GRITS 11/17/2021

H.013710 I-10: US-61 to Laplace ITS Deployment

Creating ITS Infrastructure in Rural Louisiana

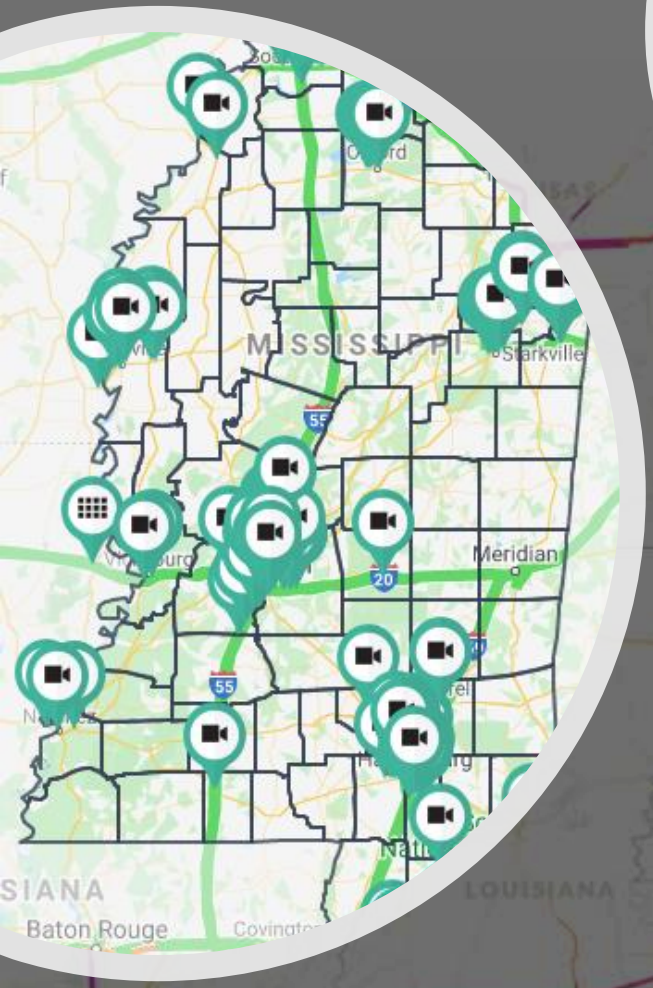
Stantec

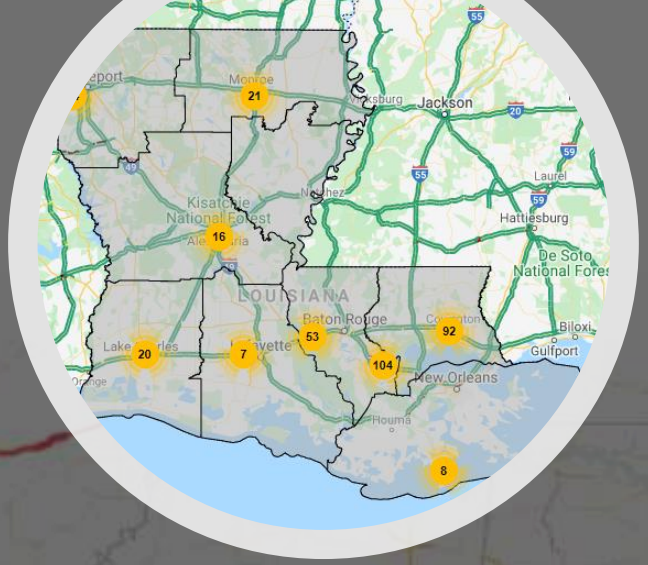
Agenda

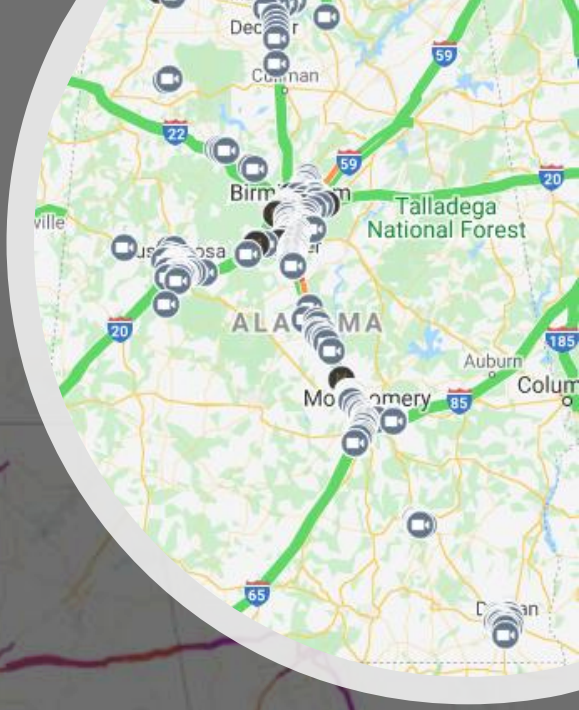
1. Safety Moment
2. Background
3. Project Description
4. Solar Site Design
5. Conclusion

