
IDEA2021
Powering the Future: District Energy/CHP/Microgrids
Sept. 27-29 | Austin Convention Center | Austin, Texas

Optimizing District Energy with Analytics Software

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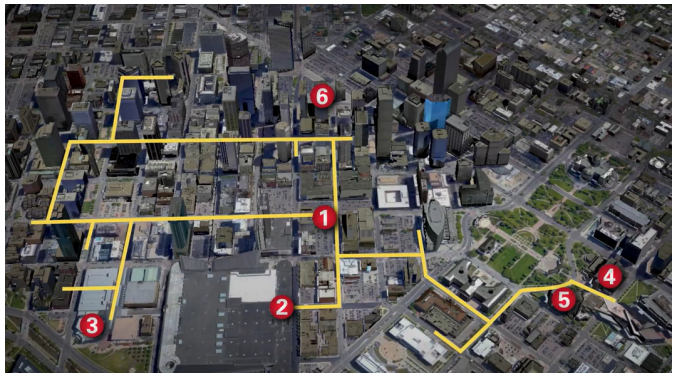
Xcel Energy District Steam Overview

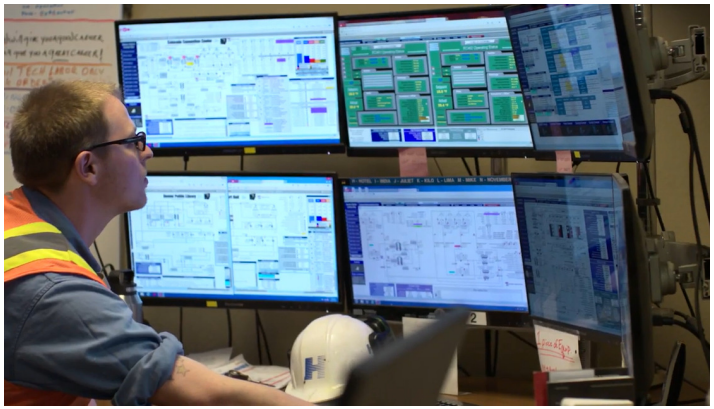
- In operation since 1880
- Denver Steam Plant plus 2 satellite plants
- Steam heat exchangers in around 120 buildings for space heat, water heaters, laundries, and process loads

Xcel Energy District Chilled Water Overview

- Denver Chilled Water Plant with waterside economizer and ice storage
- 5 satellite plants
- Heat exchangers in around 40 buildings, primarily space cooling

