



**TwinWorX**<sup>®</sup>



The State University  
of New York

**TECHNOLOGY TO ACHIEVE  
BUILDSMART 2025 / EO22 GOALS**

# e-Magic Inc.



e-Magic Inc. specializes in providing *expertise* and *software* for design, development and integration of large scale *Industrial IoT* and *Azure Digital Twins* solutions globally.



HQ  
Toronto Canada  
e-Magic Inc. est. 1998

## Digital Twins Solutions

Monitor, Visualize,  
Control and Optimize Assets



Smart Buildings  
Healthcare  
Manufacturing  
Infrastructure

On-premise & Cloud  
Microsoft Azure Cloud  
Azure native services

# TwinWorX<sup>®</sup>



# EO22 and BuildSmart 2025

## Primary Goals of BuildSmart 2025:

### 1. Energy Savings Target:

- Achieve 11 trillion Tbtu of building site energy savings by December 31, 2025

### 2. Support Climate Leadership and Community Protection Act (CLCPA):

- Assist state entities to assess and implement strategies to reduce their GHG emissions.

### 3. Compliance with State Orders and Requirements:

- Continue the efforts initiated by Executive Order 22 to reduce greenhouse gas emissions and improve energy efficiency in state buildings.
- Align with the New Efficiency: New York report, which sets a broader energy savings target of 185 TBtu by 2025.

### 4. Implementation of Energy Efficiency Measures: Focus on

- Reporting and Benchmarking
- Energy audits and master planning
- Submetering
- Operations and Maintenance
- Retrocommissioning

## New York Executive Order 22

### 1. Sustainable Procurement:

- focusing on reducing toxic substances, promoting renewable resources, and enhancing recyclability and compostability of products.

### 2. Greenhouse Gas Emissions Reduction:

- By 2030, 100% of the electricity used by state operations must come from renewable sources.

### 3. Energy Savings:

- achieve 11 trillion BTUs of energy savings by 2025 through the BuildSmart 2025 program.

### 4. Zero Emission Vehicles (ZEVs):

- The state's fleet must transition to entirely zero-emission vehicles by 2035 and 2040, respectively.

### 5. Focus on Disadvantaged Communities:

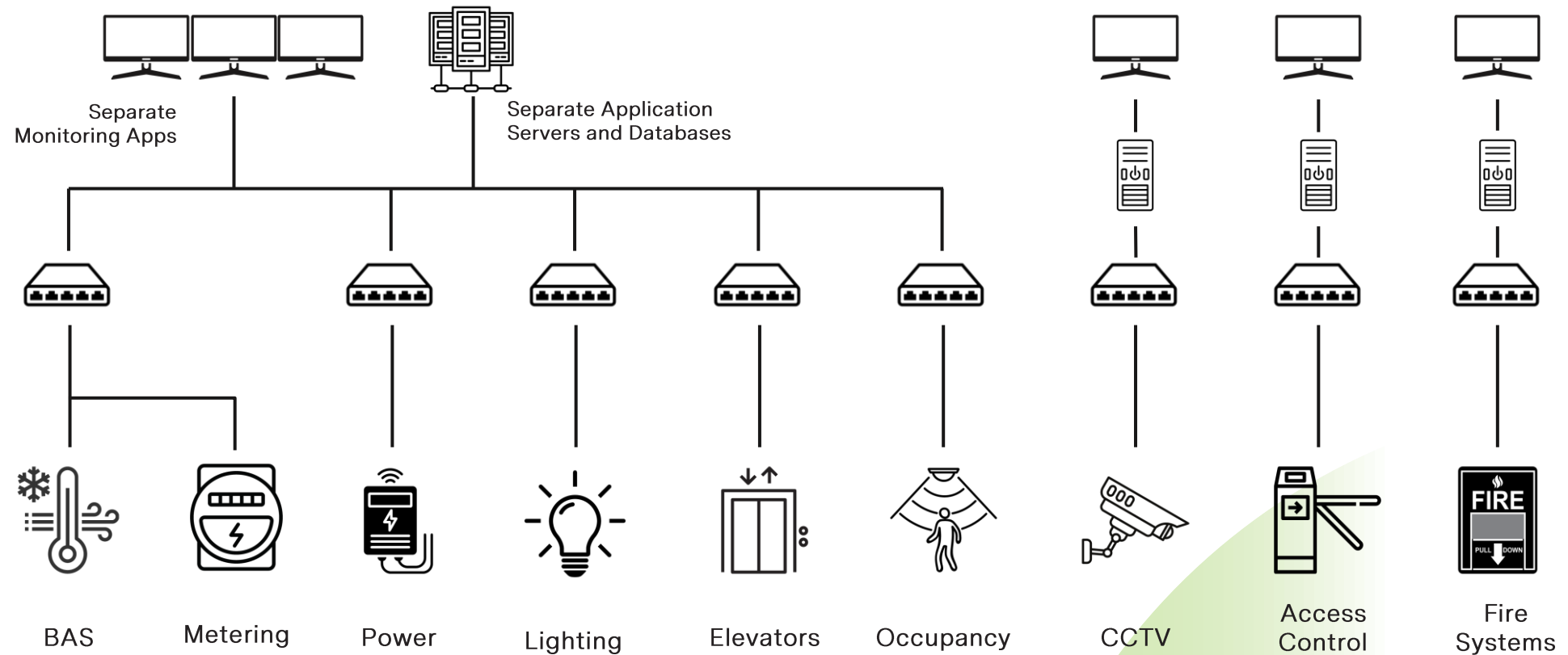
- prioritize sustainability upgrades for state facilities located within disadvantaged communities.

# Technology in Facilities

# Traditional Building Architecture

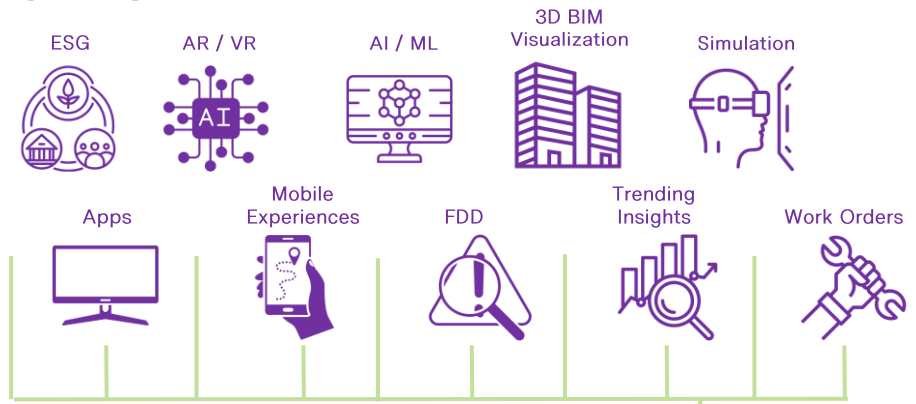
But most buildings simply do not have the capability to support smart building initiatives.

- Siloed Applications and Databases
- Possibly Connected but NOT Integrated
- Redundant IT Infrastructure
- Different protocols
- Unique Naming Conventions
- No Data Context
- Difficult to protect against cybersecurity threats

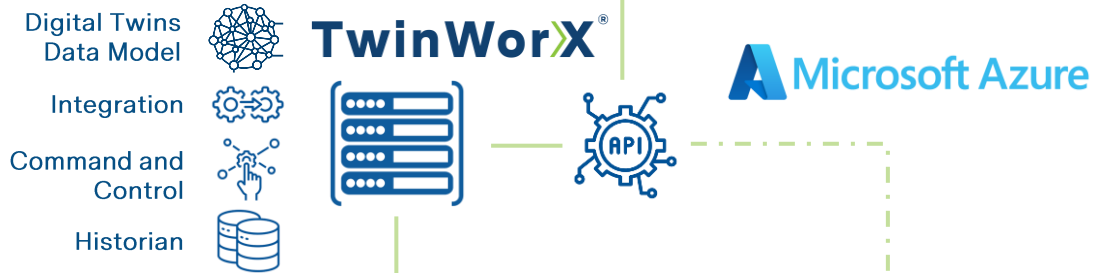


# Smart Building Architecture

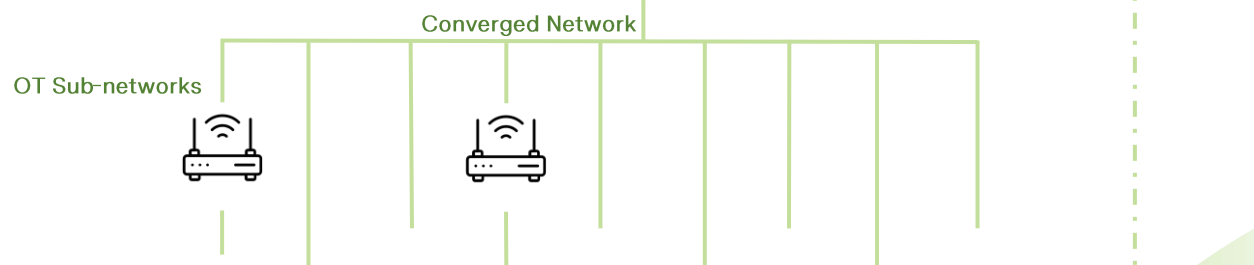
Applications Layer  
Packaged Business  
Capabilities



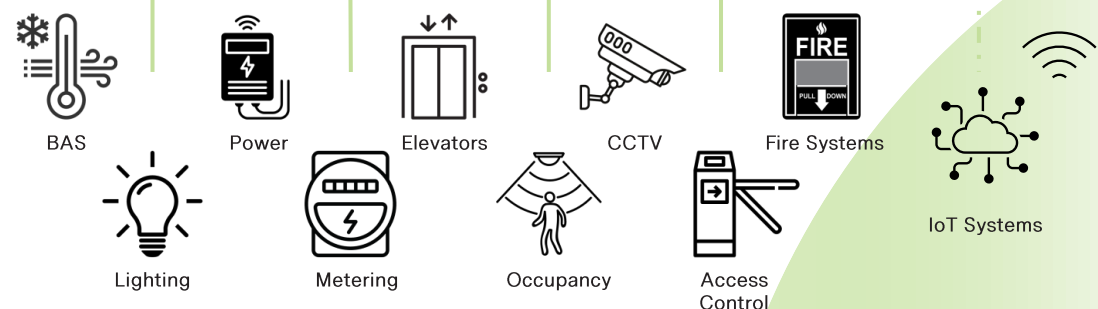
Independent Data Layer  
Data Modelling  
Data Storage



Networking Layer



Device Layer  
Equipment  
Systems  
Data Sources  
IoT



# Building Technology Today



## Digital Twins

- Digital replicas of physical buildings that integrate real-time data from IoT sensors, building systems, and devices.
- Monitoring, controlling, analyzing, and optimizing building performance
- Enabling improved operational efficiency, energy management, and maintenance planning.



## Fault Detection and Diagnostics

- Autonomously detects deviations from normal operation, determines the root causes of faults, and recommend corrective actions
- Leverages real-time data and sophisticated algorithms
- Enhance operational efficiency, reduce energy consumption, and prevent costly downtime



## AI for Optimization

- Reinforcement Learning, a subset of machine learning, is about training algorithms through trial and error to make optimal decisions.
- AI agent continuously learns and adapts to changing conditions by taking actions to optimize processes.

