

Western Treasure Valley Electrical Plan Update

Welcome

Jim Burdick
Engineering Leader
Idaho Power

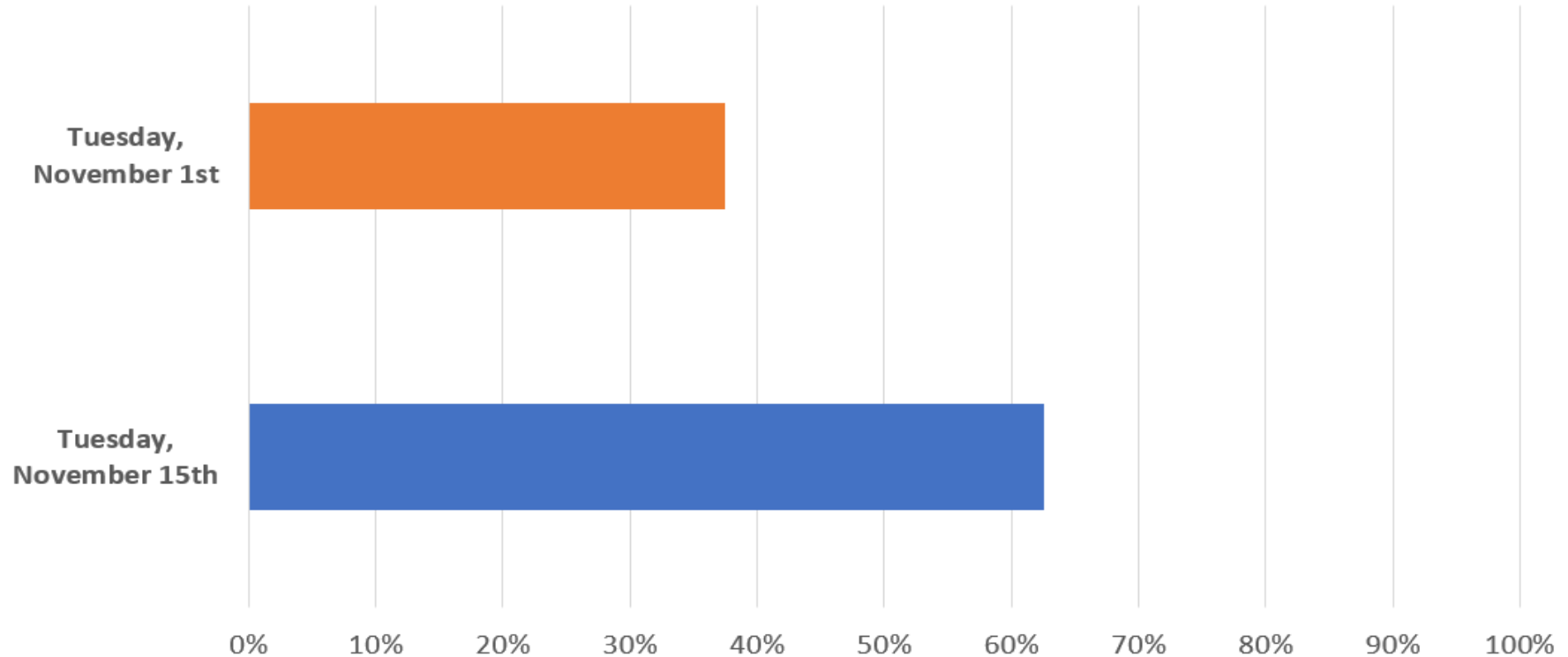


Eastern Idaho Electrical Plan Update

Meeting No. 2



Survey: Which date would work best for you for meeting #3?



Meeting No. 2 Agenda

- 10:00 a.m. – Welcome
- 10:15 a.m. – 2022 Community Goals and Siting Criteria
- 11:15 a.m. – Substation Connections and Reliability Criteria
- 11:45 p.m. – Lunch
- 12:15 p.m. – Small Group Mapping
- 1:30 p.m. – Small Group Reporting
- 1:50 p.m. – Next Steps and Wrap up
- 2:00 p.m. – Adjourn

10 Year Growth

County	2011 Loading (MW)	2019 Loading (MW)	2021 Loading (MW)
Canyon	398	461	510
Gem	30	33	41
Owyhee	31	37	37
Payette	45	64	74
Washington	23	26	32
Malheur	84	73	78
Total	610	693	771

Western Treasure Valley Electrical Plan Update

Community Goals and Siting Criteria

Jim Burdick
Engineering Leader
Idaho Power



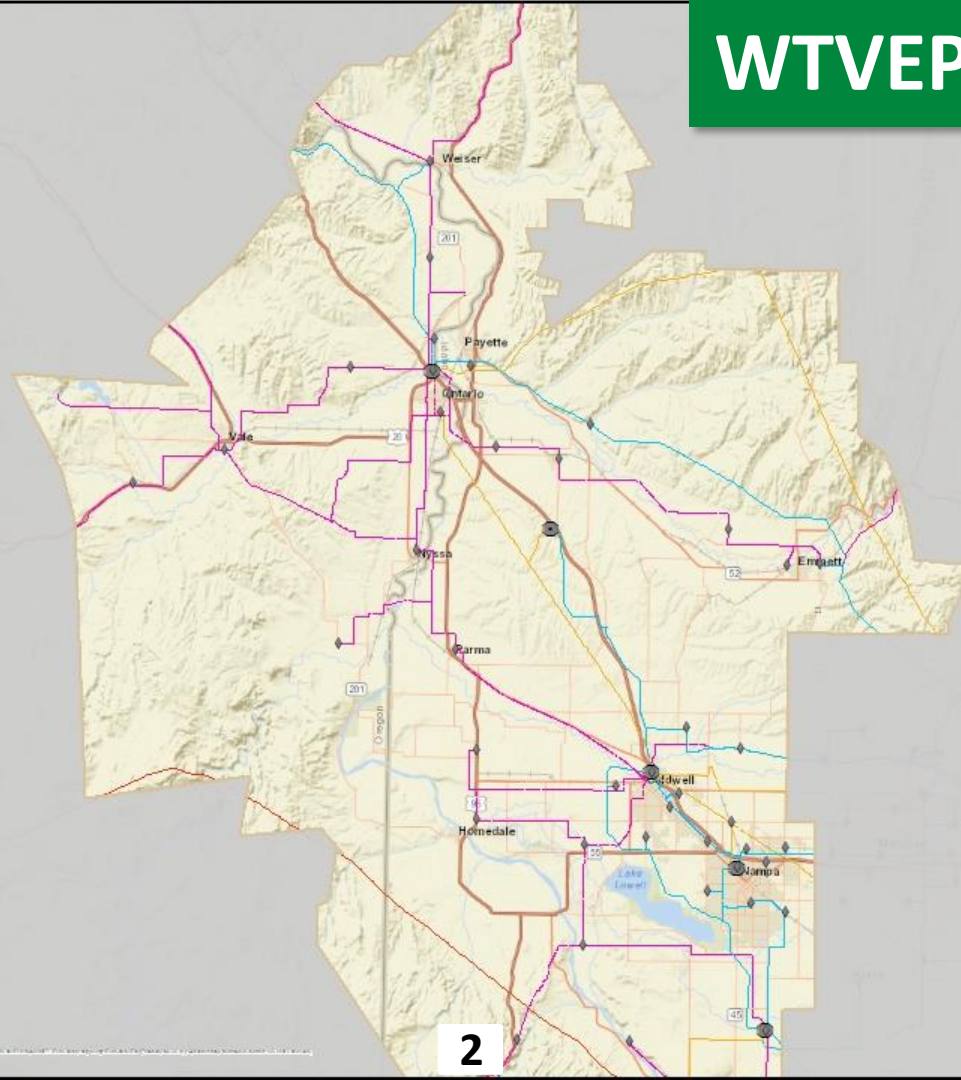
Western Treasure Valley Electrical Plan Update

Reliability and Mapping

Dakota Pfaff
Technical Lead Engineer
Idaho Power



WTVEP Study Area










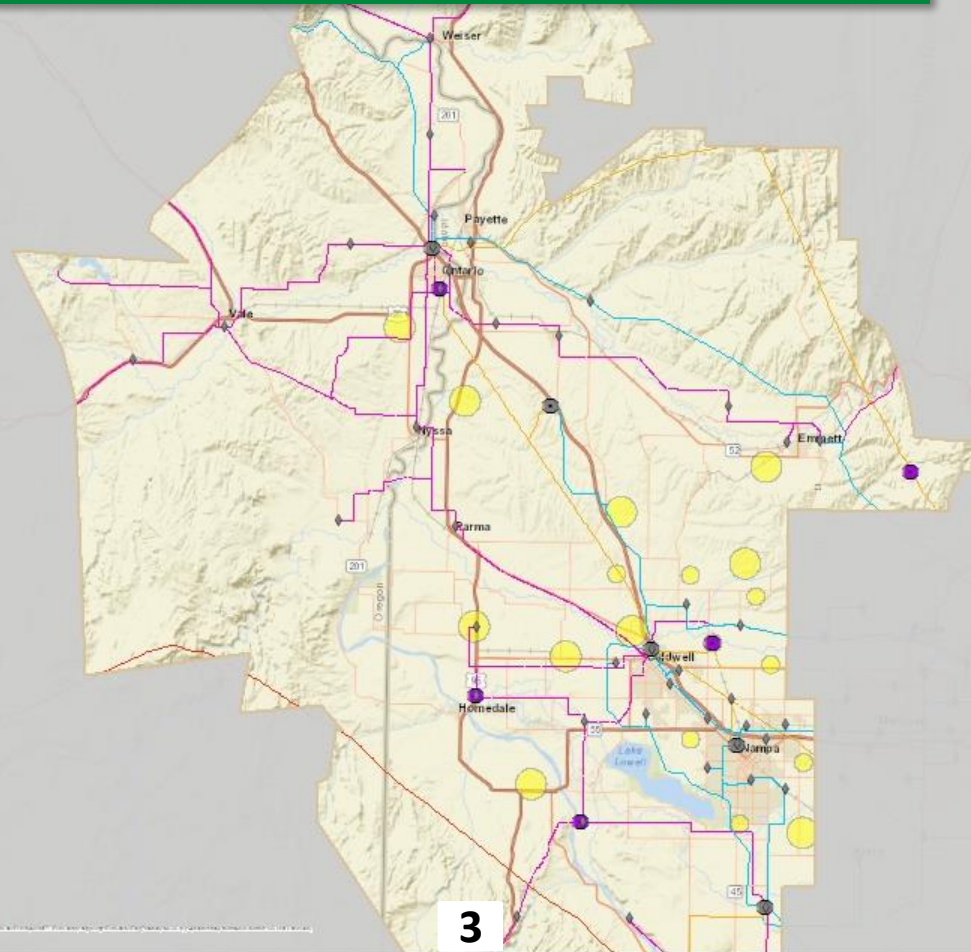
Western Treasure Valley Electrical Plan

- Existing Distribution Substation
- Existing Source Substation
- Existing 69kV Transmission
- Existing 138kV Transmission
- Existing 230kV Transmission
- Existing 500kV Transmission

