Boston Smart Utilities

Thermal Decarbonization

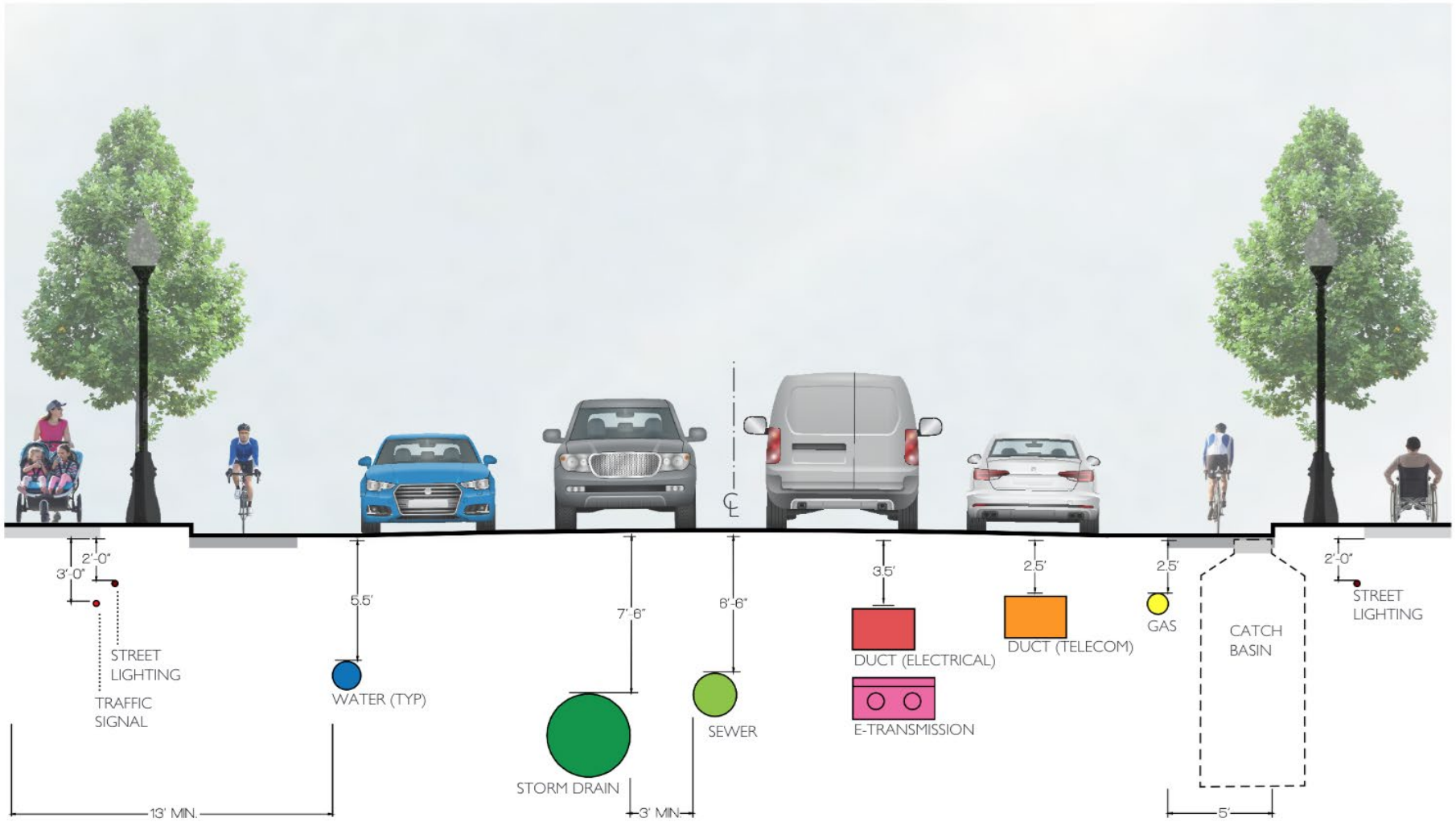
Initiatives, Investigations and Climate Resilience

