VX Platform

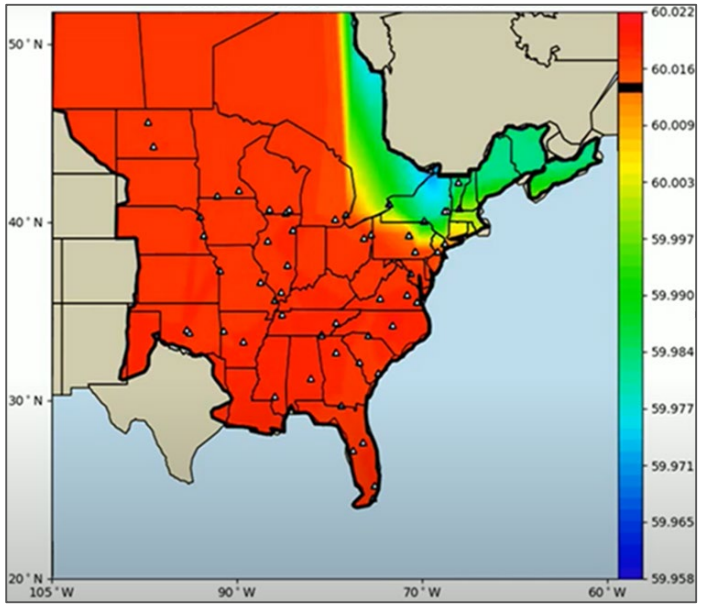
Vermont System Planning Committee
January 24, 2024

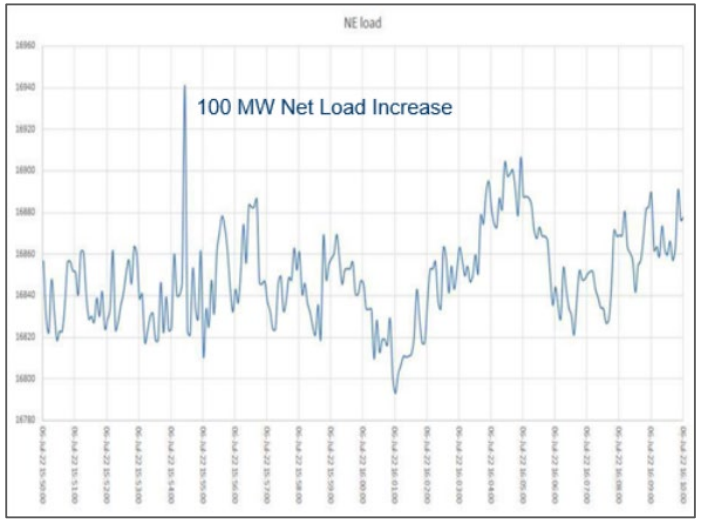
Overview

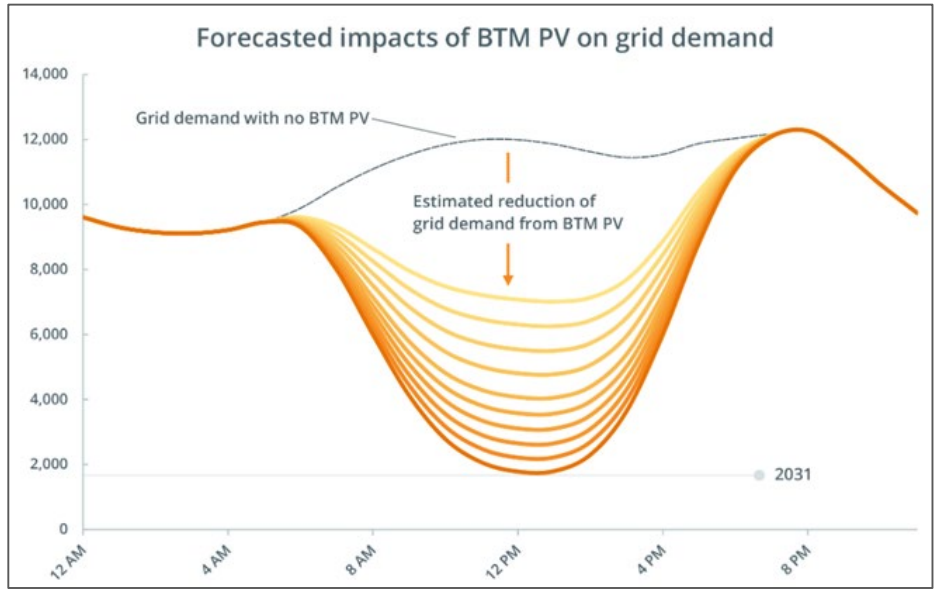
- Increasing Grid Complexity
- Current Grid Data Exchange
- Vermont Exchange (VX) Platform
  - Network Model Management & Time Based Modeling
  - 2024 Implementation
  - VX Commissioning
- FERC Order No. 901