Total Buildout: 3,913 MW

Western Treasure Valley Electrical Plan

-  Proposed Distribution Station
-  Preferred Source Substation
-  Existing Distribution Substation
-  Existing Source Substation
-  Existing 69kV Transmission
-  Existing 138kV Transmission
-  Existing 230kV Transmission
-  Existing 500kV Transmission



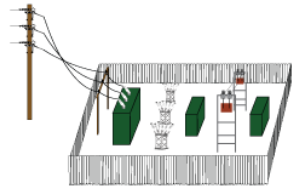
2022 WTVEP Update

Buildout Requirements



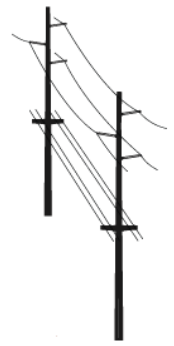
High Voltage Transmission

Minimum Two Lines Per Source Substation

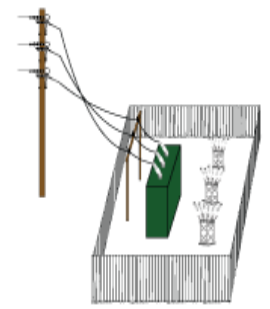


Source Substations

Four New Source Substations



138 kV Transmission

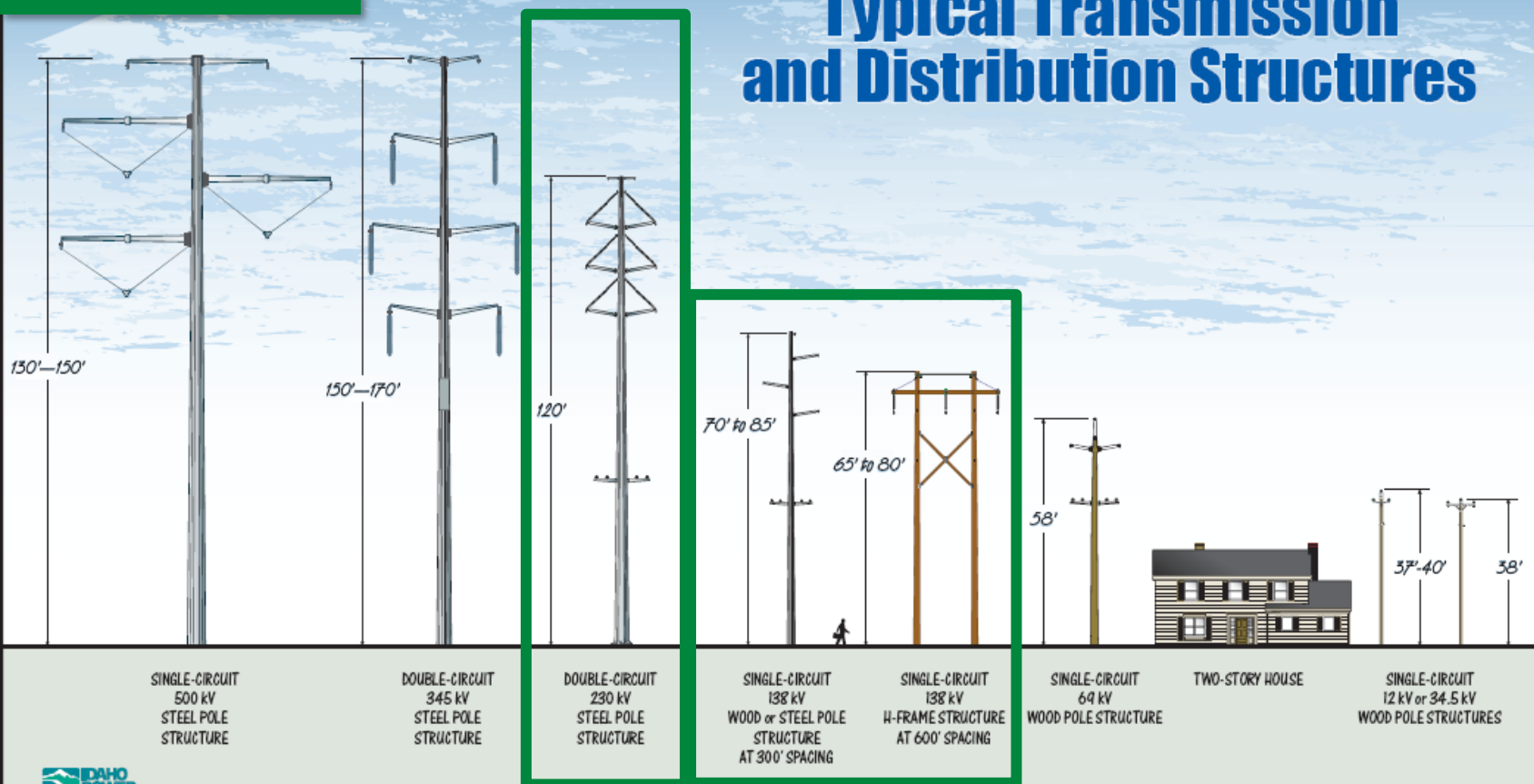


Distribution Substations

19 New Distribution Substations

In Scope

Typical Transmission and Distribution Structures

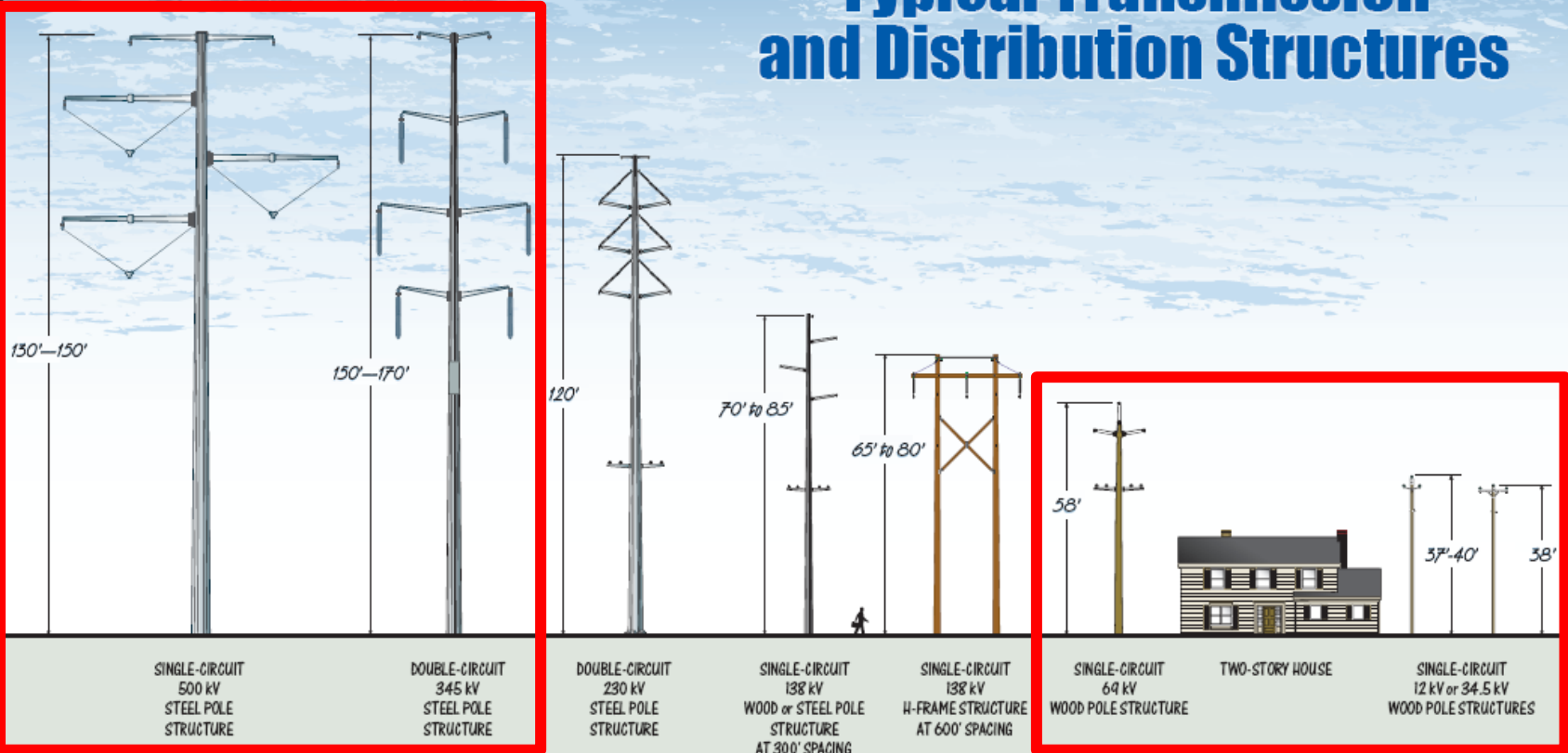


Transmission and Sub-Transmission Lines

Distribution Lines

Out of Scope

Typical Transmission and Distribution Structures



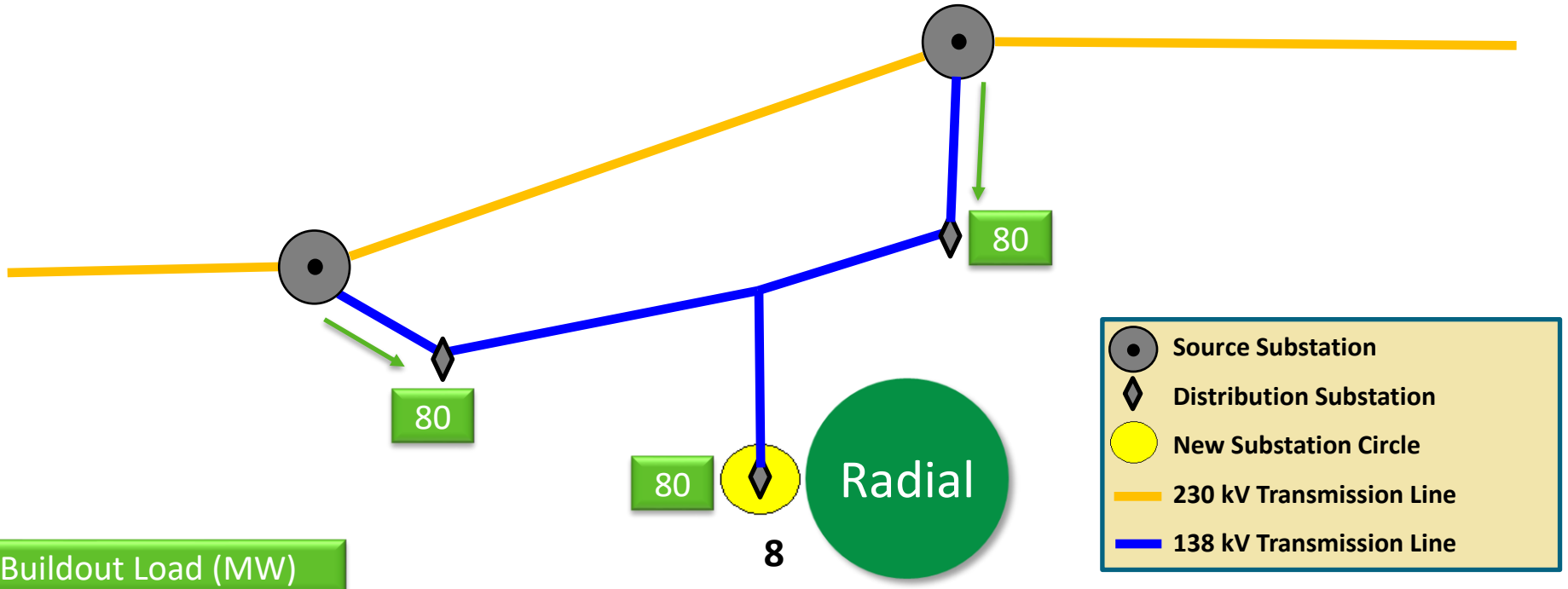
