

Bull Run
TREATMENT
PROJECTS

Filtration

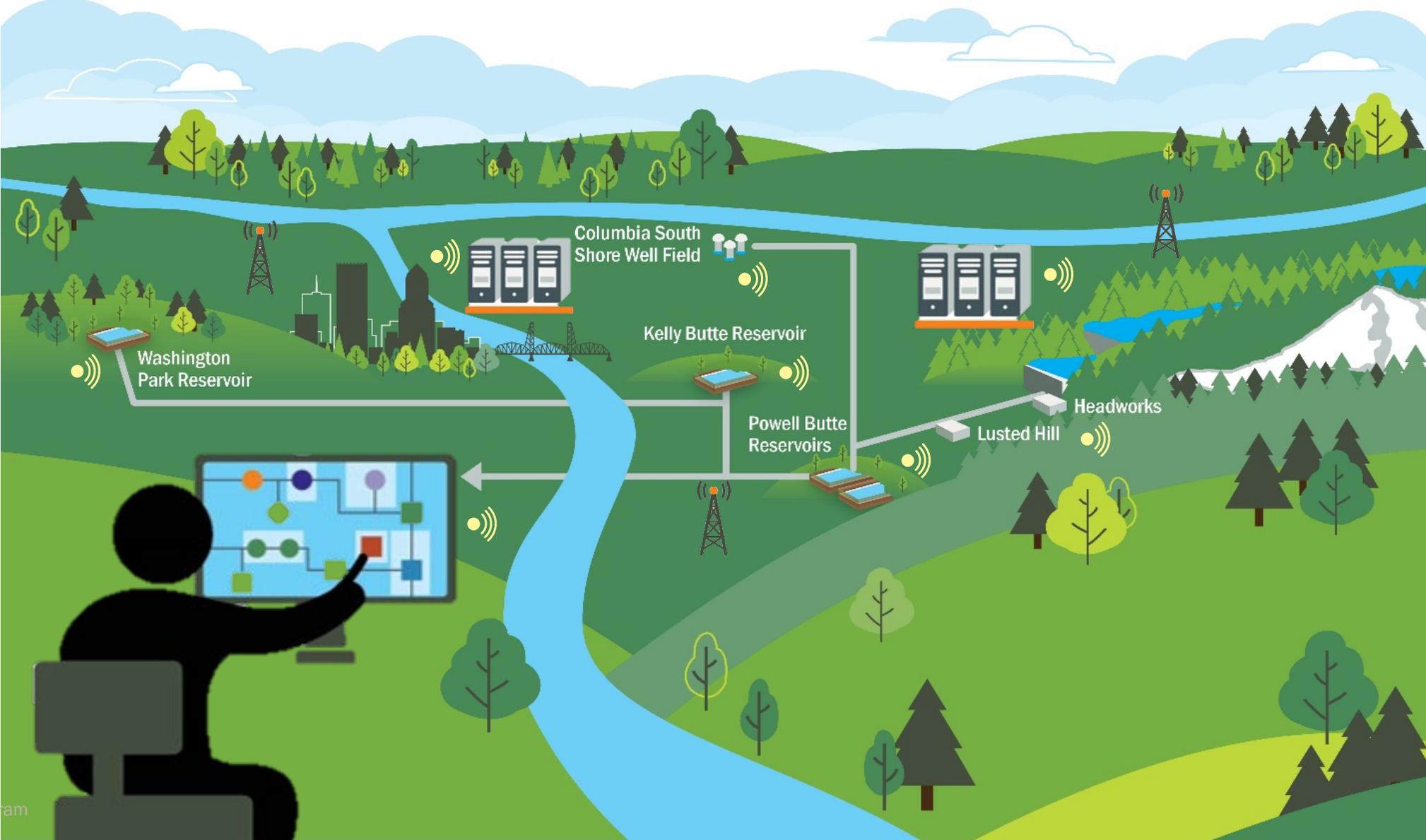
**Brown AND
Caldwell**

Navigating the Challenges of Defining Portland Water Bureau's Future SCADA System