Safety Moment

Stantec follows ISO 9001 certified field safety practices on all projects



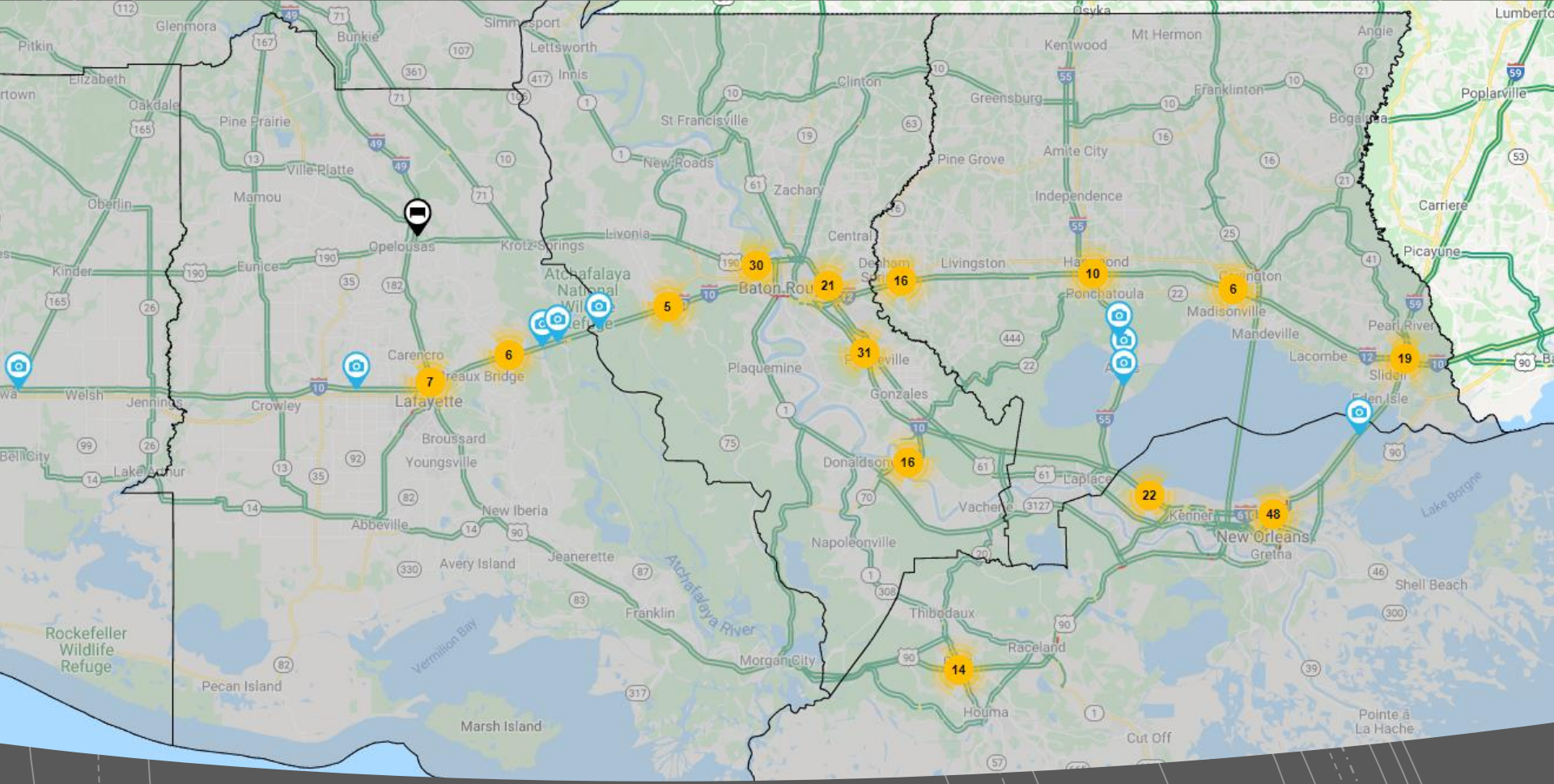




Background

Rural Infrastructure Needs

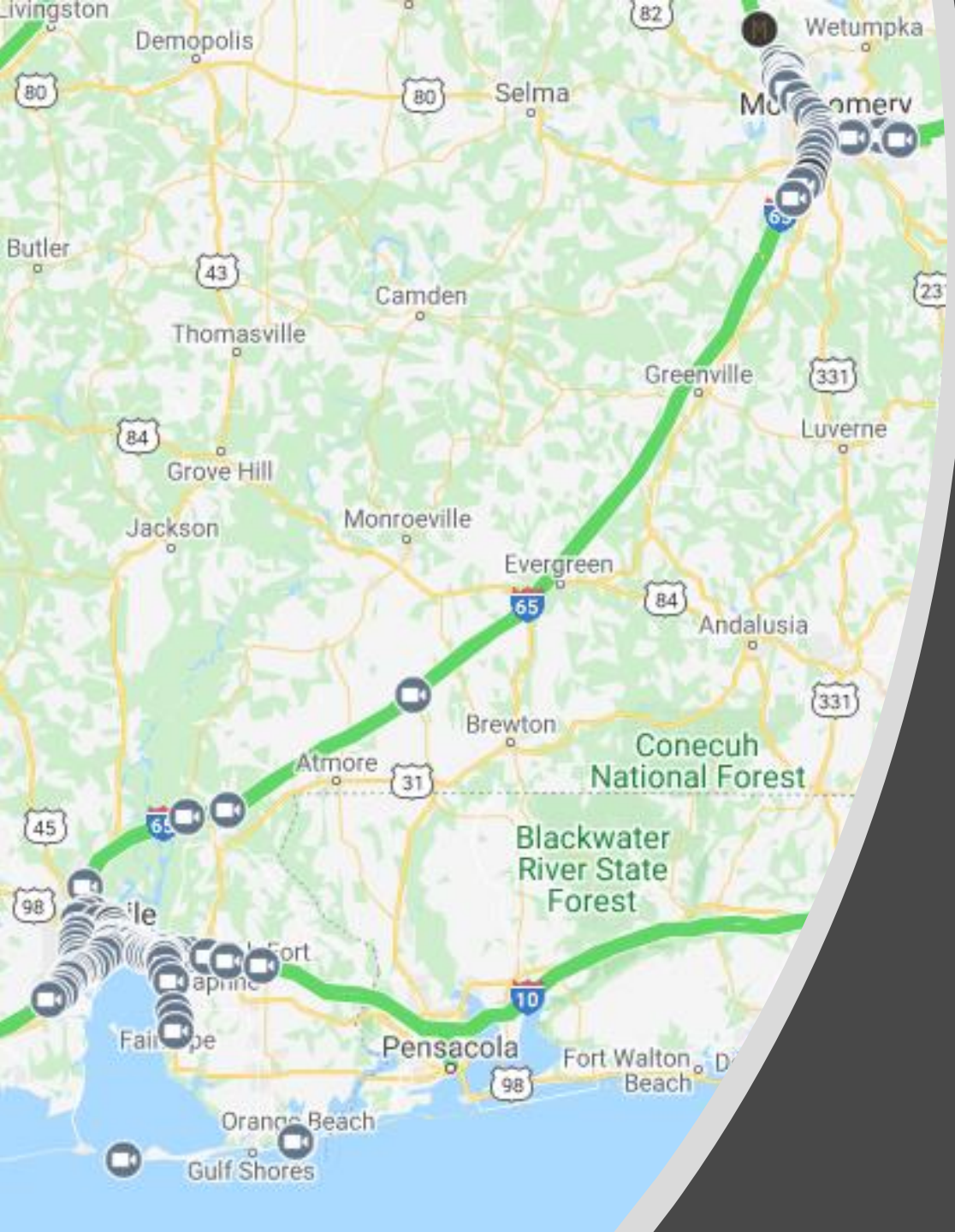
2045



