A Decade of Results: A Retrospective of NYSERDA’s Multifamily Performance Program

Mark Lorentzen
November 1, 2017

Presented at the 2017 ACEEE National Conference on Energy Efficiency as a Resource
Intro to TRC

For nearly 50 years, TRC has partnered with utilities, businesses, and agencies to provide national engineering and consulting services to four primary markets:

WHO WE ARE:

- Engineers, building scientists, technology & systems experts, strategic advisors, business managers, customer engagement & marketing experts, program managers

- 120+ offices; 4100+ employees

- #10 Top Designer in Power, by ENR
# TRC Energy Services

## GENERATION
We provide full lifecycle support from power system and critical issues studies, through permitting, engineering, construction support, air measurements, auditing, operations, remediation and facilities decommissioning to help you provide safe, reliable power while meeting clean energy requirements.

## UTILITIES
TRC is one of the leading engineering and environmental services firms supporting extensive upgrades to the nation’s electric grid system. We deliver project management, engineering design, survey, permitting, material procurement and construction management solutions for complex projects including transmission and distribution, substations, protection and controls and telecommunications.

## EFFICIENCY
As a partner to utilities, agencies and business, TRC supports the full spectrum of energy efficiency and distributed energy resource opportunities. We offer holistic, integrated energy services from research to planning, design and delivery that serve multifamily residential, commercial and industrial end-users and communities.
Key Metrics

Existing Buildings

• 23% Actual Average Savings
• 1,360 Projects
• 6,789 Buildings
• 247,771 Units
• 174 million square feet

New Construction

• 170 ENERGY STAR Buildings
• 156 ENERGY STAR in progress
• 450 Projects
• 469 Buildings
• 37,844 units
• 36 million square feet
The World in 2006

iPhone
Multifamily Programs

Utility/Clean Energy Provider

RES
- New Homes
- Prescriptive Rebates
- Home Performance

C&I
- P4P
- Prescriptive
- R&D

2006
“Free” Direct Install from Utilities

- EE Budget
- EE Savings Targets
NYSERDA Programs Serving MF

- Assisted MF Program (AMP)
- Comprehensive Energy Management (CEM)
- New Construction Program
- Loan Fund
- Residential Technical Assistance (ResTech)
- Publicly Assisted Housing (PAHP)
- Direct Install
- Green Buildings Program
Multifamily Performance Program

- EE Budget
- EE Savings Targets
- “Market Transformation”

Tools & Standards
Trade Allies
## Initial Program Design

<table>
<thead>
<tr>
<th>Design Challenge – Need to...</th>
<th>Solution</th>
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<tbody>
<tr>
<td>Consolidate into a single program</td>
<td>Serves Existing and New Buildings</td>
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<tr>
<td>Reward actual savings not audits</td>
<td>Pay for Performance</td>
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<tr>
<td>Push deeper savings</td>
<td>Whole Building – no Rebates!</td>
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<tr>
<td>Develop the Energy Workforce</td>
<td>Relies on Trade Ally Network</td>
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<tr>
<td>Achieve deeper savings</td>
<td>High savings targets - measured</td>
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<tr>
<td>Provide simple incentive structure</td>
<td>Incentive paid $/unit</td>
</tr>
<tr>
<td>Support projects throughout process</td>
<td>Incentive timeline follows project cash flow</td>
</tr>
<tr>
<td>Ensure installation actually occurs</td>
<td>Use of a project champion, reward for installation</td>
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</table>
### Table 3. Detailed List of Recommended Measures for Entire Project

<table>
<thead>
<tr>
<th>Measure</th>
<th>Installed Cost (first design)</th>
<th>Energy Savings</th>
<th>Demand Savings</th>
<th>Water/Steam Savings</th>
<th>O&amp;M Savings</th>
<th>Cost Savings</th>
<th>Payback</th>
<th>S.L.R.</th>
<th>Life Cycle Savings</th>
<th>Years for I.C.C</th>
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### Table 4. Benchmarking Tool & Design Assistant

<table>
<thead>
<tr>
<th>Building Description</th>
<th>Ceiling Insulation</th>
<th>Exterior Wall Insulation</th>
<th>Roof Insulation</th>
<th>Window Insulation</th>
<th>Door Insulation</th>
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### Table 5. NYSP RDA Multi-Family Building Performance Benchmarking Tool - Ver. 2.1

<table>
<thead>
<tr>
<th>Building Rating</th>
<th>Overall Energy Consumption</th>
<th>Overall Cost</th>
<th>Operating Utility Costs</th>
<th>Operating Energy Costs</th>
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### SECTION II. EXISTING CONDITIONS

This assessment consists of 202 units in 12 row-house buildings at the Amherst Garden Apts complex. The buildings, located at 86 E. Amherst Street, Buffalo, New York, were assessed by us to determine the most appropriate and effective scope of work to achieve this project’s target, a comprehensive energy assessment and potential scope of work for energy saving measures.