# Technology enabling BuildSmart 2025



**Digital Twins**



**Fault Detection and Diagnostics**



**AI for Optimization**

**Reporting & Benchmarking**

**Energy Audits and Master Planning**

**Submetering**

**Retrocommissioning**

**Operations and Maintenance**



## Reporting & Benchmarking

Energy Audits and Master Planning

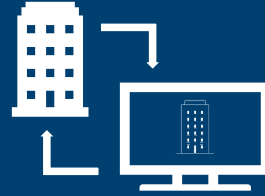
Submetering

Retrocommissioning

Operations and Maintenance

Guidelines:

Assessing progress towards statewide energy efficiency targets, and benchmarking helps state agencies identify low-performing buildings to prioritize for energy efficiency improvements.



## Digital Twins

### Real-time Data Collection and Analysis

- Continuous monitoring with real-time data from sensors and IoT devices
- Integration of data from BMS, EMS, and utility meters

### Enhanced Reporting

- Automated generation of detailed and accurate reports
- Predictive analytics for future energy consumption and potential equipment failures
- Simplified compliance and auditing processes

### Benchmarking Capabilities

- Performance comparison against historical data, other buildings, and industry standards
- Granular insights into energy usage and system performance
- Scenario analysis for strategic decision-making

### Visualization and User Engagement

- Interactive dashboards for easy visualization of real-time and historical data
- Improved communication and engagement with stakeholders through clear visual representations

## Reporting & Benchmarking

## Energy Audits and Master Planning

## Submetering

## Retrocommissioning

## Operations and Maintenance

Guidelines:

Effective tools for identifying, and prioritizing energy efficiency upgrades in buildings.



## Digital Twins

### Historical Data Analysis

- Utilize historical data to identify patterns and recurring issues
- Help in understanding long-term performance trends and degradation

### Detailed Analysis

- Comprehensive view of building operations and energy usage
- Identification of inefficiencies and areas for improvement

### Predictive Analytics

- Forecast future energy consumption patterns
- Anticipate potential equipment failures and maintenance needs

### Scenario Simulation

- Model different energy-saving measures
- Evaluate impact of various strategies on building performance

### Enhanced Reporting

- Automated generation of detailed energy audit reports
- Simplified compliance with regulatory requirements

## Reporting & Benchmarking

## Energy Audits and Master Planning

## Submetering

## Retrocommissioning

## Operations and Maintenance

### Guidelines:

Submetering provides energy usage data at a building level allowing facility managers and decision-makers to analyze designated buildings or areas on an individual basis; and allows for a more targeted analysis of energy identification of the best opportunities for energy savings



## Digital Twins

### Real-time Data Integration

- Collects and integrates data from all submeters across the building
- Provides a comprehensive and unified view of energy consumption

### Detailed Visualization

- Visualizes energy usage data in real-time through interactive dashboards
- Enables easy identification of high energy use areas and trends

### Enhanced Monitoring and Analysis

- Continuously monitors submeter data to detect anomalies and inefficiencies
- Supports detailed analysis of energy consumption patterns

### Predictive Analytics

- Uses historical and real-time data to forecast future energy usage
- Helps in identifying potential issues before they escalate

### Performance Benchmarking


- Compares submeter data against benchmarks and historical performance
- Identifies areas for improvement and tracks progress over time

### Optimization of Energy Efficiency

- Pinpoints specific areas where energy-saving measures can be implemented
- Provides insights for optimizing building operations and reducing energy costs

# Customer examples

Building Home / KPI Module



**BUILDING INFORMATION**

# Office Tower Toronto, ON

**No. of Floors** 32      **Year Built** 2022

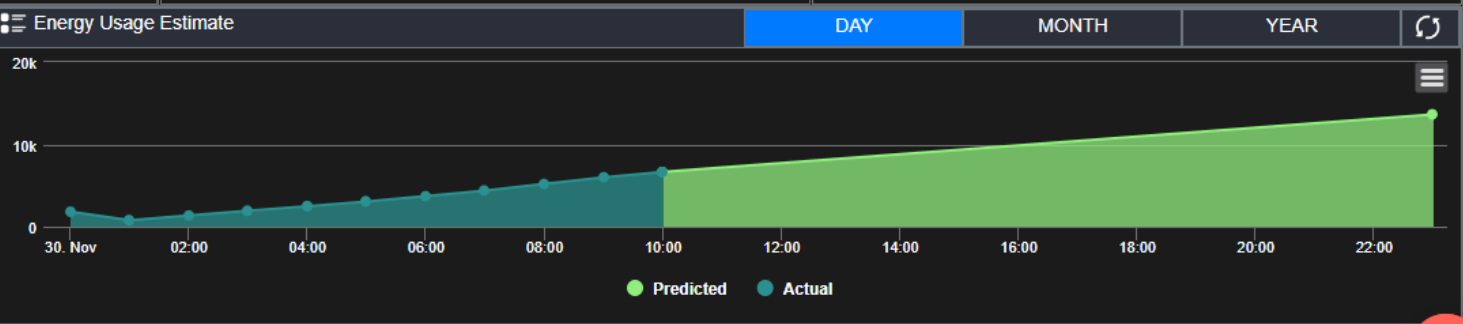
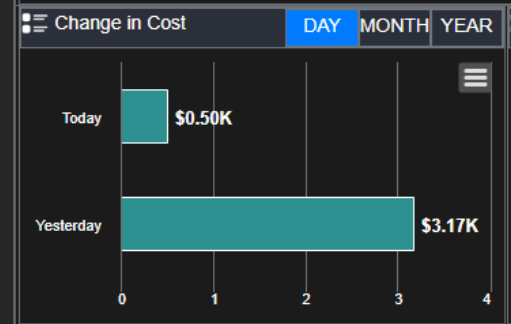
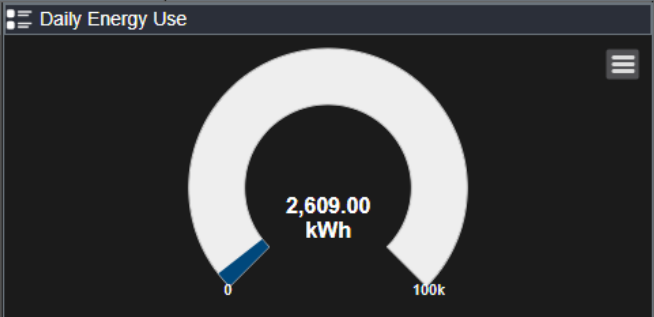
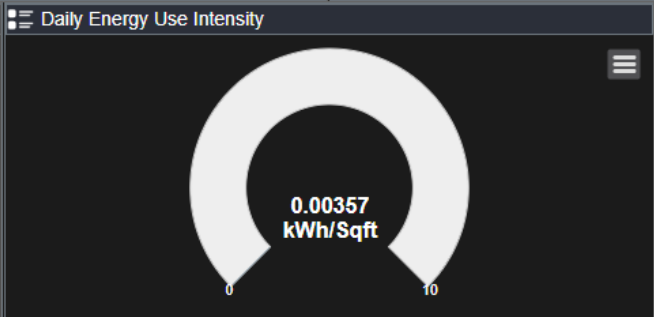
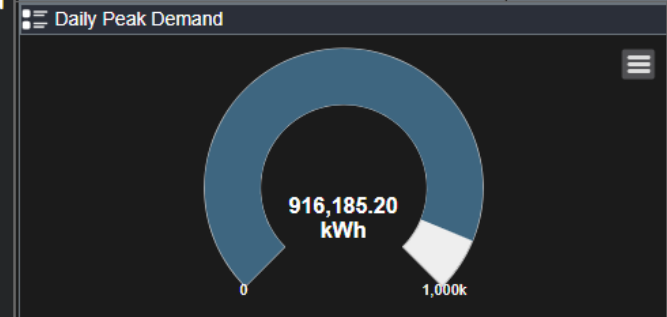
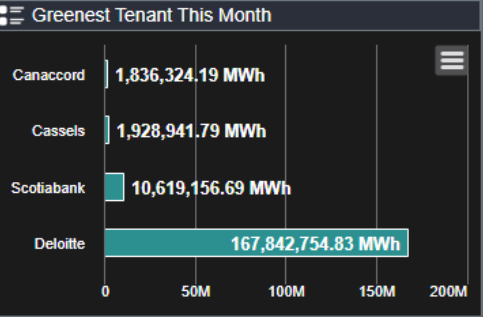
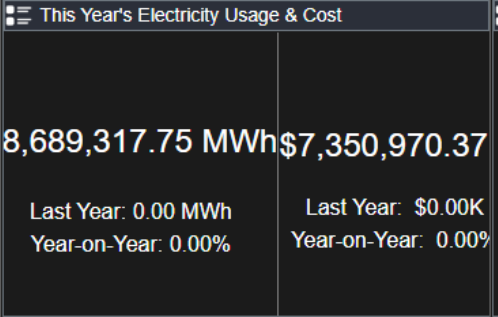
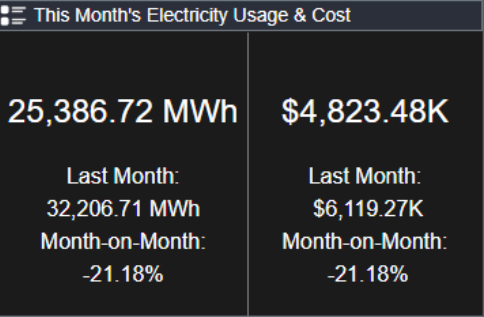
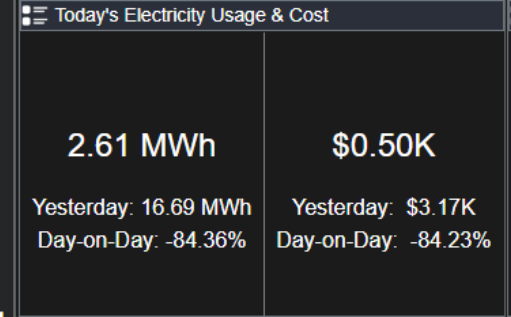
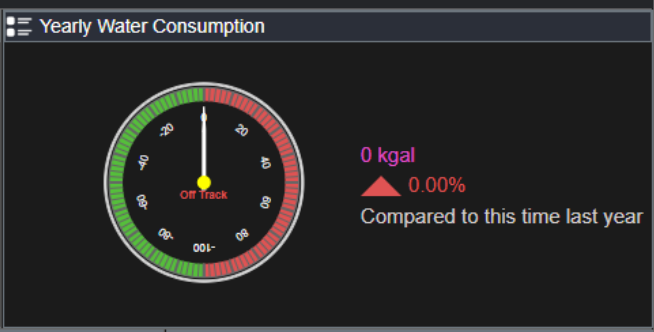
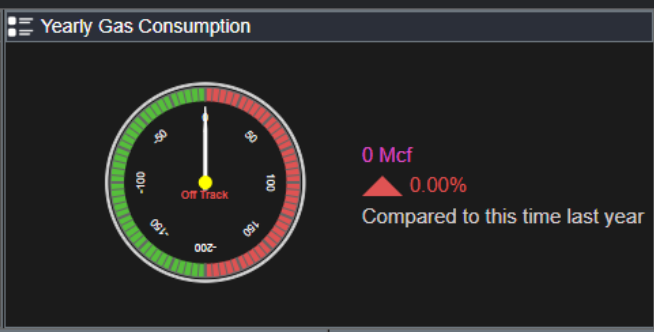
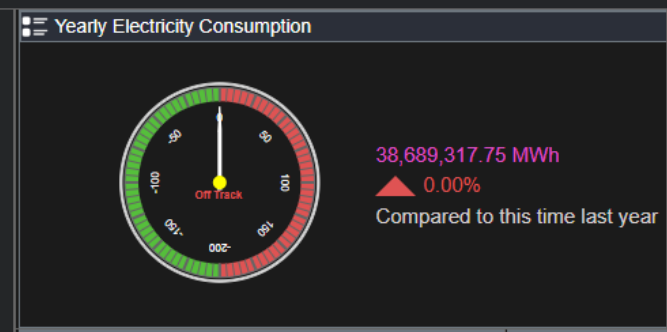
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**WEATHER FORECAST**

