

Field Perspective: Impact of Resilience Projects



Dramatic Hill AFB Electrical Reliability Improvement

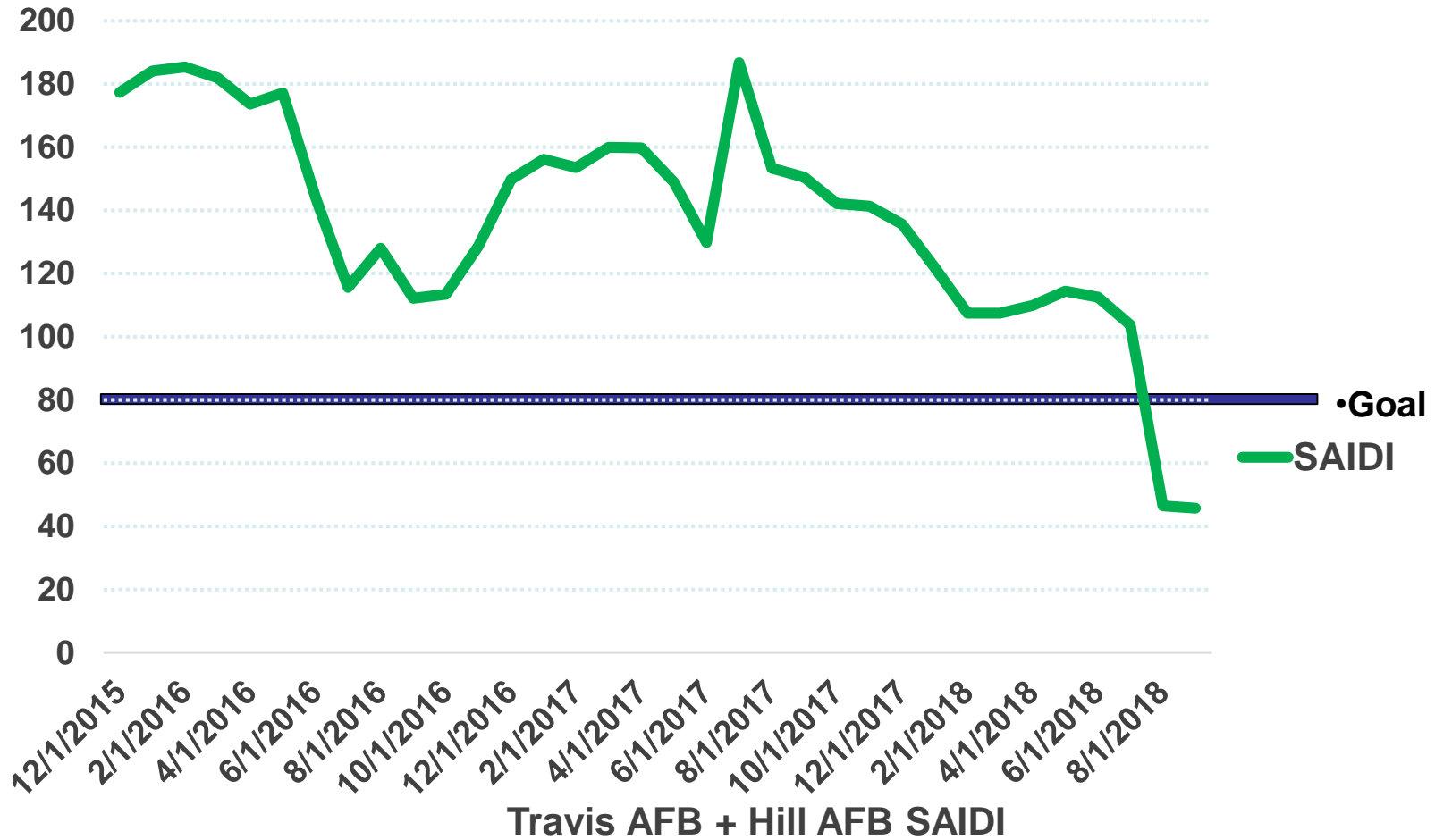
- 12-month Rolling Reliability 30 Sep 15: 99.9616%
- 12-month Rolling Reliability 30 Sep 18: 99.9951%
- 12-month Rolling SAIDI 30 Sep 15: 201.77 Minutes
- 12-month Rolling SAIDI 30 Sep 18: 25.75 Minutes

Four
9s!

