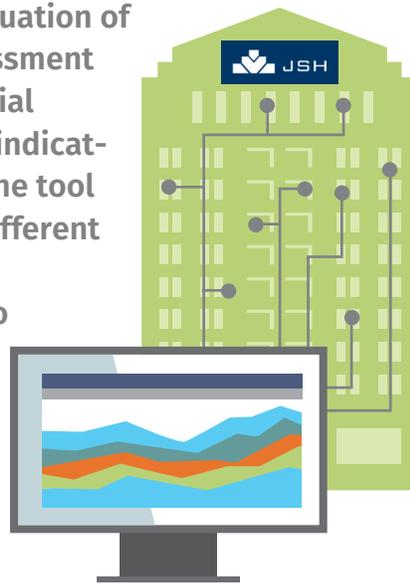


# Lessons Learned From Testing New Markets:

## SBC's Pilot Program Gives Insight into Product Direction

### Summary

As part of the Smart Buildings Center's (SBC) Accelerated Technology Deployments (ATD) program, SBC helped an innovative technology provider evaluate the viability of a modified version of a proven product in a new market sector. As part of a technology demonstration pilot, ATD vendors supported the refinement, deployment, and evaluation of Confluenc's updated energy assessment and planning tool in the commercial building sector. While the results indicated that the value proposition of the tool would not translate well across different markets, the experience offered Confluenc a unique opportunity to reorient their business strategy with minimal investment.



### Business Challenge: Time and Effort for Energy Assessment

On-site energy assessments, whether conducted independently or through utility efficiency programs, are intended to provide building owners with detailed insights into building operations and identify energy upgrade opportunities. Performing a detailed on-site assessment often requires significant time to thoroughly investigate areas for improvement and to analyze the results, an issue that is compounded for managers who are responsible for a portfolio of buildings. For building managers who are taking preliminary steps towards efficient operations, the required time and resources can sometimes be prohibitive.

### Potential Solution: Jump-Start the Process with Virtual Analysis

Energy planning tools, software, and services present an alternate route forward to help minimize such barriers, by gathering and analyzing building or portfolio energy information without stepping foot in the building. While not necessarily intended as a wholesale replacement for comprehensive site assessments, such tools may help owners get a head start on understanding where to focus their time and effort when undertaking more intensive on-site

assessments in the future. Furthermore, owners and operators of a portfolio of buildings can quickly see where the biggest sources of energy waste may be and target those buildings first.

Energy management consulting firm and technology provider Confluenc offers a sophisticated, market-tested tool as one such a solution: the Integrated Energy Planning Model (IEPM), which has been successfully deployed for large-scale portfolio planning at several major universities. Recently, the team has begun to explore the scaled-down use of their platform for the individual building operator market. They developed the **Integrated Energy Planning Model for Building Managers (IEPM for Building Managers)** beta product, which pulls much of its baseline functionality from the flagship IEPM product. However, as is common with many expanding smart building technology companies, Confluenc lacked the funds to fully test the waters of a new sector.

### Pilot Project Methodology

To help further refine and test the viability of this new tool in a new market, Confluenc engaged with the Smart Buildings Center (SBC) through the SBC's ATD support vendors. As part of the SBC's Accelerated Technology Deployment (ATD) program, vendors deployed the IEPM for Building Managers in a series of office buildings in Washington state, including five buildings managed by JSH Properties. Feedback from commercial building managers about the tool's individual building energy

assessment capabilities was expected to help Confluenc assess whether the new tool was ready to enter a commercialization phase.

Energy 350 and Glumac, two energy engineering and evaluation firms working with the ATD program, first evaluated the IEPM for Building Managers' energy assessment and financial capabilities. They then recruited four commercial building managers to use the IEPM for Building Managers free of cost and provide feedback on the overall value of the tool for identifying energy upgrades. Two of the buildings in the evaluation also had recently conducted energy audits and were chosen to help gauge whether the IEPM for Building Managers tool would have been valuable prior to undertaking a more comprehensive on-site assessment.

