



Energy Efficiency Program

ComEd Retro-Commissioning and Monitoring-Based Commissioning

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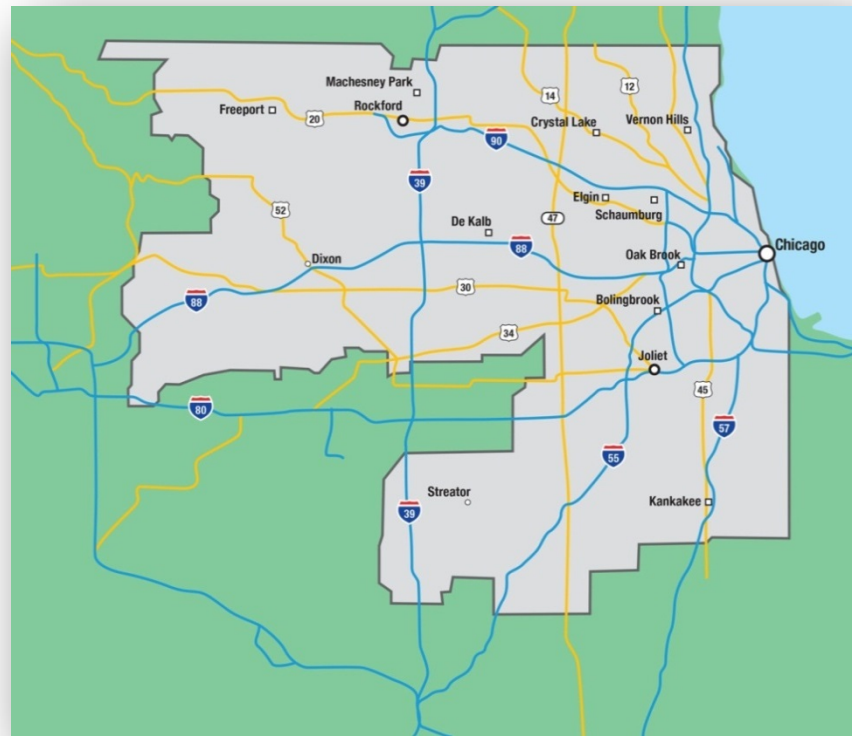
Sr. Program Manager



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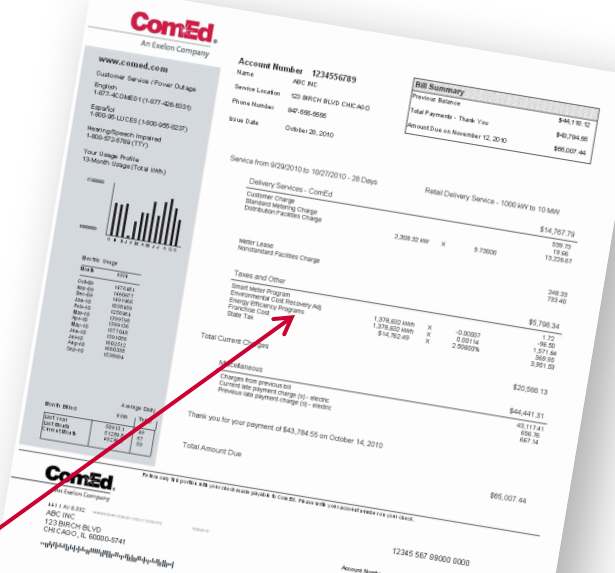
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- ✓ ComEd is an electric delivery company providing service to 3.8 million customers
- ✓ Energy efficiency programs launched in 2008
- ✓ Over \$350 million in energy efficiency incentives paid out to commercial and industrial customers



Energy Efficiency Program funding

- ✓ Program funding comes from **Energy Efficiency Programs** charge on customers' monthly bills
- ✓ Based on kWh usage
- ✓ Currently in Program Year 9; new program year starts Jan. 1, 2018



| | | | | |
|---------------------------------|---------------|---|----------|----------|
| Taxes and Other | | | | |
| <hr/> | | | | |
| Smart Meter Program | | | | 1.72 |
| Environmental Cost Recovery Adj | 1,378,632 kWh | X | -0.00007 | -96.50 |
| Energy Efficiency Programs | 1,378,632 kWh | X | 0.00114 | 1,571.64 |
| Franchise Cost | \$14,762.49 | X | 2.50600% | 369.95 |
| State Tax | | | | 3,951.53 |

Energy Efficiency Program offerings



Assessment Types

- ✓ **Facility**
- ✓ Laboratory
- ✓ Healthcare
- ✓ Data Center
- ✓ Combined Heat & Power
- ✓ Process Efficiency