Increasing Grid Complexity

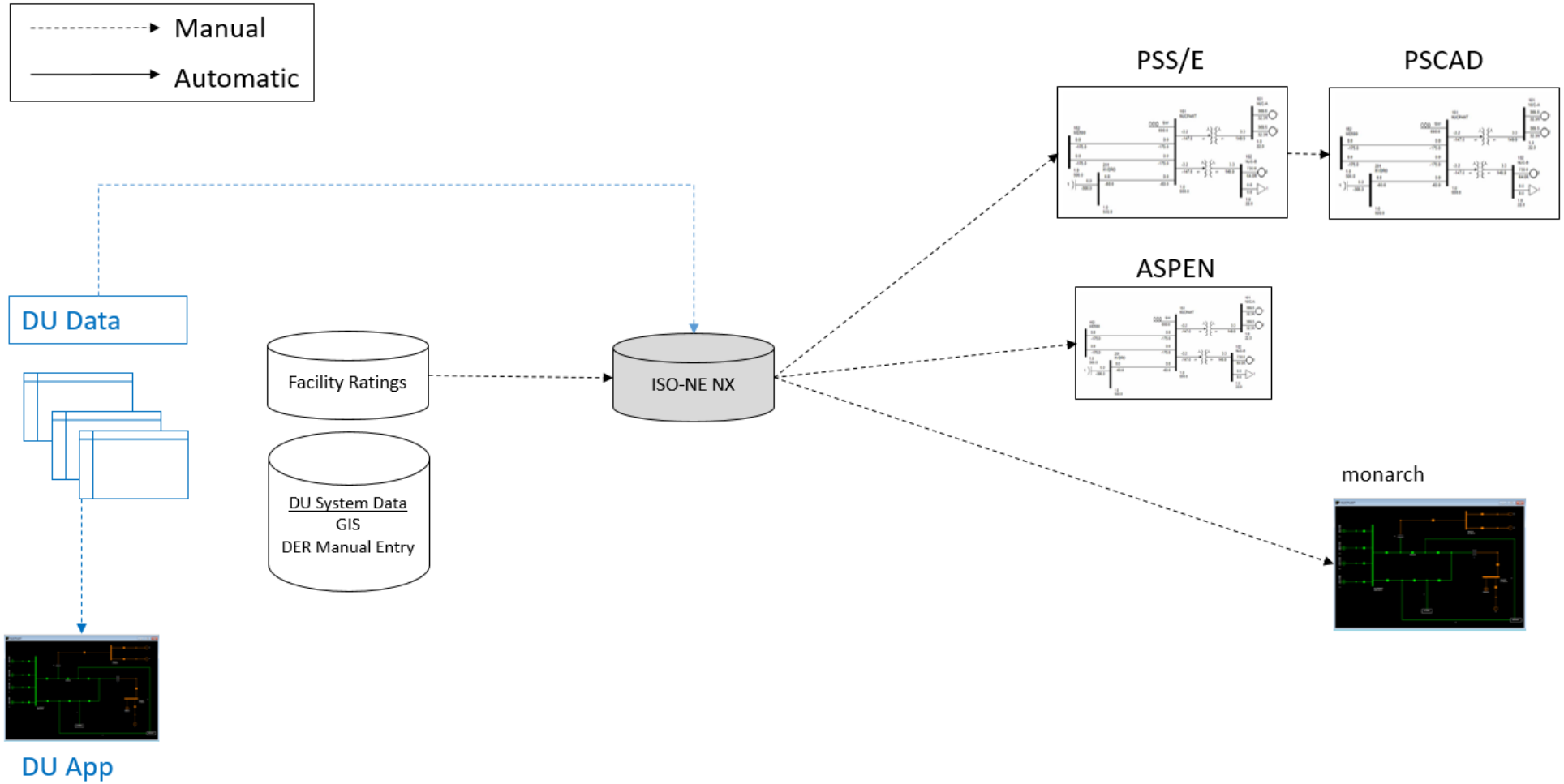
- Environment
- Policy
- Regulation
- Technology
- Physics





