Local System Plan
Bangor Hydro District

Needs Assessment/Potential Solutions
Local Planning Advisory Committee Meeting
October 29, 2025

Versant Power Representative
Jeffrey Fenn, P.E. Fennco, LLC

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R0

Purpose of Local System Plan (LSP)

Per Appendix 1 of Attachment K of the ISO-New England OATT – The LSP is an annual report that:

- Describes non-PTF transmission system reliability needs
- Reflects
  - Local system planning studies
  - Proposed solutions
- Identifies
  - Local planning process
  - Criteria, Data and Assumptions
- Gives opportunity for input
  - Local needs and solutions
  - Public Policy needs

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LSP Communication

- LSP is communicated via Transmission Owners Planning Advisory Committee (TOPAC) meeting following an ISO-New England PAC meeting

- The material is posted prior to the TOPAC meeting at Transmission Owner Planning Advisory Committee webpage on the ISO-NE website

- Transmission Customers and Stakeholders have 30 days after TOPAC presentation to provide written comments for consideration by Versant Power

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LSP Communication (continued)

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- VP LSP is located at:
  https://www.versantpower.com/docs/default-source/oasis/versant-power-lsp-2025-r0-251021.pdf?sfvrsn=67f9fe8c_1

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Local System Planning Process

The process is "Needs Assessment" followed by Solutions Proposals

Local system needs can result from:

- Load growth
- Sub-area reliability assessments
- Point of delivery request from customers
- Generation interconnection requests (in accordance with appropriate generator interconnection procedures)
- Public Policy Requirements
- Asset Condition

Local System Plan consists of:

- Summary of needs assessment results
- Listing of criteria, data and study assumptions
- Identification of proposed alternatives
- Solution study results and selection of preferred alternative

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Criteria, Data, and Assumptions

- Loads are based on the New England specific area as provided in the ISO-New England MOD case, Versant Power specific forecasts and local customer needs are used to refine this
- Studies use relevant assumptions regarding transmission, generation and demand resources found in the latest ISO-New England Regional System Plan
- Criteria follows ISO-New England as well as TPL criteria or local planning criteria as appropriate – Local criteria listed at the end of this presentation

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LSP Project List

- The LSP project list is a cumulative listing of proposed transmission solutions intended to meet local needs. Most projects are 34.5 or 46kV, while others may be non PTF 115kV.
- Similar to the ISO-New England PTF RSP, the LSP contains the status of each project
  - **Concept** – Project is under consideration as a solution to a partial needs assessment
  - **Proposed** – Needs assessment completed and project proposed as a solution, but not formally budgeted
  - **Planned** – Formally budgeted and, if necessary, PPA/I.3.9 approved by ISO-New England
  - **Under Construction** – Significant engineering and internal approvals in process and project is being implemented
  - **In-Service** – Project used and useful

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LSP – Concept

#	Needs Assessment	Service Area	Project Name	Solution	Project In-Service
257N 257S	Asset Condition	Northern	Lincoln and Millinocket RTU Replacements	Replace due to asset condition	2026
257V	Asset Condition	Northern	Medway RTU Replacement	Replace due to asset condition	2027
257H	Reliability Improvement	Bangor	Graham T9 LTC Controls	Replace controls to allow parallel operation	2027
296H	Asset Condition	Bangor	Graham T9L Breaker Replacement	Replace T9L breaker and reconfigure	2028
229X	Asset Condition	Bangor	Hogan Rd Substation Rebuild	Being evaluated for rebuild or replacement – was 215J	2027
143I	Reliability Improvement	Bangor	BIA Substation Install MO Switches on 7905 and 7503	Add motor operators and SCADA to improve area reliability	2026
185U	Asset Condition	Hancock	L29 ROW Rebuild	Rebuild ROW portion of line	2027

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LSP – Concept Cont.

#	Needs Assessment	Service Area	Project Name	Solution	Project In-Service
257O 257P 257Q	Asset Condition	Hancock	Gouldsboro, Lucern and Trenton RTU Replacements	Replace due to asset condition	2026
257Z	Asset Condition	Hancock	Replace RTU at Somesville	Replace due to asset condition	2027
502D	Reliability Improvement	Hancock	L13 Loop – FR Sub Flopover	Add motor operators to switches to improve ability to switch	2027
257R 257T	Asset Condition	Washington County	WCS and Deblois RTU Replacements	Replace due to asset condition	2026
214K	Asset Condition	Washington County	WCS Bus 1 Relay Replacement	Replace due to asset condition	2026
209T	Asset Condition	Washington County	Harrington T1 Replacement	Replace 115/34.5kV Transformer due to condition	2027
259Y	Asset Condition	Washington County	L14 TRPI	Rebuild ROW portion of line	2026

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LSP – Proposed

#	Needs Assessment	Service Area	Project Name	Solution	Project In-Service
208H	Asset Condition	Northern	Stanford Sub Relay Replacement	Replace due to asset condition	2026
183G	Asset Condition	Northern	Chester RTU Replacement	Replace due to asset condition	2026
209P	Asset Condition	Northern	Chester T2 Replacement	Replace T2 due to condition	2029
228Z 241M	Asset Condition	Northern	Line 74 Rebuild Part 5, Line 86 TRPI Part 3	Line rebuilds in sections	2026
257I	Reliability Improvement	Bangor	Replace Graham T7 LTC Controls	Control upgrade to permit transformer parallel operation	2027
840E	Asset Condition	Hancock	MDI Loop L32	Upgrade 35kV line 32 to serve area needs	2027
143M	Asset Condition	Hancock	Boggy Brook T1 Replacement	Replace T1 at Boggy Brook due to condition	2029

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LSP – Planned

#	Needs Assessment	Service Area	Project Name	Solution	Project In-Service
246V	Reliability Improvement	Northern	Powersville Sub Station Service	Add station service to 115kV sub	10/2026
143W	Asset Condition	Northern	Chester 9001 Breaker	Replace breaker	12/2026
259Q	Asset Condition	Northern	Line 83 TRPI P3	Rebuild ROW portion of line	12/2026
311C	Asset Condition	Northern	Line 88 TRPI P3	Rebuild ROW portion of line	12/2026
831D	Reliability Improvement	Bangor	46kV L72 Relay Upgrade	Relace protection on L72 to enable improved operation and permit automatic reclose	12/2027
207K	Reliability Improvement	Bangor	46kV L71 Relay Upgrade	Relace protection on L72 to enable improved operation and permit automatic reclose	5/2026
264I	Reliability Improvement	Bangor	Eastern Ave L9 Fault Detection and SCADA Control	Add SCADA to L9 as needed to improve area reliability	10/2025

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LSP – Planned Cont.

#	Needs Assessment	Service Area	Project Name	Solution	Project In-Service
310S	Reliability Improvement	Bangor	L7 Communications and Protection Upgrade	Add communications and related equip. to the Line 7 corridor from Graham to Milford to permit acceptable protection	12/2027
241K	Asset Condition	Bangor	Graham L5 Relay	Replace relay due to condition	7/2026
905E	Reliability Improvement	Bangor	Graham T10	Replace T6-8 with T10	9/2027
183I	Asset Condition	Bangor	BIA RTU Replacement	Replace RTU due to condition	7/2026
237O	Asset Condition	Bangor	Milo and Corinth Communications	Add fiber into substations	12/2026
839E	Asset Condition	Hancock	MDI Loop L40	Upgrade 35kV line 40 to serve area load	9/2026
215G	Asset Condition	Hancock	Ellsworth Falls 33T Relay Replacement	Update Protection System	7/2026

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LSP – Planned Cont.

#	Needs Assessment	Service Area	Project Name	Solution	Project In-Service
237Q	Asset Condition	Hancock	Mill St SCADA Comm	Replace RTU comm due to condition	12/2026
239W	Asset Condition	Washington County	WCS Cap Breaker Replacement	Replace Capacitor Breaker due to condition	11/2026
207H	Asset Condition	Washington County	WCS T3 Replacement	Replace T3 based on test results	10/2026
309X	Asset Condition	Washington County	Line 23 TRPI P2	Rebuild ROW portion of line	12/2026
311F	Asset Condition	Washington County	Line 59 TRPI	Replace Structures due to condition	6/2026

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LSP – Under Construction

#	Project In-Service	Service Area	Project Name
201O	12/2025	Northern	Stanford Cap Breaker and Control Shelter
119D	9/2026	Bangor	Hermon Breaker and Protection Upgrade
185Z 264I	12/2025	Bangor	Greenpoint Sub L9 Fault Detection and SCADA Control
150W	12/2025	Bangor	L7 RR Track ROW
151K	102026	Bangor	L9 Mardens ROW
148Q	12/2025	Hancock	L24 TRPI
185U	3/2027	Hancock	L29 ROW Targeted Rebuild
208G	5/2026	Washington County	Scotts Hill Rd Relay Replacement

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LSP – In-Service

Project In-Service	Service Area	Project Name
3/2025	Northern	Lincoln L85 VT Additions – add line VTs
12/2024	Northern	Lincoln L85 VT additions
10/2025	Northern	L83 TRPI P2, L86 TRPI P2
10/2025	Northern	L81 TRPI
6/2025	Bangor	L7 UMaine 46kV Breaker Addition
7/2025	Bangor	Bradley Sw. Station
2/2025	Bangor	L74 Rebuild P3
12/2024	Bangor	L73 Tap

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LSP – In-Service Cont.

Project In-Service	Service Area	Project Name
7/2025	Bangor	Orono T4 and T4H Replacement
12/2024	Bangor	L83 TRPI
10/2025	Bangor	Fiber to Tibbets St and Hampden
9/2025	Bangor	L77, L78 TRIP Targeted Rebuild
4/2025	Bangor	L74 Part 4 Rebuild
6/2025	Hancock	Ellsworth Falls T2 Protection Upgrade
12/2024	Hancock	L28 SCADA Control
3/2025	Hancock	Ellsworth Falls, 1/10 MO Sw.
8/2025	Hancock	Mill St Sub Motor Operator Addition to 1203 and 1207

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LSP – In-Service Cont.

