

## Attachment LGL-1

### 2018 REP CAPITAL PLAN January– December 2018

#### Circuit Tie Construction:

**Program Description:**

Construct circuit ties for large radial circuits which would allow a backup source of power with Distribution Automation.

**Reliability Benefit:**

Constructing circuit ties and installing associated distribution automation devices allows for restoration of service to the majority of the customers fed from these circuits while repairs are made to the cause of the outage.

**2018 Plan:**

Complete two circuit ties, as described below. These circuits were chosen due to their poor performance and based on the number of customers positively impacted by the proposed tie.

**Planned Plant in Service:**

\$3,000,000

# Circuit Tie – W185 to 4W1, Swanzey

## Executive Summary

Create a circuit tie between the W185 circuit fed out of Emerald Street S/S, and the 4W1 fed out of Swanzey S/S by closing in a gap along Safford Drive. This will create a 12.47 kV tie between Hwy 12 and Old Homestead Highway in Swanzey. Conversion work, wire upgrades, and Distribution Automation will be required. Estimated Total Cost: \$1.5 million.

## Project Need Statement

The 4W1 and a large portion of the W185 are radially fed circuits. In 2016, the 4W1 circuit was ranked #26. Outages this Spring impacted over 3,000 customers for close to 560,000 outage minutes so it is anticipated the circuit will be higher on the 2017 list. There is also the need to be able to shift load between Emerald Street S/S and Swanzey S/S. This tie would allow up to 3 MW to be moved between stations for loading, maintenance, and emergency situations. This project offers the potential to save 487,000 customer minutes annually.

## Project Objectives

Improve reliability on the 4W1 and W185 circuits by creating a circuit tie and installing DA devices for isolation. This will increase flexibility for maintaining, restoring, and operating the distribution system in the Keene and Swanzey areas.

## Project Scope

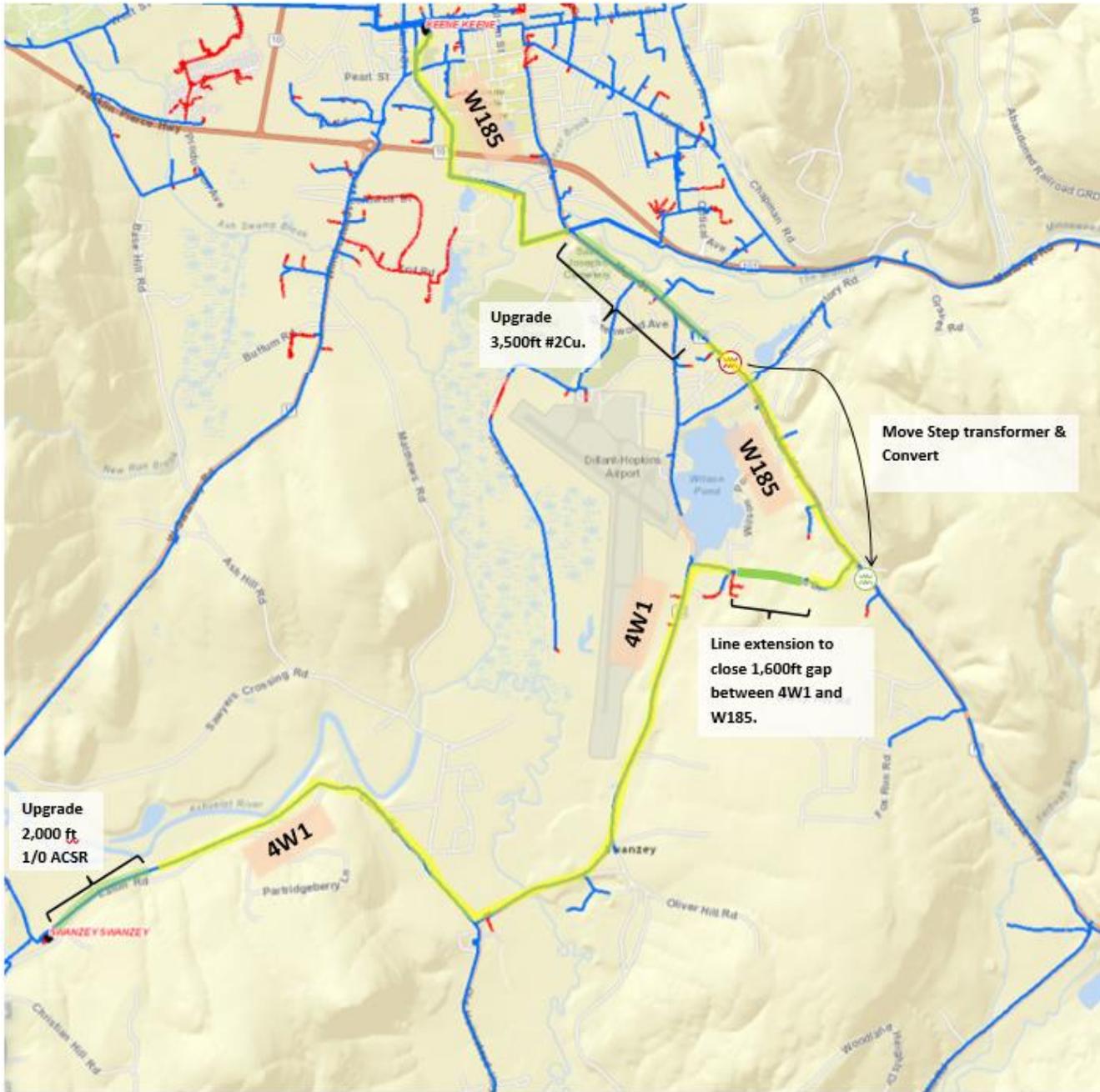
- Upgrade to 477 spacer cable along portions of Lower Main Street on the W185 (3,500')
- Convert a portion of Hwy 12 South beyond Safford Drive from 4 to 12 kV (4,700').
- Close in gap between the 4W1 and the W185 along Safford Drive with spacer cable (1,600')
- Upgrade beginning of 4W1 ROW to 477 spacer cable (2,000')

