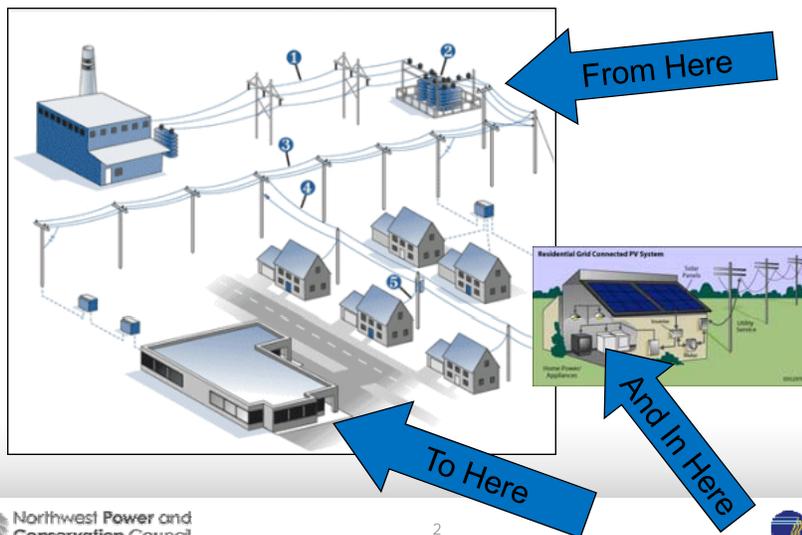


Conservation Voltage Regulation (CVR)

Conservation Resources Advisory Committee
January 28, 2015



Energy & Capacity Savings from Improved Regulation of Feeder Voltage



The Standards

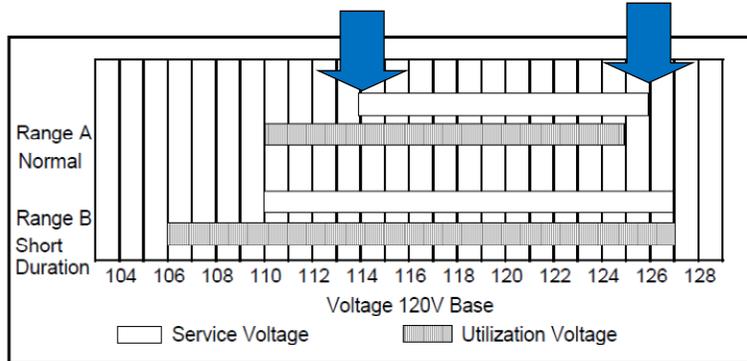


Figure 1-1
ANSI C84.1 Voltage Ranges

CVR Tools

- System Optimization
- Line Drop Compensation
- End of Line Voltage Feedback
- Home Voltage Regulation

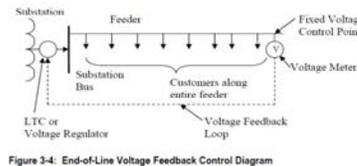
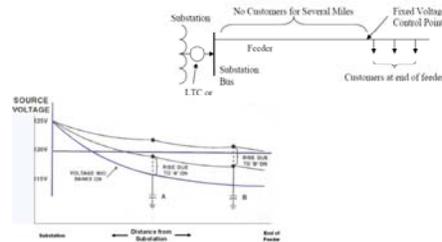
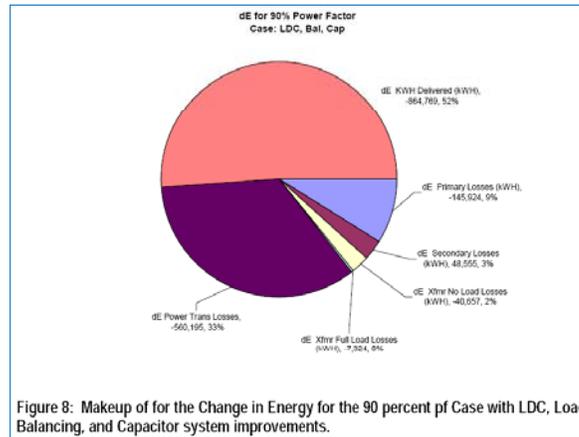


Figure 3-4: End-of-Line Voltage Feedback Control Diagram



Where the Savings are Expected to Come From



Source: NEEA DEI Project Final Report by RW Beck page B-23

Approach: Update 6P Assessment (400 aMW, 200 aMW < \$30/MWh)

- Original NEEA study solid
- Remove completed projects (~6 aMW)
- Update utility sales data & new forecast
- Incorporate:
 - NEEA Long Term Tracking Report (2014)
 - Avista project & evaluation (2014)
 - Update CVR factors & %ΔV for specific utilities, if data
 - Update max achievable to 85% (was 100%)
 - Adjust 2035 savings for interaction with other EE

Issues for CVR

- Ramp Rate: Falling short of 6P ramp rate
 - 6 aMW achieved of 48 aMW available 2010-2013
 - But first Avista project 5 aMW, so can be fast
- Cost: Propose no cost adjustments
- Feeder Applicability: Propose no changes
- Persistence:
 - Delta V changes as system changes
 - Measure Life: 15 years with annual O&M cost
- Individual utility adjustments?