Project In-Service	Service Area	Project Name
11/2024	Washington County	Auto Flop Over for L19 and L20
11/2024	Washington County	Machias Sub
12/2024	Washington County	Line 23 TRPI Targeted Rebuild
10/2025	Washington County	Cherryfield Sub M/O and SCADA

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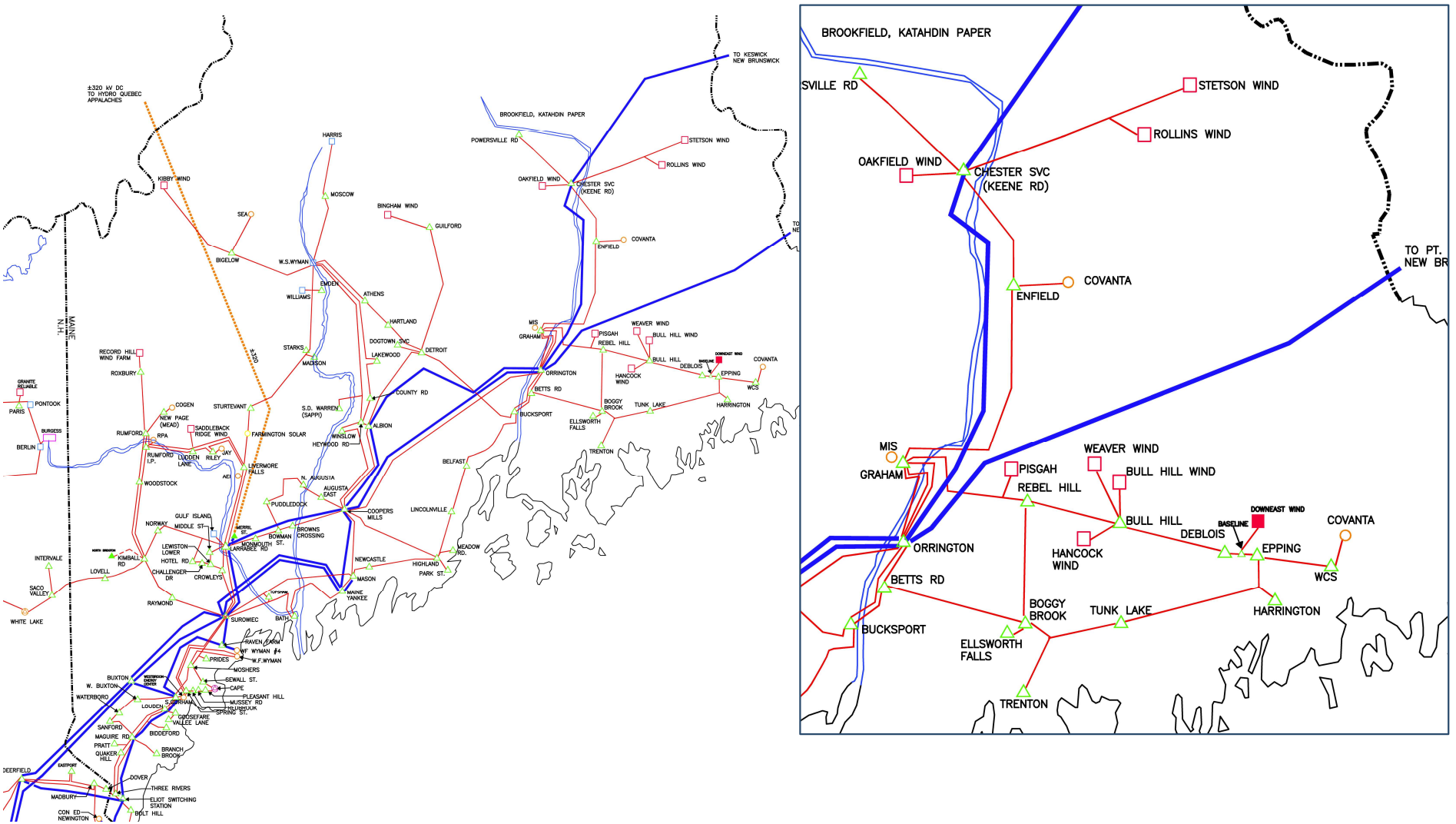
Maine and Versant Power – Bangor Hydro District - Major Transmission System



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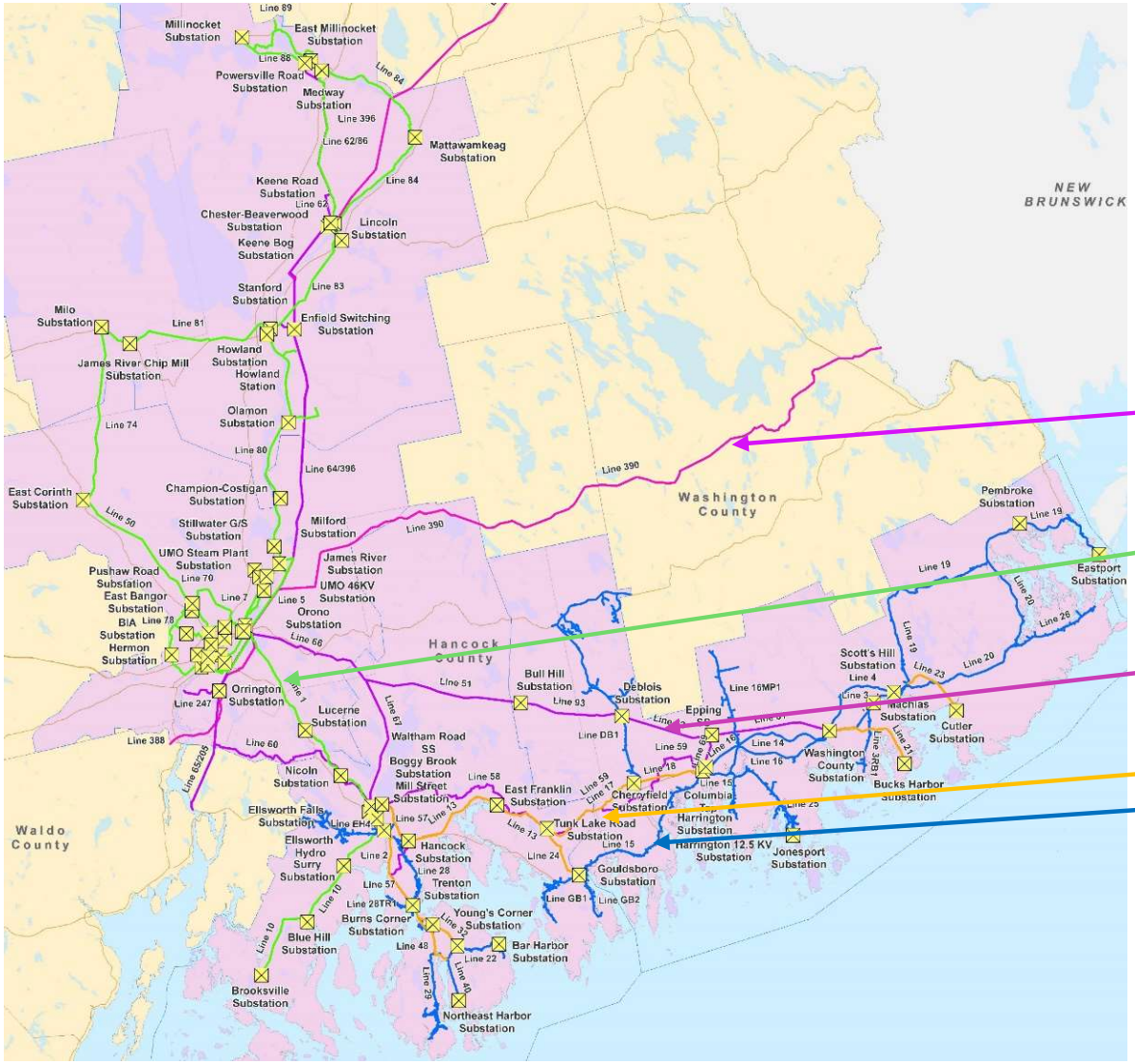
Versant Power Bangor Hydro District Detailed System



Voltage Color Code

345kV

46kV

115kV

34.5kV

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Descriptions - Concept

- Lincoln and Millinocket RTU replacements – Replace SCADA RTUs at Lincoln and Millinocket substations due to vintage and function
- Medway RTU Replacement - Replace SCADA RTU at Medway substation due to vintage and function
- Graham T9 LTC Controls – Replace controls to allow parallel operation
- Graham T9L Breaker Replacement – Replace T9L breaker and reconfigure into 46kV yard
- Hogan Rd Substation Rebuild – Rebuild facility due to age, condition and function
- BIA Substation Install MO Switches on 7905 and 7503 – Replace 46kV line switches 7905 and 7503 with new ones that have motor operators and SCADA control
- L29 ROW Rebuild – 34.5kV Transmission Rebuild Per Inspection based on asset condition

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Descriptions – Concept Cont.

- Gouldsboro, Lucern and Trenton RTU replacements – Replace SCADA RTUs at Gouldsboro, Lucern and Trenton substations due to asset condition
- Replace RTU at Somesville - Replace SCADA RTU Somesville substation due to asset condition
- L13 Loop – FR Sub Flopover – Consider options for better automatic restoration
- WCS and Deblois RTU Replacements – Replace SCADA RTUs at Washington County 115/34.5kV Sub and Deblois 115/34.5kV subs due to asset condition
- WCS Bus 1 Relay Replacement – Replace 34.5kV bus 1 relays due to asset condition
- Harrington T1 Replacement – Replace 115/34.5kV transformer at Harrington sub due to asset condition
- L14 TRPI - 34.5kV Transmission Rebuild Per Inspection based on asset condition

