

Utility/Energy Capital Renewal & Strategies

Strategic Plan: August 2012
Facilities Management



Utility/Energy Overview, Capital Renewal, and Strategies

- **Utilities**
 - Electrical
 - Steam/Condensate
 - Sanitary/Steam
 - Chilled Water

Content

Primary Utilities

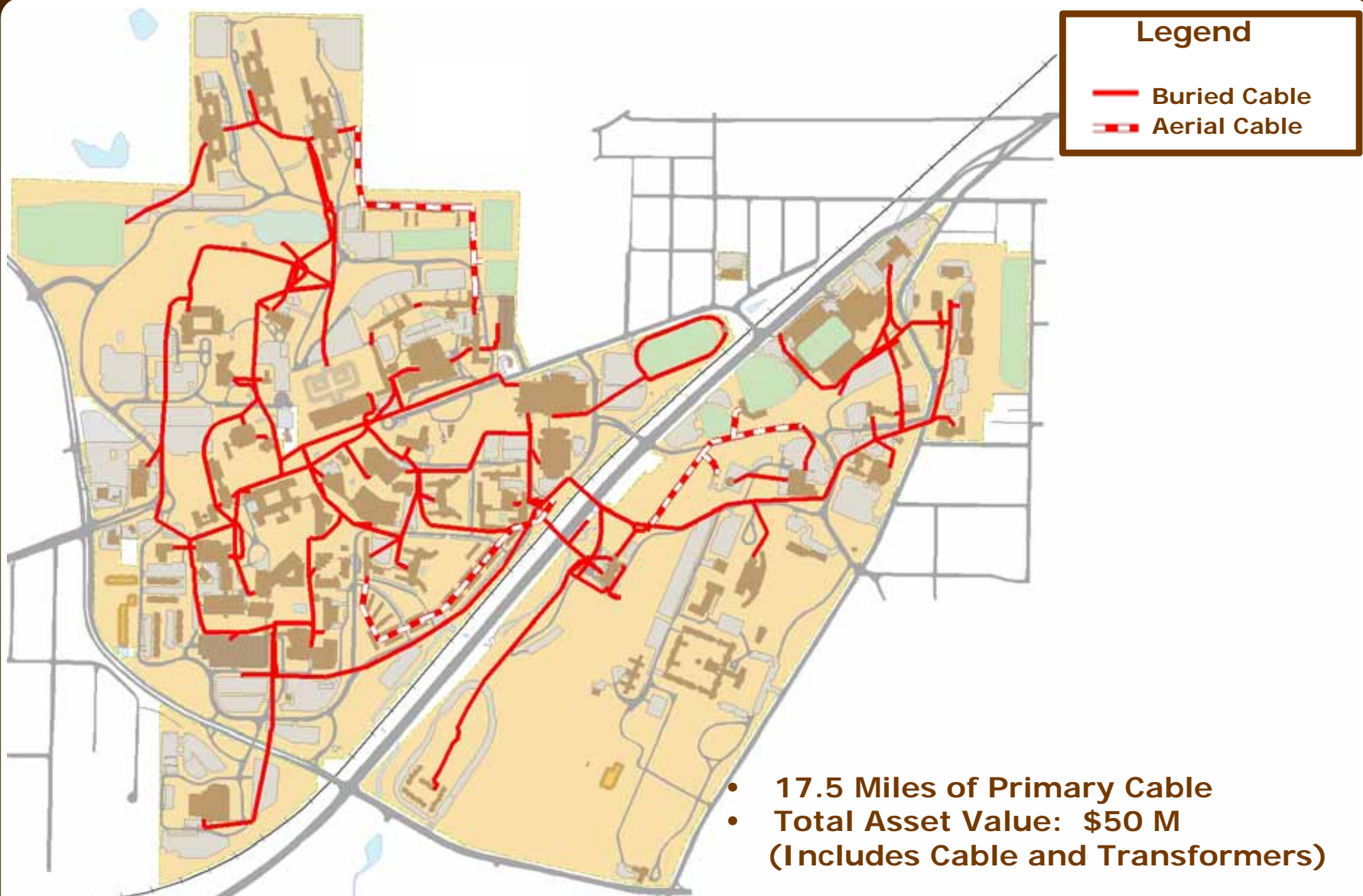
Presenters:

George Wilson

John Seelman

Ray Kezenius

Electrical



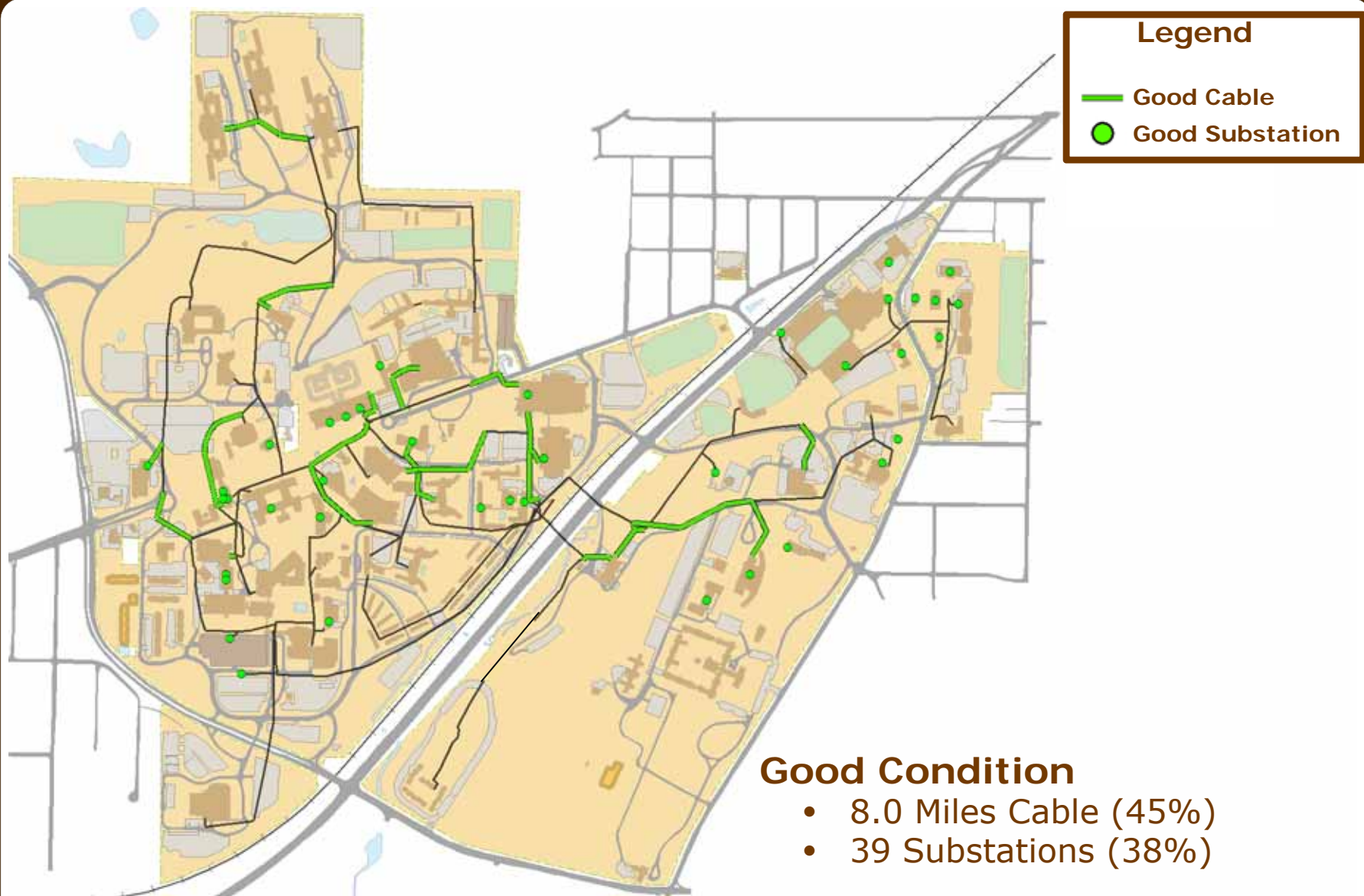
Primary Utilities – Electrical Overview

Criteria for Condition Analysis

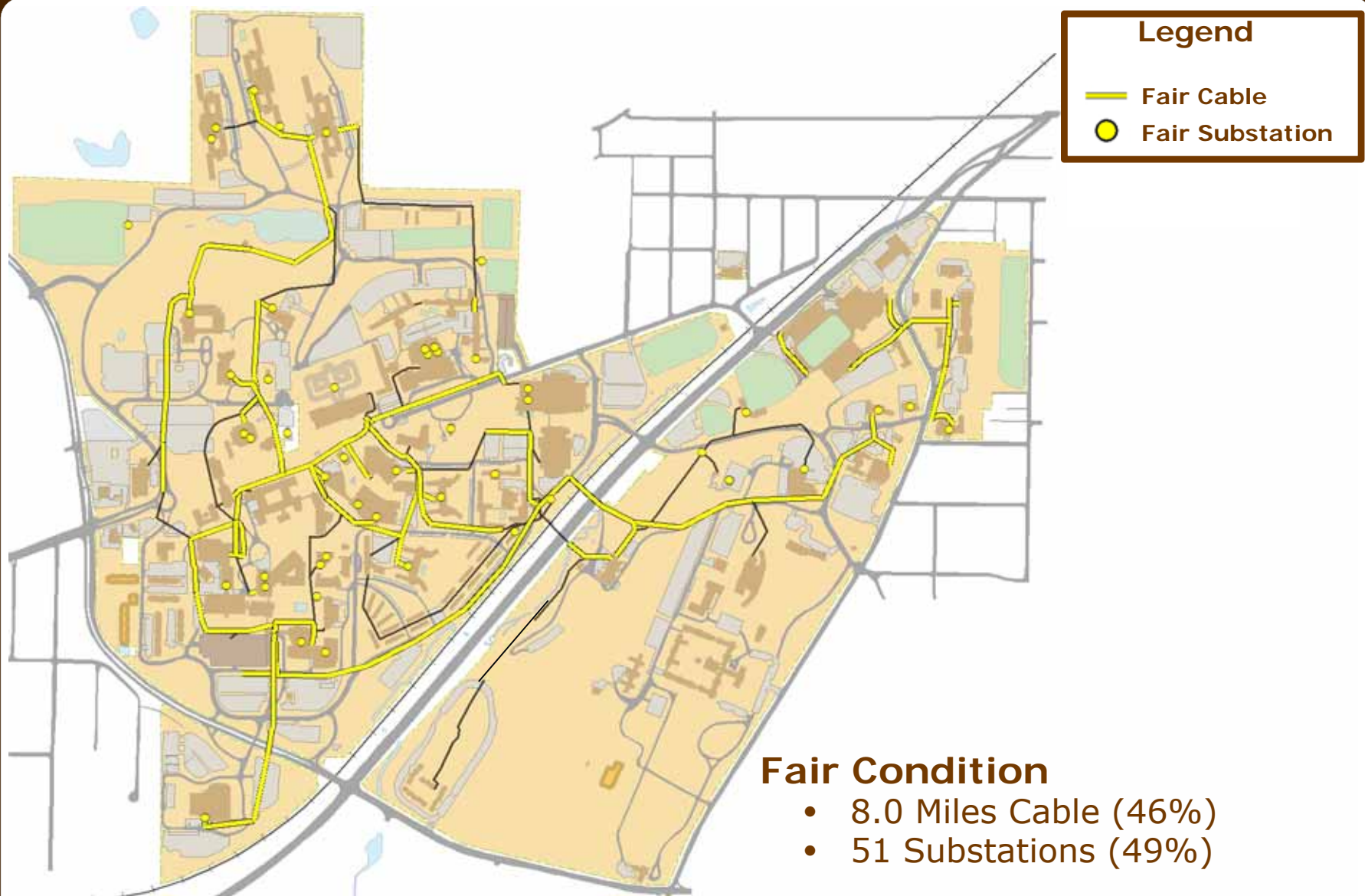
- Age
- Location
- Capacity
- Past Operational Issues



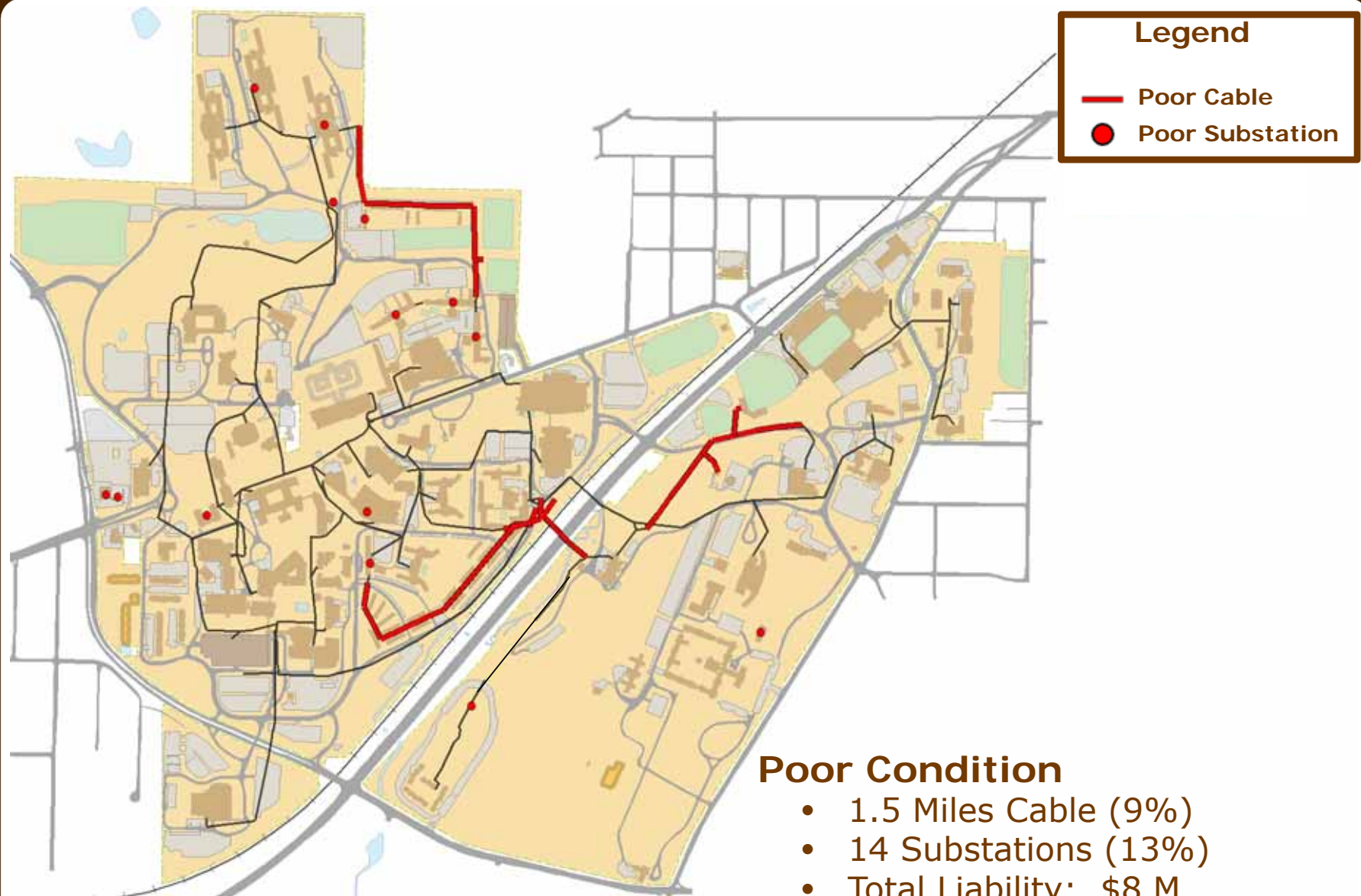
Primary Utilities – Electrical Criteria



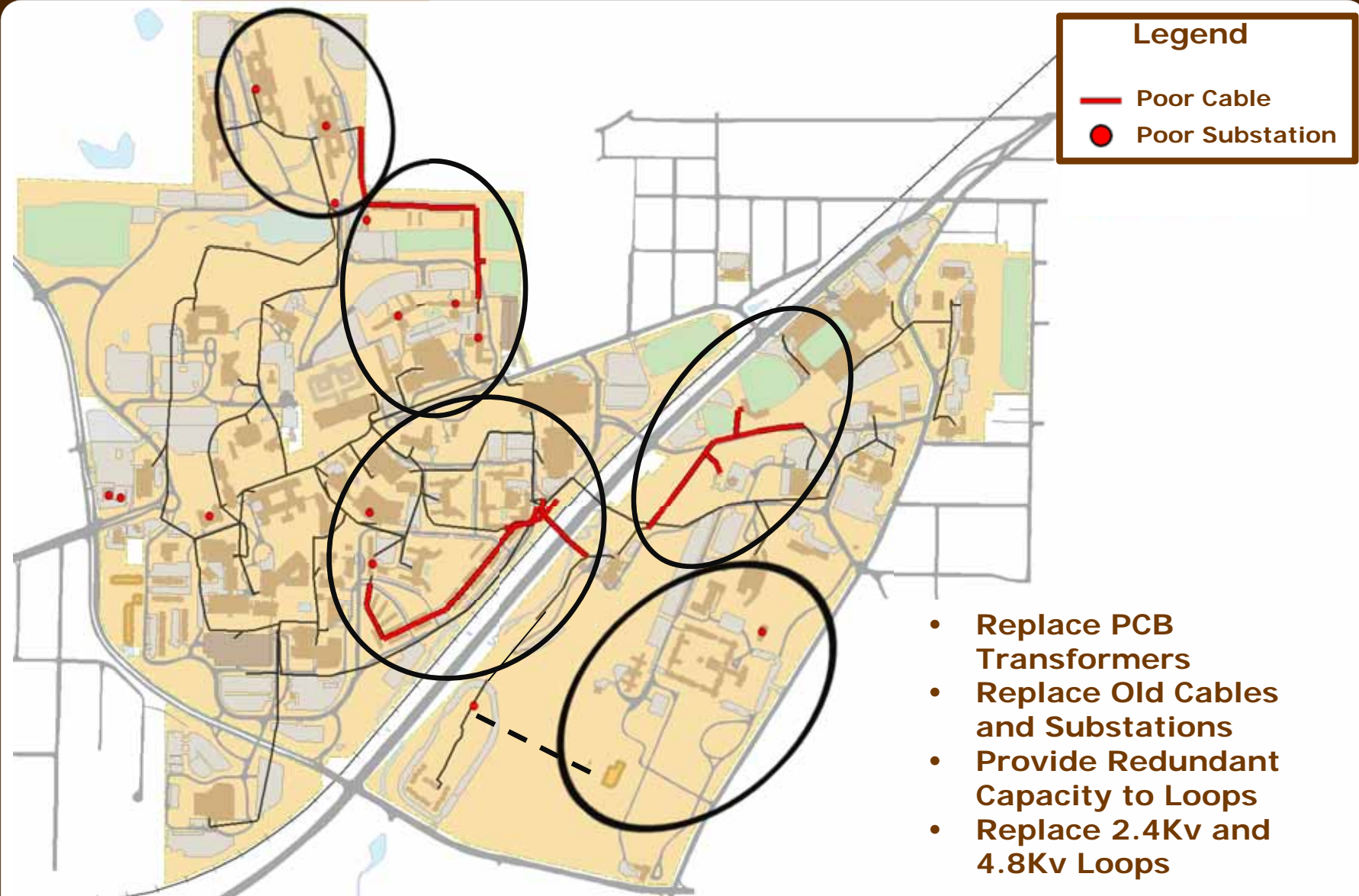
Primary Utilities – Electrical Condition