Downtown Toronto  
7°

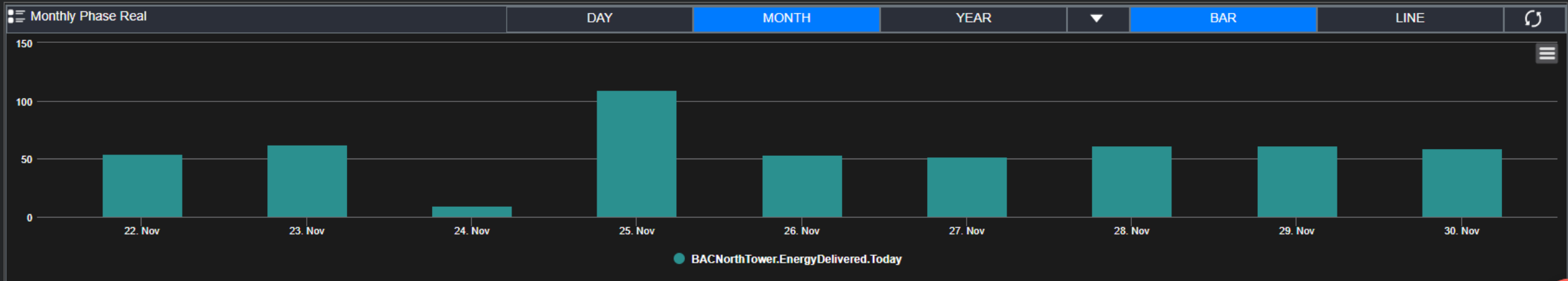
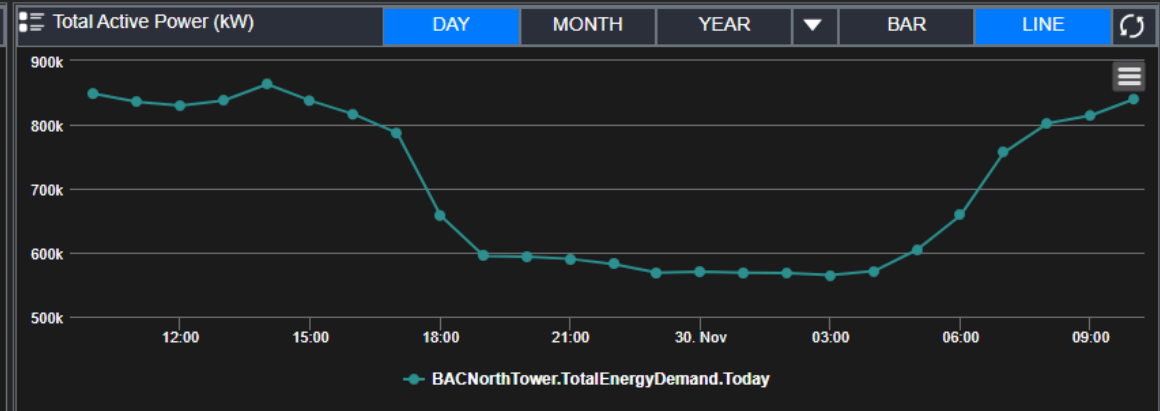
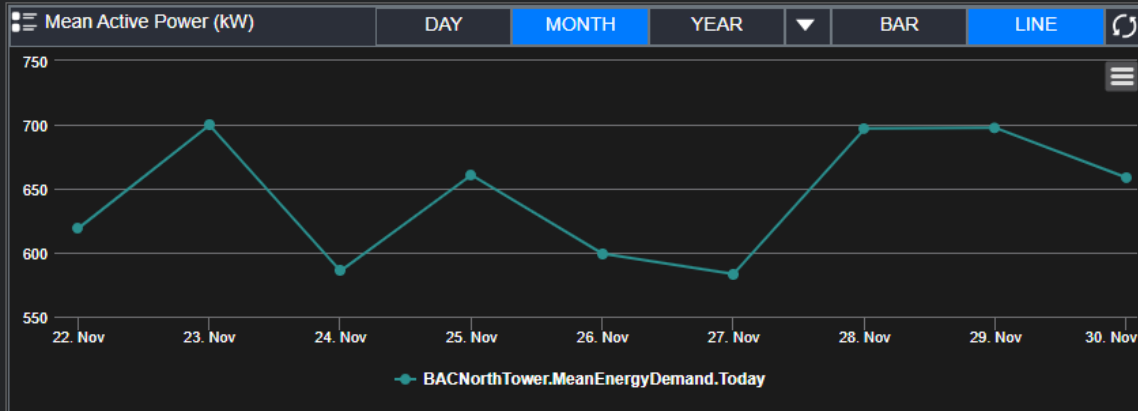
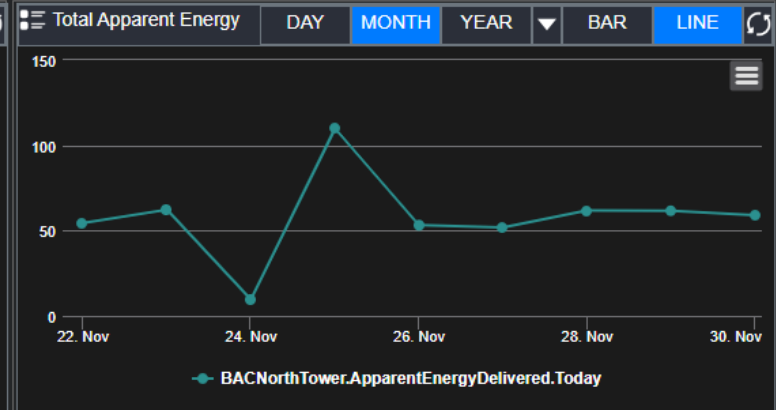
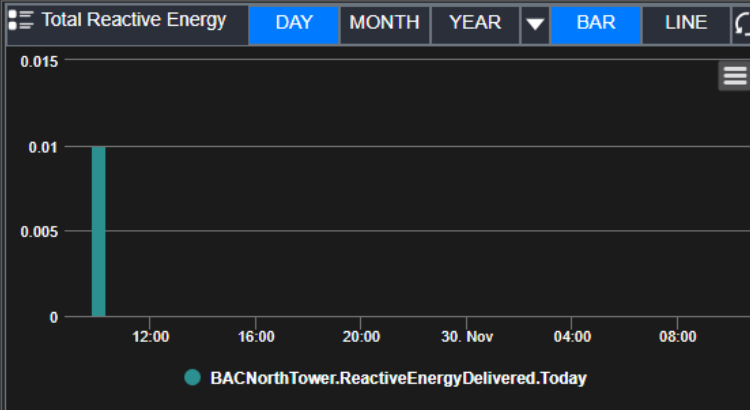
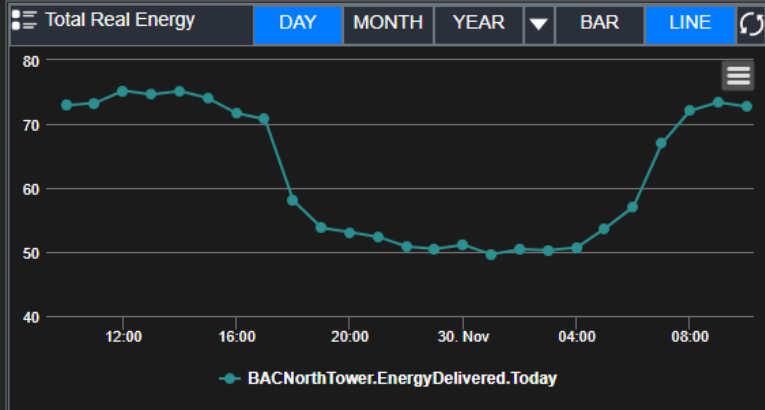
Rain