SAIDI = System Average Interruption Duration Index (How many minutes a random customer will be down in a year)

Reliability and System Expertise Are Two Major UP Benefits

UP Results: Reliability Indices

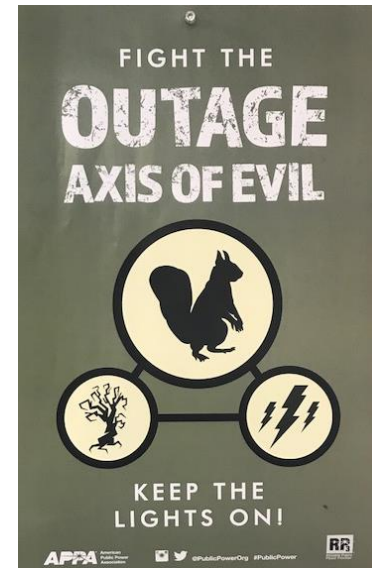


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Decreasing SAIDI means better reliability

UP Return on Investment

- UP brings industry tools to improve reliability
- Automation minimizes outage impacts
 - Old: Squirrel takes out 90 buildings for hours at a time
 - New: System detects problem & reconfigures within a matter of seconds
- Real time alarms
- Trouble location and guidance for responding crew members
- Less buildings down when crew arrives



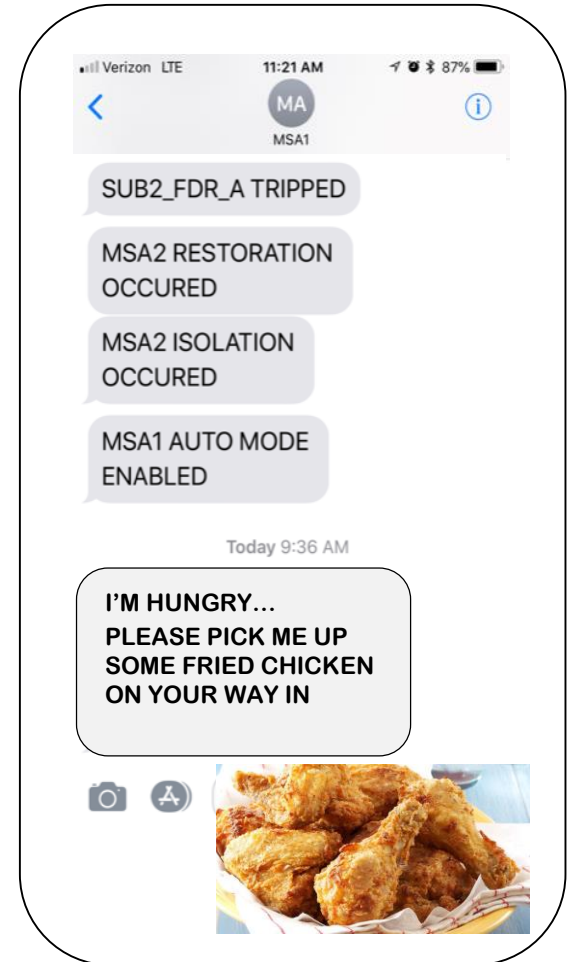
FOUO

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Automation Improves Resilience

“My Substation Sends Me Texts!”

- Infrastructure tells you when it needs attention
- Apply technology to improve system understanding
- Detect problems before they occur
- System alerts crew before customer reports the outage
- Real time system information to crews before they arrive on site
- Air-gapped, cybersecure system



Text Messages from Electrical System
(Public Service Message: Bottom Text is fictitious)

Hill AFB Automation Case Study



Before:

- Manual switching
- Somewhat radial
- Lead-sheathed U/G cable in Orangeburg Conduit
- Unbalanced loading
- Low protection
- No automation
- No real-time monitoring

After:

- Automated switching
- Redundant and looped
- Easy-to-maintain O/H lines
- More balanced loading
- Advanced protection and sectionalizing
- Auto reclosing, fault isolation, and restoration
- Real-time monitoring
- Alarms