Louisiana ITS Coverage

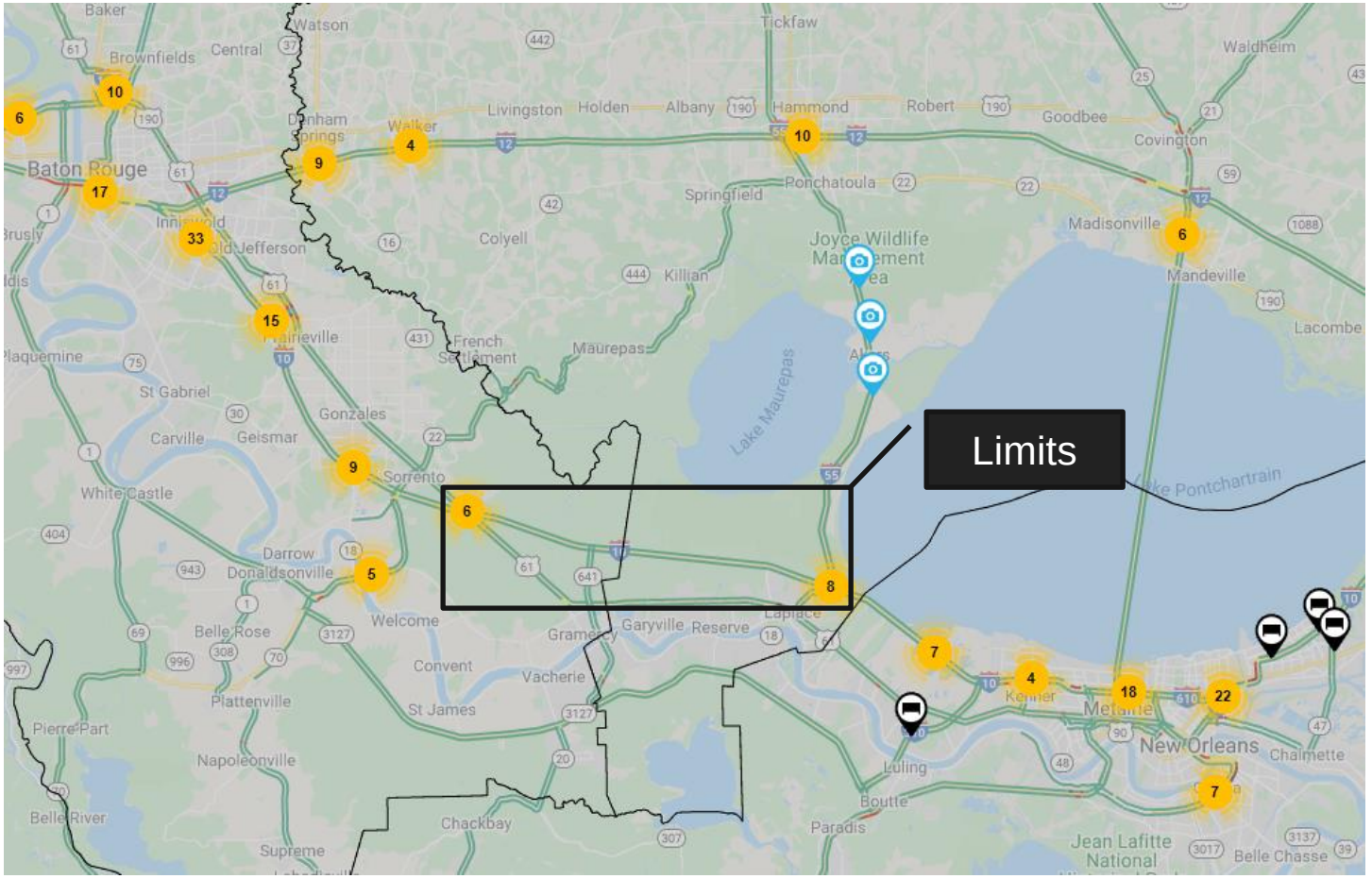
- Focused on large cities
- Fiber network is extensive, but device locations limited by power in some areas

Mississippi ITS Coverage



Alabama ITS Coverage

H.013710 Project Description

