ALDERWOOD
WATER & WASTEWATER
DISTRICT

WEST YOST
Water. Engineered.

Cyber-Informed Engineering (CIE): Embedding Cyber Defense into Water Infrastructure

May 2026

Panel Introductions



Kevin Sykes
Electrical/SCADA Manager

ALDERWOOD
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Gregg Cato
Asset Program Manager

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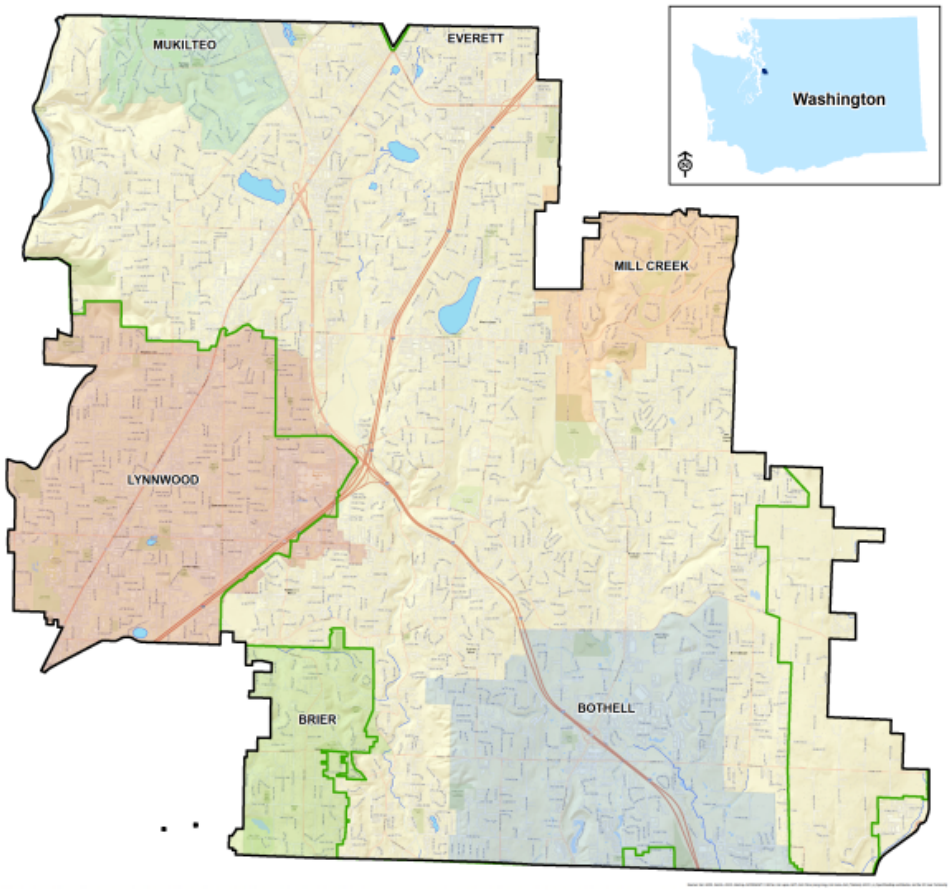
Jeff Hesse
Principal Engineer

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District Background

Alderwood Water & Wastewater District:

- Founded in 1931
- Largest Water District in WA
- Source of Supply = Everett
- Retail + Wholesale
- Average Demand : 25 MGD



Project Background

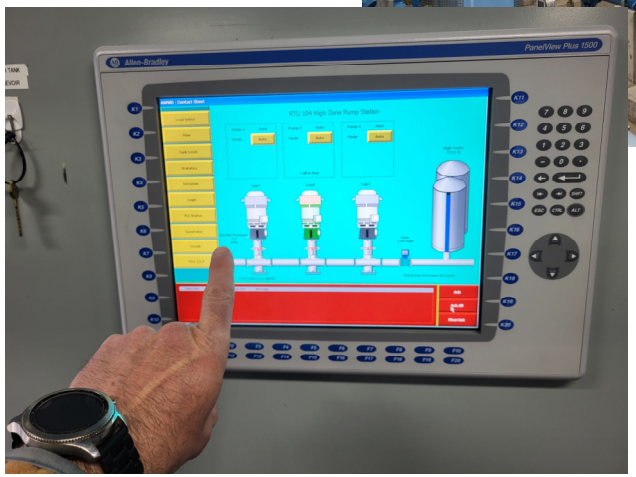
Why did AWWD undertake a SCADA Master Plan?



