

# City of Cambridge

TOBIN MONTESSORI AND VASSAL LANE UPPER SCHOOLS PROJECT  
DECEMBER 2, 2021



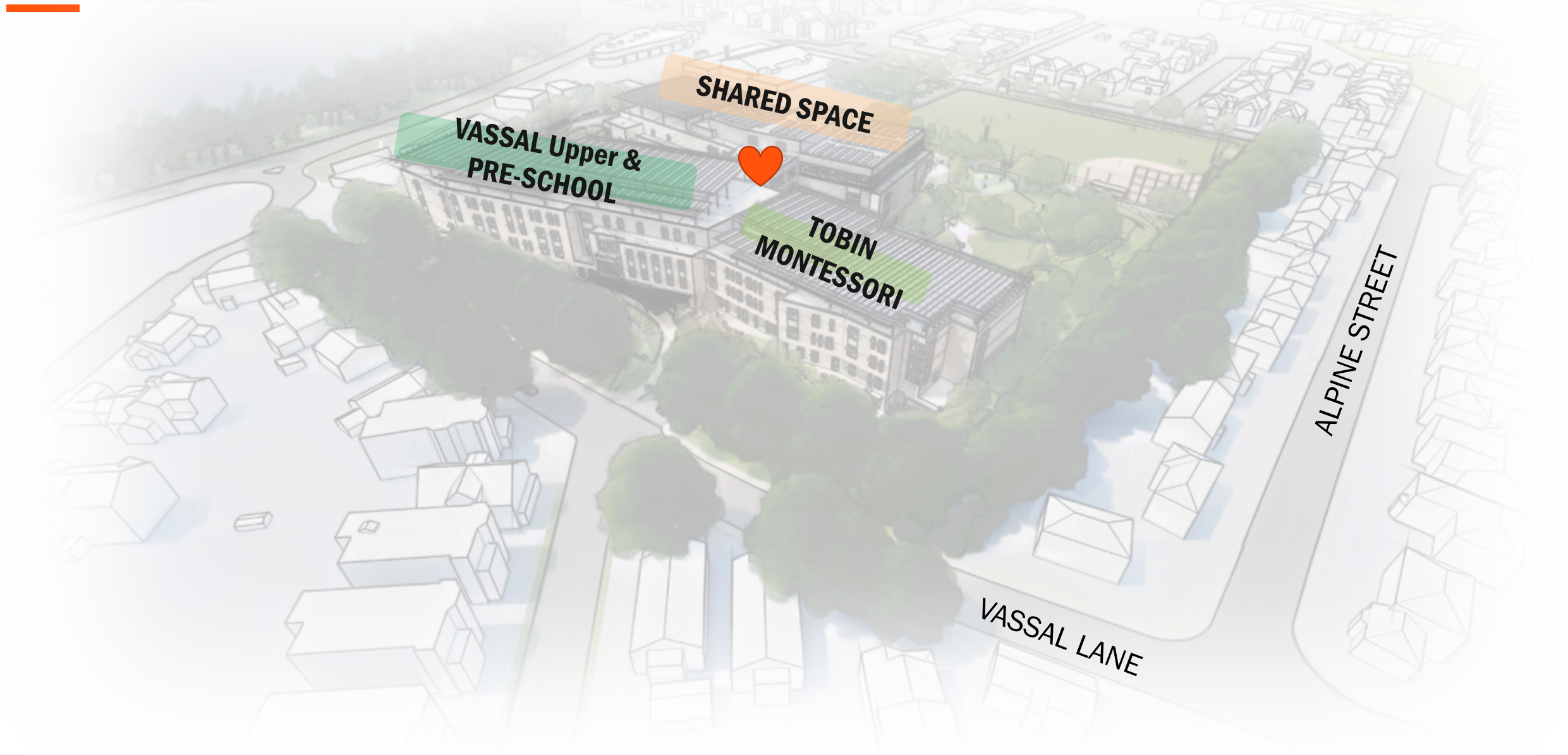
**PERKINS —  
EASTMAN**

*Human by Design*

