



DENNY SUBSTATION DESIGN AND CONSTRUCTION

Northwest Energy Systems Symposium

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NEEDS

- Changes in zoning prompted high density load growth
- Capacity
- High reliability Service - Network System
- Proposed customer projects



DENNY PROGRAM

- Substation
- 115/230 kV
Transmission Line
(Denny-Mass)
- New SLU Network
Area



ORIGINAL RENDERING



Substation Facing Southwest

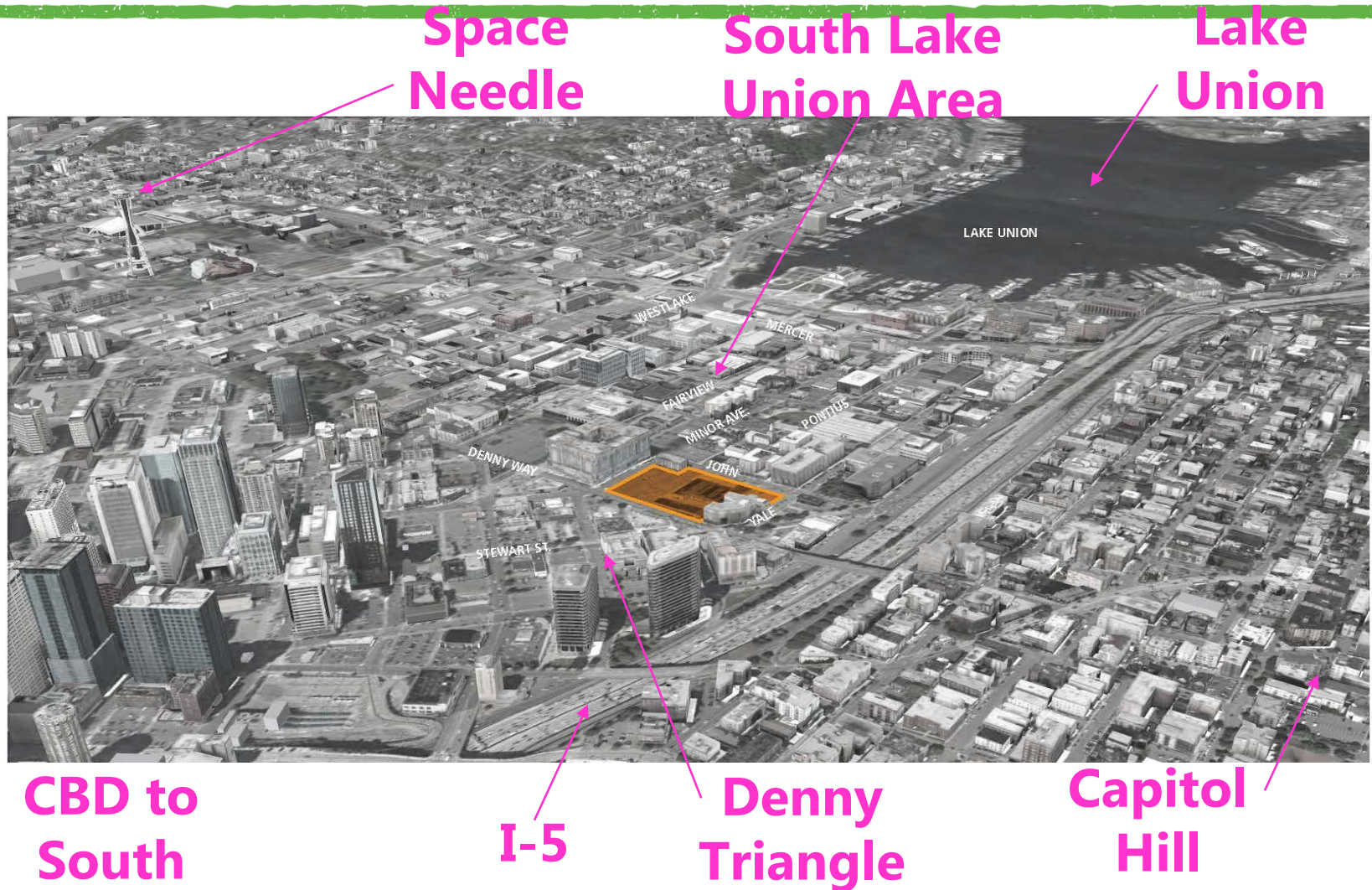
DENNY SUBSTATION RENDERING; FROM DENNY



FINAL RENDERING



WHERE'S DENNY SUB?