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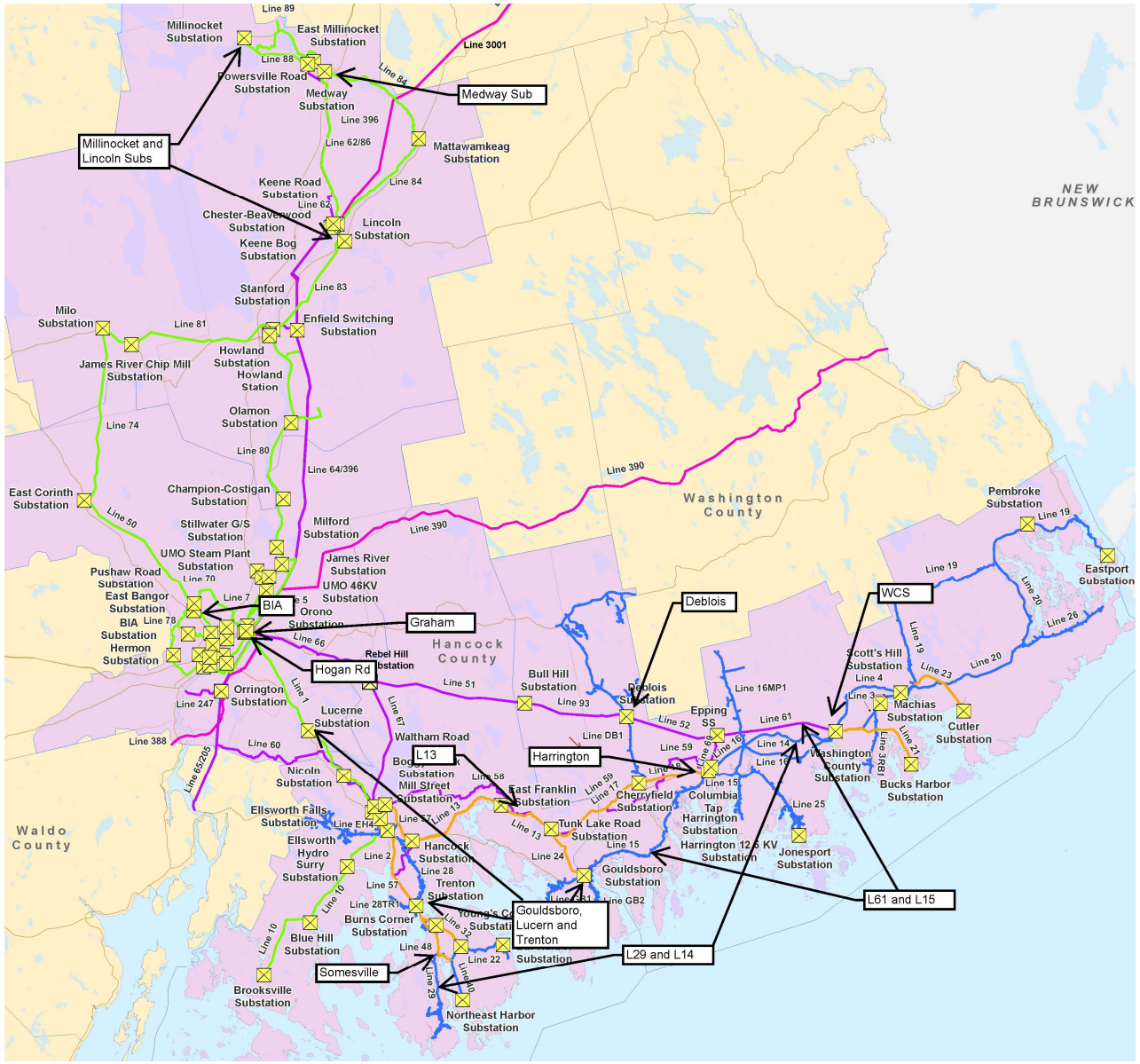
Descriptions - Concept



Descriptions – Proposed

- Stanford Sub Relay Replacement – Replace and upgrade 46kV line 81 protection at Stanford due to asset condition. Move into new control shelter.
- Chester RTU Replacement – Replace Chester 115/46kV sub RTU due to asset condition
- Chester T2 Replacement – Replace 115/46kV transformer T2 at Chester due to asset condition
- Line 74 Rebuild Part 5 and Line 86 TRIP Part 3– 46kV targeted line rebuilds due to asset condition
- Replace Graham T7 LTC Controls – Replace tap changer controls on 115/46kV transformer to allow parallel operation
- MDI Loop L32 – L32 is part of the 34.5kV transmission loop supplying multiple substations in the Mt Desert Island Area. Upgrades to the line to improve reliability and capability
- Boggy Brook T1 Replacement – Replace T1 at Boggy Brook substation due to condition

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Project Descriptions - Proposed

Project Descriptions – Planned

- Powersville Sub Station Service – Add station service from the 115kV bus at Powersville
- Chester 9001 Breaker Replacement – Replace 9001 breaker due to asset condition
- Line 83 TRPI P3 – Rebuild ROW portion of L83 part 3
- Line 88 TRPI P3 – Rebuild ROW portion of L83 part 3
- 46kV L72 Relay Upgrade – Upgrade protection on 46kV line 72. This will improve protection operation and permit automatic reclose
- 46kV L71 Relay Upgrade – Upgrade protection on 46kV line 71. This will improve protection operation and permit automatic reclose
- Eastern Ave L9 Fault Detection and SCADA Control - Add SCADA to line 9 at Eastern Ave Substation to improve area reliability
- L7 Communications and Protection Upgrade – Add communications and related equip. to the Line 7 corridor from Graham to Milford to permit acceptable protection

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Project Descriptions – Planned Cont.

- Graham L5 Relay– Upgrade line 5 protection at Graham to be in line with rest of area for improved coordination and operation
- Graham T10 – Replace T6-8 with new T10 due to condition and load needs
- BIA RTU Replacement - Replace SCADA RTU at BIA substation due to vintage and function
- Milo and Corinth Communications – Add fiber into both Milo and East Corinth substations to improve relay operation
- MDI Loop L40 – Rebuild portions of 34.5kV Line 40 in the MDI area to enable load support
- Ellsworth Falls 33T Relay Replacement – Upgrade protective relays on the 34.5kV bus tie breaker 33T to meet present protection needs

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Project Descriptions – Planned Cont.

- Mill St SCADA Comm – Replace SCADA RTU communications media due to condition and function
- WCS Cap Breaker Replacement – Replace capacitor switching breaker based on condition
- WCS T3 Replacement – Replace transformer T3 at WCS based on condition
- Line 23 TRPI P3 – Rebuild ROW portion of Line
- Line 59 TRPI – Replace Structures due to condition

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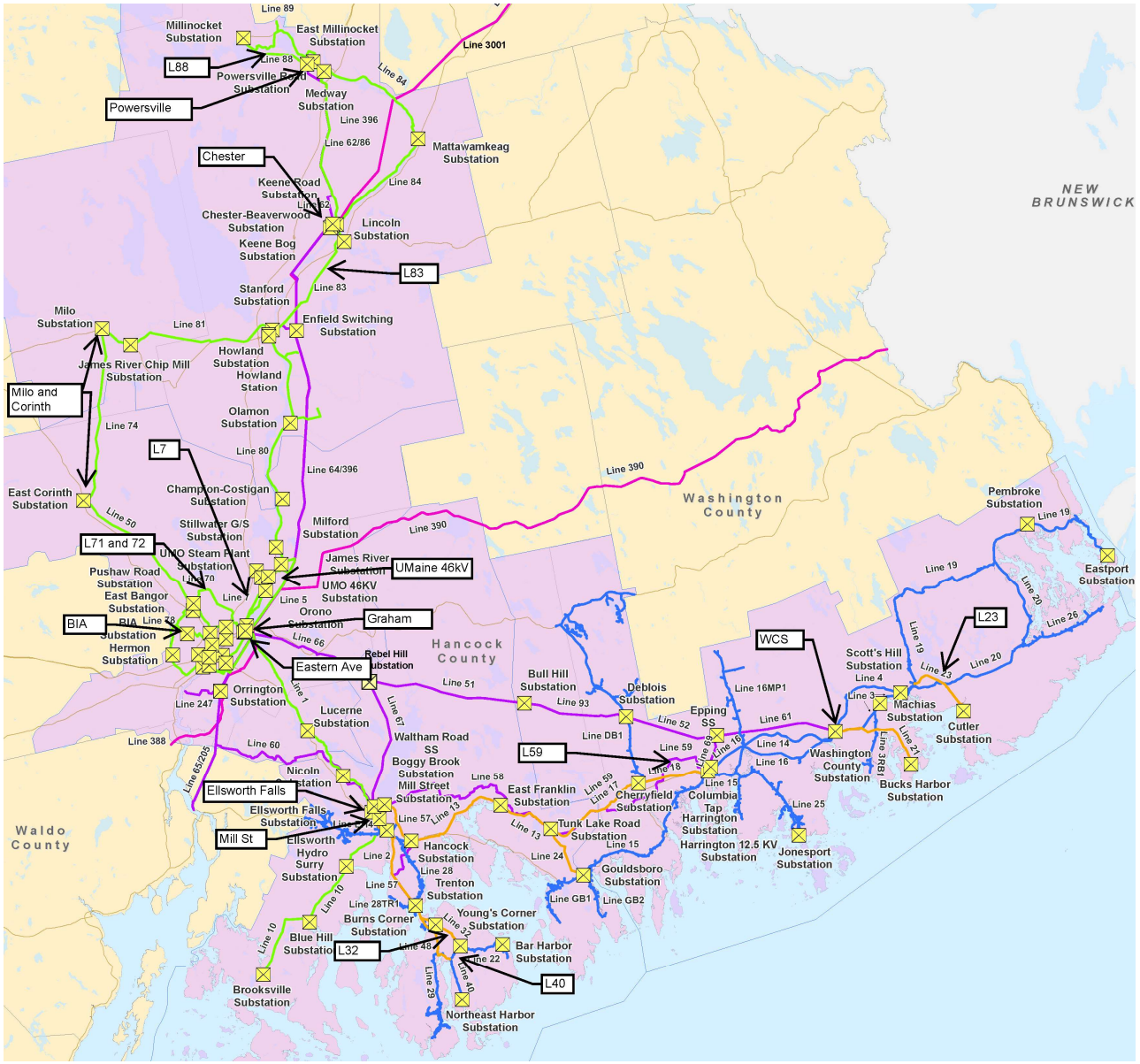
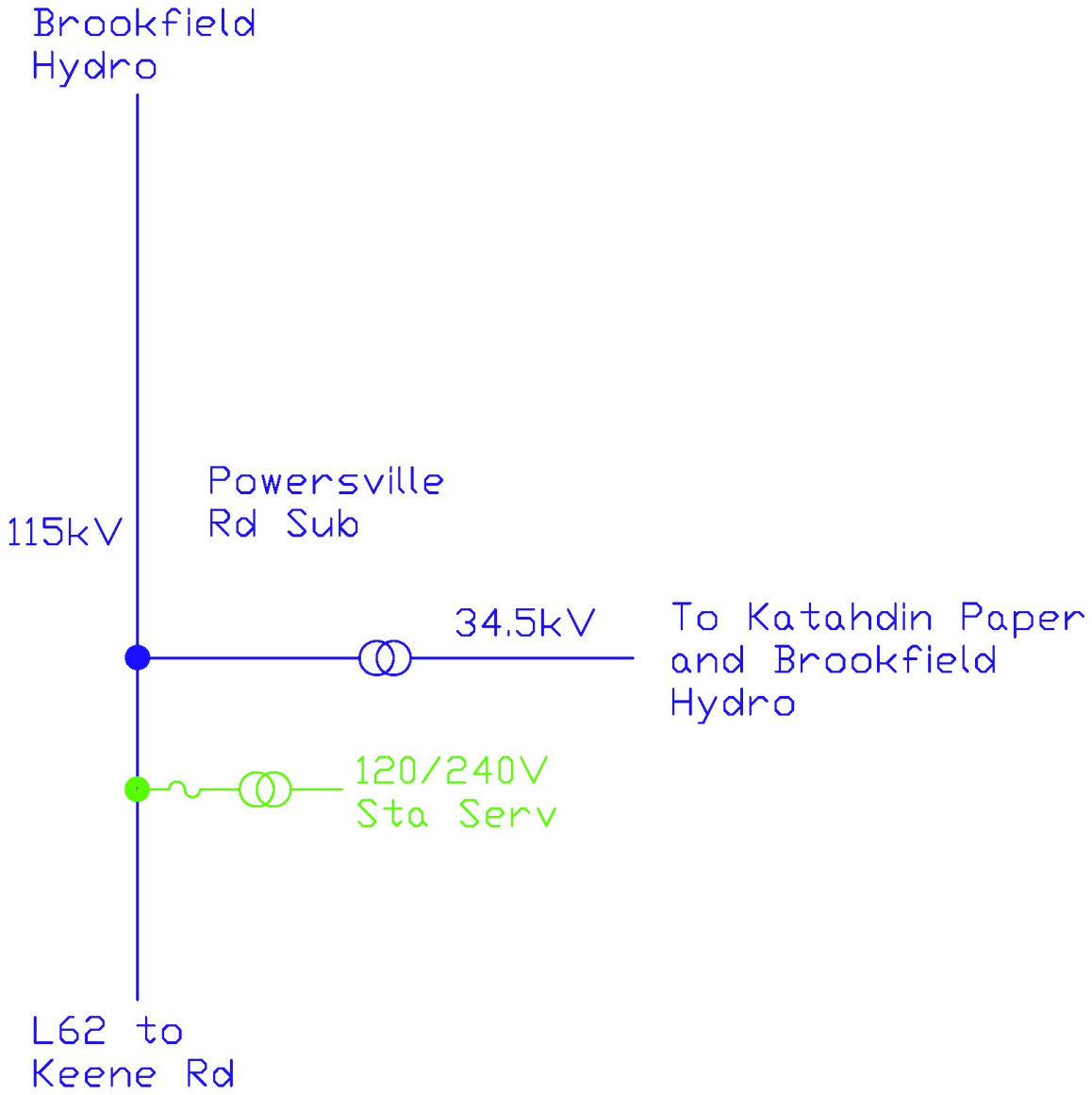
Project Descriptions - Planned