The 12 building sections are labeled A-L. Each section contains between 8 and 26 units. Each unit is 3 stories tall, and the second floor has 2 bedrooms and a bath. The first floor contains a kitchen, dining and living room. The unfinished basement has a washer and dryer hookups.
We have lift off!

Historical Program Intake

- Historical Intake - Electric (Cumulative)
- Historical Intake - Electric w/Attrition (Cumulative)
- Historical Intake - Firm Gas (Cumulative)
- Historical Intake - Firm Gas w/Attrition (Cumulative)
Flat Line Years

Historical Program Intake

- Historical Intake - Electric (Cumulative)
- Historical Intake - Electric w/Attrition (Cumulative)
- Historical Intake - Firm Gas (Cumulative)
- Historical Intake - Firm Gas w/Attrition (Cumulative)
Recovery Begins 2010-12

Historical Program Intake

Units

Jan-06 Jan-07 Jan-08 Jan-09 Jan-10 Jan-11 Jan-12 Jan-13 Jan-14 Jan-15

275,164
249,336
159,952
153,585

Historical Intake - Electric (Cumulative)
Historical Intake - Electric w/Attrition (Cumulative)
Historical Intake - Firm Gas (Cumulative)
Historical Intake - Firm Gas w/Attrition (Cumulative)
2012 – Superstorm Sandy

• >12 foot storm surge
• 2.2 M people without electricity
  – Parts of Rockaways & Staten Island without power for weeks
• $32B in damage in NYS
• >88,000 buildings affected
  – More than 400 NYCHA buildings (~35,000 units) lost power, heat, or hot water during Sandy
  – Destroyed 100s of buildings; damaged 1000s
2012 - Cuomo’s mandate to Public Service Commission

BUILD A MORE RESILIENT ENERGY SYSTEM
REV Emerges

Building a clean, resilient, and affordable energy system

The State Energy Plan is a comprehensive roadmap to plan coordinated every State agency and authority that seeks to integrate clean energy into the system, effectively deploying innovative energy solutions across the state.

In 2014, Governor Andrew M. Cuomo launched New York's State Energy Plan to harness the clean energy potential of the state. The Plan is a roadmap for REV's leaders to work together through public-private partnerships to achieve the outcomes outlined in the State Energy Plan, along with the State's path to achieving the following clean energy goals:

- 50% renewable energy by 2030
- 80% clean energy by 2050
- Making energy more affordable for all New Yorkers
- Cutting greenhouse gas emissions

Reforming the Energy Vision

Reforming the Energy Vision (REV) is Governor Andrew M. Cuomo's comprehensive energy strategy for New York. REV helps consumers make more informed energy choices, develop new energy products and services, and protect the environment while creating new jobs and economic opportunity throughout the State.
REV 2030 Goals Established

• 40% reduction in GHG Emissions from 1990 levels
• 50% of electricity must come from renewable sources
• 23% reduction in energy consumption of buildings from 2012 levels

Far greater Market Animation is required
REV – NYSERDA, DPS, and The Utilities Shift Focus

• To achieve these goals we need everyone, not just NYSERDA
• Distributed Energy Resources (DER), decentralized & cleaner
• Non-wire alternatives – DER instead of utility system upgrades
• NYSERDA Clean Energy Fund
  – DPS allows for more flexibility
  – Fuel Neutrality
  – Grid Innovation
  – Shift from Programmatic Approach to mid-market interventions
  – Affordable MF Programmatic Strategies retained
  – More market animation and innovation in MF sector
MPP – Under REV

• New innovative components to more broadly animate the market
  – Deeper savings, brighter bright spots, foster even greater innovation
    • High Performance Component > 40% savings
    • RetrofitNY – Deep energy retrofit = NZB or near
    • Realtime energy management – technology demonstration & commercialization

• MPP “core offering” adjusted
  – Much lower incentives, much higher performance requirements
  – Too far, too fast………. 
Multifamily Performance Program

NYSERDA MPP

Tools & Standards

Trade Allies

2017
Lesson 1: Design is a Process not a Destination

- Evolving Market
- Fed Policy
- Economic Forces
- Natural Forces
- Business Trends
- Market Animation toward goals

- Climate Change
- State Policy
- Tech Innovation
- Housing Market
- Budgets
- Local Policy
Lesson 2: Never Underestimate Market Innovation

Declining Cost of Solar

U.S. Solar PV Installations, 2000-2015

Source: GTM Research / SEIA U.S. Solar Market Insight report
Lesson 3 – MF Market Requires a Sector Specific Approach and Multiple Strategies
Lesson 4: Simple is Better but not to be confused with “Dumb”
Lesson 5

Programs, Policies and other market interventions are experiments – must take risks and be willing to “fail”
Multifamily Clean Energy Ecosystem

RTEM

Retrofit NY

NYSERDA
MPP

New Financing Models

Utilities

Innov. Tech

Trade Allies

Utilities

New Financing Models

RTEM

NYSERDA
MPP

2030