WHERE'S DENNY SUB?



AERIAL VIEW FROM DENNY WAY

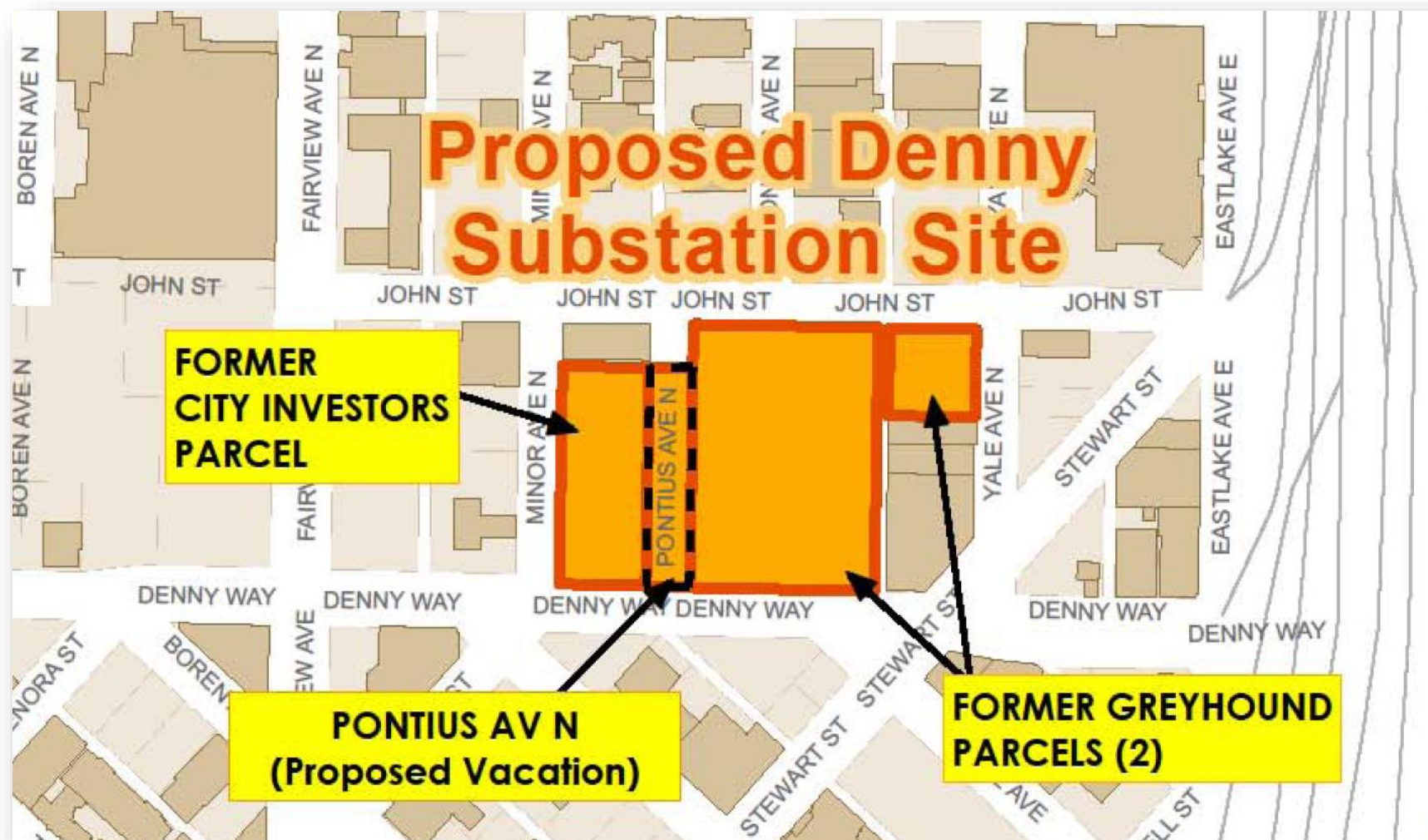


SITE PLAN

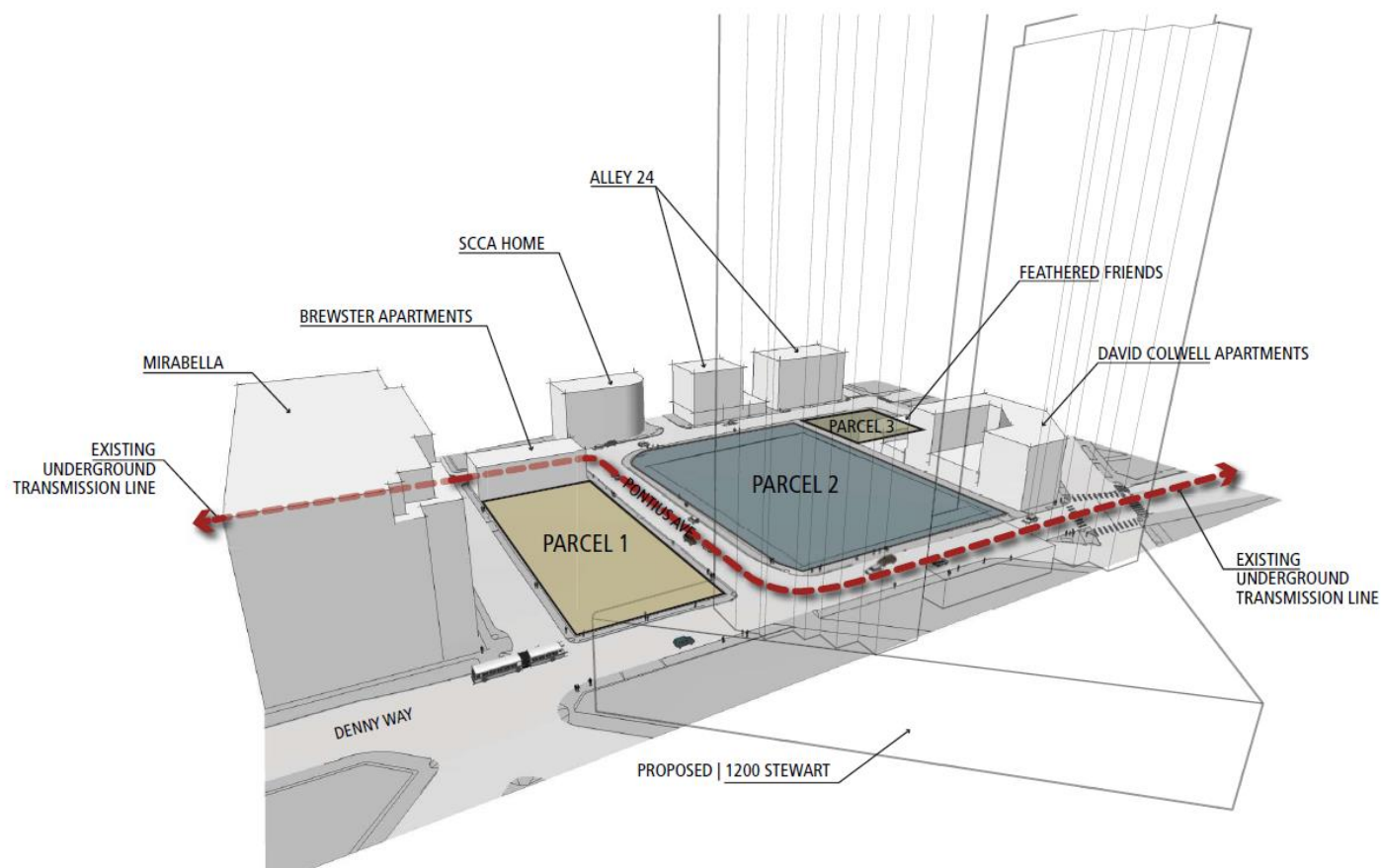


STREET VIEW ALONG DENNY WAY LOOKING NORTH

PARCEL LAYOUT



DENNY SUBSTATION PROJECT SITE

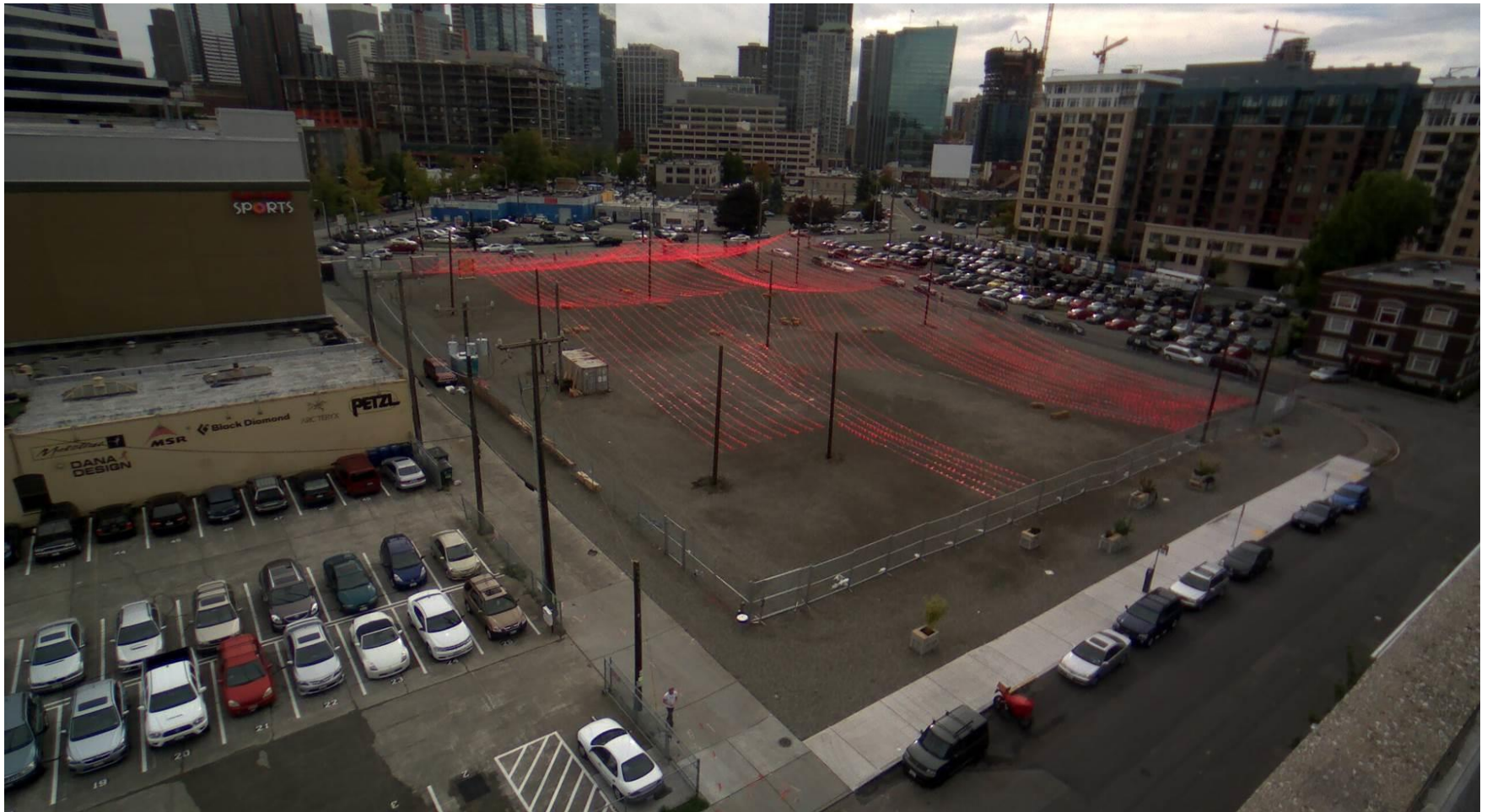


SITE & CONTEXT DIAGRAM

SITE REMEDIATION



PARTIALLY REMEDIATED SITE WITH ART



SUBSTATION - INITIAL BUILD OUT

- (3) 45/60/75 MVA, 115-13.8 kV transformers
- (4) diameters of Breaker and a Half 115 kV GIS
- 15 kV Ring Bus for 4 Subnets with Redundant Fault Current Limiting in Arc Flash Rated, Air Insulated Switchgear
- (1) 115 kV Line Reactor with Gas Insulated Switchgear to Prevent Overload from Loop Flow

SUBSTATION – ULTIMATE BUILD OUT

- (4) 45/60/75 MVA, 115-13.8 kV transformers
- (2) 150 MVA, 230-115 kV transformers
- (3) 90 MVA, 115-26 kV transformers
- (7) diameters of 115 kV Gas Insulated Switchgear
- (4) breaker ring 230 kV Gas Insulated Switchgear
- 15/26 kV Arc Flash Rated Air Insulated Switchgear
- (2) 115 kV Line Reactors with Gas Insulated SW



