Pilot Program Description: Building EMIS

Introduction
Over time building systems do not operate as efficiently as they once did, using more energy than they should in order to satisfy occupant comfort and lighting requirements. Duke Energy’s Building Energy Management and Information Services (Building EMIS) program is a systematic approach to reducing energy usage at qualified commercial or institutional facilities and persistently maintaining those savings over time. In order to achieve these goals, Duke Energy will deploy energy software, perform an on-site energy assessment, and periodically monitor and assess the building’s performance. As a participant, you commit to implementing a bundle of low cost operational and maintenance-based energy efficiency measures (EEMs) that meet certain financial investment criteria.

Benefits of the Building EMIS program
Participating in the program will help you:
- Save money and use less energy
- Improve your understanding of how the building uses energy and determine whether the energy use is appropriate for the building
- Take advantage of low-cost operational measures with short payback periods
- Achieve a reduction in the building’s annual energy consumption. The program goal is to achieve an average of 6% reduction in electric energy consumption across the portfolio of all buildings in the program. Your building may achieve a savings level that is higher or lower than this average
- Quantify energy savings associated with this and other energy reduction projects
- Ensure the persistence of the energy savings when undertaking operational improvements
- Set and track progress towards performance targets for energy use
- Improve internal energy reporting systems

How the Building EMIS program works
The focus of the Building EMIS program is on operational and maintenance-based energy efficiency measures (EEMs). These are typically low-cost measures that are often found in the building automation system (BAS) controls, as well as the heating, ventilation and air conditioning (HVAC) systems. Some common measures that Duke Energy expects to be addressed under the Building EMIS program include the following:
- Reduce equipment runtime
- Optimize zone/setback temperature set points
- Optimize supply air temperature
- Equipment sequencing
- Eliminate unnecessary lighting hours
- Optimize building or room occupancy schedules
- Optimize ventilation rates
- Optimize economizer operation
- Eliminate simultaneous heating and cooling
- Add/optimize chilled water temperature reset
This program includes several components:

- Duke Energy creates a baseline energy model for the building in the Energy Management and Information System software
- Duke Energy performs an on-site building energy assessment focused primarily on the building automation system/controls, HVAC system and lighting control system (if one exists)
- You install a bundle of operational and maintenance-based energy efficiency measures (EEMs) identified by the Building EMIS software and/or the energy analyst that has a combined simple payback (SPB) of two years or fewer (please note that some of the individual EEMs in the bundle may have a simple payback greater than two years)
- You and Duke Energy both log into the portal on a regular basis to perform energy monitoring to identify energy anomalies and ensure the persistence of savings
- You respond to energy anomalies on an ongoing basis

During the energy assessment phase, Duke Energy will provide the following:

- Telephone or email survey – collect information about major energy consuming and controlling equipment and systems including the HVAC system, lighting/lighting control system and building automation system (BAS);
- Remote analysis – use the EMIS software for idea generation to feed the onsite assessment; formulate initial hypotheses on energy saving opportunities; you may choose to provide the energy analyst with guest access to BAS to drill down into the controls system;
- Onsite assessment – confirm information that was collected; confirm or revise hypotheses; implement “find and fix” measures;
- Assessment Report/Action Plan – recommend the measures for you to pursue; guide you through the implementation process and transition to actively using the EMIS; set up alerts in the software.

The Building EMIS offer will be considered software-as-a-service (SaaS) and will offer a wide range of capabilities to drive down energy costs and improve energy efficiency. The software will allow you to capture, track, analyze interval data, and report the results in multiple views. The goal is to empower you with accurate information to enable higher building efficiencies and lower energy and maintenance costs by using data analytics to identify periods of poor energy performance in the building.

Duke Energy will provide 50 percent of upfront funding for each of the following items: initial set up of the Building EMIS software; annual EMIS software-as-a-service (SaaS) license fees for up to four years; on-site building energy assessment; written assessment report/action plan quantifying the recommended measures; and quarterly monitoring and analysis. You will be responsible for the balance of the above costs plus pay for the measures identified in the energy assessment having a bundled simple payback (SPB) of 2 years or less. A maximum of $0.10 per square foot is the Customer’s ceiling to install those measures.
The process for the Building EMIS program is as follows:

Who is eligible for the program?
In order to qualify for the Building EMIS pilot program, buildings must meet the following requirements:

1. The building space must fall into one of the following categories:
   - Office space (private, commercial real estate, government, institutional, manufacturing)
   - Universities (individually metered administrative and classroom buildings)
   - Small hospitals (between 850,000 and 7,000,000 kWh/year) and medical office buildings
   - Large retail (big box or anchor stores)
   - K-12 Schools

2. Annual electric energy usage greater than 850,000 kWh for the building

3. The building must be individually metered with one or more Duke Energy billing meters that record interval data (e.g., 15 minute intervals)

