OPPORTUNITY
How much energy can be saved with smart building control?

TECHNOLOGY
How does an energy management information system (EMIS) with automated system optimization (ASO) work?

ENERGY MANAGEMENT INFORMATION SYSTEM (EMIS)

Aggregates historical and real-time data with machine learning and thermal modeling to optimize building performance

M&V
Where did Measurement and Verification occur?

RESULTS
How did the EMIS with ASO perform in M&V?

NATIONAL RENEWABLE ENERGY LABORATORY assessed the impact of an EMIS with ASO provided by Prescriptive Data at four testbeds representative of a range of GSA facility types and operating conditions.

GSA Market Analysis for Automated System Optimization
Portfolio potential for cash-flow positive facilities based on % savings*

DEPLOYMENT
Where does M&V recommend deploying an EMIS with ASO?

BUILDINGS WITH HIGH ENERGY COSTS
An EMIS with ASO can simplify building management and should be considered for deployment across the portfolio. Prioritize buildings with high energy costs.

*Commercial Buildings Integration Program, U.S. Department of Energy  **Kramer, H, Lin, G, Curtin, C, Crowe, E, Granderson J. Proving the Business Case for Building Analytics. Lawrence Berkeley National Laboratory, October 2020  **From controlling AHU fan speeds based on weather and occupancy  **Adapted from LBNL (Kramer et al. 2020)  **5% Annual Cost Savings  **7.5% Annual Cost Savings  **10% Annual Cost Savings  **12.5% Annual Cost Savings  **Digital energy management, automated system optimization, or smart building control

- **5-11% WHOLE-BUILDING ENERGY SAVINGS  
- **95% ACCURATE PREDICTED DEMAND WAS WITHIN 5% OF MEASURED DEMAND  
- **VISIBILITY INCREASED WITH MULTIPLE DATA STREAMS  
- **INTEGRATED DASHBOARD REVEALED OPERATIONAL ISSUES  
- **POSITIVE USER ACCEPTANCE  

GSA Market Analysis for Automated System Optimization

<table>
<thead>
<tr>
<th>Portfolio</th>
<th>5% Annual Cost Savings</th>
<th>7.5% Annual Cost Savings</th>
<th>10% Annual Cost Savings</th>
<th>12.5% Annual Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash-flow positive facilities (total out of 504)</td>
<td>90</td>
<td>223</td>
<td>322</td>
<td>424</td>
</tr>
<tr>
<td>Total Building Area (sf)</td>
<td>30,488,470</td>
<td>77,028,119</td>
<td>106,211,953</td>
<td>139,233,885</td>
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<tr>
<td>Gross Annual Cost Savings ($/yr)</td>
<td>$4,538,021</td>
<td>$12,467,287</td>
<td>$19,949,064</td>
<td>$28,689,424</td>
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<td>Annual Subscription Cost ($/sf/yr)</td>
<td>$3,048,847</td>
<td>$7,702,812</td>
<td>$10,621,195</td>
<td>$13,923,389</td>
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<tr>
<td>Net Annual Cost Savings after SaaS ($/yr)</td>
<td>$1,489,174</td>
<td>$4,764,475</td>
<td>$9,327,869</td>
<td>$14,766,035</td>
</tr>
</tbody>
</table>

*Break-even point depends on utility costs, annual savings, and geographic region. Does not include installation cost due to varying expenses of integration.

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