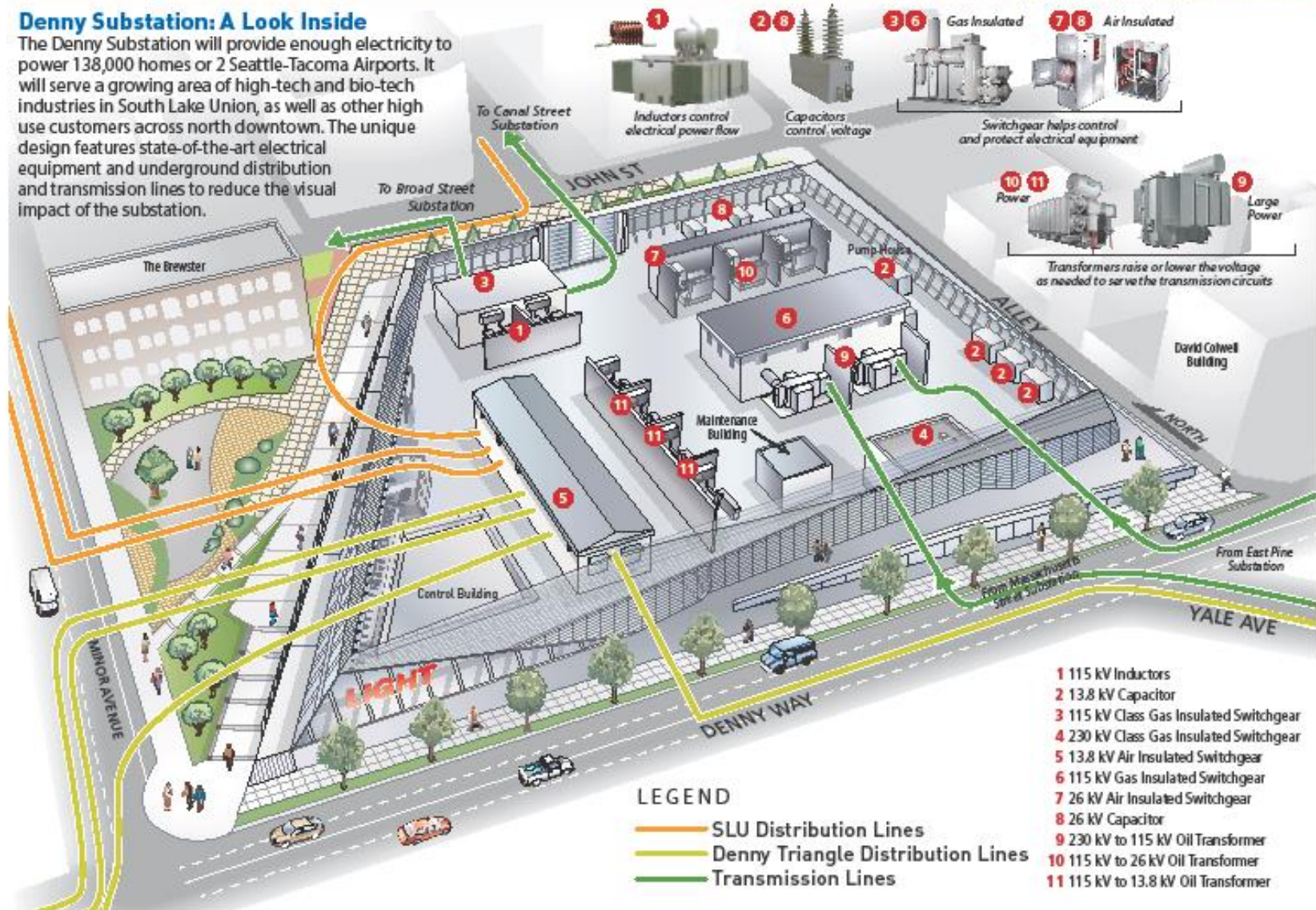
Denny Substation Project

Powering Seattle through the 21st century



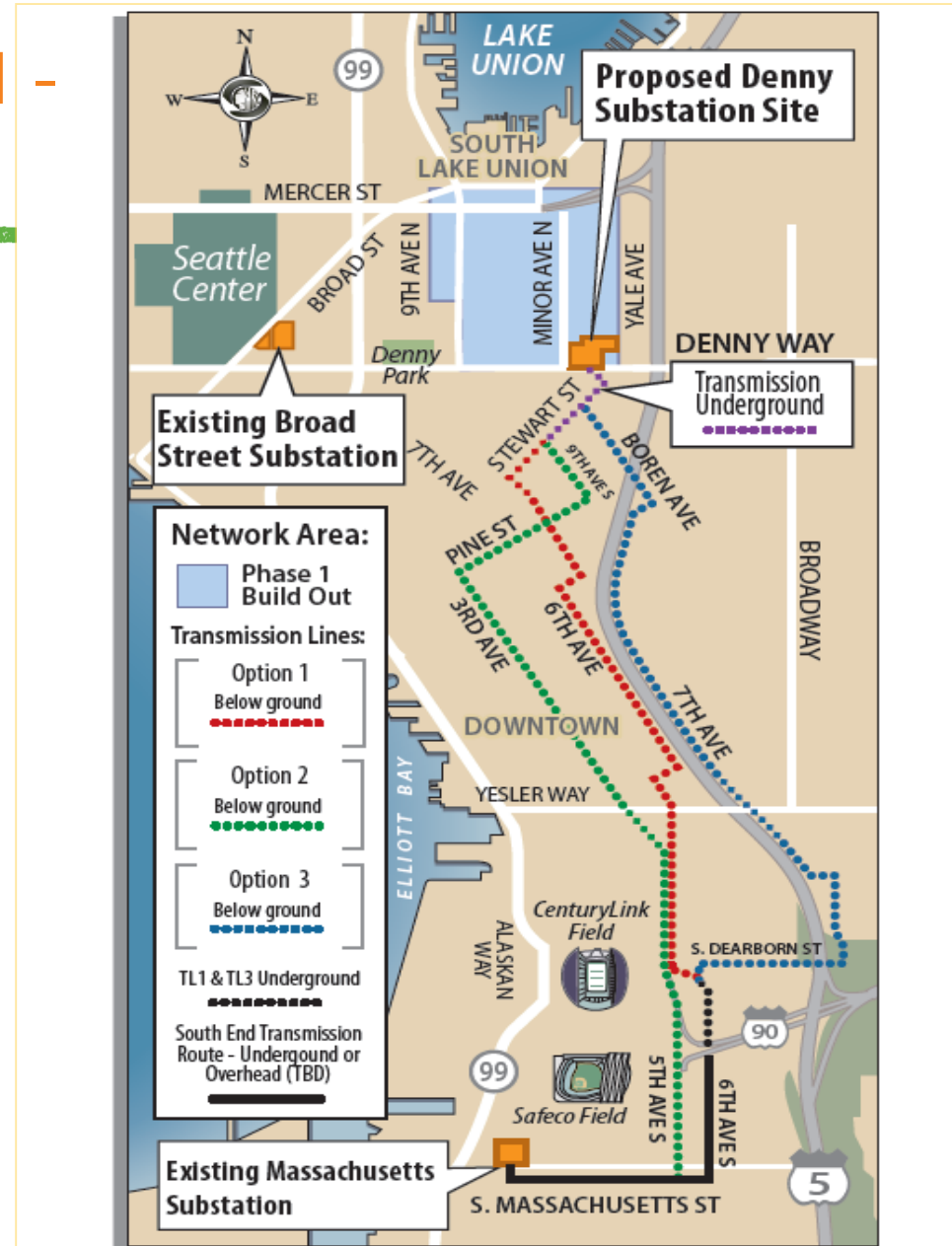
Denny Substation: A Look Inside

The Denny Substation will provide enough electricity to power 138,000 homes or 2 Seattle-Tacoma Airports. It will serve a growing area of high-tech and bio-tech industries in South Lake Union, as well as other high use customers across north downtown. The unique design features state-of-the-art electrical equipment and underground distribution and transmission lines to reduce the visual impact of the substation.



TRANSMISSION SYSTEM - ULTIMATE BUILD OUT

- Utilize Existing 115 kV East Pine – Broad Transmission Line
- New 115/230 kV Transmission Line (Denny-Mass)



DISTRIBUTION SYSTEM - ULTIMATE BUILD OUT

- 13.8kV Distribution (Network): 4 subnets of 6 feeders per subnet, 600 Amps per feeder (24 feeders total)
- 26kV Distribution (Network & Radial): 1 subnet of 6 feeders plus 6 radial circuits (12 total)



SCHEDULE

- Substation
Energization 2018
- Distribution
Network 2018
- Provide Network
Service 2018



CHALLENGES

- Political Issues
- Project Cost Increase
- 50 Year Old HPFF Transmission Line
- Tribal Knowledge





CITY LIGHT

OUR VISION

To set the standard—to deliver the best customer service experience of any utility in the nation.

OUR MISSION

Seattle City Light is dedicated to exceeding our customers' expectations in producing and delivering environmentally responsible, safe, low-cost and reliable power.

OUR VALUES

Excellence, Accountability, Trust and Stewardship.