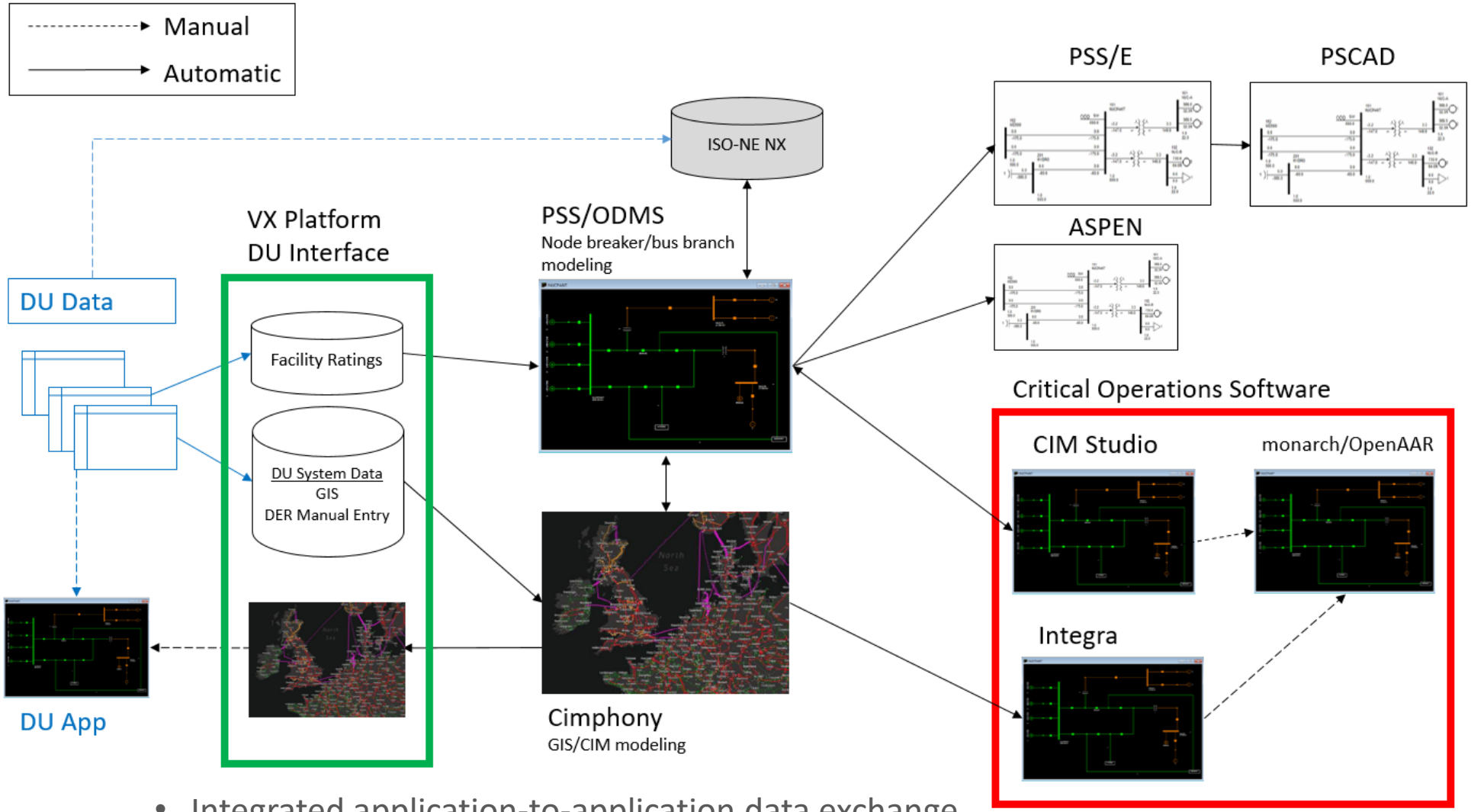


Current Grid Data Exchange



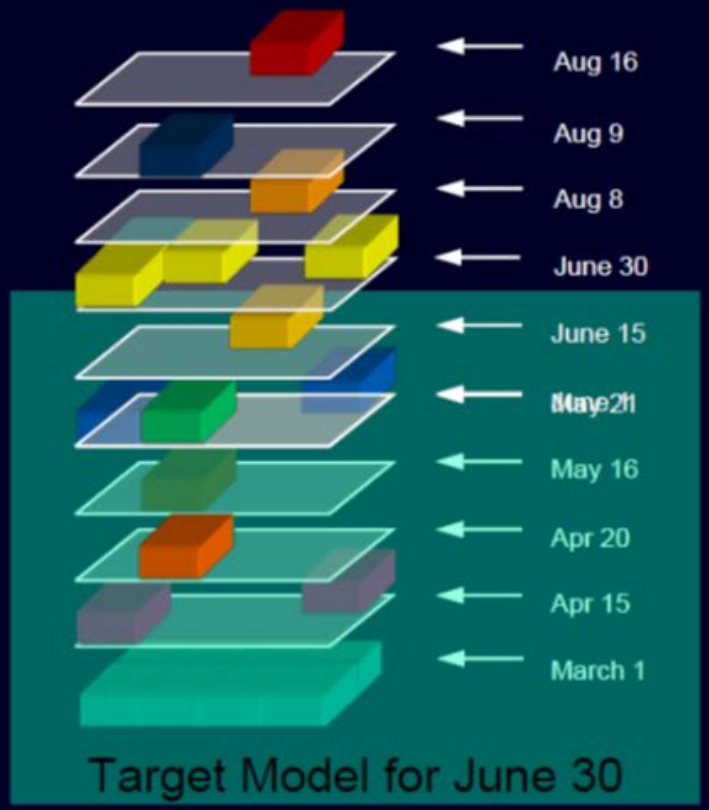
- Data exchange siloes
- Manually intensive validation processes
- Architecture not scalable to meet known emerging requirements