Powersville Rd Sub Station Service



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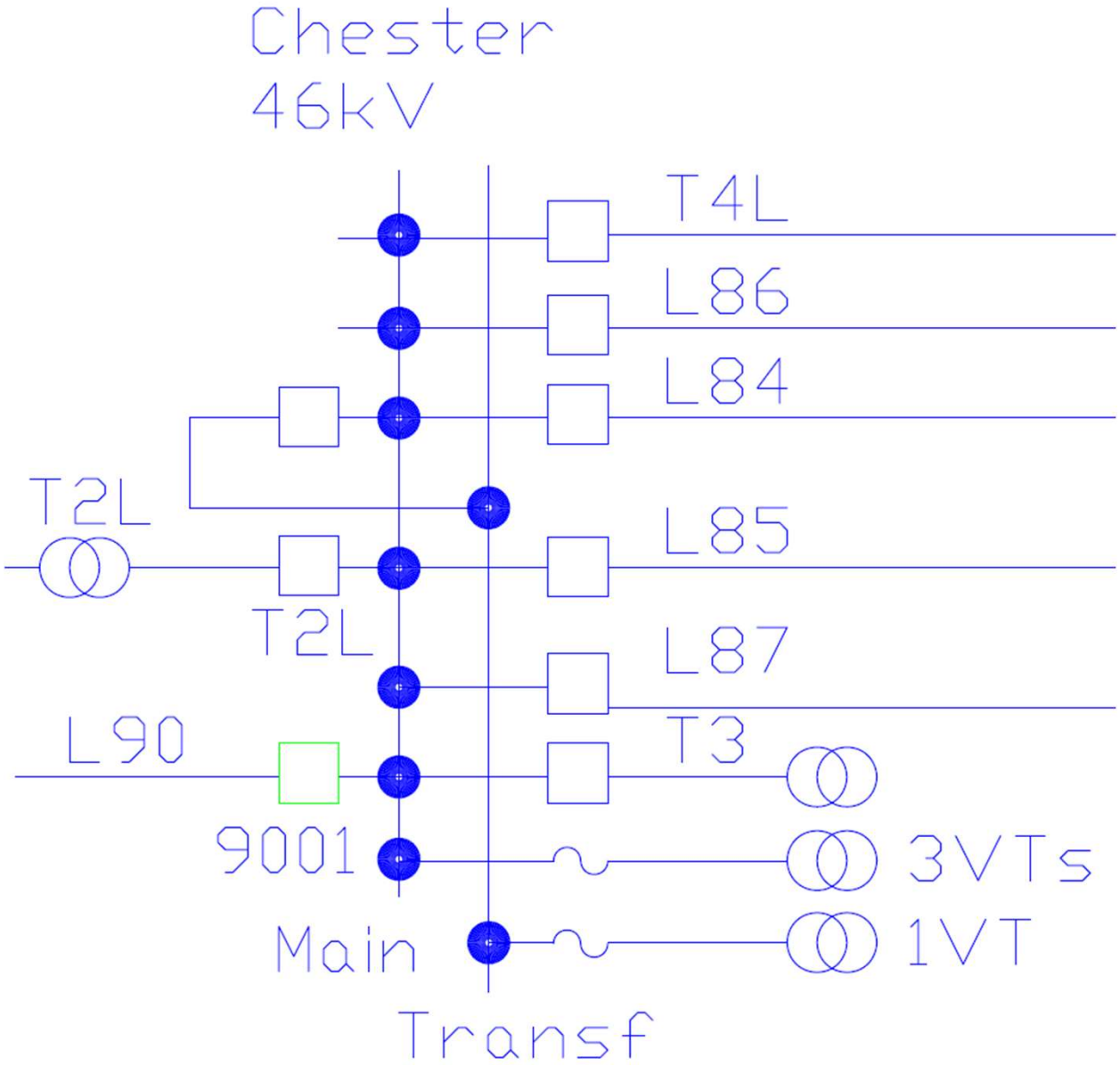
Chester 9001 Breaker



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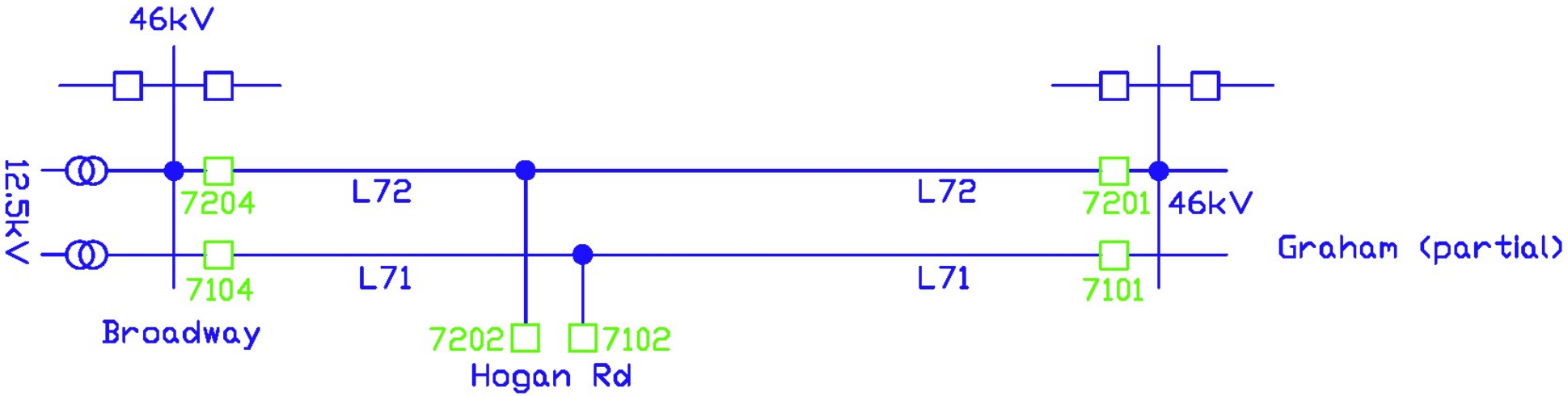
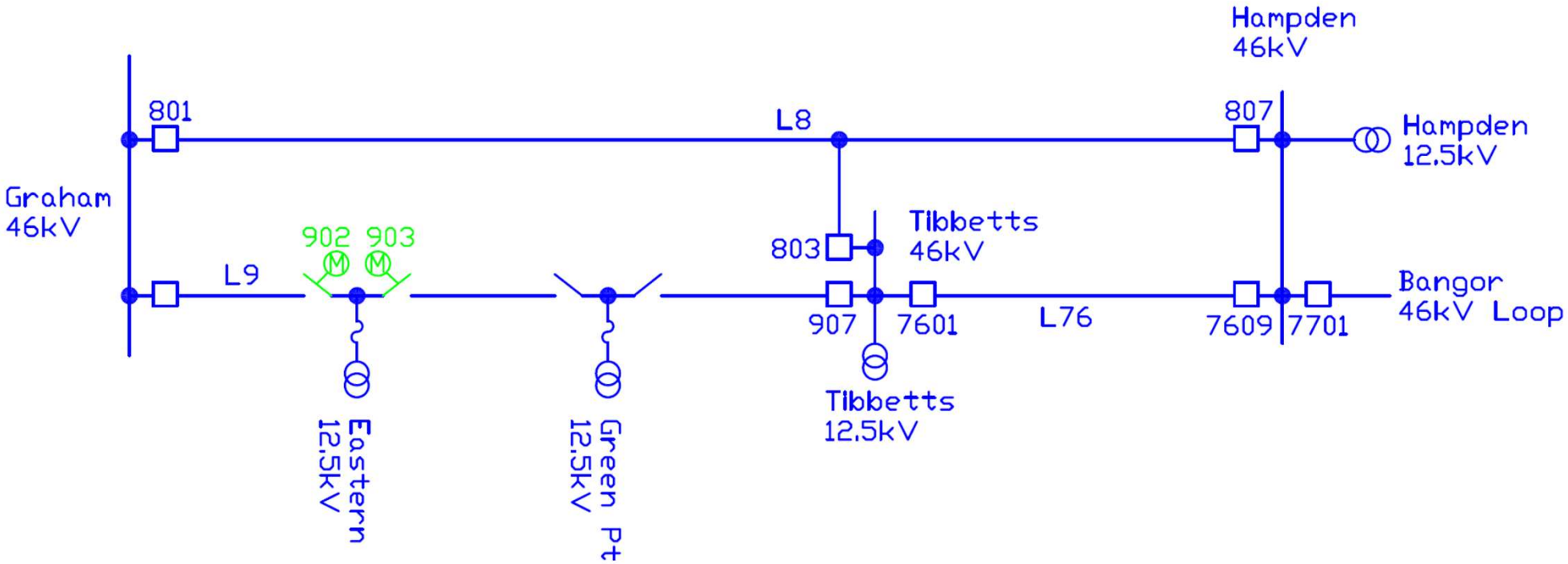
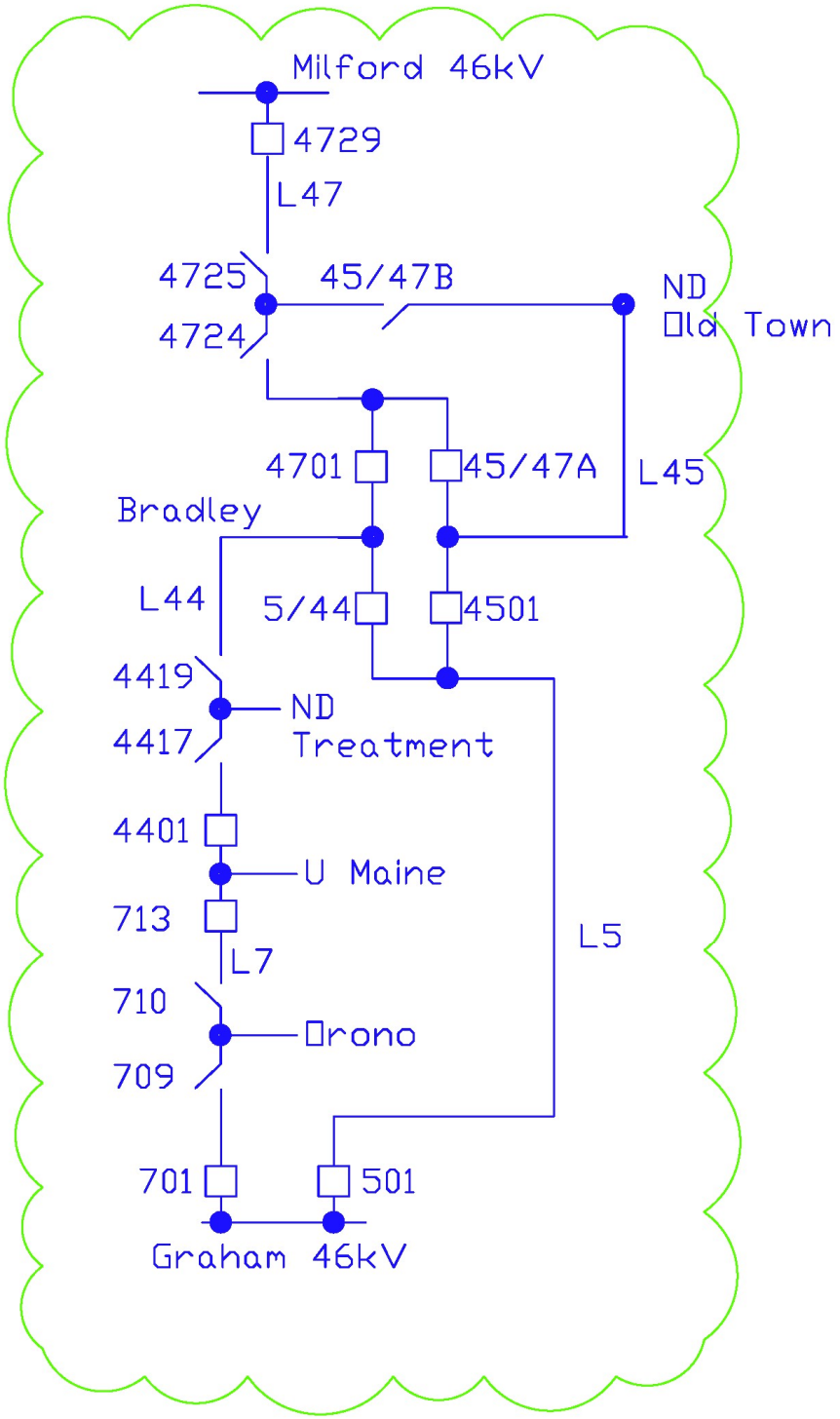
Lines 71 and 72 Relay Upgrades



