

Washington D.C.



City context | Goals and targets

80 x 50

*80% GHG reduction by 2050
with an interim goal of 50% by 2032*

75%

of GHG emissions are attributable to buildings

35%

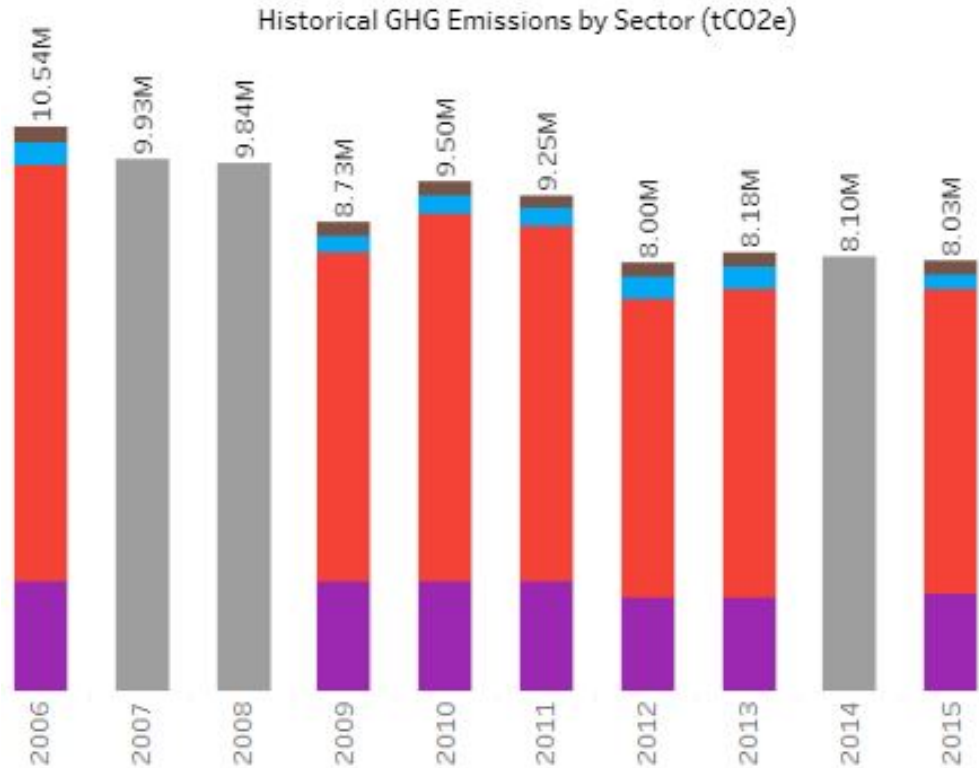
*of energy consumption in buildings came from natural gas,
heating oil, and diesel in 2015*

The 50% by 2032 target requires:

20%

of buildings to complete a deep energy retrofit

City context | Actions and progress to date



- » About 20% reductions from 2006 to 2015, but mostly from coal to natural gas switching at PJM
- » Buildings have reduced energy consumption by about 9% since 2006
- » The residential sector accounts for 23% of GHG emissions from buildings
 - › 1-4 family homes account for nearly half of residential buildings in the District (numbering more than 145,000)

(draft)
Clean Energy DC

Thermal decarbonization options are needed for heating in buildings to achieve targets