Transmission and Sub-Transmission Lines

Distribution Lines

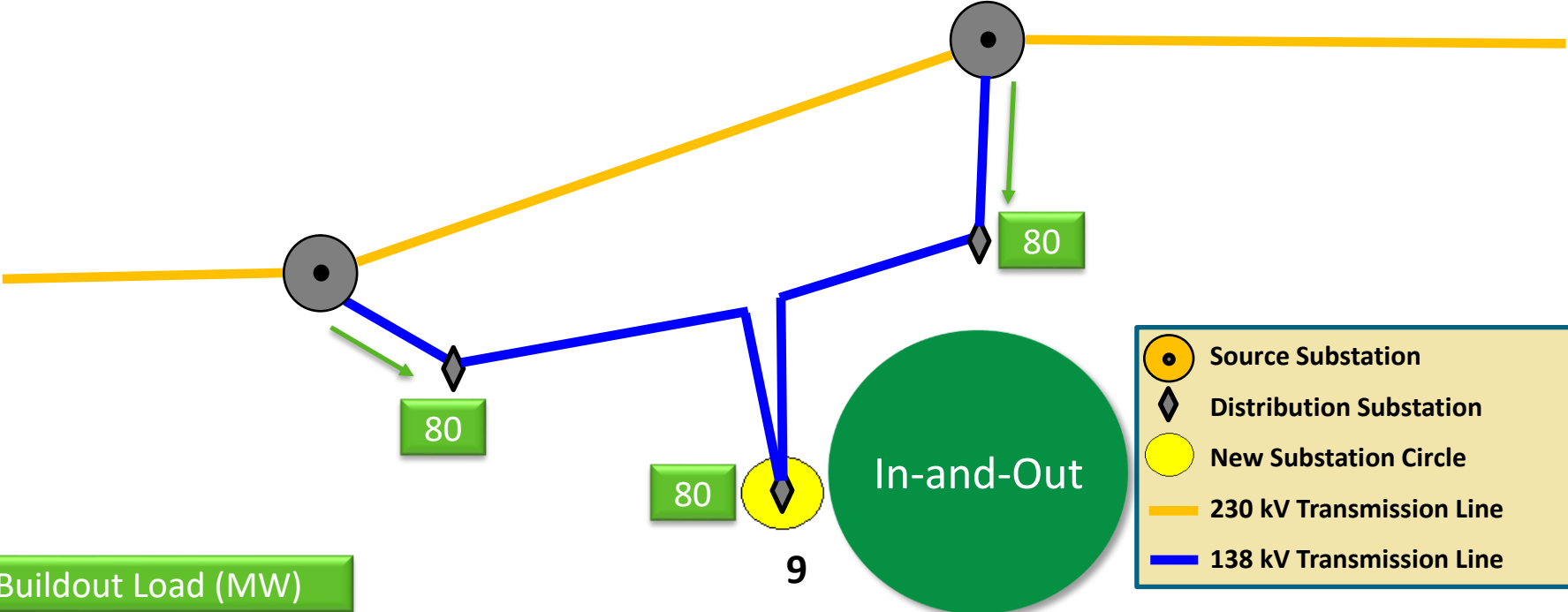
Substation Connections and Reliability Criteria



Substation Connections



Substation Connections



Buildout Load (MW)

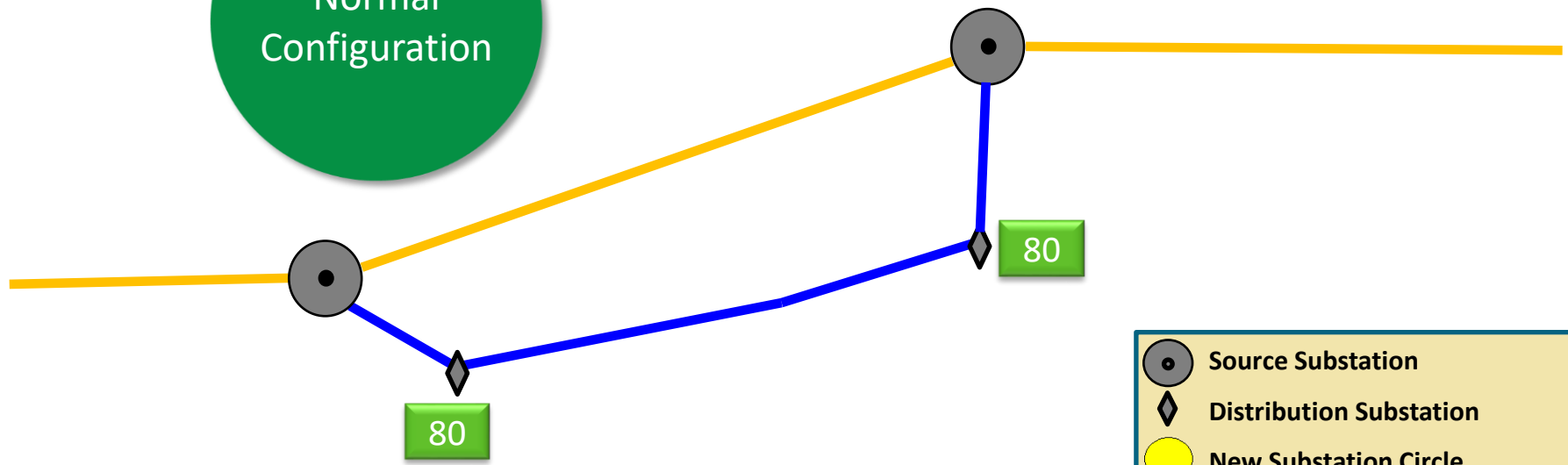
- Source Substation
- Distribution Substation
- New Substation Circle
- 230 kV Transmission Line
- 138 kV Transmission Line

(N-1) Reliability Criteria

- 'N' stands for 'normal'
- (N - 1) indicates the system is operating normally, but with the removal of a single transmission line or transformer
- Used to minimize impact to customers
 - Frequency
 - Duration
 - Number of customers

Reliability Example

Normal Configuration

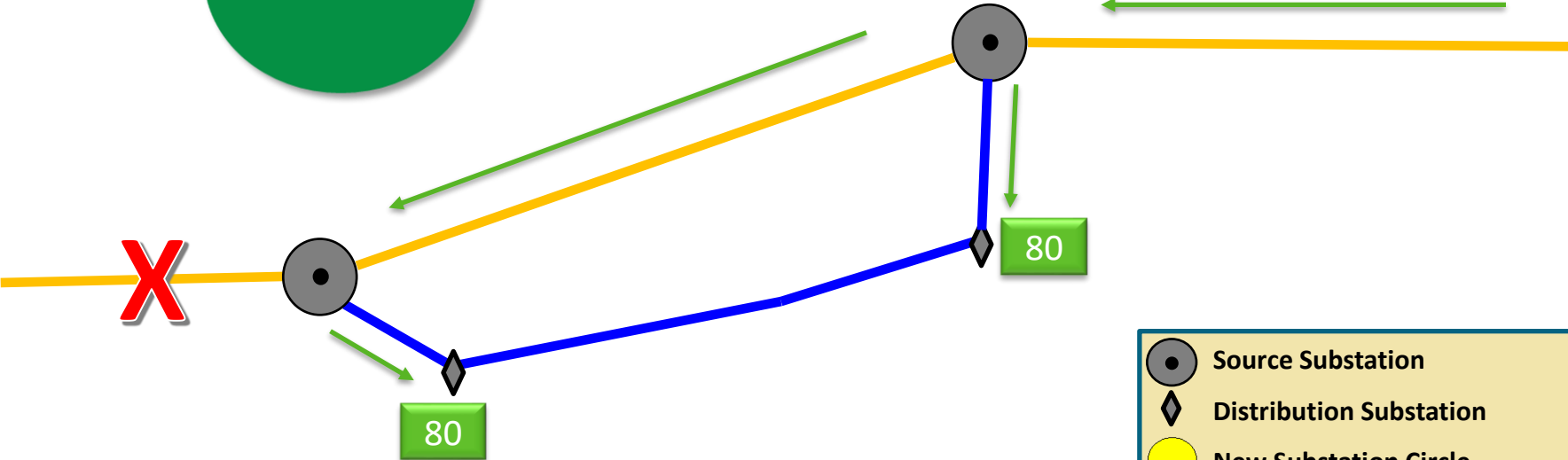


Buildout Load (MW)

- Source Substation
- Distribution Substation
- New Substation Circle
- 230 kV Transmission Line
- 138 kV Transmission Line

Reliability Example

N - 1

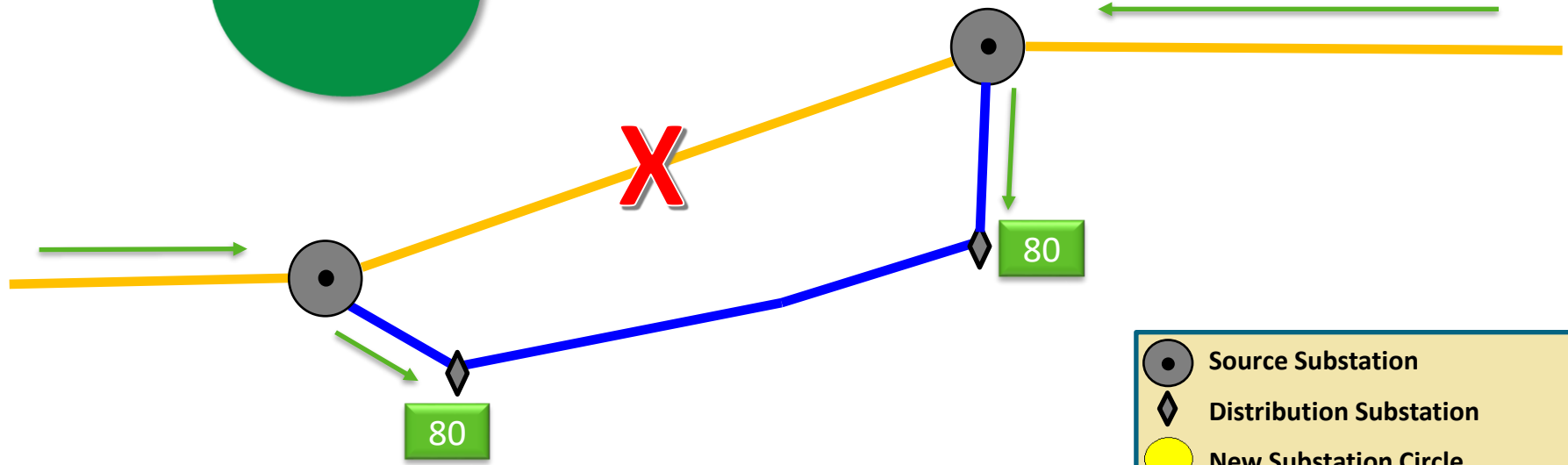


Buildout Load (MW)

