

OWEC Grid Modernization & WMP

Idaho Power

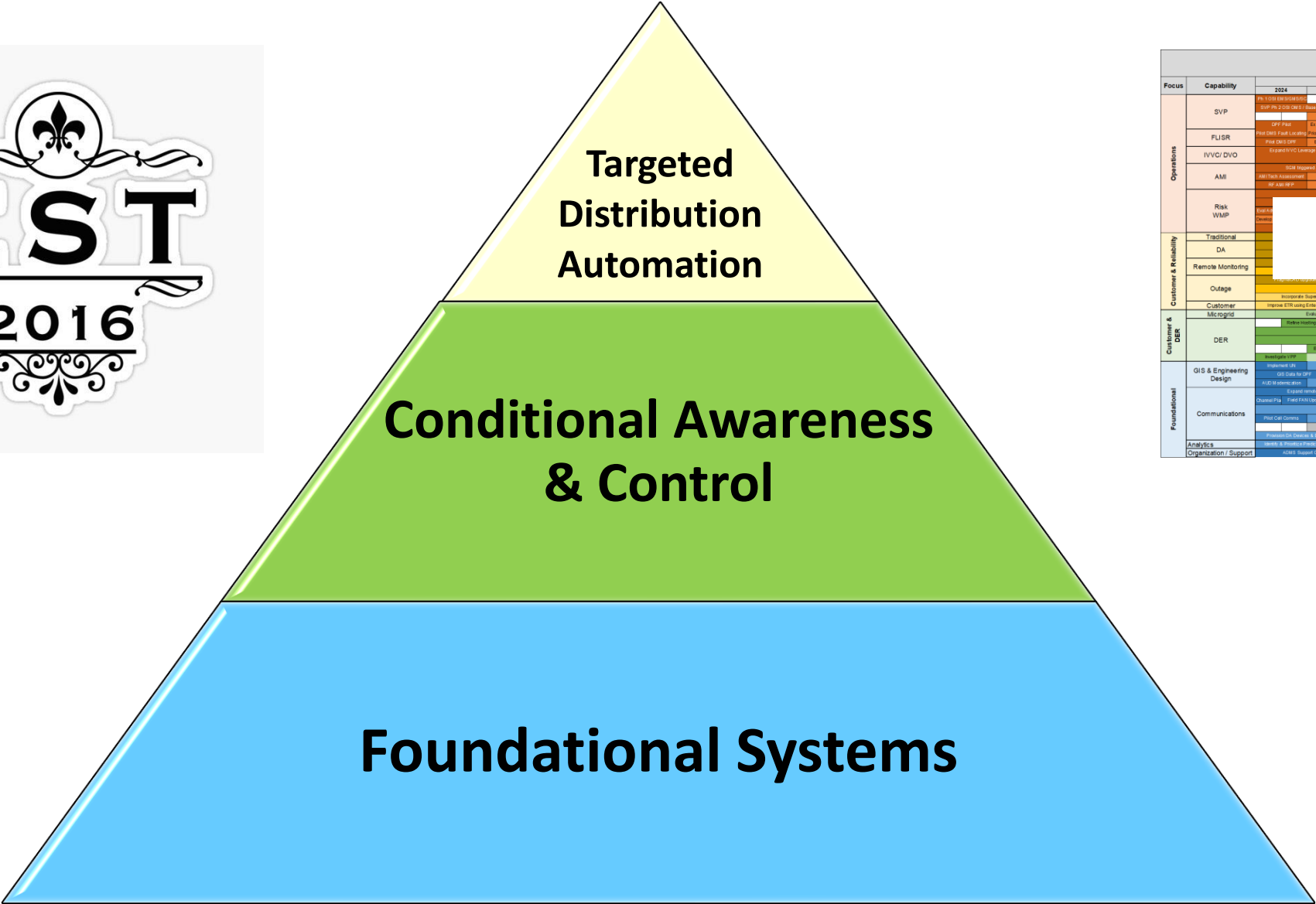
Bryan Hobson, P.E.

2025

Outline

- Grid Modernization Roadmap
- Grid Mod and WMP
- Protective Devices and SCADA Communications
- Enhanced Protection Settings
- HiZ Fault Detection pilot
- Line monitors
- Fault locating
- FLISR

Grid Modernization Strategy



2024 - Idaho Power Grid Modernization Roadmap											Key					
												Immediate Priority	Short-Term Program	Monitor	Visionary	
Focus	Capability	Year 1 to 5										Year 6 to 10				
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033					
Operations	SVP	AVL 3.0/4.0/5.0/6.0/7.0/8.0/9.0/10.0/11.0/12.0/13.0/14.0/15.0/16.0/17.0/18.0/19.0/20.0/21.0/22.0/23.0/24.0/25.0/26.0/27.0/28.0/29.0/30.0/31.0/32.0/33.0/34.0/35.0/36.0/37.0/38.0/39.0/40.0/41.0/42.0/43.0/44.0/45.0/46.0/47.0/48.0/49.0/50.0/51.0/52.0/53.0/54.0/55.0/56.0/57.0/58.0/59.0/60.0/61.0/62.0/63.0/64.0/65.0/66.0/67.0/68.0/69.0/70.0/71.0/72.0/73.0/74.0/75.0/76.0/77.0/78.0/79.0/80.0/81.0/82.0/83.0/84.0/85.0/86.0/87.0/88.0/89.0/90.0/91.0/92.0/93.0/94.0/95.0/96.0/97.0/98.0/99.0/100.0														
	FLISR															
	IVVC/ DVO															
	AMI															
	Risk WAMP															
Customer & Reliability	Traditional															
	DA															
	Remote Monitoring															
Customer & DER	Outage															
	Customer Microgrid															
	DER															
Foundational	GIS & Engineering Design															
	Communications															
	Analytics Organization / Support															