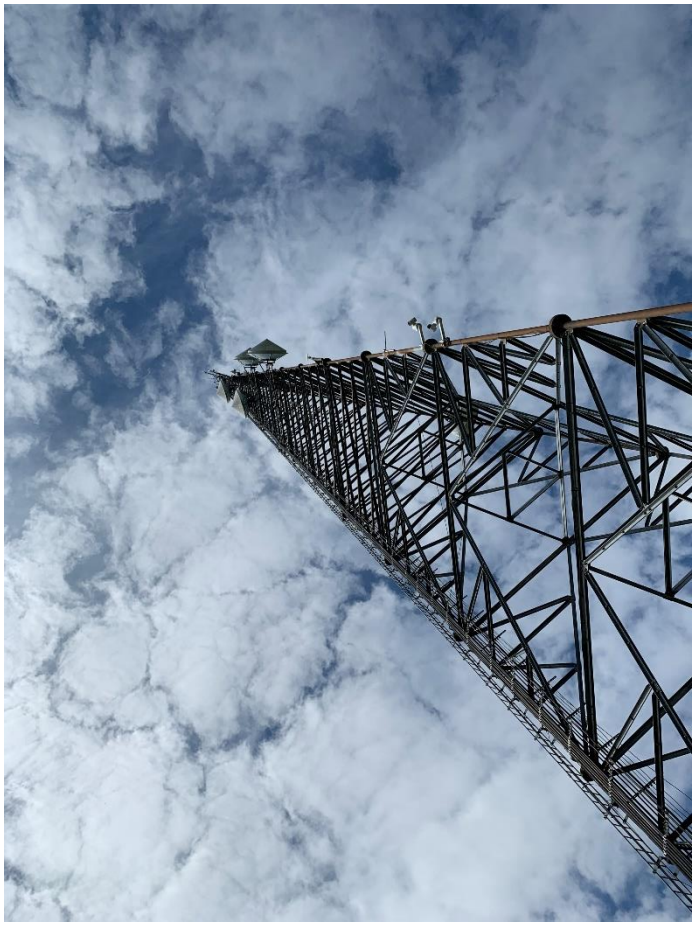


System Goals

- Eliminate crashes and increase safety of transportation system
- Rapid detection
- Rapid verification
- Dispatch emergency services and MAP
- Communicate with Motorists

