An In-Depth Look: Energy Efficiency Opportunities for NYC Multifamily Buildings
This Morning’s Webinar:

• The latest scoop on LL87 & Clean Heat
• How results from our recent Benchmarking Study mirror both the City's & CPC lenders' energy/water use
• The unveiling of CPC's Water & Lighting Factsheets
• Understanding why refinancing can help with overall compliance strategies
• An exciting addition to NYCGreenHouse.com- the go-to source for all things green
This Morning’s Speakers

Sadie McKeown,  
COO & EVP,  
Director of Green Financing Initiative, CPC

Pam Glaser,  
Director of Public Outreach & Education Unit, HPD

F.L. Andrew Padian  
VP Energy Initiatives, CPC

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A Quick Reminder About Benchmarking

• Over the last two years, CPC has filed benchmarking results to the City for 400+ buildings
• In 2011, benchmarking May 1 deadline was extended and forgiven
• This year, the deadline was May 1, and on May 2, everyone who didn’t file got a violation
• $500 per quarter per building for not benchmarking
• Our benchmarking business re-boomed on August 1, when buildings started receiving violations in the mail
• Don’t be late next year!
The Next City Requirement: Local Law 87

• Energy Audits for all buildings over 50,000 gross square feet
• Phase in about 10% of buildings per year over the next 10 years
• Also requires “retrocommissioning” -- more on that in a minute
• An energy audit can take over a year to complete beginning to end – start now!

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When is My Energy Audit Due?

- It depends upon your NYC tax block number
- Chart below outlines due dates

<table>
<thead>
<tr>
<th>Last digit of tax block number:</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
</table>
An Energy Audit? What Will I Have To Do?

- Collect two years of oil/gas records
- Every delivery, amount, delivery date, cost
- Water usage for two years
- Common area electric usage
- Plans and recent rehab/repair records
- ...and hire an energy auditor and retrocommissioning agent
- A retro-what agent?
Retrocommissioning?

“Existing-building commissioning, also known as retrocommissioning, is an event in the life of a building that applies a systematic investigation process for improving or optimizing a building’s operation and maintenance. The retrocommissioning process most often focuses on dynamic energy-using systems with the goal of reducing energy waste, obtaining energy cost savings, and identifying and fixing existing problems. “

Oregon Office of Energy - Retrocommissioning Handbook

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We also burn #6 oil, now what?

• The City has recently required that buildings burning #6 oil get off it, primarily within the next three years

• #6 oil has higher electricity and maintenance costs than other fuels

• Cost of moving off #6 can be as low as free and up to hundreds of thousands of dollars, depending on the condition of your existing equipment
What is the auditor/retrocommissioning agent going to look at?

• Building enclosure: windows, doors, walls, roofs
• Heating, ventilation and air conditioning (HVAC) systems
• Domestic Hot Water (DHW) Systems
• Lighting, motors, appliances, and other electricity uses
• Age of all of the above and projected life/death
• Maintenance and management schedules/practices
• Owner/manager/maintenance staff experience
• Fuel and water bills for two years
• Cost effectiveness of improving and tuning these systems up
Do you have any more expensive and depressing bad news for us?

• Why yes, yes we do.
• Most NYC multifamily buildings consume 20% more energy and water than they need to (some consume 400% more)
• Reductions are typically easy, changing practices are the least expensive and most cost effective
• How do we find out where we stand?
The Mayor’s Office recently reported that some buildings use five times more energy than their identical counterparts.

REALLY?
The Seven-to-One Problem in Multifamily
Range of Energy Usage in Buildings

All listed in Btu/ft²/HDD

- Single Family USA
- Low Income Single Family NYS
- Low Income Multi-Family NYS 1996
- Selected New Afford. Rehabs NYC 1996
- Middle Income Multi-Family NYS 2006
- Melrose Commons 2002