Primary Utilities – Electrical Condition

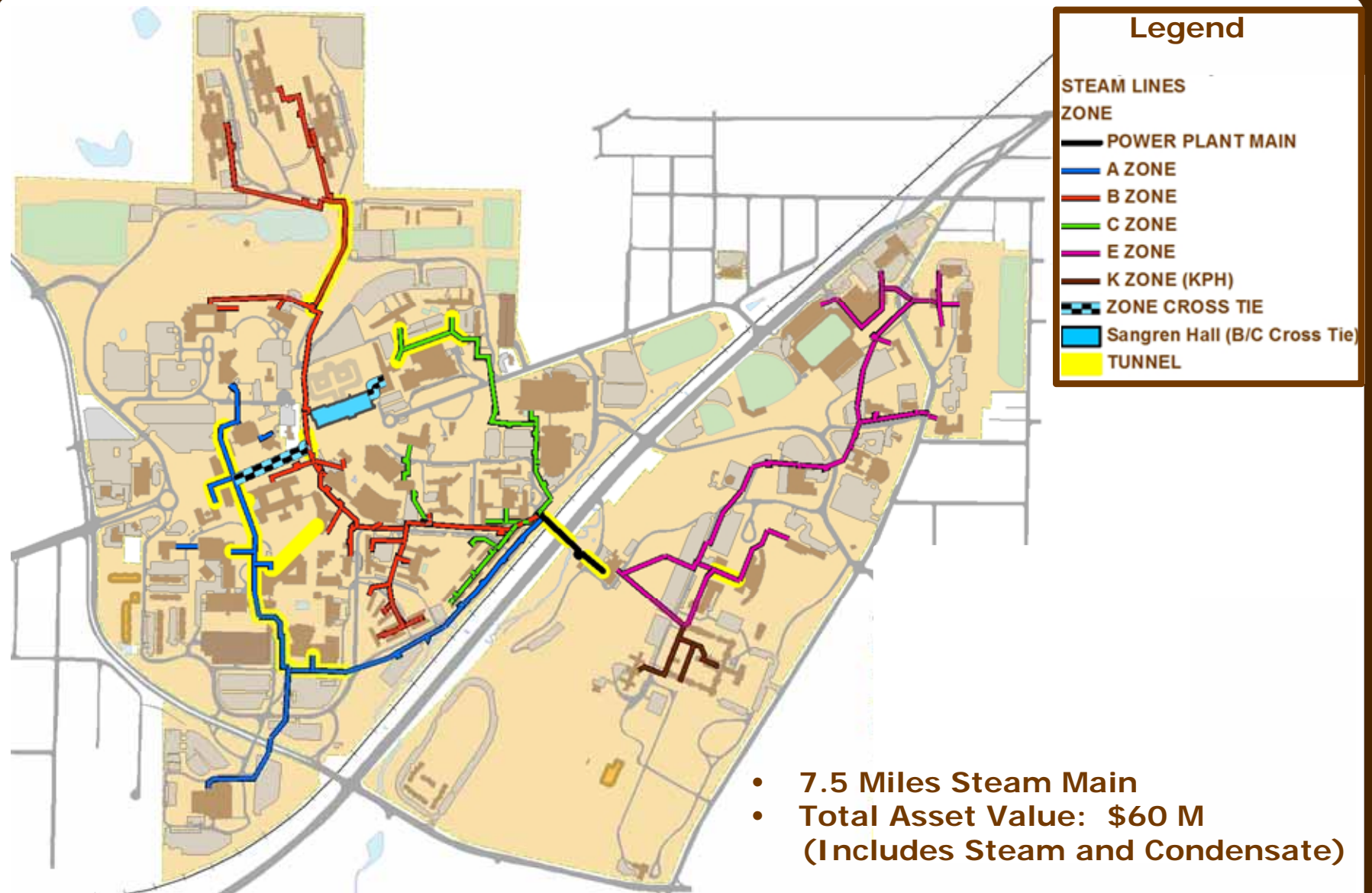


Primary Utilities – Electrical Condition



Primary Utilities – Electrical Critical Areas

Steam



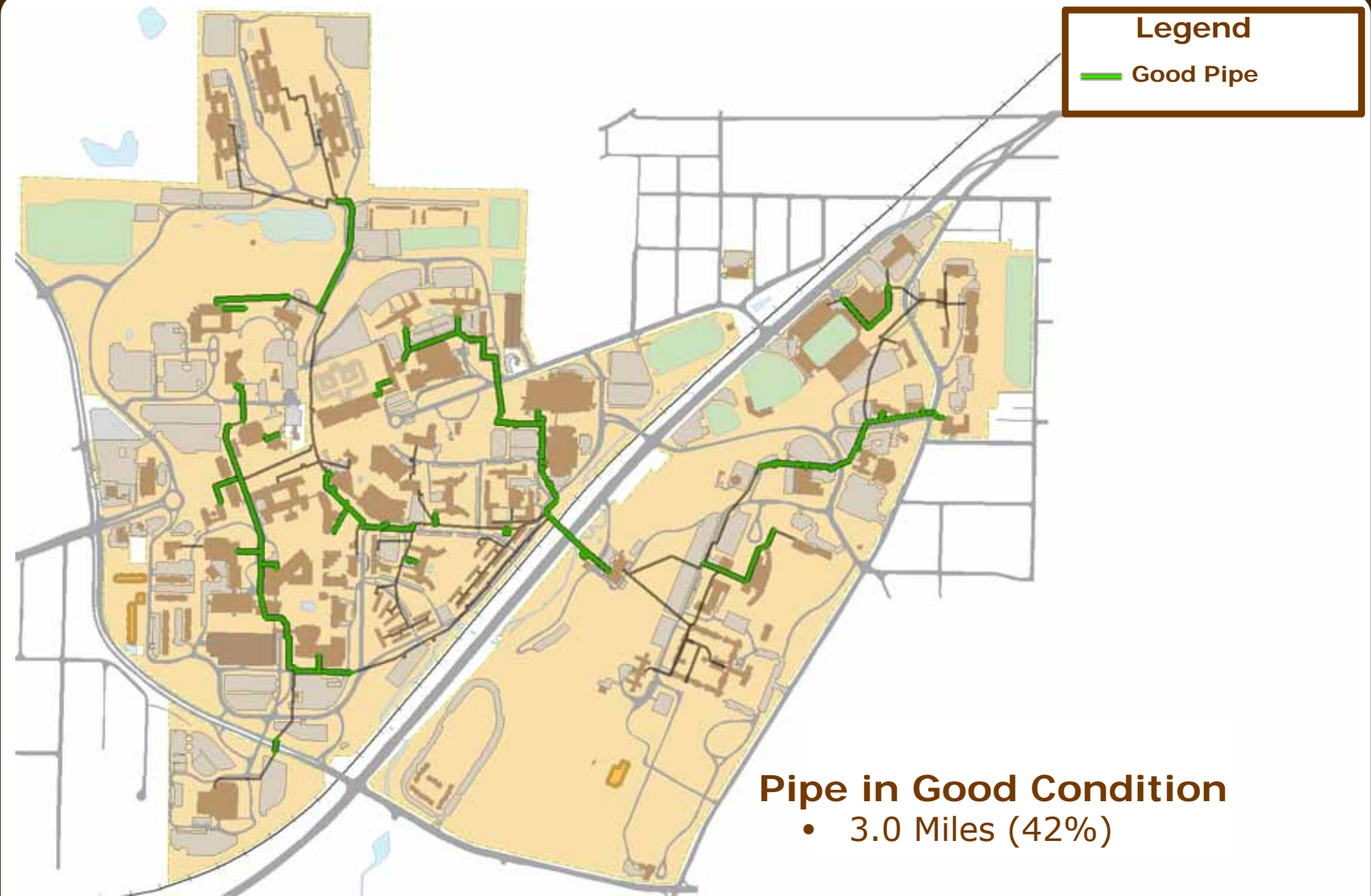
Primary Utilities – Steam Overview

Criteria for Condition Analysis

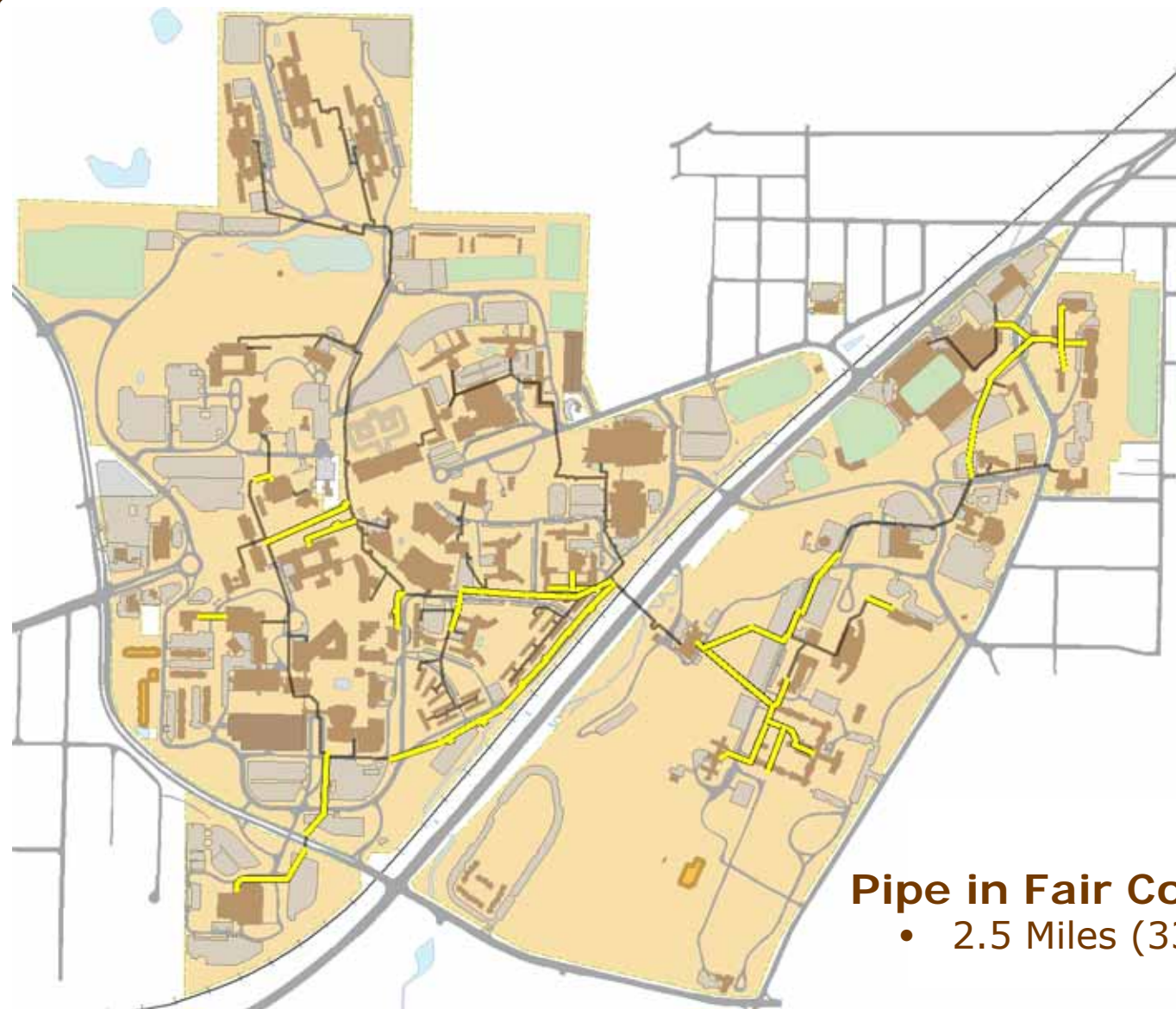
- Maintenance History
- System Age
- Insulation Condition (Assumed)
- Type of System
 - Tunnel
 - UCON
 - Direct Buried
- Ground Water Conditions