Eastern Ave L9 Fault Detection and SCADA Control



L7 Comm & Protection



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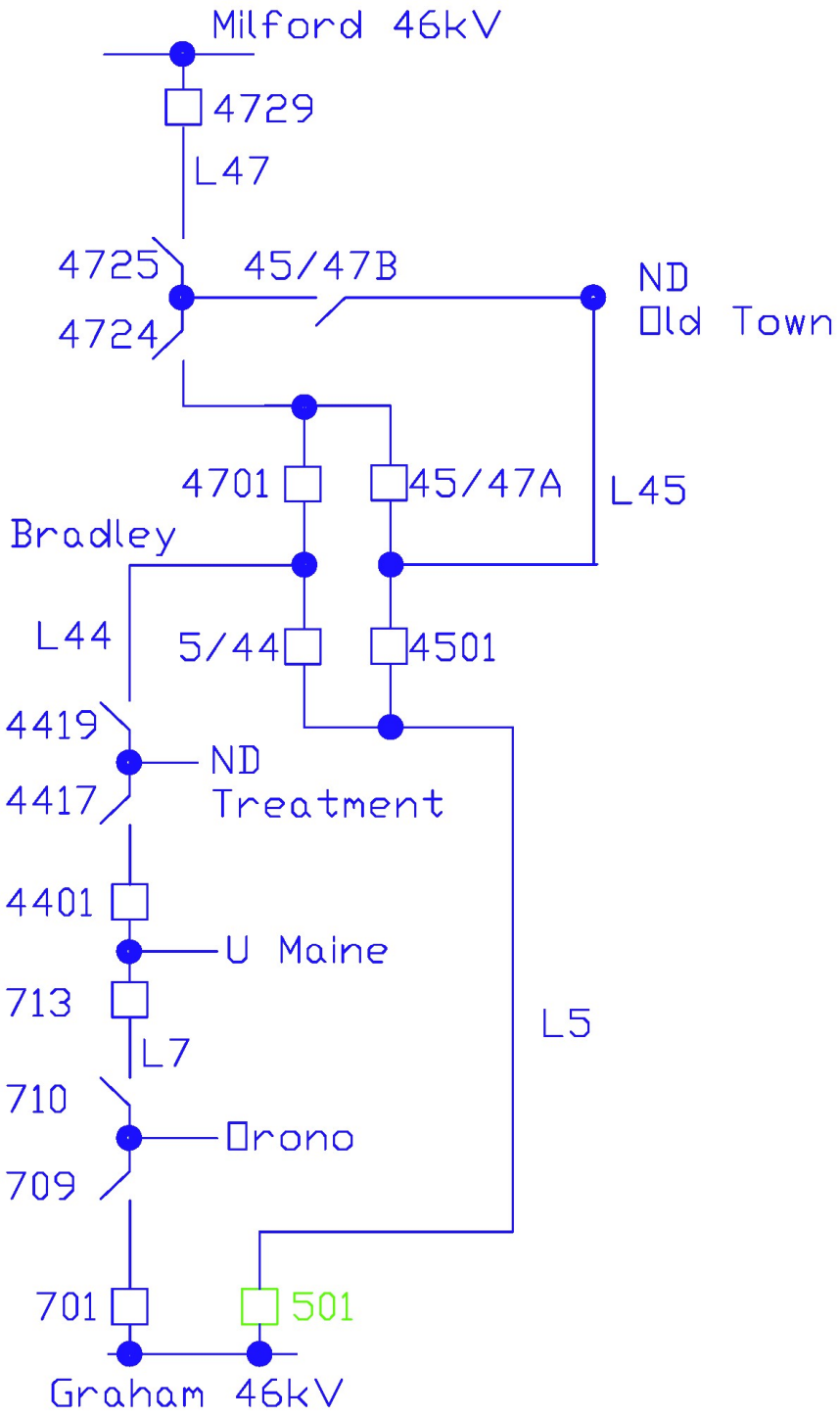
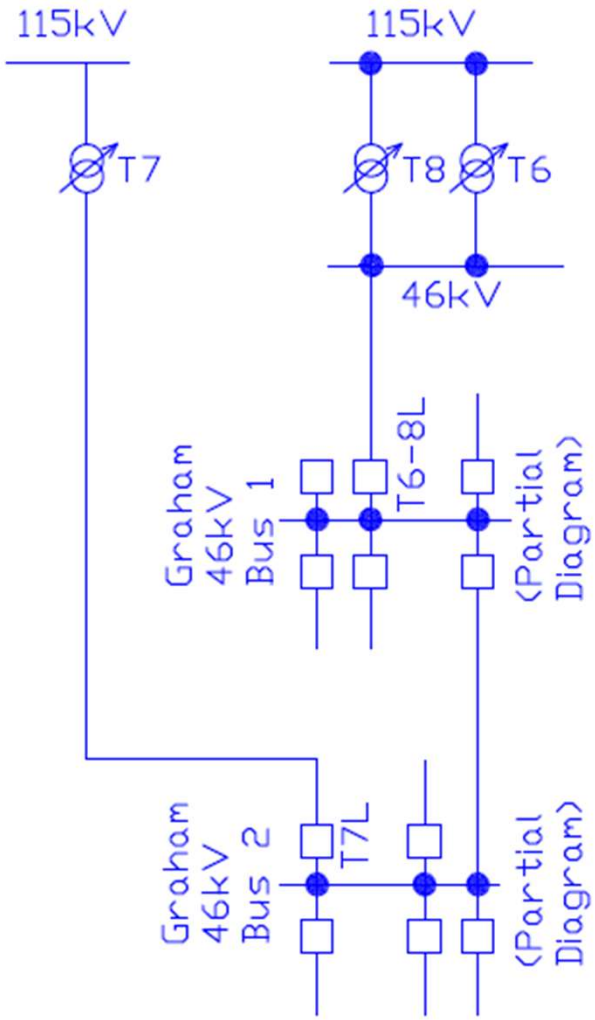
Graham L5 Relay



Graham T10



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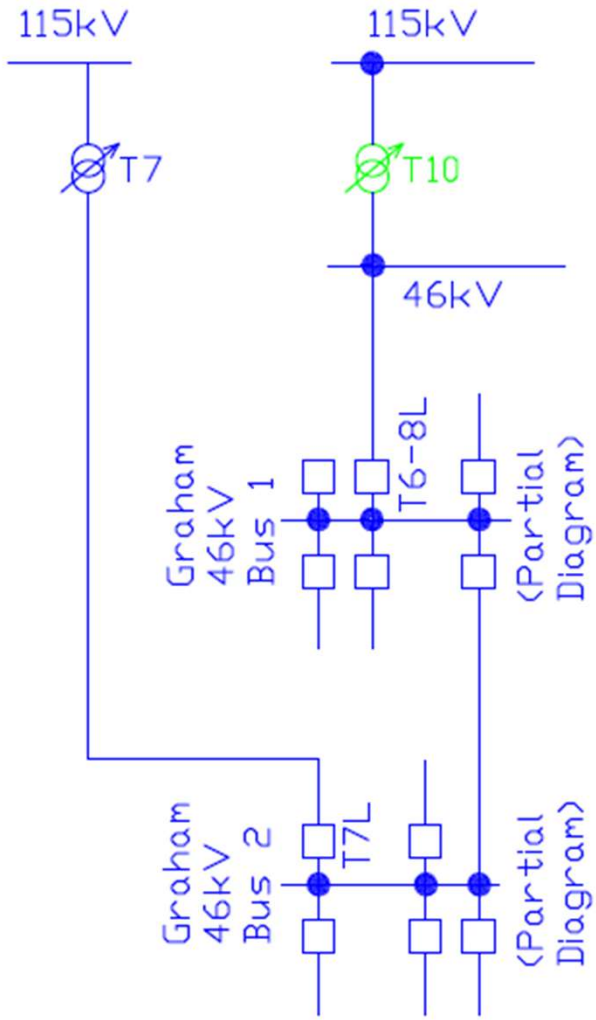