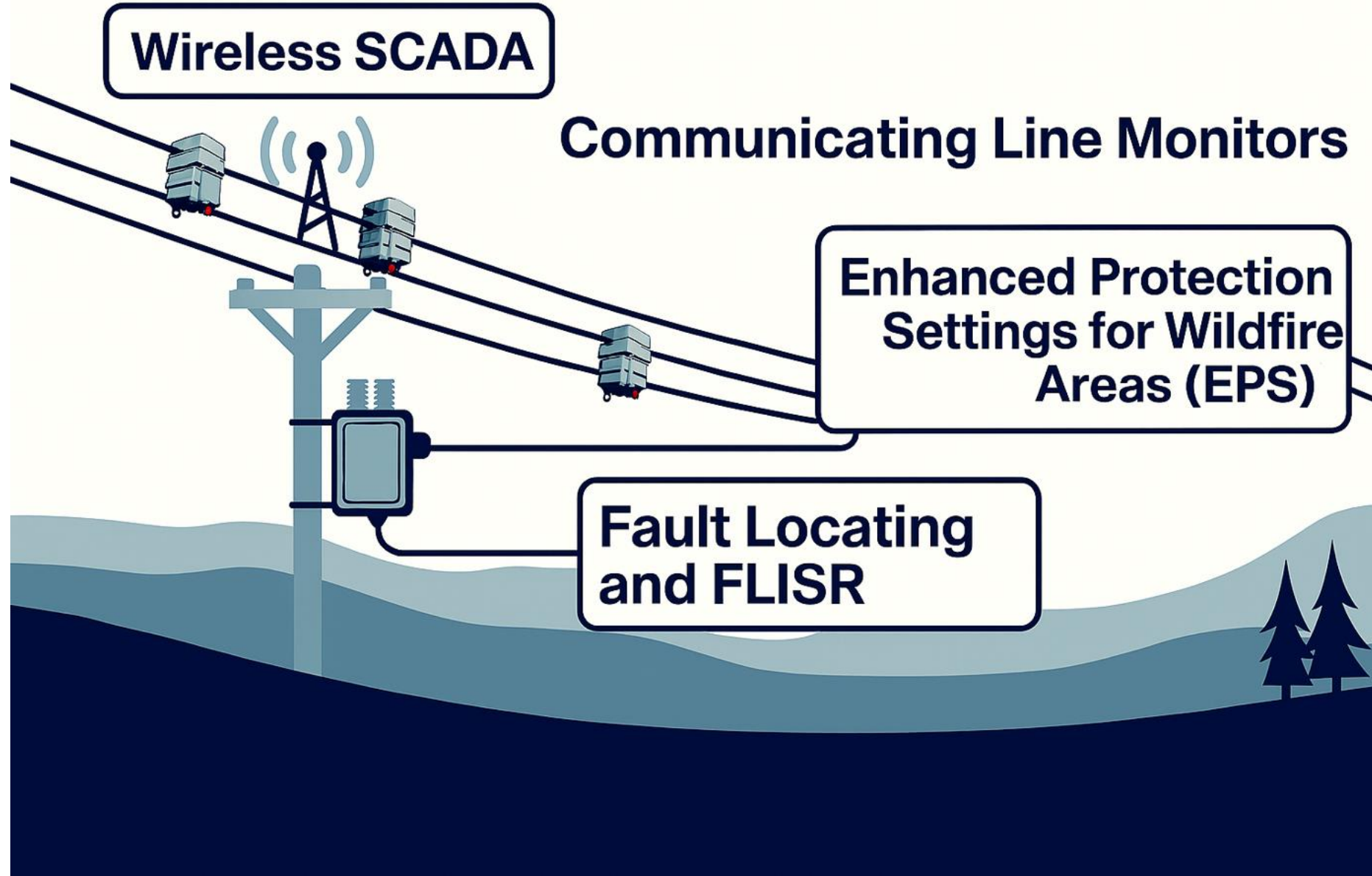
Roadmap



2024 - Idaho Power Grid Modernization Roadmap										Key			
		Immediate Priority	Near-Term Program		Monitor		Visionary						
Focus	Capability	Year 1 to 5					Year 6 to 10						
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033		
Operations	SVP	SVP Ph 1 OSI EMS/SCADA		Evaluate Triggers for Split T&D SCADA									
		SVP Ph 2 OSI OMS / Base DMS / Base SOM			Adv SOM (DPF) Pilot		Advanced SOM						
				SVP Ph 3 OSI Advanced DMS (ADMS)									
	FLISR	DPF Pilot		Expand DPF for FLISR		ADMS DPF		Distribution State Estimator (DSE) Eval & Pilot		Distribution State Estimator (DSE) Implementation			
		Pilot DMS Fault Locating		Prioritized Fault Locating		Advisory FLISR			Full Automatic FLISR				
		Pilot DMS DPF		Expand DMS DPF		Merge FLISR/ DPF to ADMS (SVP 3)							
	IVVC/ DVO	Expand IVVC Leverage Existing FAN			Expand IVVC with New FAN Masters								
		System Wide DVO Operation				Model-Based IVVC and Voltage Optimization as Needed							
	AMI	SGM triggered AMI Outage Polling			TWACS Advanced Grid Monitoring								
		AMI Tech Assessment		Eval FD&L			AMI Tech Assessment			AMI Tech Assessment			
		RF AMI RFP		RF AMI Eval		RF AM Pilot			RF AMI Advanced Grid Monitoring				
	Risk WMP	Implement Wildfire Mitigation Plan											
		Tier 3 Wildfire Feeder Hardening					Tier 2 Feeder Hardening						
		Eval Adv Line Monitoring		Pilot Adv Line Monitoring		Implement Advanced Line Monitoring with Analytics							
Develop Adv EPS		Pilot Adv EPS		Implement Advanced EPS									
Perform Targeted OH to UG Conversion													
Customer & Reliability	Traditional	Continue Bottom Feeder Reliability Program											
	DA	Install Radio-Ready Reclosers, Tie Switches				Expand FAN and cell radio connections to reclosers and ties							
		Replace Sensus with FAN or Cell Modem											
	Remote Monitoring	Deploy Communicatong Line Monitors											
		Deploy Reclosers with Voltage Sensors											
	Outage	PragmaCAD upgrade; Integrate with OSI OMS					Mobile Tech Assessment						
		Deploy Manual Fault Indicators System-Wide											
Customer	Improve ETR using Enterprise Analytics												
Customer & DER	Microgrid	Evaluate Microgrid Opportunities (WMP)						Pilot Microgrid		Microgrid Operationalization			
	DER		Refine Hosting Capacity Analysis		Refine Customer Facing DER Hosting Capacity Map								
		Expand NWA Analysis for Capital Deferment					Operationalize Non-Wires						
		Investigate Long Duration Batteries		Long Duration Batteries									
				Base DERMS Pilot		SVP3 Base DERMS		Advanced DERMS					
		Investigate VPP		Pilot VPP					Operational VPP				
Foundational	GIS & Engineering Design	Implement UN		Convert GIS Apps to UN			GIS Real Time Data Assessment						
		GIS Data for DPF			GIS Data DERMS			GIS Data Remediation					
		AUD Modernization		AUD Modern to UN				Intelligent Design Eval					
	Communications	Expand remotes to Existing FAN				FAN Technology Review				FAN Tech Review			
		Channel Plan	Field FAN Updates		Prioritized FAN Master Expansion								
		Fiber Backbone Build Out											
		Pilot Cell Comms		Cell Radio Comms to Distribution Buildout									
				Monitor & Optimize COMS (reoccurring)									
		Provision DA Devices & DMS on OpsNet		Develop IoT Communication Plan									
	Analytics	Identify & Prioritize Predictive Analytics UC			Implement Operational Predictive Analytics								
Organization / Support	ADMS Support Org Plan			Evolve ADMS Support Org									

