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Microgrid 2017 – November 6, 2017

Case Study – Automated Distribution System

Veterans Affairs Medical Center, Salisbury NC

Presentation Agenda

VA Medical Center – Power System Upgrade

- Project Goals & Overview
- Business Case for Project
- Design & Construction in Support of the Business Case

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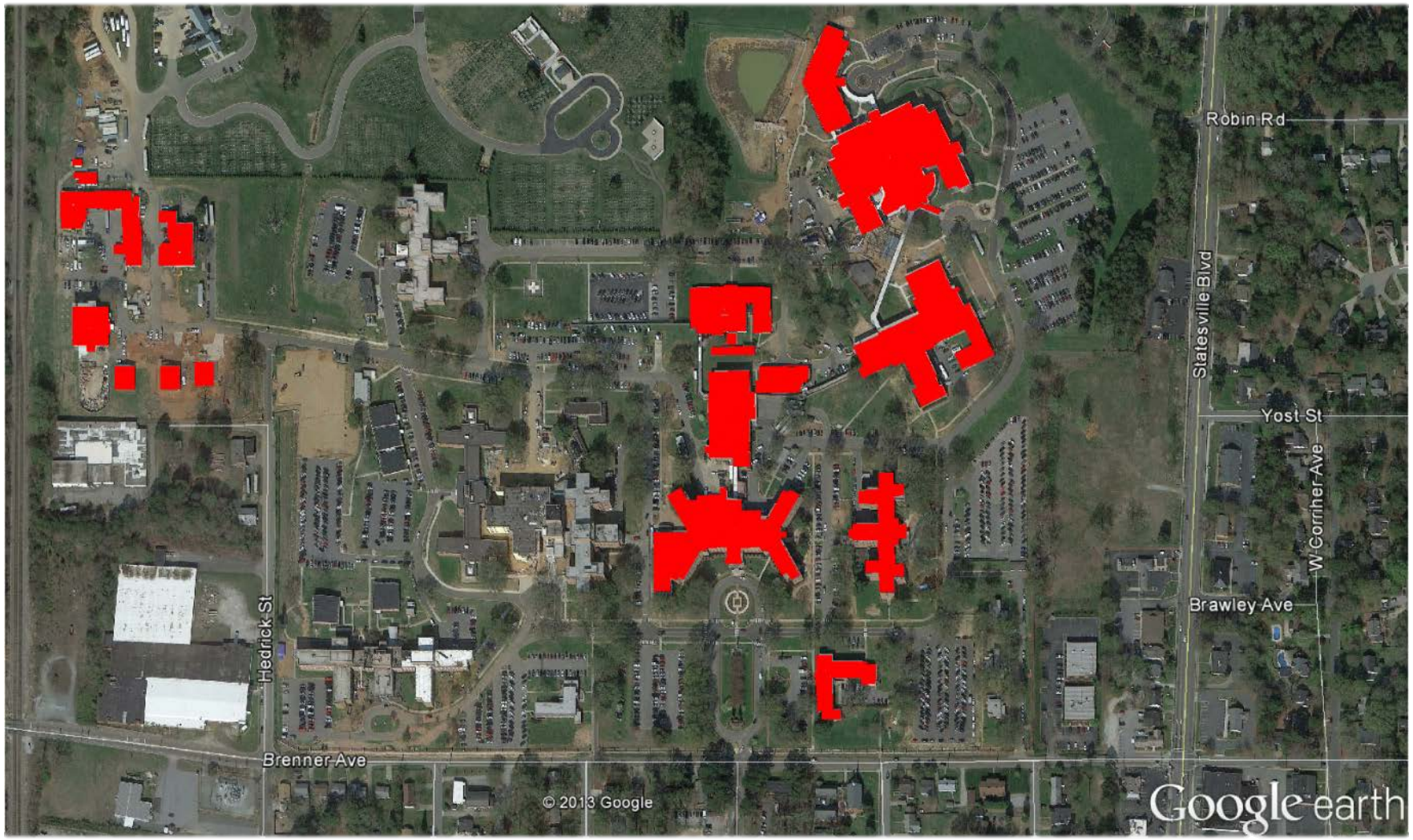
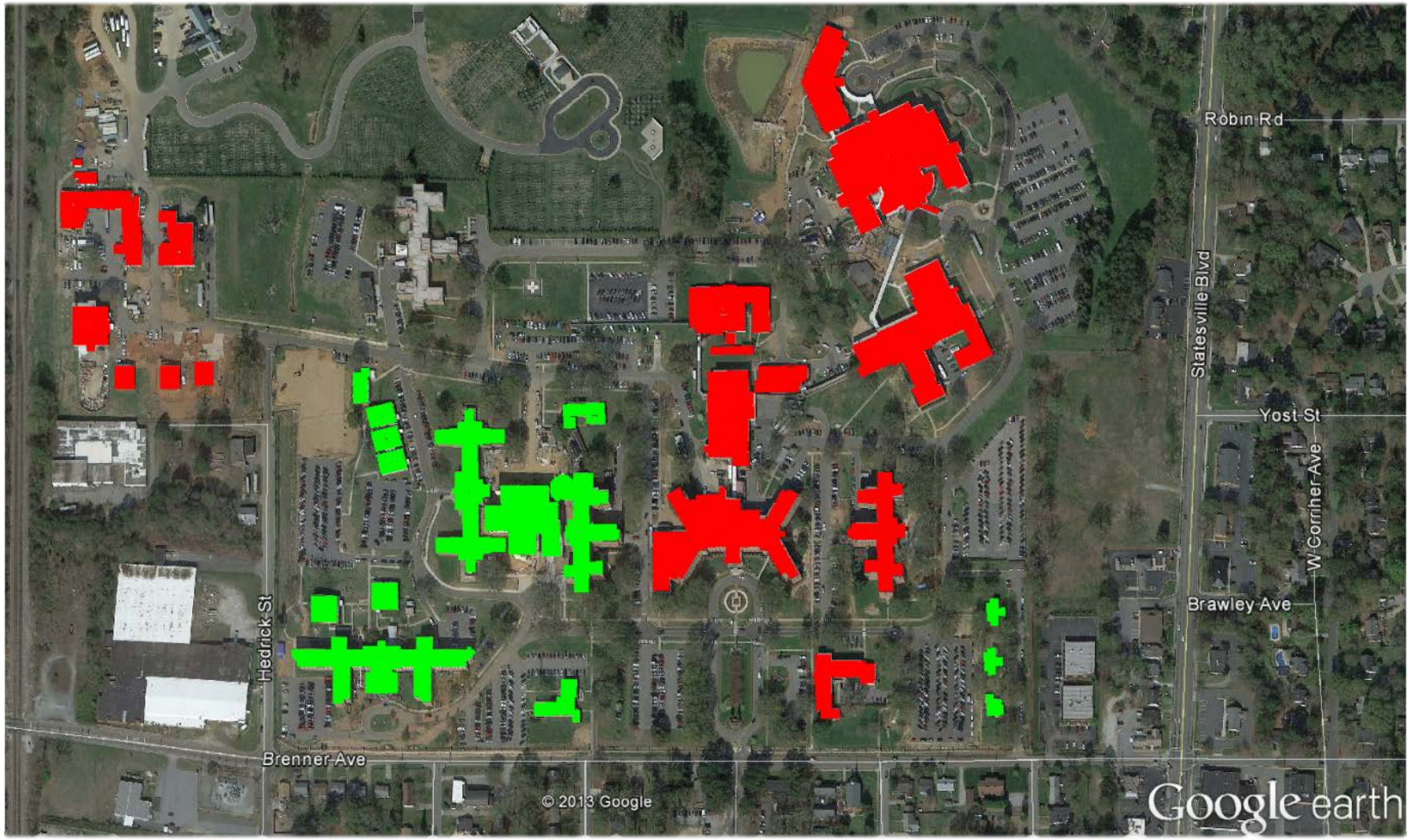
Project Goals

- Increase reliability & resiliency
  - Replace aging equipment & infrastructure
  - Improve operation of existing on-site generation
  - Provide options for additional on-site generation
- Control costs
  - Economical first-cost
  - Reduced operational costs