Vermont Exchange (VX) Platform



- Integrated application-to-application data exchange
- Automated and supportable processes
- Scalable architecture to meet known emerging requirements

Historical Time Based Model
Base Model Plus "Projects" and "SubProjects"



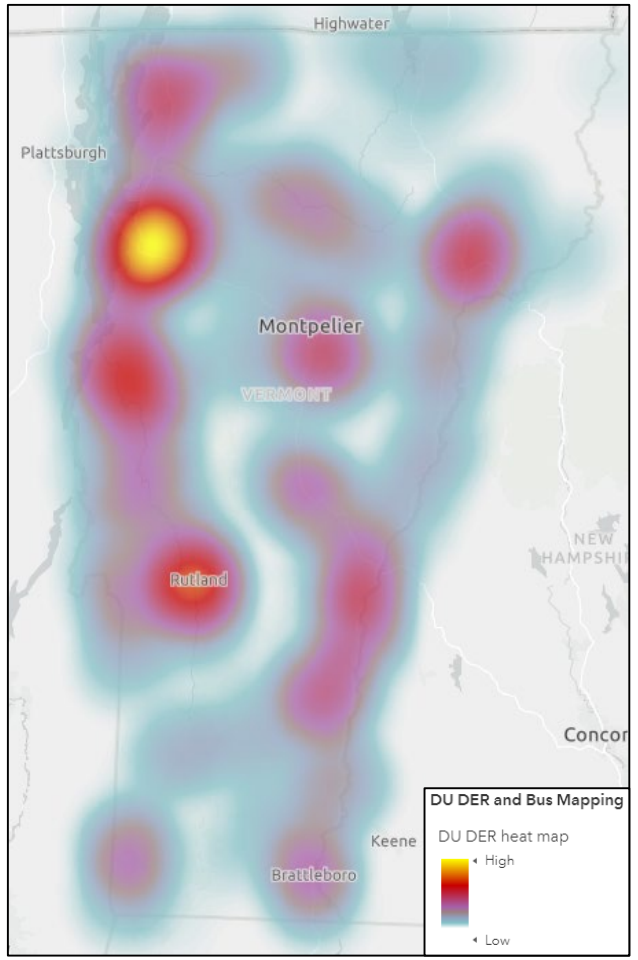
- Model is based on a base model plus changes ("Projects" or "Subprojects")
- Target model at any point in time is base model plus applicable Projects/Subprojects
- Existing projects can be
  - Changed
  - De-commissioned
  - Inserted
- Time based models available for
  - Operations models
  - Planning models

