

New York City



New York City | Context, Goals, and Targets

70% *Of citywide emissions come from the energy used in buildings*

40% *Of citywide emissions come from on-site fossil fuel combustion in buildings*

80x50 *Reduce citywide greenhouse gas (GHG) emissions by 80% from 2005 levels by 2050*

40x30 *Reduce GHG emissions by 40% from 2005 levels by 2030*

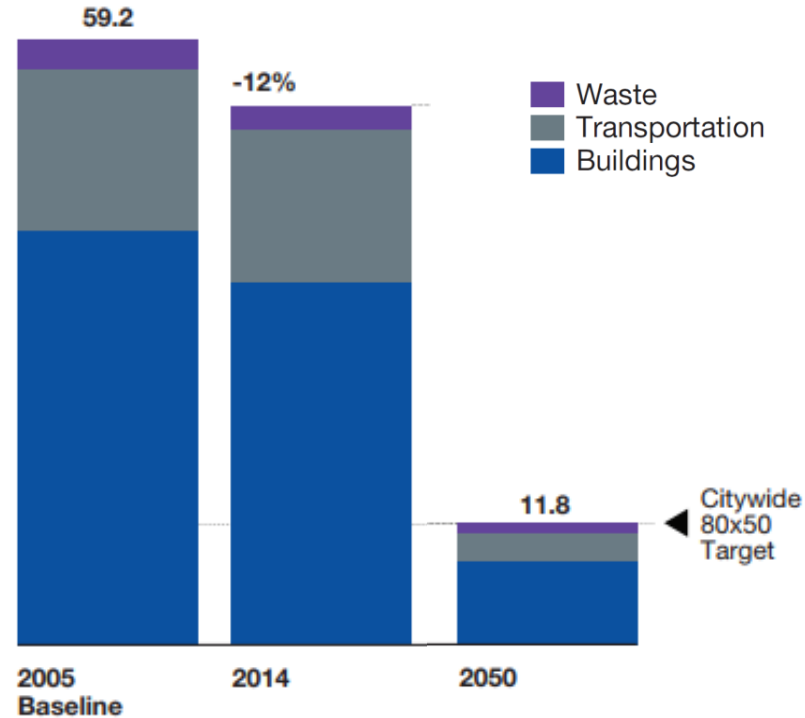
100% *Of buildings will need to complete a deep energy retrofit*