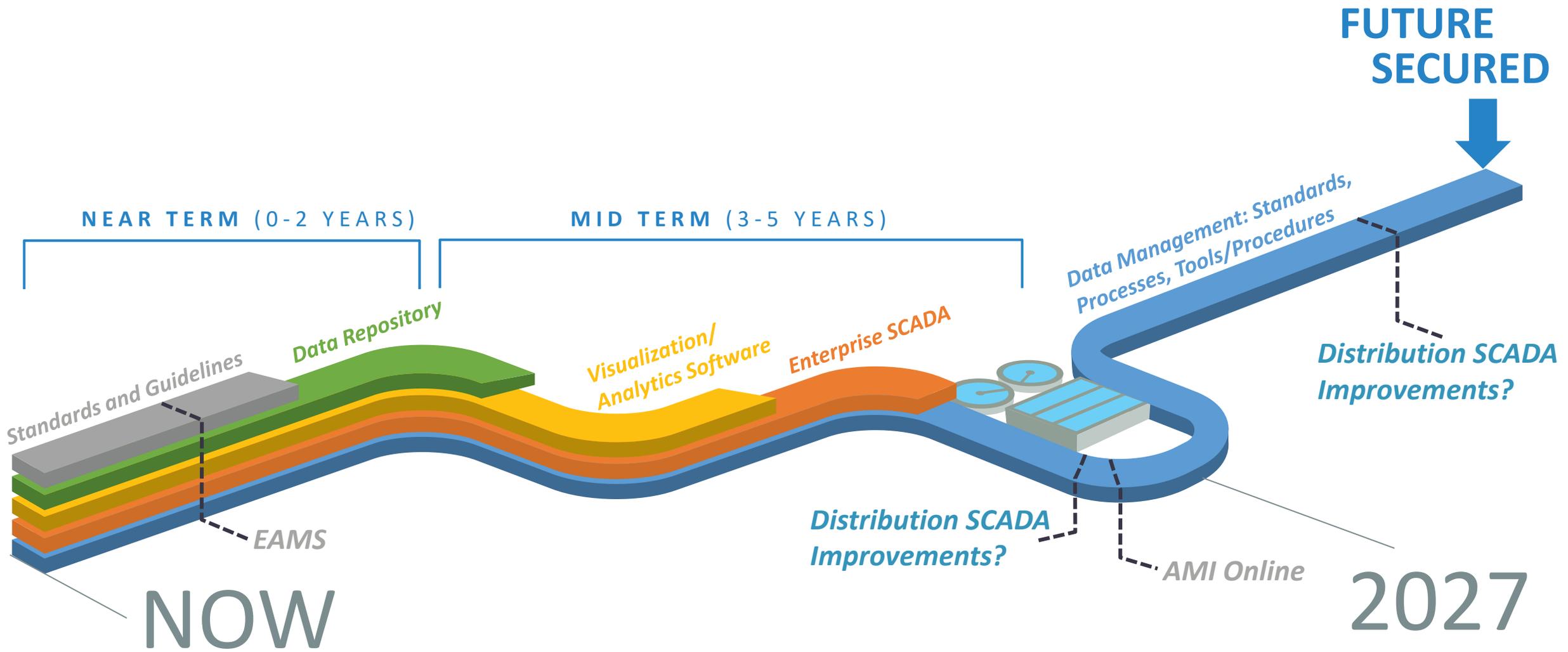
PNWS-AWWA Conference | October 28 | 2021