## Background / Justification

- 4W1 #26 on 2016 Hit List
- Annual Minutes Saved – 487,682
- Ability to move load between Swanzey and Emerald Street Substations

## Cost Estimate and Assumptions

Lower Main Street upgrade to 477 spacer cable:	300K
4W1 ROW upgrade to 477 spacer cable:	200K
Close in gap on Safford Drive with 477 spacer cable:	150K
Conversion to 12.47 kV along Hwy 12:	610K
<u>Contingencies</u>	<u>240K</u>
Total Cost:	\$1,500 K



# Circuit Tie – 3178X to 3178X3, Hinsdale

## Executive Summary

In 2014, an express feed circuit numbered the 3178X3 was constructed in ROW from Chestnut Hill S/S in Hinsdale west to Plain Road. This was to be the beginning of a circuit tie to the far end of the 3178X, a perennial top Hit List circuit. This project is to complete this tie with a new spacer cable line built up Plain Road and across Monument Road out to Hwy 119. Total Cost: \$1.5 million.

## Project Need Statement

The 3178X circuit feeds 4,245 customers radially out of Chestnut Hill S/S. Added distributed automation has improved reliability for this circuit to #47 in 2016. This tie would allow flexibility for addressing loading, maintenance, and emergency situations. This project offers the potential to save 291,000 customer minutes annually.

## Project Objectives

Improved reliability for the town of Hinsdale particularly in their manufacturing and commercial areas. Hinsdale is remote from Keene and the ability to swiftly isolate faults will significantly reduce minutes. The objective is to have a flexible and reliable circuit loop for the Hinsdale area.