Project Background – Key Areas

- SCADA System & Infrastructure
- Operations & Control
- Cybersecurity Risk
- Standards & Governance
- Staffing Support Capacity
- Seismic & Energy Resilience





Project Background – Outcomes

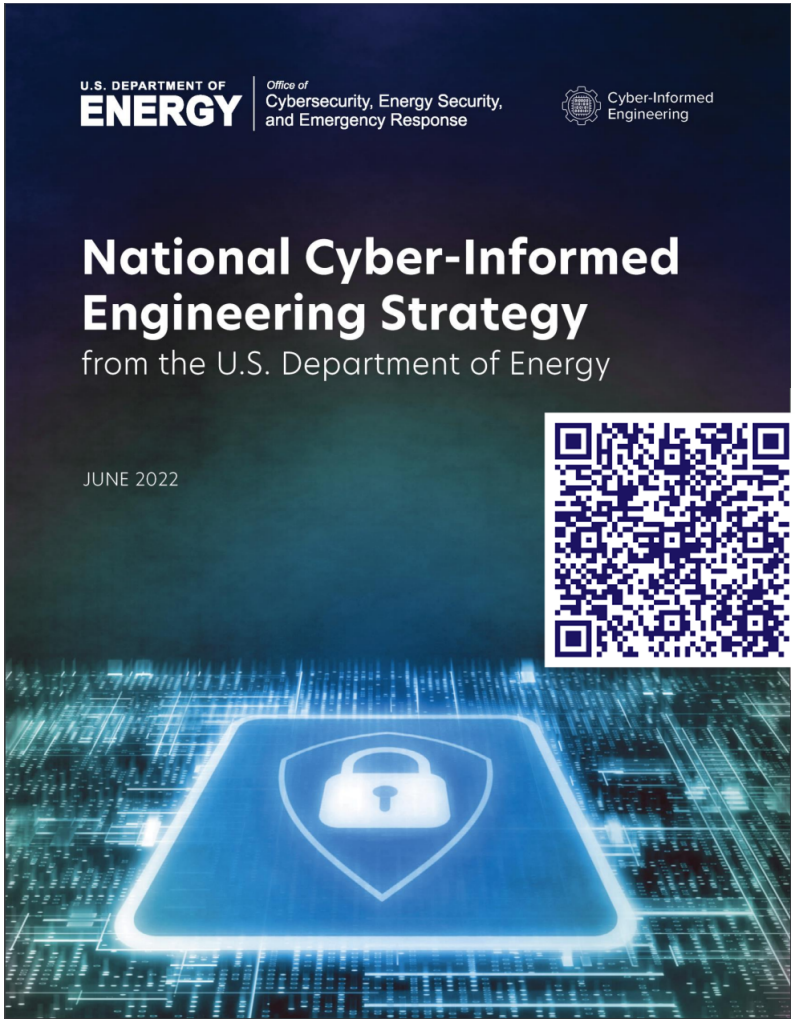
- Documented approach for the District's system vision focused on:
  - System reliability
  - Cybersecurity
  - Operational efficiency
- Core components
  - Improvements project portfolio
  - Strategic implementation plan
  - Planning-level budget



CIE – The End-State

What does CIE look like when fully implemented?

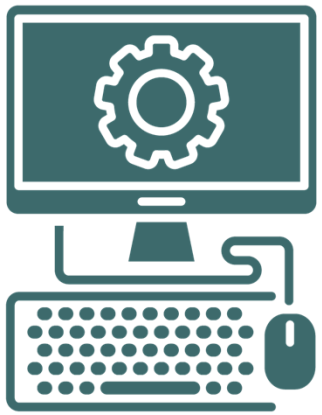
"Engineers incorporate cybersecurity practices into their body of knowledge, including engineering minimum requirements and specifications, for physical […] infrastructure systems that incorporate digital controls."