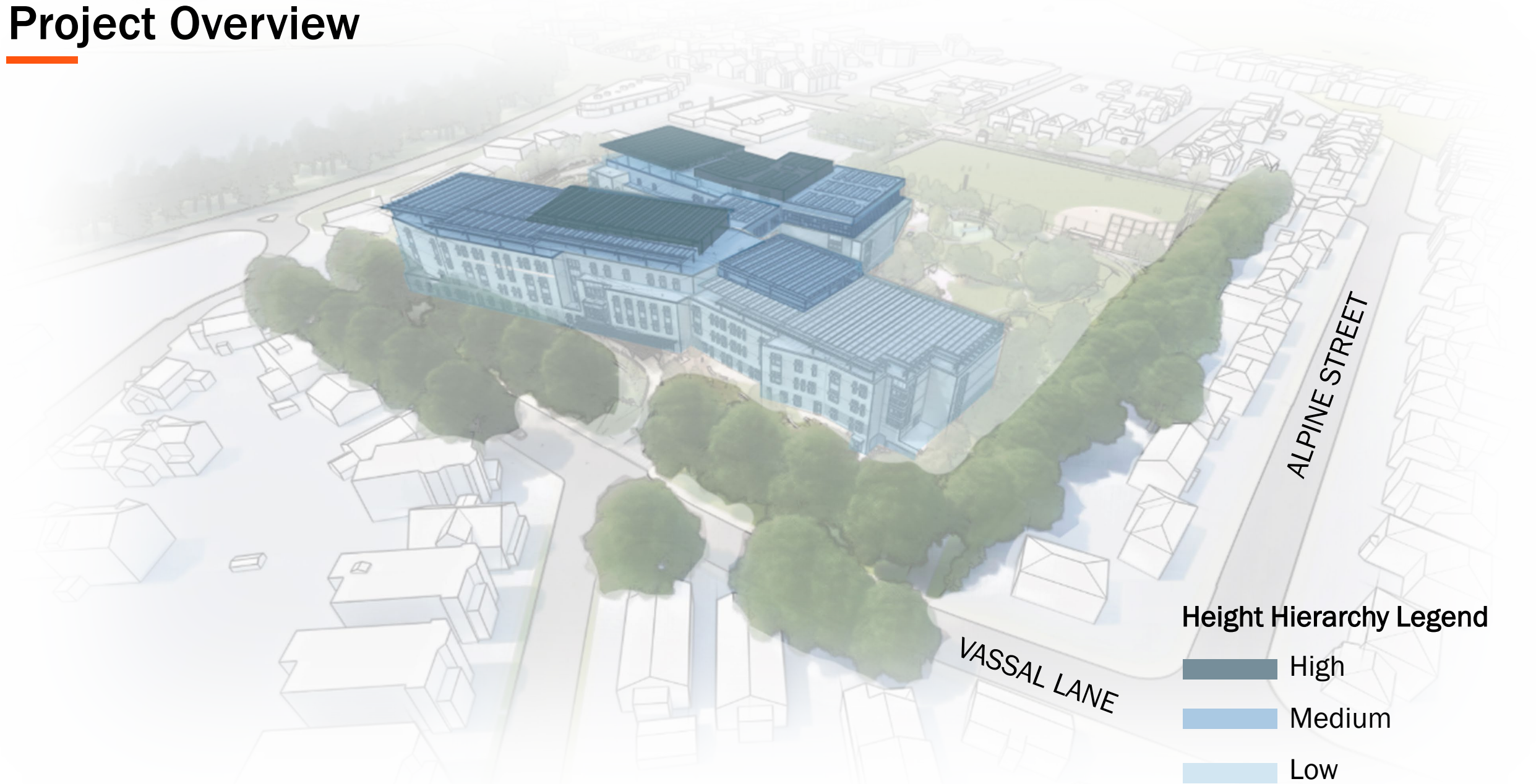
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# Project Overview



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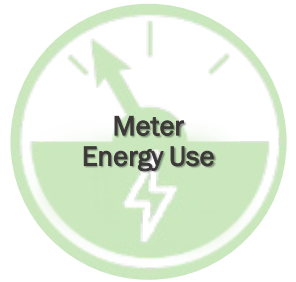