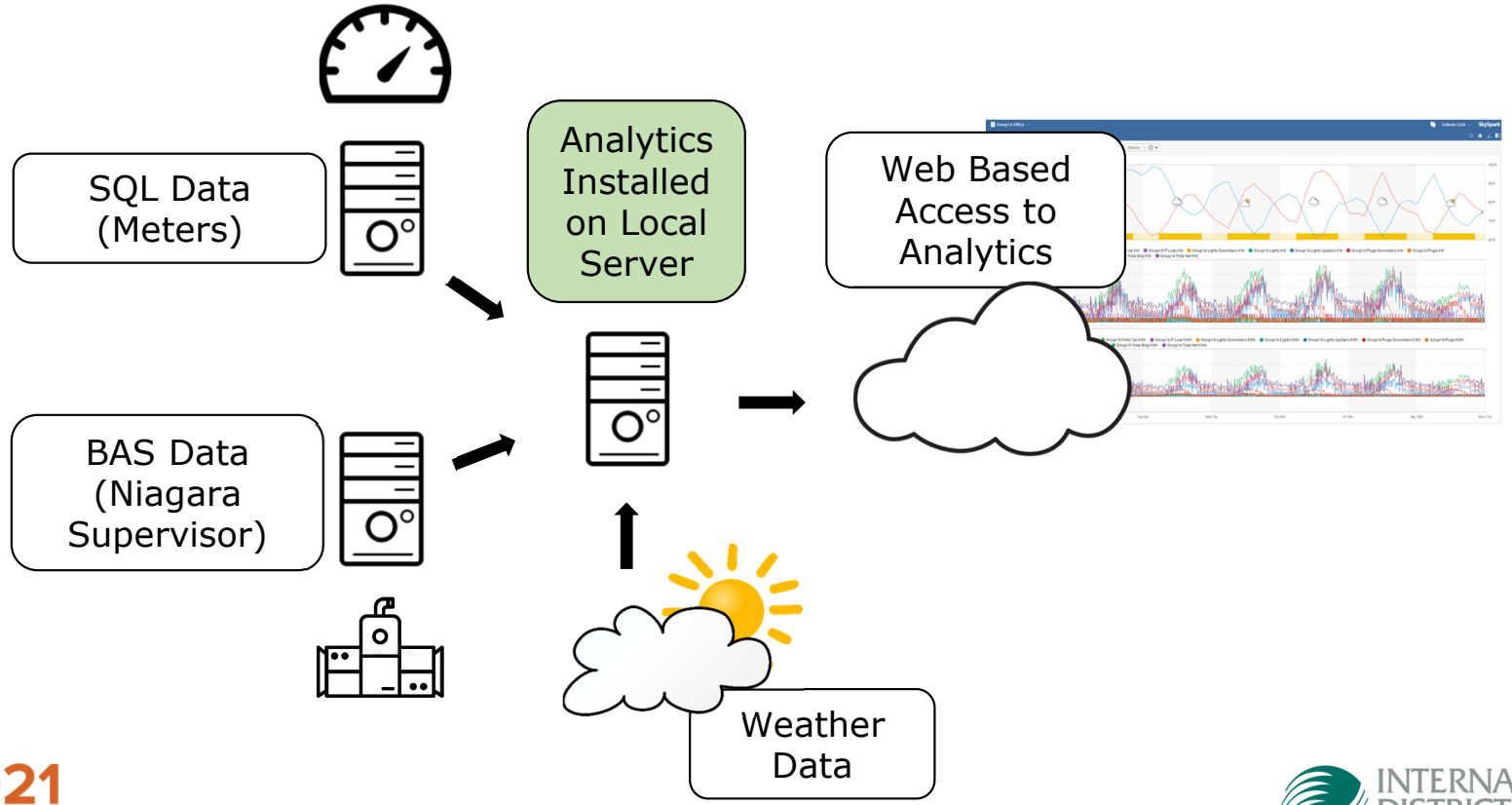


The Problem – Drivers for Analytics



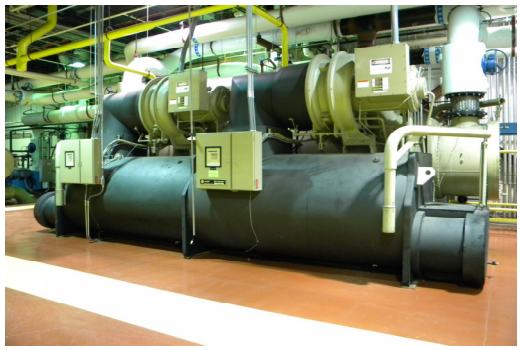
- Time consuming data processing for billing
- Meter communication issues/ data loss
- Lack of real time automated dashboards for plant optimization
- Difficult to track maintenance performance metrics

