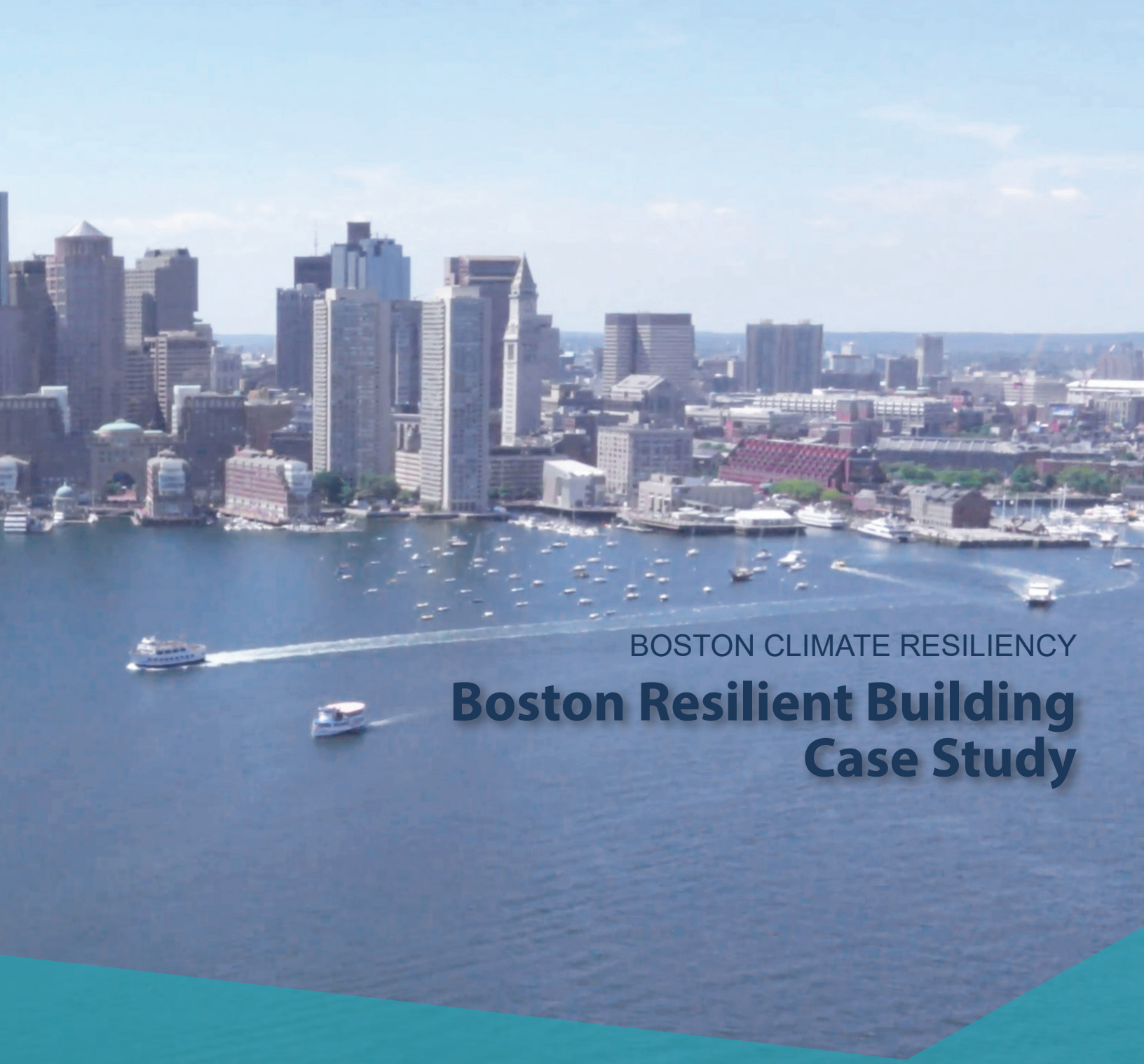

BOSTON CLIMATE RESILIENCY

Boston Resilient Building Case Study

boston planning & development agency

June 2022

OFFICE

380 Stuart St

380 Stuart Street, Boston, MA 02116

Team:
Owner / Developer: SCD 380 Stuart LLC, an affiliate of Skanska USA Commercial Development, Inc.
Architect: CBT Architects
Sustainability / LEED: Thornton Tomasetti
MEP Engineer: Cosentini Associates
Construction Management: Skanska USA Building, Inc.

OFFICE

Zero Net Carbon Approach

ALL ELECTRIC BUILDING HVAC

NET ZERO CO_2 CARBON OPERATIONS

TRIPLE PANE HIGH-PERFORMANCE ENVELOPE

100% OUTSIDE AIR & MERV 15 FILTRATION

Carbon Performance Reduction

- The building is designed to achieve a predicted maximum carbon emissions intensity (CEI) of 1.4 kg of CO2e/sf-yr, utilizing a 2035 grid emissions factor.
- The building is designed to achieve a predicted energy use intensity (EUI) of 25 kBtu/sf-yr.
- The building will be one of the largest office buildings in Boston to utilize all electric building HVAC systems.
- The design and construction team is focused on reducing embodied carbon through the use of Skanska's Embodied Carbon in Construction Calculator (EC3).

Building Design Features

- High performance triple glazed envelope with enhanced airtightness will reduce building energy usage.
- The building will utilize state of the art air source heat pump technology to electrify 100% of building heating loads.
- Dedicated outdoor air systems with highly efficient (70%+) enthalpy recovery wheels will recover energy from exhaust air, allowing the HVAC system to supply twice the code required ventilation air while minimizing associated energy usage.
- Heat recovery chiller/heat pump will transfer useful energy between the heating and cooling systems to reduce energy usage.
- Chilled beam HVAC system will reduce building fan power energy & reheat energy in comparison to a traditional VAV system.

Zero Net Carbon Approach

- The design team focused first on reducing energy consumption via a high performance envelope, high performance energy recovery, and high efficiency systems, then integrated in a highly efficient air source heat pump system to electrify 100% of building heating loads.
- The project is committed to purchasing green power either directly or through the purchase of renewable energy credits.
- All electric building HVAC systems will eliminate the associated scope 1 carbon emissions.

Climate Adaptation

- High reflectance roof and landscaping will minimize solar heat gain and associated heat island effect.
- Utility transformer vault, main electrical room, and main telecommunications room will all be located on the second floor to mitigate future flooding risks.
- Stormwater capture system will reduce rainwater runoff, associated pollution and overburdening of the municipal wastewater system.
- Infiltration system will recharge groundwater, helping to maintain groundwater levels and protect existing structures which are supported on wooden piles.
- The use of air source heat pumps for a large percentage of the total building cooling load will reduce water usage in comparison to an entirely water cooled chiller plant.
- Electric boilers will provide an all-electric heating source during extreme cold weather events below the operating temperature of the air source heat pumps.