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Almost 300 NYS Buildings requesting Energy Audits 2001-2005 (BTU/ft2/HDD)
<table>
<thead>
<tr>
<th>Service</th>
<th>Low</th>
<th>Mean</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and sewer</td>
<td>$117</td>
<td>$516</td>
<td>$977*</td>
</tr>
<tr>
<td>Pest control</td>
<td>$32</td>
<td>$75</td>
<td>$156</td>
</tr>
<tr>
<td>Painting</td>
<td>$13</td>
<td>$72</td>
<td>$189</td>
</tr>
<tr>
<td>Landscaping</td>
<td>$0</td>
<td>$72</td>
<td>$187</td>
</tr>
<tr>
<td>Appliances</td>
<td>$0</td>
<td>$22</td>
<td>$79</td>
</tr>
<tr>
<td>Cabinets - Maintenance</td>
<td>$0</td>
<td>$34</td>
<td>$83</td>
</tr>
<tr>
<td>Cleaning supplies</td>
<td>$2</td>
<td>$33</td>
<td>$65</td>
</tr>
<tr>
<td>Lighting fixtures and bulbs</td>
<td>$6</td>
<td>$17</td>
<td>$38</td>
</tr>
<tr>
<td>Ovens and ranges</td>
<td>$0</td>
<td>$15</td>
<td>$26</td>
</tr>
<tr>
<td>Windows</td>
<td>$0</td>
<td>$5</td>
<td>$26</td>
</tr>
<tr>
<td>Lighting – Fixtures only</td>
<td>$0</td>
<td>$9</td>
<td>$18</td>
</tr>
<tr>
<td>Kitchen and bath fans</td>
<td>$0</td>
<td>$9</td>
<td>$2</td>
</tr>
<tr>
<td>Lighting - Bulbs only</td>
<td>$0</td>
<td>$3</td>
<td>$6</td>
</tr>
</tbody>
</table>

* High costs are due to an unnoticed water usage with an outside hose.
A Top 10 Owner of NYC Properties: Multifamily Heating Usage

All in Btu/ft2/HDD

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<table>
<thead>
<tr>
<th>1. HEATING FUEL ANALYSIS</th>
<th>Btu/ft²/HDD</th>
<th>Btu/ft²/HDD</th>
<th>Btu/ft²/HDD</th>
<th>Btu/ft²/HDD</th>
<th>Btu/ft²/HDD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Heating Fuel is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIL</td>
<td>&lt;5</td>
<td>5-10</td>
<td>10-18</td>
<td>18-25</td>
<td>25+</td>
</tr>
<tr>
<td>GAS</td>
<td>&lt;5</td>
<td>5-10</td>
<td>10-18</td>
<td>18-25</td>
<td>25+</td>
</tr>
<tr>
<td>Con Ed Steam</td>
<td>&lt;4</td>
<td>4-8</td>
<td>8-15</td>
<td>15-20</td>
<td>20+</td>
</tr>
<tr>
<td>Electric</td>
<td>&lt;4</td>
<td>4-8</td>
<td>8-15</td>
<td>15-20</td>
<td>20+</td>
</tr>
<tr>
<td>So My Grade is: A B C D F</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. HOT WATER FUEL ANALYSIS</th>
<th>K Btu/Apt/day</th>
<th>K Btu/Apt/day</th>
<th>K Btu/Apt/day</th>
<th>K Btu/Apt/day</th>
<th>K Btu/Apt/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>My hot water fuel is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OIL</td>
<td>15-25</td>
<td>25-75</td>
<td>75-125</td>
<td>125-175</td>
<td>175+</td>
</tr>
<tr>
<td>GAS</td>
<td>15-25</td>
<td>25-75</td>
<td>75-125</td>
<td>125-175</td>
<td>175+</td>
</tr>
<tr>
<td>Con Ed Steam</td>
<td>10-20</td>
<td>20-60</td>
<td>60-100</td>
<td>100-150</td>
<td>150+</td>
</tr>
<tr>
<td>Electric</td>
<td>10-20</td>
<td>20-60</td>
<td>60-100</td>
<td>100-150</td>
<td>150+</td>
</tr>
<tr>
<td>So My Grade is: A B C D F</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. My common area Electric usage Divided by gross Building ft²</th>
<th>Kwh/Gross ft²/year</th>
<th>Kwh/Gross ft²/year</th>
<th>Kwh/Gross ft²/year</th>
<th>Kwh/Gross ft²/year</th>
<th>Kwh/Gross ft²/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Area Electricity</td>
<td>&lt;.5</td>
<td>.5-1.5</td>
<td>1.5-2.5</td>
<td>2.5-4.5</td>
<td>4.5+</td>
</tr>
<tr>
<td>So My Grade is: A B C D F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. My building total annual water usage divided by gross building ft²</th>
<th>Gallons/Gross ft²/year</th>
<th>Gallons/Gross ft²/year</th>
<th>Gallons/Gross ft²/year</th>
<th>Gallons/Gross ft²/year</th>
<th>Gallons/Gross ft²/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Building Water</td>
<td>&lt;30</td>
<td>30-50</td>
<td>50-90</td>
<td>90-125</td>
<td>125+</td>
</tr>
<tr>
<td>So My Grade is: A B C D F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CPC Report Card Grades