## Height Hierarchy Legend

- High
- Medium
- Low



# Sustainability Goals and Aspirations





# Sustainability Metrics





# Sustainable Strategies

## EXCEED 6 ACES OF OPEN SPACE

- ALL PARKING UNDERGROUND
- BUILD UP, NOT DOWN

## PROVIDE 9,000 CF OF BIOSWALE

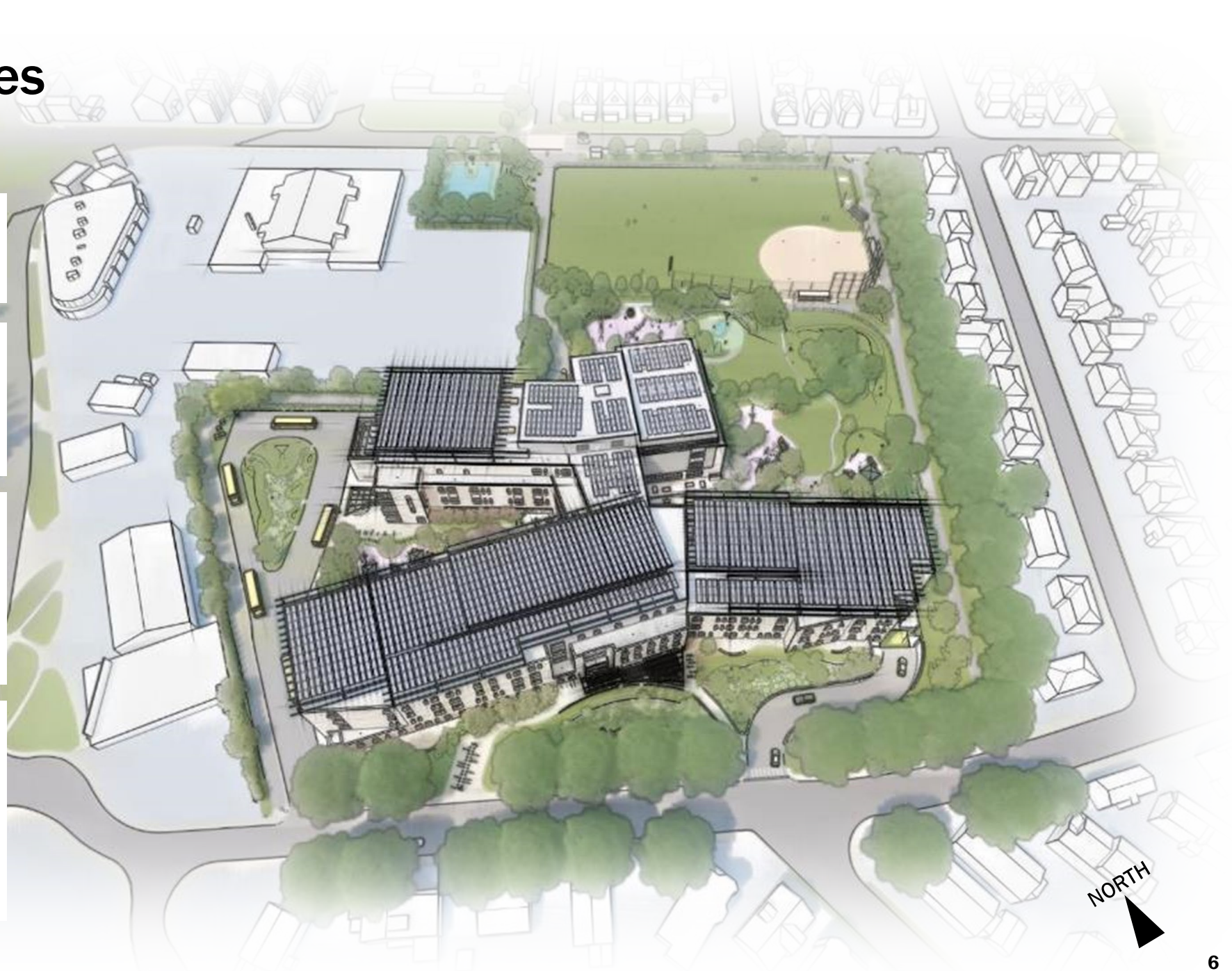
- RAINGARDENS NOT LAWN
- SITE PATHS AROUND GARDEN
- INTEGRATED WITH PLAY AREAS

## LIMIT SITE EUI TO <25 kbtu/sf-yr

- ORIENT ON EAST WEST AXIS
- PROVIDE <0.30 WWR
- PROVIDE SUPERIOR ENCLOSURE
- UTILIZE HIGH COP SYSTEMS

## BURN ZERO FOSSIL FUELS ON SITE

- USE HEAT PUMPS SYSTEMS
- DESIGN FOR RESILIENCE IN 2070 FLOODING CONDITIONS
- NET ZERO EMISSIONS
- STIVE FOR NET ZERO ENERGY