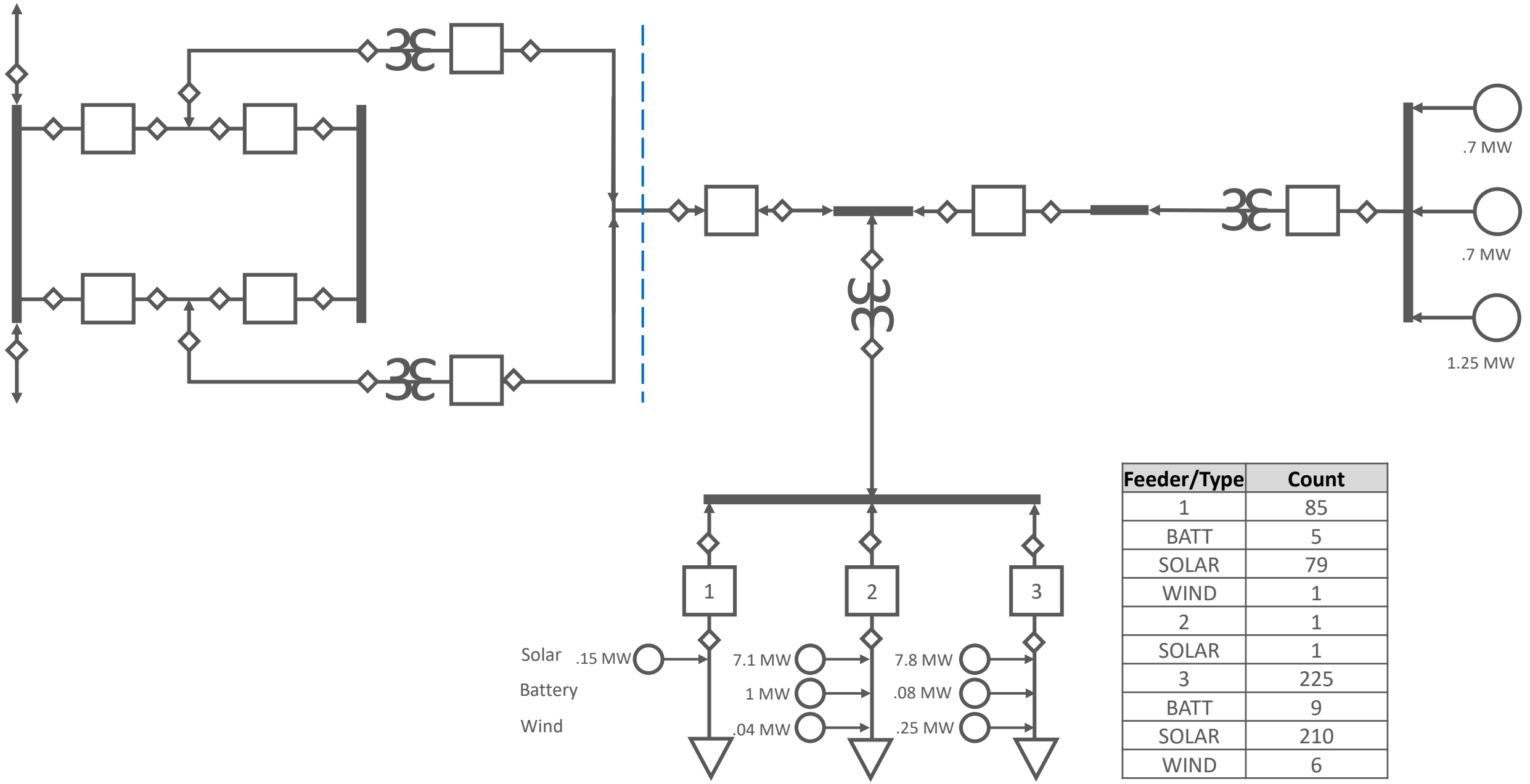
SIEMENS

VELCO

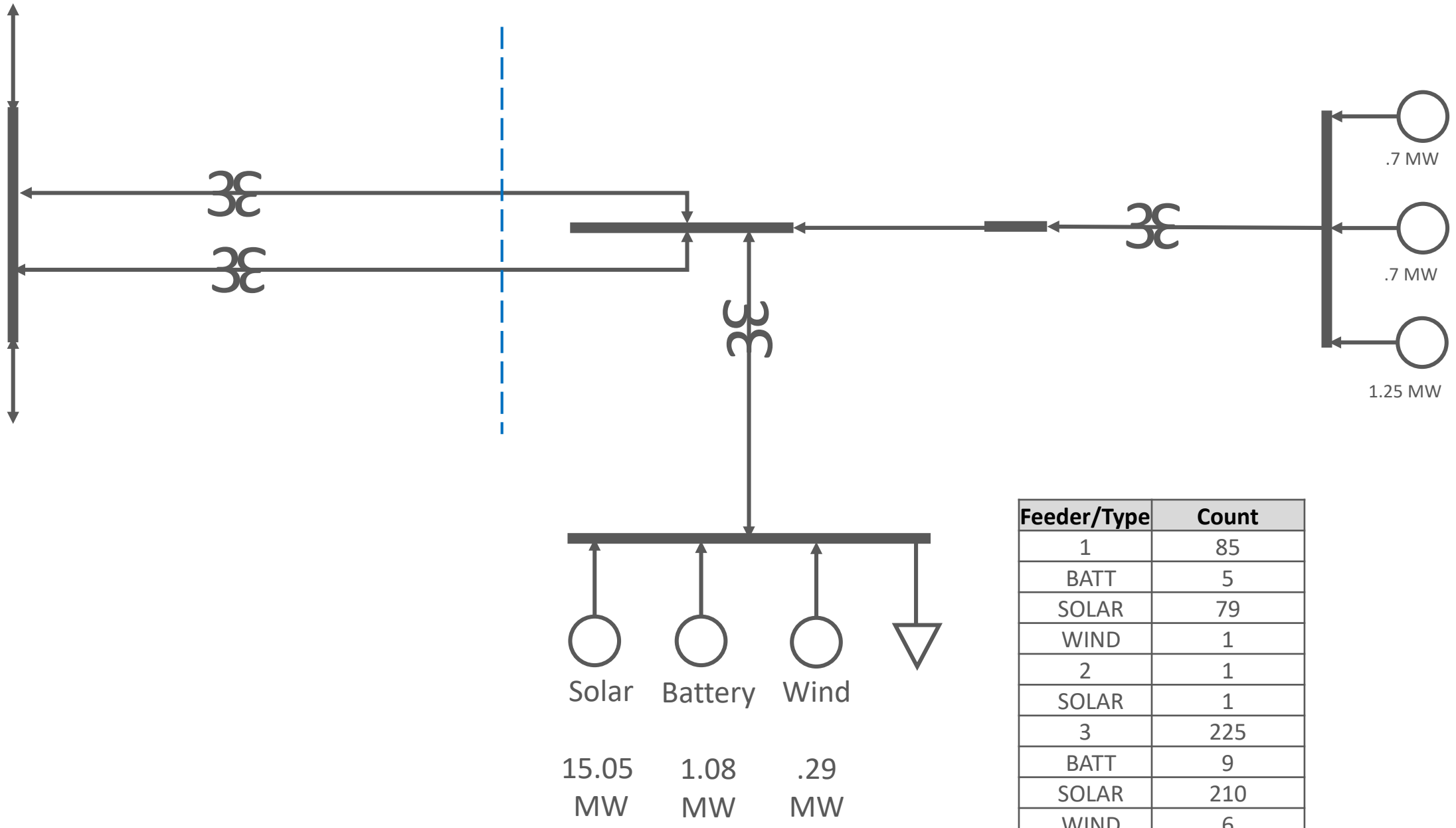
Vermont Exchange (VX) Platform – Implementation

- Proof of concepts and due diligence complete for core Network Model Manager (NMM) platform
- Energy Management System (EMS) DER monitoring tool planned for 2024 implementation
- Release 1: Facility Ratings
  - VX workshops coordinating sub-transmission facility ratings solutions with registered distribution providers (GMP and VEC)
- Next stage: VX workshops coordinating DER data sharing with GIS in April 2024





Feeder/Type	Count
1	85
BATT	5
SOLAR	79
WIND	1
2	1
SOLAR	1
3	225
BATT	9
SOLAR	210
WIND	6