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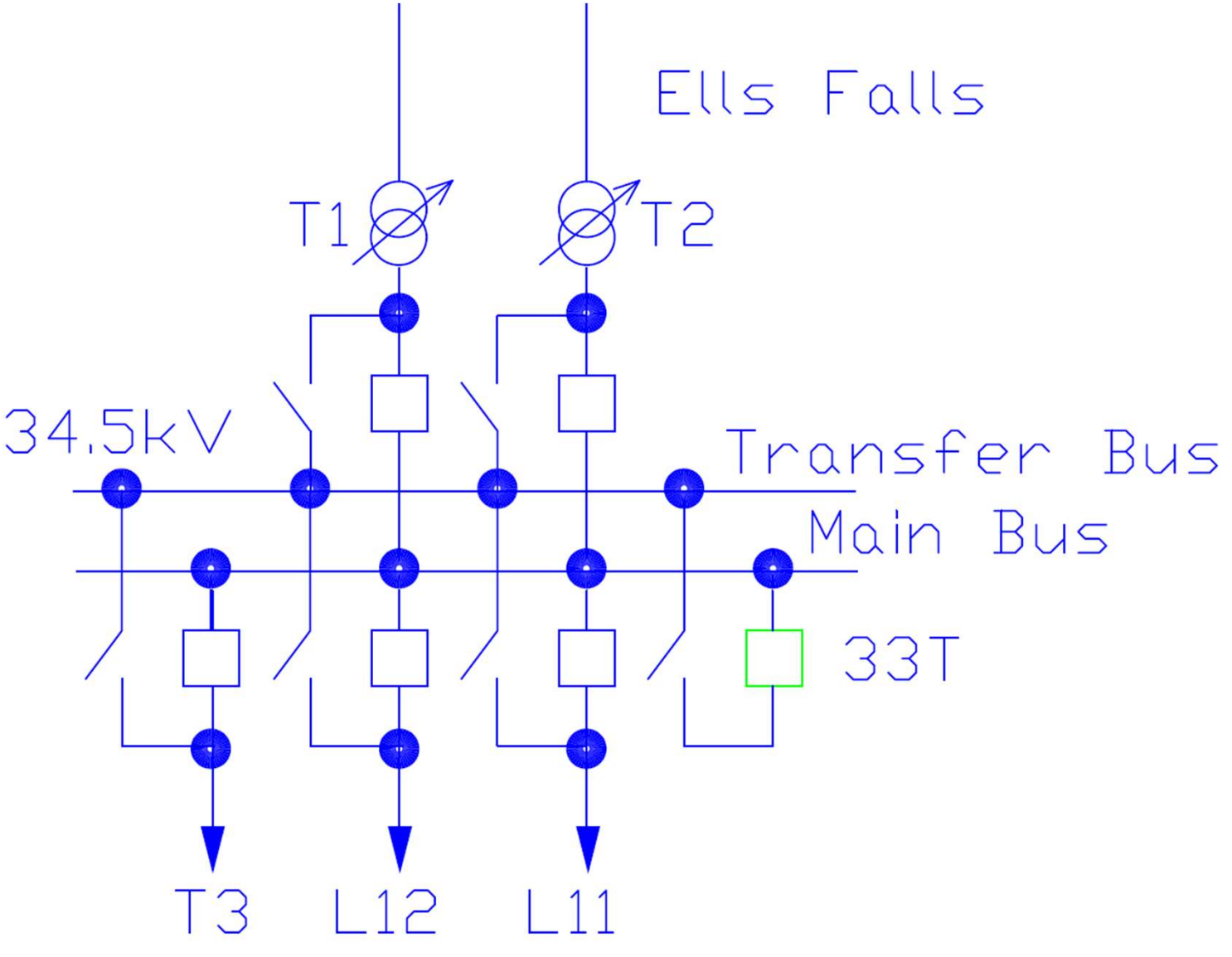
Ellsworth Falls 33T Protection



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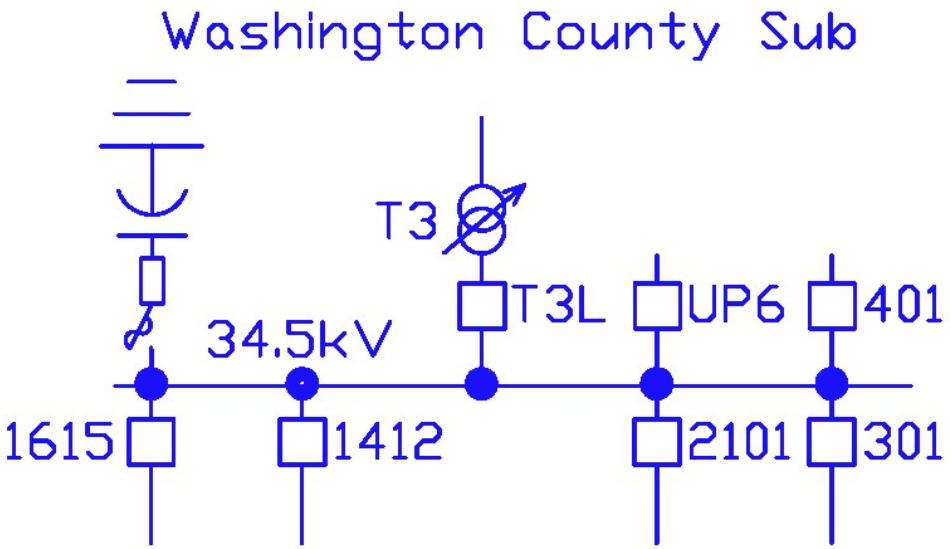
WCS Cap Breaker Replacement



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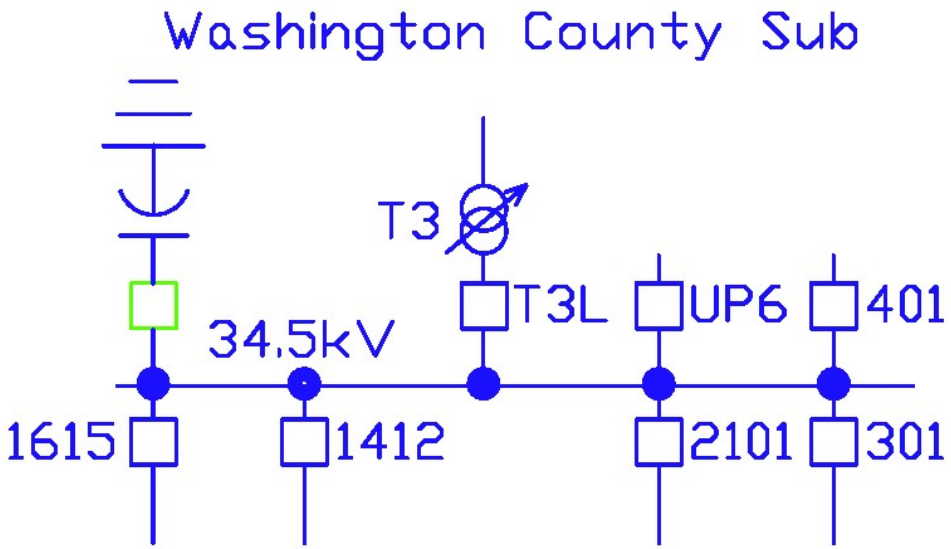

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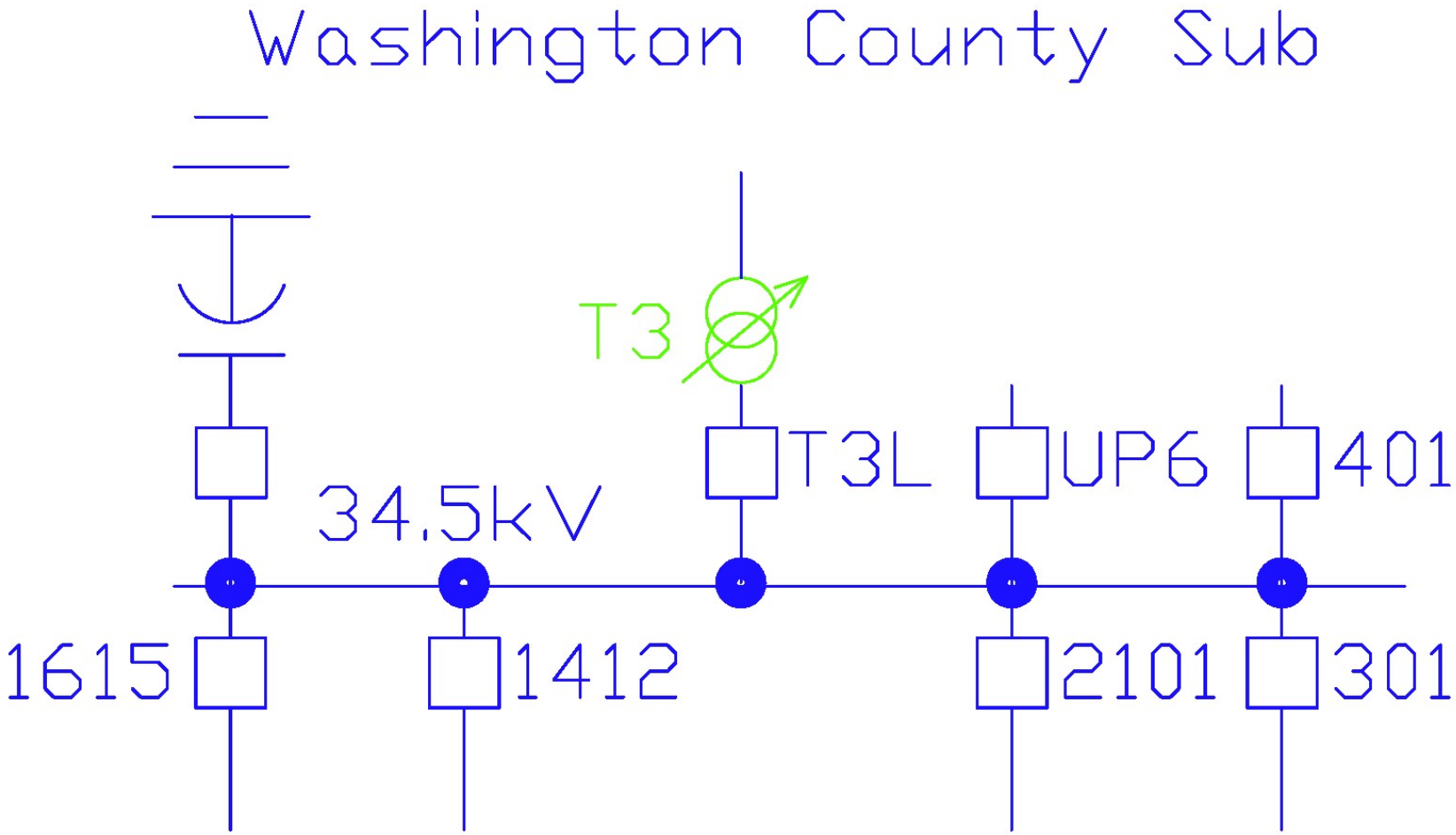
WCS T3 Replacement