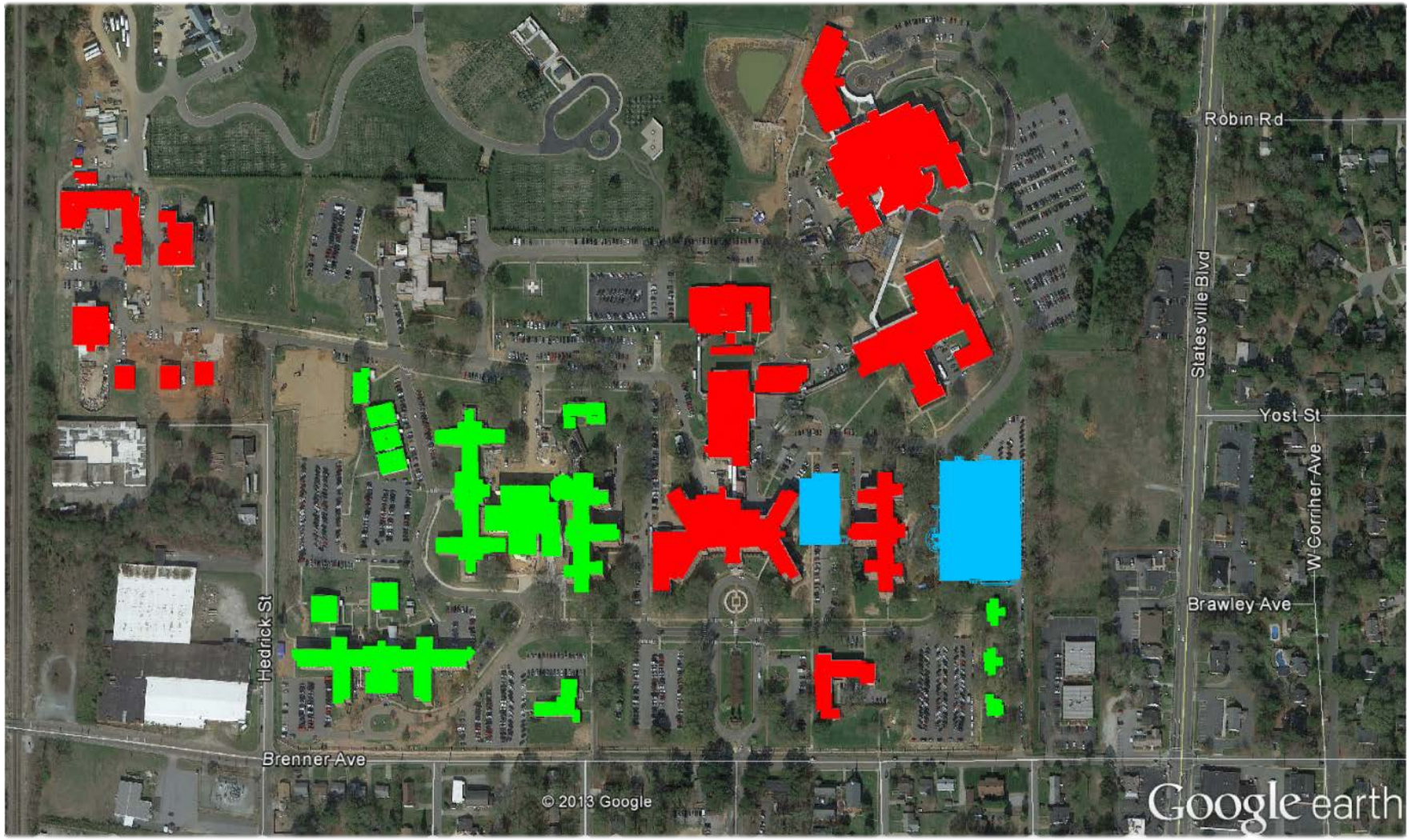
Project Overview



Project Overview

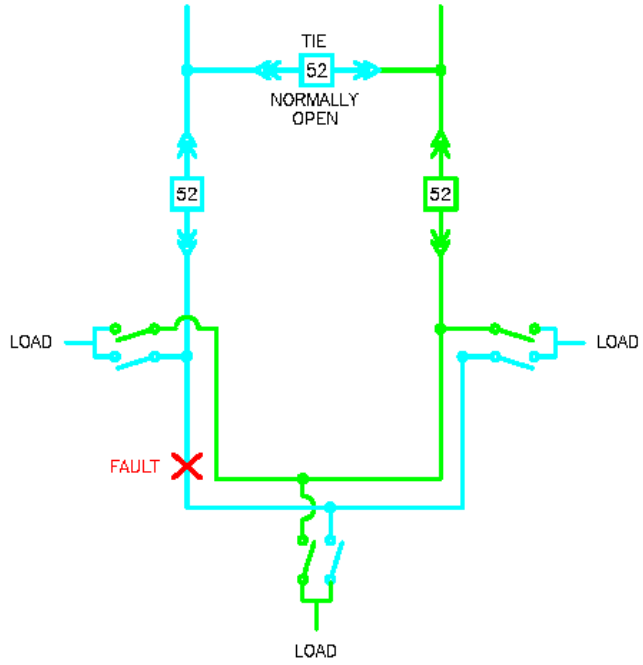


Project Overview



Options Considered

1. Primary selective system
2. Looped distribution system
3. Loop system with full standby generation
