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Improving Healthcare Facilities Operations with Situational Awareness

HEALTHCARE FACILITIES TODAY®

Today's Webcast starts at 1pm Eastern.

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Today's Moderator

Cathy Jakicic

Editor

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Today's Presenter

Eoin 0'Driscoll
PhD, PE, CEM
Principal Engineer,
DSA, Inc. (Data Systems Analyst)

Eoin O'Driscoll is a graduate of Trinity College Dublin, Ireland with a Mechanical Engineering PhD, a Bachelor of Science (Engineering with Management), and a Postgraduate Diploma (Statistics). Eoin's specific areas of expertise are: energy management, building automation optimization, and smart building implementations. Eoin is a licensed Professional Engineer (PE) in the Commonwealth of Virginia and an AEE Certified Energy Manager (CEM). In the Healthcare vertical, Eoin has developed and implemented multi-million dollar facility optimization projects designed to enhance energy performance and create more resilient critical environments. Additionally, Eoin is currently authoring a book for Elsevier Publishing titled Smart & Resilient Buildings: A Data-Driven Future.

Learning Objectives

- Determine how to achieve operational transparency in hospital facilities
- Discuss the value of a real-time situational awareness platform
- Define a central historian and the data-driven concepts (fault detection, condition-based maintenance and machine learning) it enables
- Identify how to achieve one common operating picture of a facilities environment

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To ask questions:

Please use the question and answer panel on the right-hand side of the screen, and send to all panelists.

Presentation Handouts

All participants will receive an e-mail by the end of the day with a link to download a PDF copy of today's presentation slides.

Polling Questions

Today's event will include multiple-choice polling questions.

Your participation is appreciated.

CEU Information

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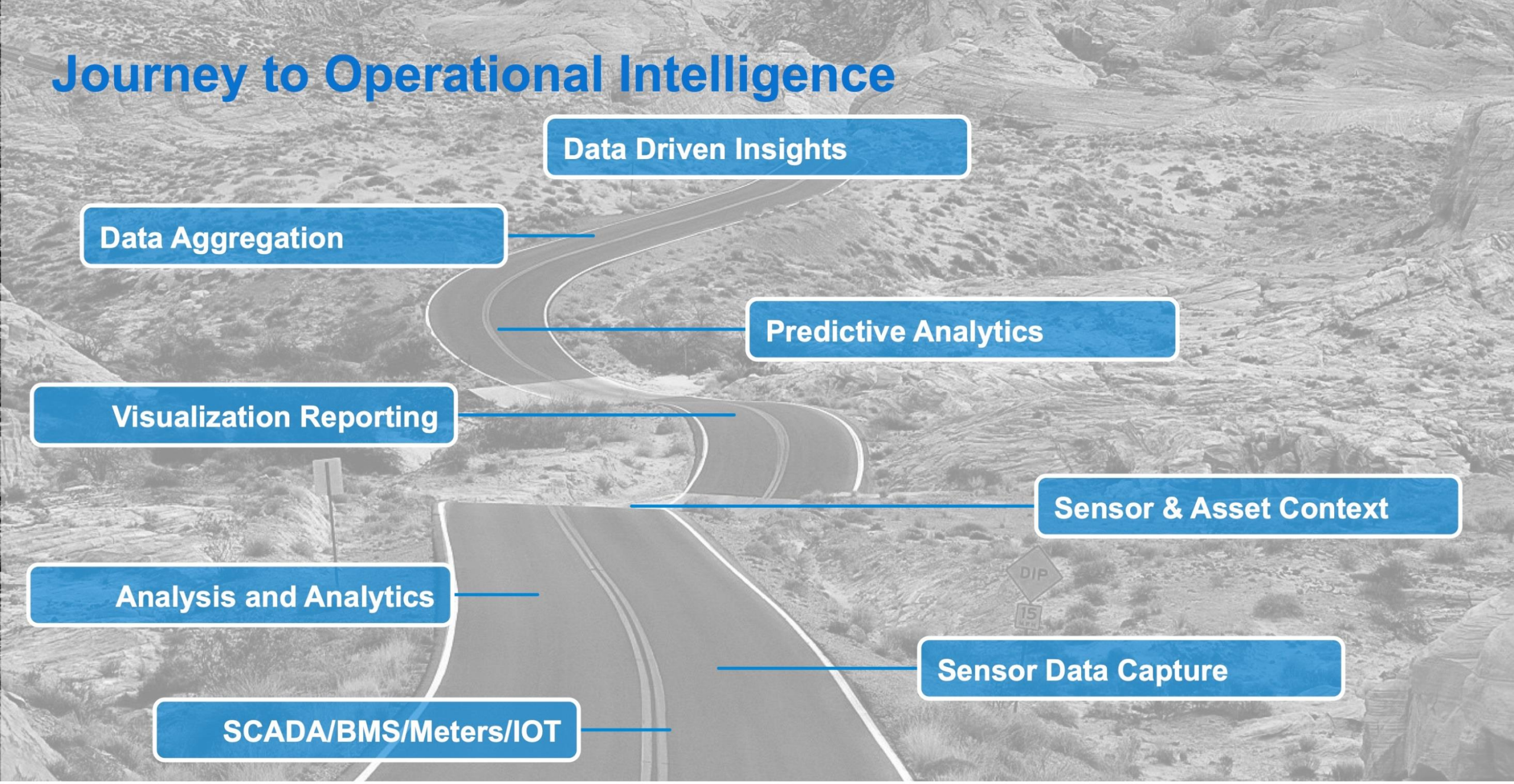
To successfully earn 0.1 CEUs, you must attend the entire webcast and earn a 70% or higher on the assessment.

The PI System:

Transform Your World Through Data

Journey to Operational Intelligence



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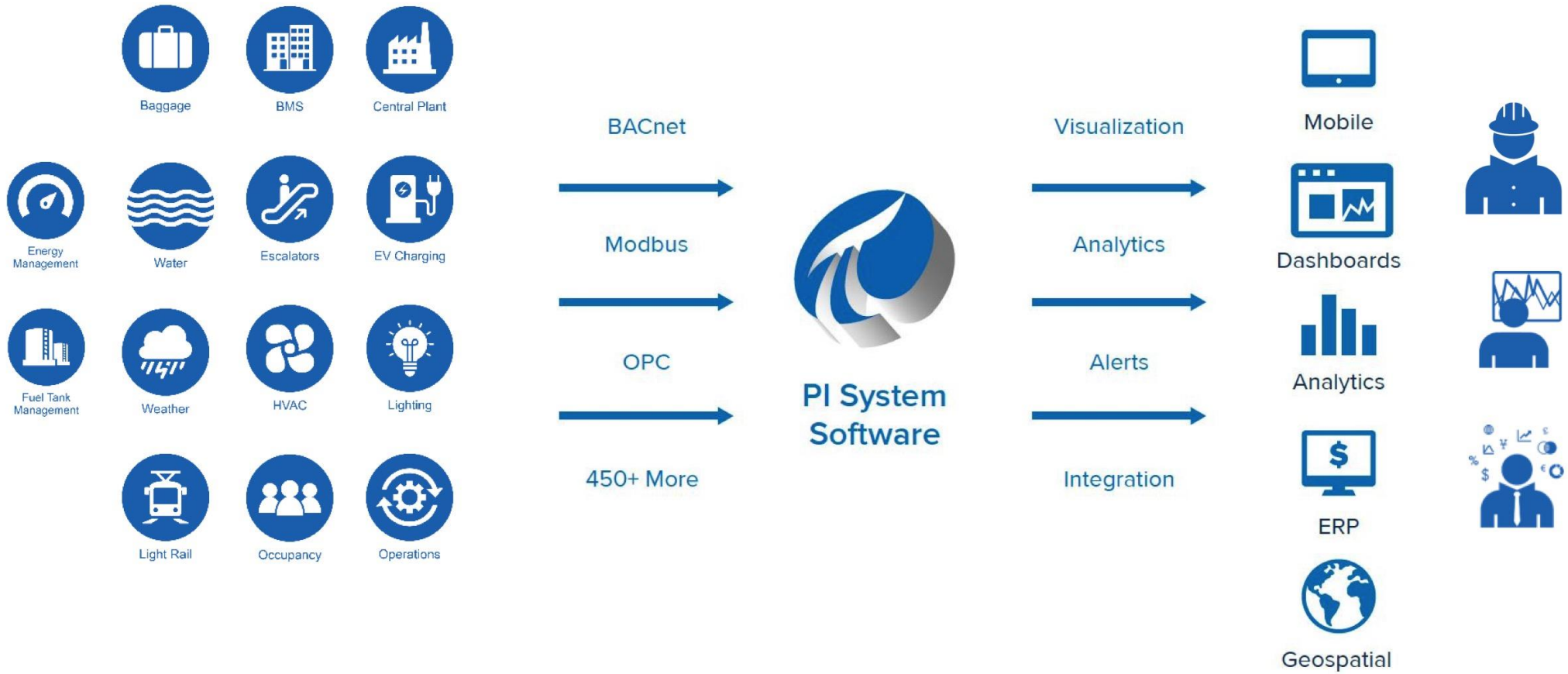
The PI System: Insight on Demand

