

Boston must generate and be supplied with electricity sourced from renewable and other low-carbon generation resources.

## Connecting Outcomes to Goals

### Net-Zero Emissions

Rapidly scaling low-carbon electricity resources is the foundational net-zero action.

### Resilience

A diverse local resource mix is less dependent on extra-regional supplies of fuels and uses local distributed energy generation. This creates opportunities for more secure and stable electricity systems.

### Increasing Social Equity

A balanced mix of energy resources creates an affordable transition.

## Progress Assessment

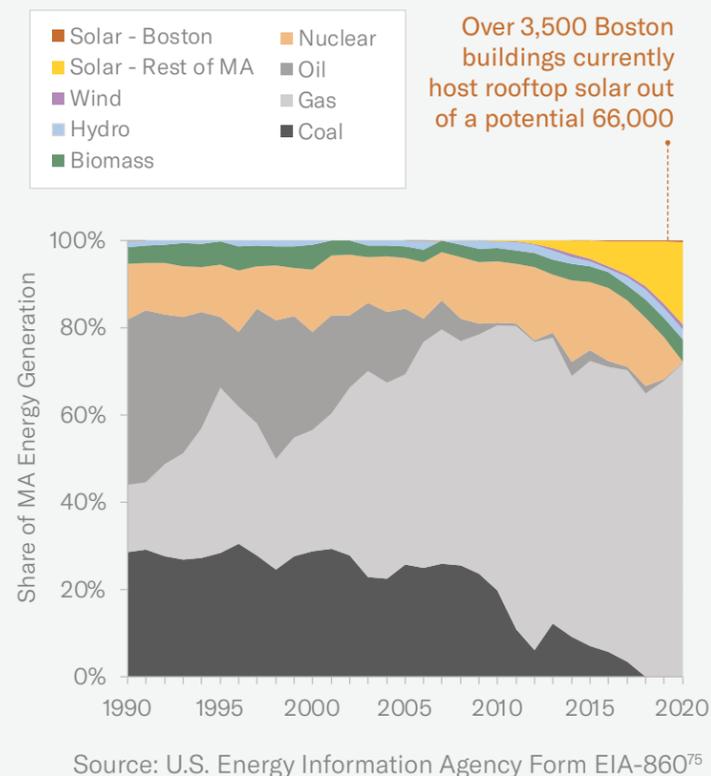
Recent state<sup>22,28,30,77</sup> and federal<sup>37,38,38</sup> policies have stepped up efforts to deploy wind, solar, and transmission resources, but it is yet to be seen whether scaling these activities can achieve a pace that aligns with the City's (or Commonwealth's) goals.<sup>29</sup> Boston's Community Choice Energy program helps to push this transition forward, but ultimately the jurisdictional control of electricity supply lies with the state and region.

The transformation is being challenged by the inertia of fossil fuel-focused market design,<sup>78</sup> supply chain constraints,<sup>79</sup> workforce limitations, and utility barriers.<sup>80</sup> Further, the growth of renewable energy in the Northeast region is dependent on the ability of many localities to scale and site solar and wind<sup>81</sup>—recent examples of local opposition highlight the challenge of conflicting interests that push back against renewable deployment.<sup>82</sup> The adoption of rooftop solar in the city can support local resilience benefits while avoiding the need to build solar elsewhere, but is itself challenged by limitations on the distribution system (see outcome #5).

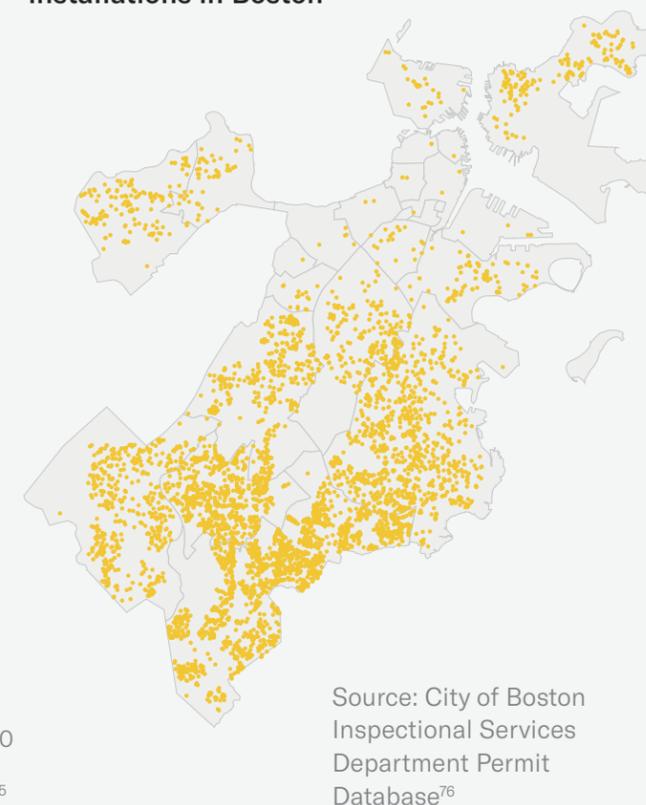
## Figure 7. Solar in Boston can deliver local energy benefits but achieving net zero depends on regional action and coordination.

Twenty percent of the Commonwealth's electricity comes from solar. Boston's Community Choice Energy brings an extra 10% to participating homes and businesses. Solar (6 GW) and wind (1.5 GW) across the region will need to grow 10 and 20-fold respectively to decarbonize the grid and support electrification. More rooftop solar reduces the need for land-based solar.

### Share of Massachusetts electricity generation by fuel or resource.<sup>75</sup>



### Location of solar installations in Boston<sup>76</sup>



## Equity Implications & Indicators

**Cost of Electricity:** Policy and implementation strategy need to ensure that low-income households are not burdened by high rates.

**Adoption of Rooftop Solar:** Low-income and rental households currently lag in terms of rooftop solar adoption,<sup>27,76,83</sup> which will put them at a financial disadvantage as the benefits of such systems grow.

## Big Lifts

**Retrofitting the Small Building Stock:** 55 MW of solar has been installed on 3,500 buildings in Boston (Figure 7). As much as 1,100 MW could be installed on 66,000 buildings in the city—the vast majority of which are single-family and small multifamily homes.<sup>84</sup>

**Local Energy Planning:** Scaling rooftop solar and the need to bring in renewable electricity to meet growing demand will require distribution system upgrades within the city.