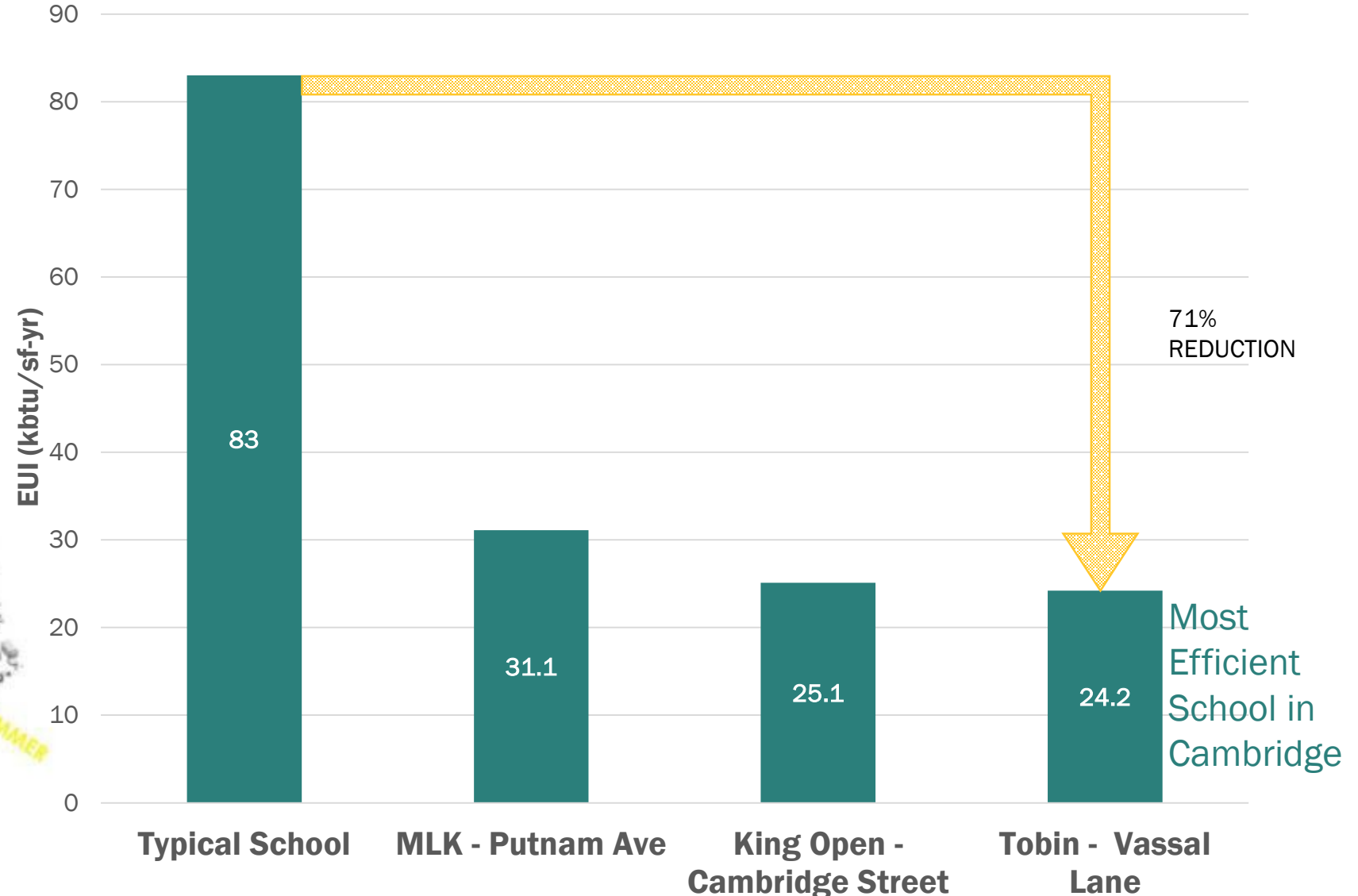
# High Performance Building

1. MAXIMALLY EFFICIENT -- LOW ENERGY USE INTENSITY (EUI)
2. ALL-ELECTRIC SYSTEMS
