COST SAVINGS: SUBSTATION BATTERY TESTING

PRESENTED BY:

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Informational Only
OBJECTIVES & TAKEAWAYS

• DISCUSS SUBSTATION BATTERY TESTING
• DISCUSS AUTOMATED TESTING & MONITORING COST SAVINGS
AGENDA

• SUBSTATION BATTERIES
• MANUAL VS AUTOMATED TESTING & MONITORING
• COST SAVINGS
Substation batteries are used to:
- Provide protective relay controls
- Operate substation equipment

Battery failure can result in outages & catastrophic equipment damage

Testing & monitoring is a regulatory compliance requirement

Manual testing & monitoring of batteries is costly & time consuming

Automated monitoring of batteries is essential to improve reliability of the electric grid, safety, & compliance.
### Automated Testing of Substation Batteries

Automated testing & monitoring of substation batteries is more efficient, effective, & safer than manual testing.

#### Installation of Battery Monitoring System

- Installed battery monitoring system – fully automated

#### Comparison of Battery Testing & Monitoring

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<tbody>
<tr>
<td>• Battery testing &amp; monitoring (4 &amp; 6 month intervals)</td>
<td>• No real-time visibility</td>
<td>• Real-time condition assessments</td>
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<tr>
<td></td>
<td>• Inconsistent reporting methods</td>
<td>• Testing/reporting consistency</td>
</tr>
<tr>
<td></td>
<td>• Site visits</td>
<td>• No site visits</td>
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COST SAVINGS

• Automated battery testing & monitoring benefits:
  ✓ Less truck rolls
  ✓ Allows crews to focus on other maintenance
  ✓ Improved compliance reporting & safety
  ✓ Testing consistency
  ✓ Proactive maintenance & improved reliability

• Future cost savings: automated electrolyte level monitoring

Manual Battery Testing Cost Analysis - Annual

<table>
<thead>
<tr>
<th>Method</th>
<th># of Battery Sets</th>
<th>Total Labor Hours Saved</th>
<th>Total Average Cost Saved</th>
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<tbody>
<tr>
<td>Manual battery testing &amp; monitoring</td>
<td>178</td>
<td>4,098</td>
<td>$328,000</td>
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Automating battery testing & monitoring saves labor hours that are currently used for other proactive maintenance.
Thank You