Incentives

- ✓ Standard
- ✓ Custom
- ✓ Small Business Energy Savings
- ✓ New Construction Services



Discounts

- ✓ Business Instant Lighting Discounts (BILD)
- ✓ Business Products Discounts



Optimization

- ✓ Retro-commissioning
- ✓ Rooftop Units
- ✓ Compressed Air
- ✓ Industrial Refrigeration
- ✓ Process Cooling

Energy Tools

- ✓ Business Energy Analyzer

Retro-commissioning, ComEd-style

- ✓ ComEd pays RCx study fees as program incentive; customer pays to implement EE measures
- ✓ Identify low-cost improvements to building operations (simple payback < 18 months)
 - Focus on HVAC and lighting
 - Can include gas as well as electric savings
 - Identification of retrofit opportunities
- ✓ Big buildings are best candidates:
 - High savings potential => cost effectiveness
 - Financial resources for energy efficiency projects
 - Dedicated facility staff



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General RCx project flow



✓ **Application Phase**

- Customer works with Service Provider to determine savings potential
- Application submitted to program for review



✓ **Investigation Phase**

- Service Provider analyzes building and system performance
- SP recommends energy-saving operational improvements to customer



✓ **Implementation Phase**

- Customer selects measures from report for implementation



✓ **Verification Phase**

- Service Provider confirms that improvements are working correctly
- Final energy savings quantified

Program evolution

- ✓ After six program years:
 - 180 completed projects, averaging over 600,000 square feet
 - 90 office buildings
 - 30 hospital/health care facilities
 - 20 educational facilities
 - Signs of market saturation among “ideal” buildings
 - Need to create offers that would incent smaller buildings to achieve operational savings
 - Opportunity to drive deeper, more persistent energy savings



Top measures from office building RCx

| Measure Category and Name | % of Program Savings Within Building Type |
|---------------------------------------|---|
| Schedule AHU for Space | 17% |
| Duct Static Pressure Reduce/Reset | 14% |
| Economizer and Outdoor Air Control | 12% |
| Optimum Start for AHU | 7% |
| Supply Air Temperature Reset | 6% |
| Reduce Supply Air and Ventilation Air | 4% |
| Demand Control Ventilation | 4% |
| Chilled Water Temperature Reset | 4% |
| Reduce Ventilation | 3% |
| Setback Space Temperature | 3% |

Takeaway: half of the available operational savings
generally captured by top 4 measures

Midsize buildings: RCxpress

- ✓ Expand offer to include buildings below size historically targeted by RCx program
 - 150,000 – 400,000 square feet
 - ~ 900 buildings
- ✓ Simplified processes to ensure cost-effectiveness
 - Focus investigation for savings on most common measures
 - Customer commitment required up front
 - Reduced number of reports and meetings
 - Shorter project life cycle

“Small” buildings: RCx Building Tune-Up

- ✓ Target buildings 150,000 square feet or smaller
 - Thousands of buildings potentially eligible
 - Wide diversity of building types and uses
- ✓ Additional streamlining of project flow
- ✓ Addition of customer incentive for implementation
 - Very limited financial resources
 - Very limited staff time
 - Low awareness of offer

Really small buildings: Energy Advisor

- ✓ Businesses with peak demand < 100 kW that have smart meters
- ✓ Free service with four easy steps:
 1. Energy advisor reviews smart meter data
 2. Advisor presents custom savings recommendations
 3. Customer takes action to implement low-cost and no-cost changes to building operations
 4. Energy advisor calculates savings and monitors energy usage over time



Visit www.EnergyAdvisorProgram.com for more info

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Deeper, more persistent savings: MBCx



✓ **Application Phase**

- Customer works with Service Provider to determine savings potential
- **Monitoring software integrated into building automation system**



✓ **Investigation Phase**

- Service Provider analyzes building and system performance
- SP presents recommendations for operational improvements



✓ **Implementation Phase**

- Customer selects measures from report for implementation



✓ **Verification Phase**

- Service Provider confirms that improvements are working correctly
- Final energy savings quantified



Current ComEd RCx options

| NAME | TARGET BUILDING SIZE | INCENTIVE | PROJECT DURATION |
|---------------------------------------|--|--|------------------|
| Retro-Commissioning | Greater than 500,000 ft ² | Study worth up to \$100,000 | 10 - 12 months |
| RCxpress | 150,000 to 500,000 ft ² | Study worth up to \$60,000 | 6 - 9 months |
| RCx Building Tune-Up | Less than 150,000 ft ² | Study worth up to \$10K, 3 cents per verified kWh | 1 - 3 months |
| Monitoring-Based Commissioning (MBCx) | Greater than 150,000 ft ² | \$15K or \$25K for software installation, plus \$0.07 per verified kWh | 12+ months |
| Energy Advisor | Small buildings (peak demand < 100 kW) | Free analysis and technical assistance | 1-3 months |