3. RENEWABLE ENERGY



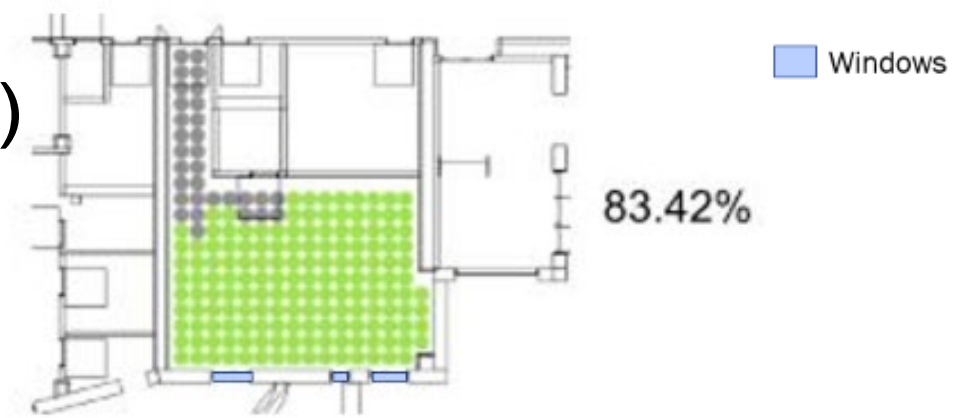
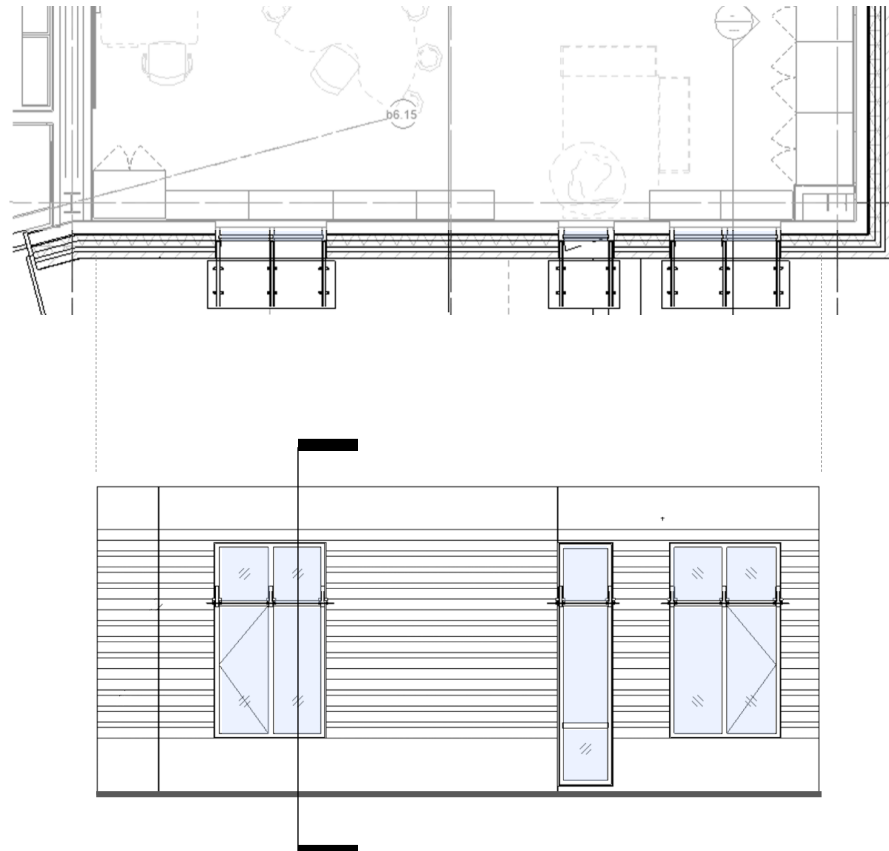
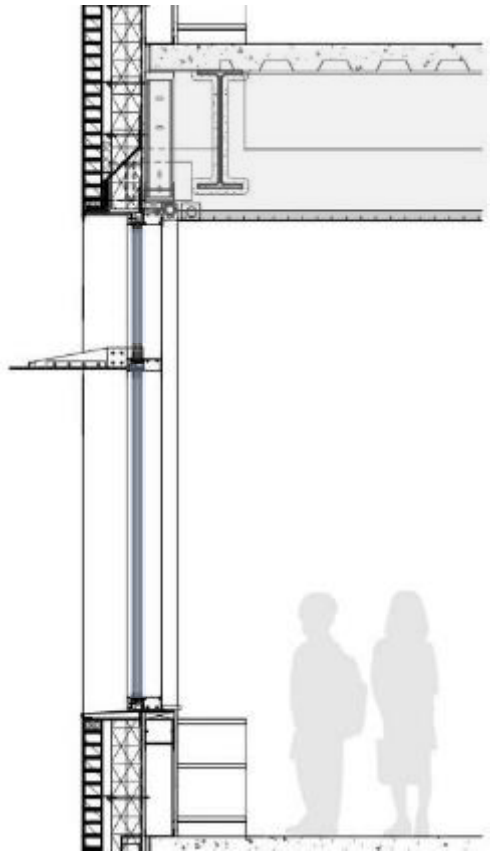
PASSIVE INTELLIGENCE