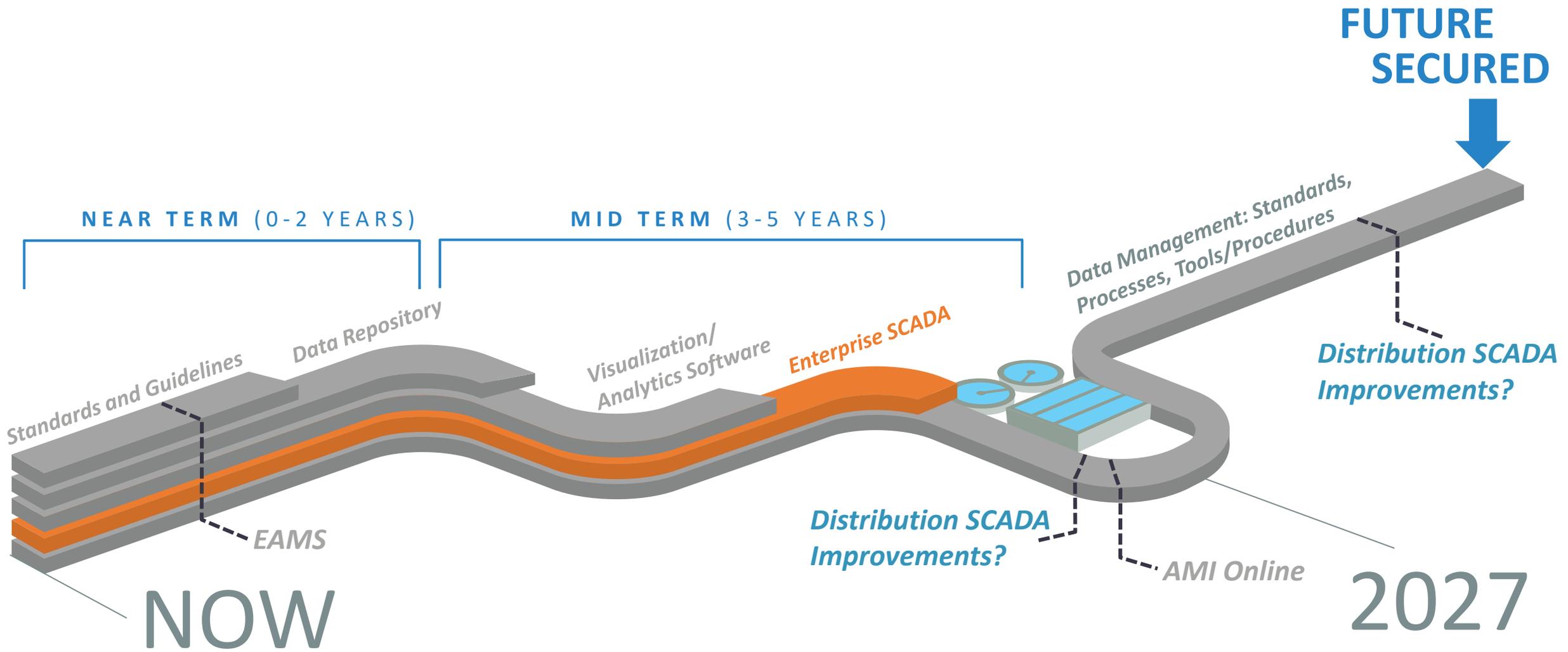
PWB's current SCADA system



Smart Utility Roadmap: Where does SCADA fit in?



Smart Utility Roadmap: Where does SCADA fit in?



Smart Utility Foundational Initiatives

Implement Data Management

Implement Data Repository

Implement Visualization/ Analytics Software

Implement Enterprise SCADA

Standards & Guidelines

Reliable Data

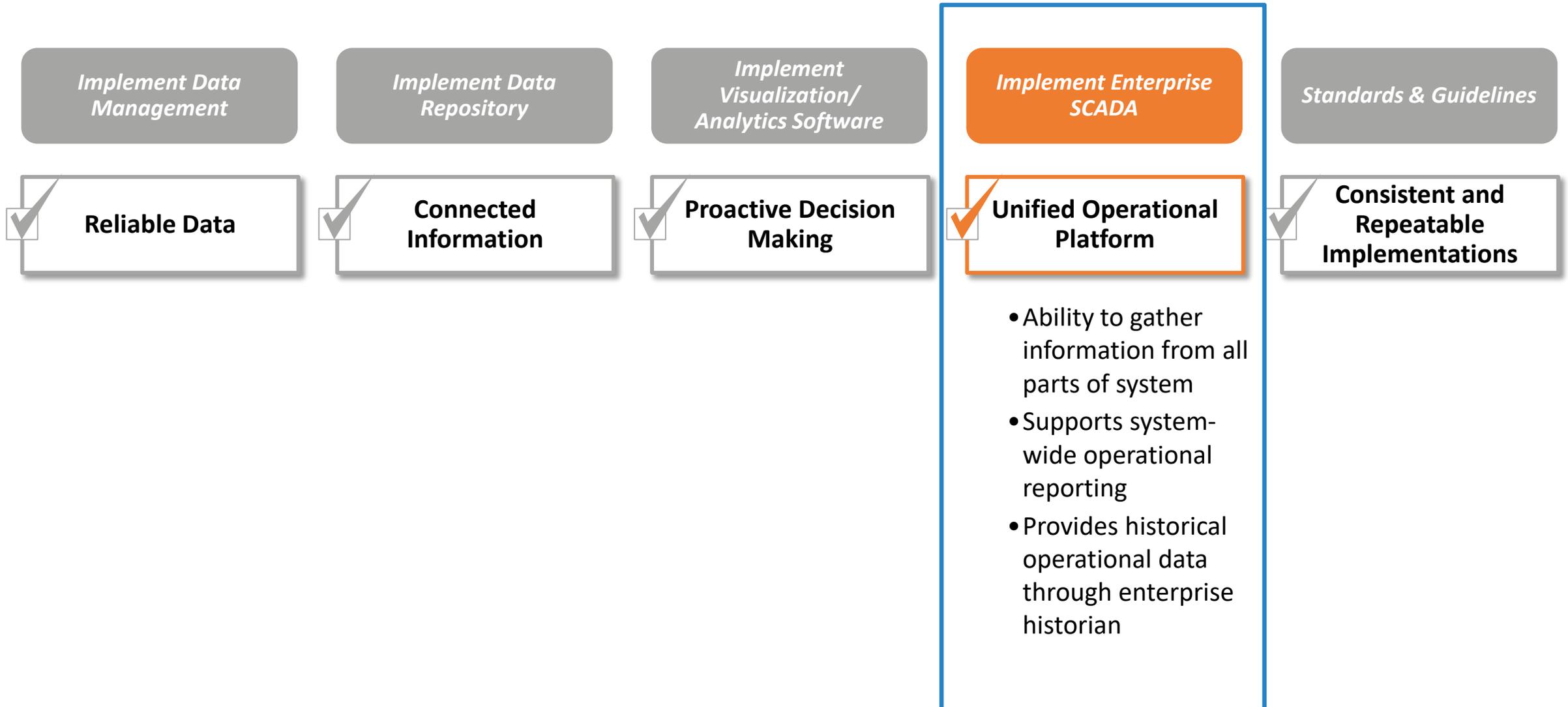
Connected Information

Proactive Decision Making

Unified Operational Platform

Consistent and Repeatable Implementations

Smart Utility Foundational Initiatives





SCADA Roadmap: Why now?