Solution – Deployment of Analytics Software



Solution – Systems Monitored

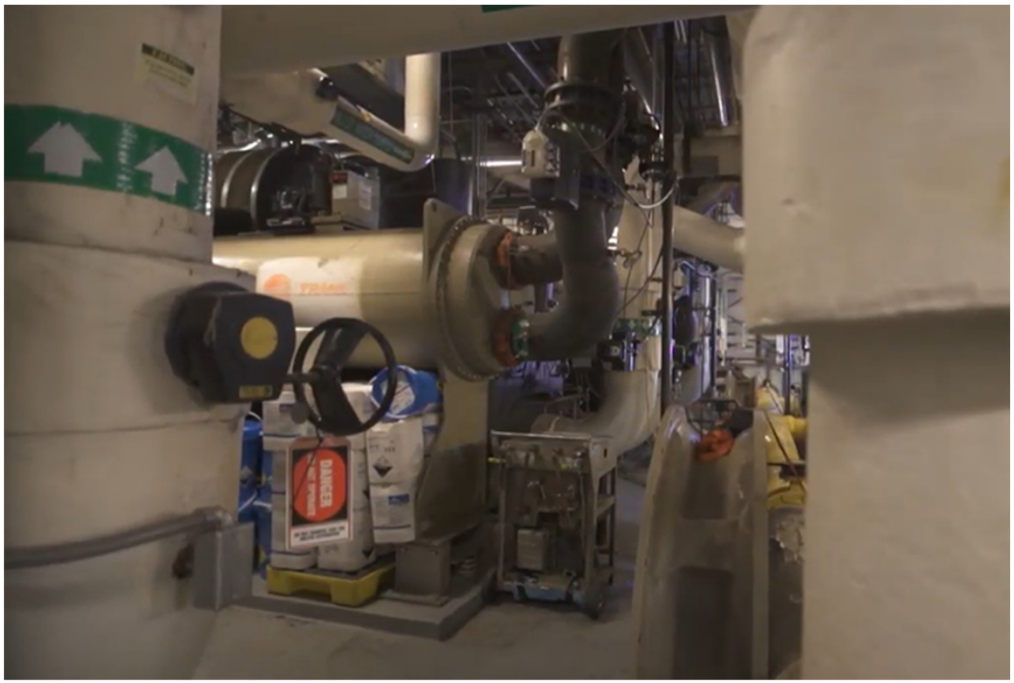
- Steam heat exchangers
- Chilled water heat exchangers
- Five central chilled water plants