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Project Descriptions – Under Construction

- Stanford Cap Breaker and Control Shelter – Replace capacitor breaker and install new control shelter
- Hermon Breaker and Protection Upgrade – Add L77 and 78 breakers and related protection to improve area reliability
- Greenpoint Sub L9 Fault Detection and SCADA Control – Add MO and SCADA control to switches for improved outage response time.
- Various 46kV Line Rebuilds – L7 RR Track ROW, L9 Mardens ROW
- Targeted 34.5kV Line Rebuilds – L24 TRPI, L29 ROW Targeted
- Scotts Hill Rd Relay Replacement – Replace line protective relays to improve reliability

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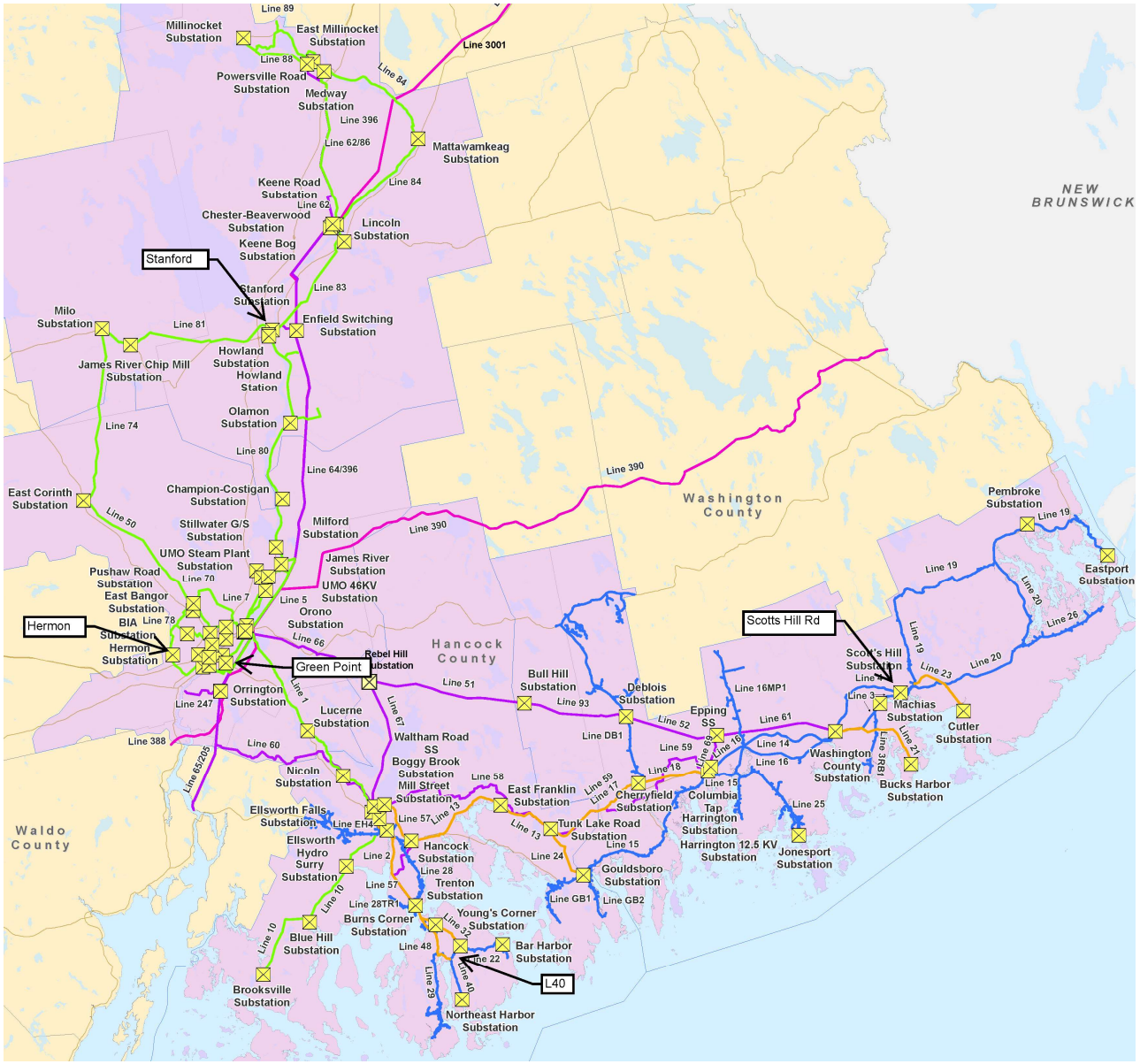
Project Descriptions – Under Construction



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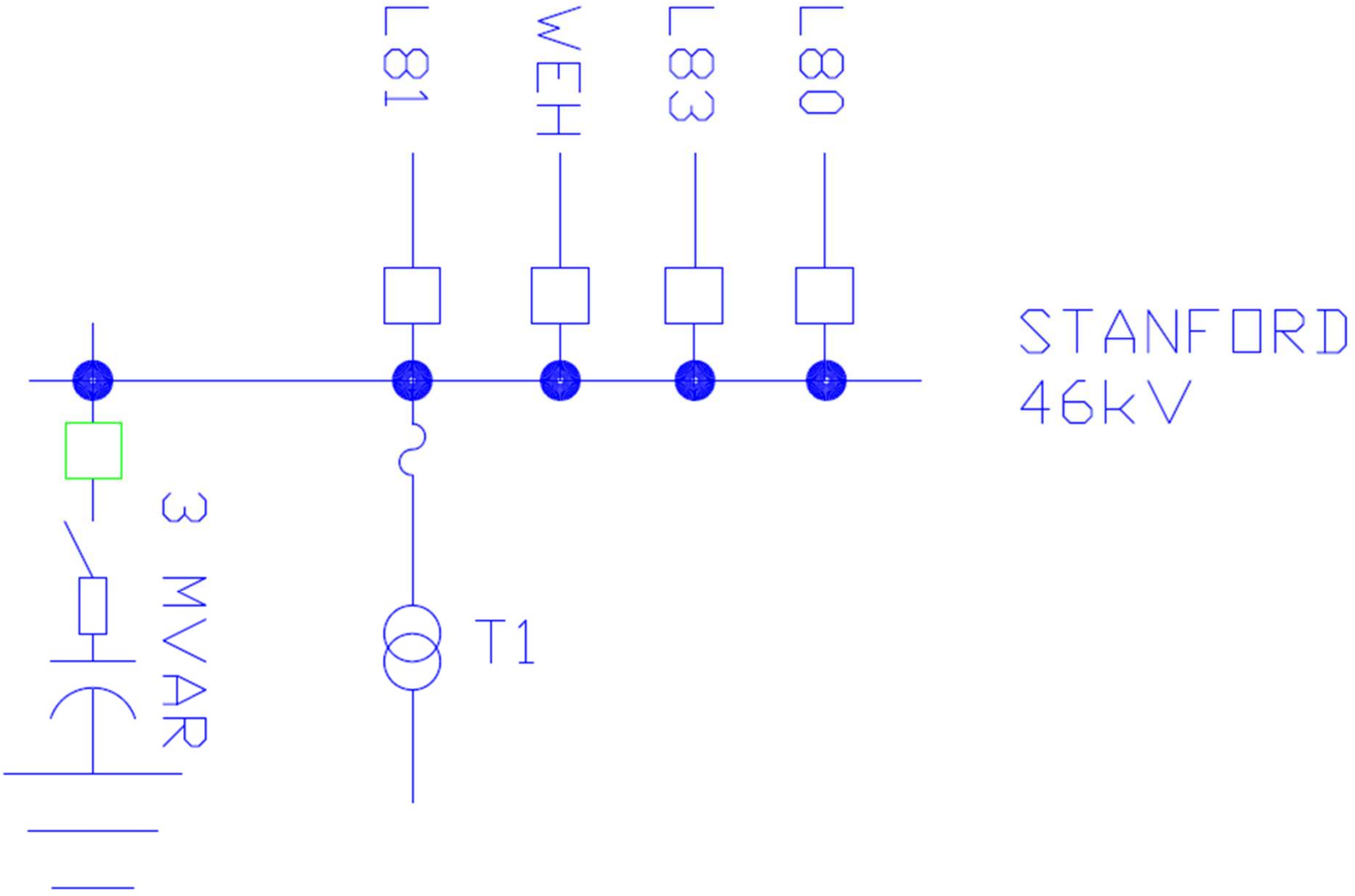
Stanford Cap Breaker Addition



