

# Xcel Energy's Small Building Tune-Up

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# Product Background

- Result of 2012 New Mexico Settlement
- Regulatory Approval
  - ◆ CO May 2014
  - ◆ NM August 2014
- Third Party Implemented

# Product Overview

## ■ **Targets Businesses 5,000 sq. ft.–75,000 sq. ft.**

### ◆ CO – Small Building Tune-up

- Measure within CO Recommissioning product

### ◆ NM – Building Tune-up

- Product under suite of NM business programs

## ■ **Deliverables**

### ◆ Audit

- Building Tune-up Checklist

### ◆ Report

- Energy Conservation Opportunities

# Low Cost/No Cost Measures

## ■ Building Tune-Up Checklist:

1. Air Handling Unit (AHU) Air Leak Reduction
2. AHU Coil Cleaning (maintenance savings only)
3. AHU Optimize Economizer
4. AHU Outside Air Reduction (including DCV CO2 control)
5. AHU Run Time Reduction (including Optimum start/stop)
6. AHU Supply Air Static Pressure Adjustment/Reset
7. AHU Supply Air Temperature Reset
8. AHU VAV Minimum Flow Reduction
9. Lighting & Equipment Run Time Reduction
10. Unoccupied Setback
11. Exhaust System Operation



# Product Marketing

## ■ Product Launch

- ◆ Training
- ◆ Promotion
- ◆ Phase 1 Marketing Tactics
  - Email Blast
  - Web Page Launch
  - Trade/Customer Publications

## ■ What's Next?

- ◆ Product Evaluation
- ◆ Phase 2 Marketing Tactics
  - Social Media
  - Direct Mailing





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# Building Optimization for Small Businesses

Rocky Mountain Utility Energy Efficiency Conference

We change the way people use energy

## ▲ Goals of Discussion

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- Retrocommissioning (RCx) overview
- Birth of “Lite” versions of RCx
- Overcoming the challenges with design, start up and implementation
- What can we learn from 3<sup>rd</sup> party evaluator results



## ▲ Brief Overview of RCx

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- Lengthy process, larger facilities
- Lot of measures, interactive effects
- Lot of work, but highly cost effective process
- RCx agent model – Large consulting engineer
- How do we address smaller buildings < 100K sq ft?
- Simpler systems (more manageable)
- Less maintenance staff support, so same low hanging fruit as larger facilities
- This customer base is not covered by RCx agents/service providers, therefore traditional RCx process not cost effective for this market segment

## Birth of RCx Lite (Retrocommissioning for Small Businesses)

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- Most programs have been launched within last 2 years
- Trade names - EBTU, BTU, Find and Fix, RCx Tier II, etc
- Quicker, simpler, less complex
- Fills a void for many utility programs – between Small Business DI and RCx/Custom/Prescriptive
- How do we design a program to address this market?
- Building Tune Up – starts out with this in mind
- But when we lay out measure mix, it suspiciously looks like Retrocommissioning
- Market justification still remains

## ▲ Brainstorming Sessions

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- RCx traditionally uses Service Provider network
- Create different type of network that serves that market – service contractors (TSPs)
- Adjunct to Preventive Maintenance Agreements
- Streamline the approach – Express format
- Train technicians on identifying “low hanging fruit”
- Pre-configure energy savings calculations within workbook with as few inputs as possible
- Fills their void – measures that are not prescriptive, too small for custom....deferred maintenance items they feel they can address

## ▲ Obstacles

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- Prescriptive analogy – how hard is it to get contractor to fill out one sheet of paper on something they do everyday?
- Getting TSPs to make part of their business process
- Administrative burden
- Training – getting to the folks who would use the program
- Training a customer on RCx concepts – how to perform a Study, M&V, documentation
- They know the inefficient buildings in their customer base, but not due to go back in 3 months

## ▲ Overcoming the Obstacles

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- Streamlined process
- Upfront handholding – work side by side with the contractor
- Ideal Technical Service Provider (TSP) – contractor with control arm and/or building automation capabilities
- Training the right components of the TSP
- Program incentive structure that benefits both the customer and TSP

## ▲ Evaluation Results

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- Realization rate = 1.01
  - Electric 1.08
  - Gas = .86
  - Seasonality implications when M&V was performed  
==> Persistence or QC component needed
  
- Net To Gross = .72
  - Work that was part of Preventive Maintenance scope
  - Addressing long standing issue(s) that were being addressed anyway
  - Improved NTG when going back and reviewing PM contracts