The Right Data to the Right People, at the Right Time in the Right Format



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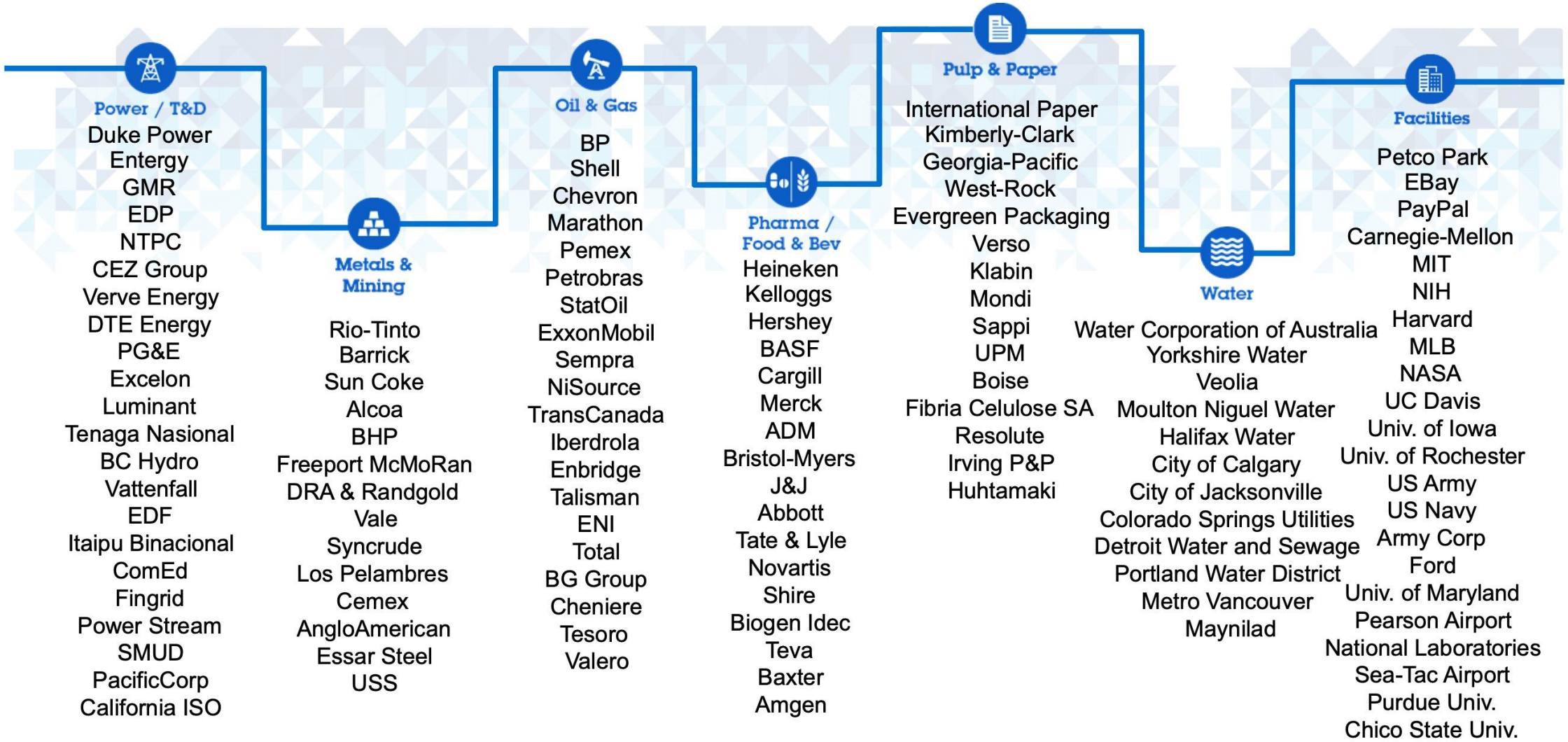
Small Sampling of Our Customers…



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The PI System: Proven

19,000+

sites deployed across diverse industries

PROVEN

You can trust the PI System infrastructure. Our customer base demonstrates this.

9 out of 10 of our first customers are still with us after 30 years

1,015 customer-led presentations and case studies

PI System installed in **125+** countries

Market Leader

Low Risk

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Improving Healthcare Facilities Operations with Situational Awareness

Eoin O'Driscoll, PhD, PE, CEM

Critical Infrastructure Protection Practice Lead

DSA
Employee-Owned, Mission-Driven

HEALTHCARE FACILITIES TODAY®

Disclaimer

- Situational Awareness
- Operational Intelligence
- Healthcare Facilities Challenges
- Data-driven Improvement Concepts
- Proven Applications

Situational awareness is the perception of events with respect to time or space, the comprehension of their meaning, and the projection of their future status

Drivers & Challenges

Patient Care

Resilience

Reduce Costs; Improve Outcomes

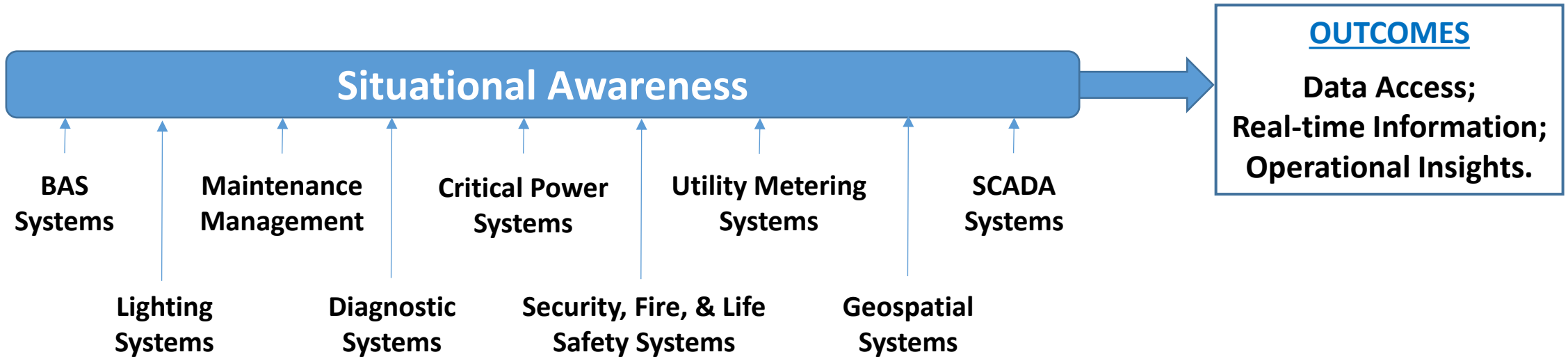
Reporting Requirements

Energy Intensive Operation (24x7)

