



# Retro-commissioning for Peak Electric Demand Reduction in New York City

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# System Wide Program Introduction

- PSC Electric Rate Order requires development of demand management (DM) programs
- DM expected to help offset anticipated load growth in Con Edison 2005-2008
- NYSERDA – 150 MW System Wide Program for ALL of Con Edison service territory
- Con Edison – 150 MW Targeted Program—specific targeted networks

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# Program Description

## Objective:

- Reduce peak electric demand through Retro-commissioning and implementation of low-cost operational improvements

## Program Description:

- \$3.24 million available funding
- Service Provider and building owner propose RCx projects
- NYSERDA will fund up to 100% for RCx study, and will pay performance incentive to provider at \$350/kW - \$500/kW
- Building owner must commit minimum cost-share of \$10,000



# Program Design and Metrics

Metrics	Program Design Phase	Proposal Phase	RCx Investigation
# Projects	32	6	6
GSF (millions)	32	6.06	6.06
Electric Savings (MWh)	18	8.98	11.66
Peak Demand (kW)	4125	1775	2536
Program \$/kW	\$785/kW	\$1016/kW	\$815/kW

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# Program Eligibility

## Provider Eligibility:

- Service provider must meet minimum NYSERDA criteria (5 to 8 project examples last 3 yrs, etc.)
- OR
- Prior participation in NYSERDA's RCx pilot

## Building Eligibility:

- Project to deliver minimum peak reduction 125 kW
- Priority given to buildings with summer peak electric demand > 1.5MW, with installed EMS and interval meters

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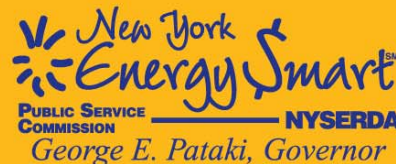




# Measure Eligibility

- RCx measures – low-cost, and no-cost improvements
  - ✓ Control strategies
  - ✓ Sequence of operations
  - ✓ System optimization
- Capital measures – permanent demand reduction measures, including AHU, lighting & controls, pumps, etc.
  - ✓ Operational for at least 5 years
  - ✓ Simple payback less than two years
  - ✓ Owner may provide cost-share sufficient to buy-down simple payback to meet eligibility requirements

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# Project Awards under PON 970

- Strategic Building Solutions
    - Morgan Stanley/Hines – 2000 Westchester
    - Morgan Stanley/Hines – 1585 Broadway
    - Morgan Stanley/Hines – 750 Seventh Ave 1013.5 kW
  - KEMA Services Inc./Amicus Energy Solutions
    - St. Regis Hotel
    - NY Sheraton Hotel and Towers 461.6 kW
  - Phoenix Facilities Management, LLC
    - Durst Organization – Four Times Square 300.0 kW
- 1,775 kW

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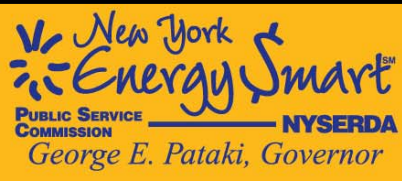




# Program Impact

Building Project	Energy Star	Avg Investment		Program Impact	
	PM Score	Owner	NYSERDA	\$ Saved	Payback after Inc
1	1				
2	36				
3	78				
4	52				
5	63				
6	35				

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# Project Management Upon Award

- Contract signed & returned to NYSERDA by 10/31/06
- RCx Report and M&V Plan due 90 days after award
- Project Implementation Plan due 60 days after approval of the RCx Report
- Project Implementation Report
  - 50% Performance Incentive
- 12 months M&V including one Summer Peak Period
  - 25% Performance Incentive
- 24 months M&V including two Summer Peak Periods
  - 25% Performance Incentive

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# Project M&V Plan and Monitoring

- Responsibility of the RCx Provider
  - Proposed kW and kWh estimates
  - Scoping phase – assumptions and revised ECM estimates
  - RCx phase – Detailed calcs
- Standardization of M&V methods across 6 projects
  - Whole building analysis used to validate calcs
  - Option A and B as appropriate
  - Use of system-level groupings to simplify M&V

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# Program Quality Assurance and Oversight

- Third-party engineering firm assigned by NYSERDA to review program deliverables
  - Scoping study and savings estimates
  - RCx Investigation and M&V Plan
  - Project Implementation Plan
  - Verify Implementation
  - M & V – 12 month and 24 month
  - Documentation Plan
  - Training Plan
  - Final Report and Case Study

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# System Coincident Summer Peak Demand Reduction

- ECM's must deliver kW reduction on all peak and near peak days May 1 – Oct 31, 12-6pm, excluding holidays
- Diversity factor applied for ECM's that do not occur continuously during peak period [(kWh 12-6pm)/6 hrs]
- Many RCx ECM's are impacted by weather (temperature dependent) and would not realize demand reduction coincident with summer peak
  - Reduce OA to Comm Rooms
  - VFD's on CHW and supply fans during cooling mode
  - Reduce static pressure to AHU
  - Chiller and CT optimization

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# Typical Measures

- Typical Non-cooling (Temp Independent) measures
  - Rebalance CRAC glycol system
  - Eliminate OA to perimeter AHUs
  - Alter sequence of CT operation
  - Alter sequence of pump operation
  - Fix leakage
  - Lighting retrofit
  - Charge HVAC units

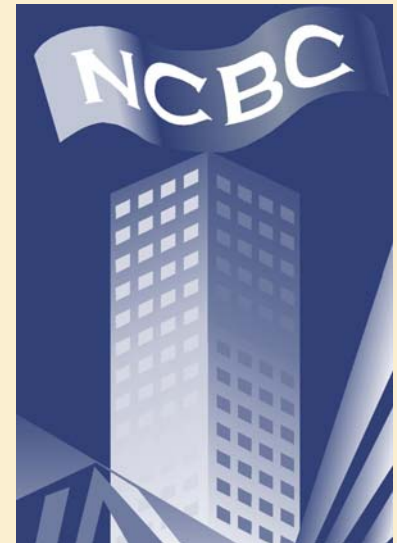
# Conclusions

- Best targets for demand reduction projects are large buildings with > 1.5 MW peak demand
- Project screening is critical for early detection of metrics
- Buildings must have monitoring in place
- Committed building owner and experienced staff will drive project success
- Leadership from RCx provider is the holy grail
- Costs to estimate energy savings during investigation and conduct M&V need to be justified by the program metrics



# NYSERDA Contact Information

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<http://www.nyserda.org/funding/funding.asp?i=2>
- General Information on NYSEERDA Website:  
[www.nyserda.org](http://www.nyserda.org)



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