

Maximizing Whole-Building Energy Savings Through Retro-Commissioning

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ComEd Smart Ideas For Your Business

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Program overview

- ✓ Recently completed fifth program year
 - 133 RCx projects completed
 - 68 office/commercial real estate
 - 25 hospitals
 - 14 educational facilities
 - 86.5 GWh in verified savings
 - CRE 50.8 GWh
 - Hospitals 18.2 GWh
 - Education 5.9 GWh
 - 2.2M therms saved

Elements of success

- ✓ Creation of service provider network
 - Serves as primary marketing channel
 - Generates revenue stream for SPs
- ✓ Adding investigation for therm savings
 - Deeper energy savings for customers with minimal additional disruption or investment
 - Cost sharing makes process more cost-effective for customers and utility programs
- ✓ Incentive design
 - Program pays all fees for engineering study
 - Implementation commitment (<18 mo. payback)

Lessons learned

- ✓ Flexibility key to project success
 - Streamlining processes and implementation
 - Campus approach
 - District energy
- ✓ Feedback very valuable
 - Customer and service provider surveys
 - Multiple evaluation cycles
 - Ranking SPs drives improvement
- ✓ A small number of measures typically generate the majority of project savings

Current status

- ✓ 70 active projects, forecasted to save 36 GWh
- ✓ Average project size is decreasing
 - Many of the biggest buildings have already participated
 - Need higher project volume to meet savings goals
- ✓ Monitoring-based commissioning introduced last year
 - First two projects underway
 - Software companies raising market awareness
- ✓ Cost-effectiveness constraints generally limit RCx to buildings > 400,000 sq. ft.

Challenges going forward

- ✓ Maximizing savings in buildings undergoing RCx
 - Monitoring-based commissioning
 - Integration with other Smart Ideas programs
 - Document other opportunities during RCx study
 - Smart Ideas Opportunity Assessment
 - Assessments at RCx candidate buildings
 - Improved information management and lead sharing through CRM and database tools

Challenges going forward

- ✓ Fine-tuning of current program structure
 - RFP process to add new SPs and remove under-performers
 - Modifications to MBCx program
 - Increased visibility for software companies
 - Tweaks to incentives
 - New measures, such as district energy
- ✓ Expanding program with new approaches that allow RCx to be performed at smaller buildings

Offering RCx to smaller buildings

- ✓ Current process is very cost-intensive
 - Long sales cycle for service providers
 - Exploratory data collection and analysis
 - Extensive reporting requirements
 - Need for rigorous M&V
 - Long project life cycle means meetings, phone calls, report reviews, etc. that add expense
- ✓ No good way to streamline current process enough to make it cost-effective in smaller buildings

Leveraging existing program data

- ✓ 5+ years of RCx projects provide an extensive database of operational measures to learn from
 - For a given building type:
 - Most commonly found measures
 - Most commonly implemented
 - Average savings by measure
 - Cost of measure per kWh saved
- ✓ Small number of measures generate most of the savings on typical projects

Top measures for commercial buildings

measure type	times implemented	total savings, GWh	kWh savings per measure	customer payback, yrs	program cost per kWh
Schedule AHU	57	8.0		0.15	\$0.04
Economizer/outdoor air control	45	5.6			
Duct static pressure reset	35	7.3	210,571		\$0.06
Demand control ventilation			162,308		
Setback space temperature			162,500	0.23	
Optimize supply fan performance				0.06	
Supply air temp. reset					\$0.06

RCx Express offering

- ✓ Target buildings: 150,000 to 400,000 ft²
- ✓ Existing RCx service provider network
- ✓ “Find and fix” approach based on data analysis
 - Specific, pre-defined project scope
 - Customer commitment up front
 - Single project report, at verification
- ✓ Equipment limitations may exclude some common BAS-driven measures (i.e. scheduling)
- ✓ New measures not used in current projects could be added, such as RTU tune-ups

Modeling-based RCx

- ✓ Office buildings under 150,000 ft²
- ✓ Predicts energy-saving measures using interval usage data, historical weather data, and building characteristics
 - Total consumption broken out into end use components
 - Initial analysis does not require on-site data collection
 - Low-cost and highly scalable
- ✓ Both capital and operational measures identified
 - Expected split about 50/50
 - Capital projects referred to standard/custom program

Modeling-based RCx

- ✓ Testing of customer engagement strategies
 - Customer approached with recommendations
 - Customer engaged before analysis
 - Customer asked for commitment before analysis
- ✓ Technical validation of predictive capabilities
- ✓ Full-scale implementation
 - Screening of buildings
 - Customer engagement using pilot results
 - Expected that program incentive will pay for analysis and implementation of operational recommendations

Contact info

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