The Evolution of Engineering





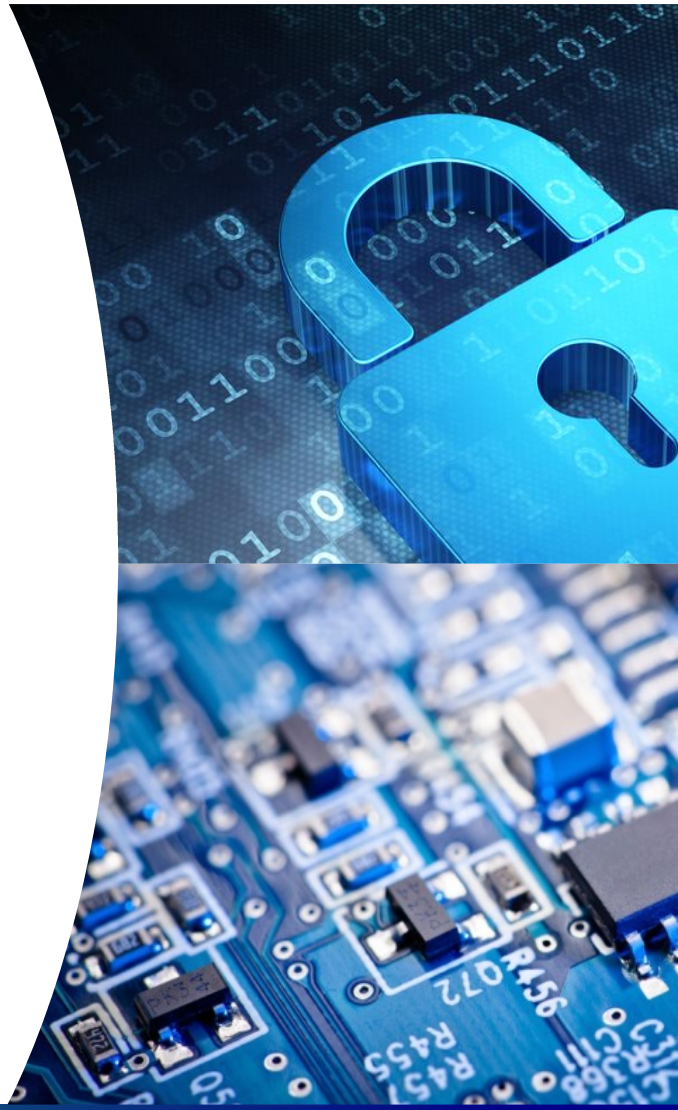


At First:
Analog Only

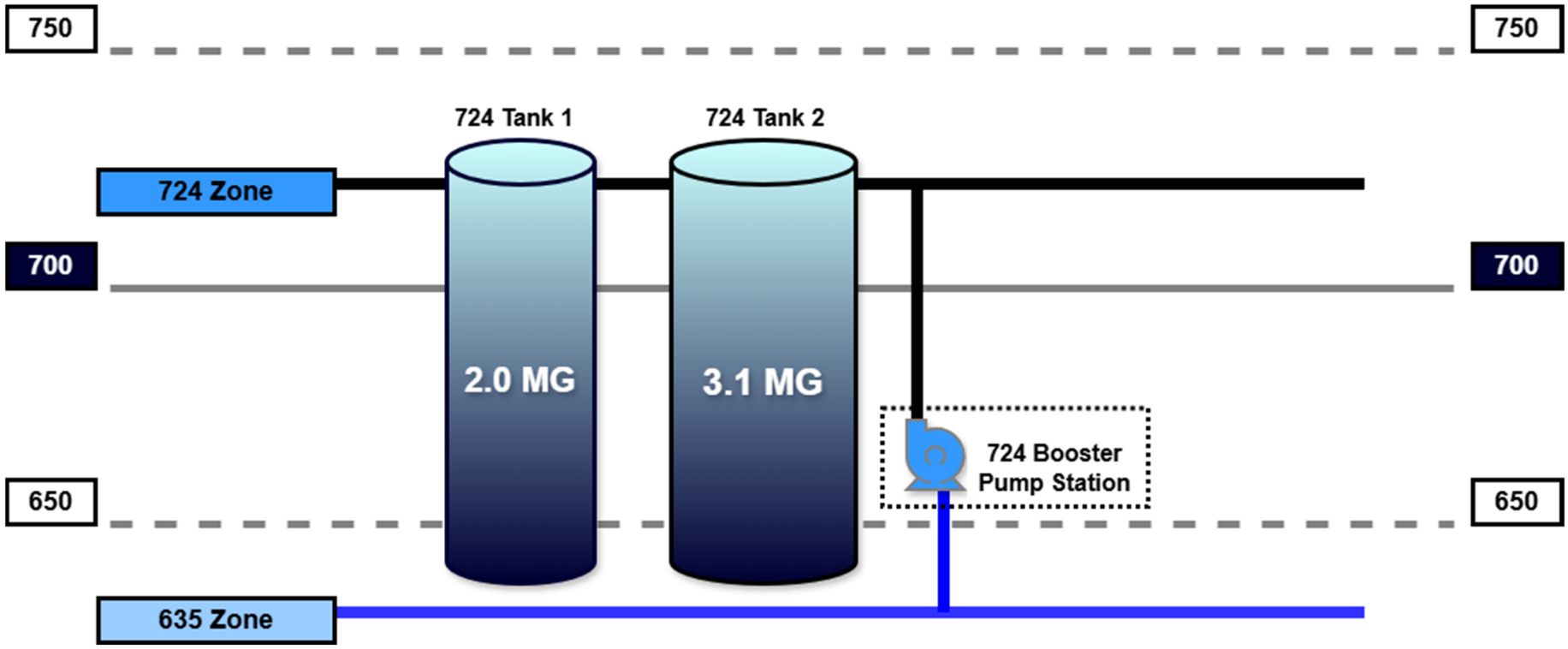
Now:
Digital designs, monitor, connect, and control analog elements