0°	2°	10°	-2°
Clouds	Clouds	Rain	Clouds
THU	FRI	SAT	SUN



Building

Tenant



Building

Tenant

Floor 14

Floor 12

Floor 11

Floor 10

Floor 09

Floor 08

Floor 07

Floor 06

Floor 05

Floor 04

Floor 03

Floor 02

Tenant: Canaccord

Floor 22

Floor 21

Floor 20

Tenant: Cassels

Floor 32

Floor 31

Floor 30

Floor 29

Floor 28

Tenant: Deloitte

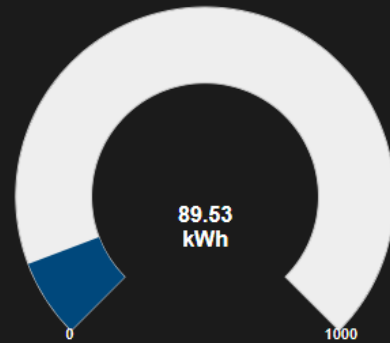
Floor 26

Floor 25

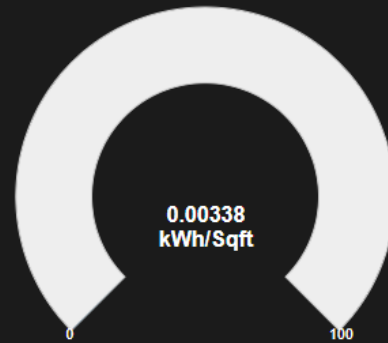
Floor 24

Floor 23

Energy Usage

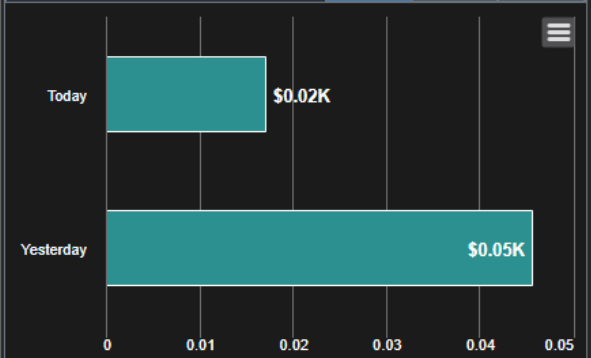


Energy Intensity



Change in Cost

DAY MONTH YEAR



Energy Usage

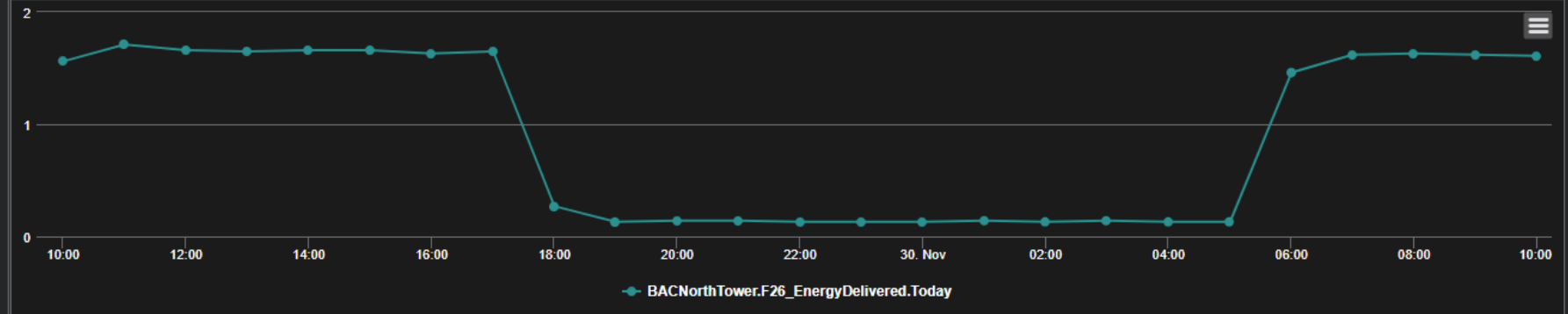
DAY

MONTH

YEAR

BAR

LINE



Today's Electricity Usage & Cost

0.09 MWh

\$0.02K

Yesterday: 0.24 MWh  
Day-on-Day: -62.50%

This Month's Electricity Usage & Cost

458,456.70 MWh

\$87,106.77K

Last Month: 0.00 MWh  
Month-on-Month: 0.00%

This Year's Electricity Usage & Cost

842,922,736.41 MWh \$350,155,319.92K

Last Year: 0.00 MWh  
Year-on-Year: 0.00%

# Building List

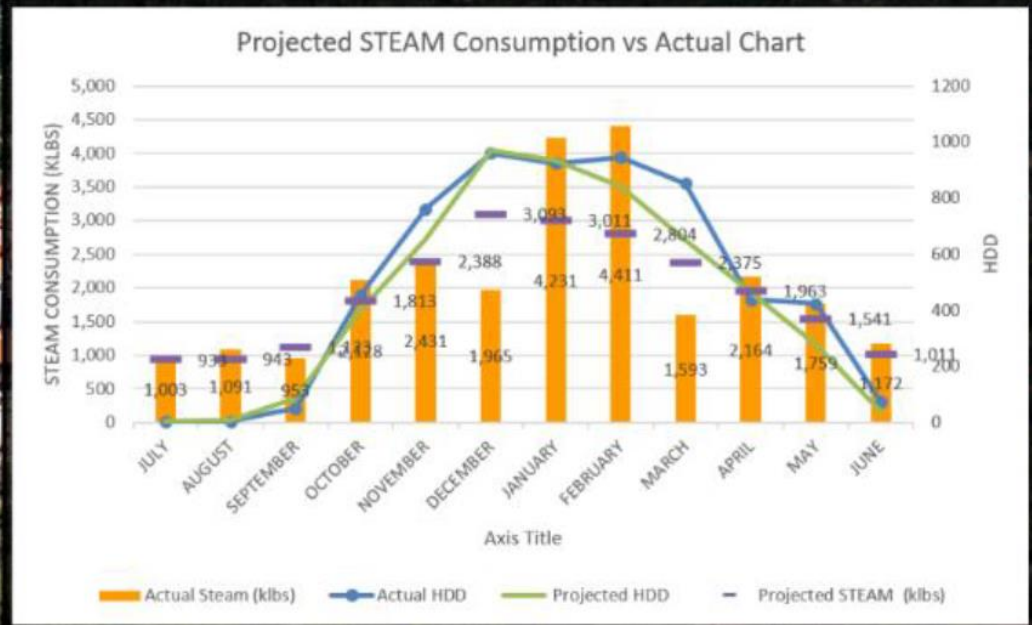
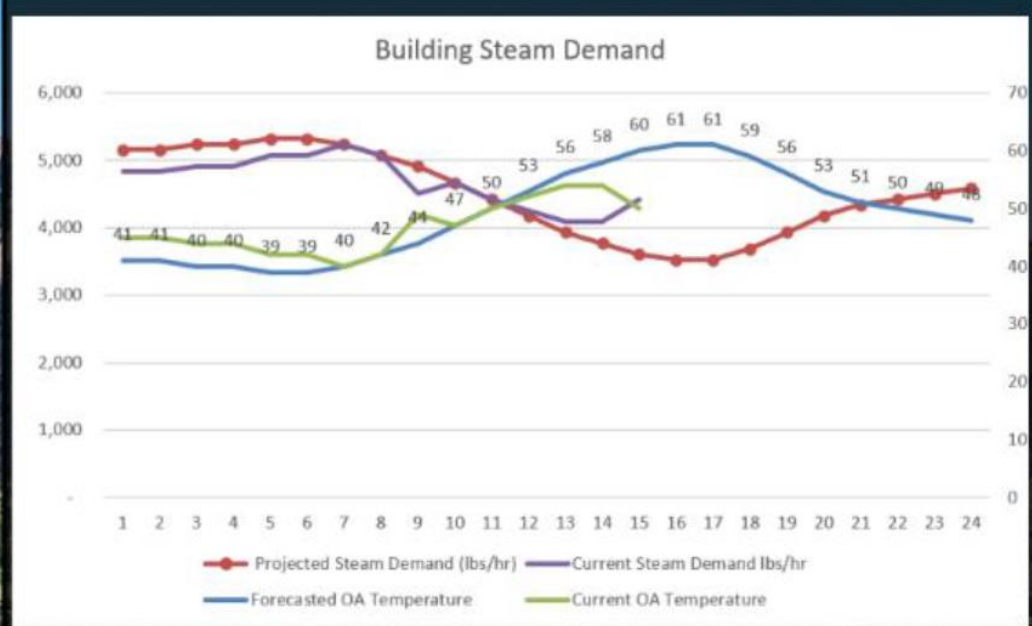
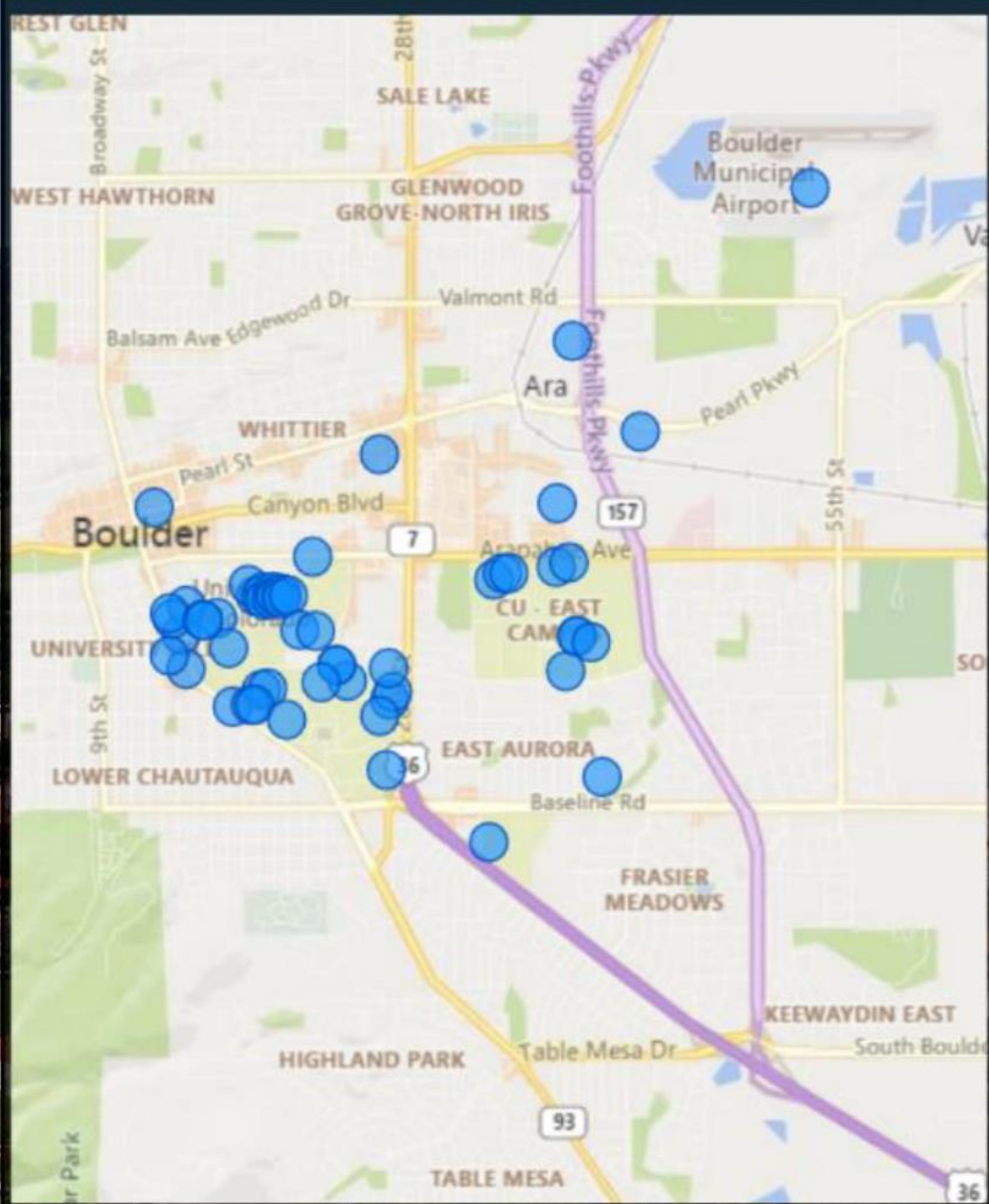


Use: All  Owner: All

Search...