4. Loop system with second utility feed

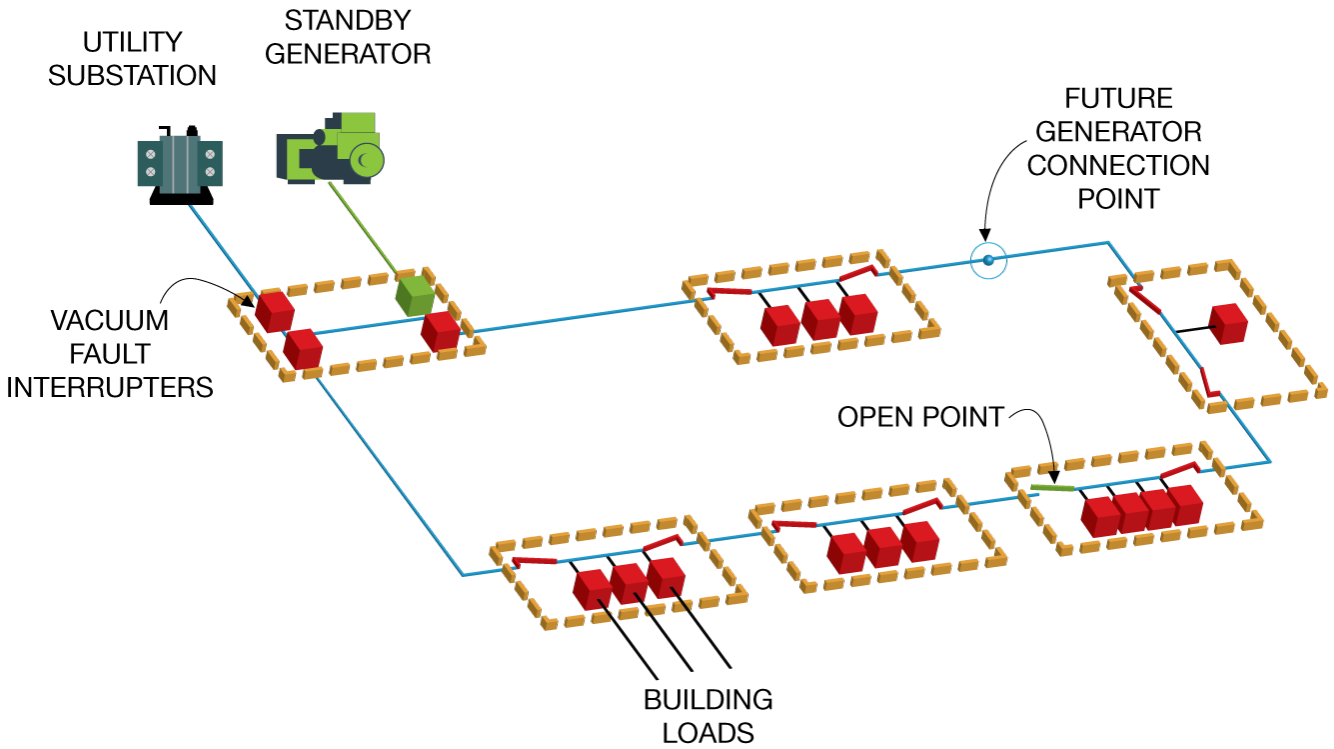


Estimated Infrastructure Comparison

	Primary Selective	Loop
Duct Bank	9,000 ft	9,500 ft
1/C Cable	76,000 ft	43,000 ft
Sectionalizing Switch	21	10