Challenges

Challenges

Getting Buy-In



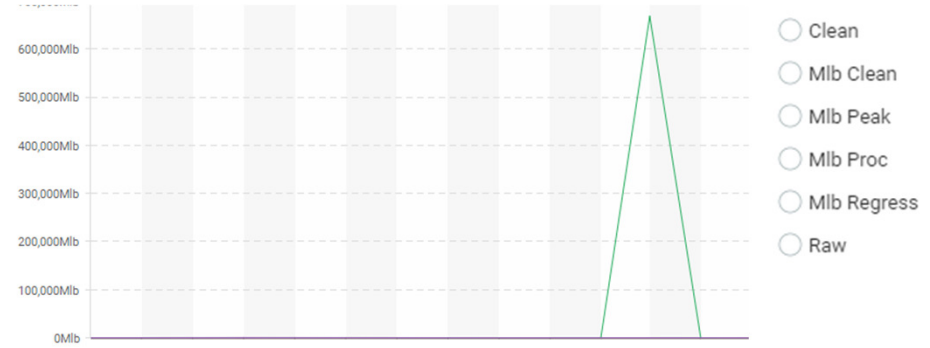
Challenges

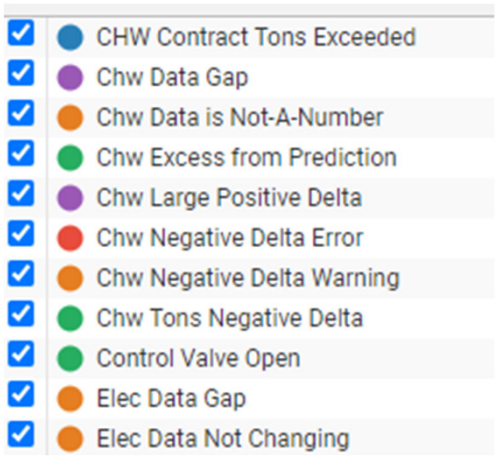
Selecting a Tool

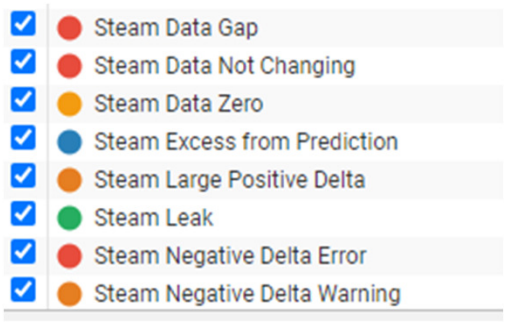
- Cost
- Flexibility
- Scalability
- Data integration (local installation)

Challenges

- Data quality - gaps and spikes
  - Calculate “clean” data points
  - Rules to identify meter issues
- Build trust in the data and outputs



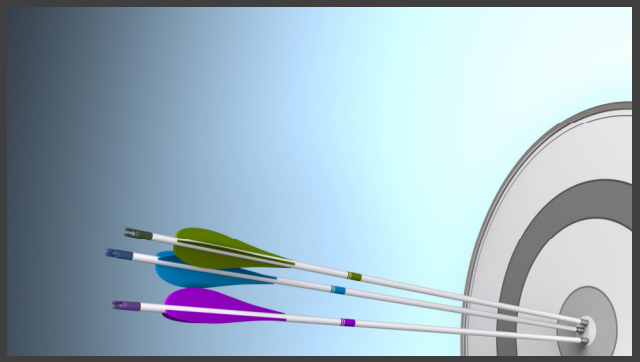




Challenges

Determining what is important

- Turn data into actionable information
- Configure tool to look at the right information
- Perform iterations to calculate and display key metrics



Triumphs

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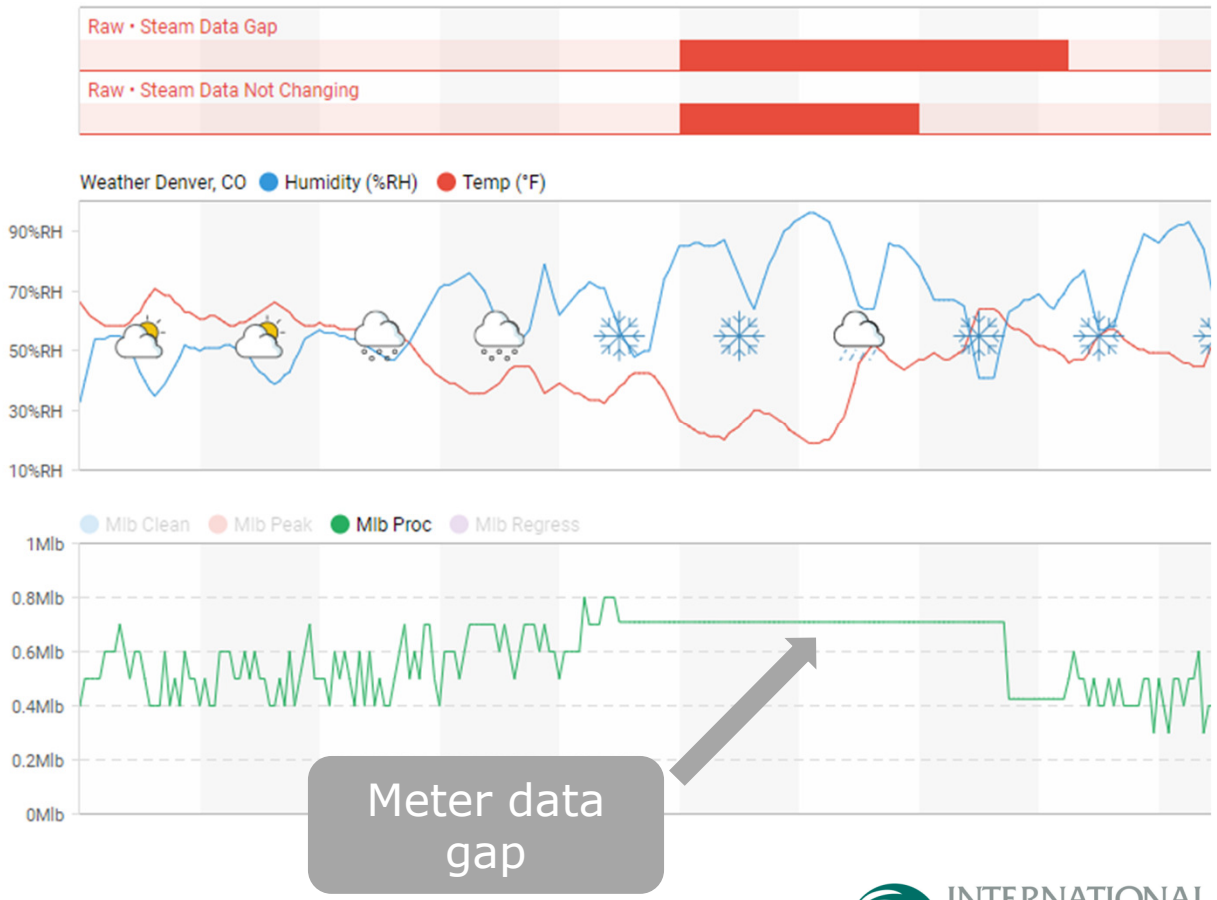
Triumphs