The evaluation process centered on better understanding the following perceived benefits of the product:

- Time and cost advantages
- Ability to identify accurate Energy
- Conservation Measures (ECMs)  
Visual representation of financials

## Technology Profile

Confluenc's IEPM for Building Managers approaches opportunity assessment at a less granular scale than its flagship university product, keeping time and level of effort to a minimum for building managers. Through online input forms, users enter in general building characteristics data such as building square footage, occupancy schedules, and primary heating and cooling equipment types (see user input form in Figure 1 at top of page).

Using the inputs, the IEPM for Building Managers' whole building modeling software then prepared an energy analysis in as little as 24 hours. Online visual graphs presented the results, showing modeled total building energy use and intensity, potential efficiency opportunities, and payback metrics for any identified energy upgrades. Users

Surveys	Annual Elec	Annual Thermal	EUI	Energy End Use	ECM Savings	ECM End Use	ECM Opps	
Total GSF: 55,000		Primary Use: Classroom/Office/Social Primary GSF: 45,000		Secondary Use: Parking Garage Secondary GSF: 10,000		Tertiary Use: Not Applicable Tertiary GSF: 0		
<b>Building Characteristics</b>		<b>Question</b>					<b>Answer</b>	<b>Units</b>
<b>Cooling</b>		What percent of the building GSF is cooled?					80	
<b>Process Cooling/Heating</b>		What is the primary cooling source for the Classroom/Office/Social space function (i.e. largest space type)?					Local Electric Chillers	
<b>Heating</b>		What is the primary cooling source for the Enclosed Parking Garage space function (i.e. 2nd largest space type)?					None	
<b>Ventilation System Demand</b>		What is the primary cooling source for the Not Applicable space function (i.e. 3rd largest space type)?					None	
<b>Lighting</b>		How many primary electric chillers are in this building?					2	
<b>Building Envelope</b>		What year was the electric chiller installed?					No answer provided	(e.g. 1983)
<b>Water</b>		Has this electric chiller been commissioned?					Yes	
		What year was this electric chiller last commissioned?					No answer provided	(e.g. 1983)
<a href="#">Download All Building Survey Answers</a>		What is the nominal cooling capacity of this electric chiller?					80	tons
		Is the chiller electricity use included in the building annual electricity use?					Yes	
		Does this building's chillers supply chilled water to other buildings?					No	
		Does the building chilled water loop have pumps associated with it?					No	
		What is the primary way these building chillers are cooled?					Air cooled	
		What percent of the chillers are cooled using this primary cooling mechanism?					100	
		What is the second most common way these chillers are cooled?					No answer provided	

Figure 1: Confluenc's user input form.

logged in to a dynamic web interface to see the effects of integrating recommended efficiency upgrades over time and tested their investment strategies based on the results. Fine-tuning the model to real-world conditions, such as billing history matched to modeled energy use, is made simple. Additionally, the Confluenc team made themselves available to walk the user through the results and assist with model refinements once survey information was finalized.

## Tailoring the tool for individual building assessment

Confluenc's flagship IEPM tool focuses primarily on high-level campus-wide assessments and thus the input questions that define its energy consumption profiles are geared more towards general assessments. The new tool required the inclusion of more nuanced and detailed characteristics of commercial buildings. Plus, instead of the IEPM's more direct

user engagement approach, the new tool was to be delivered as a "software-as-a-service" (SAAS) product. This allowed for great scalability, but also required significant fine-tuning of the product. SBC support vendors worked with Confluenc to reframe the input questions so that they were more relevant for commercial buildings. As a result, Confluenc stripped away unnecessary survey questions and added others that targeted specific building systems and gave better insights into their operation. Through multiple rounds of evaluation, Confluenc and the SBC support vendors also refined algorithms to adapt the tool for individual building assessment.

As Confluenc refined the product, SBC support vendors recruited building managers to test the tool and prepared evaluations to summarize feedback on the tool's overall appeal in this market.