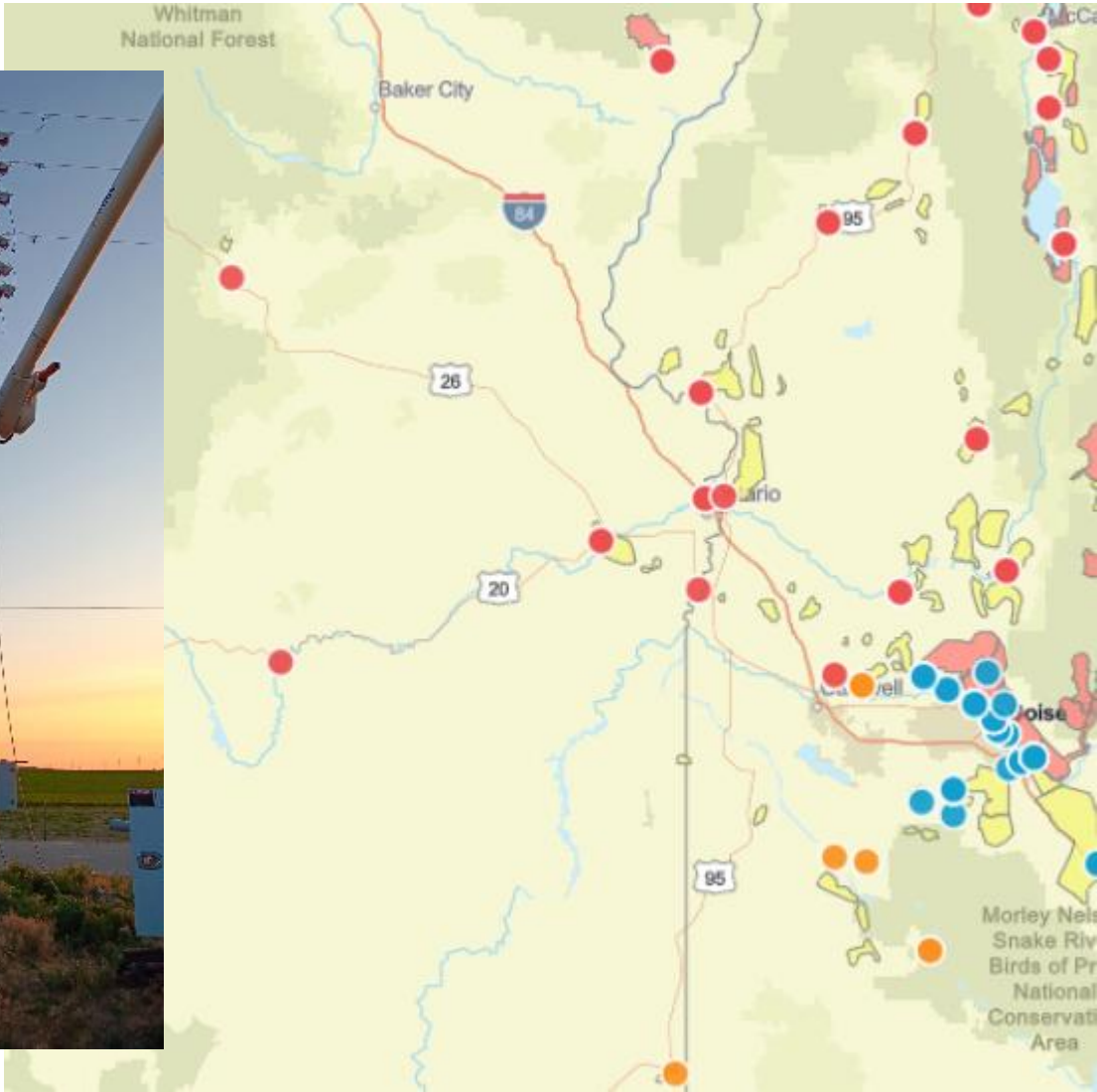
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Customer & Reliability	Traditional	Distribution Automation: Risk Mitigation											
	DA	Replace Sensus with FAN or Cell Modem											
	Remote Monitoring	Deploy Communications Line Monitors											
		Deploy Reclosers with Voltage Sensors											
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		AUD Modernization		AUD Modern to UN				Intelligent Design Eval					
	Communications	Communications Systems											
		Pilot Cell Comms		Cell Radio Comms to Distribution Buildout									
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Grid Mod and Wildfire Mitigation