Utility Infrastructure – Steam Criteria



Primary Utilities – Steam Condition



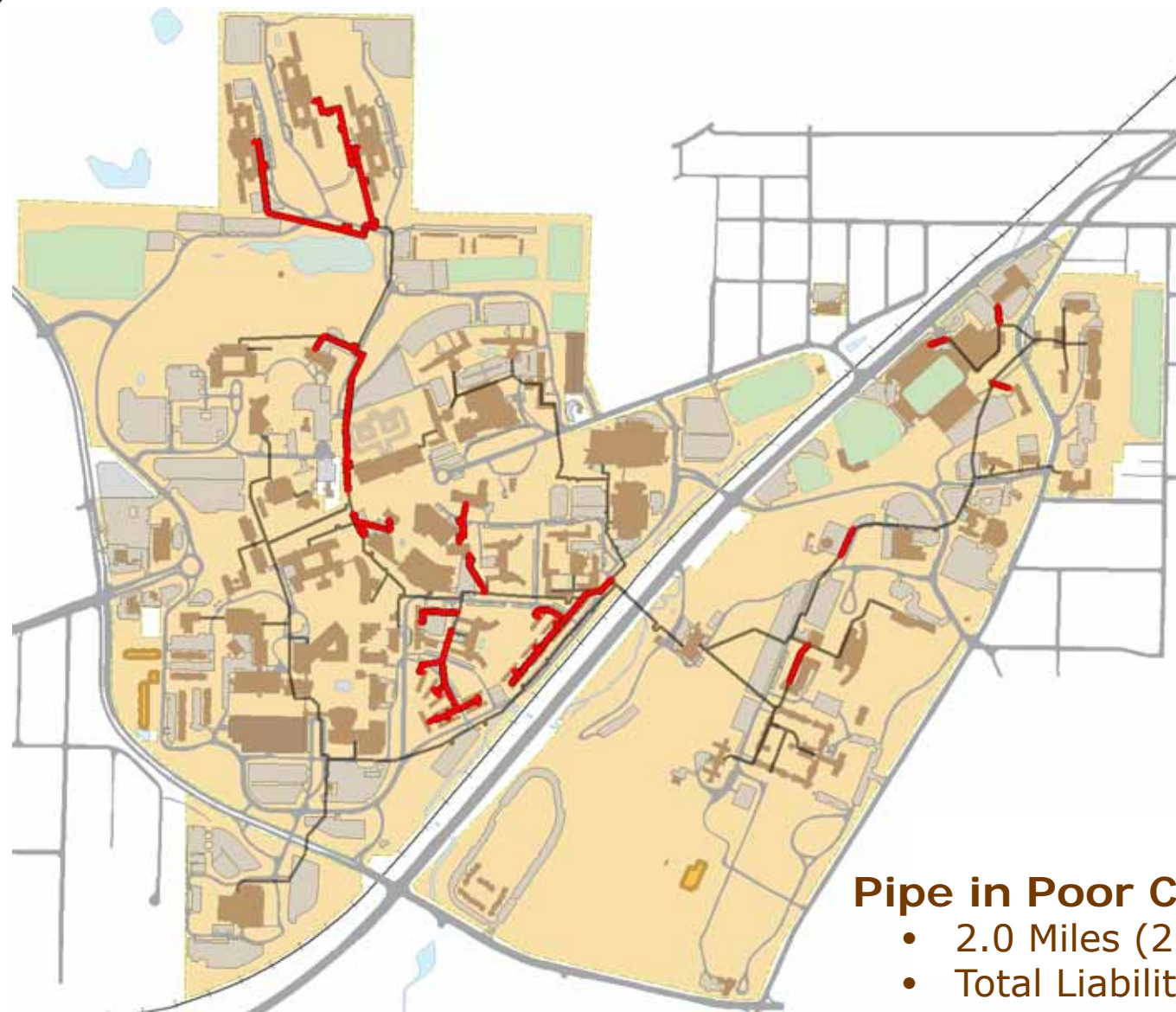
Legend

— Fair Pipe

Pipe in Fair Condition

- 2.5 Miles (33%)