- Replaced a time intensive spreadsheet process for monthly billing
- Saving 20 hours per month!

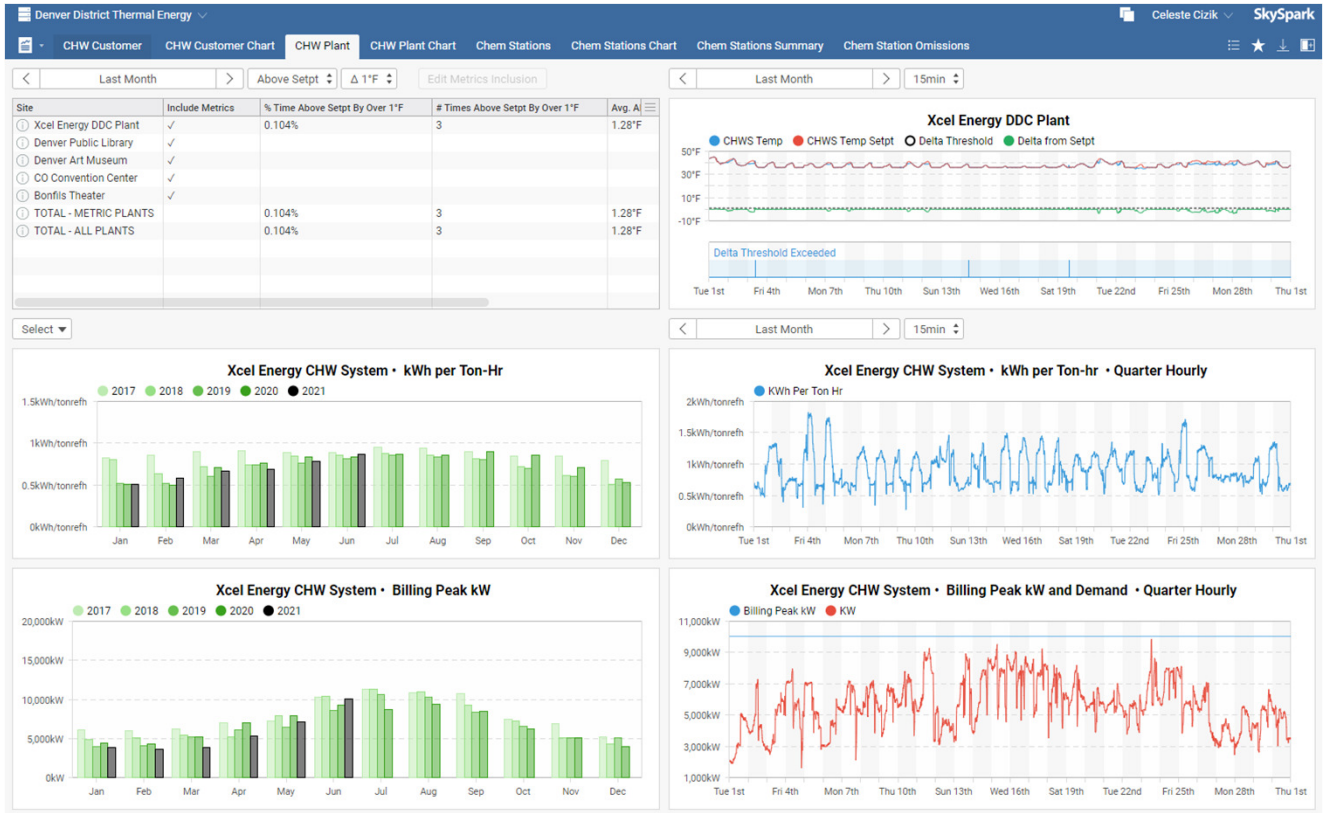
Triumphs

- Use rules to prioritize and resolve data gaps quickly