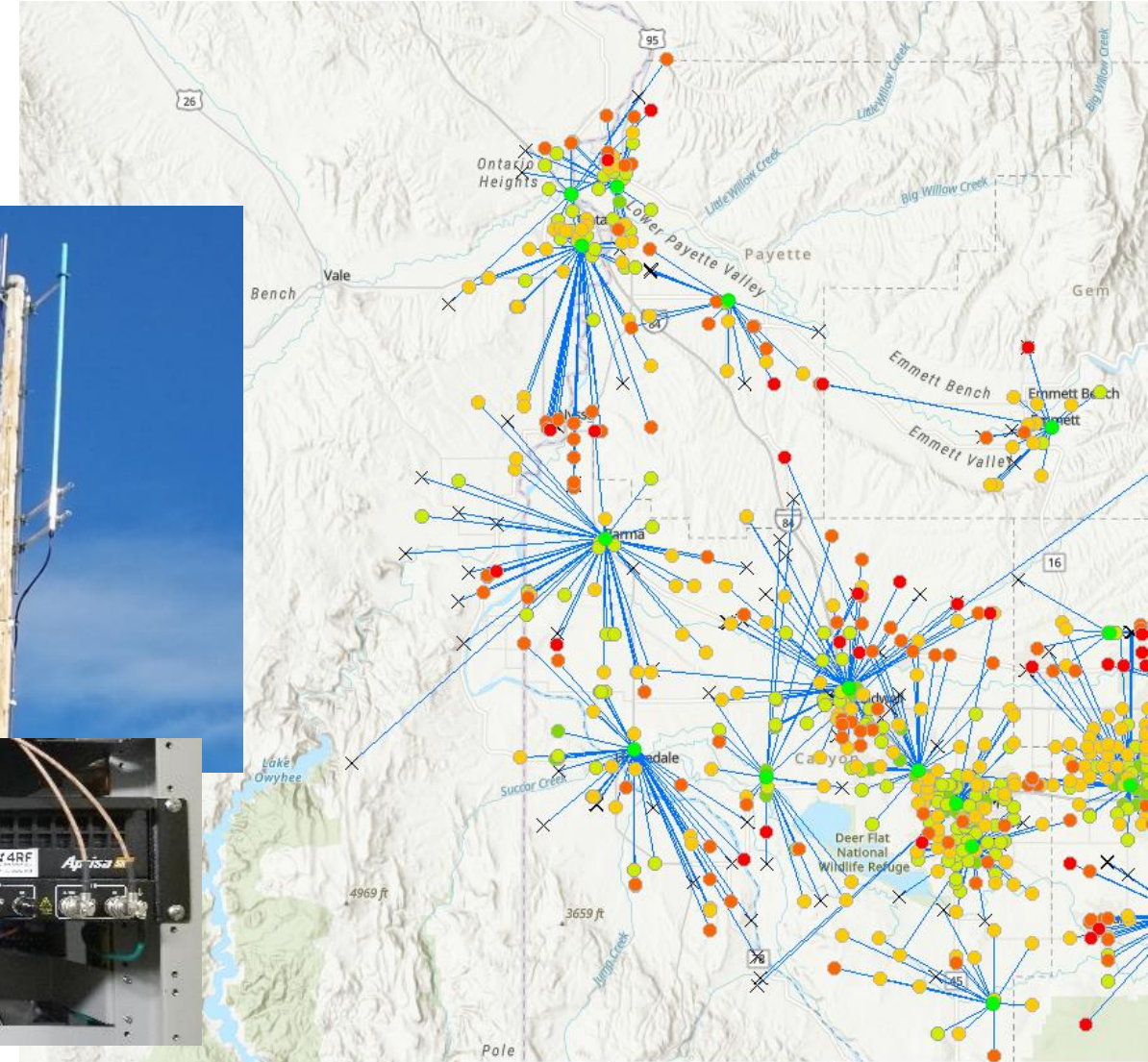
Protective Devices - Reclosers

	2024		2025	
Action	Idaho	Oregon	Idaho	Oregon
New Reclosers	33	9	38	3
Controller Upgrades	14	0	49	0
Total	47	9	87	3

