
Cell: (845) 242-6238