- Use regressions to fill in missing data



Triumphs

- Cooling plant optimization
- Monthly "scorecard" to evaluate system performance



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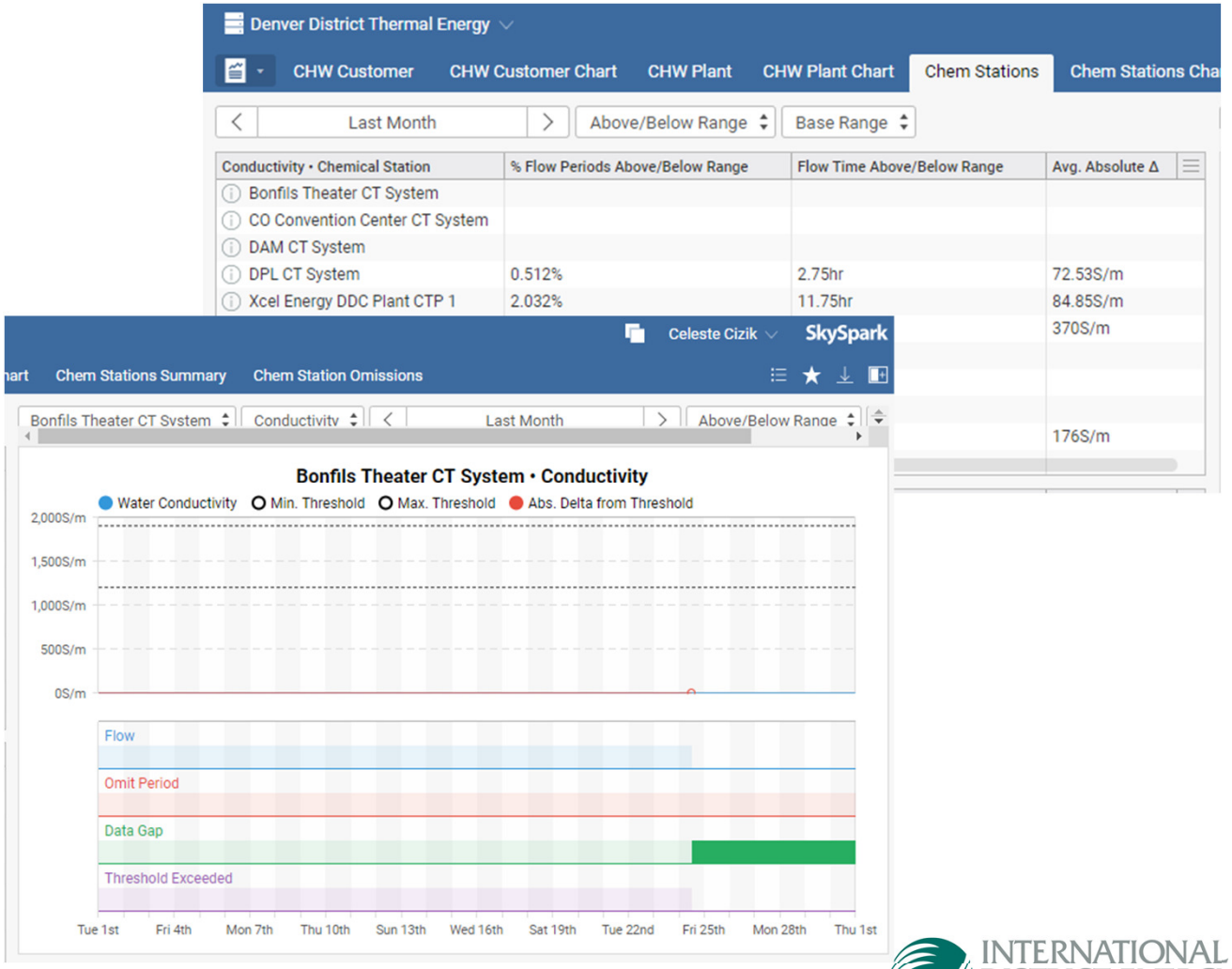
Triumphs