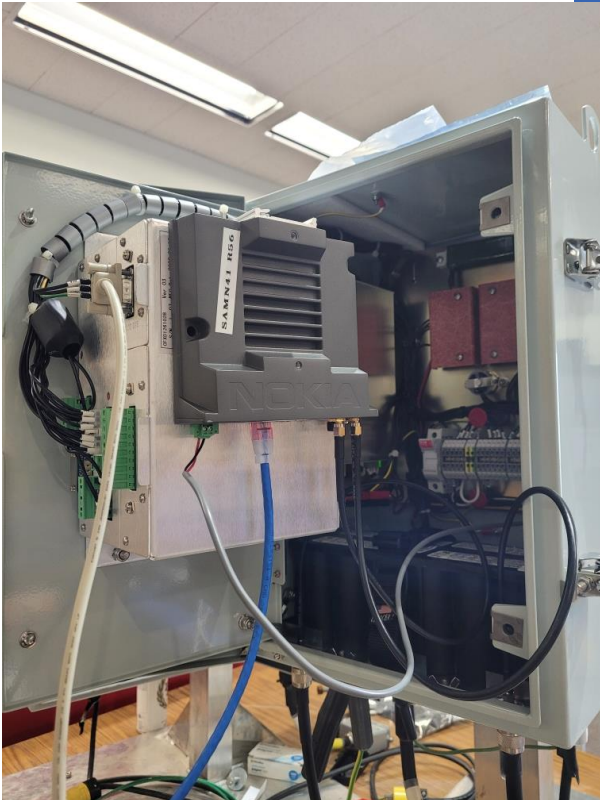
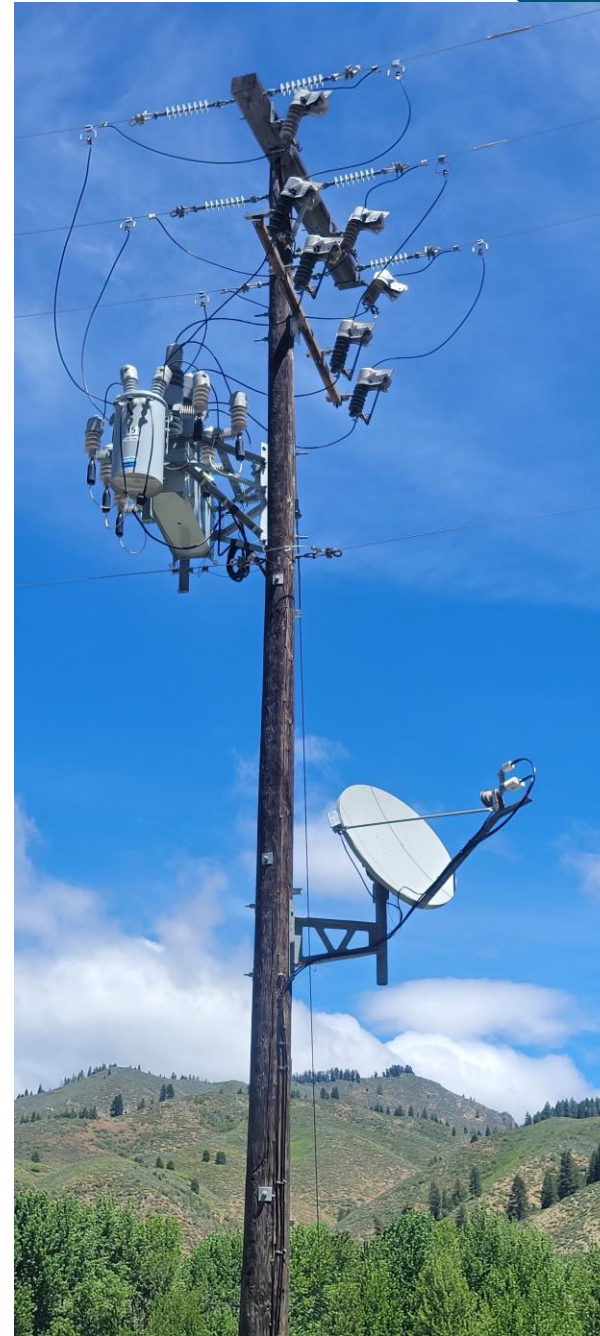


700 MHz Field Area Network (FAN)

- 84% Customers
- 16,694 distribution line miles (64%)
- 82% Peak Summer Load



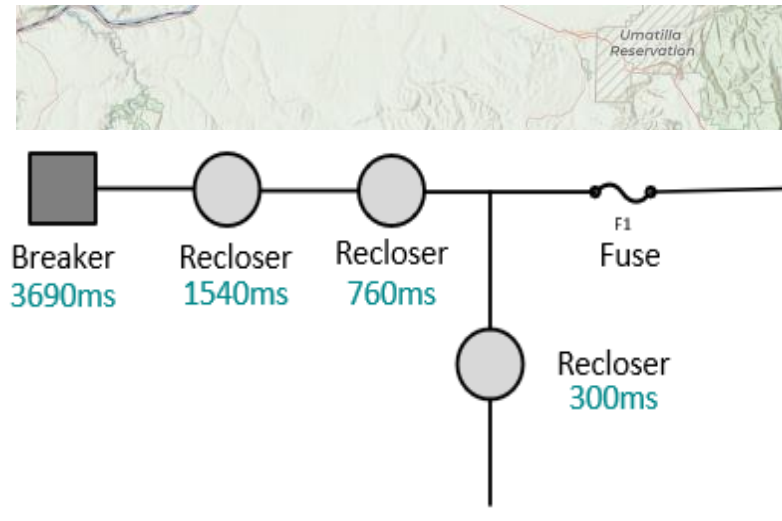
Cellular / Satellite



Enhanced Protection Settings (EPS)