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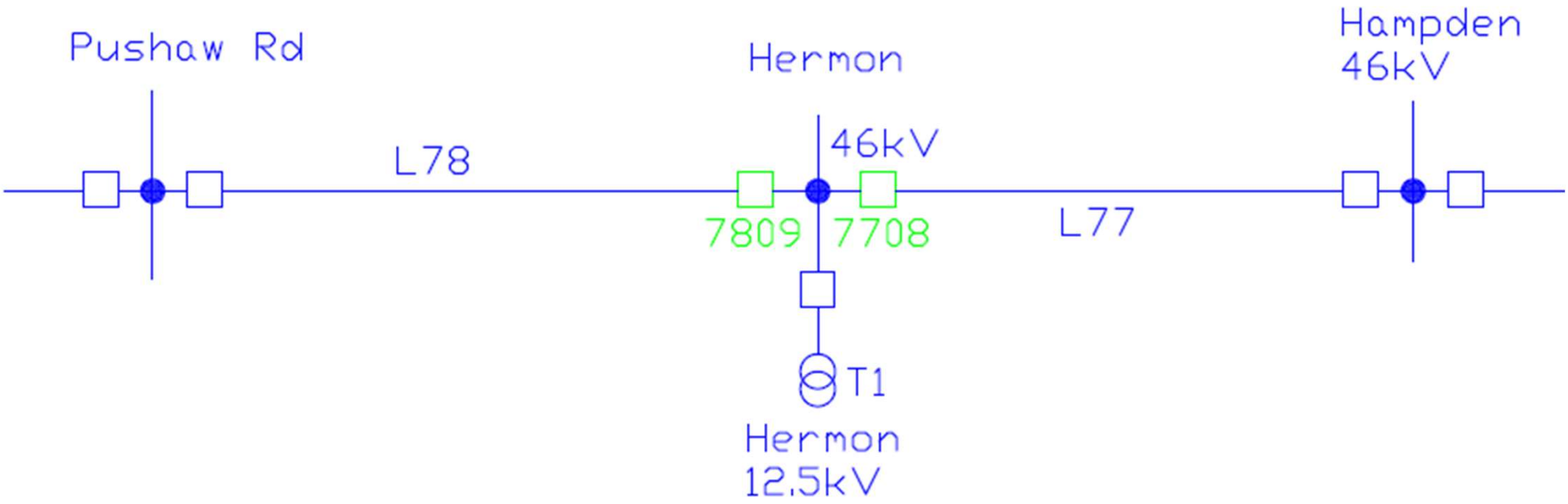
Hermon Sub Breaker and Prot. Upgrade



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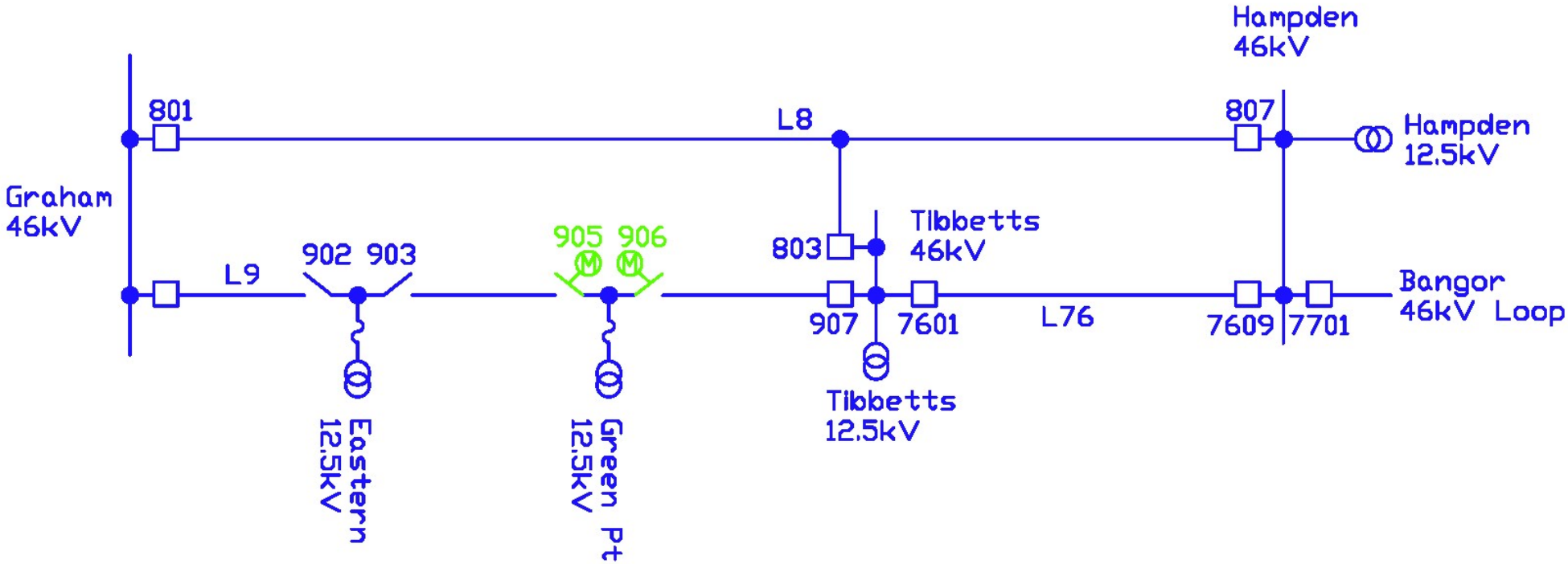
Green Pt L9 Fault Detection and SCADA Control



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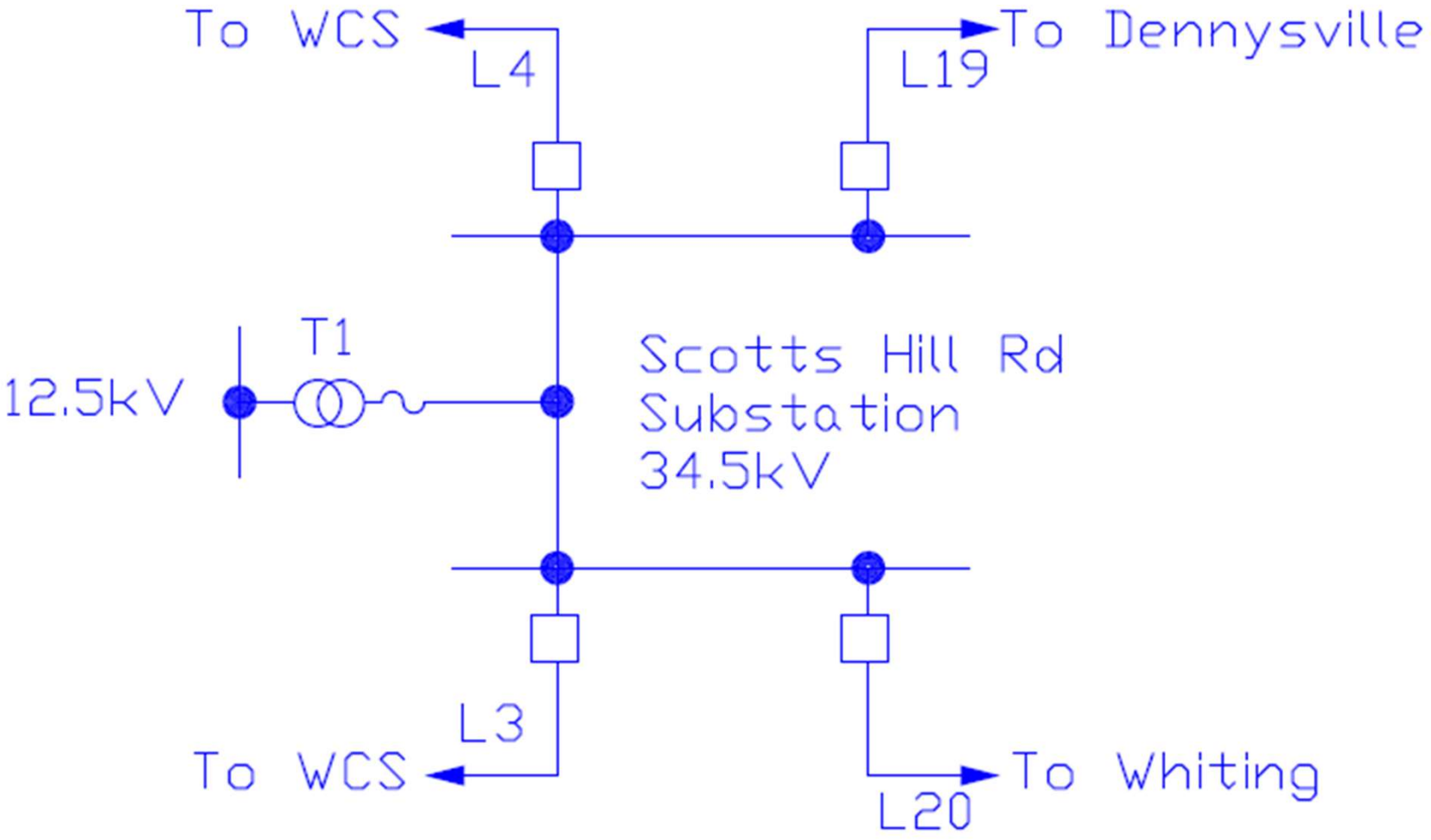
Scotts Hill Rd Relay Replacement



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Local System Planning Criteria

Criteria follows ISO-New England as well as TPL criteria or local planning criteria as appropriate

The transmission system for purposes of this study is defined as those system facilities that are operated at 34.5kV and above and are not considered to be under ISO-NE planning (in general non-PTF).

The standard of service to be provided dictates the need for changes to the existing system. It is necessary to consider the capability of transmission system elements, possible equipment failures, and the impact of failures on the ability to serve area loads.

Transmission equipment is designed to operate within certain capabilities. The power that may be transferred over transmission lines depends upon the current carrying capacity of the wire and/or the required clearances of lines above ground. Transformers are limited by their heat dissipation capability. Circuit breakers or switches are designed to sustain a certain continuous amount of current. Also, the operation of customer electrical equipment requires that voltage be maintained within a certain acceptable range. Transmission system facilities are capable of regulating voltage within a limited range by varying reactive power and changing transformer tap settings.

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Local System Planning Criteria

Since all equipment is subject to breakdown, it is necessary to consider the consequence of such failures. One possible outcome could be the overload of other equipment that remains in service. For example, if one of two parallel lines trips, the remaining line may become overloaded. Overload beyond emergency ratings must be avoided due to possible permanent damage to the equipment or for public safety. Another consequence of equipment failure is the loss of power supply to customer load. This could occur with the loss of a radial transmission line or as the result of the cascaded outage of a looped transmission system. The loss of supply is critical to loads such as industrial processing, home heating, and hospitals, and must be considered in the design of the transmission system.

Local System Planning Criteria

- Capacity Criterion
  - No facility is to be loaded in excess of its normal rating for any expected dispatch of system generation at any load level. For any single contingency, no facility is to be loaded in excess of its normal rating for the following load cycle or in excess of its emergency rating immediately following the contingency. Uneconomic generation dispatch may be utilized to maintain power flows within ratings following a contingency.
- Voltage criterion
  - Transmission system voltages are to be maintained between 95% and 105% of operating base voltage under normal system conditions and for any single contingency. Further, voltages on the regulated side of load serving buses are to be maintained between 100% and 105% of operating base voltage under normal system conditions.

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Local System Planning Criteria

Loss of load criterion

- No loss of load in excess of 25 MW is to occur for any single contingency. Loss of load less than 25 MW should be resupplied within 24 hours, except under very adverse conditions.

Maintenance criterion

- Transmission system planned maintenance is to be possible without exceeding normal voltage and capacity limits and without loss of load.