Plan for the Future

- Provide a path for updating the SCADA system to align with the Smart Utility program and its initiatives

New Filtration Facility

- Desire for common SCADA platform
- Need for SCADA/technology design guidance
- Update to current industry standards

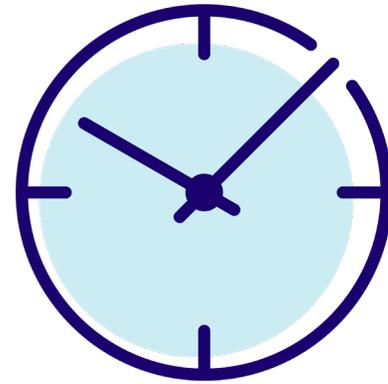
Impact of Filtration Facility on SCADA



Increase in data



More complex operations



Response time criticality



Right tools to align with needs

Developing the SCADA Roadmap



Identify operational, maintenance, and organizational requirements



Document current conditions of the distribution SCADA system



Perform a gap analysis, identify improvements, and prioritize those on critical path

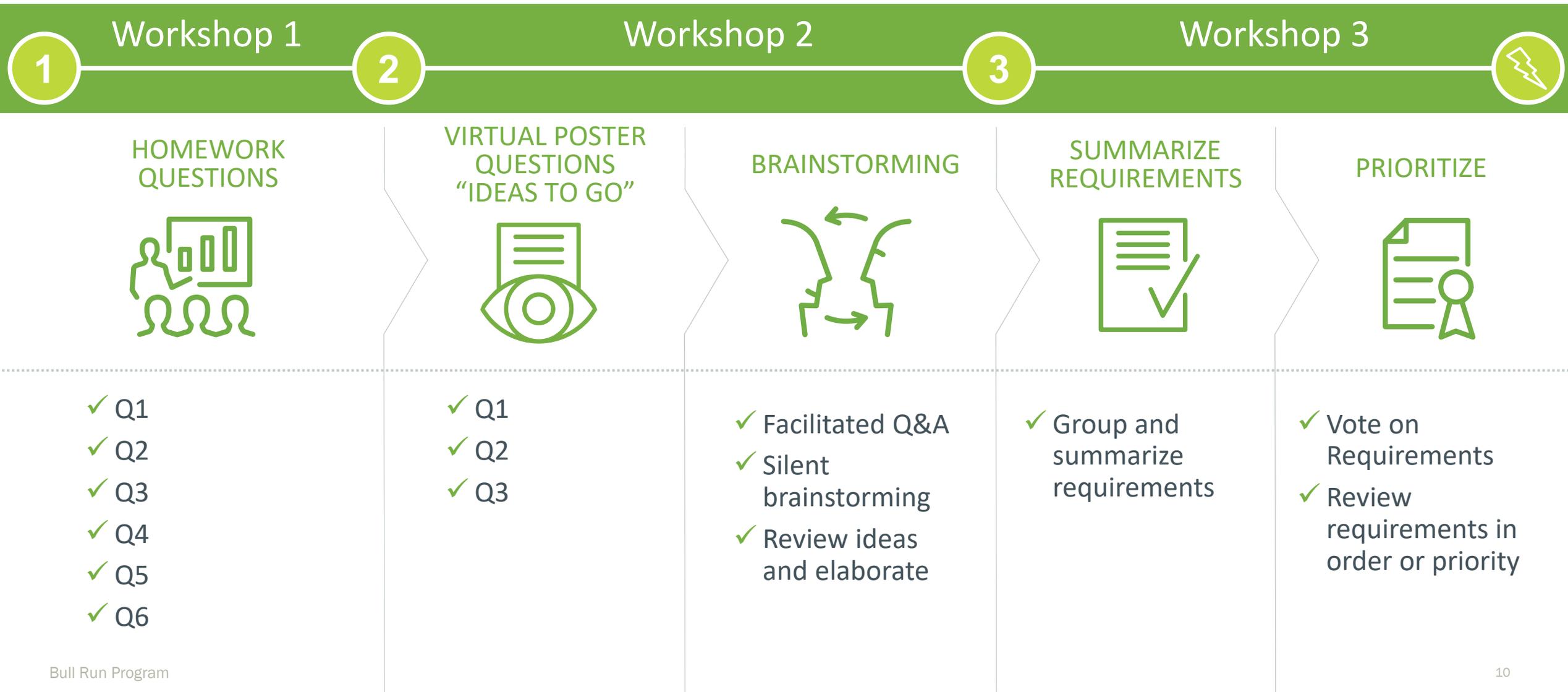


Evaluate and select SCADA technology



Develop a roadmap to implement improvements using selected technologies

Identify Requirements: Exercise Flow



Identify Requirements: Brainstorming

What important SCADA system functions, features, or tools would make your day-to-day life better?

Operations



Maintenance & Construction



How should staff be able to access, view, control, and maintain the SCADA system in order to do their job?

What is currently working well?

What is not working well?

Engineering Services



Management



What data, reporting, and analytics are needed for operations, maintenance, engineering, and management?

