



# CARBON LIGHTHOUSE

## FIGHTS CLIMATE CHANGE WITH IMPROVED DATA SOLUTIONS

### About Carbon Lighthouse

Established in 2010 and headquartered in San Francisco, Carbon Lighthouse is committed to stopping climate change by reducing carbon emissions produced by the built environment. To achieve this, the company takes an “Energy Efficiency-as-a-Service” philosophy to bridge the gap between profitability and sustainability. Working with commercial building owners and managers, Carbon Lighthouse delivers 10-30 percent whole-building energy reductions without the need for capital expenses and guarantees the actual dollar value of those savings to be \$0.40 to \$0.60 per square foot, boosting net operating income. To date, Carbon Lighthouse has saved more than 177,000 metric tons of carbon emissions. That’s the equivalent of nearly 433 million miles driven by a typical gasoline-fueled passenger vehicle.\*

## INCREASE SAFETY

of Carbon Lighthouse Engineers by reducing time on-site and exposure to HVAC equipment and electrical disconnects.

## ROBUST

continuous data solution that supports Carbon Lighthouse 10 year Energy Service Contract.

## MORE ENERGY SAVINGS

exposes all of the BACnet IP points of a building to identify and quantify more energy saving opportunities.

## The Challenge

High-quality data acquisition and sophisticated analytics are at the heart of the Carbon Lighthouse business model. Typically, the company analyzes data from existing building management systems (BMS) and equipment along with information pulled from hundreds of sensors installed throughout a building for an even deeper set of data. However, collecting this data represents a significant investment in terms of both time and capital, and can potentially expose field engineers to risks on site. In the search for greater efficiencies, the company was keen to streamline the collection of data from existing BMS that is embedded in most large commercial buildings. In doing so, they could eliminate the time spent on extracting the BMS data and spend more time on deploying and maintaining the sensors that BMS systems may not be capturing.

The real challenge for Carbon Lighthouse was to identify a solution that could interface successfully with the wide range of protocols commonly employed by the BMS, and transfer the high volume of detailed information generated, in real-time, to Carbon Lighthouse's proprietary, patented, cloud-based software platform, CLUES. Any new approach would need to be more economical and efficient.

## Our Solution

To meet these criteria, Carbon Lighthouse turned to Toggled iQ®. Toggled iQ provides a straightforward gateway to building networks that enables rapid data acquisition and secure transfer from edge to cloud. Most importantly, it works with a range of common protocols such as BACnet and Modbus. Furthermore, connection is invariably a simple process, with no requirement for specialist programming or engineering skills.

Carbon Lighthouse initially trialed the system in its own office. Following some fine-tuning by the Toggled iQ team, Carbon Lighthouse was quickly satisfied it could provide a flexible, secure and easy way to implement a link with its own CLUES platform. Significantly, Carbon Lighthouse recognized it could use Toggled iQ tools to automatically 'normalize' and standardize the local data drawn from numerous different BMS. This ensured that all incoming data streams were consistent with the terminology used by CLUES, without any need for Carbon Lighthouse to make changes to its own system.

Training of Carbon Lighthouse staff was also provided by Toggled iQ, and deployment of the platform to client buildings began in spring 2019.

## Results

As of the fall of 2019, and with ongoing support from Toggled iQ, the solution has been deployed in 50 buildings consisting of both new and existing Carbon Lighthouse projects. That means Toggled iQ's solution is already providing CLUES with the information it needs to help identify sources of wasted energy, model numerous potential solutions, and implement the most effective measures available.

Crucially, Carbon Lighthouse now enjoys a robust, continuous data link that supports the company's ten-year Energy Service Contracts. What's more, by exposing all of the BACnet IP points in a building, Toggled iQ enables Carbon Lighthouse to identify and quantify more energy saving opportunities than was possible previously. In addition, by reducing the time that engineers need to spend on-site and minimizing their exposure to HVAC equipment and electrical disconnects, safety standards are enhanced significantly.

Because Carbon Lighthouse's business model is based on guaranteeing savings for building owners, the performance models it creates with CLUES need to be extremely accurate. That, in turn, is dependent on the acquisition of very specific, granular data; not just as a one-off, but over the entire lifetime of the partnership between Carbon Lighthouse and each client. With Toggled iQ, Carbon Lighthouse is able to leverage the rich information routinely generated by BMS quickly and easily. Going forward, that means deploying fewer sensors and lowering lifetime data costs. Consequently, the proposition for building owners becomes even more compelling, and further drives Carbon Lighthouse's vision: to stop climate change.

\*October 2019



TOP: Toggled iQ Gateway.  
MIDDLE: Data streaming tracker.  
BOTTOM: Data streaming.