boston planning & development agency

Date

December 8, 2023

The (unseen) Right Of Way

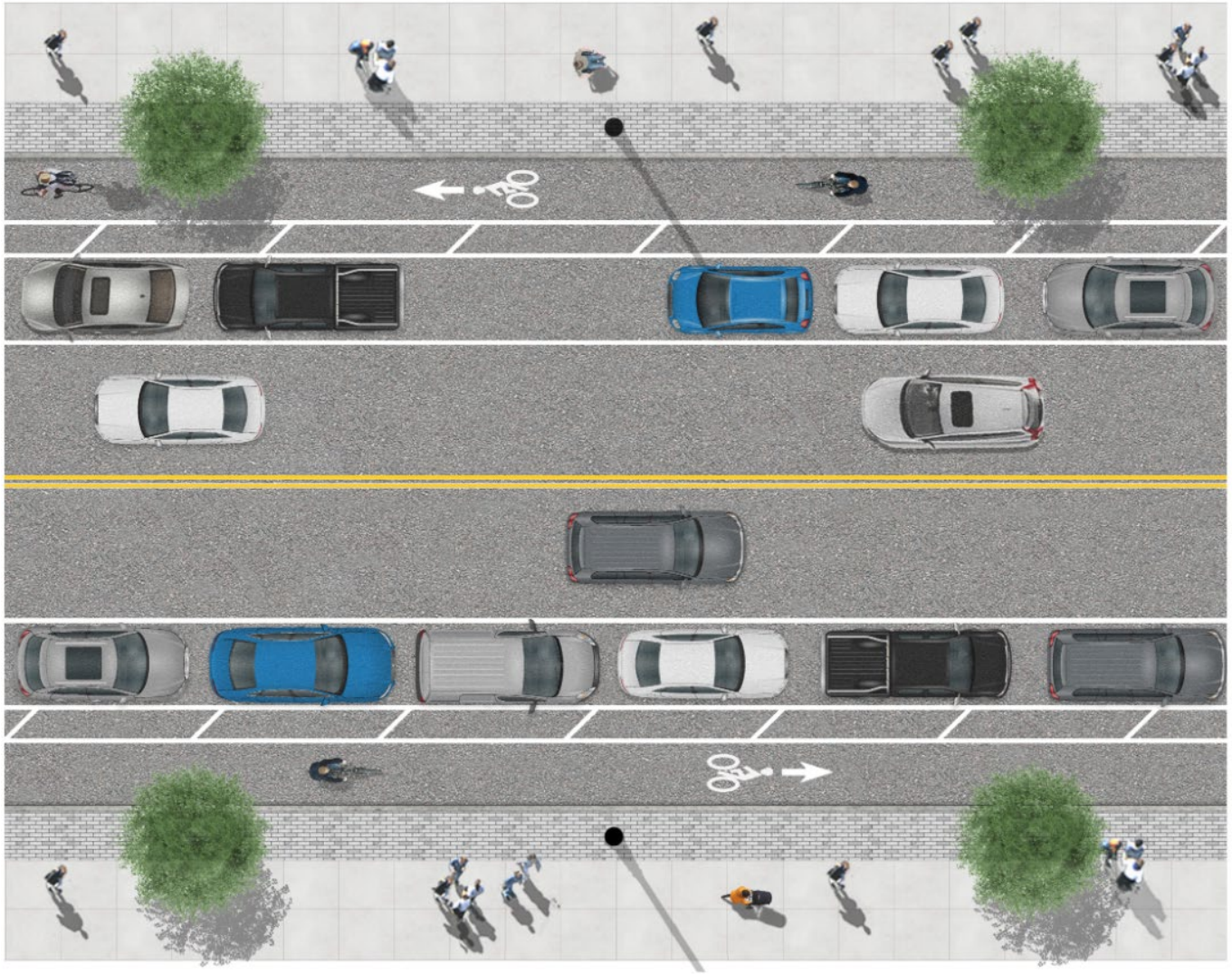


Boston Smart Utilities

Benefits:

- Make utilities easier to build, maintain and upgrade
- Reduce energy/water costs for residents/businesses
- Harden infrastructure against flooding and heat waves
- Attract businesses & jobs through world-class utilities
- Integrate cutting edge technologies to continue to innovate.

Impacts Above



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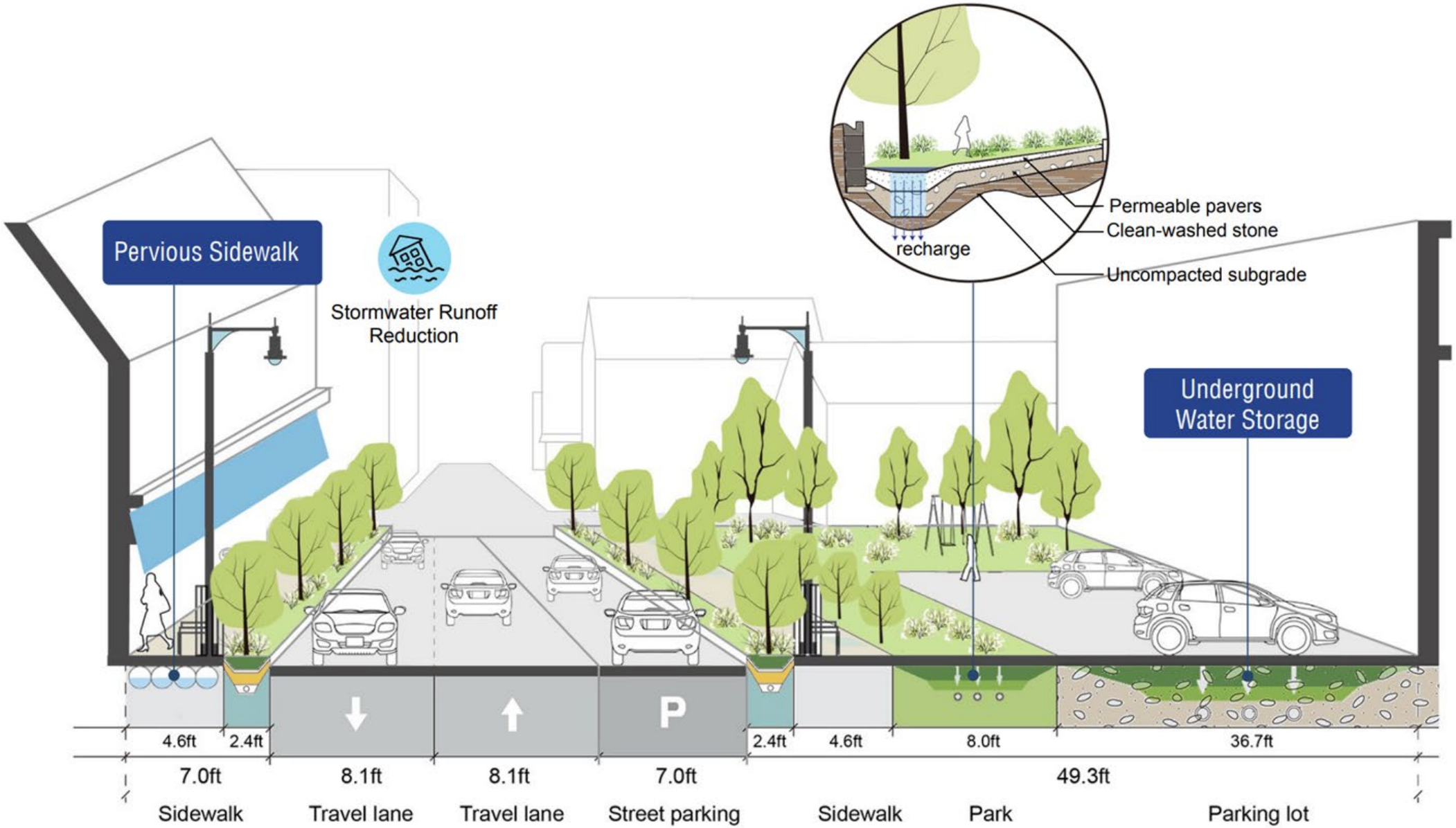
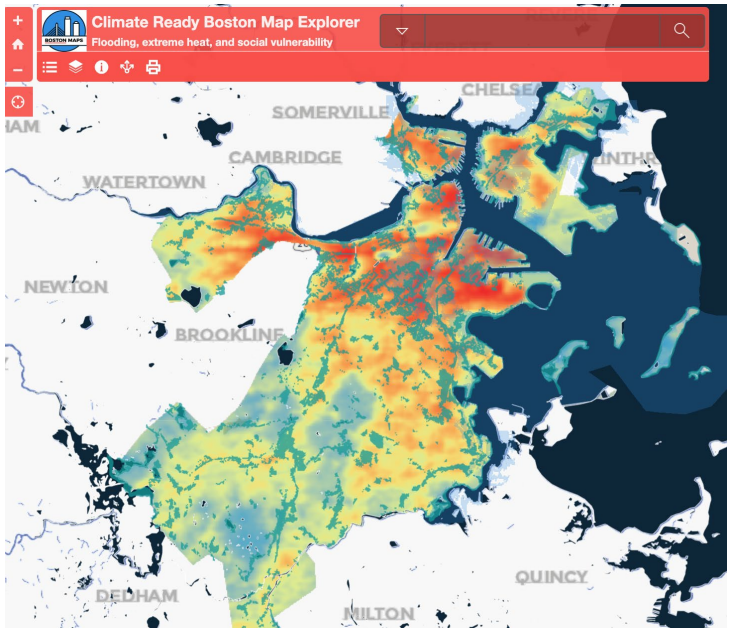
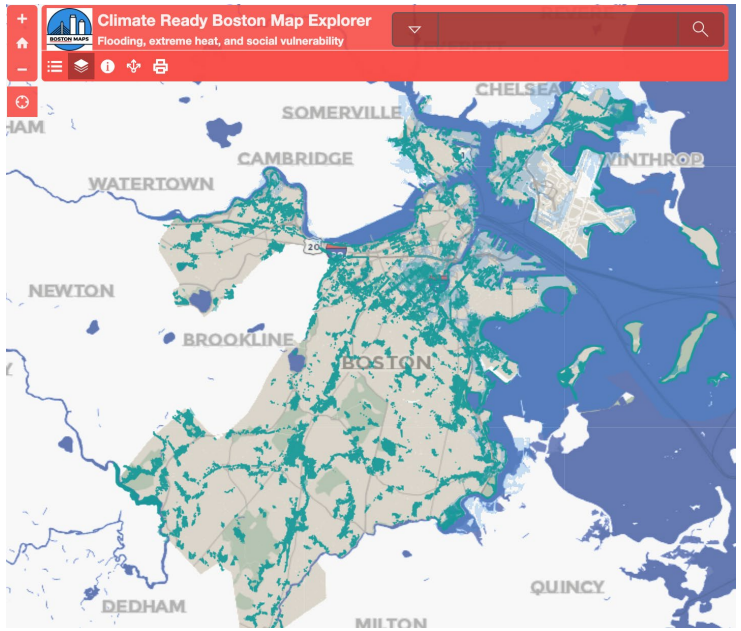