Identify Requirements: Results

- Key requirements identified
 - In-house maintainability
 - Stable and reliable
 - High performance HMI
 - Right level of redundancy
 - Easy access to historical data
 - Able to meet security standards

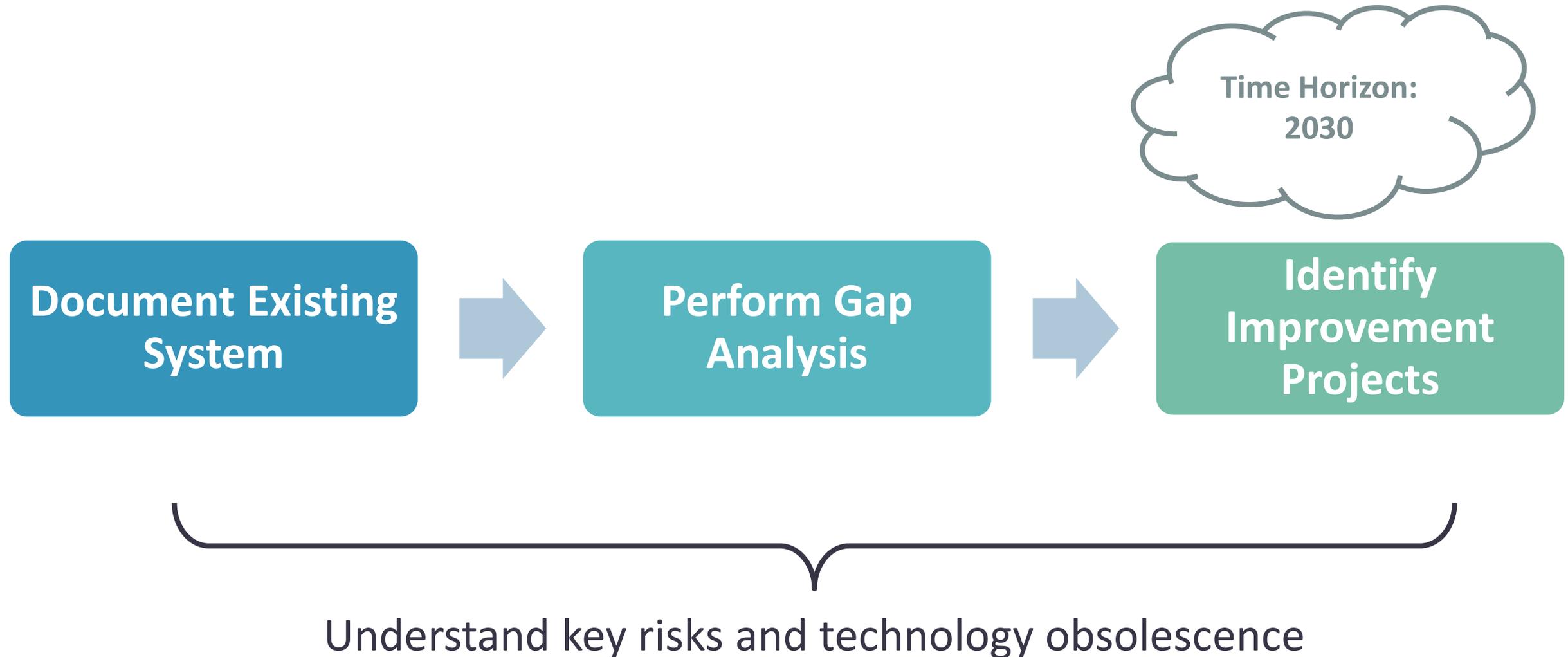
Portland Water Bureau
FROM FOREST TO FAUCET
Brown and Caldwell

Ideas to Go | SCADA Roadmap User Requirements

INSTRUCTIONS:
 1. Use your mouse wheel or press Ctrl + to zoom in to a poster area.
 2. Right-click or double-click to add a sticky note and write your idea.
 3. Be careful not to delete someone else's sticky note!