Number • Building Name

- Select all
- 013 - INTERNATIONAL ENGLISH CENTER (IEC)
- 015 - THE ACADEMY (ACAD)
- 096 - 4845 PEARL EAST CIRCLE (PRL3)
- 131 - ATHENS NORTH COURT (ATHN)
- 133 - FAMILY HOUSING EXPANSION (133) (TB...)
- 134 - FAMILY HOUSING EXPANSION (134) (TB...)
- 136A - FACULTY-STAFF COURT 1 (FACT1)
- 136B - FACULTY-STAFF COURT 2 (FACT2)
- 136C - FACULTY-STAFF COURT 3 (FACT3)
- 136D - FACULTY-STAFF COURT 4 (FACT4)
- 136E - FACULTY-STAFF COURT 5 (FACT5)
- 136F - FACULTY-STAFF COURT 6 (FACT6)
- 136G - FACULTY-STAFF COURT 7 (FACT7)
- 136H - FACULTY-STAFF COURT 8 (FACT8)
- 136J - FACULTY-STAFF COURT 9 (FACT9)
- 140 - STEAM CONVERSION SHED (TB49)
- 141 - FAMILY HOUSING EXPANSION (141) (TB...)
- 143 - FAMILY HOUSING COMMUNITY CENTER...
- 144A1 - ATHENS COURT A1 (ATCTA1)
- 144A2 - ATHENS COURT A2 (ATCTA2)
- 144A3 - ATHENS COURT A3 (ATCTA3)
- 144A4 - ATHENS COURT A4 (ATCTA4)
- 144B1 - ATHENS COURT B1 (ATCTB1)
- 144B2 - ATHENS COURT B2 (ATCTB2)
- 144B3 - ATHENS COURT B3 (ATCTB3)
- 144C1 - ATHENS COURT C1 (ATCTC1)
- 144C2 - ATHENS COURT C2 (ATCTC2)
- 144M1 - ATHENS COURT MAIL 1 (ATCTM1)
- 144M2 - ATHENS COURT MAIL 2 (ATCTM2)
- 144S1 - ATHENS COURT STORAGE 1 (ATCTS1)
- 144S2 - ATHENS COURT STORAGE 2 (ATCTS2)
- 144S3 - ATHENS COURT STORAGE 3 (ATCTS3)





# Building List

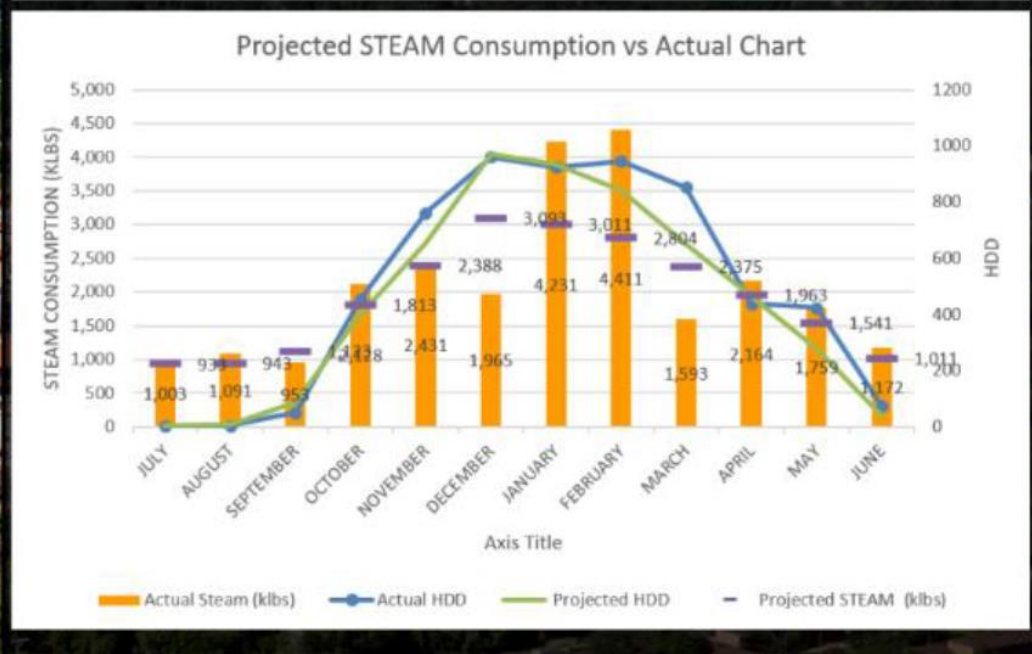
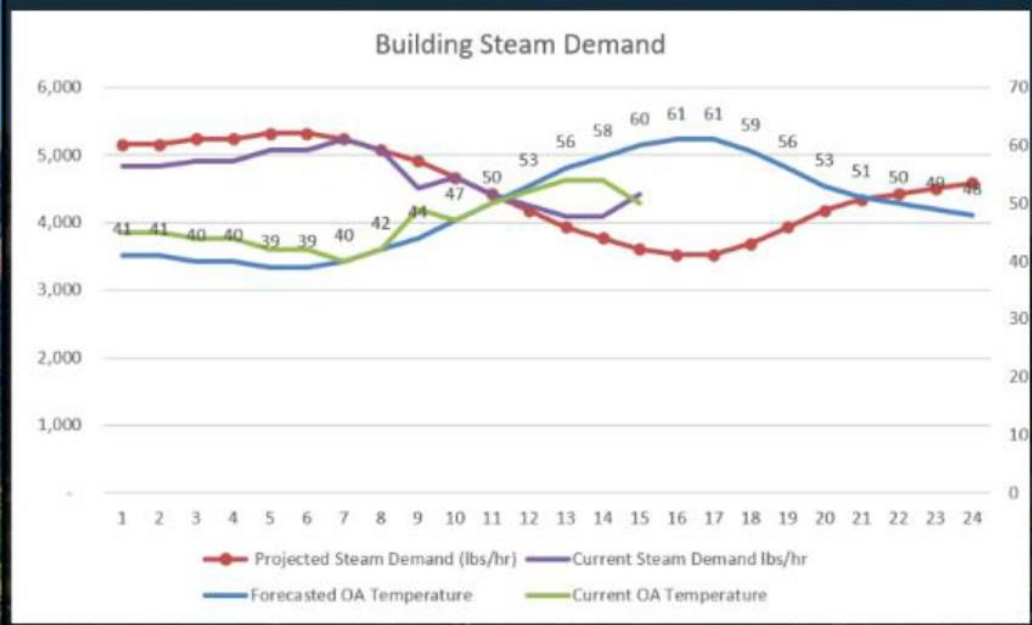
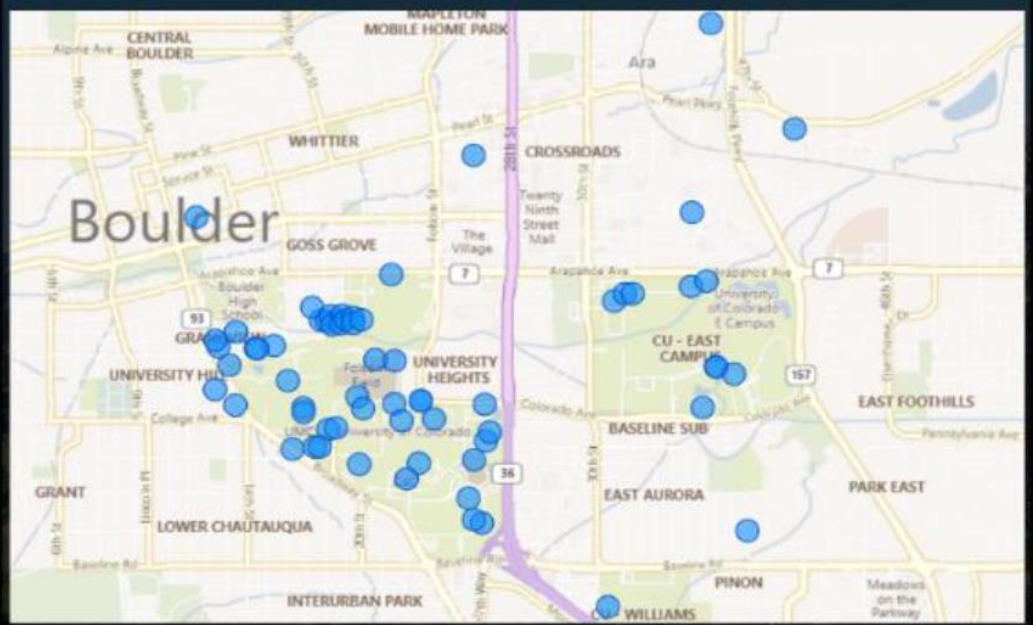


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- 144B3 - ATHENS COURT B3 (ATCTB3)
- 144C1 - ATHENS COURT C1 (ATCTC1)
- 144C2 - ATHENS COURT C2 (ATCTC2)
- 144M1 - ATHENS COURT MAIL 1 (ATCTM1)
- 144M2 - ATHENS COURT MAIL 2 (ATCTM2)
- 144S1 - ATHENS COURT STORAGE 1 (ATCTS1)
- 144S2 - ATHENS COURT STORAGE 2 (ATCTS2)
- 144S3 - ATHENS COURT STORAGE 3 (ATCTS3)



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  - 144S2 - ATHENS COURT STORAGE 2 (ATCTS2)
  - 144S3 - ATHENS COURT STORAGE 3 (ATCTS3)

## Energy Use Intensity Report - 2020

GSF	Building Type [USE]	KBTU	Actual EUI	Target EUI	GOAL	%GT GSFTYPE/GSFCampus	%GT EUITarget x Weight
2090617	Lab / Research	424,360,946.58	202.98 <span style="color: red;">↑</span>	187	-0.08	17.68%	38.92%
1281502	Light / Mixed Lab	183,272,256.39	143.01 <span style="color: red;">↑</span>	120	-0.16	10.84%	15.31%
3135373	Residential Higher-Ed Dorms	149,041,422.90	47.54 <span style="color: green;">↓</span>	55	0.16	26.51%	17.17%
1266940	College University Classroom	133,622,402.49	105.47 <span style="color: red;">↑</span>	65	-0.38	10.71%	8.20%
689132	Dining multi use	78,515,936.52	113.93 <span style="color: red;">↑</span>	72	-0.37	5.83%	4.94%
1057762	Mixed Use Office	67,002,117.55	63.34 <span style="color: red;">↑</span>	48	-0.24	8.94%	5.05%
476355	Public meeting	50,385,294.07	105.77 <span style="color: red;">↑</span>	30	-0.72	4.03%	1.42%
356907	Library	35,416,029.48	99.23 <span style="color: red;">↑</span>	64	-0.36	3.02%	2.27%
137061	Laboratory	32,664,229.86	238.32 <span style="color: red;">↑</span>	187	-0.22	1.16%	2.55%
320531	Recreation	23,446,618.68	73.15 <span style="color: red;">↑</span>	28	-0.62	2.71%	0.89%
138029	Admin / Professional Office	15,501,421.24	112.31 <span style="color: red;">↑</span>	42	-0.63	1.17%	0.58%
510832	Gymnasium	14,091,089.79	27.58 <span style="color: green;">↓</span>	28	0.02	4.32%	1.42%
132315	Multi-Purpose (recreation)	12,428,017.30	93.93 <span style="color: red;">↑</span>	28	-0.70	1.12%	0.37%
145398	Distribution Center	7,133,266.68	49.06 <span style="color: red;">↑</span>	30	-0.39	1.23%	0.43%
55965	Medical Office / clinic	7,100,000.36	126.87 <span style="color: red;">↑</span>	45	-0.65	0.47%	0.25%
31987	Police Station	2,993,033.76	93.57 <span style="color: red;">↑</span>	69	-0.26	0.27%	0.22%

11826706      1,236,974,083.65      104.59      85  
Total GSF      Total Actual KBTU      Campus EUI      ASHRAE wt. EUI Goal