- Manage water Service Level Agreement (SLA)
- Monitor KPIs - evaluate performance on a daily basis



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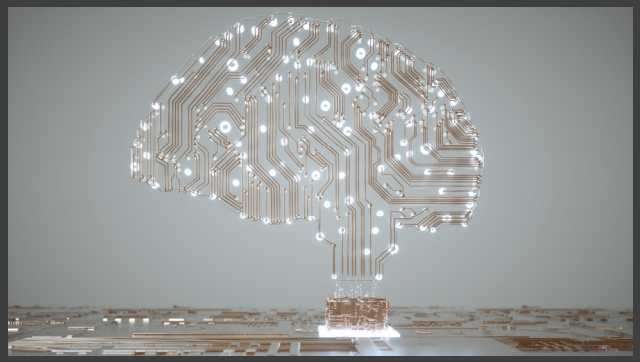

The Path Forward - Lessons Learned

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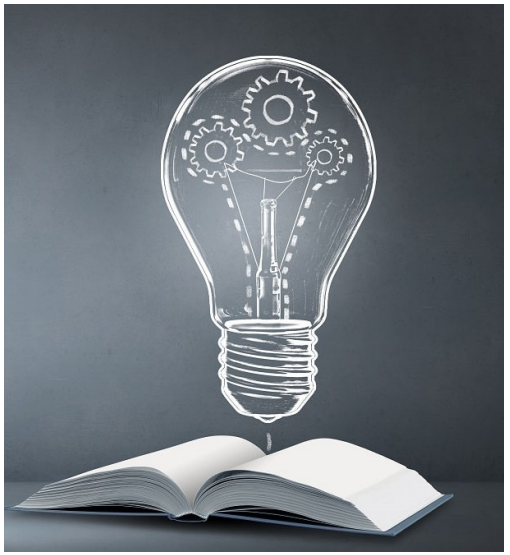
The Path Forward