Primary Utilities – Steam Condition



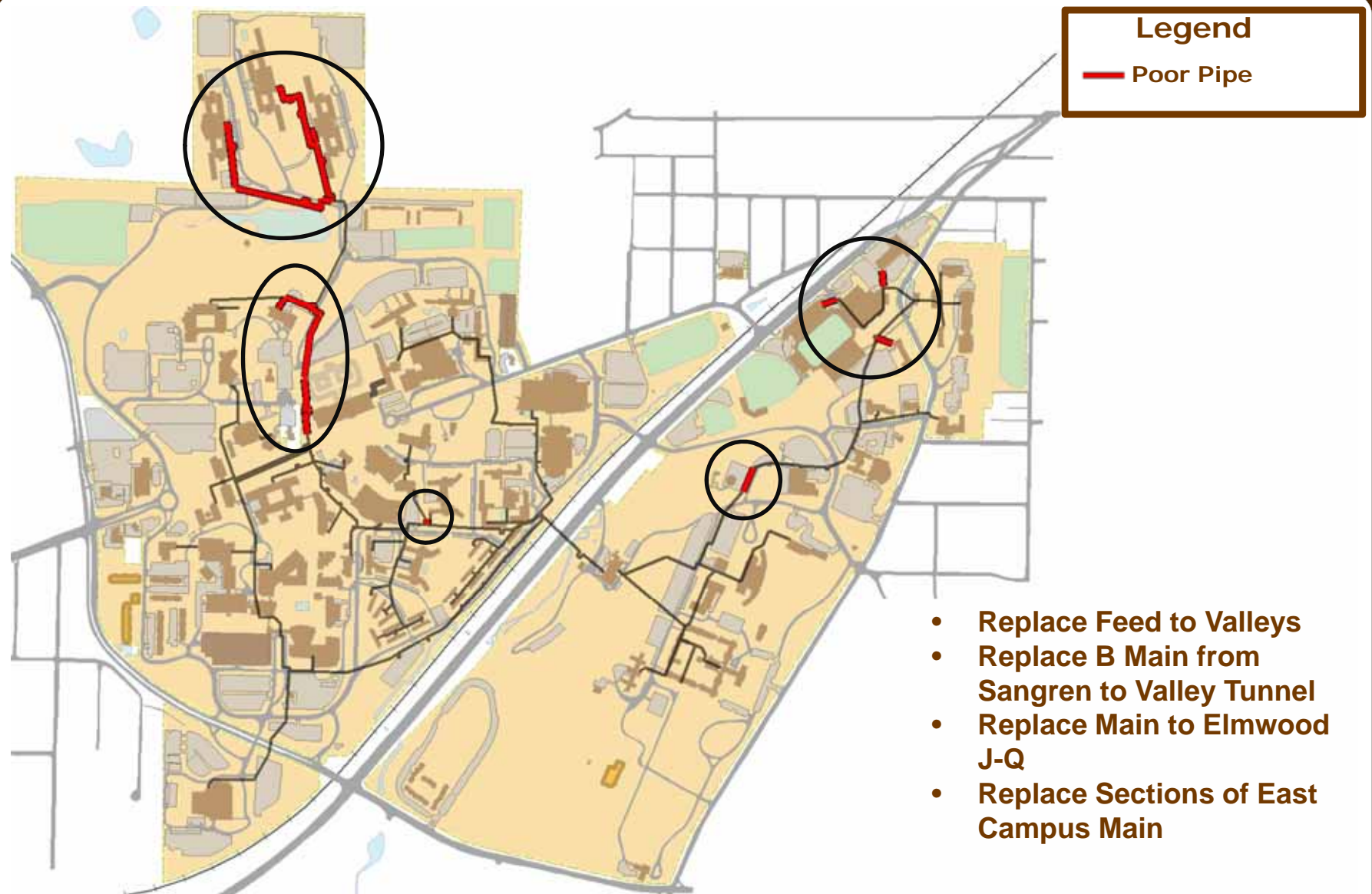
Legend

— Poor Pipe

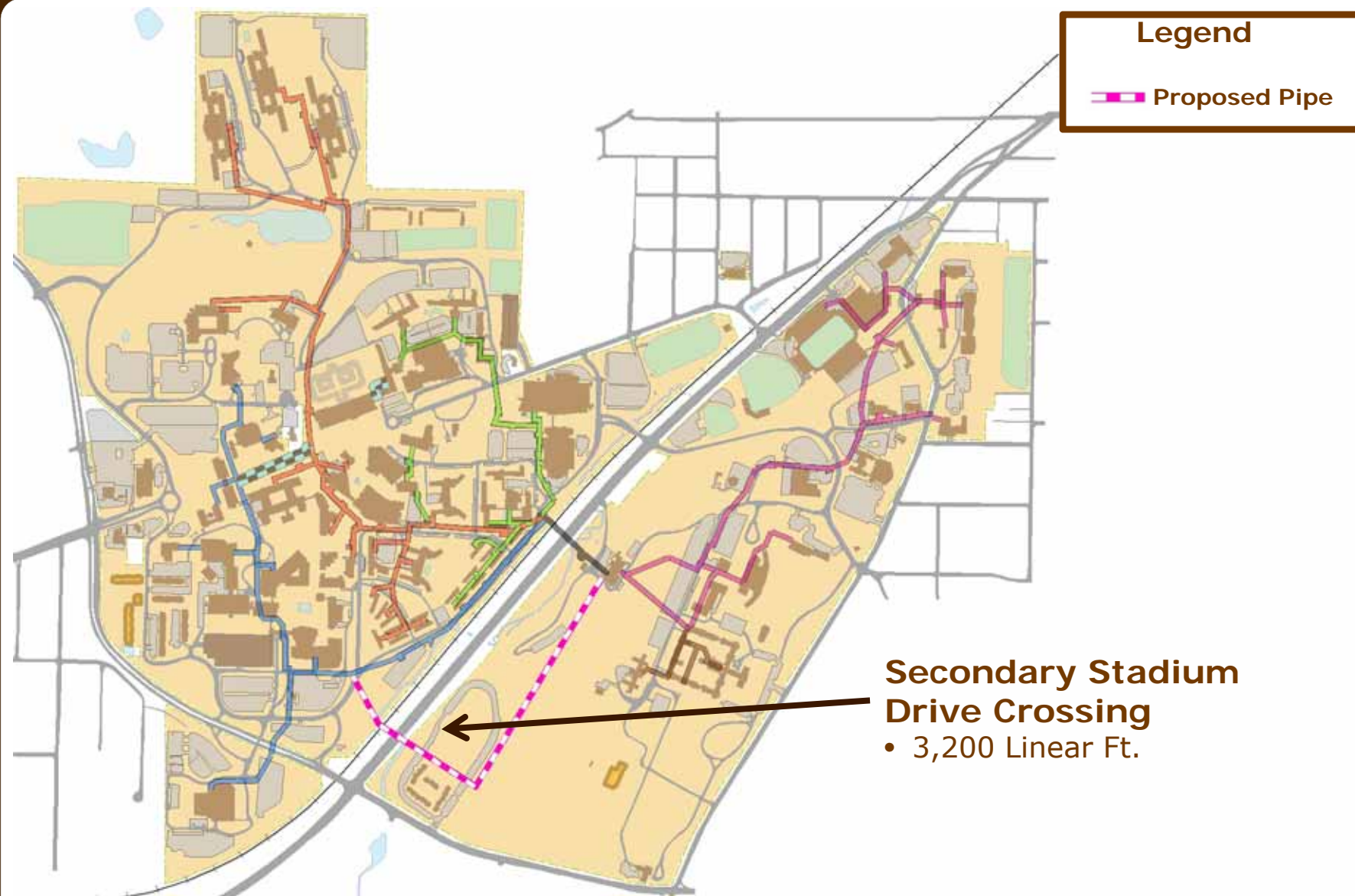
Pipe in Poor Condition

- 2.0 Miles (25%)
- Total Liability: \$6 M

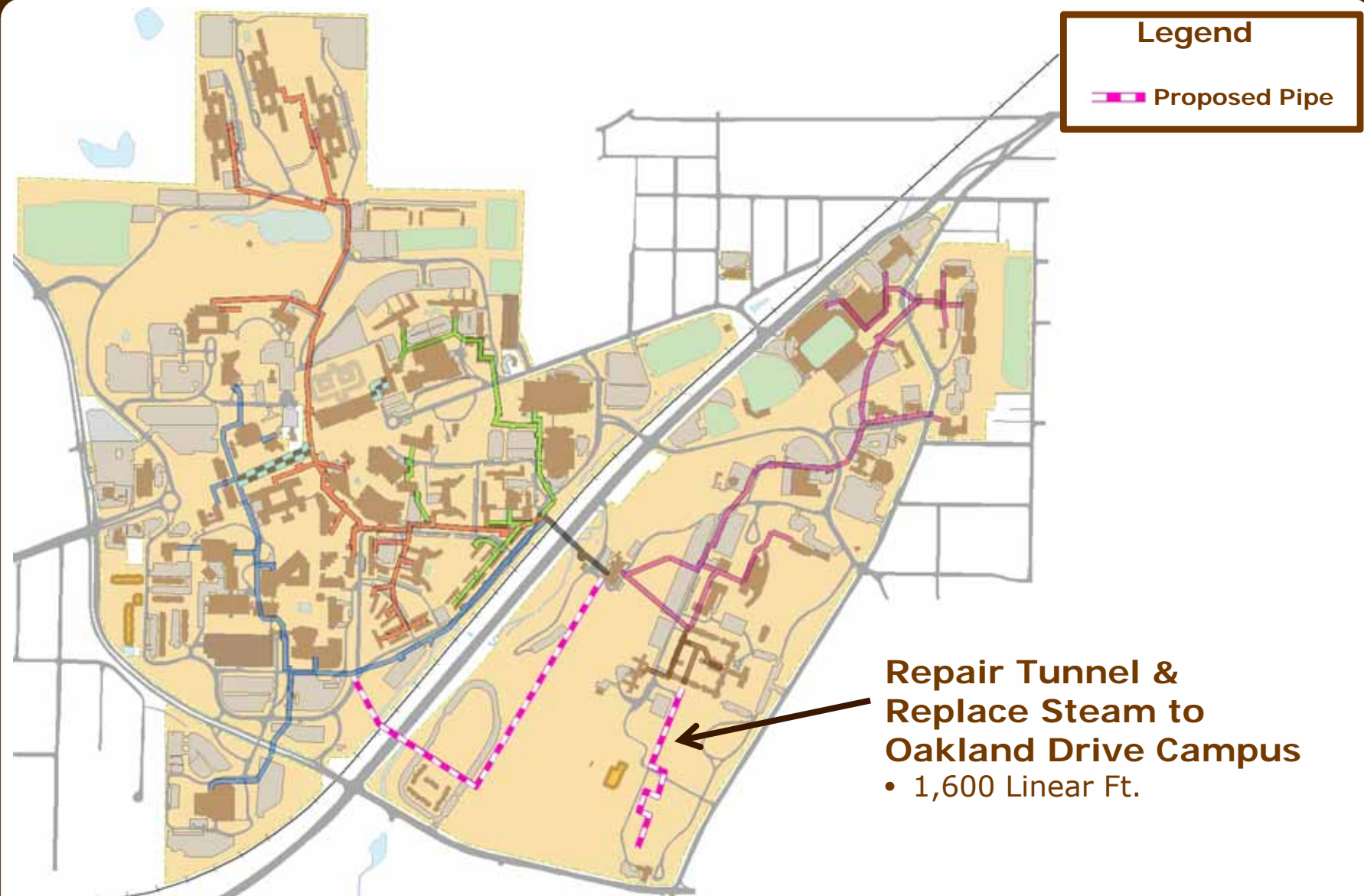
Primary Utilities – Steam Condition



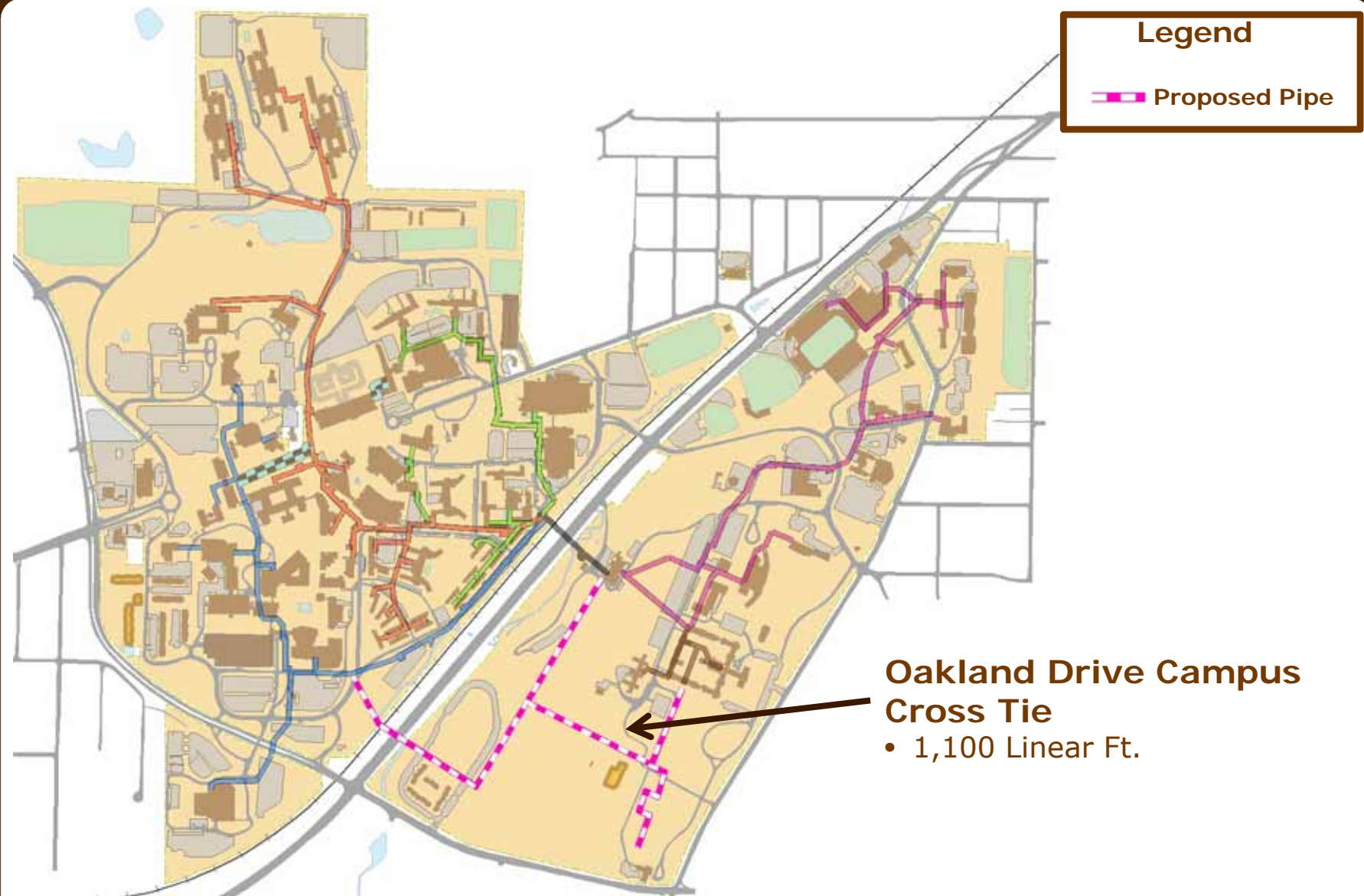
Primary Utilities – Steam Critical Points