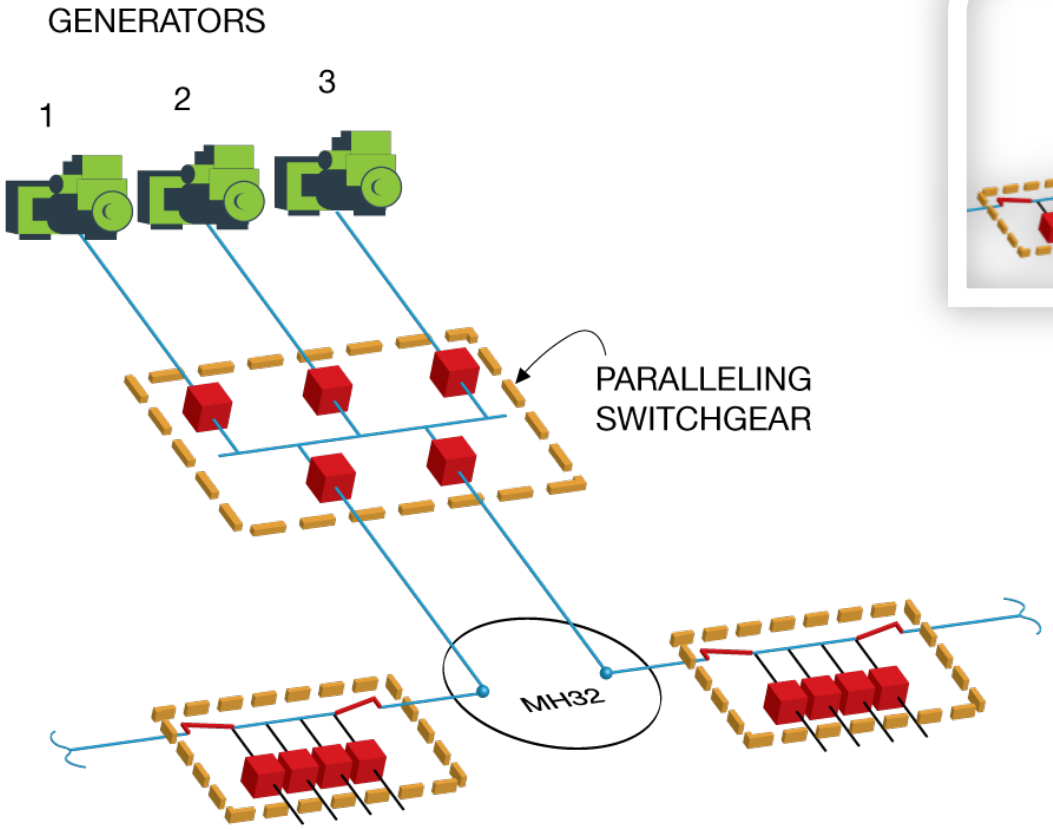
Design Approach

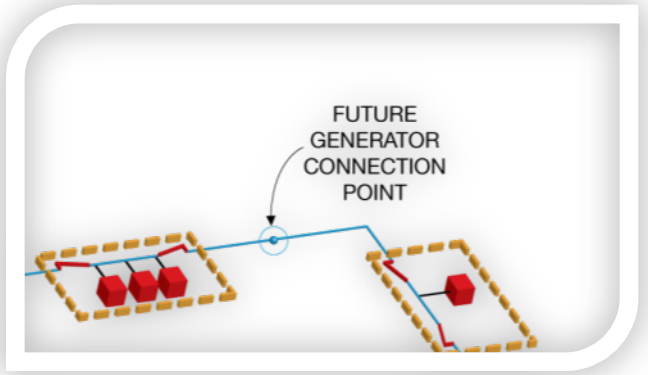
- 12.47kV loop distribution system designed for 6MW campus load
- Plan for future generator and/or utility connections