Pervious Sidewalk
Stormwater Runoff Reduction
recharge
Permeable pavers
Clean-washed stone
Uncompacted subgrade
Underground Water Storage
P
4.6ft
2.4ft
2.4ft
4.6ft
8.0ft
36.7ft
7.0ft
8.1ft
8.1ft
7.0ft
49.3ft
Sidewalk
Travel lane
Travel lane
Street parking
Sidewalk
Park
Parking lot

Heat



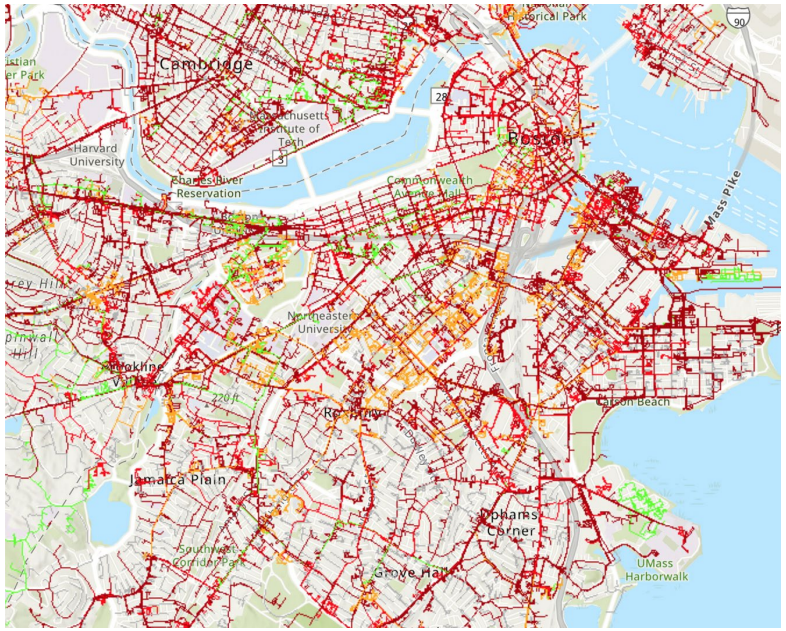
Shade Surfaces

Stormwater



Green Infrastructure

Decarbonization



Electrification

Two Buckets

1

Smart Utilities Standards

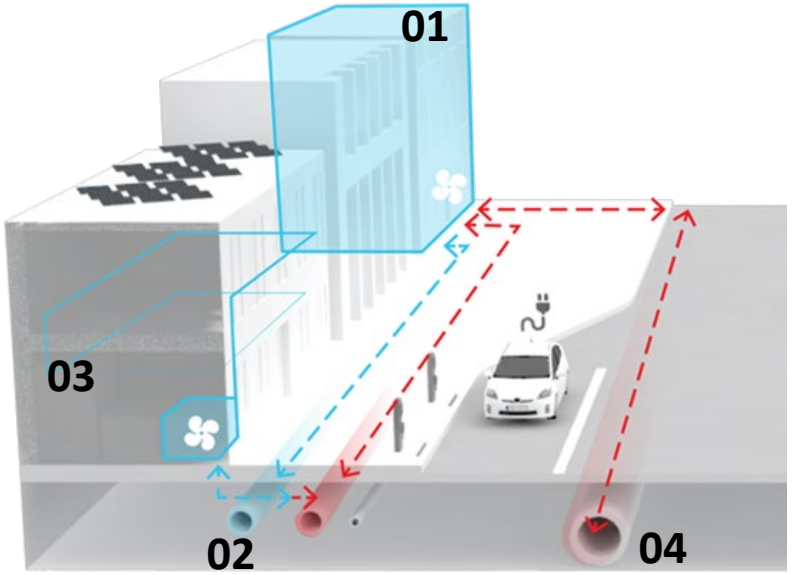
2

Smart Utilities Policy for Article 80 Zoning Review

1

Smart Utilities Standards

Smart Utilities Standards
District Energy



1. All Electric Efficient Buildings
2. Connected Distribution
3. Different Use Types
4. Main Energy Corridor

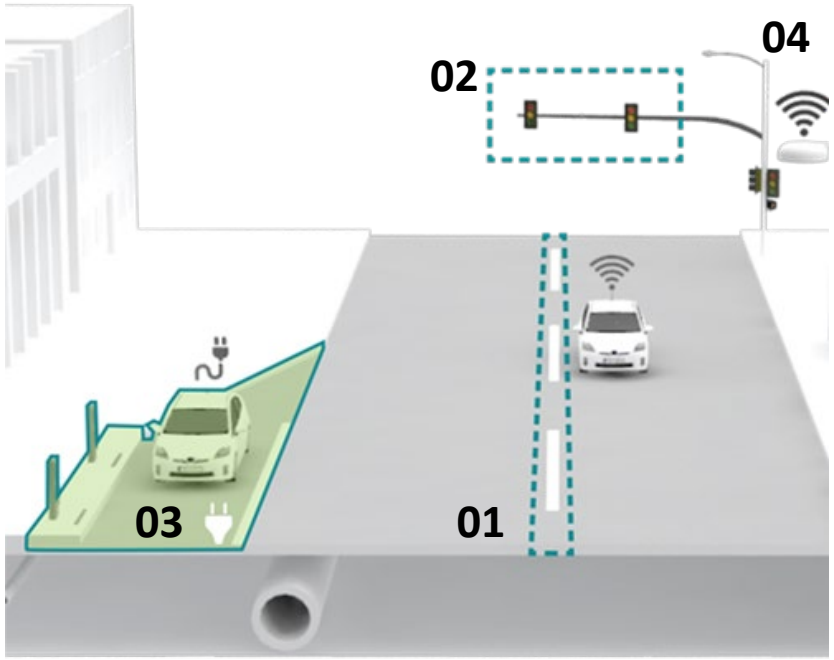
Smart Utilities Standards
Green Infrastructure