4. The Customer is not opted-out of the Energy Efficiency rider (only applies in NC, OH and SC)

5. Existing building automation system (BAS) in good working order, but no Building EMIS yet

6. Equipment and systems not at the end of life

7. Have no imminent plans for major retrofits

8. Some system design information available for review
Duke Energy's roles and responsibilities
Duke Energy's roles and responsibilities for the Building EMIS pilot program include:
1. Entering into contracts directly with the EMIS software vendors and energy analysts;
2. Providing upfront payment of each of the following items:
   o Deployment of the EMIS software-as-a-service (SaaS);
   o Onsite building energy assessment;
   o Written Assessment Report/Action Plan quantifying the recommended measures;
   o Quarterly check-ins, coaching and analysis;
   o Annual EMIS software license fees for the term of the Customer agreement;
3. Billing the Customer for the Customer's 50% portion of the costs listed above.

The Customer's roles and responsibilities
In exchange for Duke Energy's incentive of 50 percent of the costs of the major components (Building EMIS deployment, energy assessment, assessment report/action plan, annual Building EMIS license fees, quarterly monitoring), the Customer's responsibilities for the Building EMIS pilot program include the following:
1. Providing building information that will be used to inform the screening process and construct the building energy model in the software:
   o Building size in square feet of heated/cooled space;
   o General description of the building heating, ventilation and air conditioning (HVAC) systems and building automation system (BAS);
   o Occupancy schedules for major areas of the building;
   o Equipment operating schedules for HVAC and lighting;
   o Zone temperature set points for heating and cooling modes;
   o Fossil fuel usage and costs (12-24 months);
2. Designating a Customer energy manager; this person can be an energy manager, facility manager, facility engineer or other influential internal stakeholder
3. Granting full building access as well as access to meter data to the Building EMIS team for analysis and monitoring purposes
4. If practical, granting BAS access to the Building EMIS team to perform analysis
5. If practical, providing access to relevant building design documentation
6. Paying 50 percent of the cost of EMIS software-as-a-service and license fees, onsite assessment, Assessment Report/Action Plan and the analyst services
7. Participating in the energy assessment to identify improvement opportunities
8. Agreeing to implement a negotiated bundle of operational or maintenance related energy efficiency measures (EEMs) with a simple payback of two years or fewer within two months of receiving the Assessment Report/Action Plan
9. Spending up to $0.10 per square foot to implement EEMs. The Customer can opt to spend more than this amount if the investment is attractive
10. Responsible for all aspects of implementing the bundle of measures as part of the implementation phase which includes, but is not limited to, getting bids, negotiating scope of work, paying for materials and labor and approving the completed product. Work can also be self-performed by the Customer
11. Responding to significant energy anomalies identified by either the EMIS software or the energy analyst
12. Notifying Duke Energy if any changes are made which will materially affect the energy profile of the building. This includes tracking any major changes to the building structure or equipment, occupancy/tenant changes, building schedule changes and temperature set point changes
13. Agreeing to allow data to be used in anonymous benchmarking studies

If the Customer opts not to proceed after Duke Energy was able to identify EEMs that meet the predefined thresholds of two years or fewer simple payback and investment of $0.10 per square foot, then the Customer shall compensate Duke Energy for the portions of the Building EMIS SaaS, the energy assessment and the energy analyst services that were paid in advance by Duke Energy.
At the end of the four year program term, the Customer has the option to initiate a new contract for the Building EMIS software and assume the full annual cost of the Building EMIS SaaS license.

In addition, it is strongly recommended that each Customer establish an account for the building in U. S. EPA’s Energy Star Portfolio Manager to track the building’s performance against EPA benchmarks and building characteristics.

**Costs**
The Customer costs for participating in the Building EMIS program are listed below. In addition, the Customer is responsible for the costs of implementing the recommended low-cost measures.

<table>
<thead>
<tr>
<th>Year</th>
<th>Customer Contribution</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td></td>
<td>$4,985</td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
<td>$1,826</td>
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<tr>
<td>Year 3</td>
<td></td>
<td>$1,826</td>
</tr>
<tr>
<td>Year 4</td>
<td></td>
<td>$1,826</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>for 4 Years</strong></td>
<td><strong>$10,463</strong></td>
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**Exceptions and exclusions**
The Building EMIS software will not be integrated or tied to the building automation system (BAS). As such, the Building EMIS software will not automatically correct problems nor will it offer direct control of the building or equipment. The Building EMIS will identify problems through exception reporting/flagging and energy analysts may also direct the Customer to problems related to their facility energy usage, but ultimately the Customer will need to take action to correct the problem. The interval meter data in the Building EMIS software will be available the next business day. The interval data will not be presented in real time.

If the facility has multiple Duke Energy electric meters, Duke Energy will choose the meter or meters deemed to be most affected by the program services. The Customer may choose to connect additional meters (electric, gas, water, steam, etc.) to the Building EMIS software by paying the full incremental cost.

The Building EMIS program addresses operational measures. Any measures identified such as light fixture replacements will be done outside this program under Duke Energy’s existing prescriptive and custom incentive programs.