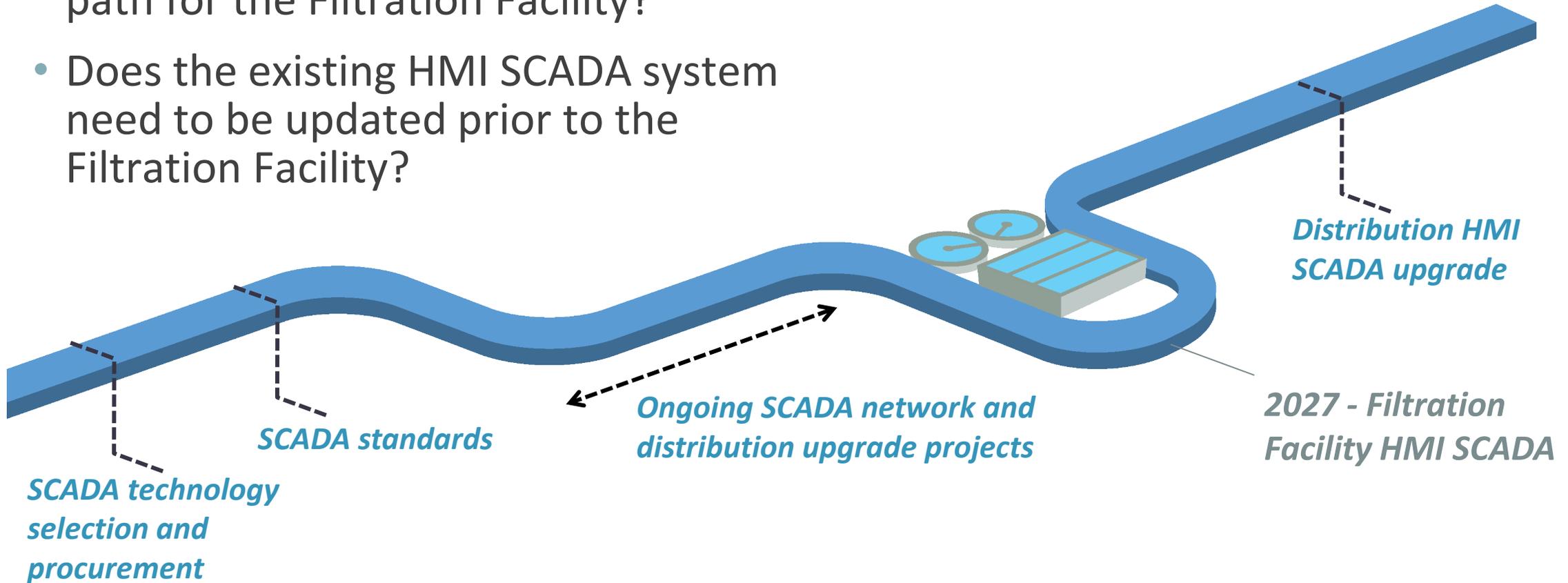
<p>Existing HMI: What is currently working well?</p> <p>Optimistic preferences are considered</p> <p>Status and name have the data values, such as on, off, normal, alarm, active, capacity, etc.</p> <p>The same data is used to generate the same graphic concept</p> <p>I like the performance graphic concept</p> <p>I prefer a gray background</p>	<p>Existing HMI: What is NOT currently working well?</p> <p>I like the performance graphic concept</p> <p>I prefer a gray background</p>	<p>What types of remote or mobile access would best benefit the operation of the distribution system?</p> <p>Mobile devices are used to access the system</p> <p>Remote access is needed for the system</p> <p>Mobile devices are used to access the system</p> <p>Remote access is needed for the system</p>	<p>What types of remote or mobile access would best benefit the operation of the filtration facility?</p> <p>Mobile devices are used to access the system</p> <p>Remote access is needed for the system</p> <p>Mobile devices are used to access the system</p> <p>Remote access is needed for the system</p>
<p>What are features do you like in the existing distribution system SCADA?</p> <p>Excel based data pulling options</p> <p>Communications work well</p> <p>Real-time data is available</p> <p>Historical data is available</p> <p>Advanced analytics are used</p> <p>Mobile devices are used to access the system</p> <p>Remote access is needed for the system</p> <p>Mobile devices are used to access the system</p> <p>Remote access is needed for the system</p>	<p>How should a PWB operator work across distribution system and filtration facility?</p> <p>System is user friendly</p> <p>System is user friendly</p> <p>System is user friendly</p> <p>System is user friendly</p>	<p>How can an enterprise historian and advanced data analytics be used to improve operational efficiency?</p> <p>Advanced analytics can be used to see variations in efficiencies</p> <p>Advanced analytics can be used to see variations in efficiencies</p> <p>Advanced analytics can be used to see variations in efficiencies</p> <p>Advanced analytics can be used to see variations in efficiencies</p>	<p>What have you seen in other utilities' SCADA systems that you'd like to have for PWB?</p> <p>The other system is more user friendly</p>