- Source Substation
- ◆ Distribution Substation
- New Substation Circle
- 230 kV Transmission Line
- 138 kV Transmission Line

Reliability Example

N - 1

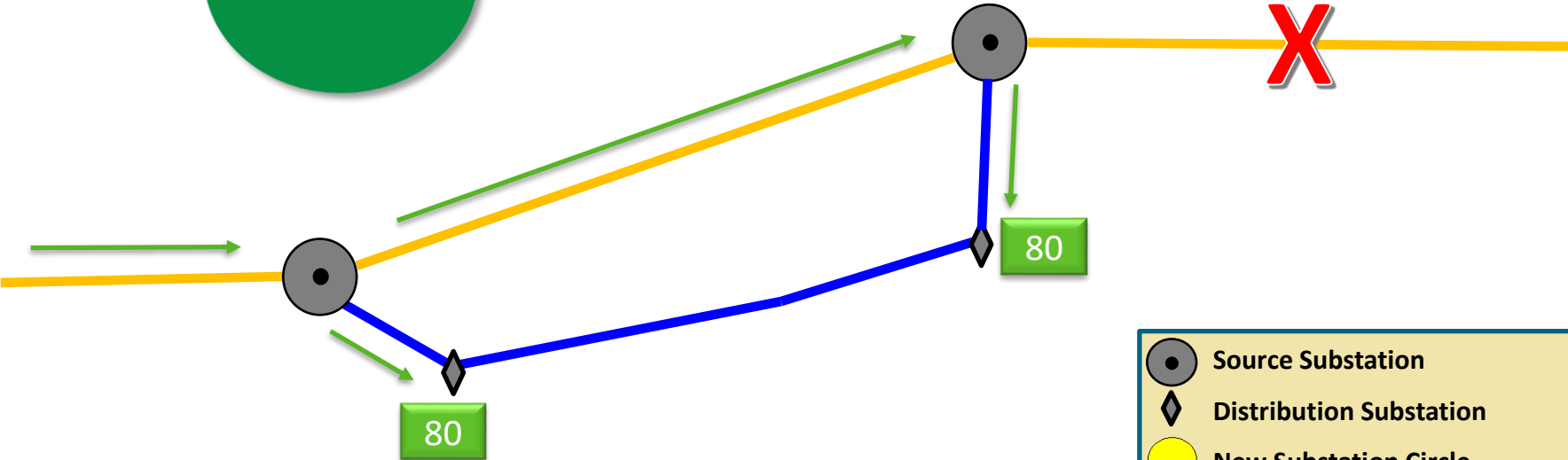


- Source Substation
- ◆ Distribution Substation
- New Substation Circle
- 230 kV Transmission Line
- 138 kV Transmission Line

Buildout Load (MW)

Reliability Example

N - 1

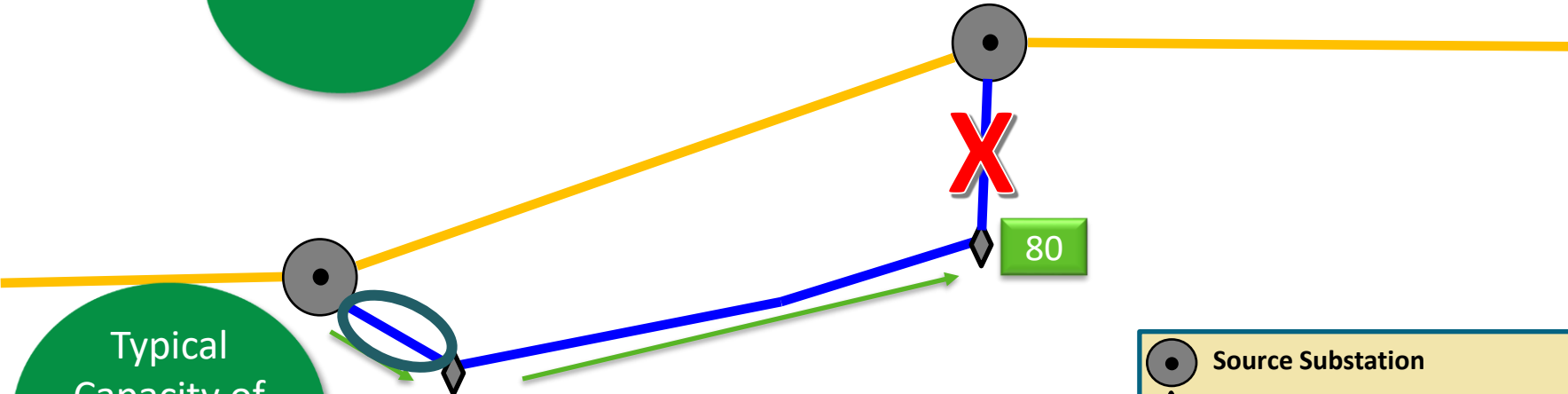


- Source Substation
- ◆ Distribution Substation
- New Substation Circle
- 230 kV Transmission Line
- 138 kV Transmission Line

Buildout Load (MW)

Reliability Example

N - 1

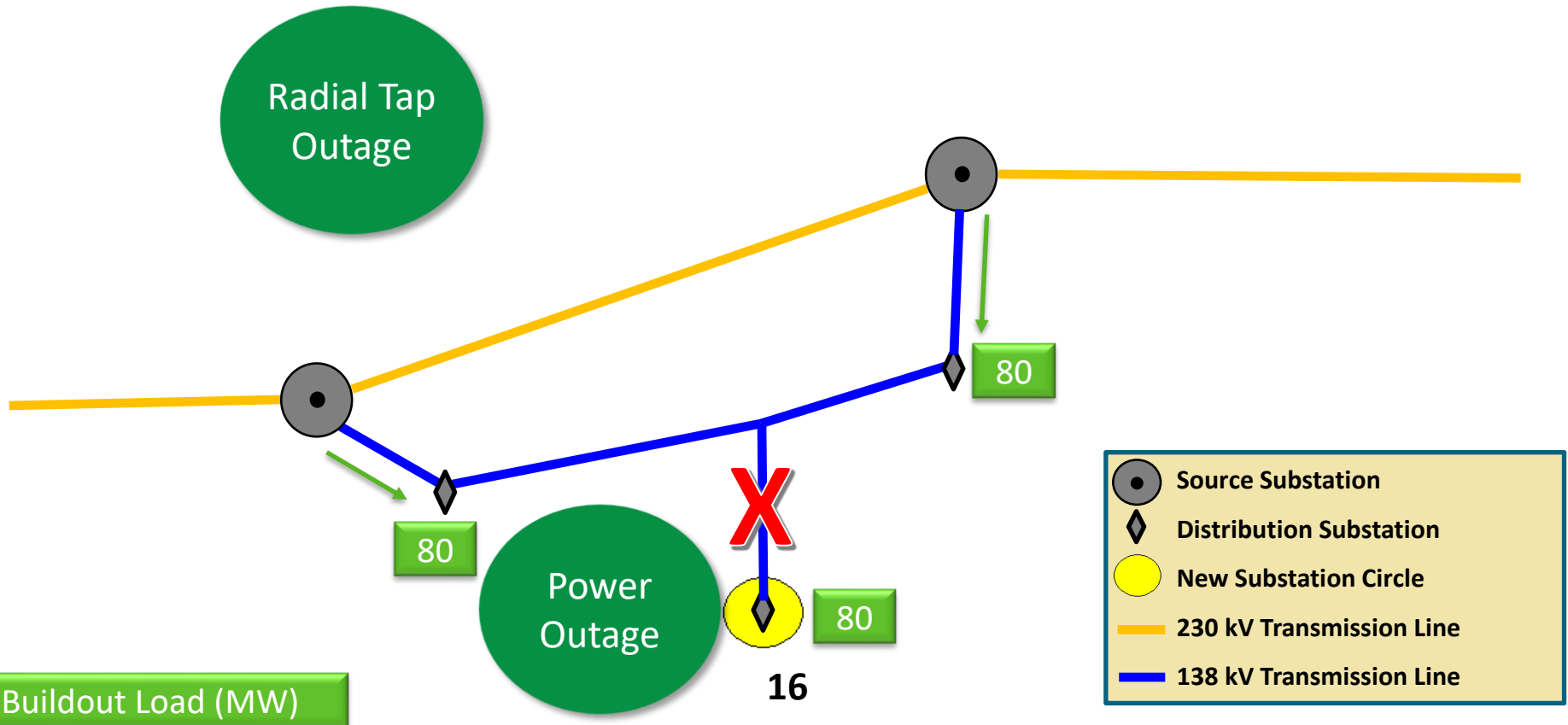


Typical Capacity of a 138 kV line is 200 MW

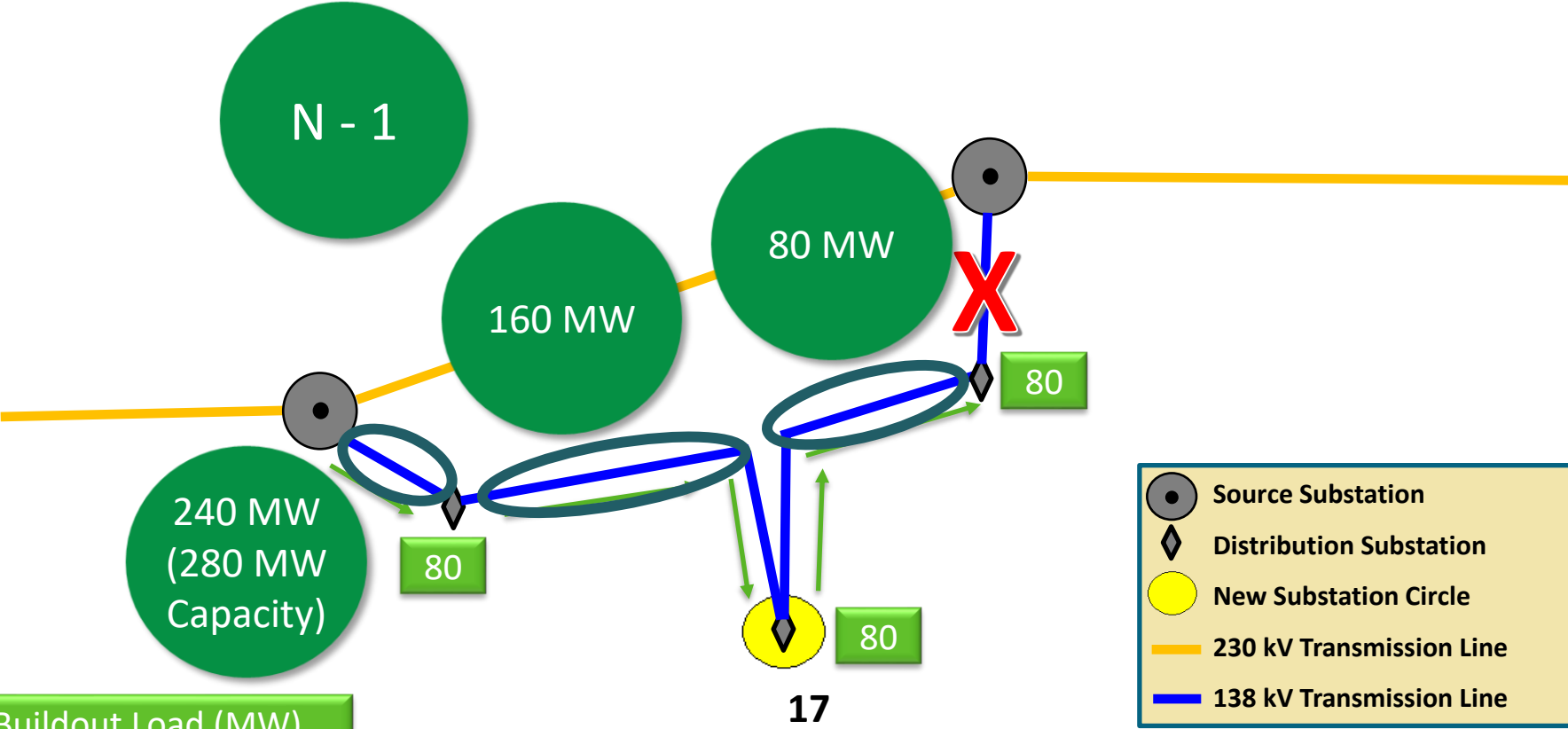
Buildout Load (MW)