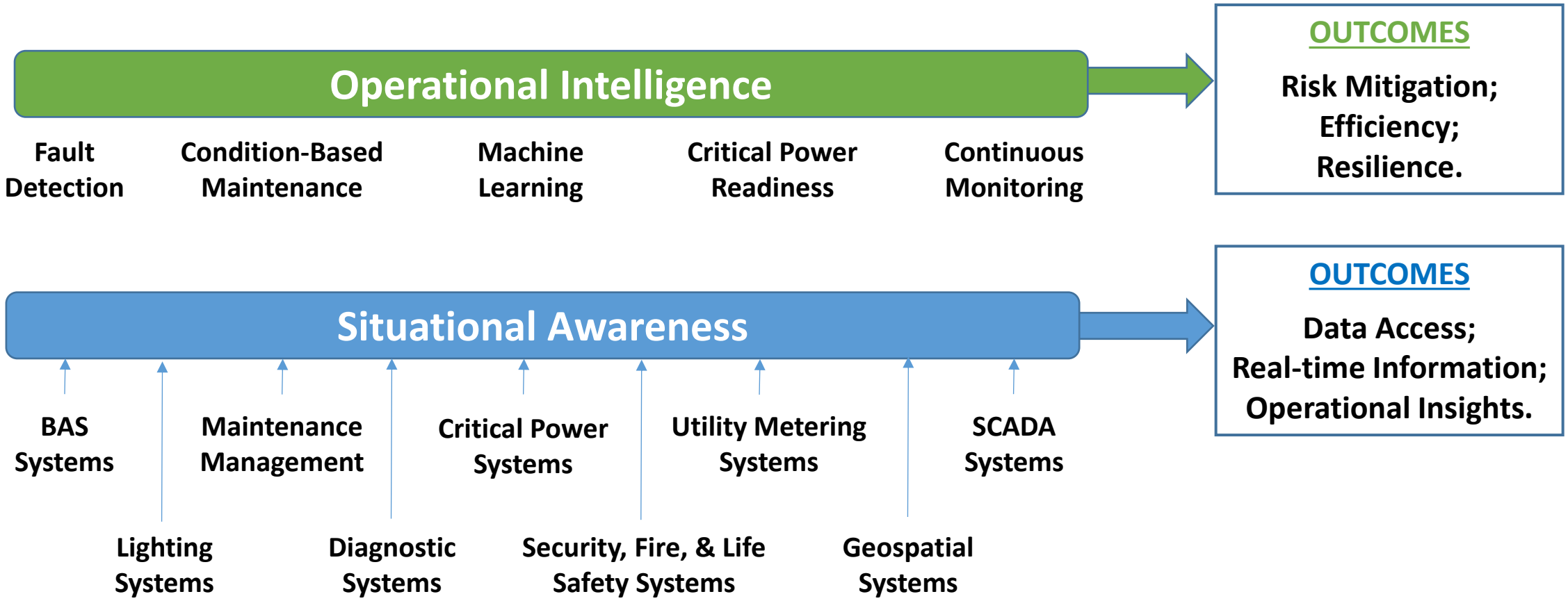
Reactive Posture

Limited Insights

Integration for Awareness & Intelligence



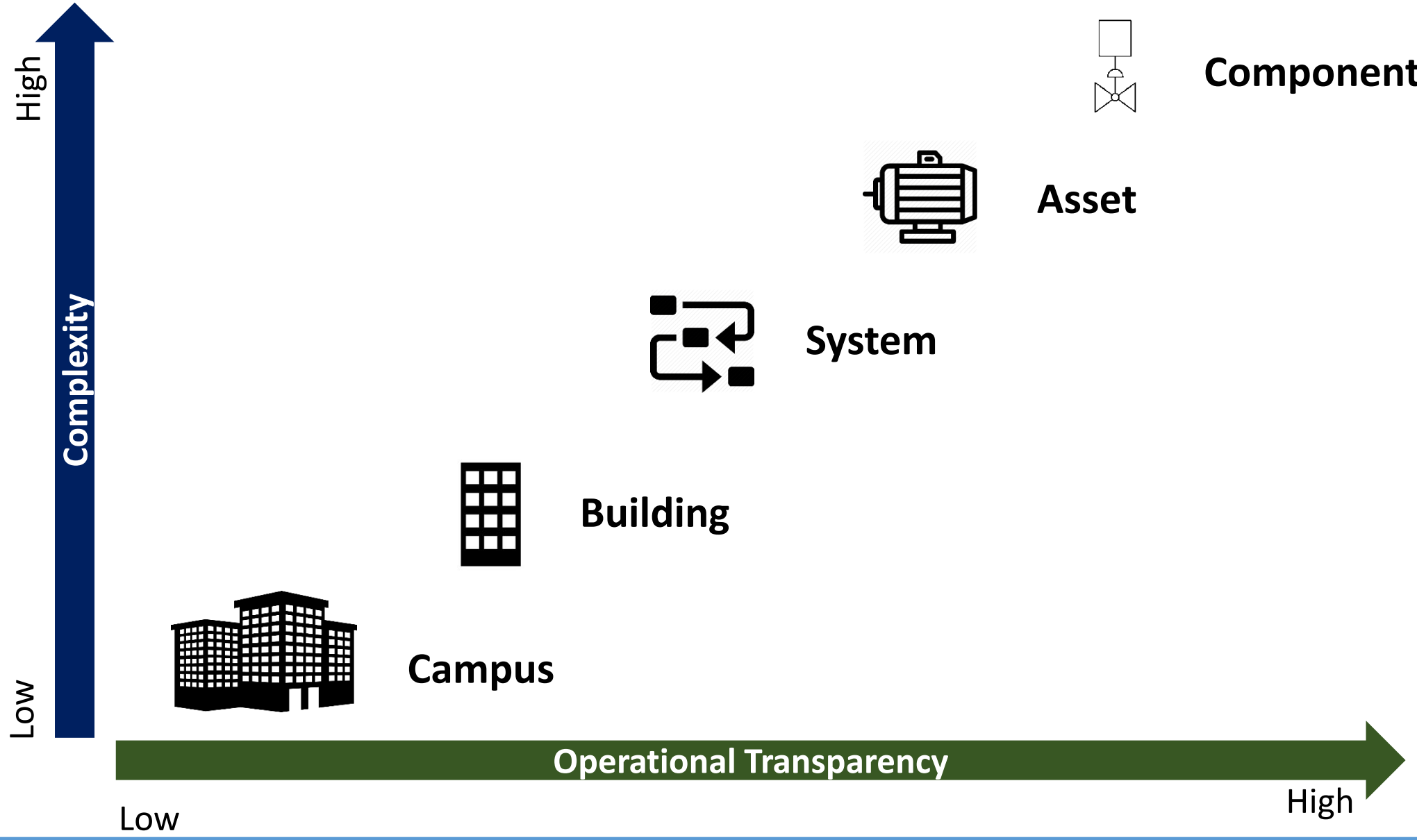
Integration for Awareness & Intelligence