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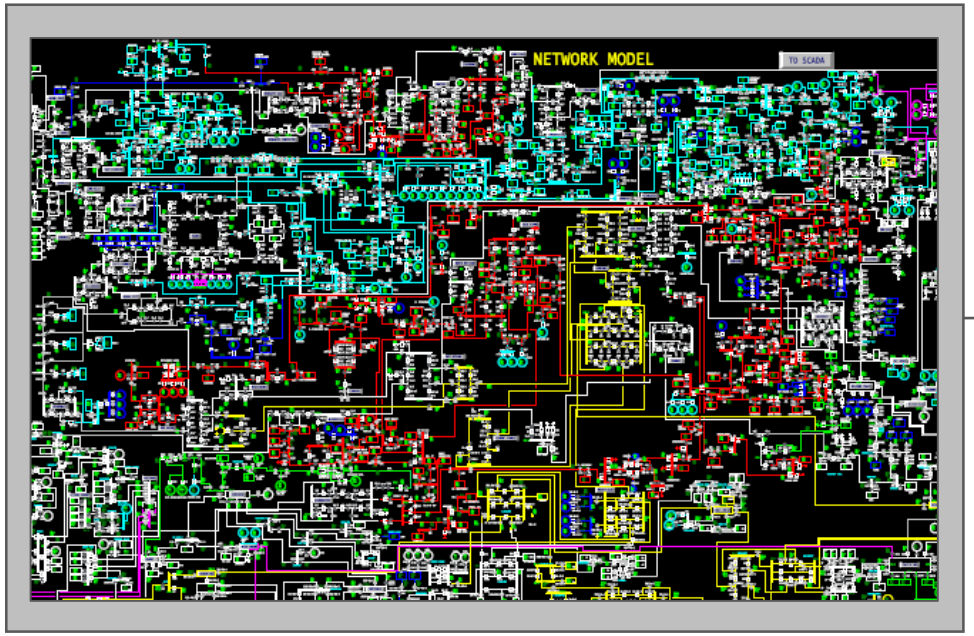
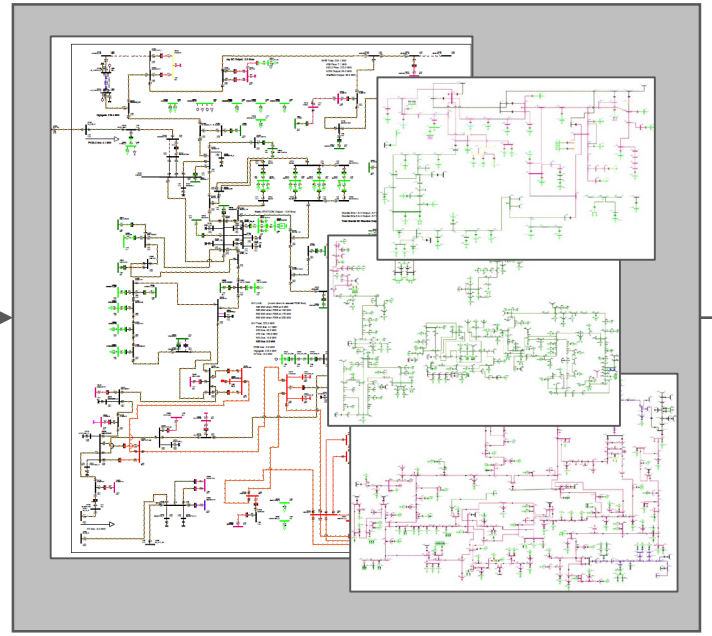
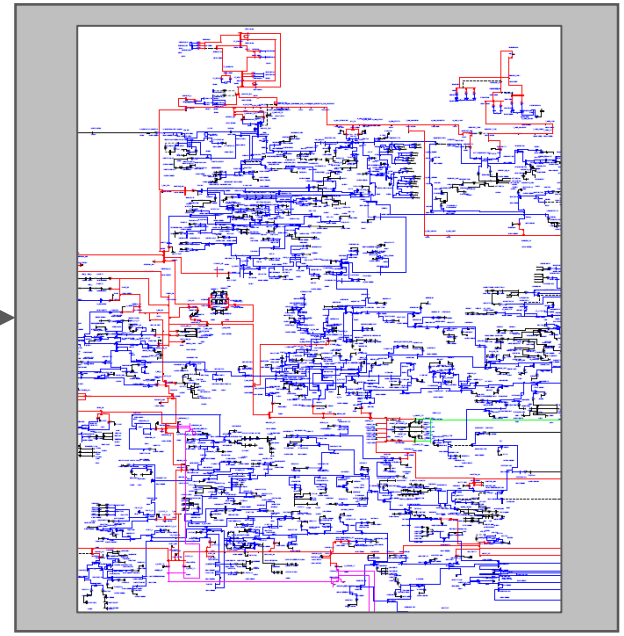
VX Platform Commissioning