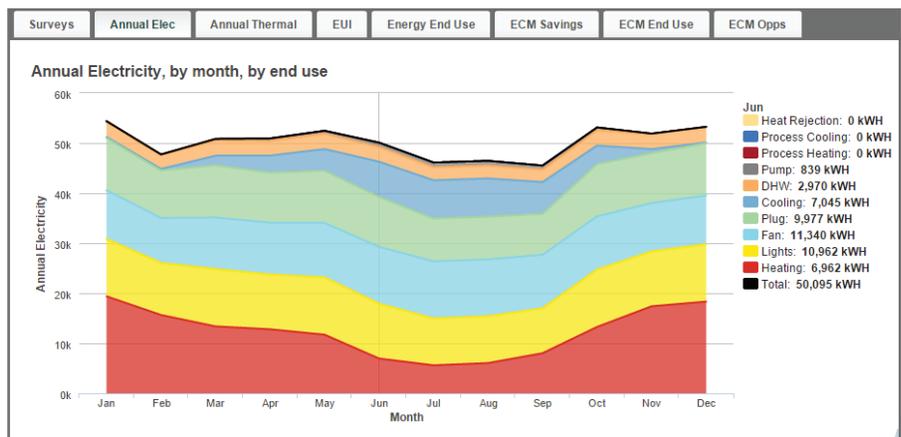


Figure 2: The Confluenc tool presents energy use data by month, disaggregated by 10 primary categories of energy use.

## Findings: Recommendations Lack the Nuances that Managers Trust

Evaluations showed that even though building managers could not always easily answer the new tool's survey questions, they

had a good sense of how well their buildings operated. It is perhaps this intimate knowledge that led many of the building managers to have doubts about the modeled energy results that the IEPM for Building Managers tool presented. This skepticism mostly came from building managers who had recently performed detailed site energy assessments and were uncomfortable that the Confluenc tool recommended several energy upgrade opportunities that varied markedly from

those on-site assessments. This is in part due to Confluenc's pre-defined set of recommended "energy conservation measures," which were seen by most building managers interviewed as too generic to build the case for investing in energy efficiency. There were similar comments about the SAAS product format, since it did not leave room for customization or the subtleties often inherent in commercial buildings.

## Lessons Learned: Individual Buildings Require More Complex Solutions

Despite Confluenc's efforts to provide more detailed survey questions while at the same time simplifying inputs, the less granular outputs of the tool were a major shortcoming for all managers involved in the study. As a result, Confluenc learned that managers of individual buildings already had adequate knowledge of how their buildings operate at a basic level and that a high-level assessment of building energy use did not offer

sufficient detail to warrant using it for opportunity assessment.

While the success of Confluenc's flagship tool indicates that campuses can benefit from receiving high-level indications of efficiency opportunities across multiple buildings, individual buildings require more nuanced and customized investigation to arrive at targeted recommendations. Therefore, Confluenc determined

that the new IEPM for Building Managers tool is not as widely scalable as they originally thought, leading to the company's decision to no longer pursue the commercial building market with this tool.

*"Through the process of working with actual building professionals and potential customers we were able to validate where we got things right and where previously unforeseen challenges surfaced."*

Dave Karlsgodt, Confluenc  
Development Team Director

## Conclusion: Confluenc to Refocus Development Resources

*"During the SBC pilot project we focused on a new product for the individual building owner and manager. Based on the feedback from the pilot, we learned a valuable lesson: the tool is not best suited for this market. It allowed us to try, fail, and learn quickly rather than wasting time pursuing dead ends. This insight was extremely valuable, as it has allowed us to reorient our entire business strategy and refocus our limited resources elsewhere."*

Dave Karlsgodt, Confluenc  
Development Team Director

Based on findings from the SBC project, Confluenc has already started to home in on a new market niche: financial decision-makers who are managing large portfolios. These professionals demand a high-level picture of energy use linked to financial estimates, a broad sense of the energy opportunities across their properties that can help them prioritize decisions, and a visual display of data that allows them to quickly engage internal colleagues and external stakeholders. Confluenc believes its flagship

product seems to be able to satisfy all of these needs. These outputs may also help focus on-site assessments at the individual building level, so energy auditors know where to dig more deeply.

The smart building industry is complex and technology value propositions are not always immediately straightforward. The SBC and its support vendors helped Confluenc quickly and cost-effectively make a much more informed decision on where to prioritize limited development funds.

## About the Smart Buildings Center

The Smart Buildings Center (SBC) is a project of the Northwest Energy Efficiency Council (NEEC), which is a non-profit industry association of the energy efficiency industry. The SBC supports growth and innovation in the Pacific Northwest's energy efficiency industry, serving as a hub for industry activities and raising the visibility of energy efficiency companies and projects.



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