ACE IoT SOLUTIONS

OPEN-SOURCE DATA MANAGEMENT TOOLS HELP CEMs AND THEIR CLIENTS COMPLY WITH NEW BUILDING ENERGY PERFORMANCE STANDARDS

Background: Ordinances passed in Washington DC, Philadelphia, New York and more than a dozen other municipalities nationwide establish building energy performance thresholds.

• In New York City, buildings over 25,000 SF must comply with Local Law 97 starting in 2024.

• Washington DC's Building Energy Performance Standards (BEPS) require that buildings over 50,000 SF must comply with Local law before 2026.

• Colorado's Energy Performance for Buildings Statute establishes emission reduction targets for commercial, multifamily, and public buildings 50,000+ SF starting in 2026.

While the regulations vary by jurisdiction, most set a schedule by which private, public, and non-profit owners of buildings of a specified size must:

1) benchmark the energy performance of their buildings and

2) implement Energy Conservation Measures (ECMs) in any building that registers under the required performance threshold or face fines.

Compliance with Building Energy Performance Standards Creates a Data-Centric Challenge for Building-Owners:
To comply with building energy performance standards, building-owners and their vendors will:

1 **Collect Data** to inform a baseline

2 **Analyze Data** to identify opportunities and interventions to reduce a building's energy usage

3 **Assess Data** to measure and verify the effectiveness of ECMs

4 **Trend and Visualize Data** to chart progress toward compliance

RELIANCE ON EXISTING EQUIPMENT TO MEET THESE DATA-CENTRIC REQUIREMENTS WILL BE A SOURCE OF FRUSTRATION

The infrastructure deployed in most buildings is not designed to support compliance with new building performance energy performance standards.

Persistent data acquisition, trending and storage will tax existing BAS/HVAC Infrastructure:
Building owners and their vendors who seek to use existing Building Automation Systems (BAS) to measure and verify the impact of ECMs will find that HVAC and metering infrastructure is not well-suited to support real-time data acquisition, trending and storage.

Using BAS/HVAC Infrastructure for data management is sub-optimal.
Data exports from BAS infrastructure is often in unusual and/or proprietary formats. Remote access to the BAS infrastructure is often limited—granted by an IT Department. Relying on BAS infrastructure to support data management and reporting will be unnecessarily burdensome and frustrating.

Implementing effective Energy Conservation Methods (ECMs) across the multiple systems present in a building requires integrations:
In most jurisdictions, building performance thresholds become more stringent over time. Building owners should expect to implement ECMs across multiple systems (e.g., HVAC, lighting, elevators) over time. Effective ECMs will access data from disparate systems and from previously deployed ECMs. Existing infrastructure is not well suited to support such integrations.

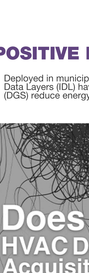
To meet these challenges, building-owners should establish an Independent Data Layer (IDL) in their buildings. With an IDL in place, building owners and their vendors save time and money, avoid technical headaches, and deploy more effective ECMs.

ACE IoT's Independent Data Layer. Leveraging an open-source technology (VOLTTRON) developed at Pacific Northwest National Lab, ACE IoT's gateways and tools enable building owners and their vendors to establish a robust, secure and cost-effective data platform that is de-coupled from a building's BAS.

For a standard deployment, ACE IoT can establish an IDL in a building for $1,000. Ongoing support for an IDL is $100 per month.

How an ACE IoT IDL works

A so-called overlay system, the independent data layer is designed to acquire data from connected systems throughout a building (e.g., the BAS, energy meters and submeters, other IoT systems) and trend the collected data to the cloud in near real-time. Once in the cloud, building owners and their vendors can easily assess the data, use the data to develop effective ECMs and measure the performance of the ECMs.



An Independent Data Layer has tangible value for building owners working to comply with Building Energy Performance Standards:

Real-time monitoring of a building's performance.
An IDL will enable building owners to monitor more easily the performance of their buildingsand and chart progress toward satisfying the energy performance threshold.

Measurement and verification of ECMs.
An IDL will allow the building owner and their vendor(s) to readily test and evaluate the effect of ECMs on the overall performance of the building(s).

Reporting.
An IDL will reduce the number of separate systems and disparate data sources that building owners and their vendors must access to report on a given building's energy performance.

Support for advanced building optimization applications.
If a building owner has interest in deploying Automated Fault Diagnosis and Detection (AFDD) software or explore use cases supported by Automated System Optimization including optimized start/stop, DER integration and Advanced Demand Management, an IDL will provide the required data. ***With an effective IDL, building owners can avoid restarting from scratch costly integration and burdensome data acquisition with every new initiative.***

POSITIVE IMPACT OF AN IDL:

Deployed in municipal buildings in Washington DC, Independent Data Layers (IDL) have helped the Department of General Services (DGS) reduce energy usage and carbon emissions.

• DGS used the data made available as the result of an IDL to design and implement innovative approaches that saved Washington DC an estimated $1.5 million per year in energy savings in 2019 + 2020.

• Initiatives enabled or supported by the data collected via an IDL reduced by 70,000 tons carbon dioxide during a period covering 2019 + 2020.

INDEPENDENT DATA LAYERS ARE AN IMPORTANT TOOL FOR CEMs HELPING BUILDING OWNERS COMPLY WITH BUILDING ENERGY PERFORMANCE STANDARDS

CEM®

Easy access to the data you need.
The presence of an IDL will help ensure that you and your team have access to the real-time data needed in order to analyze a building performance and advise your clients about the right Energy Conservation Measures that are right for their building(s).

No more wasted time with VPNs, Firewalls, and unusual export formats.
Expired passwords and cumbersome calls with your client's IT departments can be a thing of the past. An IDL will help ensure that you and your team are spending your time analyzing data—instead of wasting time trying to get the data and format the data so that your team's true work can begin.

Benchmarks and reporting.
Real-time data is easily filtered and queried. Option for perpetual storage puts to rest fears that data will be overwritten. Export data into your preferred format(s). Establish a dashboard that calculate in real-time the values of Key Performance Indicators. Reports can be issued easily using real-time data at a time of your choosing.

Evaluation of advanced building optimization applications.
An IDL provides the power to access data from different types of equipment (e.g., HVAC, Metering, IoT, Lighting etc) in a single system. The ability to access these different data streams facilitates a wholistic evaluation of cross-cutting building performance optimization efforts including implementation of ECMs, enabling of advanced demand management and the integration of Distributed Energy Resources (DERs).

About ACE IoT Solutions:

ACE IoT offers software tools and ongoing technical support that building owners and their vendors can use to establish and maintain a secure, independent data layer in their buildings. ACE IoT has complied with IT cybersecurity reviews and deployed our gateways in hospitals, corporate campuses, municipal buildings, university campuses, electric and water utility sites, and an array of commercial buildings.

Please visit www.aceiotsolutions.com for more information.

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