CIE – Background

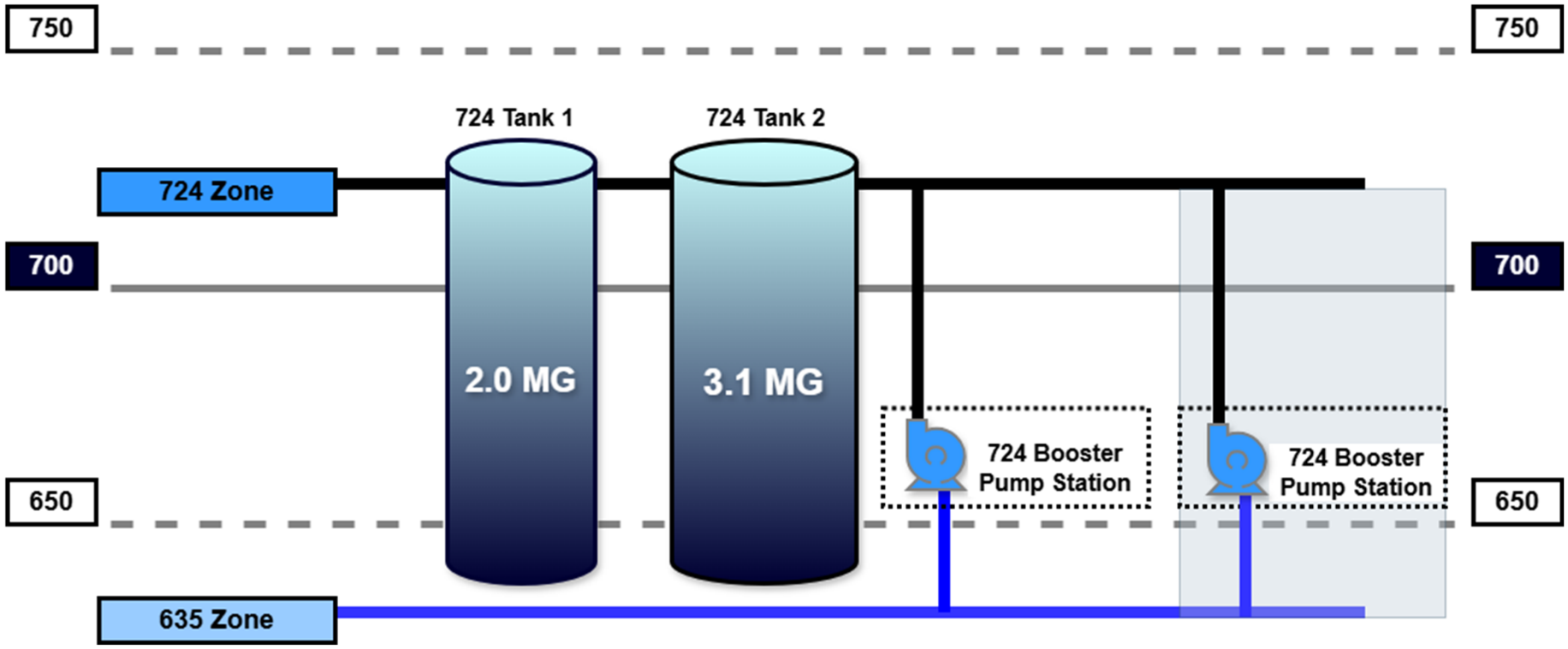
- CIE uses **design decisions and engineering controls** to eliminate or mitigate avenues for cyber-enabled attack
- CIE offers a **framework to "engineer out" cyber risk** throughout the design and operations lifecycle
- Focuses on **engineers and operators**
- Infuses cyber-resilience into existing industry cultures for **Safety, Functionality,** and **Reliability**