Rubric based off "The Green Benchmarking Cheat Sheet"
Simple Swaps, Major Savings

Don’t get left underwater! New York City water costs around $.01 a gallon, plus an extra penny to heat each gallon. In order to help you cut down on costs, CPC developed a convenient worksheet to help you save on water and heating expenses in your multi-family building. Our simple solutions quickly reduce your overhead without large capital expenditures and could lead to an annual savings of over $303 per tenant.

Showerhead Switch from 2.5gpm to 1.75gpm

Those long hot showers are nice but a typical bathroom has a 2.5 gpm showerhead and many older models waste 5 or more gallons per minute (gpm). Upgrade existing showerheads to a 1.75 gpm showerhead and save 7.5 gallons per 10 minute shower. Per person, that’s an annual savings of 2,738 gallons of water and $54 in water and related heating costs per year.

<table>
<thead>
<tr>
<th>25 gal/10mins</th>
<th>17.5 gal/10mins</th>
</tr>
</thead>
<tbody>
<tr>
<td>$182/year</td>
<td>$128/year</td>
</tr>
</tbody>
</table>

$2,738 gal/year

Individual

$54

354,506 gal/year

50-unit multi-family building

$7,006

Sink Aerators Switch from 2.5gpm to .5gpm

Replace old bathroom sink aerators with 0.5 gpm high efficiency pressure compensating aerators (PCA) and save 7,300 gallons of water and $144 in water and related heating costs per year/person. ADDITIONAL SAVINGS: Update your kitchen sink to a 1.5gpm aerator and save 3,650 gallons and $12/year/person.

<table>
<thead>
<tr>
<th>25 gal/10mins</th>
<th>5 gal/10mins</th>
</tr>
</thead>
<tbody>
<tr>
<td>$182/year</td>
<td>$36/year</td>
</tr>
</tbody>
</table>

$7,300 gal/year

Individual

$144

945,350 gal/year

50-unit multi-family building

$18,680

Toilet Switch from 3.5gpf to 1.28gpf

Most old toilets use 3.5 gallons per flush (gpf) while some pre-1980 models use 5 gallons or more. Install high efficiency 1.28 gallon WaterSense certified toilets and save 2.22 gpf. For a typical household, you can save approximately 8,605 gallons per year and about $55 in water costs by replacing that old 3.5gallon toilet.

<table>
<thead>
<tr>
<th>14 gal/day</th>
<th>5 gal/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>$51/year</td>
<td>$18/year</td>
</tr>
</tbody>
</table>

$3,322 gal/year

Individual

$33

430,228 gal/year

50-unit multi-family building

$4,302

The Community Preservation Corporation (CPC) is a not-for-profit mortgage lender that finances affordable multi-family housing throughout New York.

www.communityp.com • (212) 859-6300 • 28 East 28th Street • New York • New York • 10016
Simple Swaps, Major Savings

Save money on lighting! NYC City electricity rates are about 20¢ per kilowatt-hour (kWh). In order to help you cut down on costs, CPC developed a convenient worksheet to help you save on lighting expenses in your multifamily building. Our simple solutions quickly reduce your overhead and can lead to an annual savings of up to 70% in your electricity expenses.