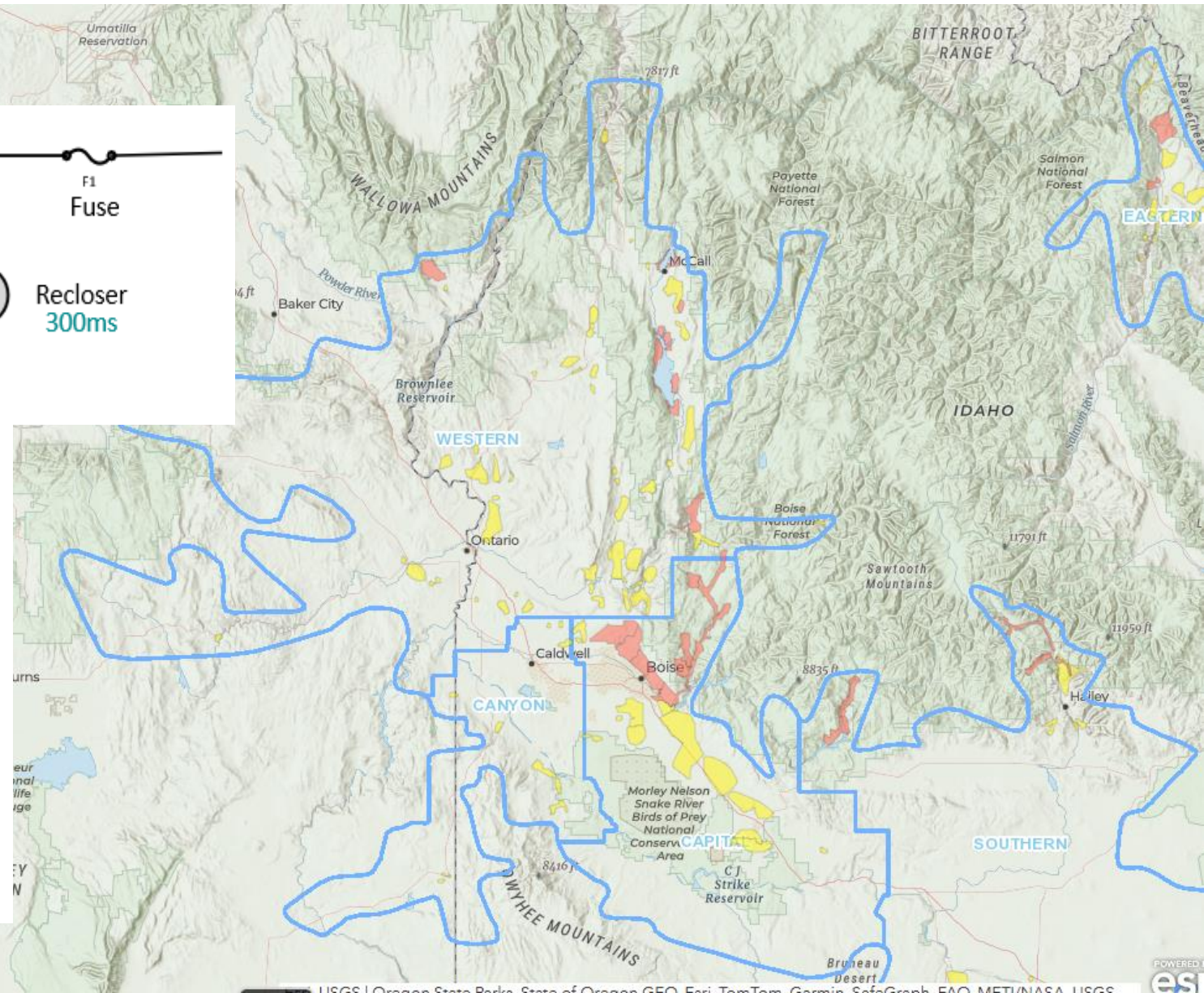
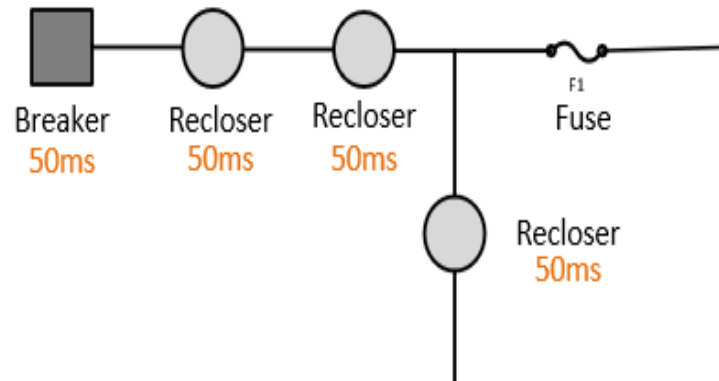
- **EPS Mode 1:**

- *Reclose Off*
- *Seasonal*



- **EPS Mode 2:**

- *Instantaneous Lockout*
- *Enabled during severe conditions*



High Impedance Fault Detection

Hi-Z Pilot

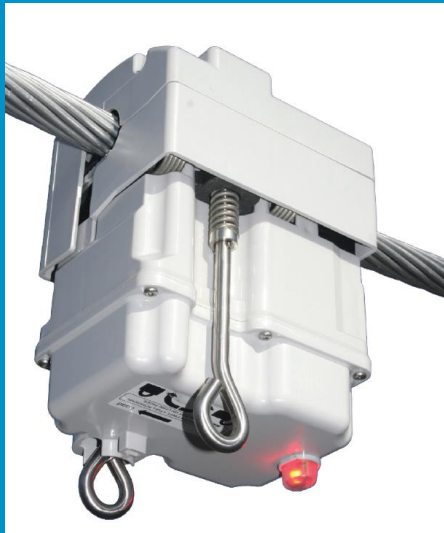
- 2025-2026
- 5 WMP Reclosers
- SCADA connected
- Alarm mode