- Source Substation
- ◆ Distribution Substation
- New Substation Circle
- 230 kV Transmission Line
- 138 kV Transmission Line

Reliability Example

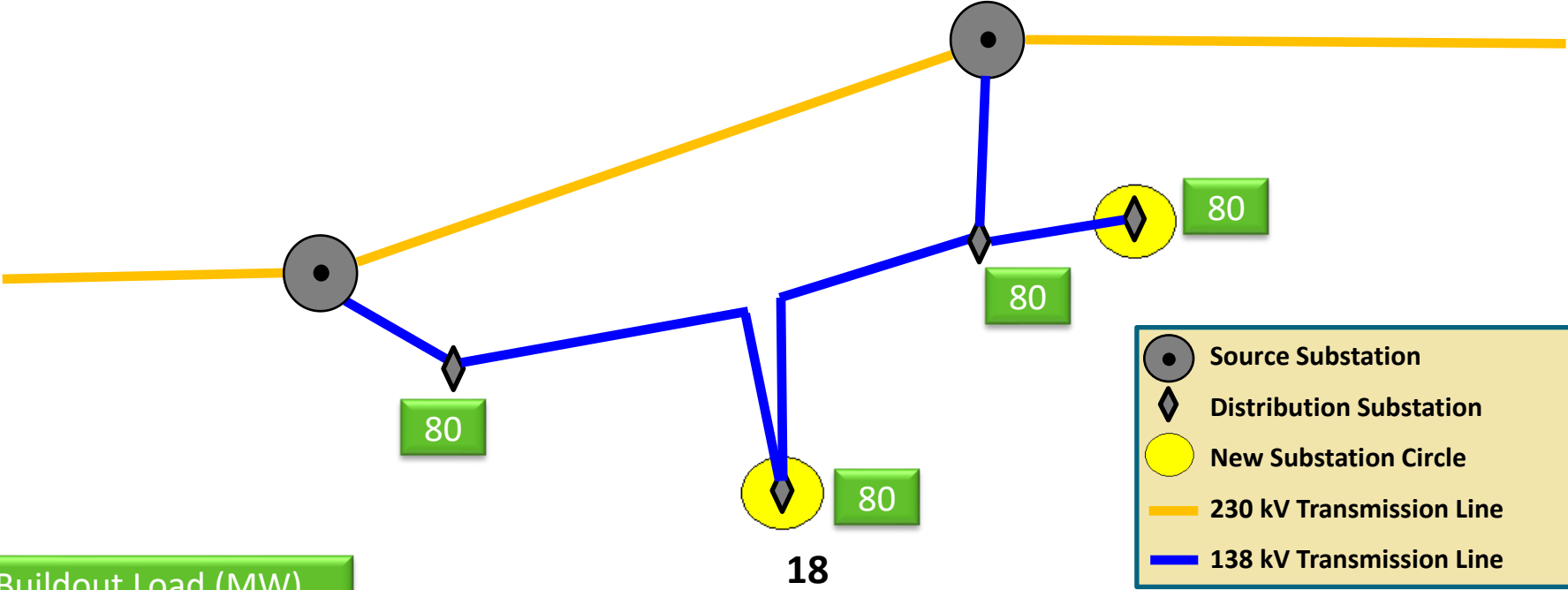


Reliability Example

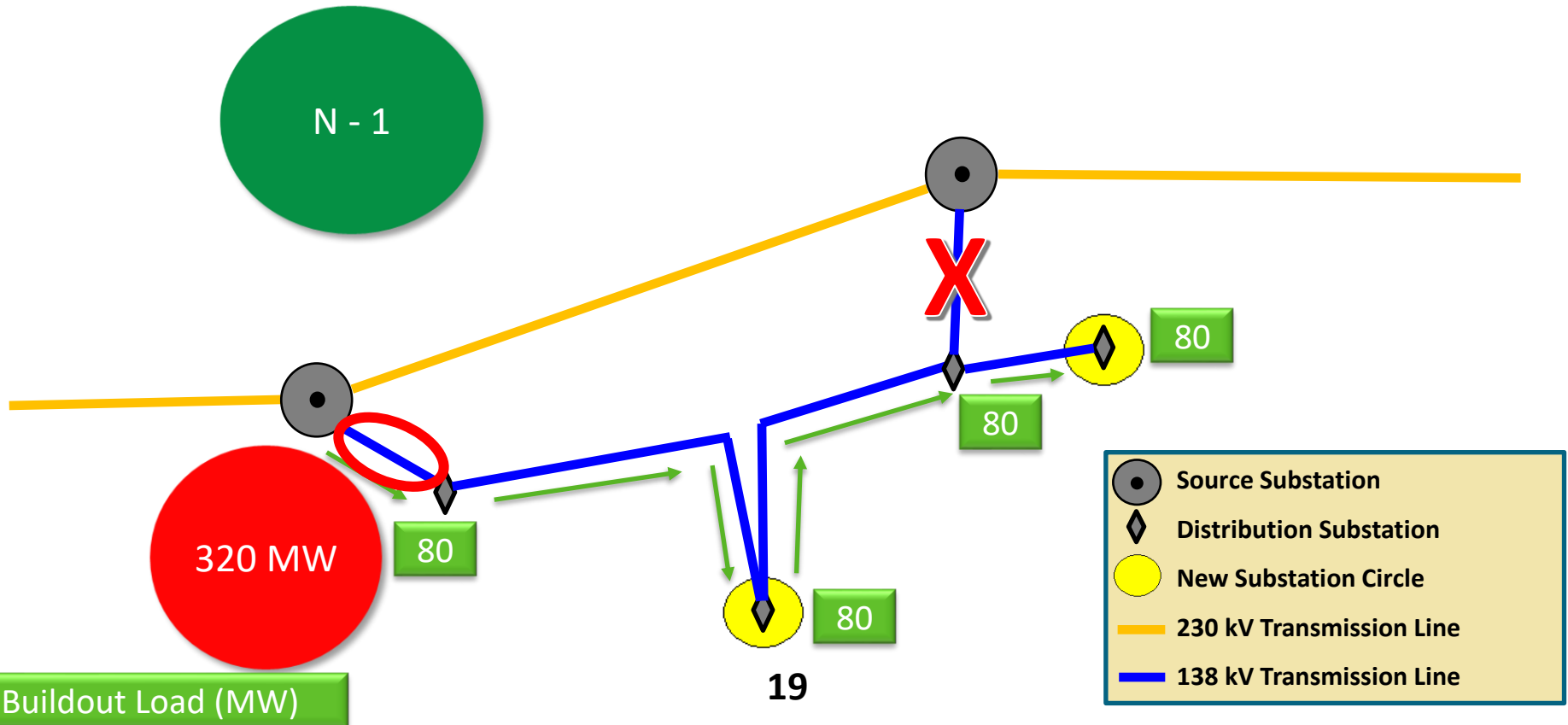


	Source Substation
	Distribution Substation
	New Substation Circle
	230 kV Transmission Line
	138 kV Transmission Line