Project Description

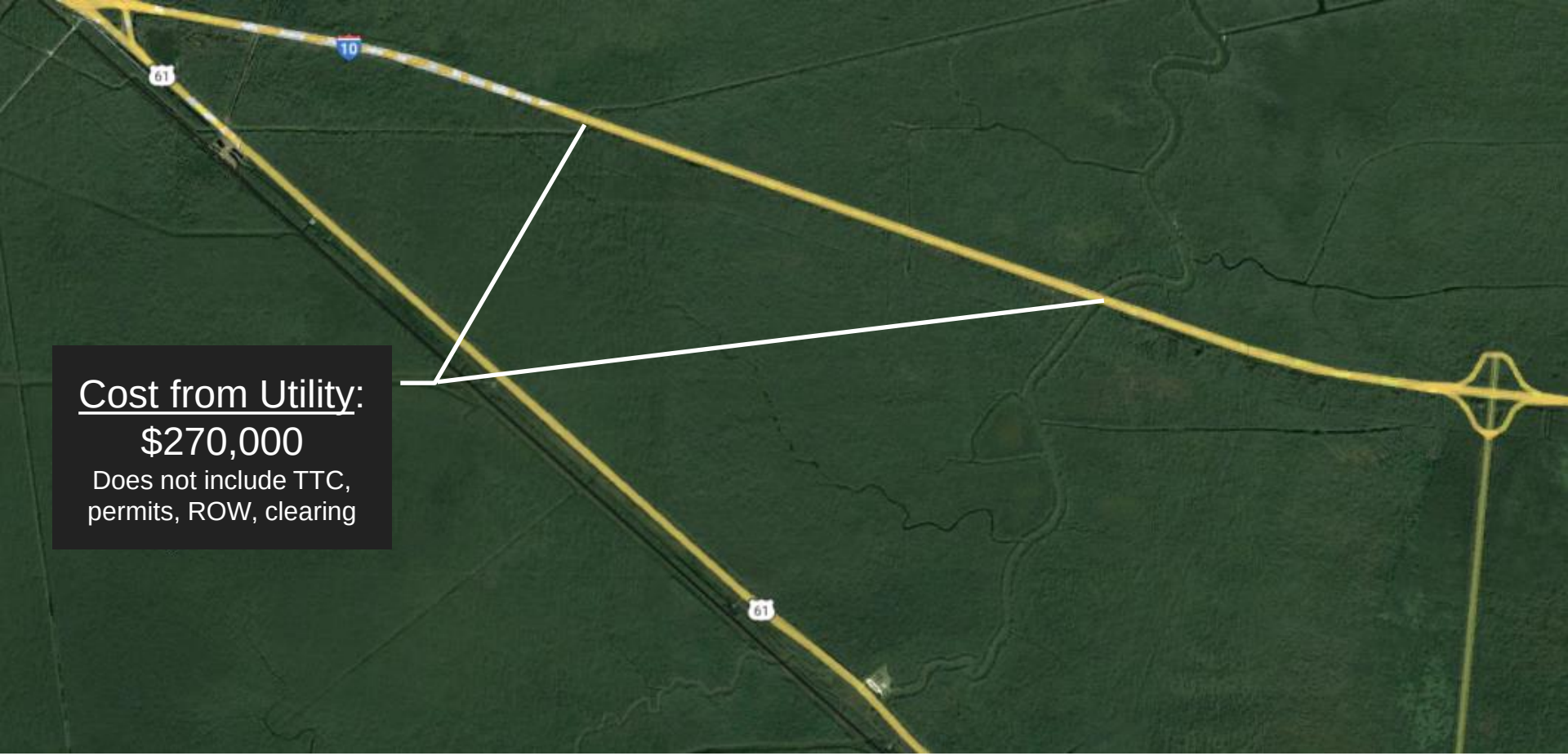
Objectives



Connect Existing Hub site at US-61 to Existing Radio Tower in Laplace via 96 strand SMFO