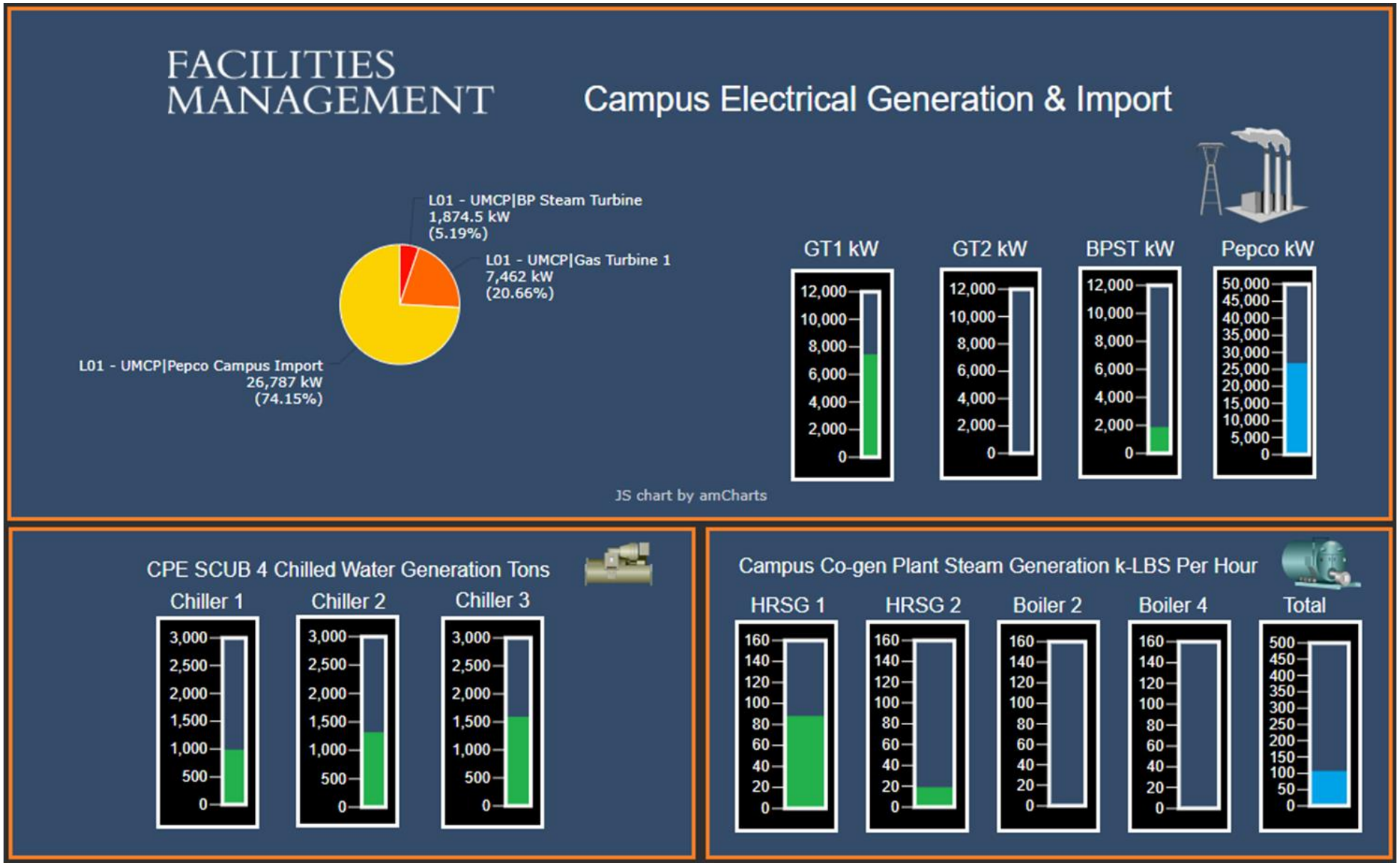
Polling Question

Please make your selection on the right side of the screen.

Your participation is appreciated.

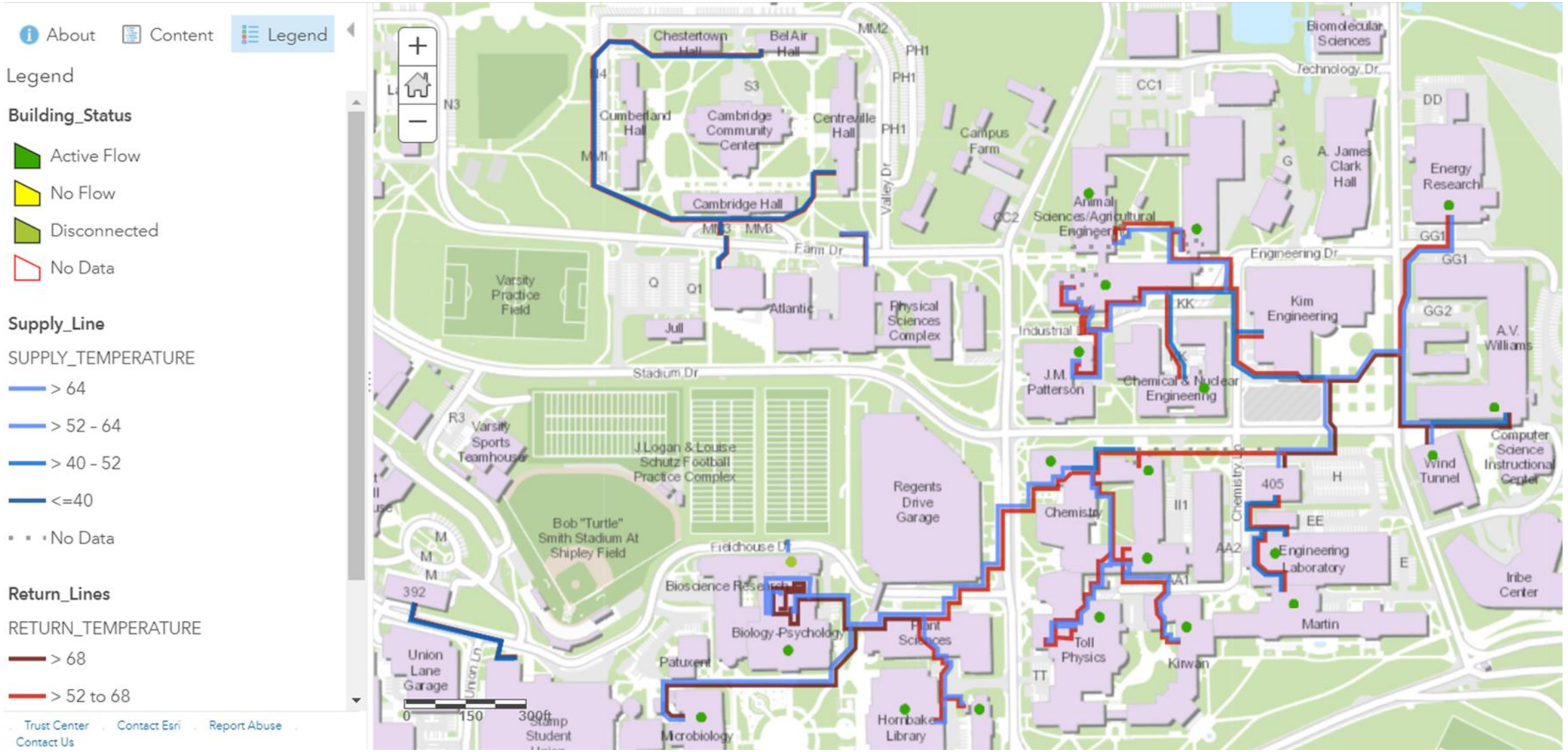

High
Complexity
Low
Component
Asset
System
Building
Campus
Operational Transparency
Low
High