Mapping Example

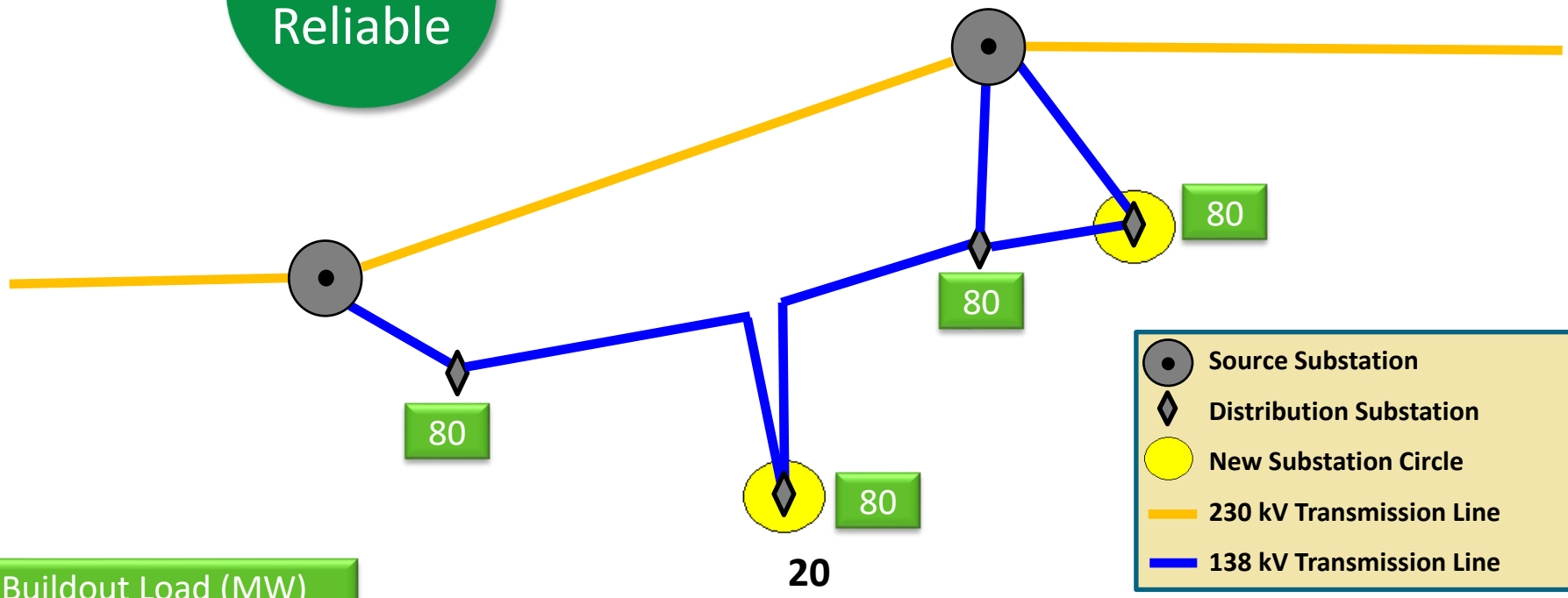


Mapping Example



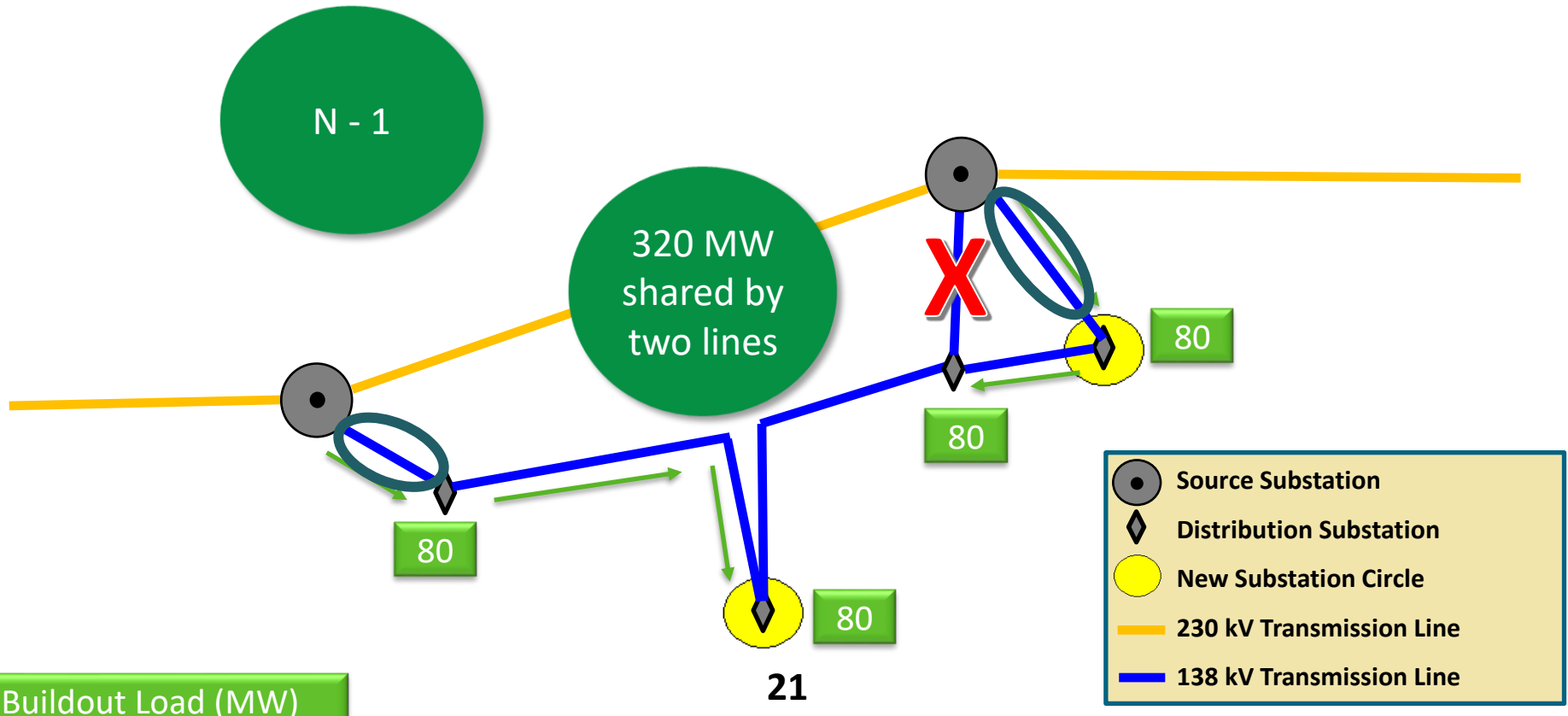
Mapping Example

More Reliable



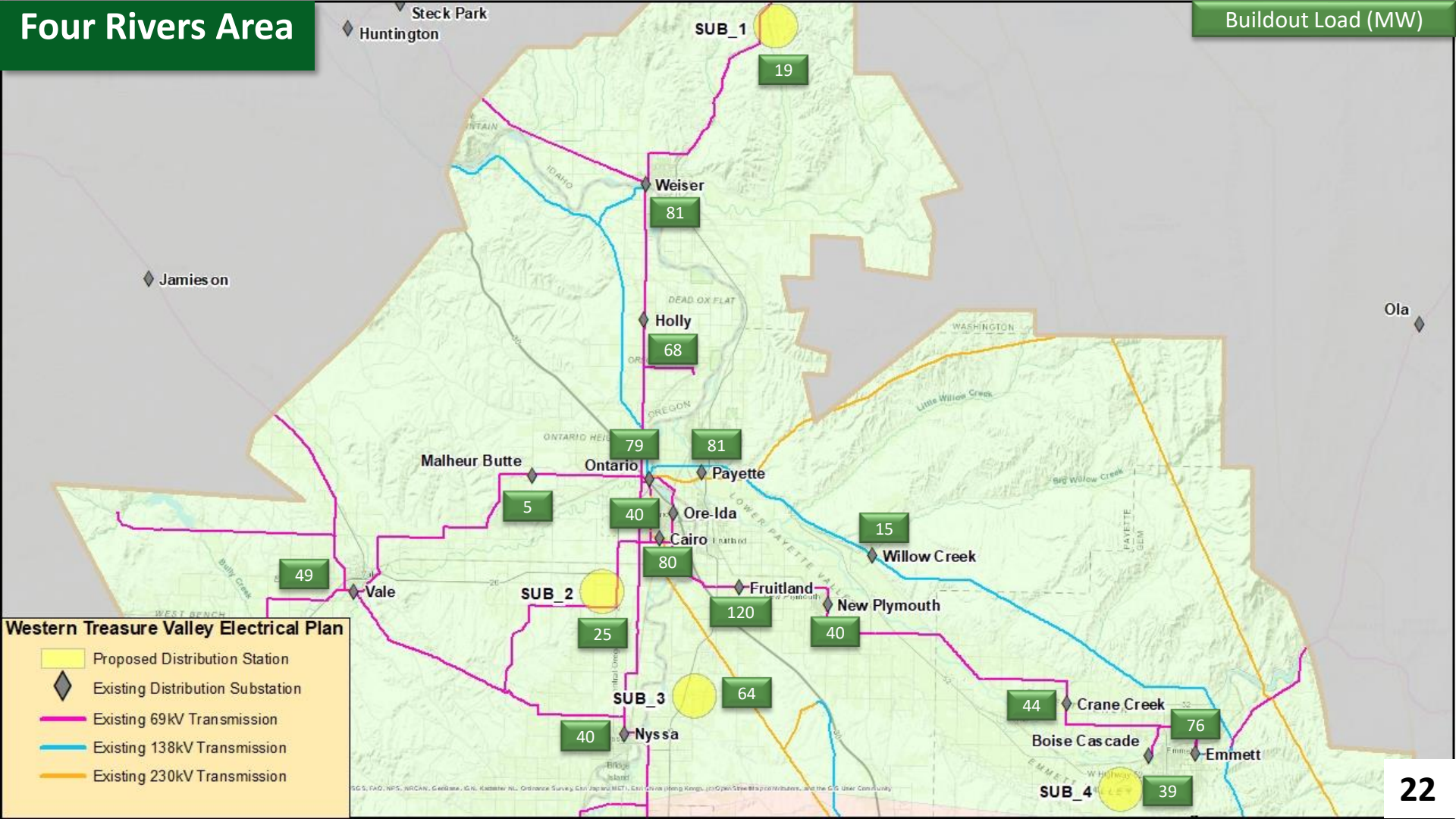
Buildout Load (MW)

Mapping Example



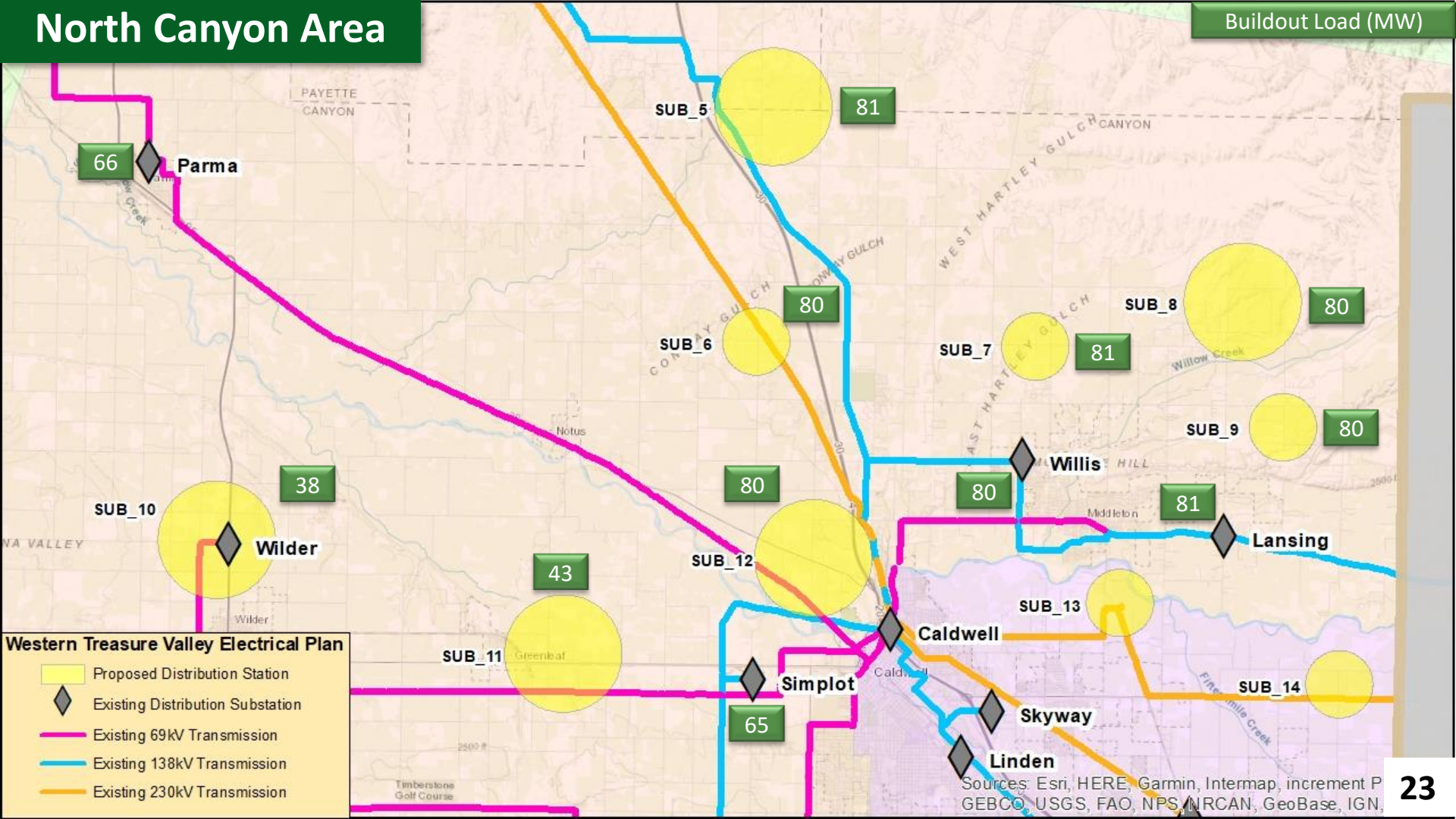
Four Rivers Area

Buildout Load (MW)