Program results

✓ After eight program years:

- 344 projects completed
- 193 million sq. ft. commissioned
- 155 million kWh saved
- 4.3 million therms saved

✓ Keys to success

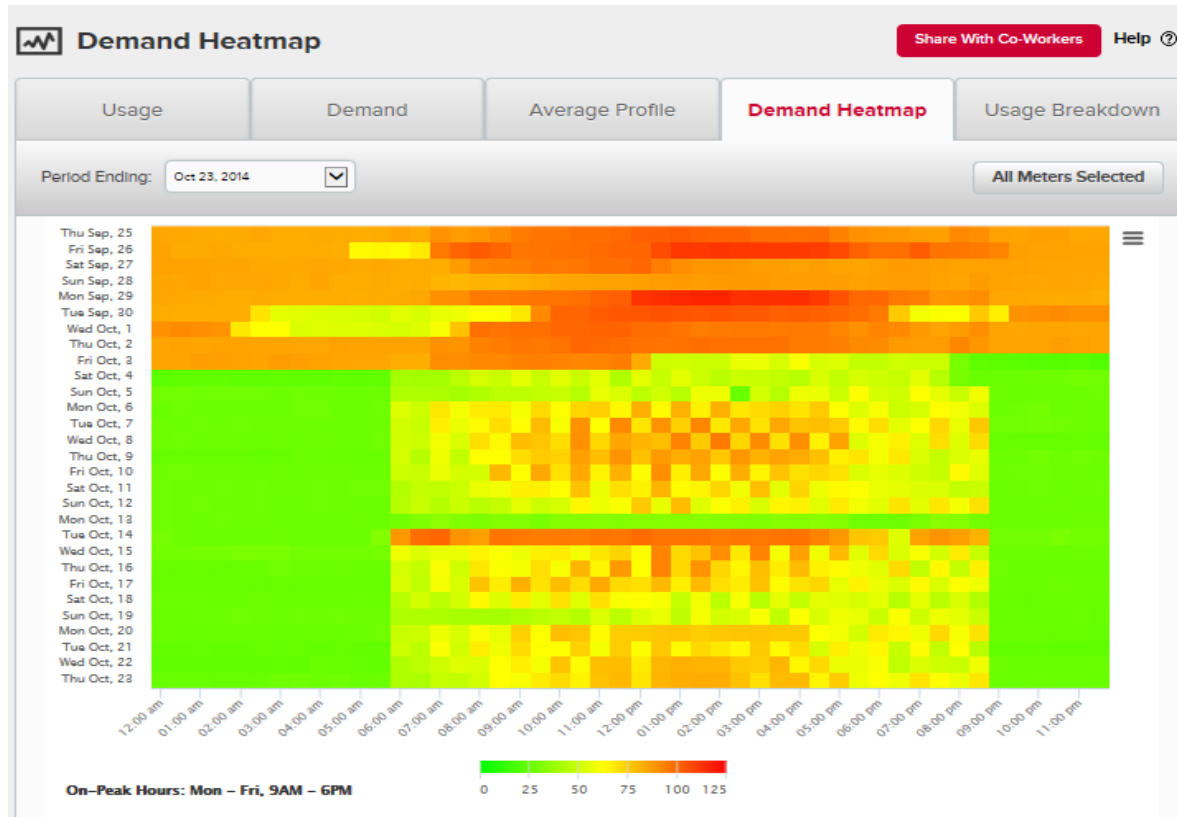
- Skilled service provider network
 - Business development
 - Strong technical performance and customer relationships
- Partnership with gas utilities
- Diverse marketing strategies



Use of energy data analytics

- ✓ Use of analytics to segment and target customers
- ✓ Business Energy Analyzer - free online energy analytics tool for customers with interval meters or smart meters (www.ComEd.com/BEA)
 - Energy tracking dashboard with easy-to-use, exportable energy data
 - Benchmarks against similar businesses or multiple locations
 - Energy efficiency recommendations
 - Identification of customers with high potential savings
 - Poor response to hot weather compared to peers
 - Poor shutdown practices during off-hours

Impact of operational improvements



Multi-channel marketing and outreach

- ✓ Complement to service provider business development
- ✓ Outreach to commercial real estate portfolio managers
 - Economies of scale
 - Encourage strategic approach to energy efficiency and management
- ✓ Outbound calling campaign
 - BEA used to target customers
 - Customer screening provides credibility: *“Our analysis indicates that you may have opportunities to reduce energy use during off hours”*
 - Call center agent can update customer contact information
 - Leads handed off to RCx team for followup

Thank You!

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