Primary Utilities – Steam Expansion Strategies

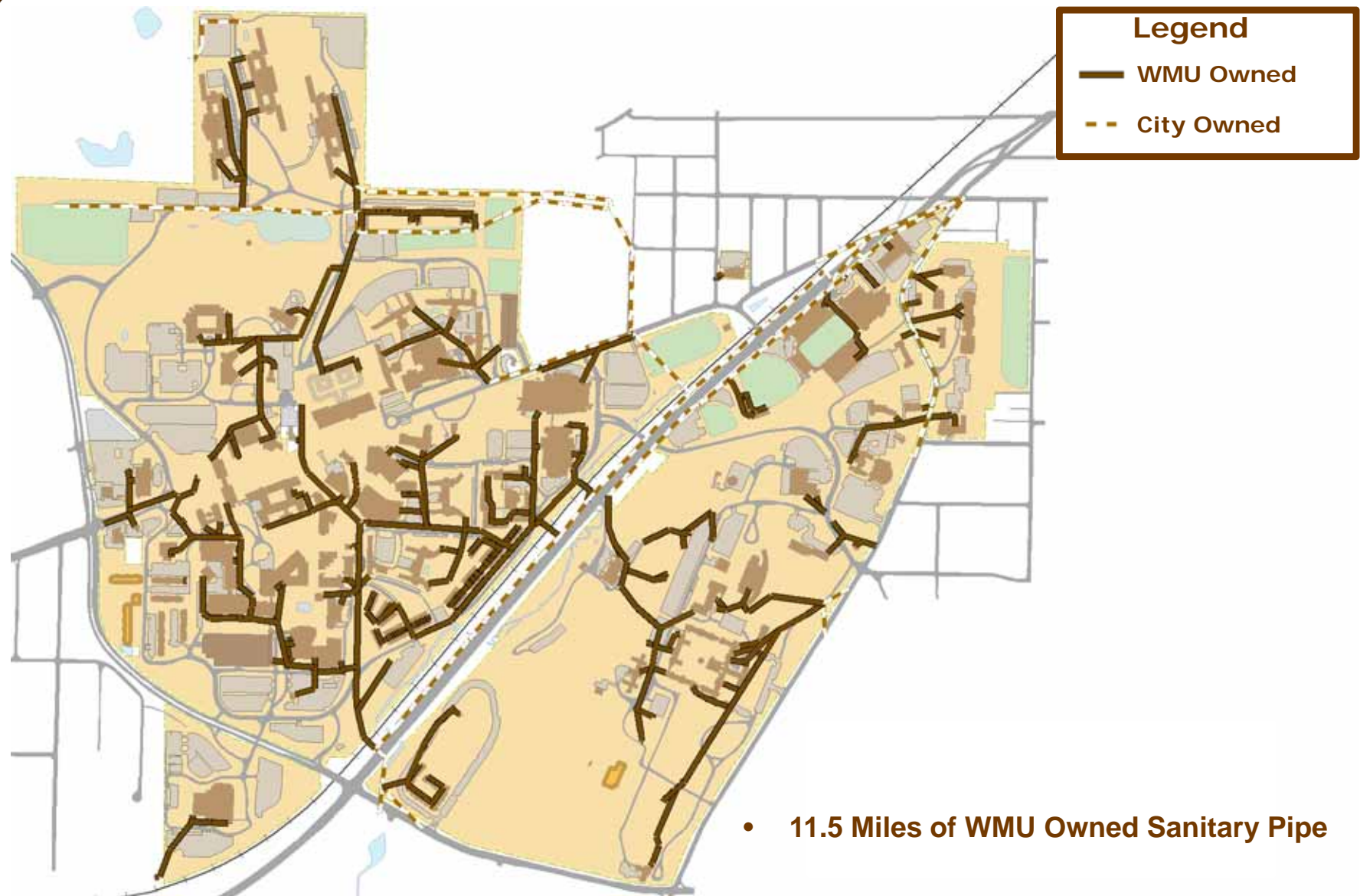


Primary Utilities – Steam Expansion Strategies

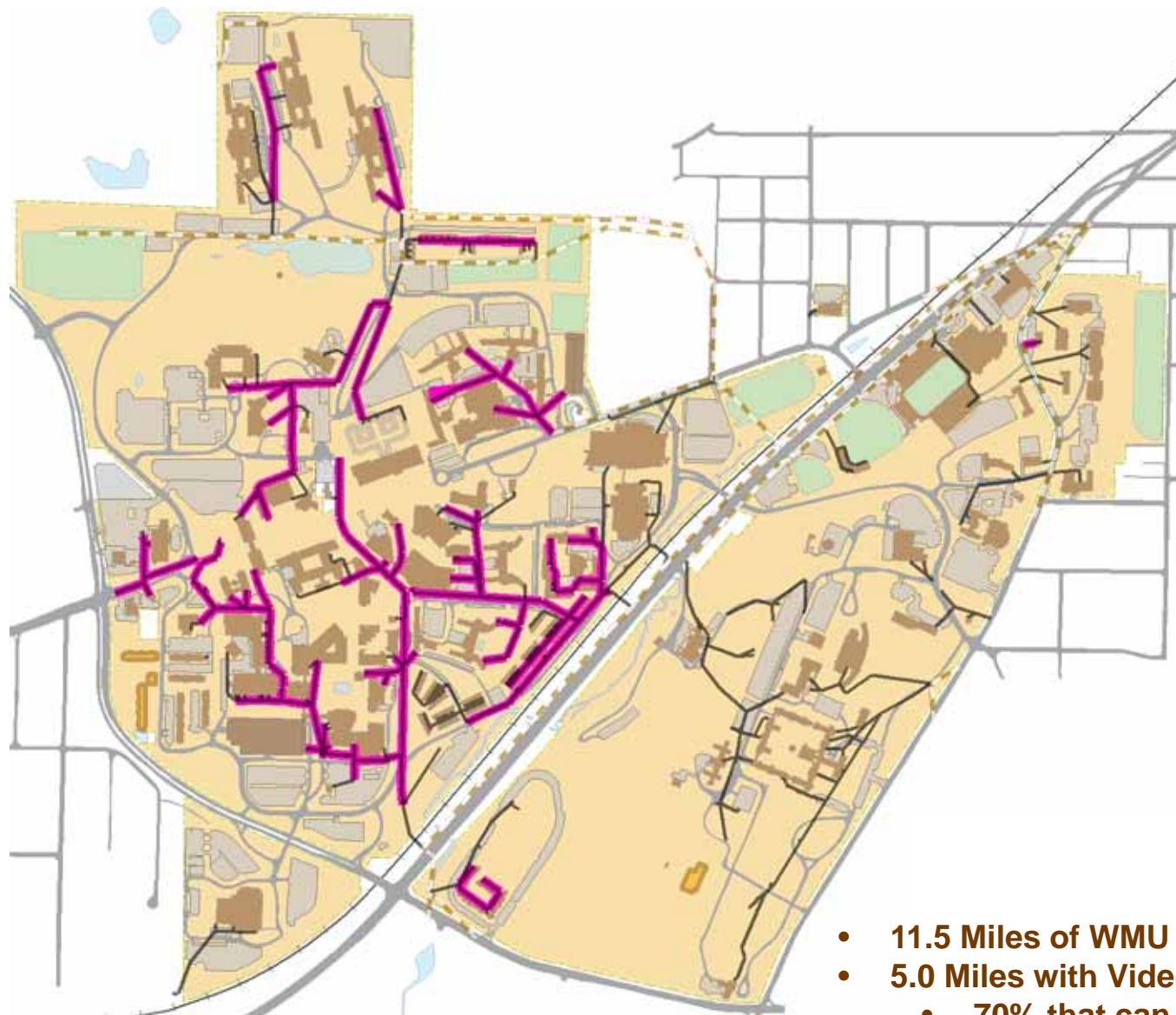


Primary Utilities – Steam Expansion Strategies

Sanitary and Storm Sewer



Primary Utilities – Sanitary Overview

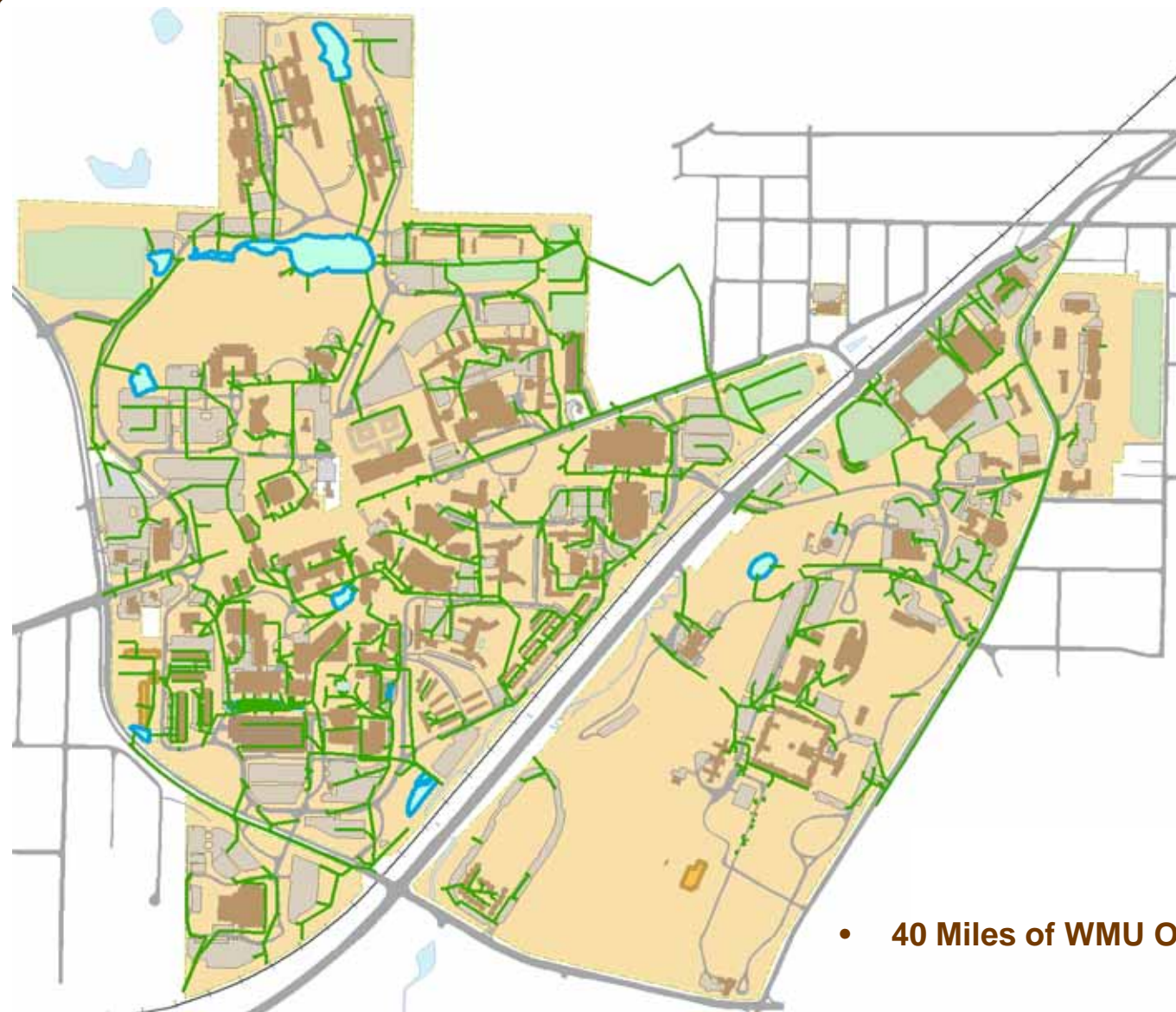


Legend