Sentient Line Monitors

MM3

- Always Online
- Reports Fault Current



ZM1

- Event based reporting
- Reports Fault Current



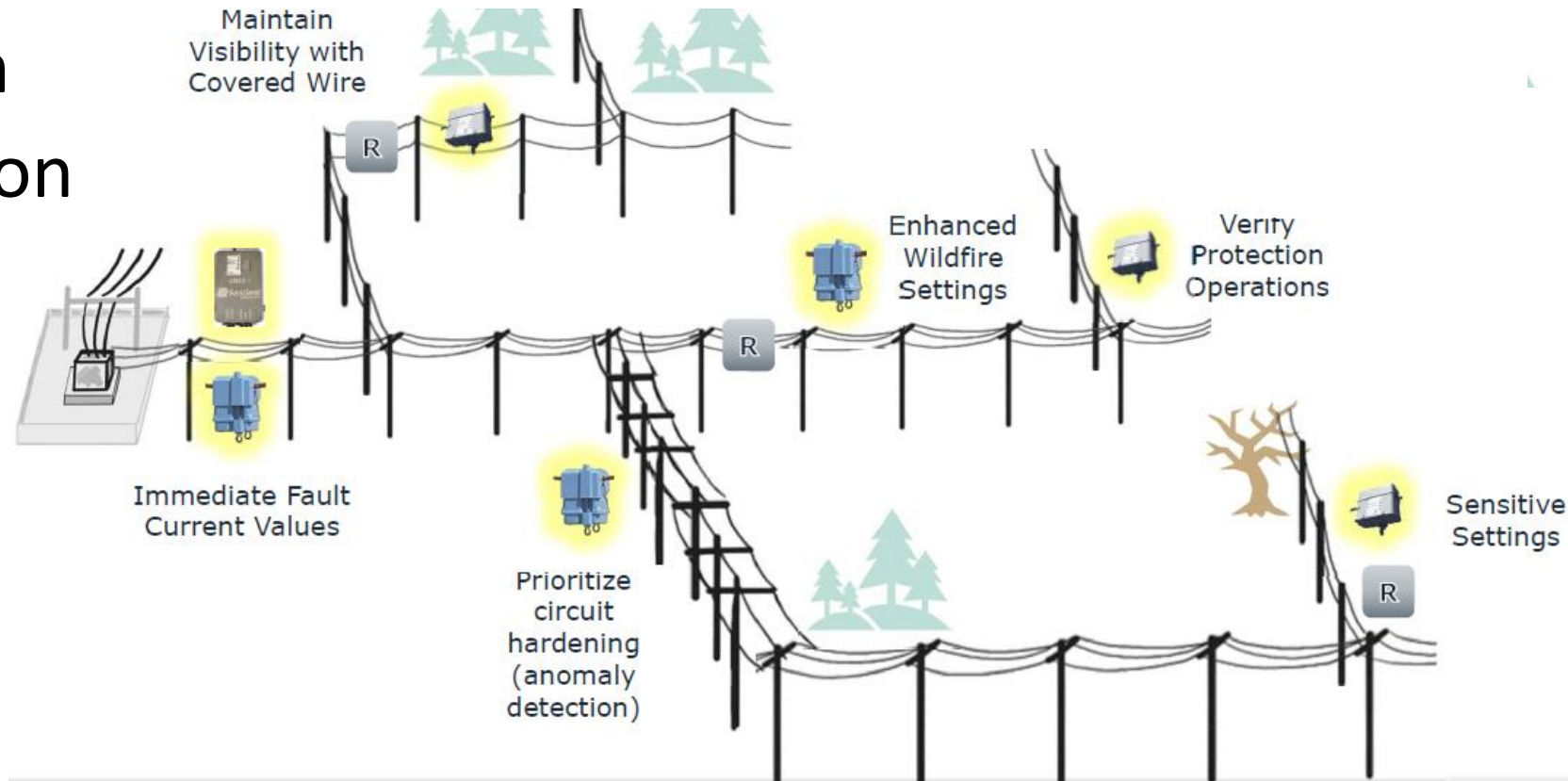
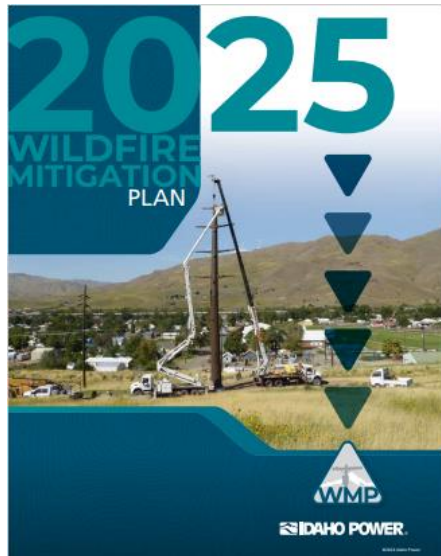
MM3ai

