

# **Sacajawea 500/115 kV Transformer Failure**

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# Background

- On November 22, 2006, BPA's Sacajawea transformer T-1755 was tripped off by a sudden pressure relay.
  - Subsequent inspection indicates there are internal problems that cannot be fixed on site
  - Repair of the transformer could take up to a year

# Sacajawea Transformer



# Sacajawea Transformer



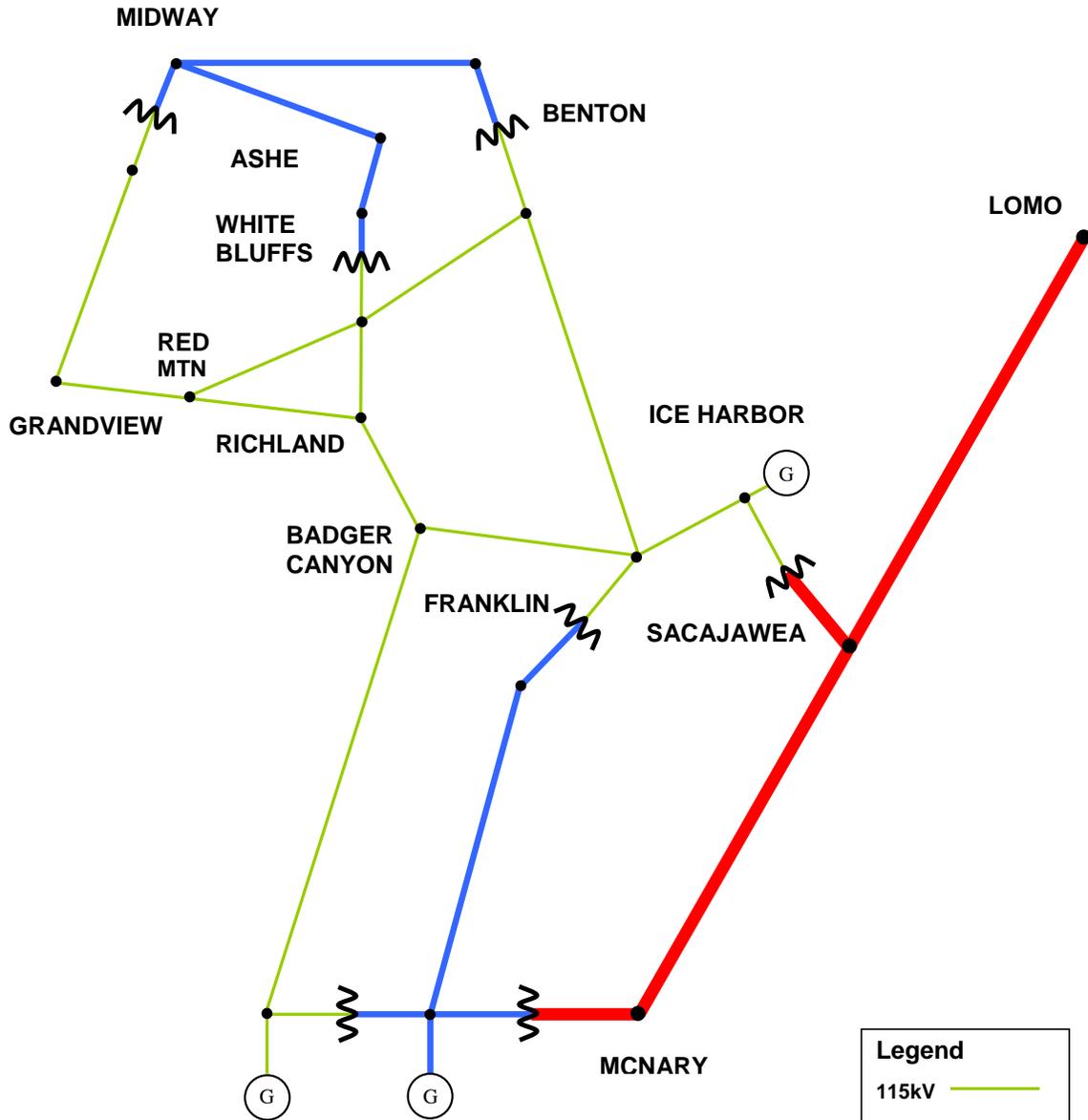
# History

- Ice Harbor generation came on-line in the early sixties
- The Sacajawea transformer was added in the mid seventies to accommodate generator additions at Ice Harbor
- The transformer is the only 500/115 kV transformer on BPA's system

# Existing Transmission System

- There are three main sources of power and voltage support in the Franklin substation area (see next slide)
  1. Ice Harbor Dam
  2. Franklin 230/115 kV transformer
  3. Sacajawea 500/115 kV transformer

# TRI-CITIES AREA TRANSMISSION



Legend	
115kV	
230kV	
500kV	

# Problems with the Sacajawea Transformer Out of Service

- Two Ice Harbor units need to be on-line to provide voltage support following an unplanned outage of the McNary-Franklin 230 kV transmission line or the Franklin 230/115 kV transformer
- Keeping two Ice Harbor unit on-line can be a challenge in April prior to the run-off and July-August after the run-off

# Solution Until Transformer Fixed

- Adding one 20 MVAR mobile capacitor group at Franklin by April 1 will reduce the Ice Harbor units needed to one during spring
- Summer load can be up to 25% higher than spring
- Adding a second 20 MVAR mobile capacitor group at Franklin by July 1 will reduce the Ice Harbor units needed to one during summer
- With these capacitor additions, only one Ice Harbor unit will be required to be on-line

**Questions?**