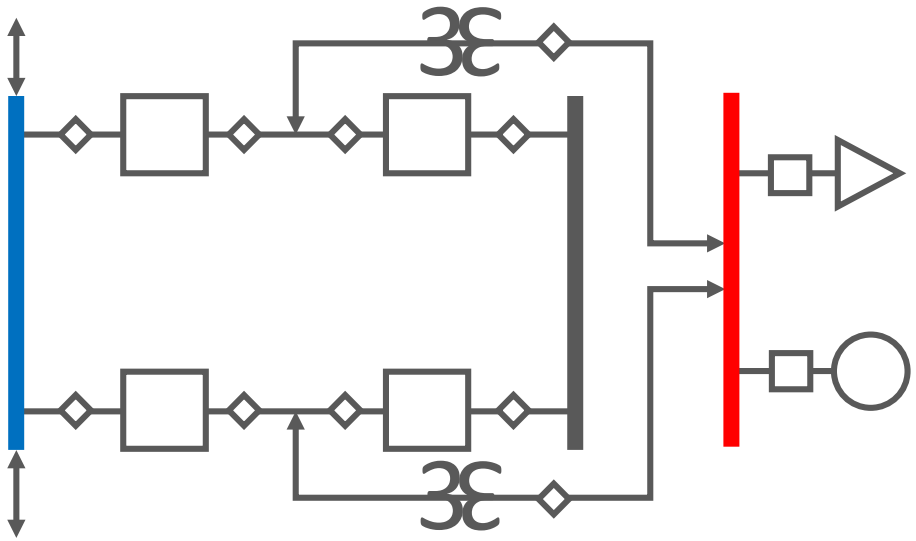
Operations – Node Breaker

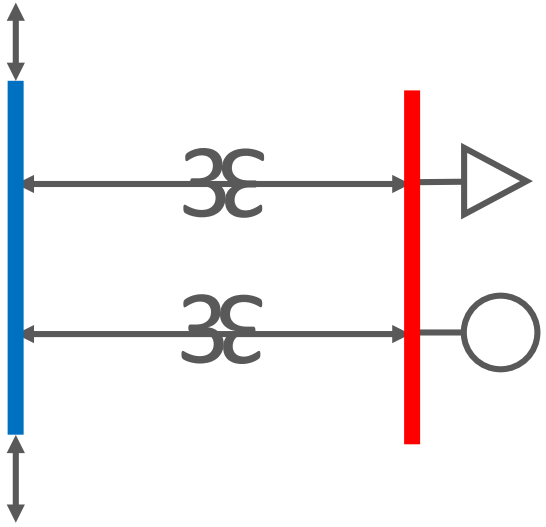


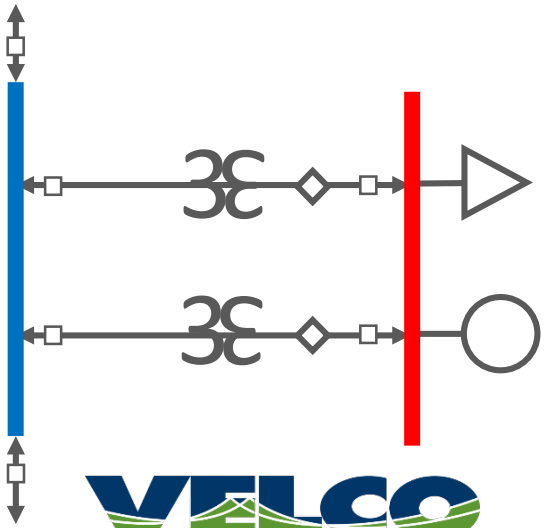
Planning – Bus Branch



Engineering – Protection





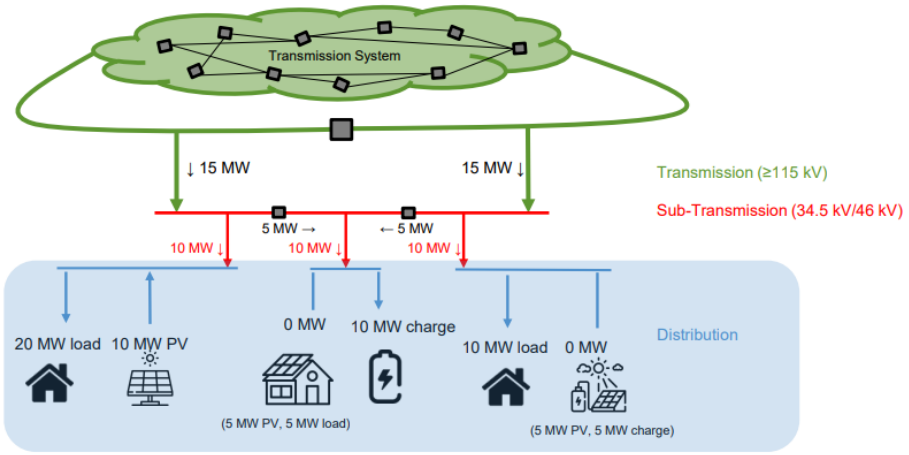


VX Platform Commissioning Criteria

- ❑VELCO **does not** (and will not) have control of any distribution assets or distributed energy resources, including inverter-based generation and flexible load
  - ➢Evidence: SCADA/EMS control points
- ❑VELCO **does not** (and will not) have personally-identifiable customer information in VX Platform
  - ➢Evidence: Database fields
- ❑VELCO **does** have operational reliability parameter and sensor data to perform transmission functions required as a NERC-registered Transmission Operator
  - ➢Evidence: Database fields, SCADA/EMS analog and indication points
- ❑VELCO **does** have network model parameter and sensor data to perform transmission functions required as a NERC-registered Transmission Planner
  - ➢Evidence: Database fields, SCADA/EMS analog and indication points

FERC Order No. 901

- Issued Oct. 2023 and directs NERC to finalize and propose for FERC approval reliability standards that address inverter-based resources



- NERC required to submit new standards to FERC:

  November 2024 →Ride Through Performance – IBR

  November 2025 →Model Validation – IBR and Aggregate IBR-DER

  November 2026 →Contingency Analysis – IBR and Aggregate IBR-DER

- FERC: *"We believe that there is a need to have all the directed Reliability Standards effective and enforceable well in advance of 2030."*

Thank you