Utility Overview

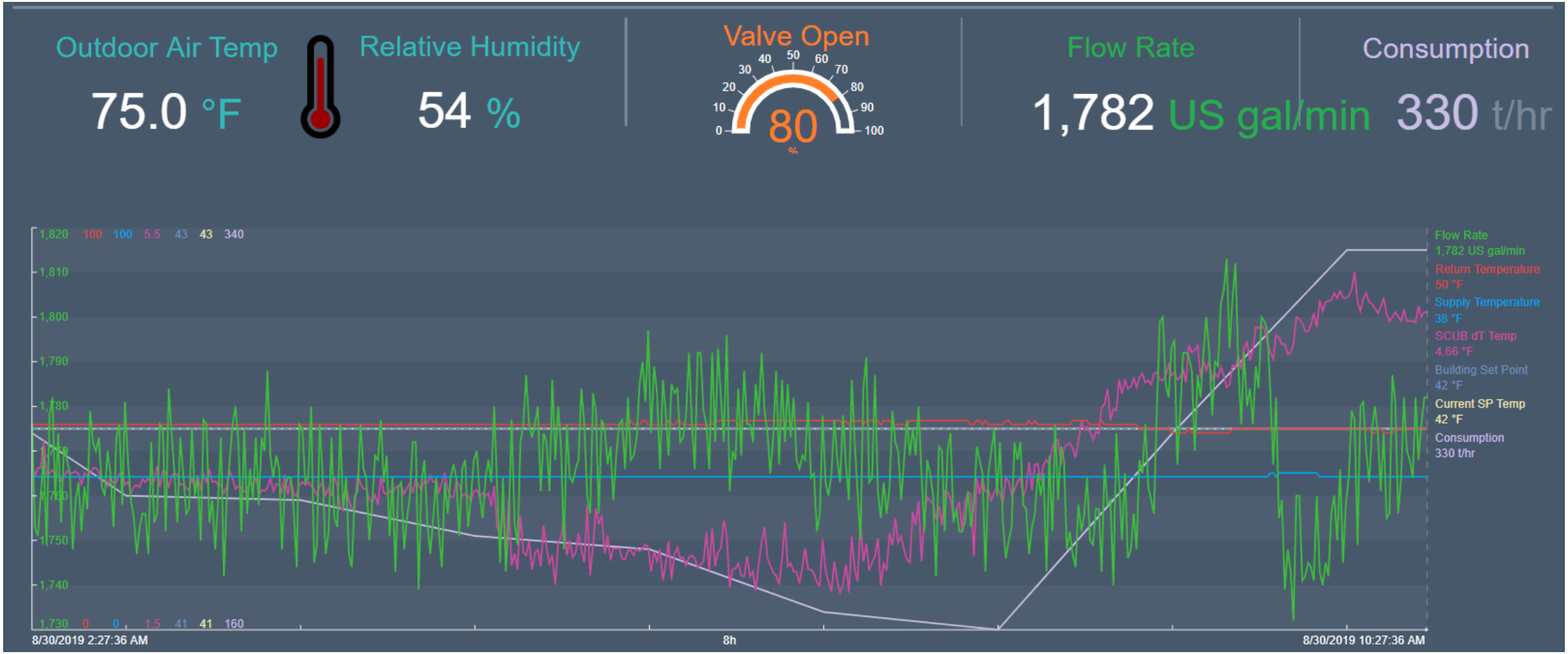


Resilience: Utility Monitoring

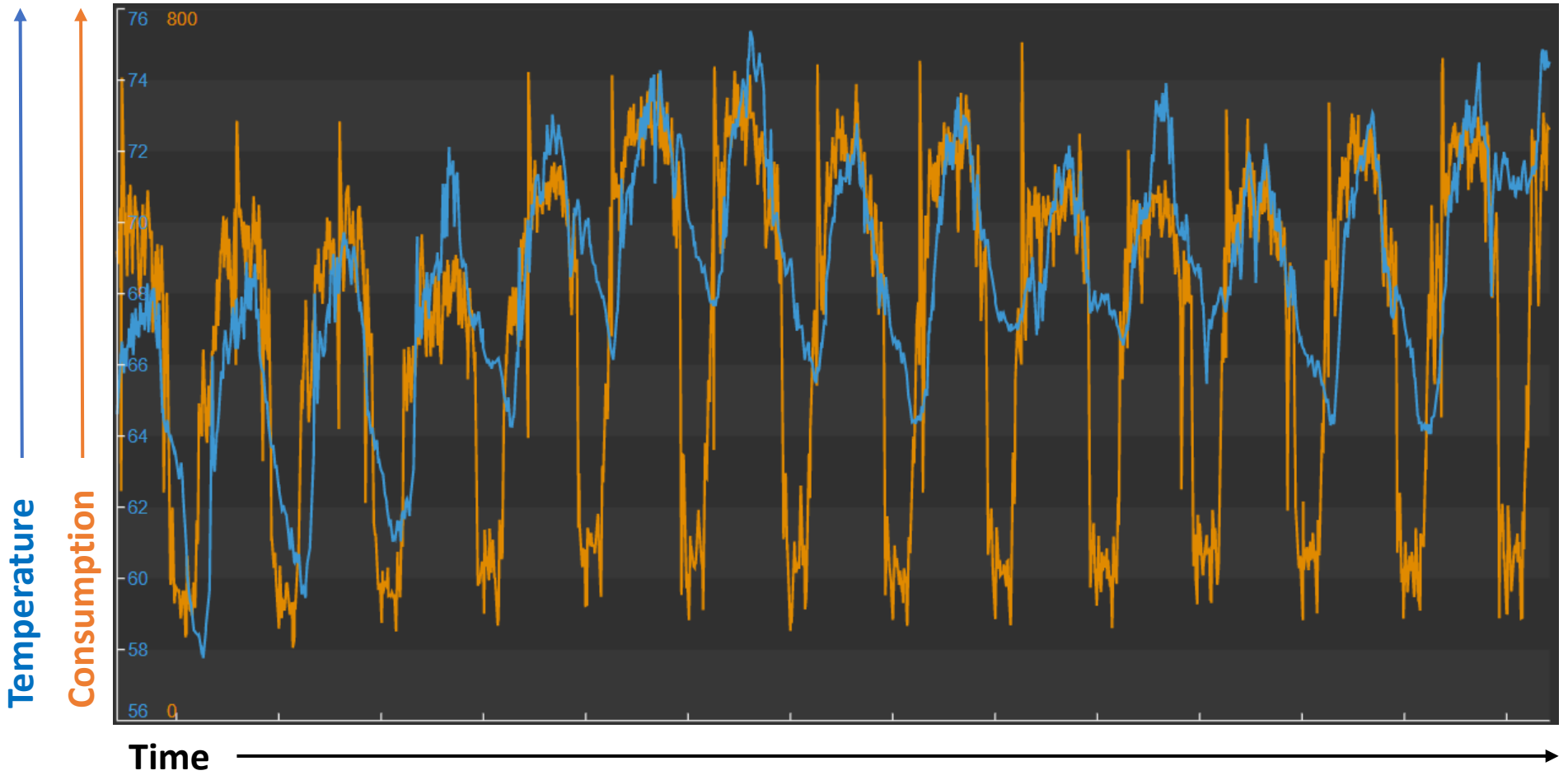
The purpose of this integration is to provide a real-time summary of all chilled water system assets across the campus.
The map is fully interactive and each element dynamically links to an asset-specific or building-specific screen.



