



Substation Condition Assessment Project Update

vermont electric power company



Operating Committee

March 17, 2022

North Rutland Substation

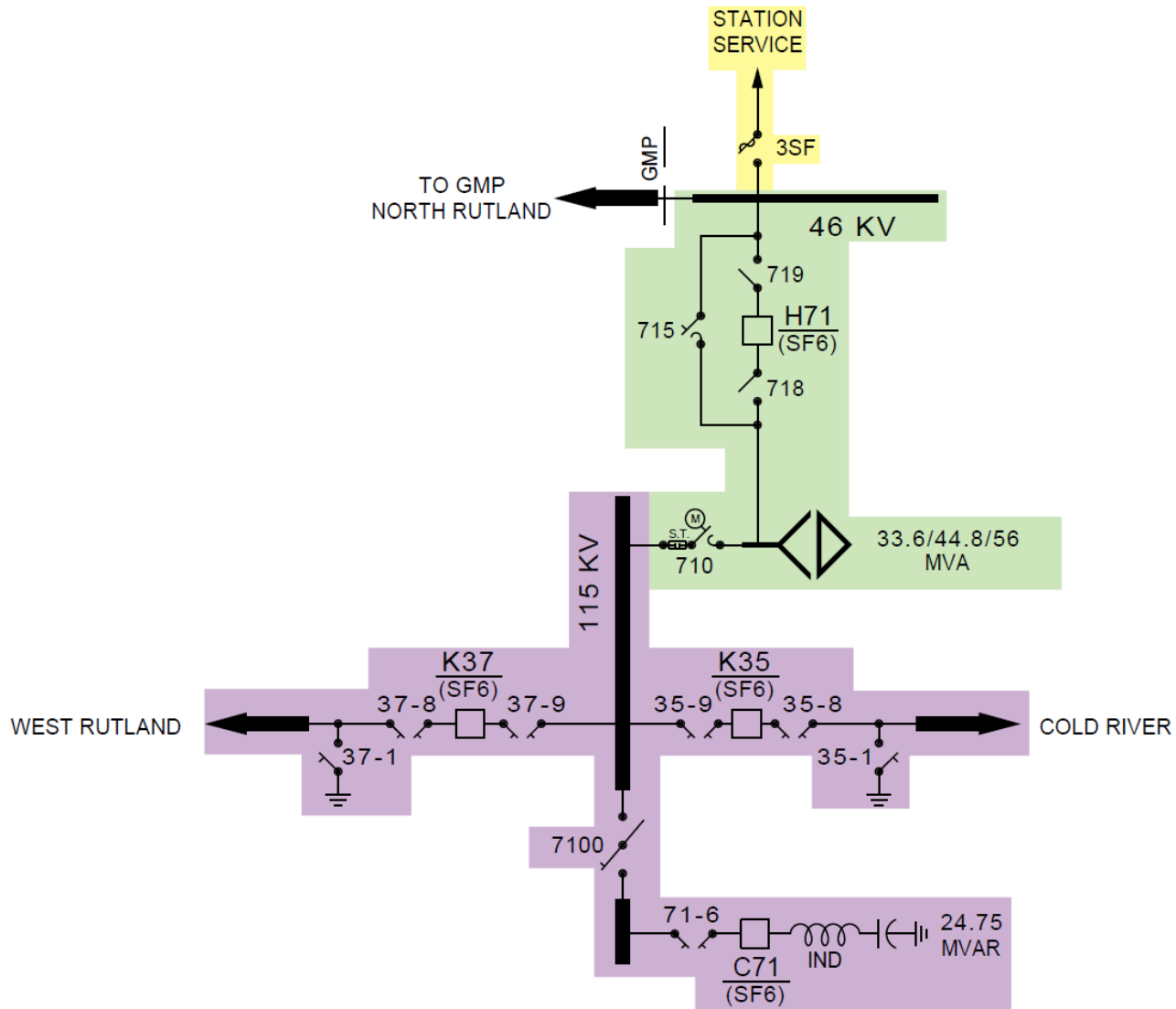


2205 Post Road, Rutland Town 05701
Originally built in 1958

Project scope of work

- Replace the existing control building with a larger control building
- Replace transformer high-side circuit switcher with a circuit breaker or circuit switcher
- Replace and expand the existing substation fence
- Maintenance related improvements
 - Replace the protection and control system
 - Replace AC and DC station service
 - Install power transformer and circuit breaker monitoring systems
 - PCB cleanup and disposal
 - Install transformer passive secondary oil containment system
- Utilize existing 46kV for temporary power during construction and relocate existing transformer