Design Approach

Inherent Ability for Modularity





Design Approach

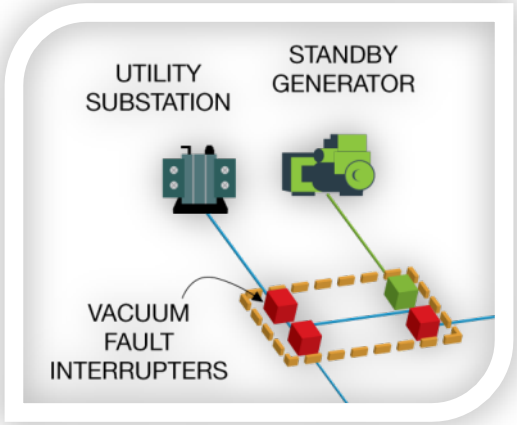
Substation Modifications

- Increased capacity
- Secondary voltage increase
- Mobile substation required

Switchgear

Outdoor Metal-Clad Switchgear ➡ Pad-mount Switchgear

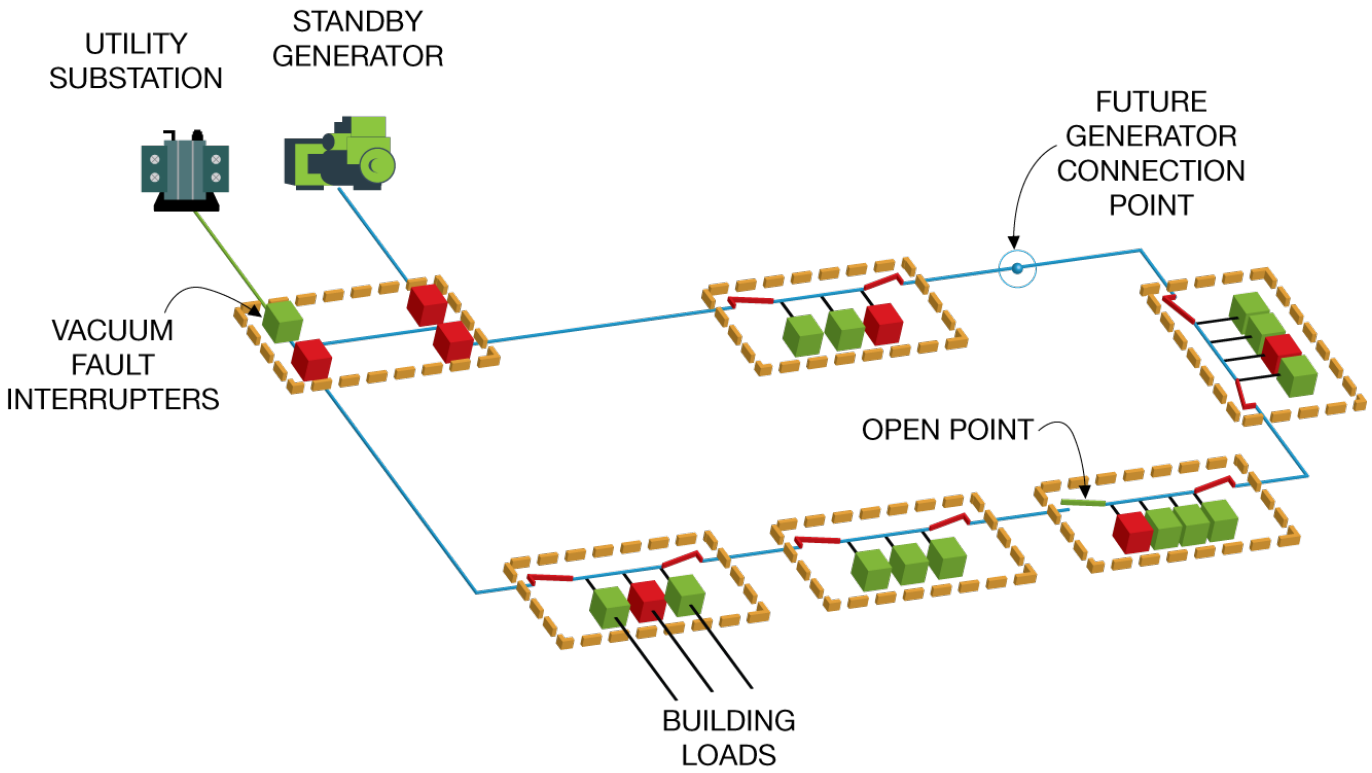
- Significant cost savings
- Relaying and fast interrupters met utility requirements
- Rated up to 600A
- Operator preferred option