724 Zone Booster Pump Station (Today)



724 Zone Booster Pump Station 2



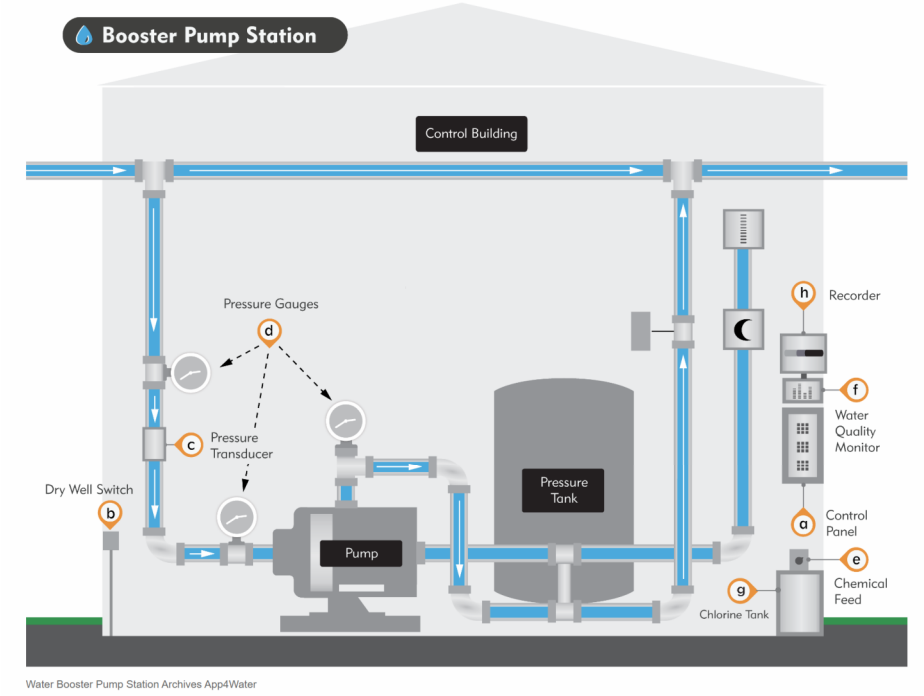
Discussion Questions

1. Why did you decide to integrate CIE?



Discussion Questions

2. What impact has the CIE pilot had on the District's engineering design and decision making?



https://bmxlovesk.xyz/product_details/13200675.html

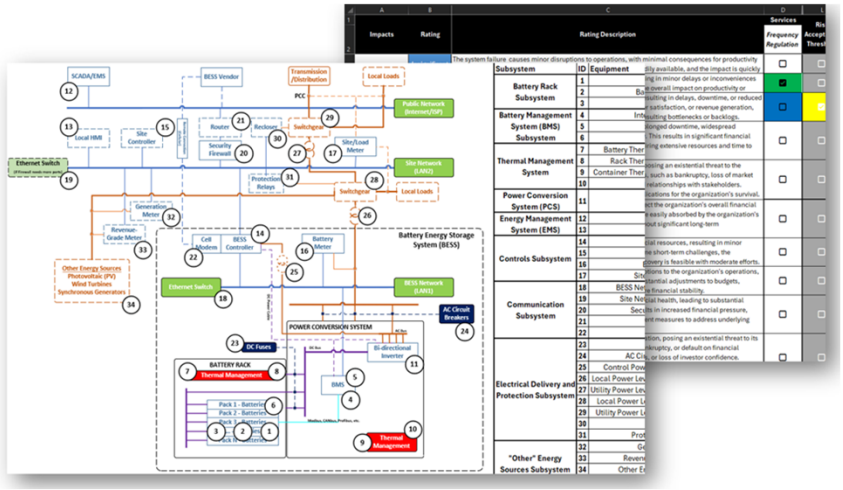
Discussion Questions

3. What should licensed operators and engineers do to embrace CIE?



Discussion Questions

4. What should utilities do to embrace CIE?



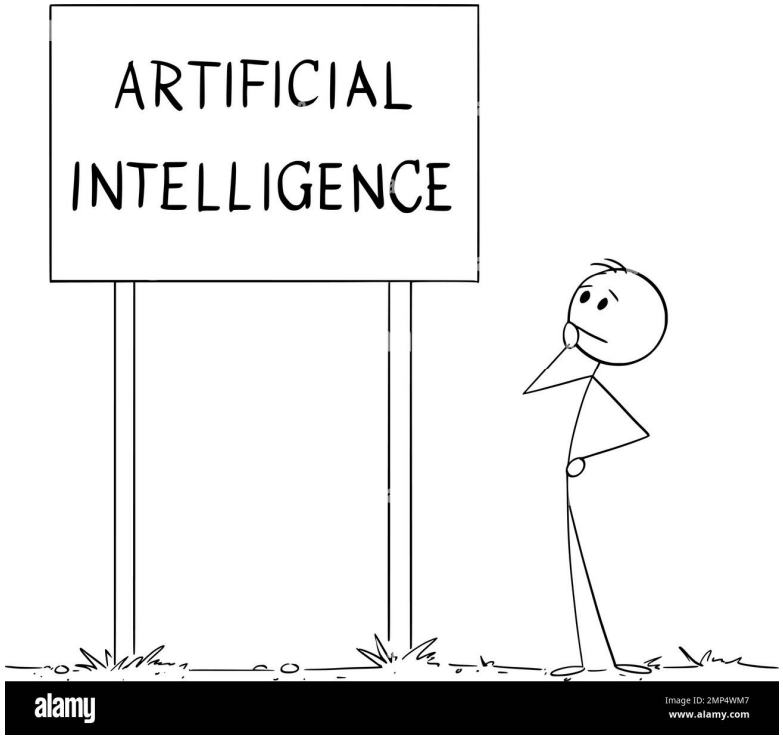
Steps in the Template

1. Detail and Describe the System Characteristics *(i.e., BESS, PV, Generators, IBR Resources, etc.)*
2. Select Grid Services Provided *(i.e., Backup Power, Voltage Regulation, etc.)* and describe how the System provides Grid Service(s). *(i.e., Enabling Functions)*