## ▲ Suggested Best Practices for Success

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- Upfront approval of workbooks with 3<sup>rd</sup> party E,M&V
- Handholding sets the table for improved product
- Screening process
- Train the individuals who will use the program
- Get out of the gate – Hands on approach for pilot
- High volume upswing – Requires active TSP network
- Pull through – direct end user contact and outreach efforts
- Deemphasize study, emphasize documentation
- Built in sanity checks – ie CBEC Energy Intensity comparisons
- QA/QC – high random QCs that taper off to 10% over time
- Persistence – linear regression at 180 days after implementation
- Continuous Improvement – Moving the hybrid approach closer and closer to prescriptive to increase participation impacts



# PRPA BTU TII Case Study Wrap

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Exchange



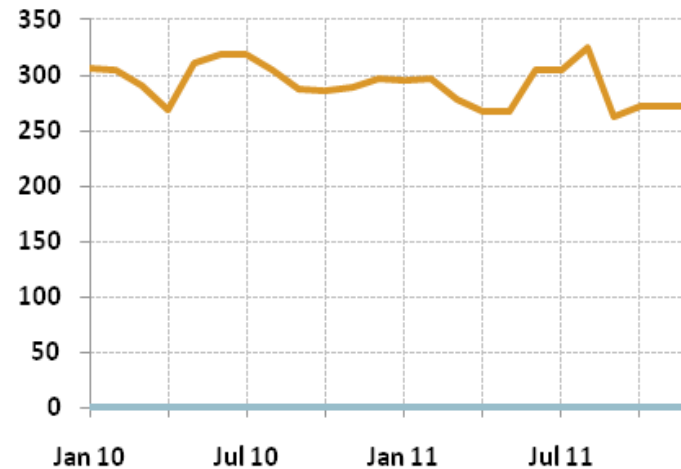
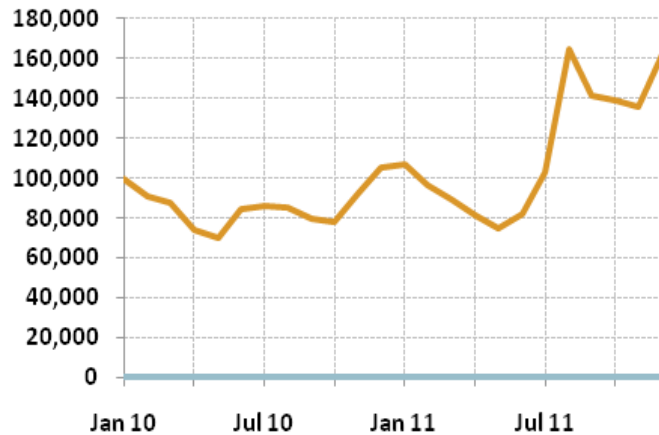
# Tier II Goals

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- Balance the details and risk between Tiers 1 & 3
- Use prescriptive savings approach from Tier 1, where possible
- Combine two sets of reports used for Tier 3 into one report
- Keep the report format simple
- Provide sufficient implementation support
- Provide verification where needed

# Project Description

- 60,000 SF Office Building in Ft Collins, CO
- (2) Packaged 65 ton, VAV RTUs with Gas Preheat
- (48) VAV Boxes with Electric Reheat



# RCMs Identified\* and Implemented

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- HVAC scheduling\*
- Airside economizer tune-up\*
- Discharge air temperature reset\*
- Global electric reheat outside air temperature lockout\*
- Optimum start on RTUs\*
  - Fixed/enabled morning warm-up NG furnace preheat
- Reduced minimum airflow on VAV boxes
- Reduced minimum outside air percentage on RTUs

# Verification

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- IPMVP – Option C
  - Due to lack of BAS trends available for an Option B analysis
- Metrix 4 Utility Accounting System was used to normalize and compare pre and post utility data

Savings	Electricity (kWh)	Monthly Peak Demand (kW)
Pre Implementation	128,413	74.7
Post Implementation	727,200	62.0

# Final Thoughts

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- Simplified reporting and rigor on analysis
- Implementation with contractor/verification:
  - Improved efficiency of project at the implementation/verification phases
  - Revealed additional measures
  - Allowed us to be more aggressive on some of the measures
  - Brought in the RTU rep to work out unit vs BAS programming issues
- Prescriptive savings approach may not yield much benefit depending on the building
  - Recommend using a BIN model
- Less/more emphasis on pre/post implementation savings, respectively