

**Appendix**

D) SGIG Build Metrics Report

## Electric Distribution System Assets - Build Metrics

*All data should be cumulative. Project data pertains to the assets or programs that are funded by the ARRA and Recipient Cost Share. System data should include both project data and any like assets or programs that are deployed in the entire service territory. The system value should be equal to or greater than the project value.*

### Implemented Distribution Devices

	Units	Project	System
Portion of system with SCADA	%	75	75
Portion of system with Distribution Automation (DA)	%	21	21
Automated Feeder Switches: number of devices installed	#	263	301
Automated Capacitors: number of devices installed	#	123	143
Automated Regulators: number of devices installed	#	177	219
Feeder Monitors: number of devices installed	#	102	144
Remote Fault Indicators: number of devices installed	#		
Transformer Monitors (line): number of devices installed	#		
Smart Relays: number of devices installed	#	102	144
Fault Current Limiter: number of devices installed	#		
Other devices installed	#	452	512
Other devices installed	#	155,866	155,866
Other devices installed	#		

### DA Applications in Operation

	Units	Project	System
Fault Location, Isolation, and Service Restoration (FLISR): is this application in operation?	■ yes/ <input type="checkbox"/> no	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Voltage Optimization: is this application in operation?	■ yes/ <input type="checkbox"/> no	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Feeder Peak Load Management: is this application in operation?	■ yes/ <input type="checkbox"/> no	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Microgrids: is this application in operation?	■ yes/ <input type="checkbox"/> no		<input type="checkbox"/>
Other DA Application: is this application in operation?	■ yes/ <input type="checkbox"/> no		<input type="checkbox"/>

### Distribution Management System Integration

- AMI: is integration complete?  yes/  no
- Outage Management System: is integration complete?  yes/  no
- Transmission Management System: is integration complete?  yes/  no
- Distributed Energy Resources: is integration complete?  yes/  no
- Other Systems: is integration complete?  yes/  no

### System

- yes/  no
- yes/  no
- yes/  no
- yes/  no
- yes/  no

### Units

- yes/  no
- yes/  no
- yes/  no
- yes/  no
- yes/  no

### Project

- yes/  no
- yes/  no
- yes/  no
- yes/  no
- yes/  no

### Distribution Device Description

#### Project

The Avista SCADA system is primarily a transmission & substation monitoring system. Information that is received is a combination of loads, device state and system characteristics. Operators have limited control of remote devices in the different substation depending on the age and infrastructure.

The portion of the system with SCADA was calculated by taking the total number of substations and gathering the number of systems that do have SCADA installed.

The portion of the project that has Distribution Automation enabled at this time is the part of the 59 distribution feeders that has the fault detection & isolation, or the volt var management system enabled.

DA Devices include G&W Viper Recloser with SEL 651R relay control, a S&C Scadamate Switch with S&C controller, and a Cooper Capacitor bank with a SEL 2411 controller. All of the DA line devices include a Tropos 802.11 wireless mesh radio.

The DA Communications network is a mesh 802.11 wireless network. IED's are connected to a mesh radio and the mesh radios have a backhaul from the 14 substations. The backhaul is a fiber connection.

Tropos radios co-located with IEDs, installed in substations and at the office.

#### System

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Specific to deployments.

Radios and com devices installed to support other smart grid initiatives.

**Distribution Device Description**

Project	System
larger size conductor to allow for transfer of load between adjacent feeders and reduced system losses.	NA
Other device	

**Distribution Application Descriptions**

Project	System
<p>FLISR</p> <p>Avista is implementing an Application that is called Fault Detection Isolation &amp; Restoration (FDIR). FDIR is initiated once a breaker recloser locks open. Once the device is opened up, the application begins an upstream isolation, trying to restore energy from the opened device out to the location of the fault. Once that is complete, the system will attempt to restore energy to the customers downstream from the fault utilizing adjacent feeders. This process is automated and will not require intervention from a dispatcher.</p>	Same
<p>Voltage Optimization</p> <p>The system will manage the power factor keeping it within a specified range, and ensure that measured line voltages and calculated end of line voltages are within in the allowable range. The system will use a combination of switchable capacitor banks along the distribution line as well as a voltage regulator in the substation. The DA switching devices installed have voltage and current sensing capabilities and will provide the feedback to the system to monitor performance.</p>	Same
<p>Feeder Peak Load Management</p> <p>This application does not have a specific Peak Load Management application. However, the realtime power flows will allow operators and engineers to better manage peak demands and transfer loads to adjacent sources.</p>	Same
<p>Microgrids</p> <p>The microgrid aspects of other projects have not been fully defined</p>	

<p>The DA system will include a distributed generation application that will allow the simulation calculation engine to take in the impacts of customer generation as well as other distributed energy resources.</p>	<p>Same</p>
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Other DA Applications

**Distribution Management Integration Descriptions**

Project	System
<p>AMI</p>	<p>- The DMS will integrate with the AMI system for the Pullman Smart Grid Demonstration Project. The scope and expectation of the integration has not been fully defined yet.</p>
<p>Outage Management</p>	<p>Same as project</p>
<p>Transmission Management</p>	<p>The DMS will integrate with the EMS to share station breaker and station regulator information.</p>
<p>DER Systems</p>	<p>The DMS will have a DER element in conjunction with the distributed generation application.</p>
<p>Distribution Management System</p>	
<p>Other Systems</p>	

Additional Project Descriptions

**Distribution Systems Installed Costs**

	Units	Project Funded	Cost Share
Back Office Systems	\$	0	0
Distribution Management System	\$	760,547	760,546
Communications Equipment and SCADA	\$	3,363,295	2,929,095
Feeder Monitor/Indicator	\$	0	0
Substation Monitors	\$	2,439,655	2,201,472
Automated Feeder Switches	\$	5,500,672	5,160,122
Capacitor Automation Equipment	\$	1,220,142	905,611
Regulator Automation Equipment	\$	228,985	228,985
Fault Current Limiter Equipment	\$	0	0
Cost of other devices installed Radio's	\$	0	0
Cost of other devices installed Reconductor (ft)	\$	8,144,591	7,814,169
Cost of other devices installed	\$	0	0
Other Costs	\$	0	0

Other Cost Description  
 Feeder monitors are included in the substation relays, so there are no associated direct costs. The radio costs are associated with the line devices that are installed, so they also do not have a direct cost they are charged to.

<b>Project</b>	09-0215	Avista Utilities (Spokane Smart Circuit)
<b>Filing</b>	build_quarterly	Build Metrics Quarterly Report Quarter 2, 2013
<b>Period</b>	<b>Start:</b> Apr 1, 2013	<b>End:</b> Jun 30, 2013 <b>Submission Due Date:</b> July 31, 2013

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