Strategies for stormwater management that emphasize best practice opportunities for the Right of Way. The **City of Boston is currently standardizing Green Infrastructure details for the R.O.W.**

Increased cost savings over "grey" stormwater infrastructure.

Assembling Specifications for Porous Surfaces

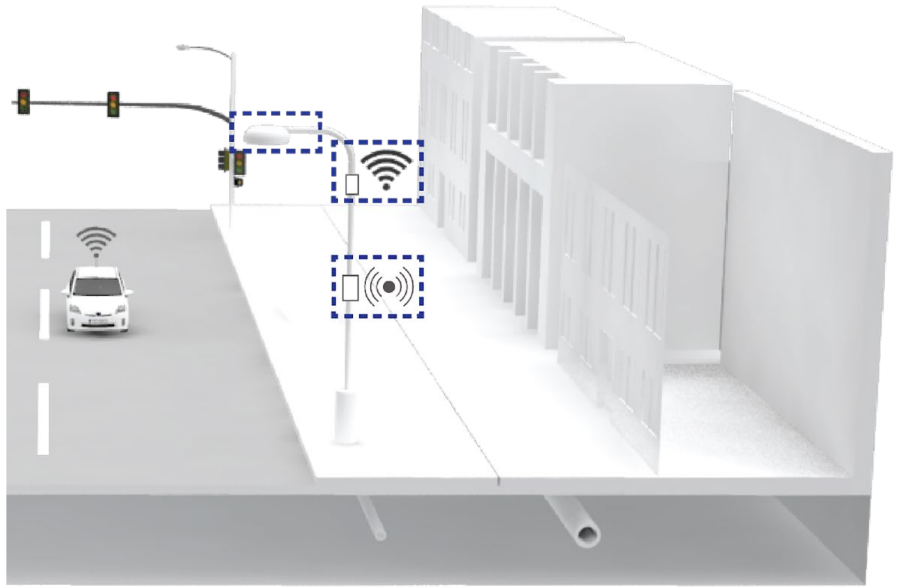
Smart Utilities Standards
Adaptive Signal Technology



01 Road Re-Striping
02 Smart Traffic Signals
03 Charging/ Idling Spaces
04 Communications Equipment

AST is a series of motion **sensors and traffic signals** that communicate in order to **improve traffic flow and safety for all modes**

Smart Utilities Standards
Smart Street Lights



Smart technology **mounted on traditional light poles**

Technology for data collection, pollution control, traffic management, safety, etc.

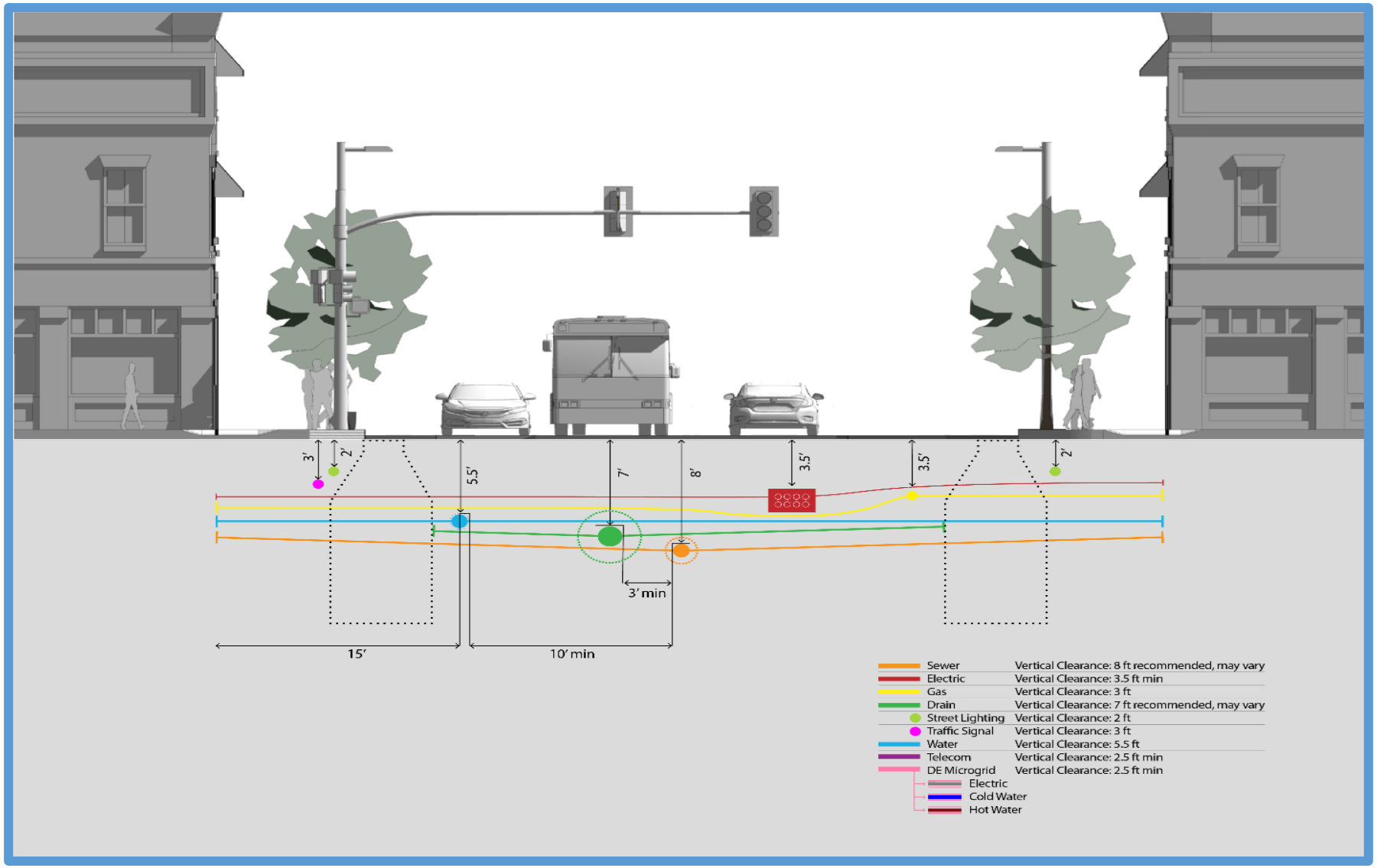
Smart Utilities Standards
Telcom Utilidor