- WMU Owned (Complete)
- City Owned

- 11.5 Miles of WMU Owned Sanitary Pipe
- 5.0 Miles with Video Work Complete
 - 70% that can be videoed

Primary Utilities – Sanitary Overview



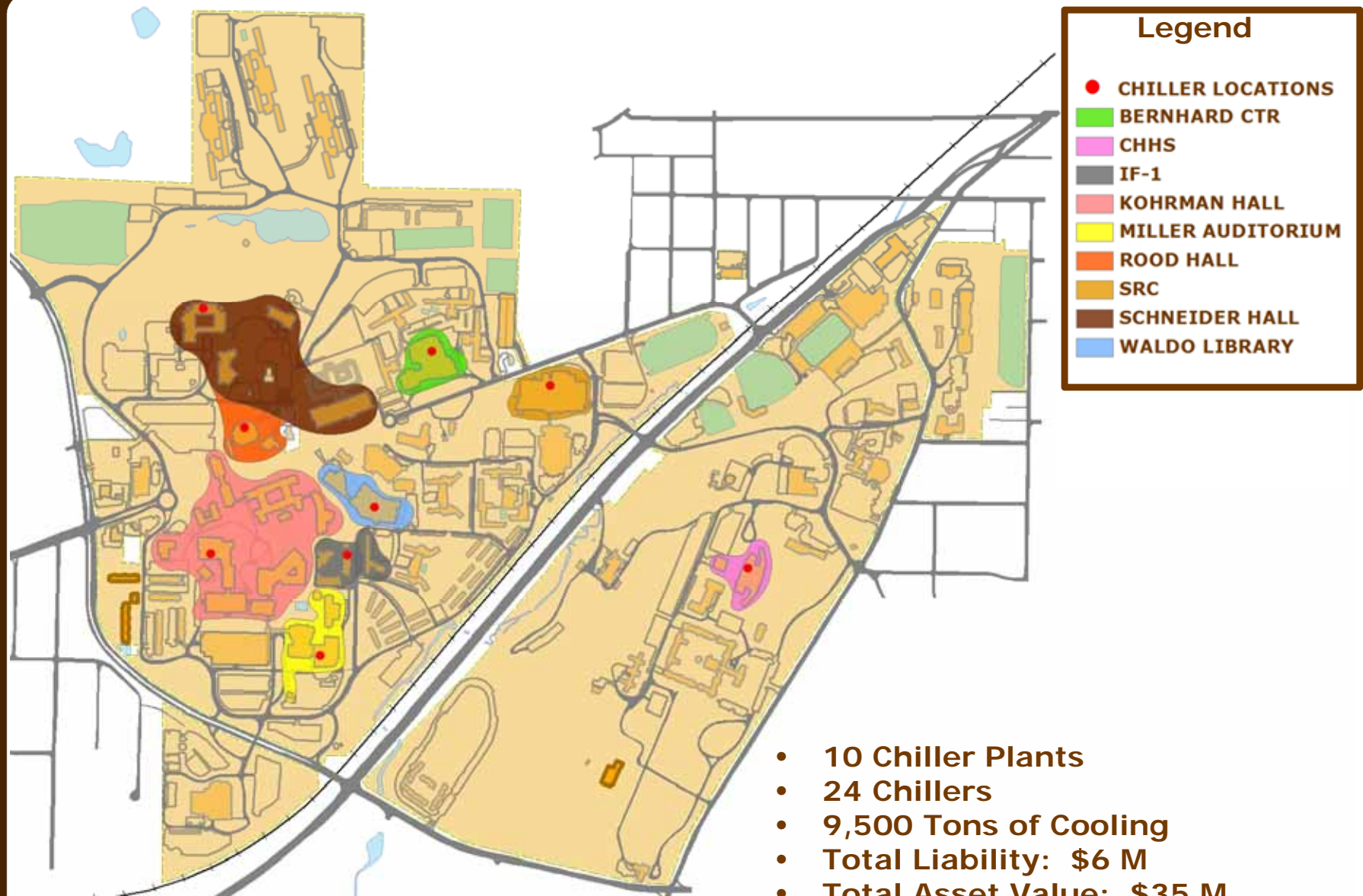
Legend

— Storm Line

- 40 Miles of WMU Owned Storm Lines

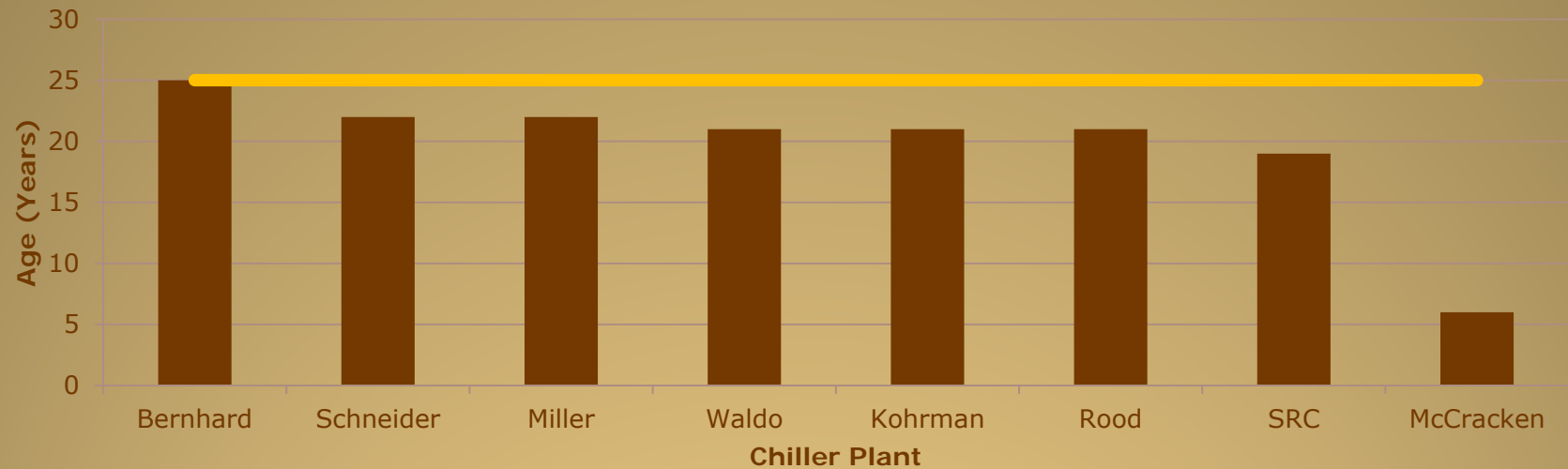
Primary Utilities – Storm Sewer Overview