3. Determine Consequence Threshold (Impact Rating)
4. Perform Consequence Analysis from both Engineering and Cybersecurity perspective.
5. Perform Mitigation Analysis and select Mitigations *(i.e. CIE, C2M2, IEEE 1547, etc.)*.

- **CIEMAT** – CIE for Microgrids Tool - https://github.com/idaholab/CIEMAT/tree/main
- **CIEBAT** – CIE for Battery Energy Storage Systems Tool - https://github.com/idaholab/CIEBAT/tree/main

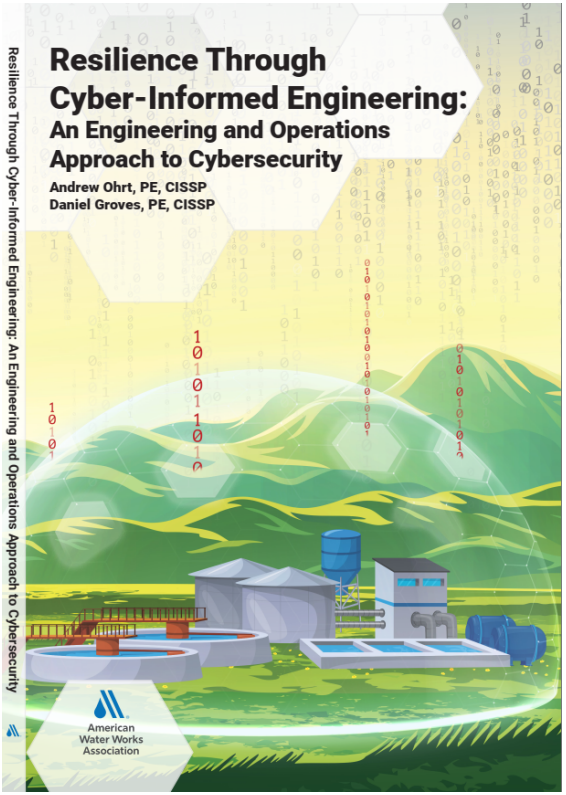
Discussion Questions

5. How does CIE help you think about managing AI risks for your organization and utilities?



CIE Water Sector Resource!

www.awwa.org/cie



Questions!



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THANK YOU!


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