50-60% *Of buildings must convert to high efficiency electric heat pumps*

90%+ *Of buildings must electrify hot water systems*

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

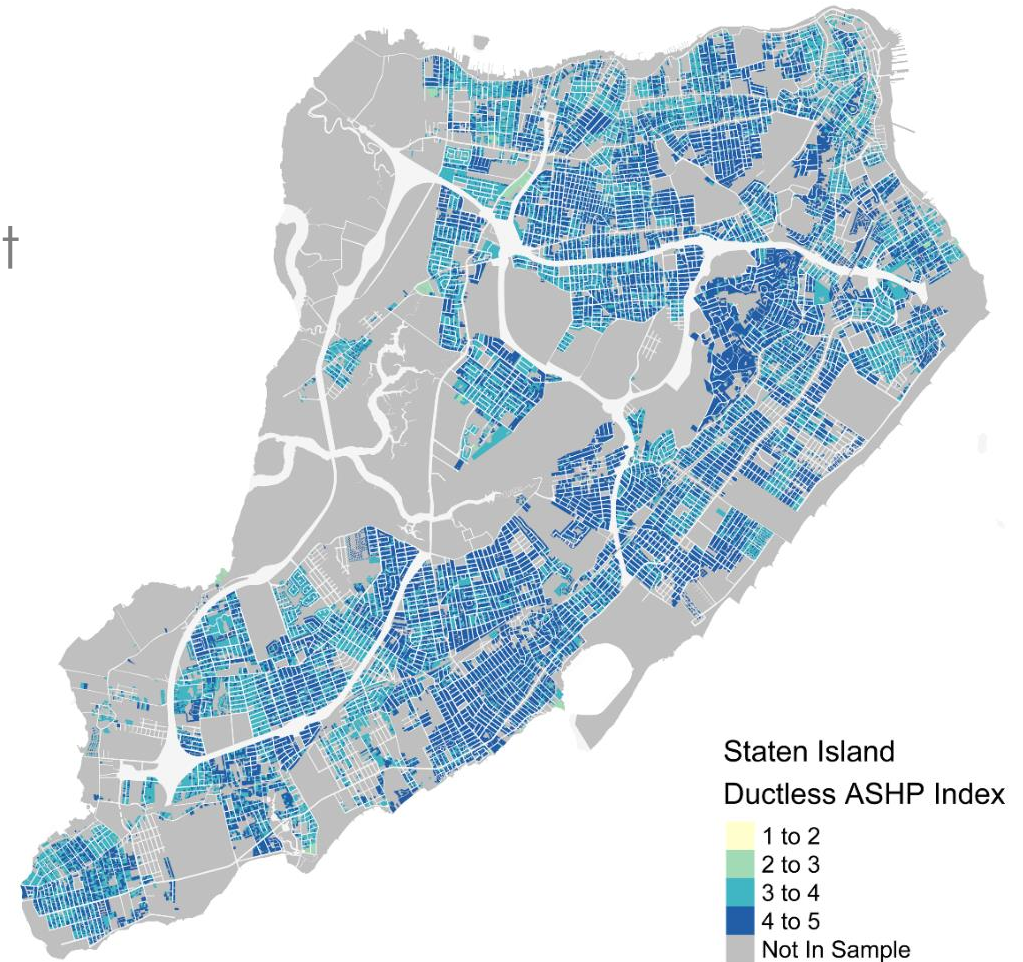
Key market opportunities

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

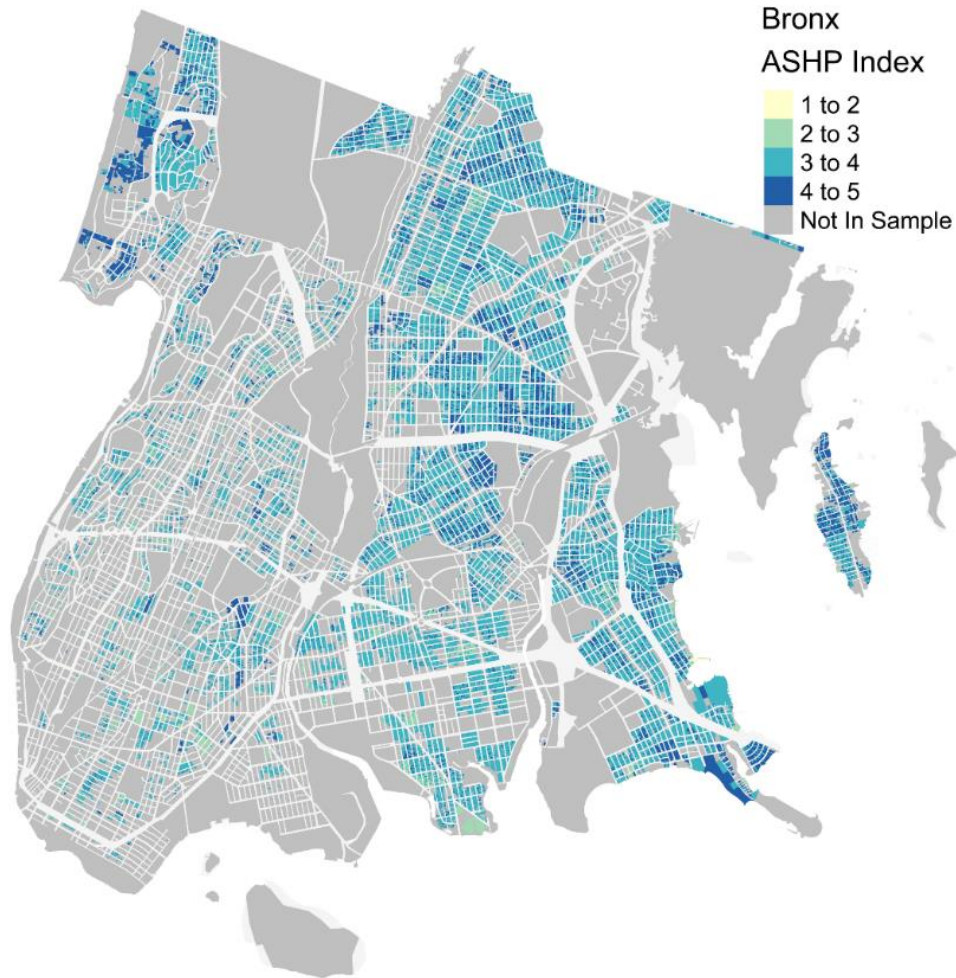
- » Most homes are heated by natural gas, but lack central air conditioning

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

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*