North Canyon Area

Buildout Load (MW)



66 Parma

SUB_5 81

SUB_6 80

SUB_7 81

SUB_8 80

SUB_9 80

SUB_10 38 Wilder

80

80 Willis Hill

81

Lansing

Wilder

43

SUB_12 80

SUB_13

Caldwell

SUB_14

SUB_11 Greenleaf

65






Simplot

Skyway

Linden

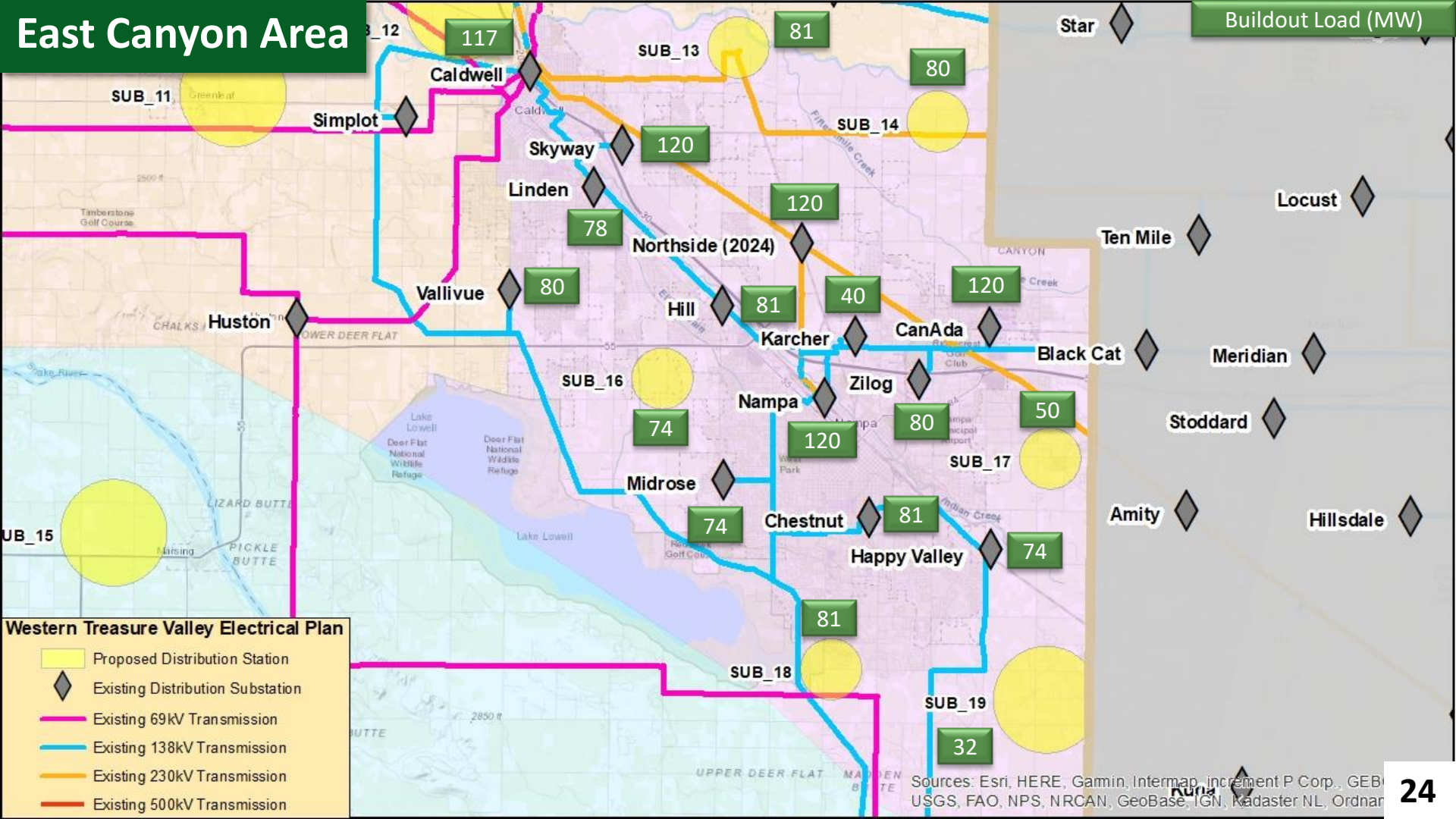
Sources: Esri, HERE, Garmin, Intermap, increment P, GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN,

Western Treasure Valley Electrical Plan

-  Proposed Distribution Station
-  Existing Distribution Substation
-  Existing 69kV Transmission
-  Existing 138kV Transmission
-  Existing 230kV Transmission

East Canyon Area

Buildout Load (MW)



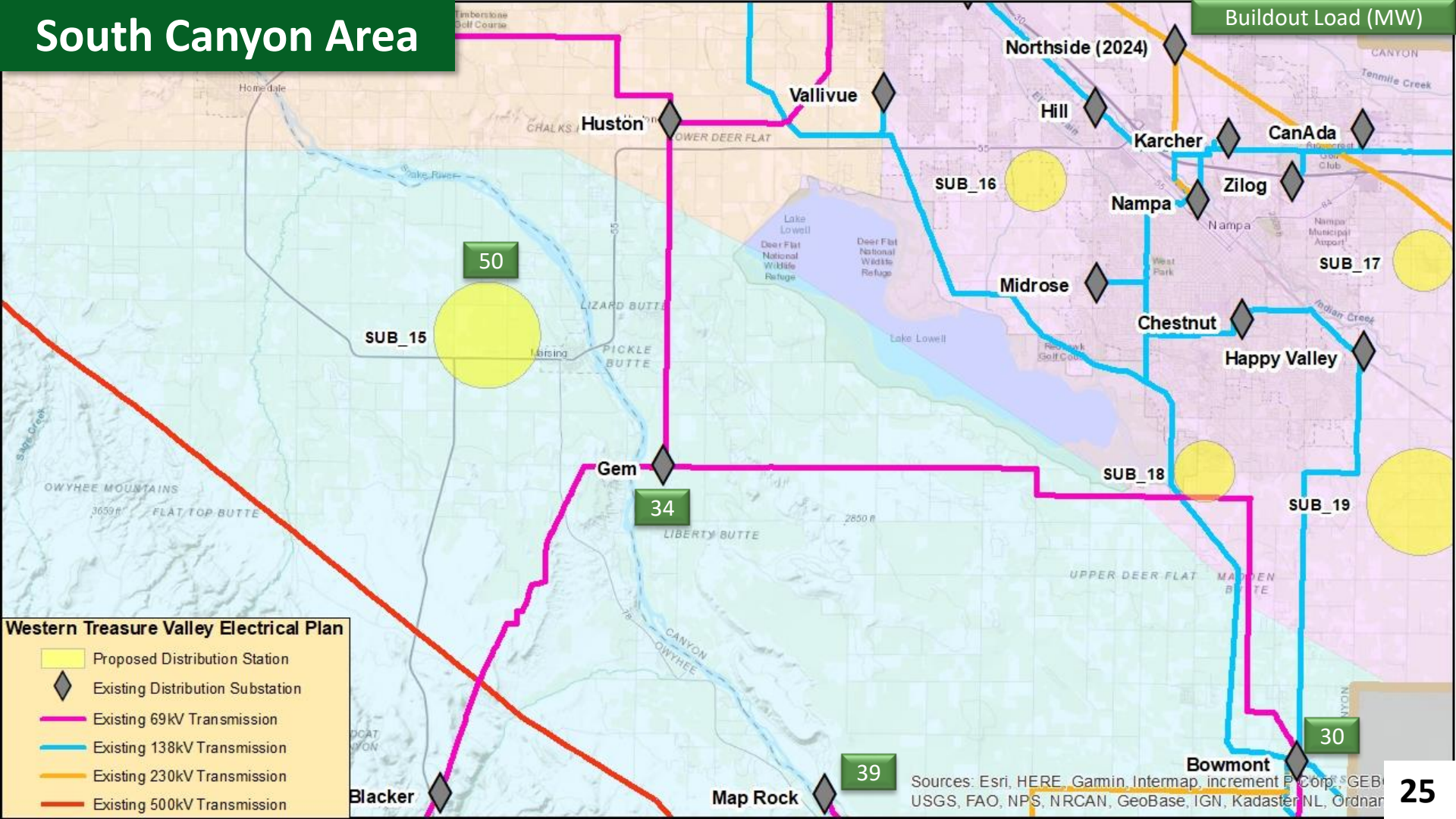
Western Treasure Valley Electrical Plan

- Proposed Distribution Station
- Existing Distribution Substation
- Existing 69kV Transmission
- Existing 138kV Transmission
- Existing 230kV Transmission
- Existing 500kV Transmission

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance

South Canyon Area

Buildout Load (MW)



Western Treasure Valley Electrical Plan

- Proposed Distribution Station
- Existing Distribution Substation
- Existing 69kV Transmission
- Existing 138kV Transmission
- Existing 230kV Transmission
- Existing 500kV Transmission

Sources: Esri, HERE, Garmin, Intermap, increment P Corp, GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance

Mapping Orientation

- See Appendix A in the WTVEP Update 2022 Meeting No. 2 Reference Guide

Committee Mapping Goal

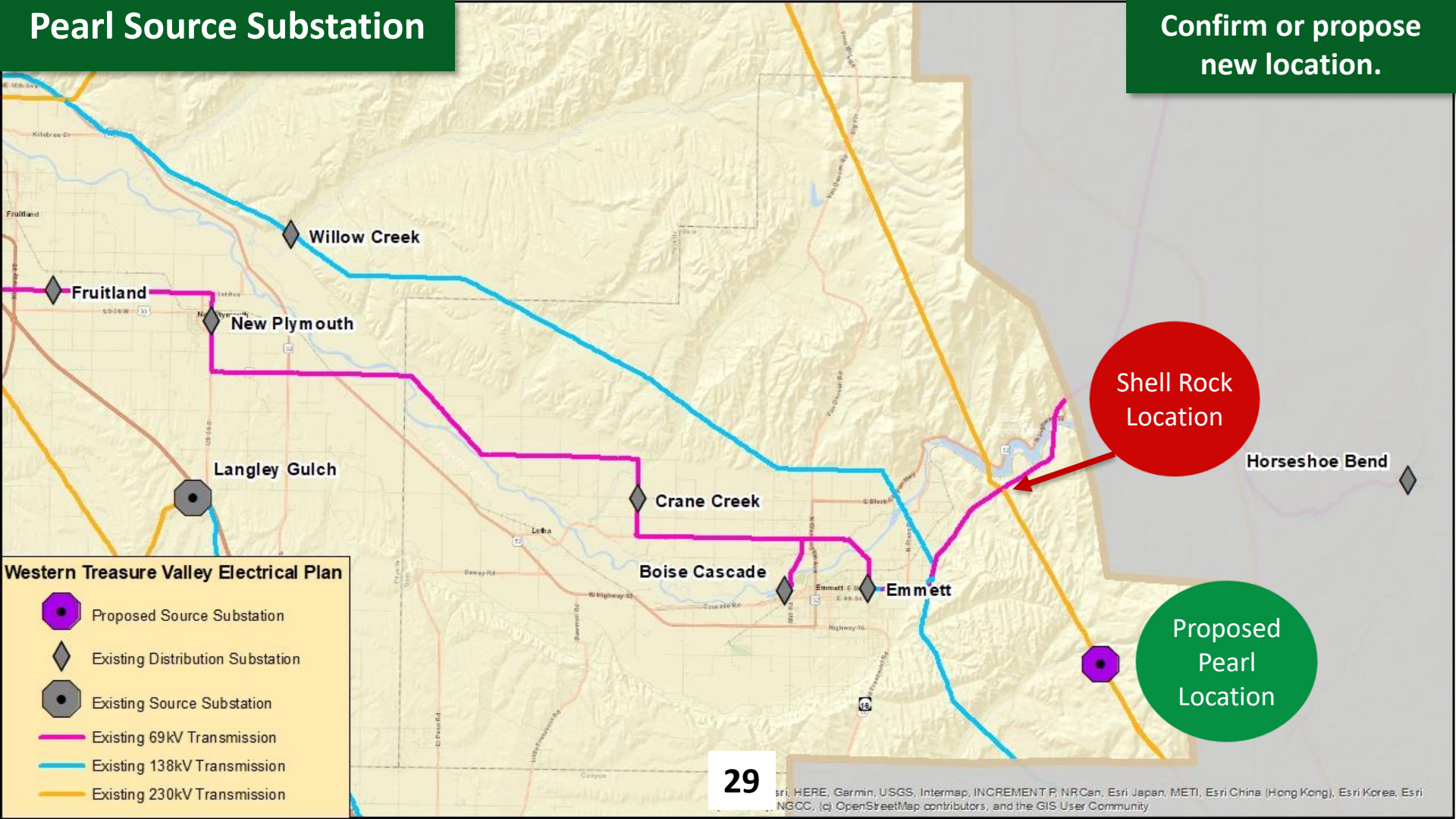
- Propose a single preferred site for each future source substation, distribution substation and connecting transmission lines
 - Identify alternative sites