A set of encased pipes that **consolidate wires and fiber optics** of cable/internet

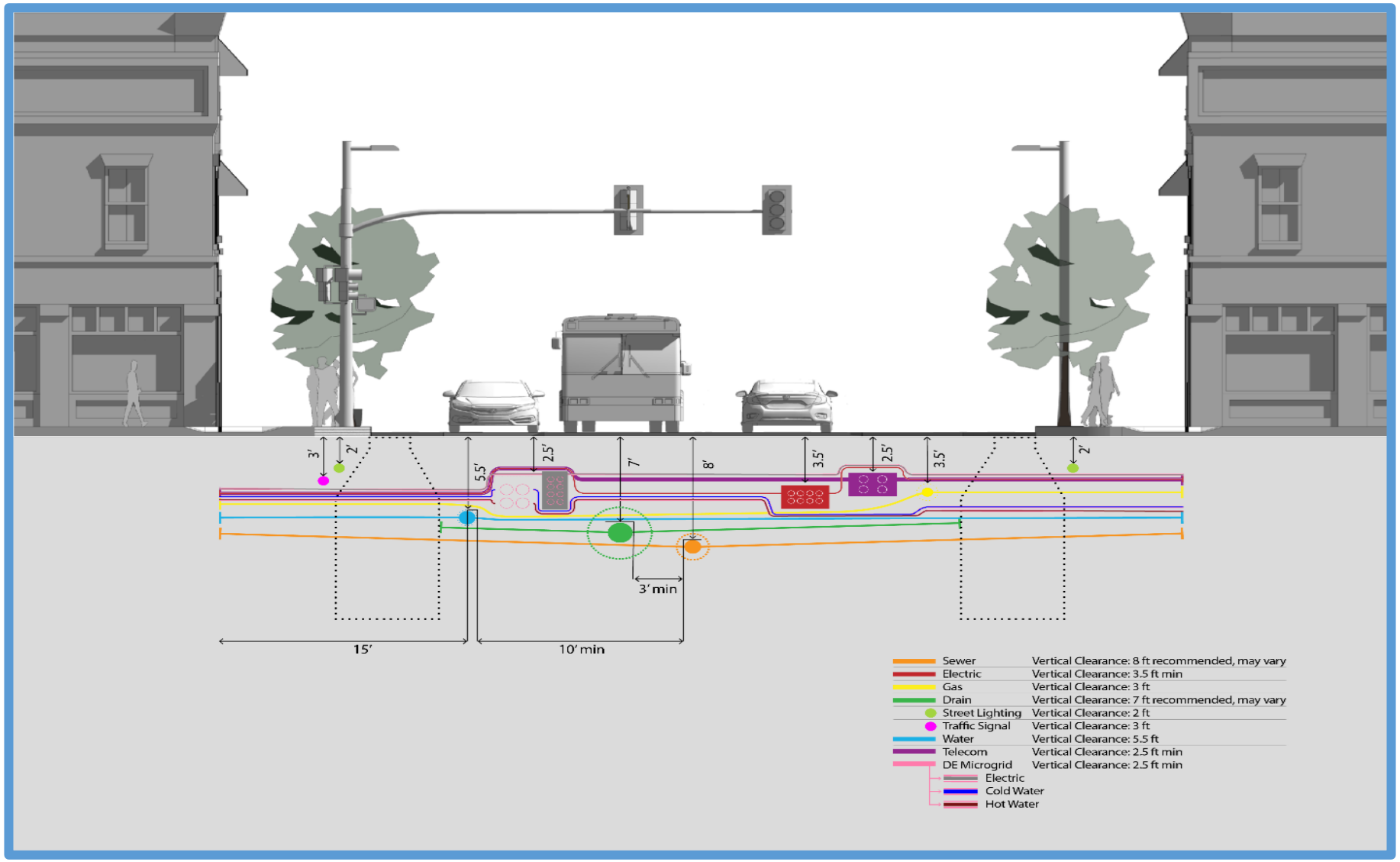
Eliminates repetitive **street openings**

