New York City
### New York City | Context, Goals, and Targets

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
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<tbody>
<tr>
<td>70%</td>
<td>Of citywide emissions come from the energy used in buildings</td>
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<tr>
<td>40%</td>
<td>Of citywide emissions come from on-site fossil fuel combustion in buildings</td>
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<tr>
<td>80x50</td>
<td>Reduce citywide greenhouse gas (GHG) emissions by 80% from 2005 levels by 2050</td>
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<tr>
<td>40x30</td>
<td>Reduce GHG emissions by 40% from 2005 levels by 2030</td>
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<tr>
<td>100%</td>
<td>Of buildings will need to complete a deep energy retrofit</td>
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<tr>
<td>50-60%</td>
<td>Of buildings must convert to high efficiency electric heat pumps</td>
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<tr>
<td>90%+</td>
<td>Of buildings must electrify hot water systems</td>
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City context | Actions and progress to date

New York City’s Commitment to 80x50

- As of 2016, 18% reduction in emissions from buildings
- Most actions to date have focused on large buildings
- 800,000 1-4 family buildings account for ~20% of GHG emissions

For 1-4 family buildings, by 2050...
- Estimated 500,000 must install ASHPs
- Up to 750,000 must install HPWHs
Key market opportunities

176,000 1-4 family buildings citywide identified as good candidates for ASHPs

» Most homes are heated by natural gas, but lack central air conditioning

Staten Island: 70,742 high potential homes for ASHPs

» 71% single family homes
» 86% owner-occupied
» Nearly 100% gas heated
Key market opportunities

Bronx: 19,240 high potential homes for ASHPs
» 33% single family homes
» 52% owner-occupied
» 34% use heating oil
Local Supply Chain – Large and Fragmented

Local Cold Climate ASHP Supply Chain
NYC and Surrounding Counties (~25 mile radius)

» 17 NEEP-certified manufacturers supply products locally
» At least 67 distributors with over 200 locations in operation
» The top 8 distributors account for roughly half of locations
» Nearly 14,500 local HVAC contractors
» Over 90% of firms employ 10 or fewer employees
Going to Scale:
City-Industry Cooperation for RH&C
October 26, 2017

Local Barriers and Opportunities

Opportunities

• Growing demand/need for central cooling (with low central AC penetration), “smart buildings,” solar PV
• Proposed performance-based Energy Code & energy performance mandate for existing buildings
• Development of a “utility transformation study” with local utilities
• NYSERDA and Con Ed pilot projects and programs

Barriers

• Over 1 million buildings in NYC
• Large and fragmented local supply chain and contractor network
• Current electric grid capacity and concerns over technical feasibility and potential future impacts of strategic electrification
Next steps

» Phase 2 Goals (1-2 years):
  › Determine the factors that drive demand among both 1-4 family homeowners and large building owners in NYC
  › Identify key opportunities and begin growing the local contractor network and supply chain
  › Develop technical solutions to overcome issues with ASHP and HPWH installations where needed
  › Determine potential impacts of electrification to the grid in partnership with utilities
  › Begin working on a coordinated approach with observer cities
Next steps

» Phase 3 Goals (3-5 years):
  › Scale up demand for ASHPs and HPWHs across thousands of 1-4 family homes and large buildings in NYC
  › Develop a robust local supply chain that can accelerate high quality installations for significantly lower cost
  › Develop and implement the long-term strategy to phase in installations that puts NYC on track to its 2050 electrification targets
  › Implement the national/international effort to transform the ASHP and HPWH market across North America