Mapping Step 1

- Review and confirm or adjust proposed **source substation** sites
 - Pearl (Four Rivers area)
 - Cairo (Four Rivers area)
 - Garnet (East Canyon area)
 - Gem or Homedale (South Canyon area)
 - The 2011 electrical plan identified two alternatives for a source substation in the South Canyon Area. Idaho Power is asking the 2022 committee to select a single preferred source substation location and an alternate location.

Pearl Source Substation

Confirm or propose new location.



Western Treasure Valley Electrical Plan

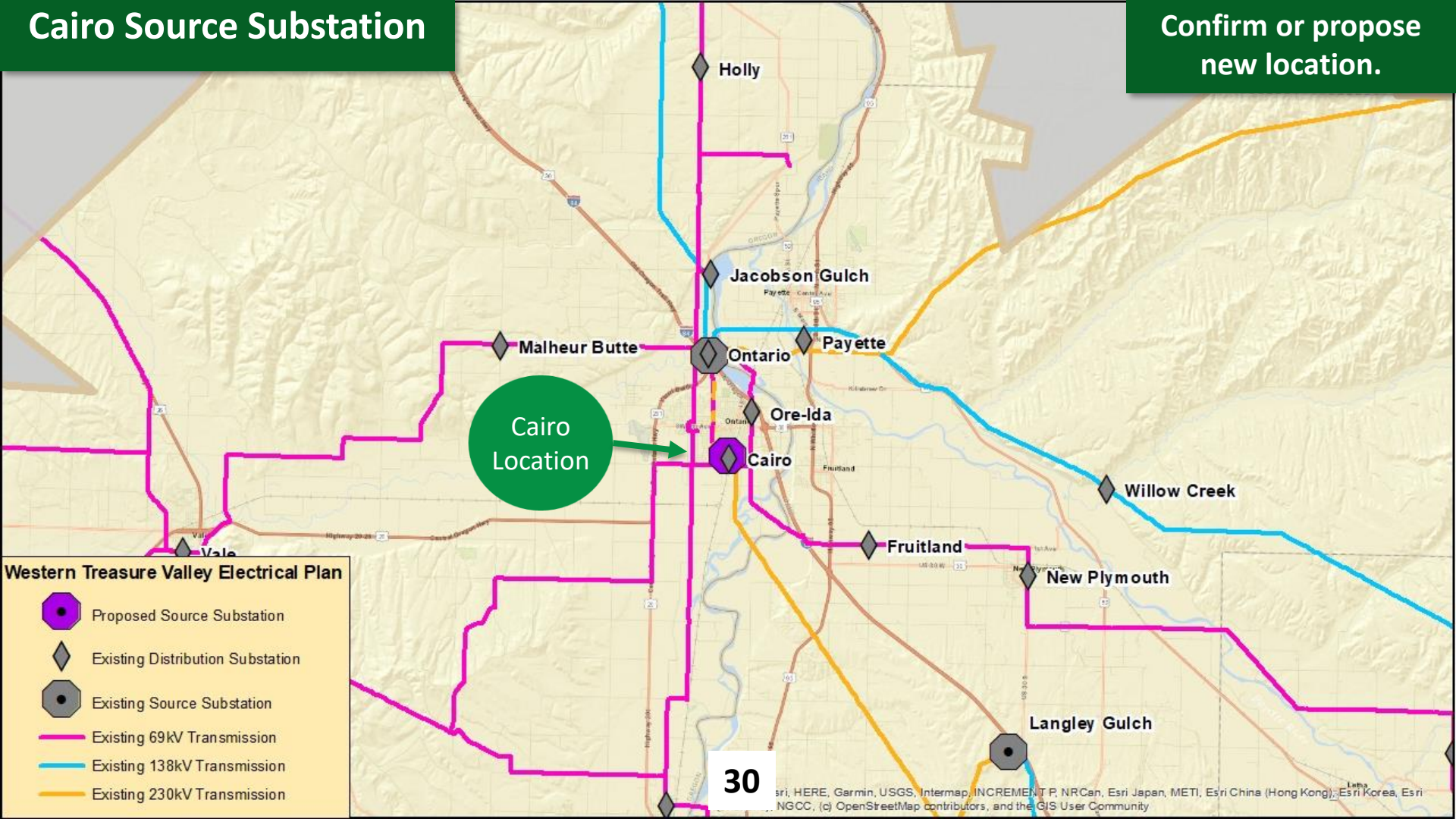
-  Proposed Source Substation
-  Existing Distribution Substation
-  Existing Source Substation
-  Existing 69kV Transmission
-  Existing 138kV Transmission
-  Existing 230kV Transmission

Shell Rock Location

Proposed Pearl Location

Cairo Source Substation

Confirm or propose new location.



Cairo Location

Western Treasure Valley Electrical Plan

-  Proposed Source Substation
-  Existing Distribution Substation
-  Existing Source Substation
-  Existing 69kV Transmission
-  Existing 138kV Transmission
-  Existing 230kV Transmission

30

Garnet Source Substation

Confirm or propose new location.



Western Treasure Valley Electrical Plan

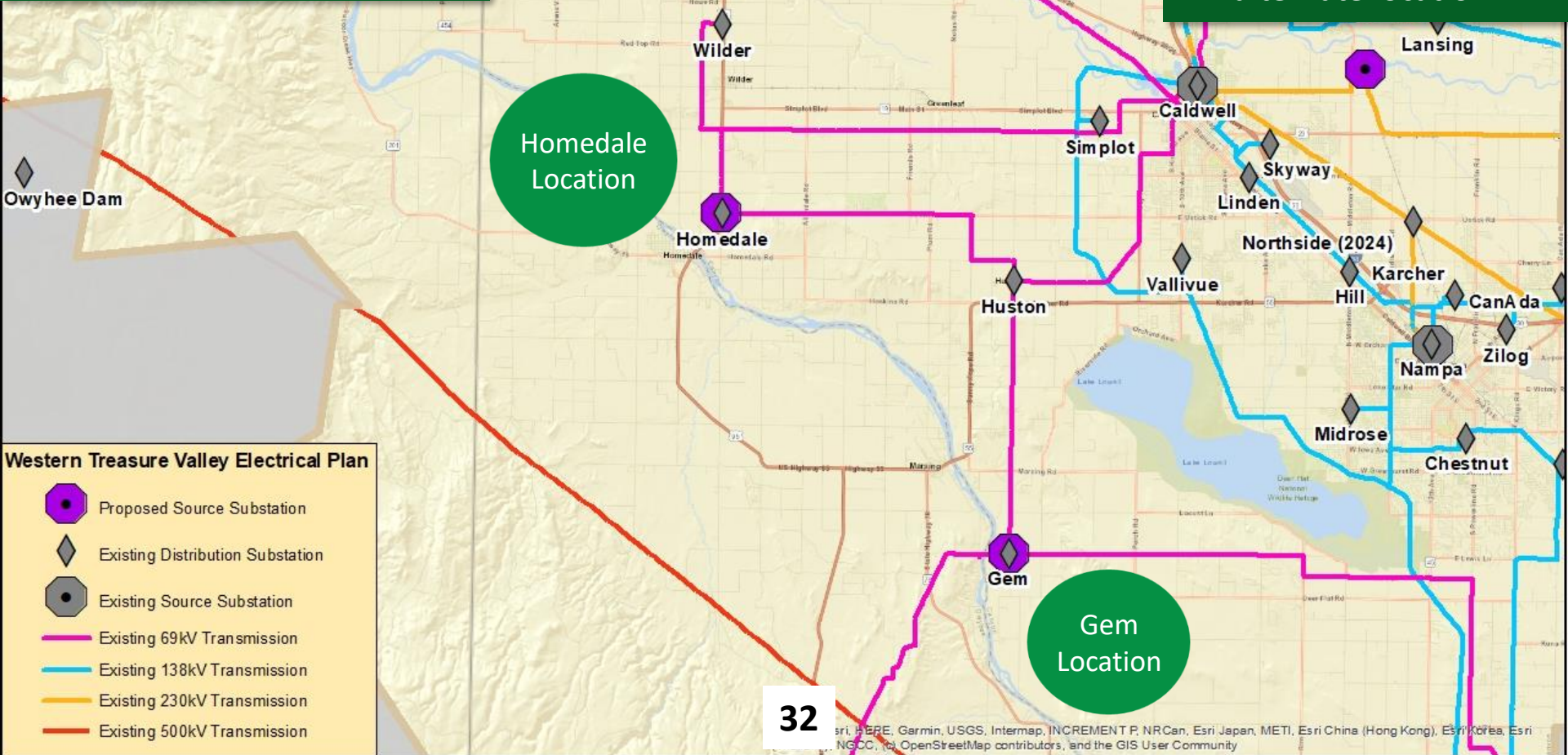
-  Proposed Source Substation
-  Existing Distribution Substation
-  Existing Source Substation
-  Existing 69kV Transmission
-  Existing 138kV Transmission
-  Existing 230kV Transmission

31

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI,

Gem and Homedale Source Substations

Select a single preferred location or propose an alternate location.



Mapping Step 2

- Confirm or propose at least two **high voltage transmission line** routes to each source substation.

Western Treasure Valley Electrical Plan Update

Mapping Orientation

Jim Burdick
Engineering Leader
Idaho Power



Western Treasure Valley Electrical Plan Update

Next Steps

Jim Burdick
Engineering Leader
Idaho Power