Evaluate Current System and Identify Projects



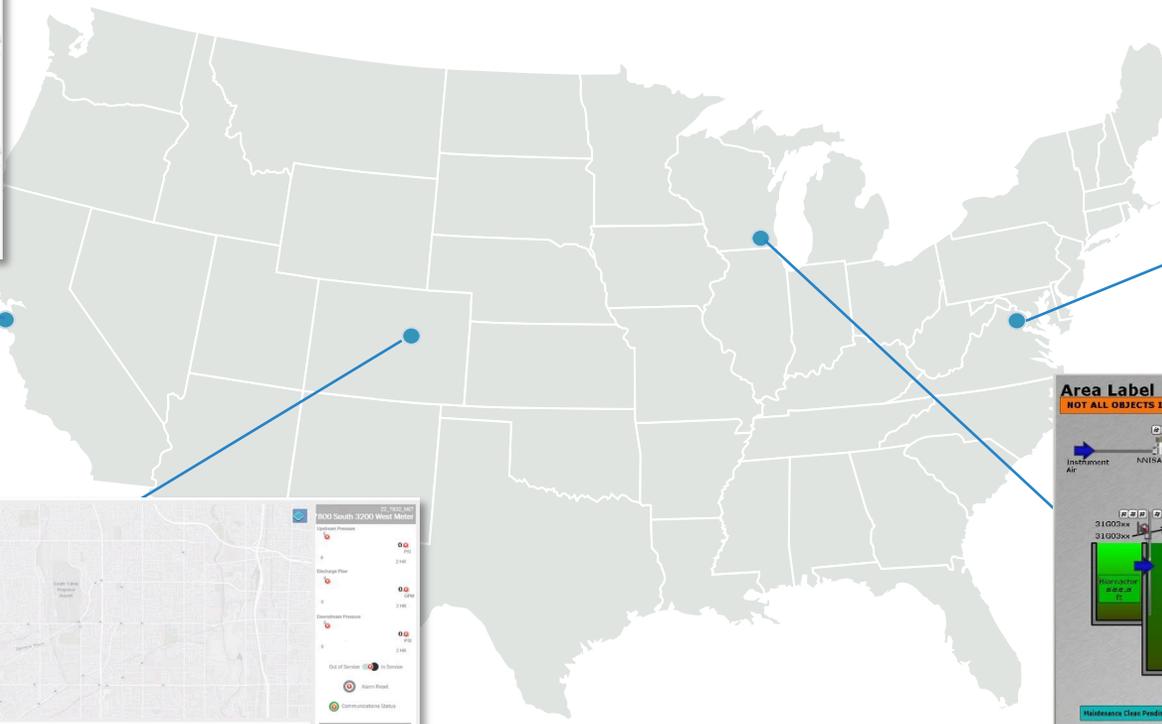
Prioritize Projects

- What SCADA Projects are on the critical path for the Filtration Facility?
- Does the existing HMI SCADA system need to be updated prior to the Filtration Facility?



Evaluate and Select Technology: Virtual "Site Visits"

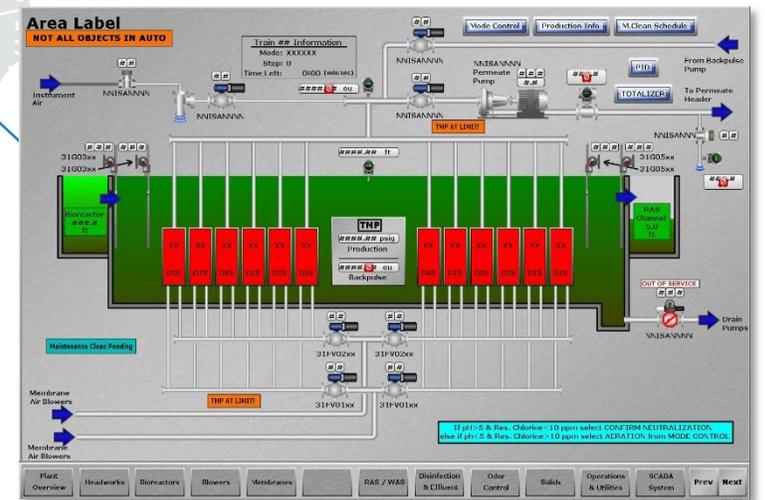
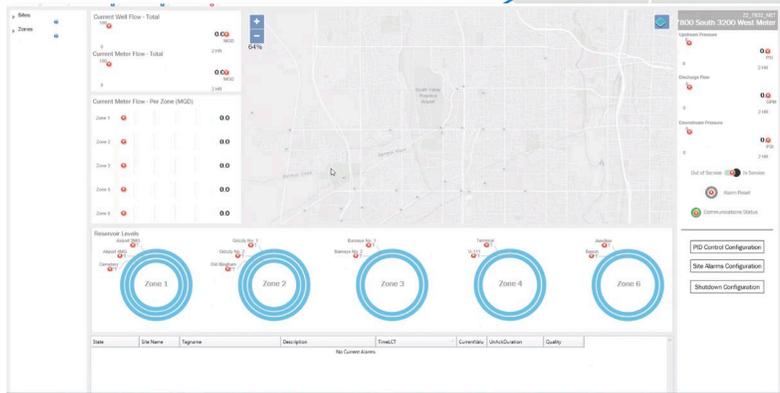
- SCADA system platform evaluation of other utilities



Wells Alternation
1/30/2015 9:59:55 AM
ASB

Well	Well	Well	Well	Well	Well
Allocation Group 1	Allocation Group 2	Allocation Group 3	Allocation Group 4	Allocation Group 5	Allocation Group 6
Well Group 01	Well Group 02	Well Group 03	Well Group 04	Well Group 05	Well Group 06
Well Group 07	Well Group 08	Well Group 09	Well Group 10	Well Group 11	Well Group 12
Well Group 13	Well Group 14	Well Group 15	Well Group 16	Well Group 17	Well Group 18
Well Group 19	Well Group 20	Well Group 21	Well Group 22	Well Group 23	Well Group 24
Well Group 25	Well Group 26	Well Group 27	Well Group 28	Well Group 29	Well Group 30
Well Group 31	Well Group 32	Well Group 33	Well Group 34	Well Group 35	Well Group 36
Well Group 37	Well Group 38	Well Group 39	Well Group 40	Well Group 41	Well Group 42
Well Group 43	Well Group 44	Well Group 45	Well Group 46	Well Group 47	Well Group 48
Well Group 49	Well Group 50	Well Group 51	Well Group 52	Well Group 53	Well Group 54
Well Group 55	Well Group 56	Well Group 57	Well Group 58	Well Group 59	Well Group 60