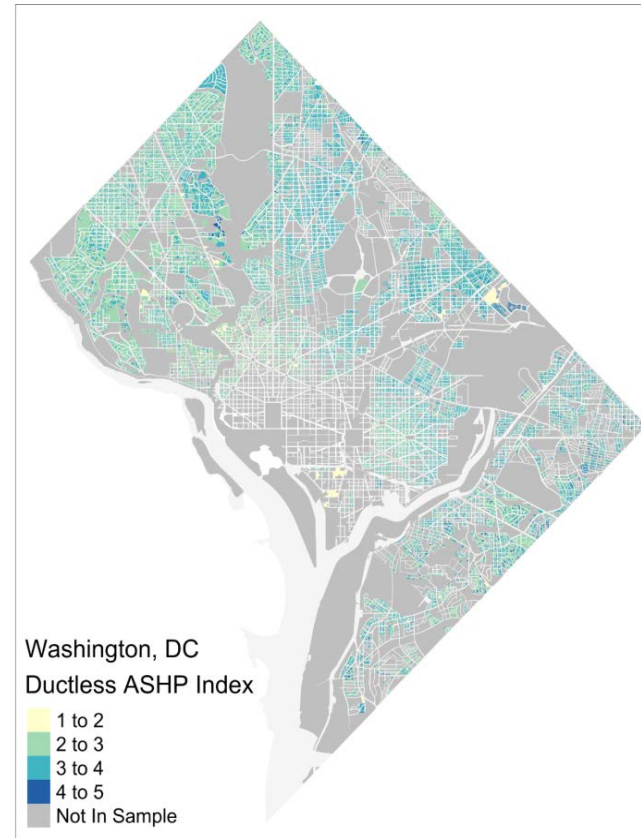
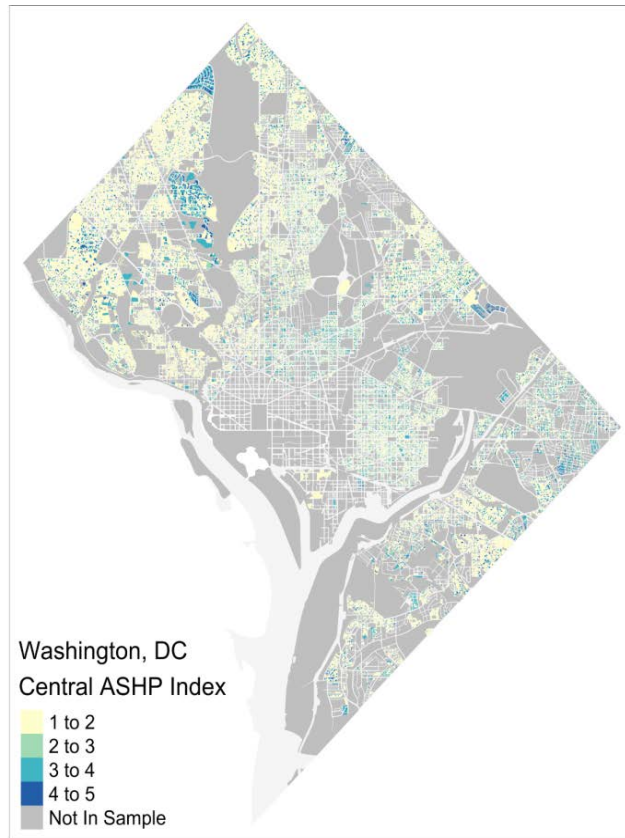
Key market opportunities

Most promising opportunity: small residential buildings using electric resistance heating and heating oil and/or lacking central AC

- » Most homes (likely) heated by natural gas, though **at least 9%** of homes use higher cost heating fuels
- » **Up to 38% of 1-4 family homes** do not have central AC, which make the cooling benefits of ASHP more appealing in DC's warm (and warming) climate
 - › Ductless ASHPs are promising options to address this market, as many of these homes will lack ductwork, and contractors installing ductless ASHPs are already targeting these homeowners
- » Engaging existing ASHP installers and one of the 20+ distributors in metro DC critical to reaching these customers

Key market opportunities

- » *Small residential buildings using window AC units, and electric resistance heating or heating oil.*



92,131 buildings assessed for ASHP potential:

- » *Approx. 10% have high potential for ASHP adoption (4,024 for ductless, 5,432 for ducted)*

Local Barriers

Technical and building barriers

- **High AC penetration:** At least 62% of homes already have central AC
- Contractors indicate these customers are not aware of/not interested in replacing central AC with ASHP

Awareness barriers

- Contractors and consumers have limited awareness of existing incentives for ASHPs from DC SEU
- Consumers lack awareness of ASHPs, and many installations are replacements of existing central systems or are from upselling cooling-only systems

Market data

- Existing data sources provide inadequate look at state of market – e.g. low data on residential heating fuels, annual heat pump installations

Next steps

- » *Phase 2: pilot program design to accelerate deployment*
 - › *Collaboration with DC SEU and midstream stakeholders to strengthen program design process and identifying opportunities to modify existing programs*
- » *Parallel initiatives:*
 - › *A neighborhood-based clean energy transition analysis and tools*
 - › *New building codes in FY 18*
 - › *Extend the clean energy roadmap to 2050 with multiple pathway scenarios*