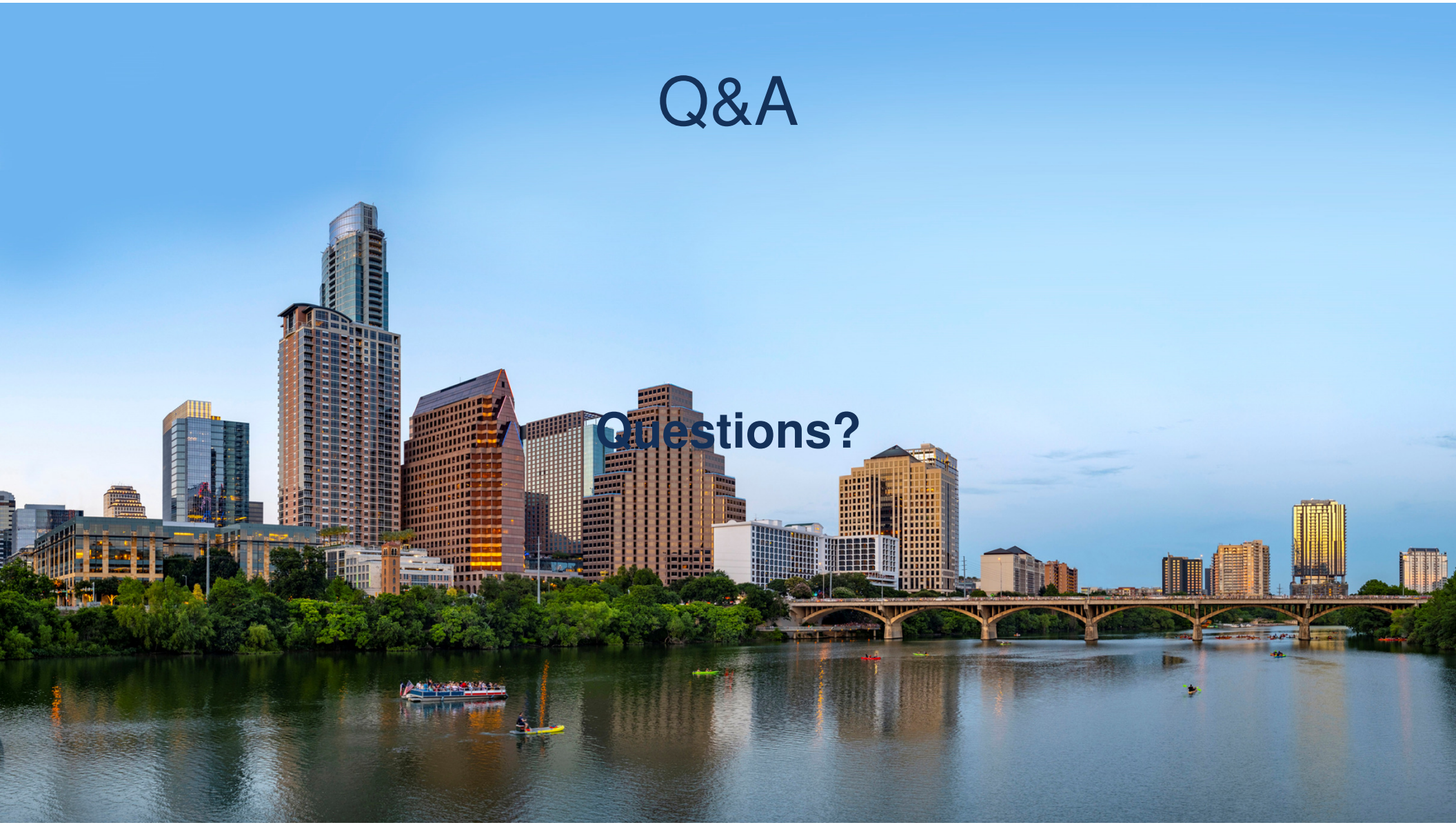
- Integrate more data and equipment
- Expand contractor KPIs beyond water chemistry
- Refine data during maintenance
- Verify performance post modifications

Lessons Learned

1. Identify and engage stakeholders to get buy-in
2. Determine analytics system needs and desired outcomes
3. Start with a pilot, then expand and customize
4. Evaluate process improvements
5. Celebrate success!



Q&A



Thank You!

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