Print
Share Report
Share CSV

## Building List

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- 136A - FACULTY-STAFF COURT 1 (FACT1)
- 136B - FACULTY-STAFF COURT 2 (FACT2)
- 136C - FACULTY-STAFF COURT 3 (FACT3)
- 136D - FACULTY-STAFF COURT 4 (FACT4)
- 136E - FACULTY-STAFF COURT 5 (FACT5)
- 136F - FACULTY-STAFF COURT 6 (FACT6)
- 136G - FACULTY-STAFF COURT 7 (FACT7)
- 136H - FACULTY-STAFF COURT 8 (FACT8)
- 136J - FACULTY-STAFF COURT 9 (FACT9)
- 140 - STEAM CONVERSION SHED (TB49)
- 141 - FAMILY HOUSING EXPANSION (141) (TB...
- 143 - FAMILY HOUSING COMMUNITY CENTER...
- 144A1 - ATHENS COURT A1 (ATCTA1)
- 144A2 - ATHENS COURT A2 (ATCTA2)
- 144A3 - ATHENS COURT A3 (ATCTA3)
- 144A4 - ATHENS COURT A4 (ATCTA4)
- 144B1 - ATHENS COURT B1 (ATCTB1)
- 144B2 - ATHENS COURT B2 (ATCTB2)
- 144B3 - ATHENS COURT B3 (ATCTB3)
- 144C1 - ATHENS COURT C1 (ATCTC1)
- 144C2 - ATHENS COURT C2 (ATCTC2)
- 144M1 - ATHENS COURT MAIL 1 (ATCTM1)
- 144M2 - ATHENS COURT MAIL 2 (ATCTM2)
- 144S1 - ATHENS COURT STORAGE 1 (ATCTS1)
- 144S2 - ATHENS COURT STORAGE 2 (ATCTS2)
- 144S3 - ATHENS COURT STORAGE 3 (ATCTS3)

## Meter Health Report

Steam Electricity Water Chilled Water

AMR ID	BLDG	BLDG NO.	IP Address	Fails (Last 24 Hrs)	Runtime
205-E01-ME-1	UMC	205	172.20.128.139	0	24:00:00
205-E02-SE-1	UMC	205	172.20.128.141	0	24:00:00
208-A01-MS-1	HEND	208	172.20.144.235	0	24:00:00
208-A01-MW-21	HEND	208	172.20.144.235	0	24:00:00
211-A01-MS-1	MCOL	211	172.20.144.215	1	24:00:00
211-A01-MW-21	MCOL	211	172.20.144.215	1	24:00:00
211-E01-ME-1	MCOL	211	172.20.144.214	0	24:00:00
221-A01-MS-1	HLMS	221	172.20.144.216	0	24:00:00
221-A01-MW-21	HLMS	221	172.20.144.216	1	24:00:00
221-E01-ME-1	HLMS	221	172.20.144.217	0	24:00:00
224-A01-MS-1	CHEM	224	172.20.144.210	1	24:00:00
224-A01-MW-21	CHEM	224	172.20.144.210	0	24:00:00
224-B01-MW-21	CHEM	224	172.20.144.208	1	24:00:00
224-C01-MS-1	CHEM	224	172.20.144.207	0	24:00:00
224-C01-MW-21	CHEM	224	172.20.144.207	0	24:00:00
224-E01-ME-1	CHEM	224	172.20.144.213	0	24:00:00

Print Share Report Share CSV

## Reporting & Benchmarking

## Energy Audits and Master Planning

## Submetering

## Retrocommissioning

## Operations and Maintenance

### Guidelines:

Systematic process that studies how and why a building's systems are operated and maintained as they are, and then identifies ways to improve system performance, reduce energy consumption, and improve occupant comfort.



## Digital Twins

### Data-driven Insights

### Historical Data Analysis

### Verification of Retrocommissioning Measures

- Monitor the impact of implemented retrocommissioning measures
- Validate that energy-saving measures are delivering expected results



## Fault Detection & Diagnostics

### Continuous Monitoring

- Real-time tracking of building systems performance
- Immediate identification of deviations **from optimal operation**

### Automated Fault Detection

- Pinpoint specific faults in HVAC, lighting, and other systems
- Identify issues that **might be missed during periodic checks**

### Efficient Issue Resolution

- Prioritize and address critical faults quickly
- Reduce downtime **and improve system reliability**

### Preventive Maintenance

- Forecast potential equipment failures before they occur
- Schedule **maintenance activities proactively to prevent faults**

### Optimization of Existing Systems

- Fine-tune operational parameters for enhanced performance
- Ensure systems **operate as designed and intended**

Reporting & Benchmarking

Energy Audits and Master Planning

Submetering

Retrocommissioning

**Operations and Maintenance**

Guidelines:

Guidelines for maintaining efficient building operations to achieve energy savings and sustain improvements including strategies such as:

- O&M Planning,
- continuous commissioning,
- preventative maintenance,
- predictive maintenance, and
- corrective maintenance.



## Fault Detection & Diagnostics

### Continuous Monitoring

- Real-time tracking of building systems performance
- Immediate identification of deviations **from optimal operation**

### Automated Fault Detection

- Pinpoint specific faults in HVAC, lighting, and other systems
- Identify issues that **might be missed during periodic checks**

### Data-driven Insights

- Detailed analytics on equipment performance and energy usage
- Provide actionable insights **for improving system efficiency**

### Efficient Issue Resolution

- Prioritize and address critical faults quickly
- Reduce downtime **and improve system reliability**

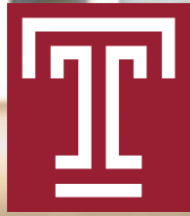
### Preventive Maintenance

- Forecast potential equipment failures before they occur
- Schedule **maintenance activities proactively to prevent faults**

### Optimization of Existing Systems

- Fine-tune operational parameters for enhanced performance
- Ensure systems **operate as designed and intended**

# Customer examples



# Temple University

Temple University Facilities and Operations needed to develop a smart-building strategy that would provide the foundation for optimizing operations across the university's 214 buildings, reducing costs and improving services for its schools, businesses, employees and students.

## Challenge

Develop a smart building strategy to reduce operational costs, optimize energy and resource consumption, and improve service levels

## Solution

Implemented TwinWorX® in a phase 1 deployment in 5 buildings, enabling single-pane visualization and control

## Outcomes

### Cost Avoidance:

- \$1 Million immediate savings: Legacy upgrade is no longer required
- \$25,000 first cost and \$3,000/year servers for lighting systems
- Opened Competition



# University of Pennsylvania

e-Magic has been Integrating and Maintaining U Penn Systems since 1993

## Solution

Built and currently maintain the Centralized Operations Command and Control Center run by 5 Operators 24 hrs per day / 7 days per week

## Outcomes

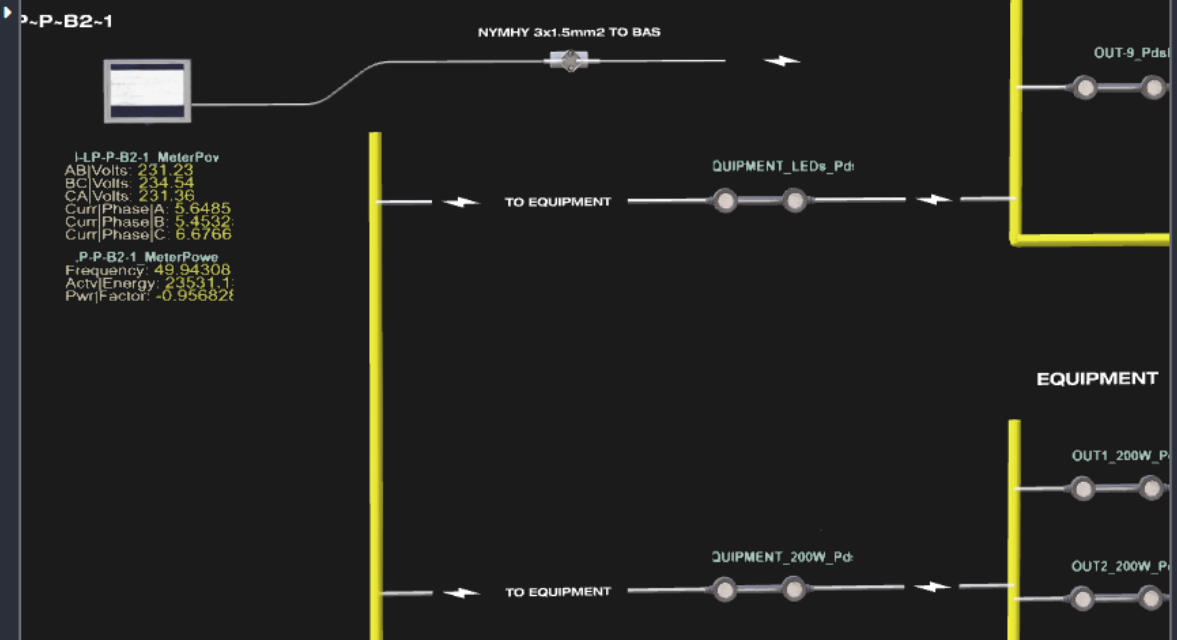
More than 300 Buildings and Other Facilities are centrally managed and controlled at the Operations Center



METERS

1\_PM LP-P B2.1 INC

3D-Model



1-PM LP-P B2.1 MeterPov  
 AB|Volts: 231.23  
 BC|Volts: 234.54  
 CA|Volts: 231.36  
 Curr|PhaseA: 5.6485  
 Curr|PhaseB: 5.4532  
 Curr|PhaseC: 6.6766

1-PM LP-P B2.1 MeterPowe  
 Frequency: 49.94308  
 Actv|Energy: 23531.1  
 Pwr|Factor: -0.95682

Trends

- 30 MIN
- 1 HR
- 2 HRS
- 8 HRS
- 24 HRS
- 1 WK
- 1 MN
- BAR
- LINE



Sunday, 28 Jul 2024  
 KHub\_Office\_Electrical\_Lighting\_Control\_Panel.LP\_P\_B2\_1\_INC\_PowerMeter.Active\_Energy: 23196.23KWh