Facility Classification Diagram



Facilities Classification Diagram Legend

ISO NEW ENGLAND PTF FACILITIES (COMMON FACILITIES):

POOL TRANSMISSION FACILITIES (PTF) ARE THE TRANSMISSION FACILITIES OWNED BY PARTICIPATING TRANSMISSION OWNERS (PTO), OVER WHICH THE ISO SHALL EXERCISE OPERATING AUTHORITY IN ACCORDANCE WITH THE TERMS SET FORTH IN THE TRANSMISSION OPERATING AGREEMENT (TOA), RATED 69kV OR ABOVE REQUIRED TO ALLOW ENERGY FROM SIGNIFICANT POWER SOURCES TO MOVE FREELY ON THE NEW ENGLAND TRANSMISSION SYSTEM. (OATT, II.49)

COMMON FACILITIES (NON-PTF):

VELCO FACILITIES THAT COMPRISE THE STATEWIDE, HIGH VOLTAGE TRANSMISSION GRID, INTERCONNECTING AND SERVING THE LOAD CENTERS OF THE STATE, AND ARE USED IN COMMON BY ALL PURCHASERS OF TRANSMISSION SERVICES ON A STATEWIDE BASIS. THIS INCLUDES FACILITIES CONSTRUCTED PRIOR TO 7-1-90, OR ANY SPECIFIC FACILITIES CONSTRUCTED AFTER 7-1-90 THAT HAVE BEEN RECLASSIFIED AS COMMON FACILITIES AS A RESULT OF BEING IN SERVICE FOR A PERIOD OF TEN YEARS.

SPECIFIC FACILITIES:

HIGH VOLTAGE LINES, SUBSTATIONS AND OTHER APPURTENANCES CONSTITUTING A DIRECT PHYSICAL CONNECTION TO THE VELCO (COMMON) TRANSMISSION SYSTEM AND ARE NOT PART OF THE LOOPED TRANSMISSION GRID. THESE FACILITIES ARE USED AND INSTALLED TO BENEFIT A REQUESTING PURCHASER OF TRANSMISSION SERVICE. IN THE CASE OF A SUBSTATION (STEPPING DOWN TO A LOWER VOLTAGE) THIS INCLUDES THE TRANSFORMER, HIGH SIDE CIRCUIT SWITCHER, BANK BREAKER, ANCILLARY DEVICES, CONTROLS AND CONTROL CIRCUITRY (REFER TO COMMON FACILITIES DEFINITION FOR CRITERIA OF RECLASSIFICATION).

EXCLUSIVE FACILITIES:

EQUIPMENT CONNECTED TO THE LOW VOLTAGE BUS, INCLUDING ANY ASSOCIATED PROTECTION, CONTROL, AND METERING SYSTEMS THAT HAVE BEEN CONSTRUCTED UNDER A VELCO WORK ORDER, AND ARE TO BE FULLY OWNED AND FUNDED BY THE PURCHASER OF TRANSMISSION SERVICE UPON COMMISSIONING. THIS TYPICALLY INCLUDES FOUNDATIONS AND STRUCTURES, BREAKERS AND SWITCHES, INSULATORS, LINE POTENTIAL TRANSFORMERS, CONDUIT, CABLE AND GROUNDING. ONGOING MAINTENANCE AND TESTING OF THESE FACILITIES ARE SUBJECT TO THE TERMS AND CONDITIONS OF VELCO'S SUBSTATION PARTICIPATION AGREEMENT.

SHARED FACILITIES (COMMON USE):

TYPICALLY CONSISTING OF EQUIPMENT LOCATED WITHIN SUBSTATIONS THAT ARE SHARED IN SOME MANNER FOR THE BENEFIT OF BOTH VELCO AND THE PURCHASER OF TRANSMISSION SERVICE. THIS INCLUDES STRUCTURES (BUILDINGS) AND IMPROVEMENTS, FENCING AND GATES, LOW VOLTAGE DISCONNECT SWITCHES, BUS WORK, LOW VOLTAGE POTENTIAL TRANSFORMERS (STATION SERVICE AND BUS POTS), COMPLETE STATION GROUNDING SYSTEMS, SUPPORTS AND CABLE TRAYS, BATTERIES AND CHARGERS, SWITCHSTICKS AND GLOWTECTORS, LADDERS, TABLES AND SUPPLY CABINETS. ONGOING MAINTENANCE AND TESTING OF THESE FACILITIES ARE SUBJECT TO THE TERMS AND CONDITIONS OF VELCO'S SUBSTATION PARTICIPATION AGREEMENT.