Resilience: Utility Monitoring



Resilience: Utility Monitoring



Polling Question

Please make your selection on the right side of the screen.

Your participation is appreciated.

Resilience: Critical Asset Monitoring

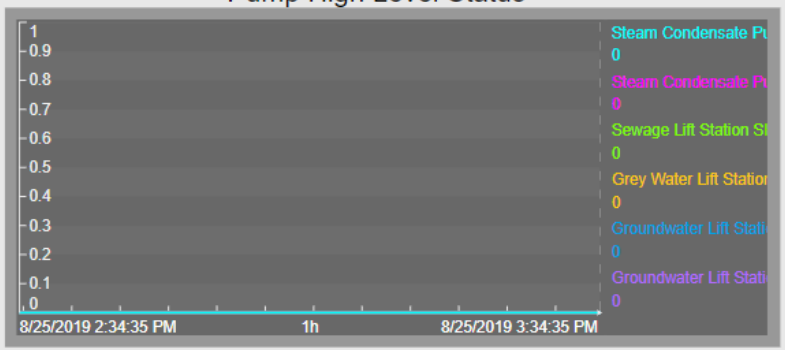
Legend:
- Normal Operation
- Alarm Condition
- Unknown Condition
- Open Cubicle + No De-Energized Buildings

Feeder 10 Status

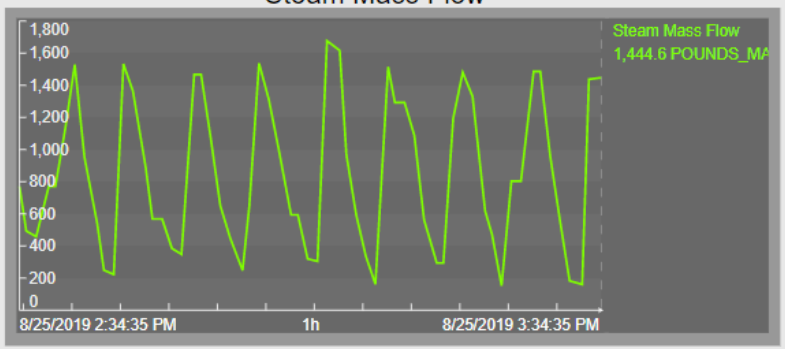
Building Service Entry Voltage
483 Volts