Connect existing CCTV and DMS sites to new Fiber

Install additional 7 CCTV sites, 4 solar-powered



Cost from Utility:
$270,000
Does not include TTC, permits, ROW, clearing

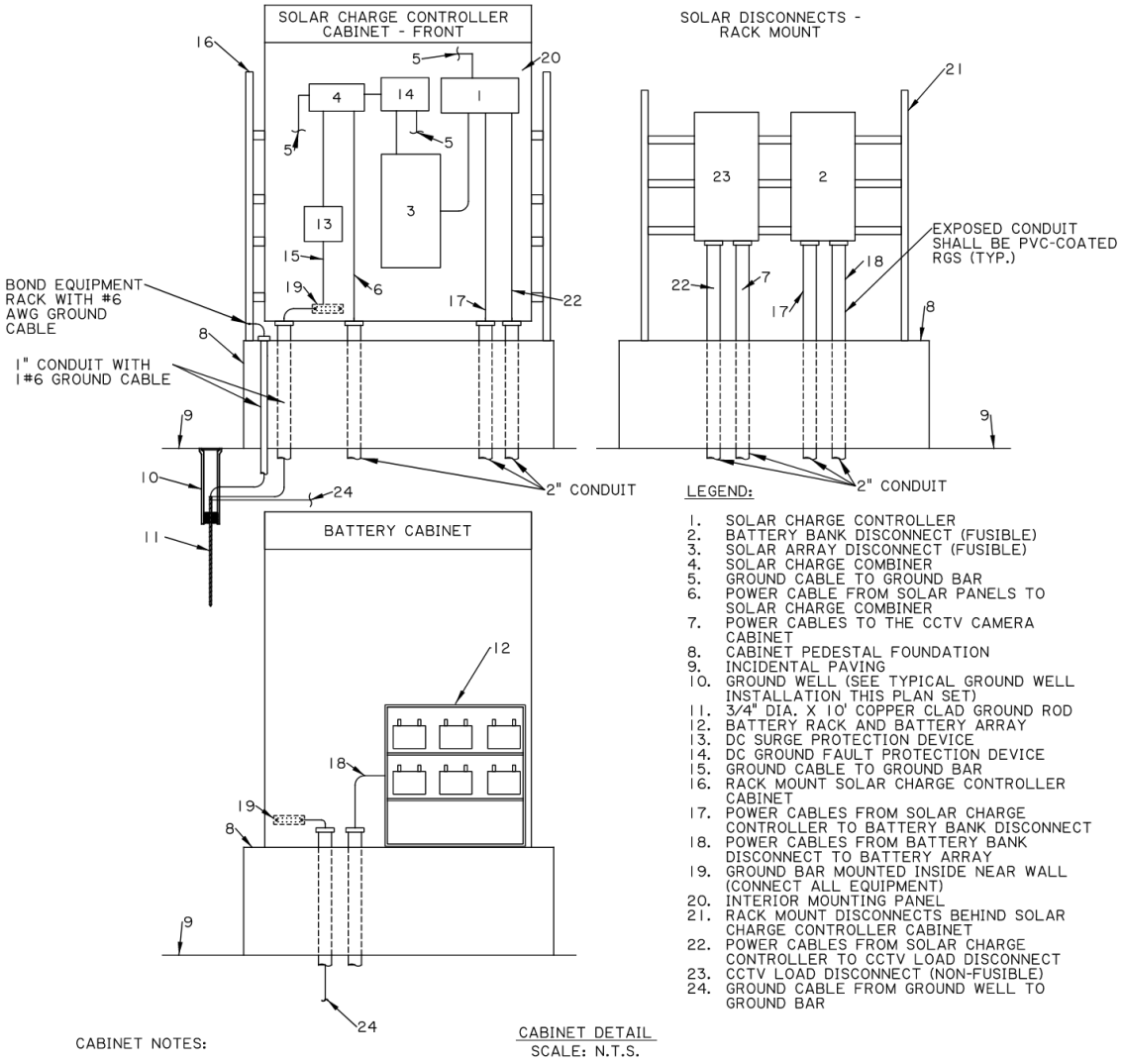
Utility Costs (Estimated)

Cost from Utility:
$360,000
Does not include TTC, permits, ROW, clearing

Cost from Utility:
$140,000
Does not include TTC, permits, ROW, clearing

Utility Costs (Estimated)

Choosing and Sizing Solar Components



Loads:

1 Cohu camera

Ruggedcom switch

2 cabinet fans

1 cabinet light

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66 Ah per day

Choosing and Sizing Solar Components

Battery – Gel Lead Acid, sized based on IEEE Std. 1013-2019 (Worksheet 1) – 6 standard 24 VDC batteries, 7.56 kWh capacity

Solar Array – sized based on IEEE St. 1562-2007 (Worksheet 1) – 4 PV modules providing 24 VDC and 9.2 A

Note: IEEE Standards are Guides, not requirements and existing or alternate installations may not follow them.

Choosing and Sizing Solar Components

Solar Cables – sized per NEC 690.8 (A) (1)

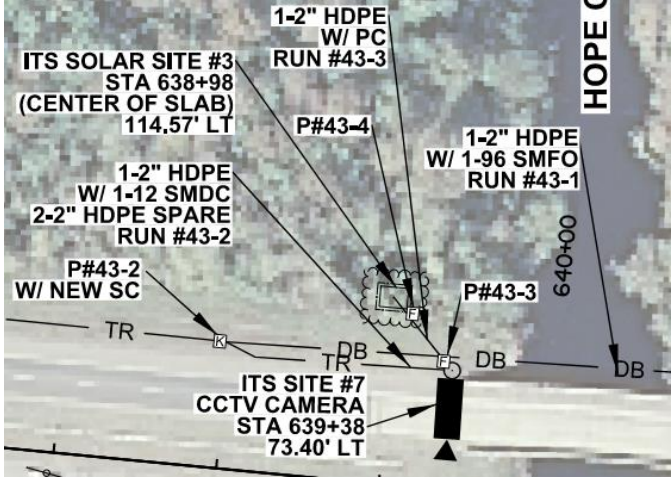
Solar OCPD – sized per NEC 690.0 (B)