- Outage Predictions: Equip Failures; Vegetation
- Reports Fault Current

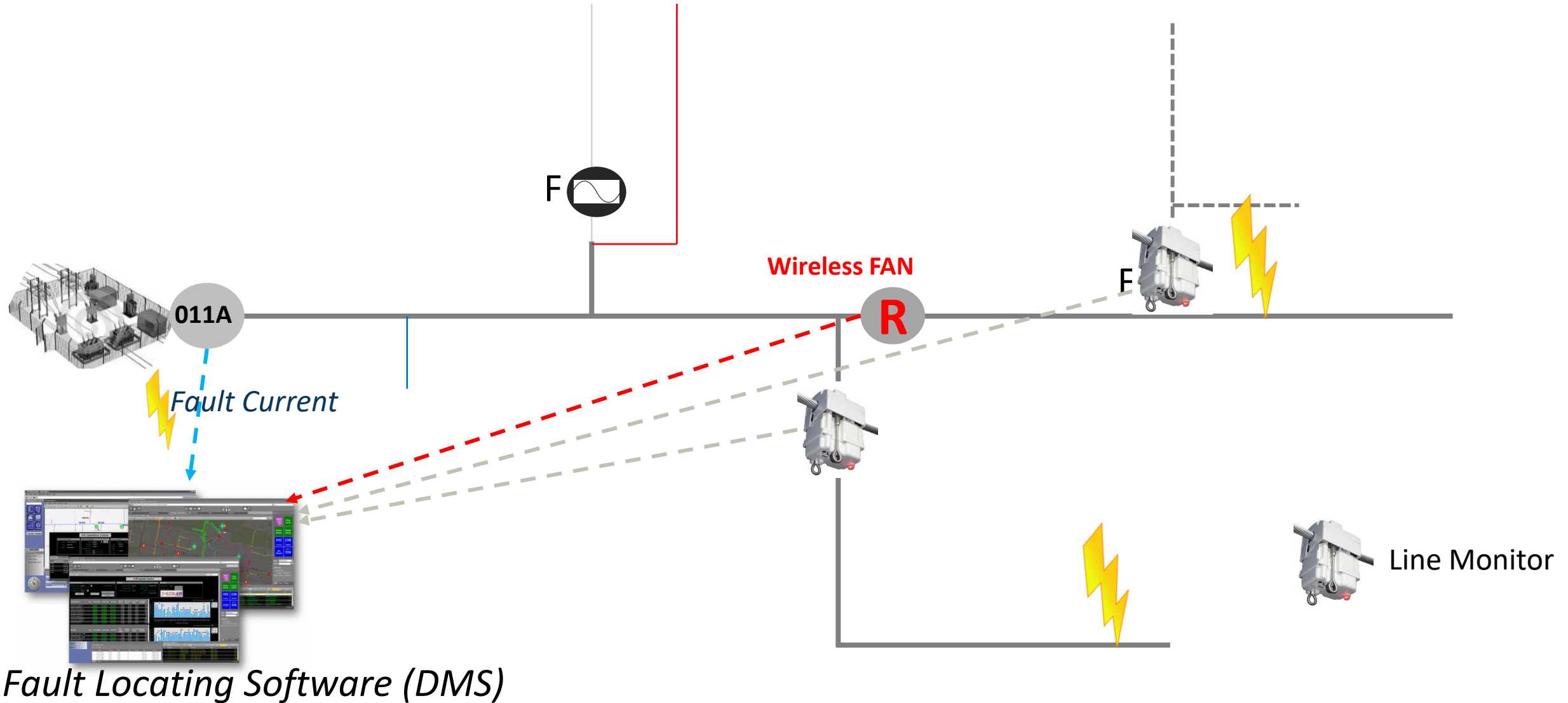


Line Monitor Pilot

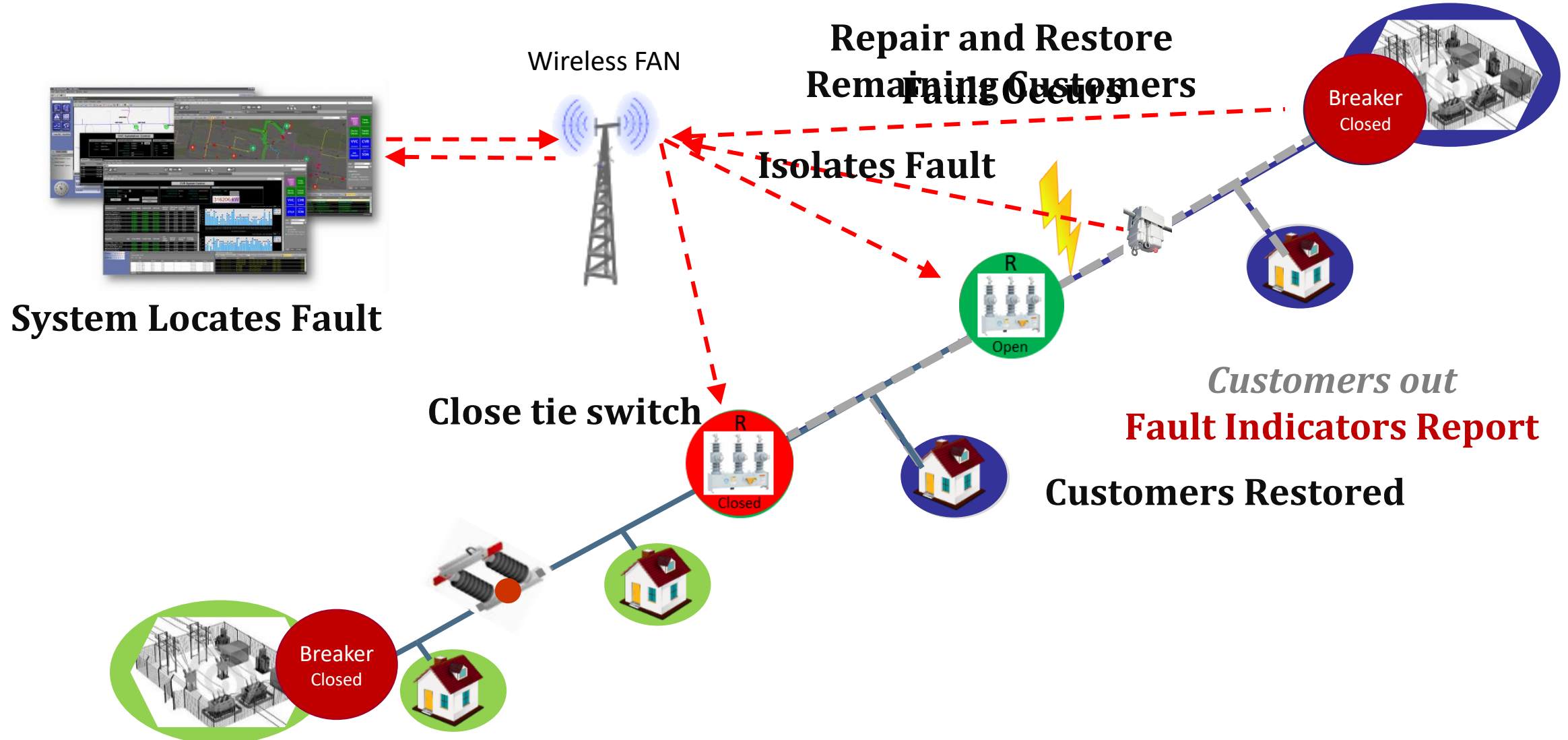
- Fault Locating
- Outage Prediction
 - Anomaly Detection
 - Pre-Failure Detection



Fault Locating



Long Term: FLISR



Fault Locating Progress



Fault Locating Performance	Count	Percentage
Exact Location Found	21	47.7%
Fault Impedance	9	20.5%
Model Optimization Needed	9	20.5%
Would have solved with Line Monitor	3	6.8%
Field Device Corrections	2	4.5%
TOTAL	44	100.0%

Switching Order Auto Created	21 of 21	100.0%
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Extra Slides

Advanced EPS Pilot



Idaho Power Pilot	Phase Element	Ground Element
Active Elements	One definite time element	One definite time element
Set Point	200% of historical load** or existing pickup if more sensitive	Minimum calculated ground
Reclose	OFF	OFF
Min Time Delay	50 ms*	50 ms
Max Time Delay	200 ms	200 ms
Sequencing Time Interval	50 ms	50 ms