Reduces barriers to entry in telecom sector

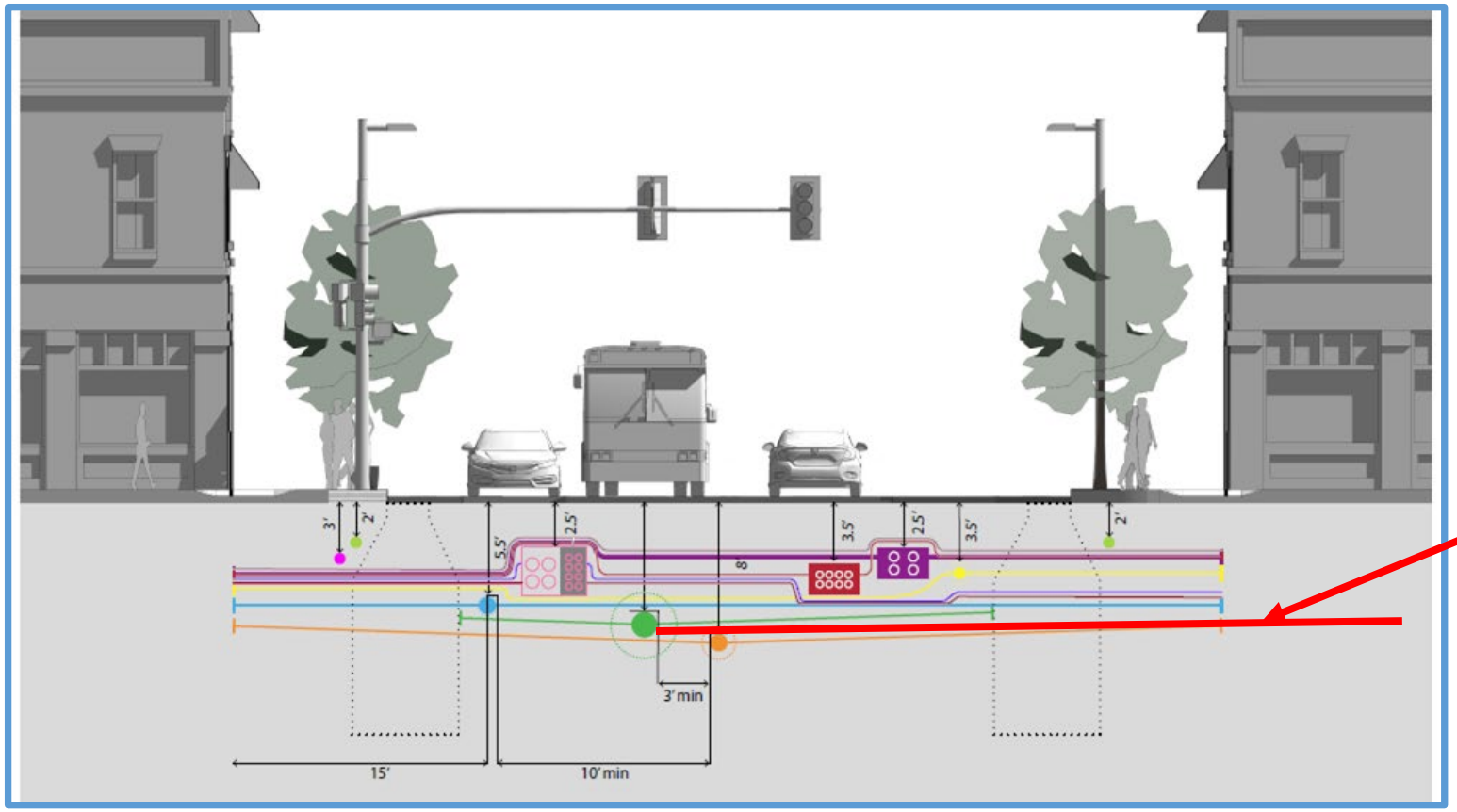
Smart Utilities Standards



Smart Utilities Standards



Smart Utilities Standards



Goal:

Implement Networked Geothermal and Waste Energy Standard

2

Smart Utilities Program and Policy

Article 80 Review and Advanced Feasibility Assessments

Advanced Energy Feasibility Assessments

Threshold - 1.5 million GSF

Low temperature thermal loop and geothermal technologies

Solar thermal and photovoltaic (PV) technologies

Sanitary sewer, blackwater and seawater heat exchange

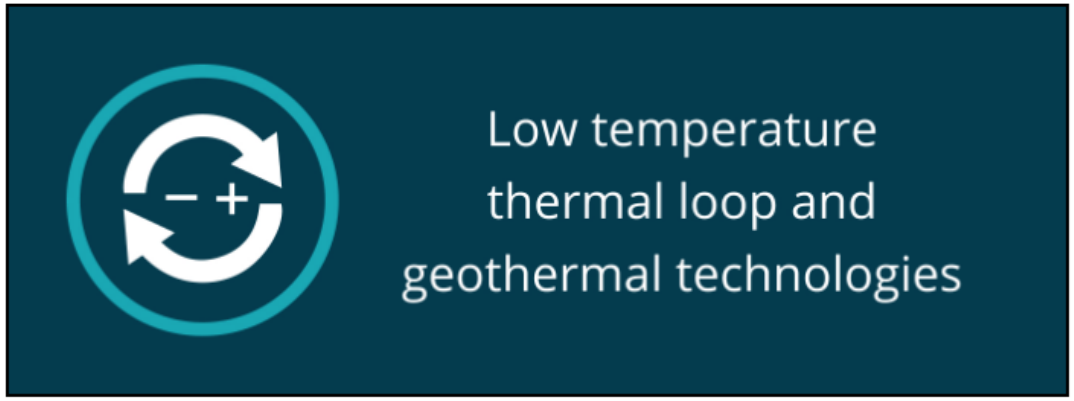
Demand management/ feedback systems

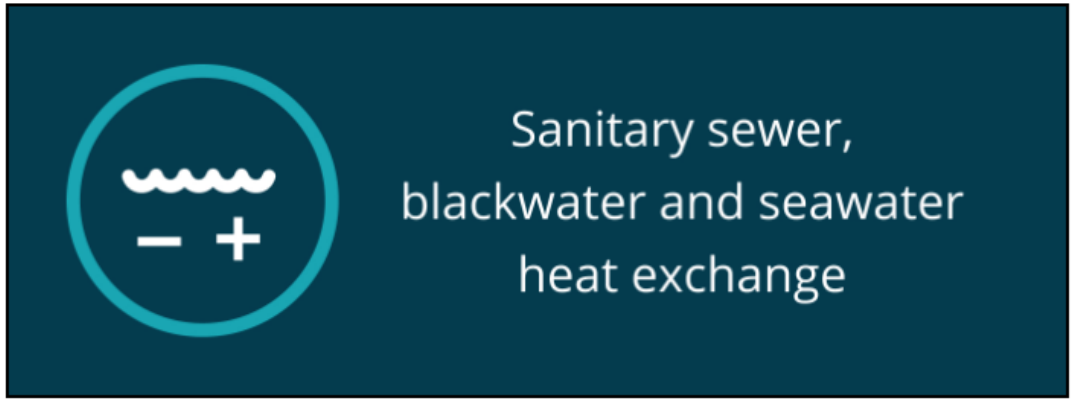
Vehicle to Grid (V2G) systems

Water collection and reuse

Advanced Energy Feasibility Assessments

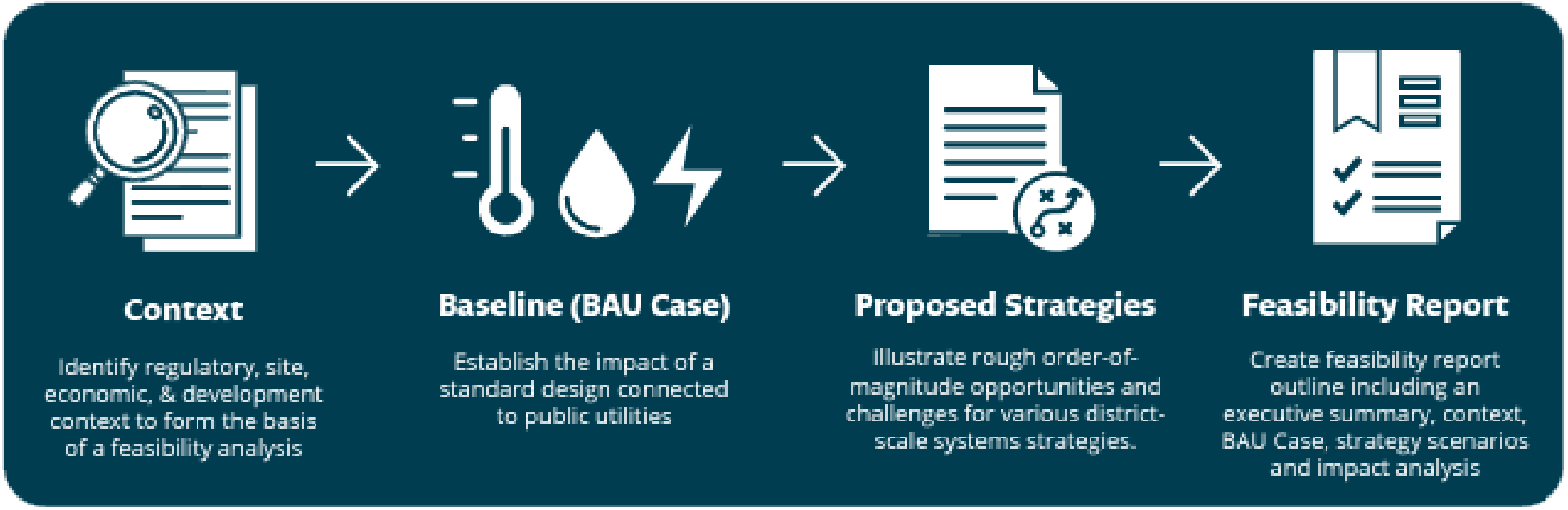
Threshold - 1.5 million GSF





Advanced Energy Feasibility Assessments

Threshold - 1.5 million GSF



Advanced Energy Feasibility Assessments

Threshold - 1.5 million GSF

Part 1 - Context : Information and Data Collection

Identify and document the regulatory, economic, site, and development context to form the basis of a feasibility analysis of a Advanced Energy System.

Regulatory

City of Boston Goals

- ➔ BERDO
- ➔ Zero Net Carbon Targets
- ➔ Heat Mitigation and Adaptation
- ➔ Resilience

Advanced Energy Feasibility Assessments

Threshold - 1.5 million GSF

Part 2- Advanced Energy Feasibility Assessment: Purpose

1-2 Meetings with the Smart Utilities Team and key stakeholders. Review and discuss key deliverables and findings related to the techno economic study. The overall deliverables are finalized summary report are outlines below.

Baseline

Establish the impact of a standard design connected to public utilities

- ➔ Heating Cooling Demands
- ➔ Stand Alone Buildings vs. District
- ➔ Water balance (gal/year) Potable and Non-potable opportunities - what is available?

Advanced Energy Feasibility Assessments

Threshold - 1.5 million GSF

Proposed Strategies

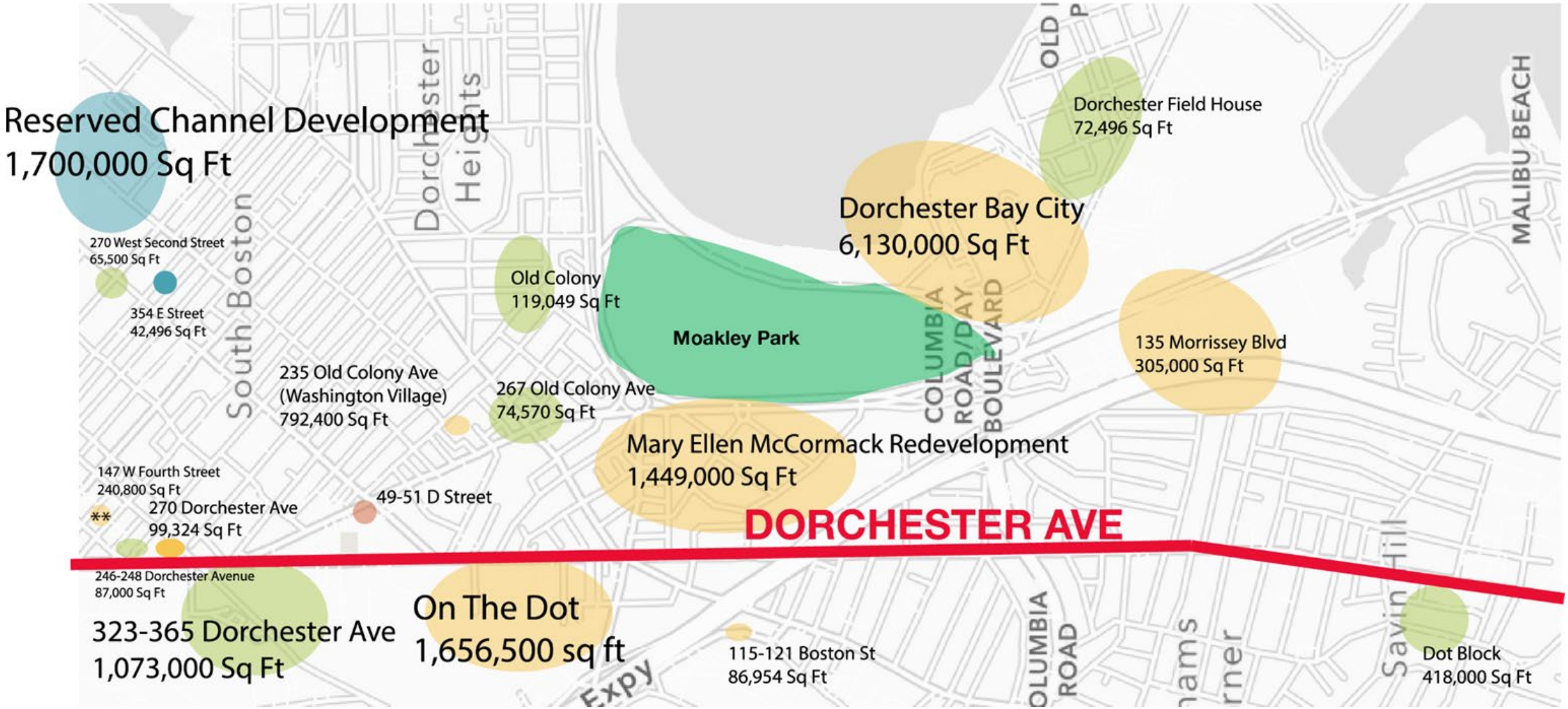
Illustrate rough order-of-magnitude opportunities and challenges for various district-scale systems strategies. These strategies should support sustainable and equitable resource management in land use, water, energy, and carbon.