AHU

Equipment name

AHU.O.1.TN-1



Basement

Office

Ground Floor

Roof

Floor 1

AHU.O.1.TN-1

AHU.O.1.TN-2

Floor 2

Floor 3

Amenities

VAV



CAV



EXH FAN



FCU



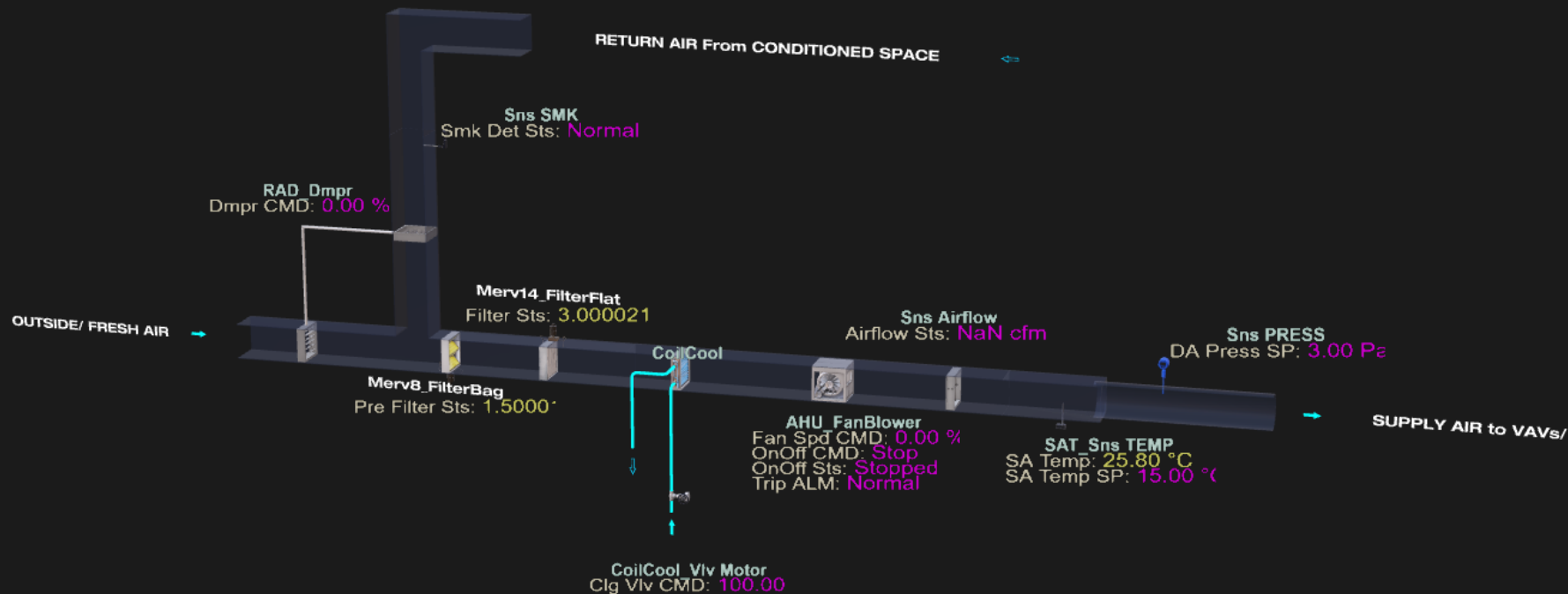
JET FAN



PRESS FAN



3D-Model





**Reporting & Benchmarking**

**Energy Audits and Master Planning**

**Submetering**

**Retrocommissioning**

**Operations and Maintenance**

Guidelines:

Guidelines for maintaining efficient building operations to achieve energy savings and sustain improvements including strategies such as preventative maintenance, predictive maintenance, and corrective maintenance.



## AI for Optimization

### Adaptive Control

- AI agent continuously learns optimal control strategies for building systems (HVAC, lighting, etc.)
- Adjusts system parameters in real-time to maintain comfort and efficiency

### Reinforcement Learning (RL)

- Learning Process: AI agent uses RL to learn from the environment by receiving feedback (rewards or penalties) based on actions taken
- Optimization: Learns the most energy-efficient settings and schedules through trial and error

### Real-time Decision Making

- AI agent makes instantaneous decisions to optimize performance
- Adapts to changes in occupancy, weather conditions, and energy prices

### Scenario Simulation

- Simulates various scenarios to predict outcomes of different control strategies
- Tests and validates new strategies in a virtual environment before implementation

# Example – Chiller Optimization

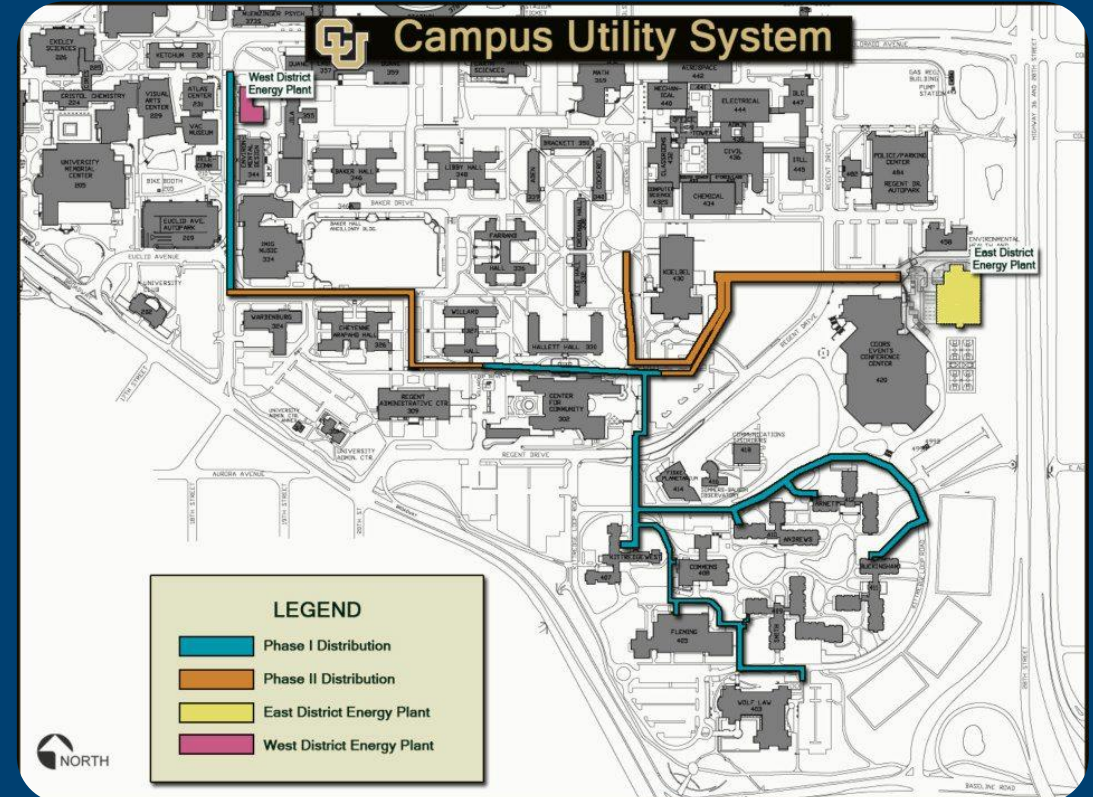
## Objectives

- Minimize Power
- Meet Temperature Set Point on Campus



# Example – Chiller Optimization

- Optimize the control of the Chillers at the University of Colorado (EDEP – East District Energy Plant) for specific objectives
- Every simulation step is 15 minutes, and we simulate all variable changes based in the given actions
- Decision: Agent will send actions to decide when is better to use CH1, CH2 or HX1



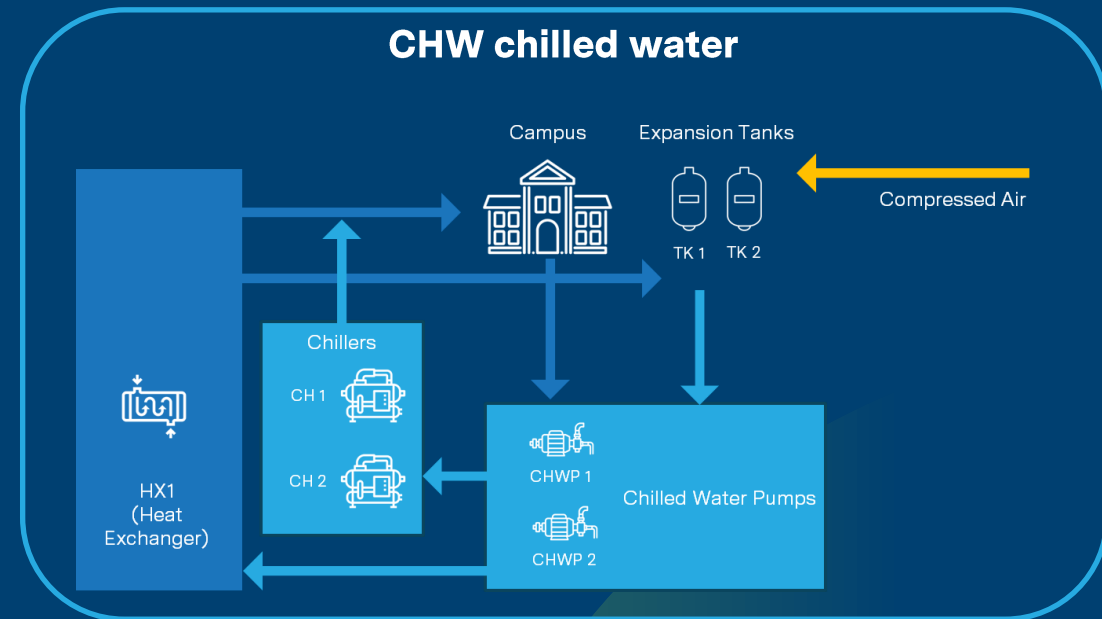
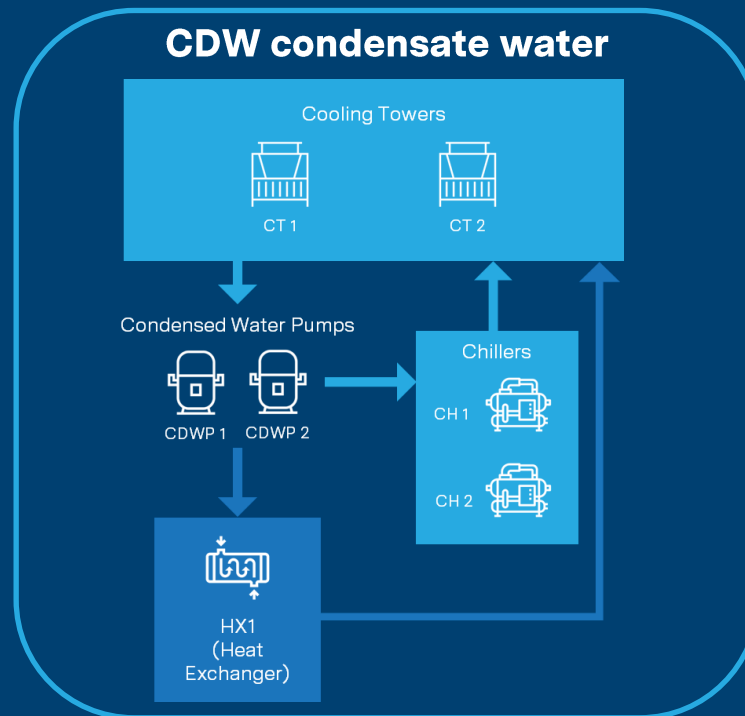
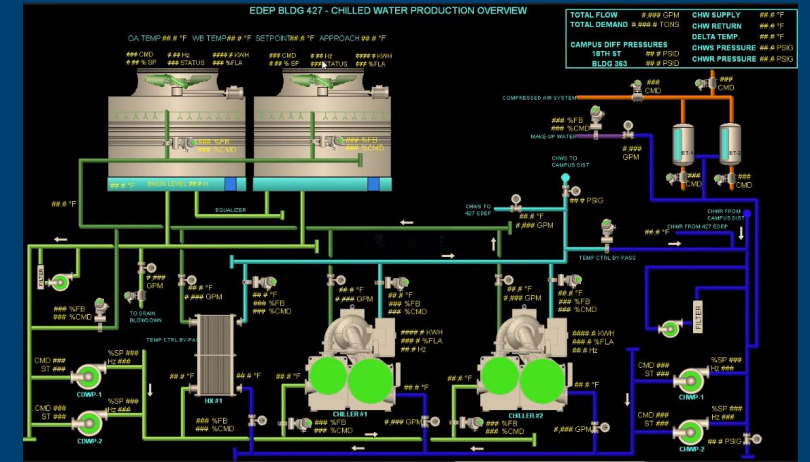
# Chiller Simulation