WEST TANK LEVEL SELECTED
Tank Control
Current Tank Level: 22.00
Upper Level Output: 22.00



Align Requirements with Technology Selection

- Technology Procurement
 - Part 1: Technical review
 - Part 2: Live demonstration



Document the Results

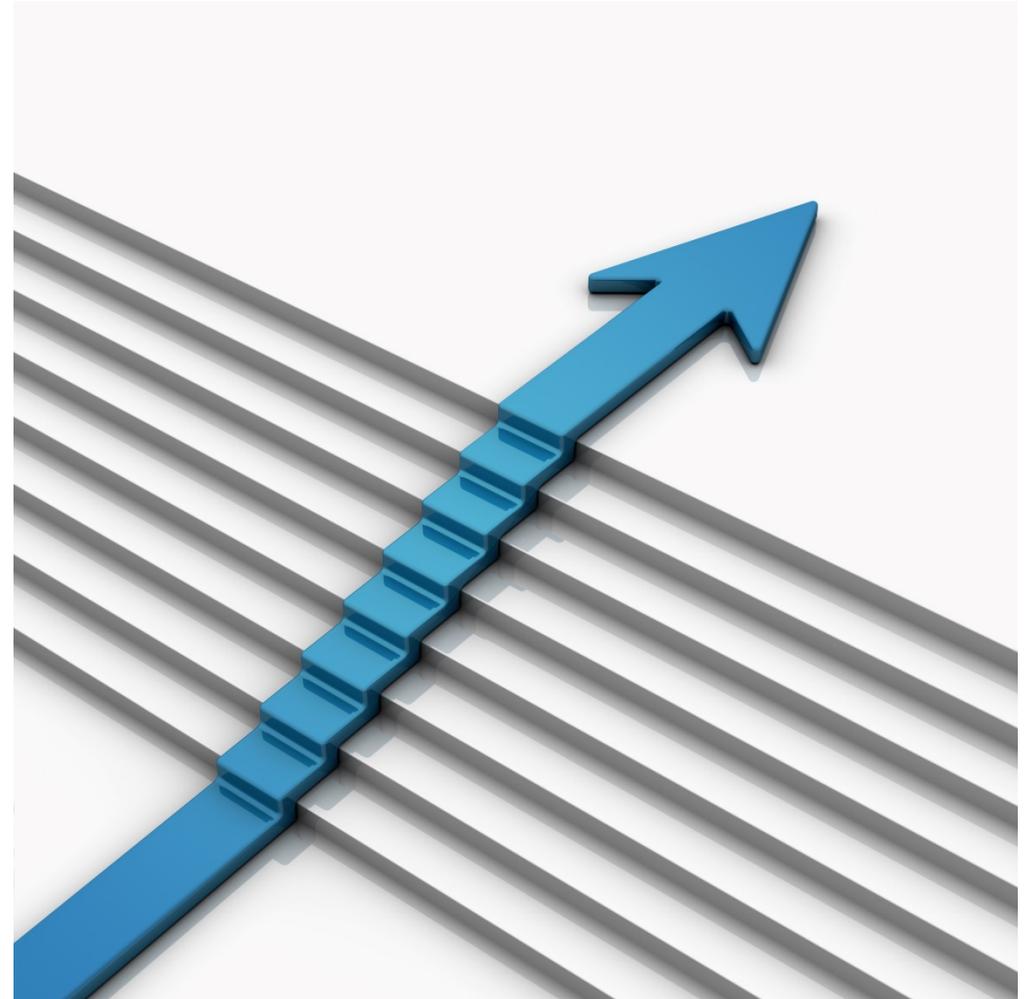
SCADA Roadmap

- ✓ Design and implementation
- ✓ Risks and dependencies
- ✓ Installation alternatives
- ✓ Planning level cost estimates
- ✓ Implementation schedule



Where do we go from here?

- Current State
 - Select and procure SCADA technology
- Next Steps
 - Finalize SCADA Roadmap document
 - Develop SCADA standards



SCADA is foundational to the Bureau's Smart Utility Vision

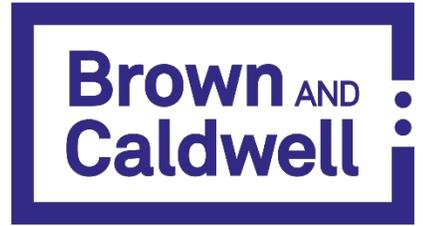
The Bureau's Smart Utility implementation will support our mission, vision and values by using innovative technology-based tools to guide operational and business decisions as the Bureau adapts to the future.





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Questions?

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