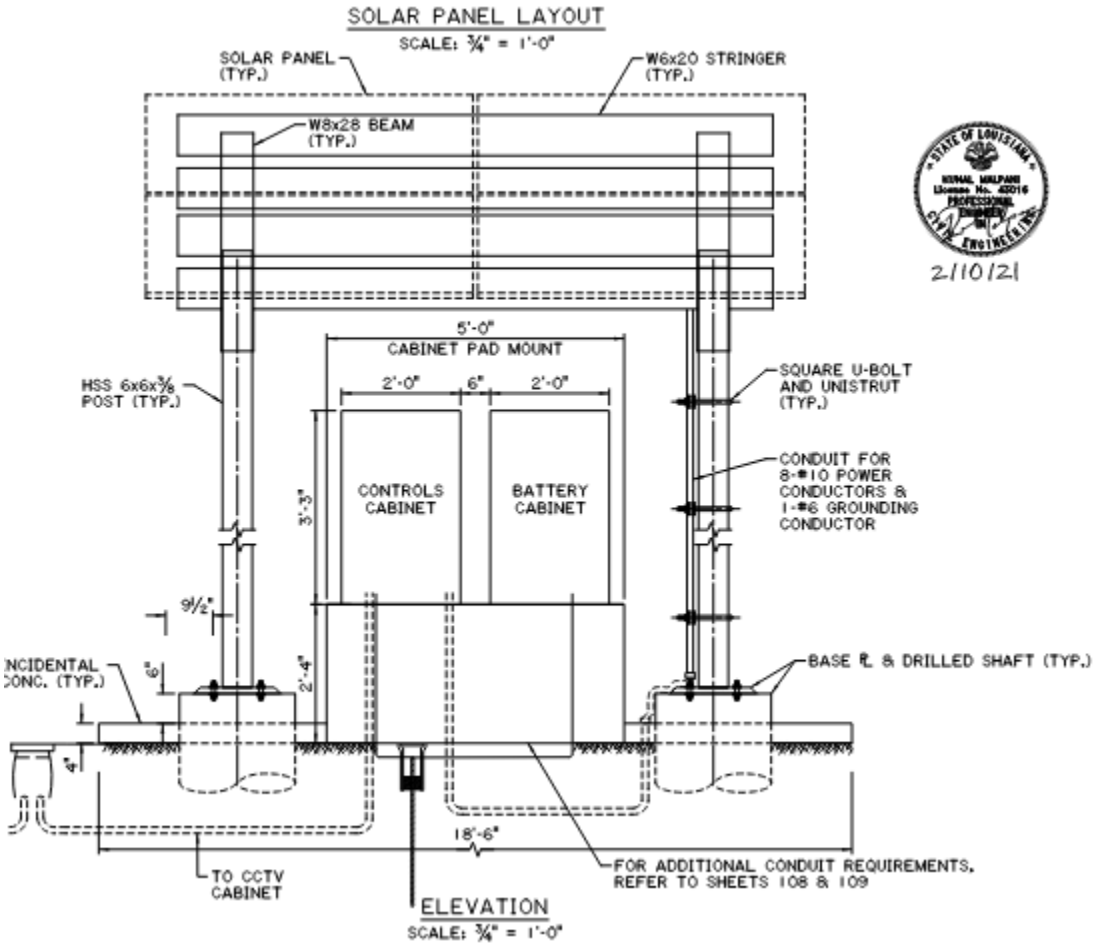
Arc Fault Protection not required due to voltage (required for systems 80VDC and higher)

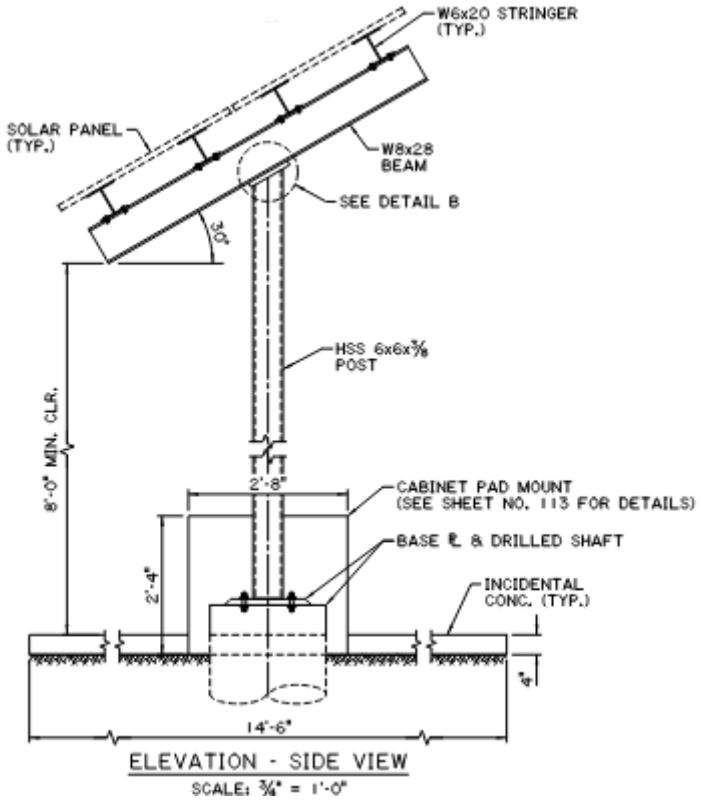
Note: NEC 690 is for Solar Photovoltaic (PV) Systems specifically though other sections may apply to specific situations.