Ejector Pump Levels

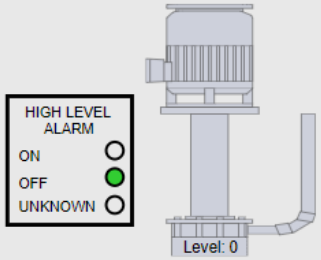
Pump High Level Status



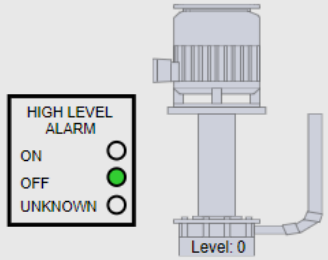
Steam Mass Flow



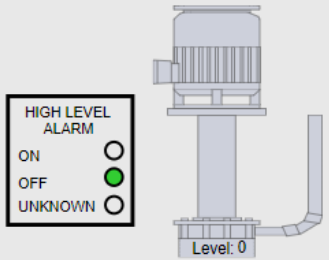
Steam Condensate Pump RMB0501CP1



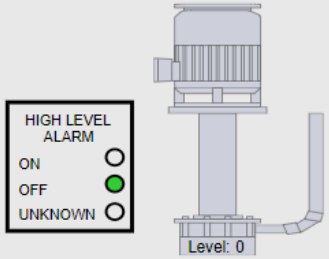
Sewage Lift Station SB0207P1



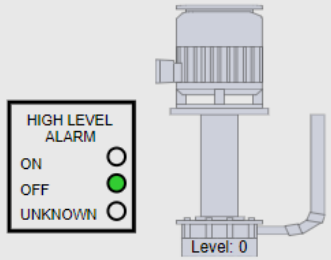
Groundwater Lift Station B0501P1



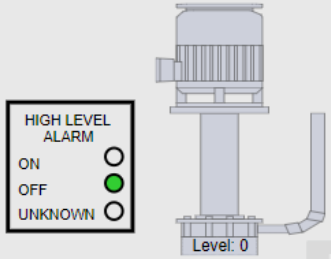
Steam Condensate Pump RMB0501CP2



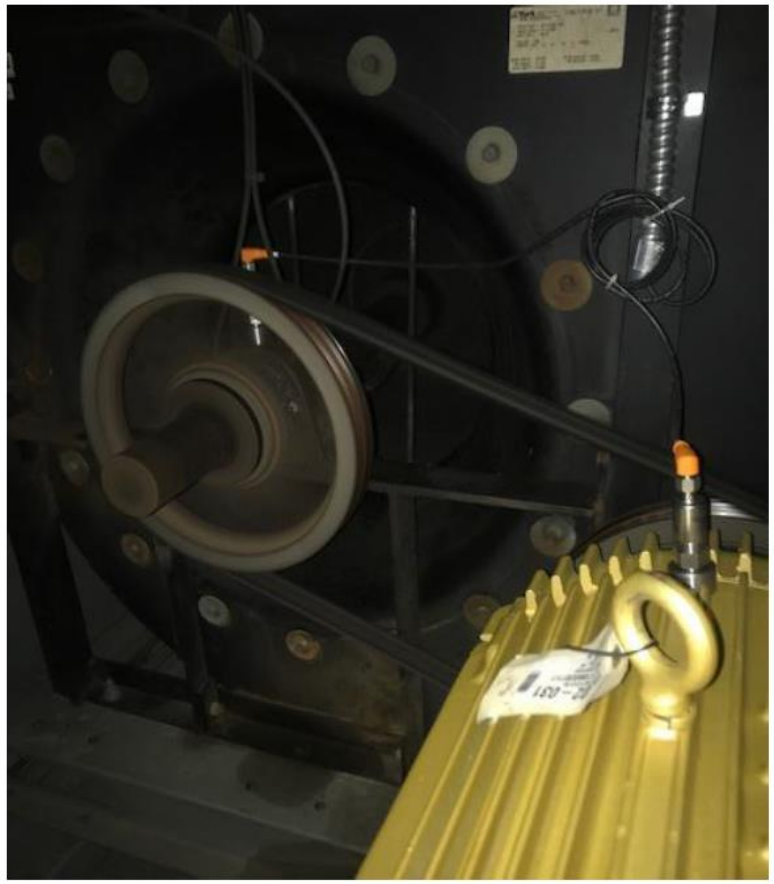
Greywater Lift Station B0501P1



Groundwater Lift Station SB0279P1



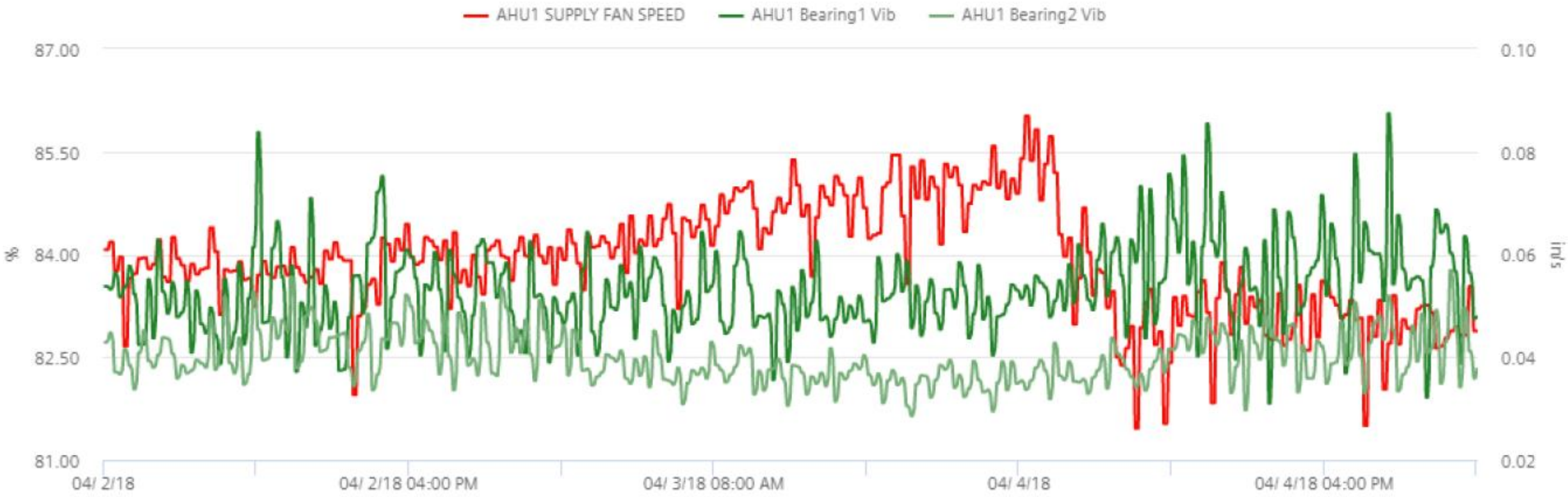
Resilience: Critical Asset Monitoring



From ANSI/AMCA; Air Movement & Control Association:

VIBRATION	
(Inches/Second Peak)	
0 - .005 In/Sec	EXTREMELY SMOOTH
.005 - .01 In/Sec	VERY SMOOTH
.01 - .02 In/Sec	SMOOTH
.02 - .04 In/Sec	VERY GOOD
.04 - .08 In/Sec	GOOD
.08 - .16 In/Sec	FAIR
.16 - .32 In/Sec	SLIGHTLY ROUGH
.32 - .64 In/Sec	ROUGH
Above .64 In/Sec	VERY ROUGH

Resilience: Critical Asset Monitoring

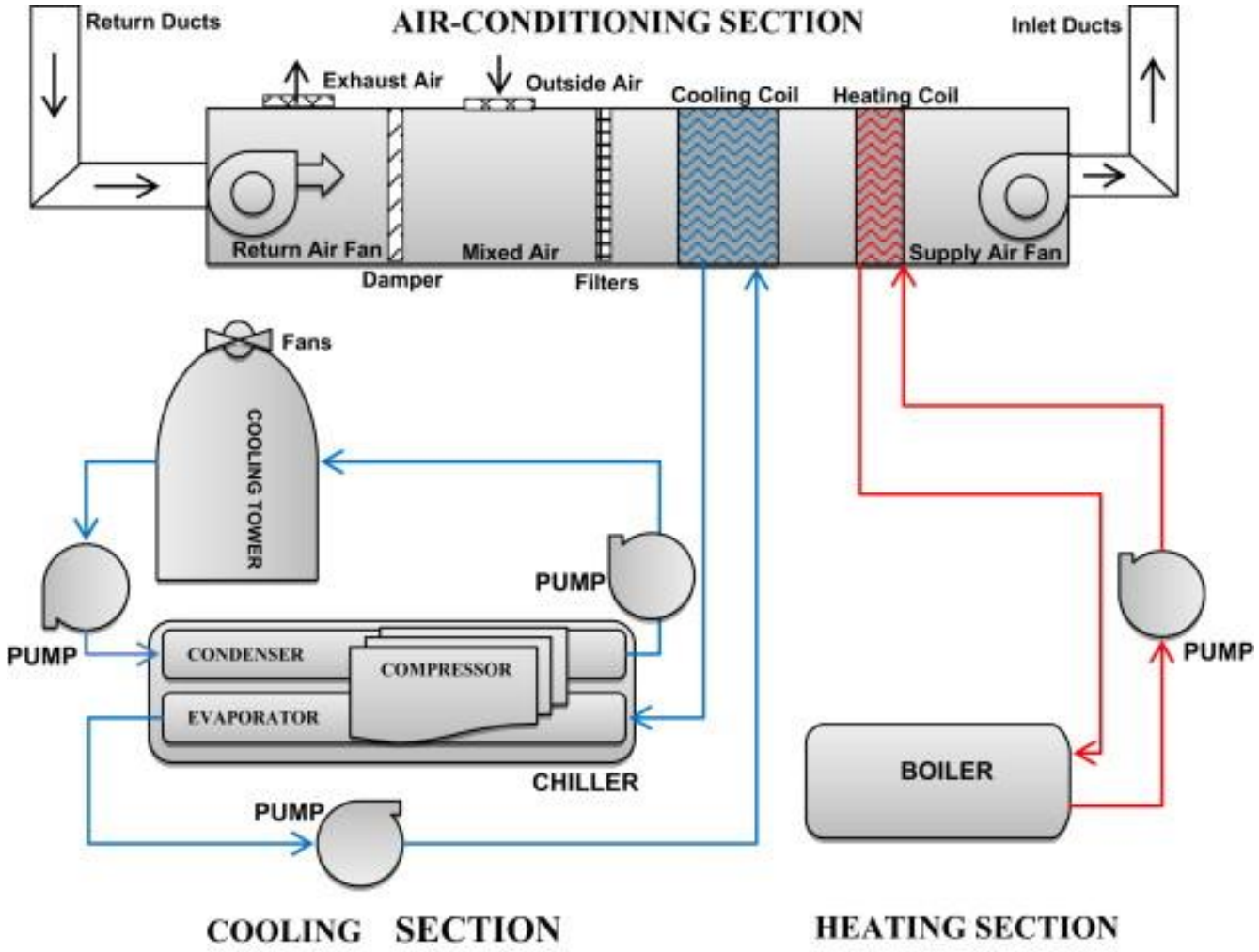


Polling Question

Please make your selection on the right side of the screen.

Your participation is appreciated.

Efficiency & Compliance: HVAC Monitoring



Healthcare Requirements

- Ventilation
- Temperature
- Humidity
- Pressurization
- HEPA Filtration
- Reporting

Efficiency & Compliance: Environment of Care

Reporting & Compliance

Environment of Care; EC.02.05.01 EP15

IAQ & Ventilation Maintenance

Issue	**Protect patients from airborne contaminates**
Risk	**Hospital Acquired Infections**
Impact	**Harm to patients**
Mitigation	**Continuous HVAC performance monitoring**