Automation

Load Shed/Load Add

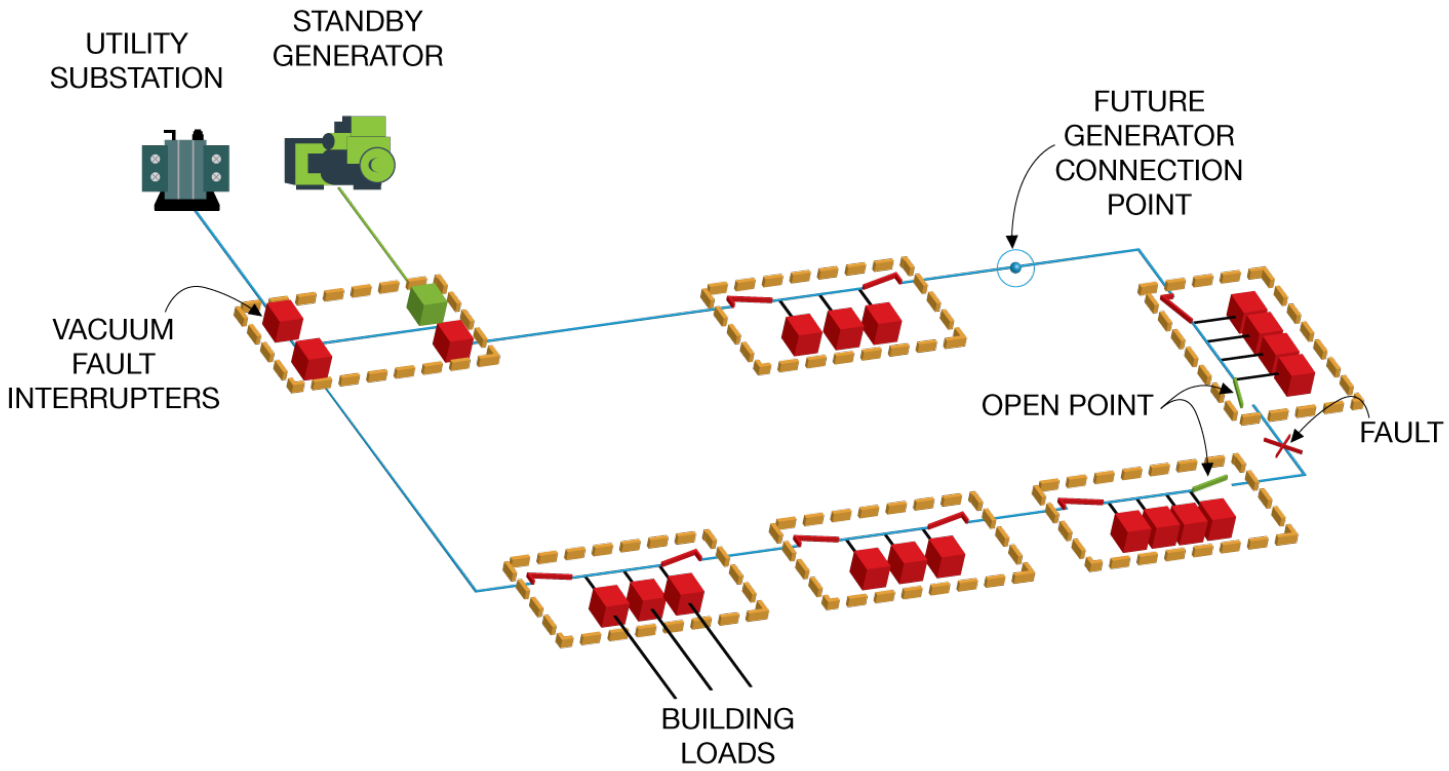
- Important feature with loop configuration
- Maximizes generator capacity