## Project Scope

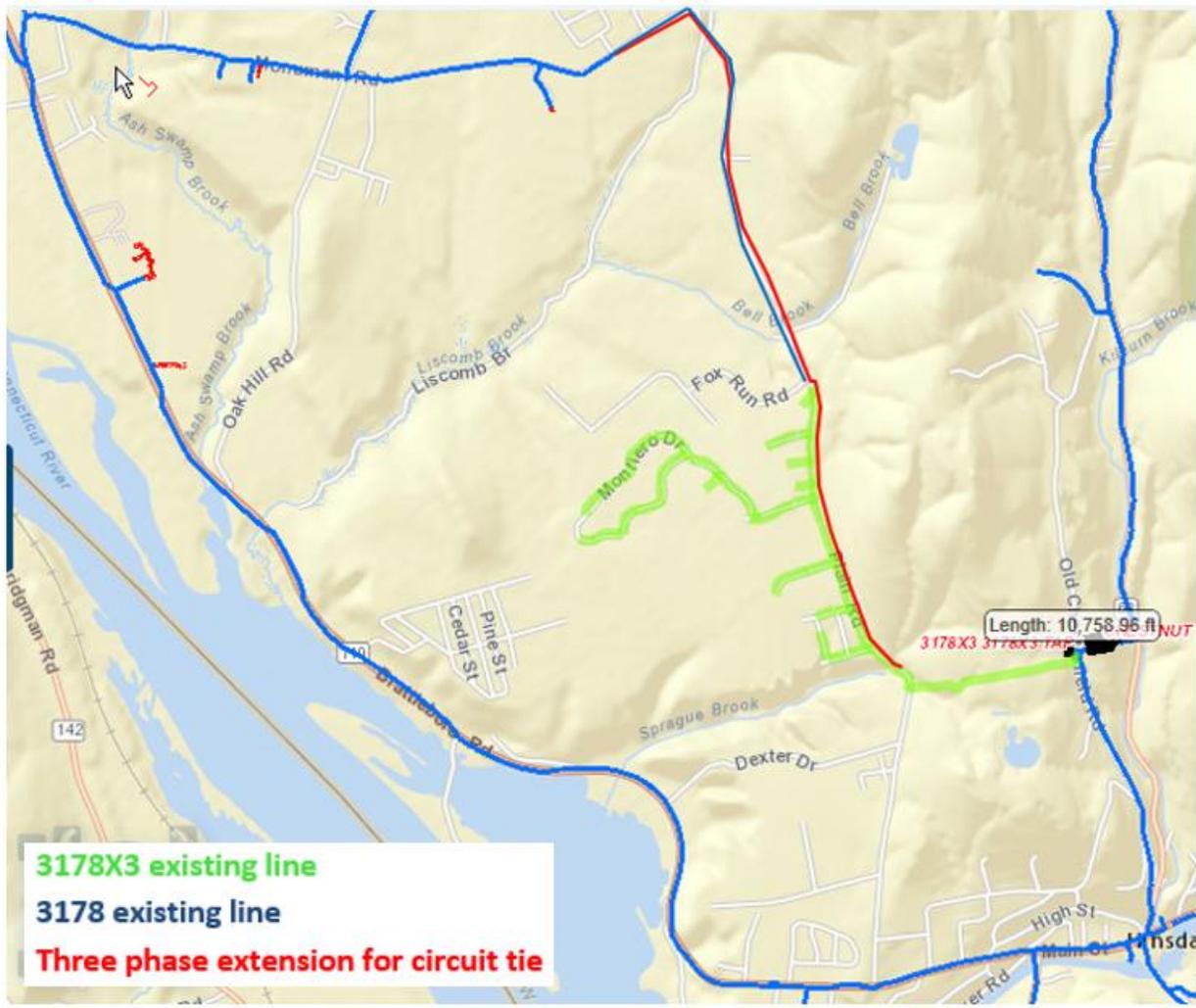
- Upgrade to three phase 477 spacer cable north along Plain Road and Monument Rd. (15,000')
- Convert Monument Rd to 34.5 kV.

## Background / Justification

- 3178X #47 on 2016 Hit List
- Annual Minutes Saved – 291,394

## Cost Estimate and Assumptions

Line Upgrade and Conversion – Plain and Monument Road:	1,046K
Wire Upgrade along Monument Road:	234K
<u>Contingencies</u>	<u>220K</u>
Total Cost:	\$1,500K



**VEGETATION MANAGEMENT:**

**Enhanced Tree Trimming (ETT):**

**Program Description:** Trim main lines for reliability using an enhanced tree trimming (ETT) specification to create ground to sky clearance versus the standard maintenance trim zone. Expanded clearance is obtained by performing greater off zone takedowns and clearing, and higher than normal vertical clearing.

**Reliability Benefit:** Increasing the trim zone at targeted main line locations significantly reduces the risk of tree outages associated with significant SAIDI (customer) impact.

**2018 Plan:** The 2018 Vegetation Management plan is still in development.

**Planned Plant in Service:** \$4,000,000

**Hazard Tree Removal:**

**Program Description:** Remove trees greater than 16 inches in diameter within the trim zone and others outside the trim zone that are identified as a hazard to falling onto primary conductors.

**Reliability Benefit:** Identifying and removing trees that have a high likelihood of contacting primary conductors significantly reduces the risk of tree outages associated with significant SAIDI (customer) impact.

**2018 Plan:** Hazard trees are identified by Company arborists when reviewing circuits scheduled for trimming. Landowners with trees deemed diseased or decayed are approached for permission to remove the trees at the same time trimming is being performed.

**Planned Plant in Service:** \$2,000,000