Efficiency & Compliance: Environment of Care

Reporting & Compliance

Environment of Care; EC.02.05.01 EP15

IAQ & Ventilation Maintenance

Issue — **Protect patients from airborne contaminates**

Risk — **Hospital Acquired Infections**

Impact — **Harm to patients**

Mitigation — **Continuous HVAC performance monitoring**

Continuous Monitoring

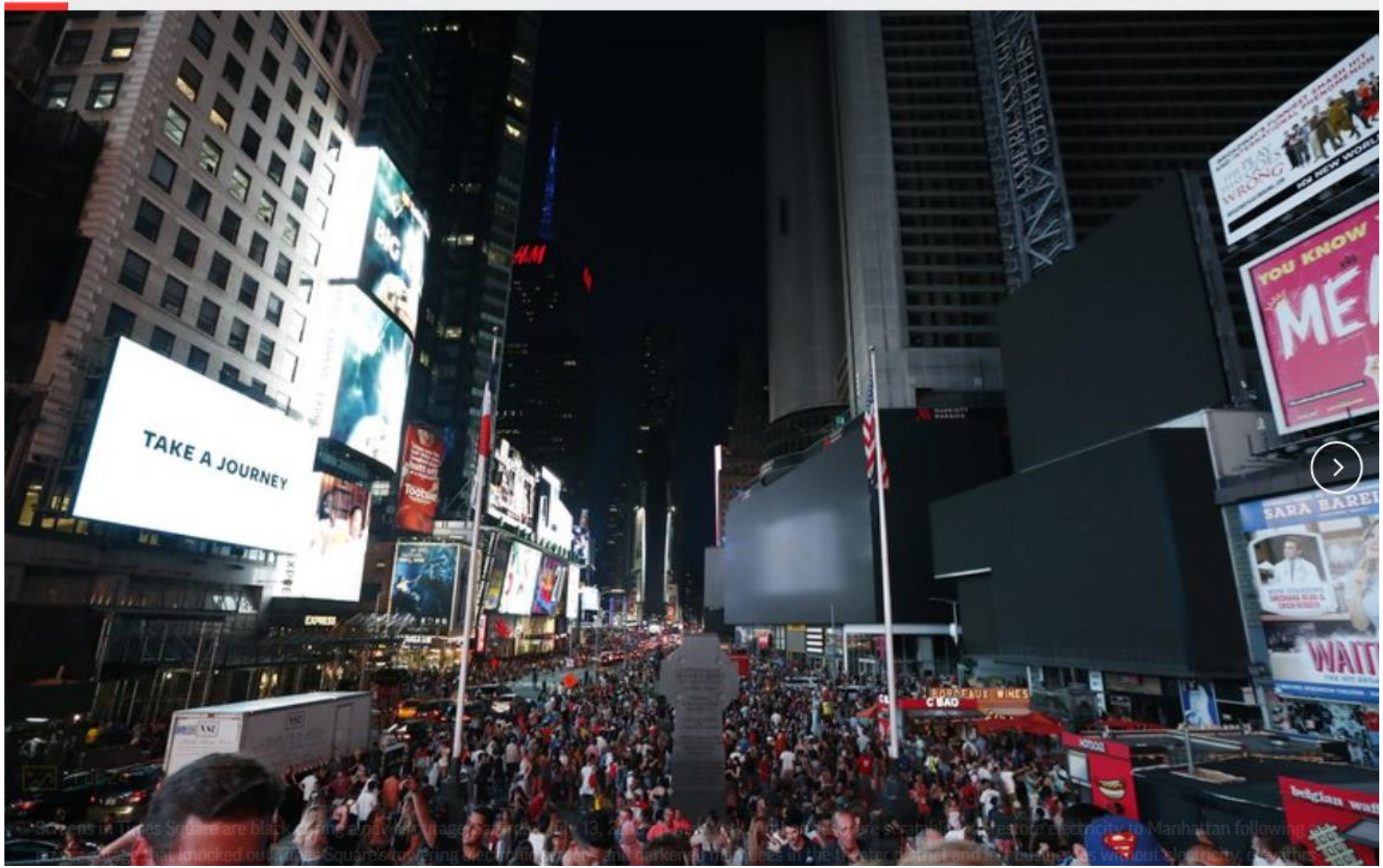
- Pressure relationships
- Air filtration efficiencies
- Air-exchange rates
- Temperature
- Humidity

Fault Detection & Diagnostics

1) Scheduling
2) Economizer Operation
3) Simultaneous heating & cooling
4) Static pressure reset
5) Supply air temperature reset
6) Air change rate monitoring
7) Temperature & humidity monitoring
8) Equipment cycling

AP

No lights, big city: Power outage KOs Broadway, Times Square

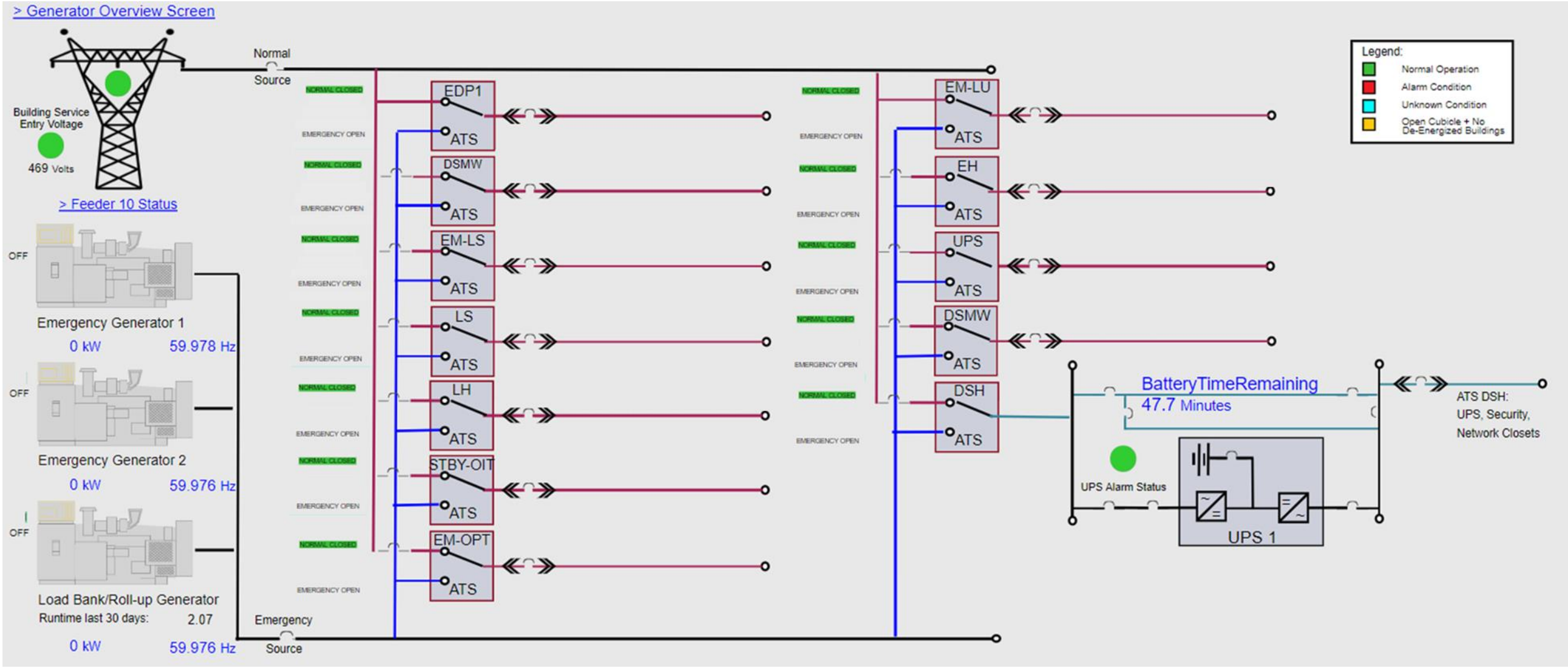


Environment of Care; EC.02.05.03 EP1

Reliable Emergency Electrical Power Source

Issue	**Reliable emergency electrical power source;**
Risk	**Loss of power can cause catastrophic events;**
Impact	**Harm to patients;**
Mitigation	**Continuous critical power and utility systems monitoring**

Resilience & Compliance



- Resilient Healthcare facilities require situational awareness
- Systems integration and targeted analytics reduce risk, improve the environment of care, and reduce operating costs
- Analytics-ready time-series data is critical

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Employee-Owned, Mission-Driven

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