Automation

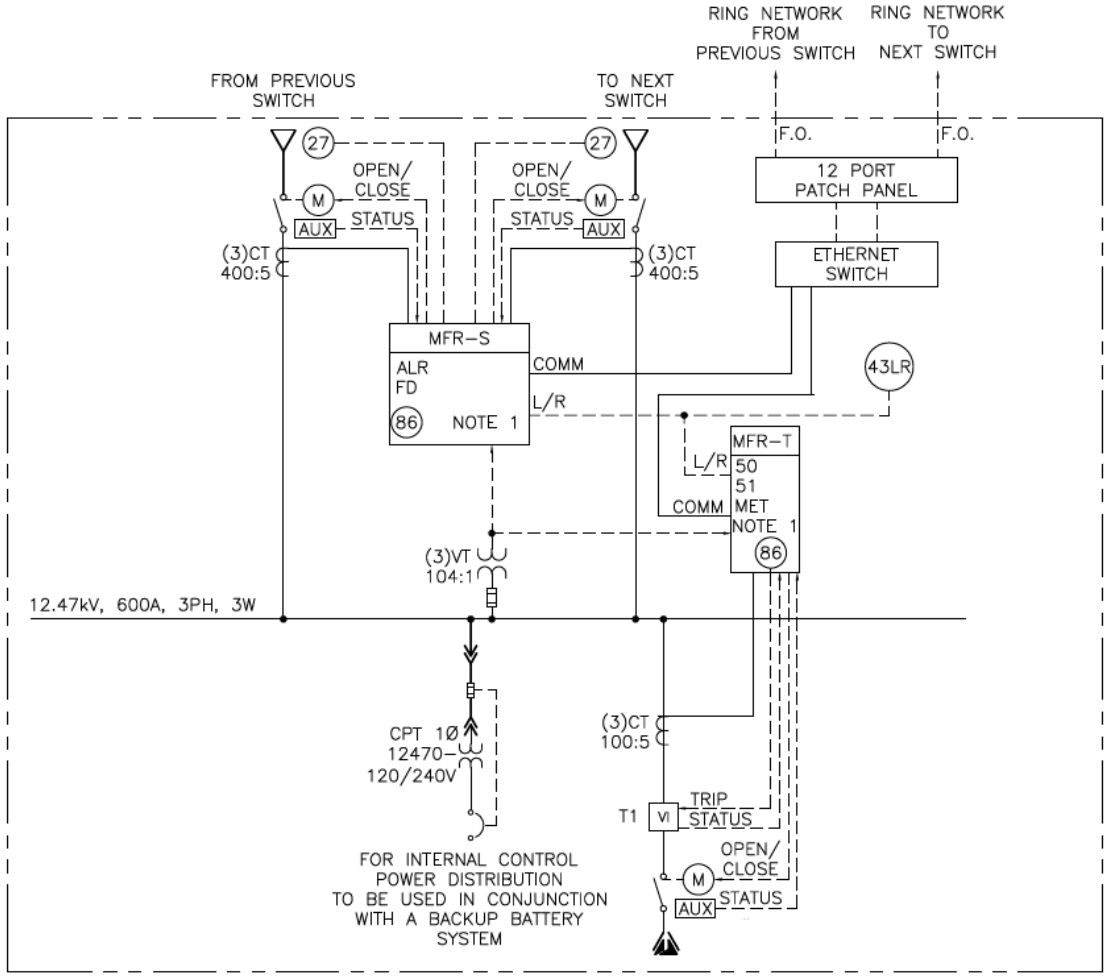
Outage Restoration

- Fault detection
- Automatic loop restoration



Automation

Sectionalizing Switch Detail



Conclusion

- Reduced operational cost through service consolidation
- Loop configuration lowered first cost
- Automation improved reliability & resiliency
- Reliability & resiliency add value to Medical Center operations

Q & A

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