Solar Site Design

Solar Site Design



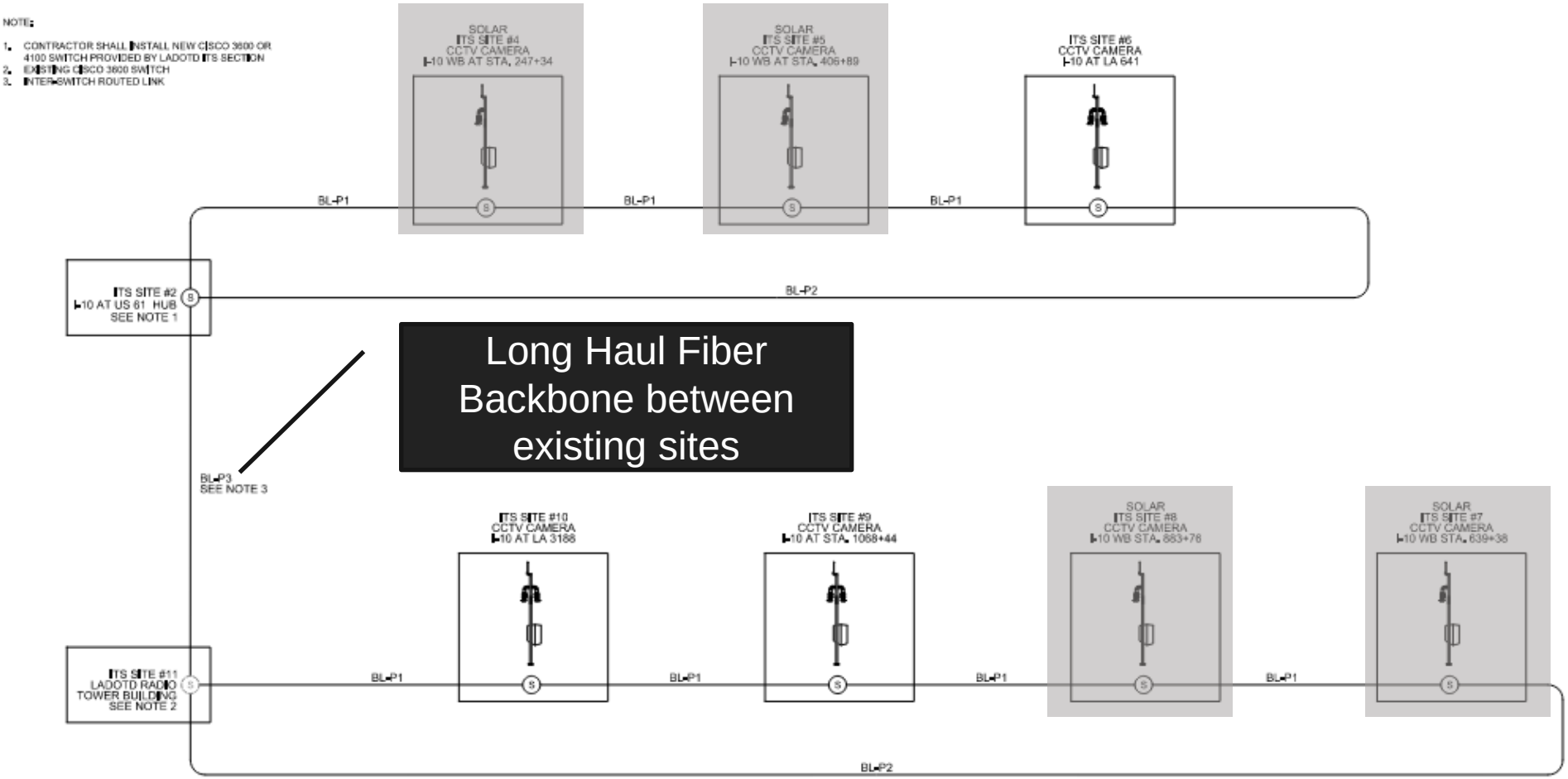




Note: NFPA 855-20 “Installation of Stationary Energy Storage Systems” may apply to the site design. The standard does not apply to lead-acid battery installations less than 70 kWh storage capacity. MUTCD latest edition and NESC may have applicable standards as well depending upon the site location.

Solar Site Design

Fiber Backbone Design



Solar Costs

Engineer's Estimate	Contractor's Bid (8 total)
Solar Power System - $122,500	Solar Power System - $60,000 (winning bid), $105,000 (average bid)
Clearing and Grubbing - $5,000	Clearing and Grubbing - $3,250 (winning bid), $8,750 (average bid)
Total for 4 - $510,000	Total for 4: $253,000 (winning bid)
Total Project Estimate - $4.5M	Total Project Bid - $4M

Estimated Utility costs totaled at least $1.04M

No additional TTC, ROW, or Permits required

Conclusion

INITIAL COST SAVINGS

RELIABILITY

MAINTENANCE

Without change there is no innovation, creativity, or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable.

William Pollard