Chilled Water

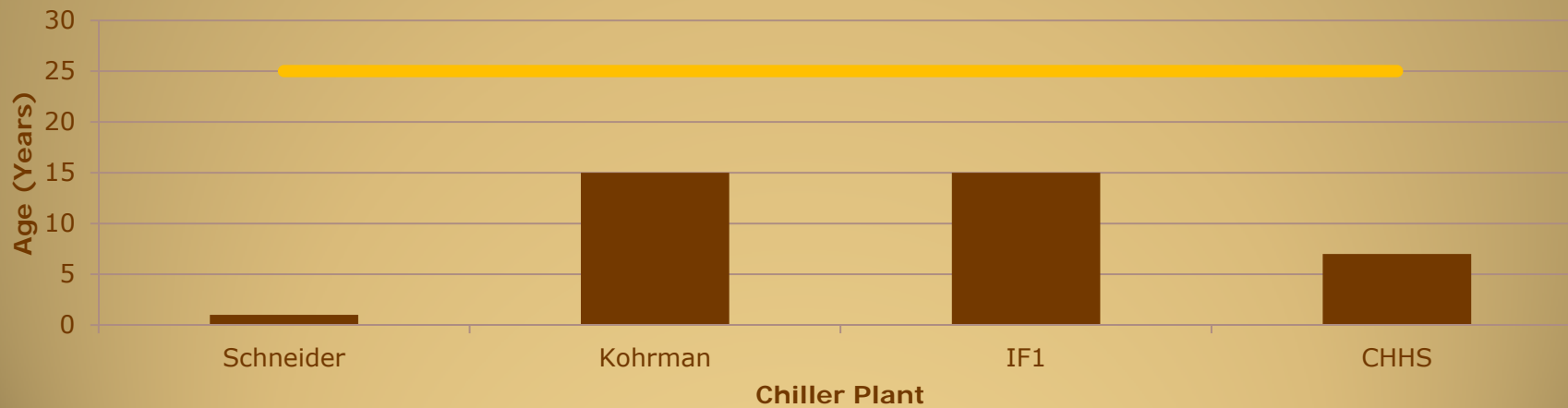


Primary Utilities – Chiller Plants

Age of Electric Chillers

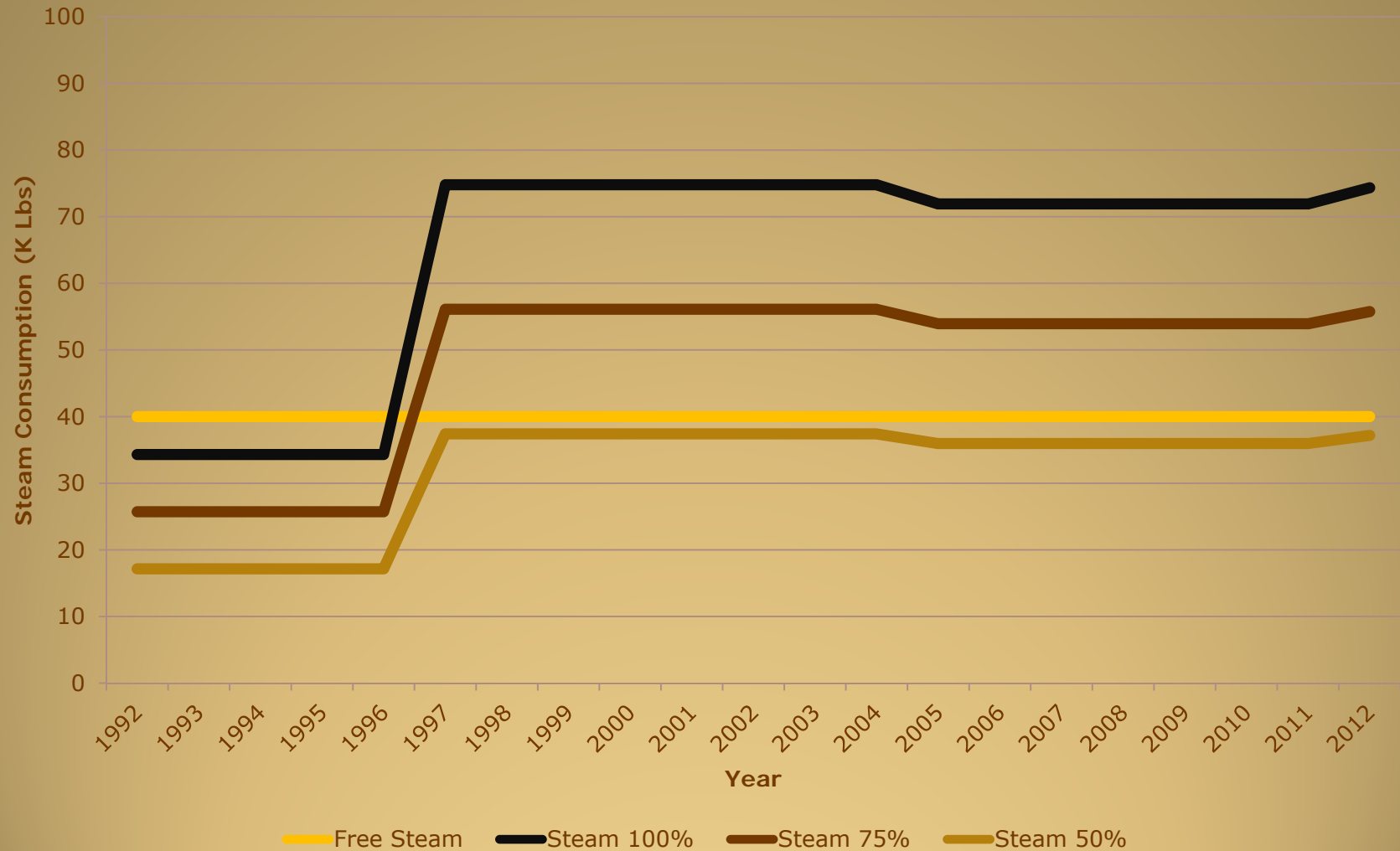


Age of Absorption Chillers

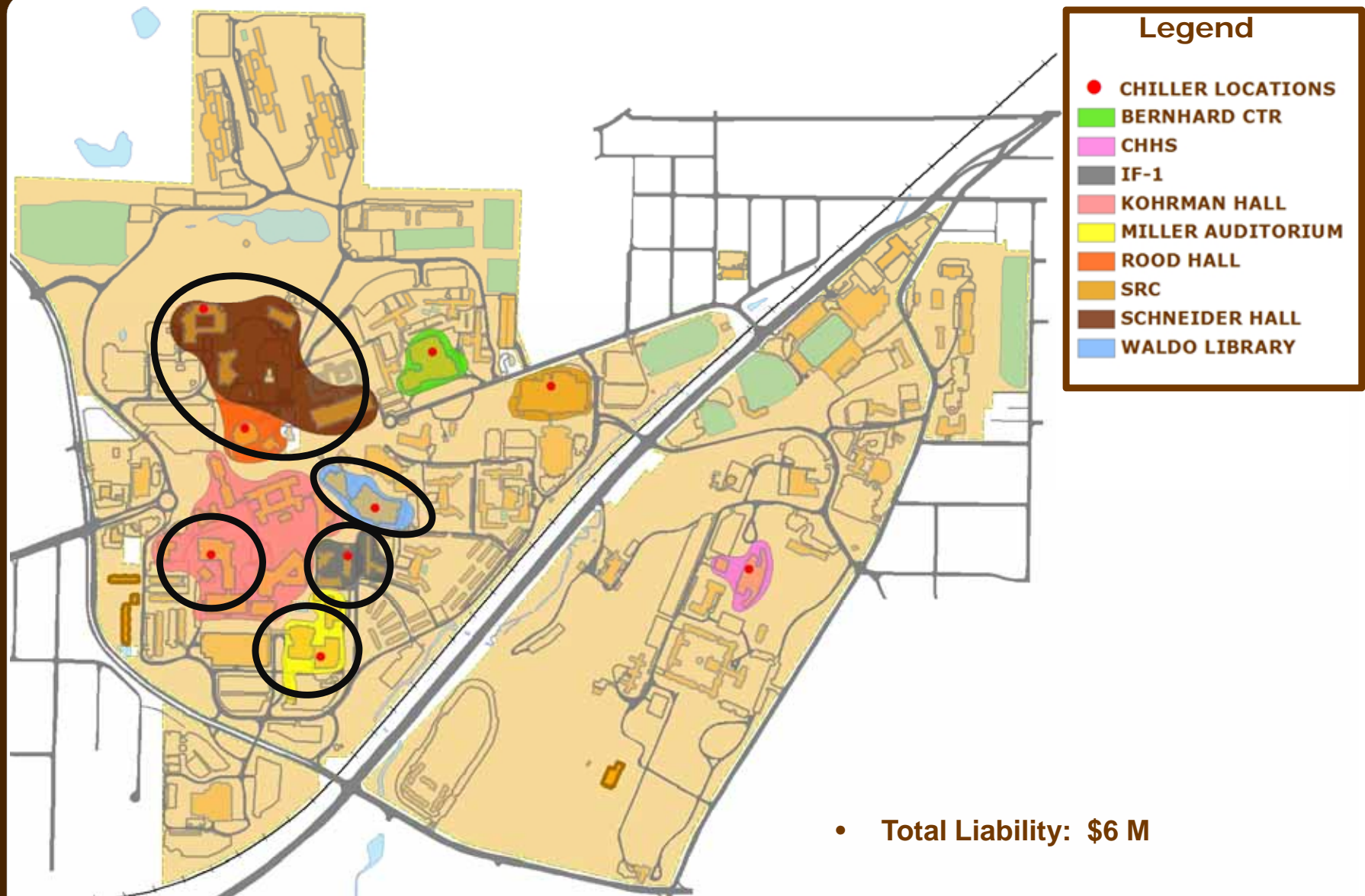


Primary Utilities – Chiller Plant Age

Absorption Chiller Steam Consumption



Primary Utilities – Chiller Operating Strategy



Primary Utilities – Chiller Plants Critical Areas

Summary of Primary Utilities Replacement Cost

Recommendation for Utilities in Poor Condition

Utility	5 Year Plan
Electrical	\$8,000,000
Steam	\$6,000,000
Chilled Water	\$6,000,000
Total	\$20,000,000

Recommendation for Utilities in Fair Condition

Utility	15 Year Plan
Electrical	\$18,000,000
Steam	\$22,000,000
Chilled Water	\$5,000,000
Total	\$45,000,000

Primary Utilities – Recommendation

Thank You