General Arrangement Diagram



Zoom of General Arrangement Diagram



Progress to Date

- Remedial PCB contamination clean-up competed in October 2021
- Purchased abutting property in December 2021
- Received CPG on January 31, 2022
- Began tree clearing on March 2, 2022
- Began below grade construction on March 7, 2022

Next Steps

- Outage to bypass substation scheduled for April 4, 2022
- Final commissioning outage scheduled for week of October 24, 2022
- Commissioning scheduled for November 1, 2022
- VELCO Asset Maintenance crews to self-perform above grade work
- VELCO System Protection crews to self-perform protection and controls work
- Cost estimate with contingency (20%) \$15.3M
- Project forecast \$12.7M

Existing Florence



8040 Whipple Hollow Road
Pittsford, VT 05763

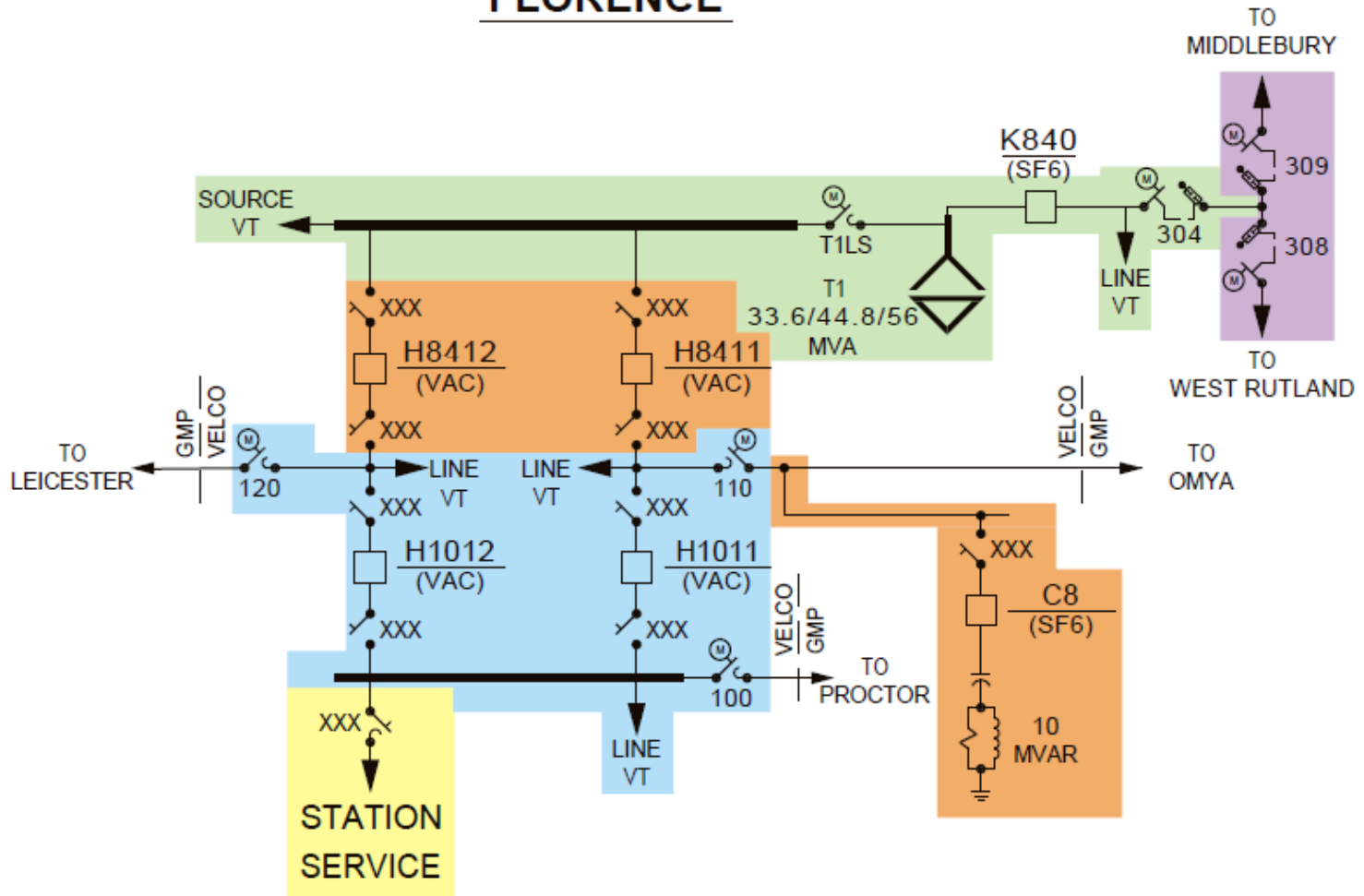
Originally built in 1978

Project scope of work

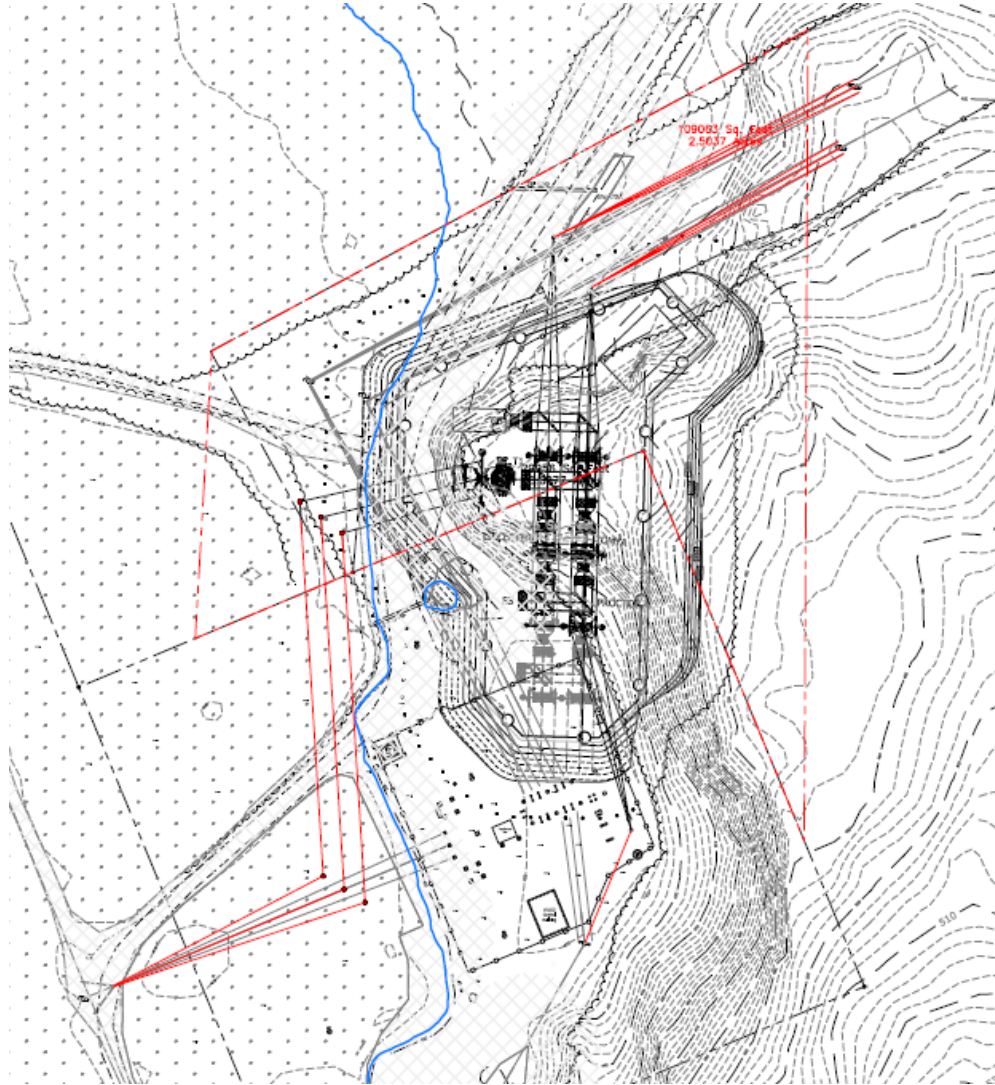
- Replace the existing 46kV radial bus substation with a new substation arranged in a 46kV ring bus configuration adjacent to the existing substation
- Remove existing 46kV radial bus substation after commissioning new substation
- Requires purchasing 3 acres of land from OMYA
- Avoids the need for a temporary substation during construction
- Increase the size of the existing capacitor bank from 5.4 MVAR to 10MVAR
- Estimate with 20% contingency is \$17.7M
- Forecast is \$12.9M

Facility Classification Diagram

FLORENCE



Proposed 46 KV Ring Bus Substation



Project Schedule

- Anticipate receiving CPG in March 2022
- Begin site clearing in May 2022
 - Tree removal
 - Ledge blasting
 - Rock crushing
 - Improve adjacent K30 access road improvements with crushed rock
- GMP to raise their existing 46KV lines in May to allow safe working clearance during construction
- Begin below grade work in August 2022
- VELCO Asset Maintenance crews to self-perform above grade work
- VELCO System Protection crews to self-perform protection and controls work
- Expect to Commission new substation in June 2023