Trends in Multifamily Building Energy Efficiency

Data Analysis from NYSERDA’s Multifamily Performance Program (MPP)

~ Ed Morrison, Sr. Project Manager for NYSERDA Multifamily Programs
The Data Set - History

• The Multifamily Performance Program (MPP)
  – multifamily buildings with five or more units
  – Started in 2007
    
    **Market Types:** market-rate and **affordable-rent buildings**

    **Building Type:** New Construction and Existing Buildings
  
  – Incentives come in the form of per unit payments
  – Goal is to reduce energy consumption by a threshold percentage of the properties baseline
Multifamily Performance Program Activity

Affordable Market - Scope of Work Cost Totals

- Existing Buildings
- New Construction

May-07 to May-14
Multifamily Performance Program Activity

Affordable Market - Workscope Cost per Unit (average)

<table>
<thead>
<tr>
<th>Month</th>
<th>Existing Buildings</th>
<th>New Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>May-07</td>
<td>$18,000</td>
<td>$18,000</td>
</tr>
<tr>
<td>Aug-07</td>
<td>$16,000</td>
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<tr>
<td>Nov-07</td>
<td>$14,000</td>
<td>$14,000</td>
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<tr>
<td>Feb-08</td>
<td>$12,000</td>
<td>$12,000</td>
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<td>May-08</td>
<td>$10,000</td>
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<tr>
<td>Aug-08</td>
<td>$8,000</td>
<td>$6,000</td>
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<tr>
<td>Nov-08</td>
<td>$6,000</td>
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<td>Feb-09</td>
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<tr>
<td>May-09</td>
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<tr>
<td>Aug-09</td>
<td>$0</td>
<td>$0</td>
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</tbody>
</table>

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Multifamily Performance Program Activity

Affordable Market - New Construction Electric savings

- KWH Savings
- kW Demand Savings

May-07 to May-14

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Multifamily Performance Program Activity

Affordable Market - Energy Cost Savings

- % Cost saving to tenant
- Cost Savings ($)
- Tenant Cost Savings ($)

<table>
<thead>
<tr>
<th>Year</th>
<th>May</th>
<th>Sep</th>
<th>Jan</th>
</tr>
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<tbody>
<tr>
<td>2007</td>
<td></td>
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<tr>
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<td>2012</td>
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<td>2013</td>
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<tr>
<td>2014</td>
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</tbody>
</table>
Affordable Market – Ownership Type

Ownership - May 2008

- Private (non-profit) 10%
- Private (for-profit) 35%
- Public / Municipal 16%
- Developer 35%
- Co-Op 4%

Ownership - May 2014

- Private (non-profit) 47%
- Public / Municipal 16%
- Developer 28%
- Co-Op 1%
- Private (for-profit) 8%
MPP Measure (Improvement) Trends

Affordable Market – New Construction - Appliances

Counts

- Dishwasher, Install Energy Star
- Refrigerators, install Energy Star
- Washing machines, install Energy Star

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MPP Measure (Improvement) Trends

Affordable Market – New Construction - HVAC

- Air Conditioners, install
- Boiler, new high efficiency, install
- DHW indirect-fired heater, install
- Low-flow aerators, install
- Low-flow showerheads, install
MPP Measure (Improvement) Trends

Affordable Market – New Construction - Envelope / Shell

- Insulation, Below Grade Walls
- Insulation, roof deck or attic
- Insulation, walls
- Windows, new high efficiency, install, apts

Counts


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MPP Measure (Improvement) Trends

Affordable Market – New Construction - Lighting

Counts

- Lighting, bi-level, install
- Lighting, exterior, upgrade or install
- Lighting, High Efficiency Flourescent, Apt install
- Lighting, High Efficiency Flourescent, CA, install
- Lighting, LED exit signs, install
- Lighting, occupancy sensors, install

Dates:
- May 07
- Sep 07
- Jan 08
- May 08
- Sep 08
- Jan 09
- May 09
- Sep 09
- Jan 10
- May 10
- Sep 10
- Jan 11
- May 11
- Sep 11
- Jan 12
- May 12
- Sep 12
- Jan 13
- May 13
- Sep 13
- Jan 14
- May 14
MPP Measure (Improvement) Trends

Affordable Market – New Construction - Motors

Counts

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MPP Measure (Improvement) Trends

Affordable Market – Existing Buildings - Envelope / Shell

Counts

May-07  Sep-07  Jan-08  May-08  Sep-08  Jan-09  May-09  Sep-09  Jan-10  May-10  Sep-10  Jan-11  May-11  Sep-11  Jan-12  May-12  Sep-12  Jan-13  May-13  Sep-13  Jan-14  May-14

- Envelope penetrations, seal (with energy savings)
- Exterior doors, weatherstrip or airseal
- Insulation, roof deck or attic
- Insulation, walls
- Windows, replace, apts

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MPP Measure (Improvement) Trends

Affordable Market – Existing Buildings - Heating Systems

Counts

May-07 Sep-07 Jan-08 May-08 Sep-08 Jan-09 May-09 Sep-09 Jan-10 May-10 Sep-10 Jan-11 May-11 Sep-11 Jan-12 May-12 Sep-12 Jan-13 May-13 Sep-13 Jan-14 May-14

Boiler, new high efficiency, install
Boiler, replace
Programmable thermostats, install
Thermostatic radiator valves, install

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MPP Measure (Improvement) Trends

Affordable Market – Existing Buildings - Hot Water

Counts

May-07 Jan-08 May-08 Sep-08 Jan-09 May-09 Sep-09 Jan-10 May-10 Sep-10 Jan-11 May-11 Sep-11 Jan-12 May-12 Sep-12 Jan-13 May-13 Sep-13 Jan-14 May-14

- DHW heater, high efficiency, install
- DHW, controls
- Low-flow aerators, install
- Low-flow showerheads, install
- Piping, DHW, insulate

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Thank you.