<table>
<thead>
<tr>
<th>Type of Lamp</th>
<th>Replace This . . .</th>
<th>With This</th>
<th>Replace This . . .</th>
<th>With This</th>
<th>Replace This . . .</th>
<th>With This</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime</td>
<td>1,000 Hours</td>
<td>10,000 Hours</td>
<td>20,000 Hours</td>
<td>42,000 Hours</td>
<td>2,500 Hours</td>
<td>10,000 Hours</td>
</tr>
<tr>
<td>Lamp Costs</td>
<td>$0.37</td>
<td>$2.50</td>
<td>$2.82</td>
<td>$12.13</td>
<td>$8.27</td>
<td>$26.40</td>
</tr>
<tr>
<td>Lumens (Brightness) *</td>
<td>850</td>
<td>825</td>
<td>2,700</td>
<td>2,750</td>
<td>1,310</td>
<td>1,185</td>
</tr>
<tr>
<td>If your lamp is on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Your Annual Energy Costs will be . . .</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 Hours per day</td>
<td>$108.36</td>
<td>$24.97</td>
<td>$57.30</td>
<td>$51.59</td>
<td>$186.66</td>
<td>$63.43</td>
</tr>
<tr>
<td>6 Hours per day</td>
<td>$27.09</td>
<td>$6.23</td>
<td>$14.33</td>
<td>$12.88</td>
<td>$46.67</td>
<td>$15.85</td>
</tr>
<tr>
<td>3 Hours per day</td>
<td>$13.55</td>
<td>$3.12</td>
<td>$7.16</td>
<td>$6.45</td>
<td>$23.33</td>
<td>$7.93</td>
</tr>
<tr>
<td>1 Hour per day</td>
<td>$4.52</td>
<td>$1.04</td>
<td>$2.39</td>
<td>$2.15</td>
<td>$7.78</td>
<td>$2.64</td>
</tr>
</tbody>
</table>

Need help paying for your lighting upgrades? Con Ed offers free lighting surveys as part of its Multifamily Energy Efficiency Program (MFEFP) for buildings with 5-75 units. Lighting incentives include cash rebates for high-efficiency fluorescent lighting, occupancy sensors, and LED exit signs. Find out more at: www.coned.com/energyefficiency

*Described in detail on reverse
AND NOW, WHAT YOU’VE ALL BEEN WAITING FOR...

How do we pay for this stuff?
Current Financing Solutions

- On-Bill Financing
- PACE Financing
- Municipal Second Mortgage Programs
- NYCEEC Credit Enhancement for Private Lenders
- NYSERDA Multifamily Performance Program
- NYSERDA Energy Smart Loans
  - All of the options add an additional step, add to the cost and complicate the process
  - Will property owners embrace these methods?
    - Some will, some won’t
Public Incentive Programs

• Utility Rebate Programs
  – Con Edison, National Grid

• Alternative Energy Tax Credits

• Weatherization Assistance Program
  – Good solution for income restricted properties

• Everybody wants something back
  – There is not enough public money to address the enormous need

• Incentives will help, but will not help everyone
  – Incentives are incentives, not permanent solutions
Scale of the Need in NY City

- 3,328,000 Residential Units
- If all units require retrofits of $1,500 - $3,000/unit
- $5 – 10 billion financing need
- 2010 Weatherization for all of NY State
  - $440 million through the ARRA stimulus
  - 2011 & 2012 Budgets drastically reduced
What is a Better Solution?

- Underwrite the savings into the first mortgage
- Expenses:
  - $20 \times 4,500\text{ per unit} = $90,000
  - Say 35\% are for utilities: $31,500
  - Projected savings of 30\%: $9,450
  - Half the savings can leverage $3,500\text{ per unit}
    - Added to the 30 year loan at 5\% = $70,000
- Need to establish a reliable database
  - Empirically prove that it is prudent to underwrite the savings
Why Not Change the Mortgage System

• The majority of buildings have one thing in common: **A Mortgage!**

• Make an audit and retrofit part of the loan process
  – Third party report like an Appraisal or a Phase One
  – Can’t borrow the money without it

• The Lender (money) needs to require and demand the retrofit
  – Legislatively: Green Reinvestment Act
  – Capitalistically: Green Mortgage Backed Security

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The End Result in the Ideal World

- Retrofit mortgage delivery system is adopted by lenders
- CPC model is replicated by other lenders
- Fannie Mae’s Green Financing Program helps enable a Green Mortgage Backed Security (MBS)
- People are educated, awareness grows and the system evolves and adapts
- Education, streamlining and financing push past the tipping point - achieve retrofit at scale
And Now, today’s real highlight.......
Questions/Comments?