## State Variables

- CH1 – Flow and Temperature – CHW and CDW (R and S)
- CH2 – Flow and Temperature – CHW and CDW (R and S)
- HX1 – Flow and Temperature – CHW and CDW (R and S)
- Power
- Demand

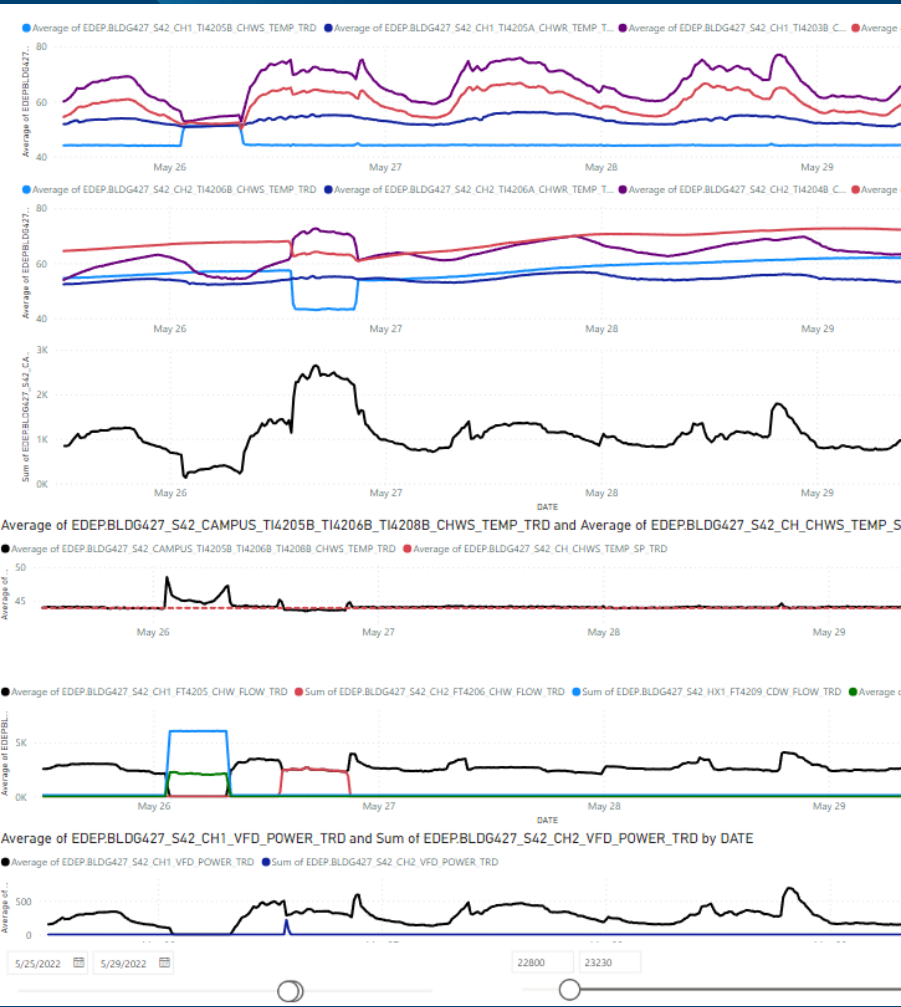
## Action Variables

- On/Off CH1
- On/Off CH2
- On/Off HX1
- CH1 FT4203 CDW Flow
- CH2 FT4204 CDW flow



# Agent Evaluation

## Source Data



CH 1 Temp

CH 1 Temp

CH 2 Temp

CH 2 Temp

Demand

Demand

CHWS Temp and setpoint

Avg Campus, CHWS Temp

On/Off cycles

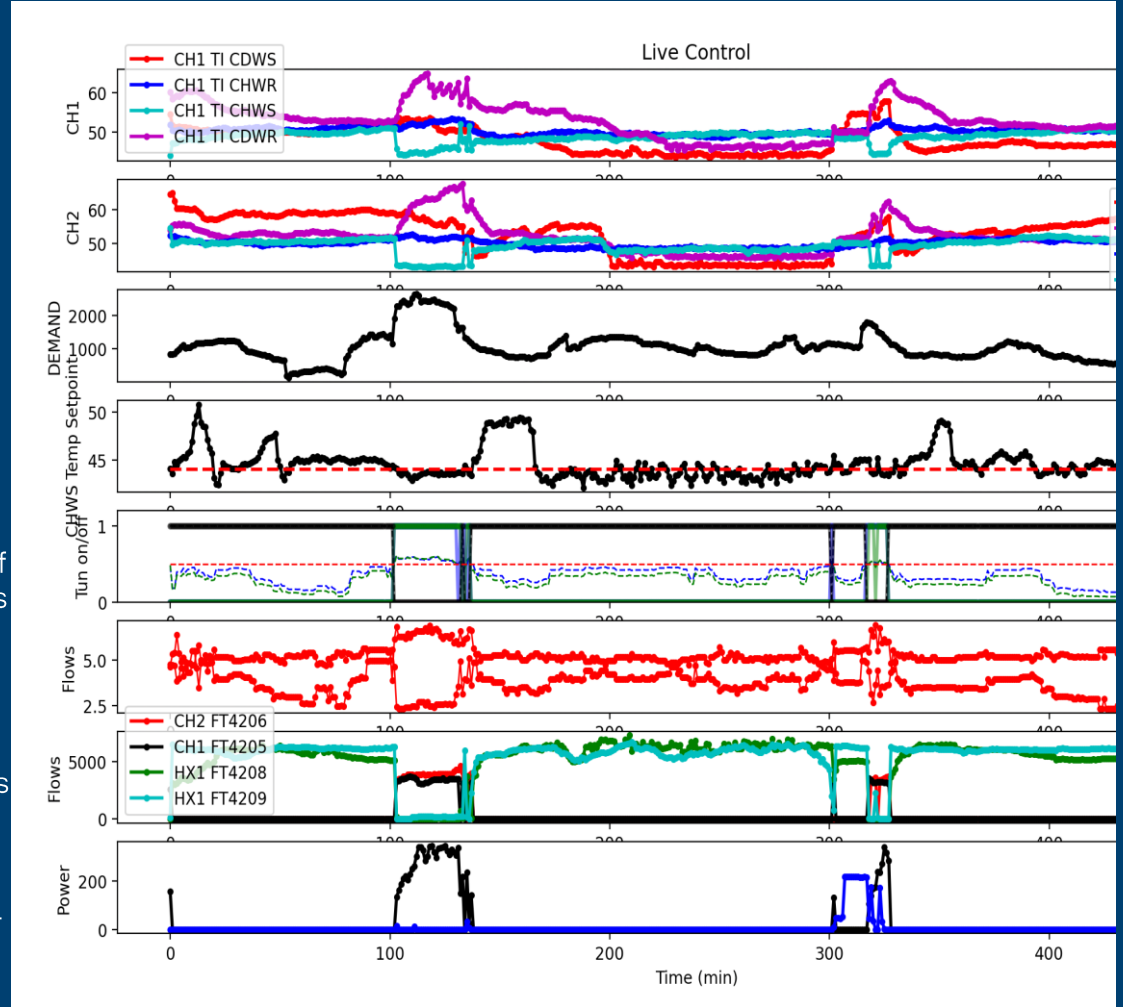
Avg Flow rates CH1, CH2

Flow rates

Power Consumption

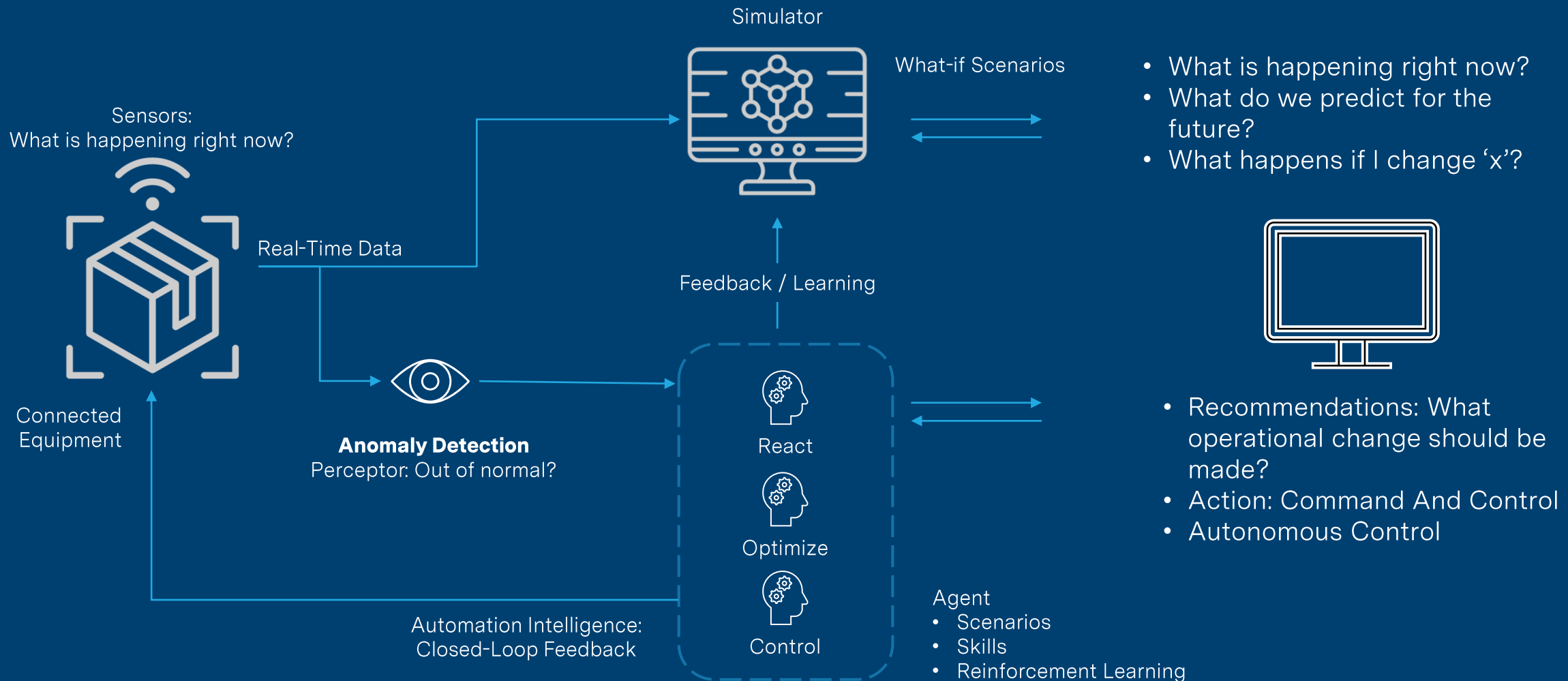
Power Consumption

## Autonomous Agent





# AI Optimization



# Technology enabling BuildSmart 2025



**Digital Twins**



**Fault Detection and Diagnostics**



**AI for Optimization**

**Reporting & Benchmarking**

**Energy Audits and Master Planning**

**Submetering**

**Retrocommissioning**

**Operations and Maintenance**

**Q&A**

# Start improving your operations with IoT and Azure Digital Twins

## LEARN MORE



[www.e-magic.ca](http://www.e-magic.ca)

## GET STARTED



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Search: TwinWorX



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