Impact Analysis

- ➔ Sustainable & Equitable Resource management
- ➔ Land use improvements with reference to resiliency, urban heat island, opportunity/EJ zone, site adjancenties, biodiversity and public health impacts
- ➔ Life cycle cost

Advanced Energy Feasibility Assessments

Portion of Current Landscape

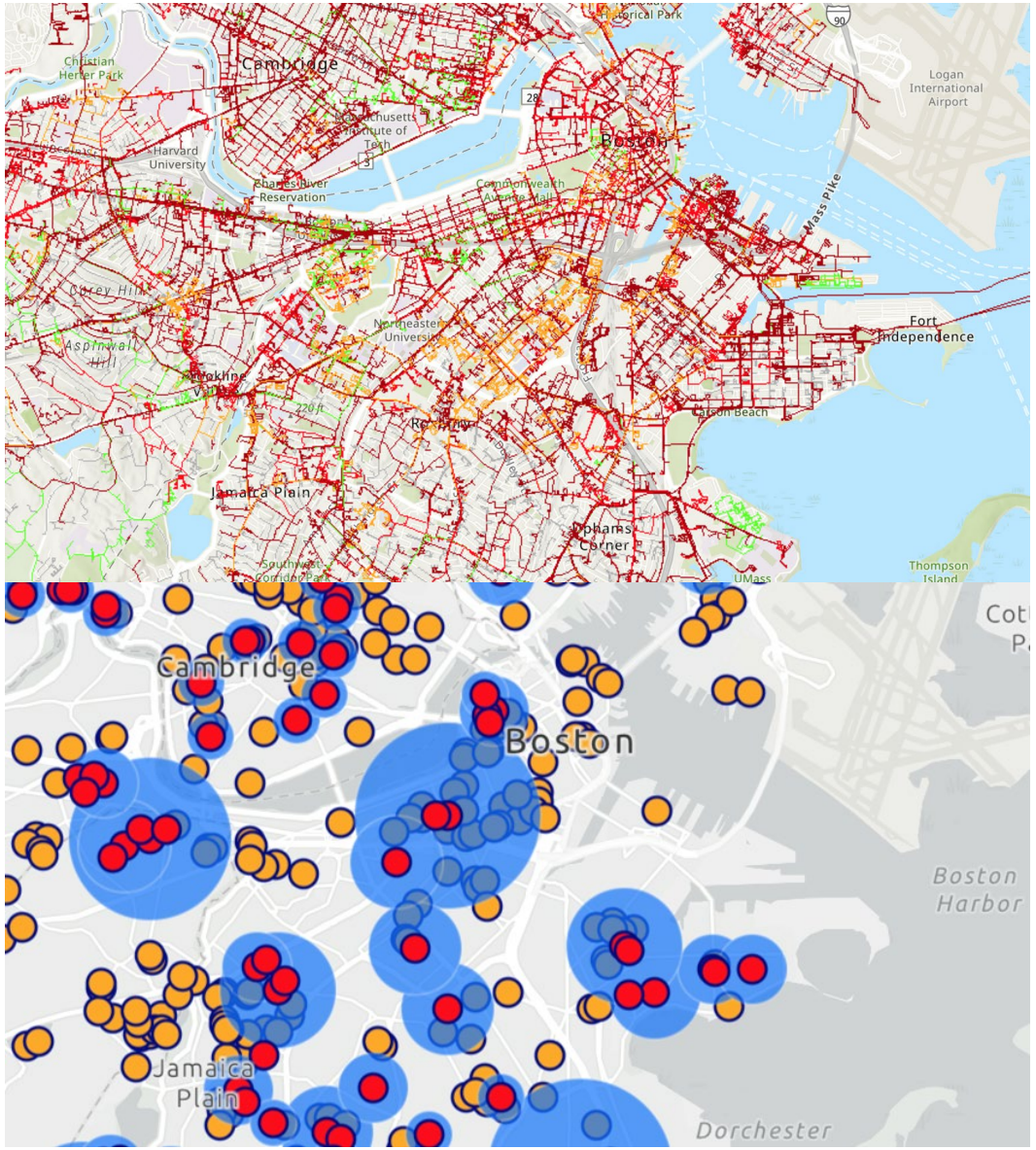


Goals and Priorities

- ➔ Expand Capacity and Resources for thermal decarbonization
- ➔ Increase Capacity for Electrification and Fuel Switching
- ➔ Develop policy for Waste Energy Technologies
- ➔ Increase Pilot Opportunities for Retrofits and New Construction projects
- ➔ Elevate multi-user and 3rd Party Ownership Models

Pictured Right

- ➔ *Eversource Hosting Capacity Map*
- ➔ *HEET - Gas Pipe Replacement GIS Map (Boston Metro)*



Thank you!

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