School Buildings – Total Energy Used



# Façade/Daylight Performance (28% glazing)

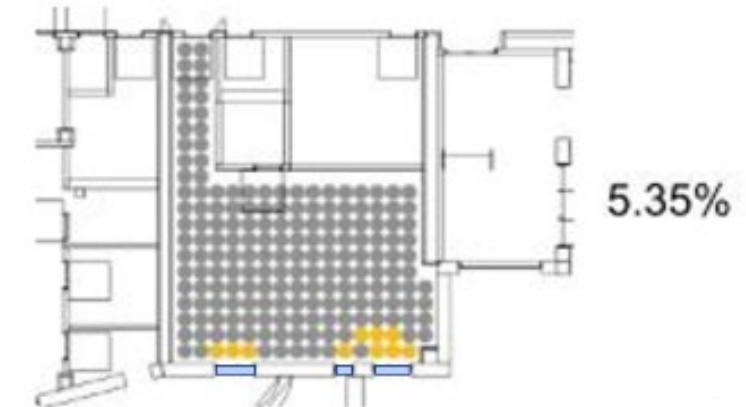
LESS ENERGY – MORE LEARNING



**DAYLIGHT**

ACTUAL SDA: 83.42%

TARGET SDA: >75% +8.42%



**GLARE**

ACTUAL SDA: 5.35%

TARGET ASE: <10% -4.65%



# Supporting Wellness

**WGME Portland** + Follow

## 'Do not eat' advisory issued for deer harvested in Fairfield area

WGME - 1h ago

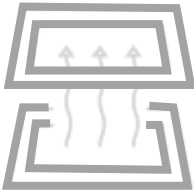
React Comments

f t in | Save for later

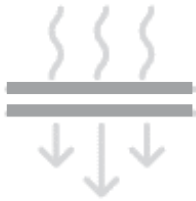
**F** AIRFIELD (WGME) -- The Maine Department of Inland Fisheries and Wildlife says you should not eat any deer harvested in the Fairfield area.

Officials say high levels of forever chemicals or "PFAS" were found in five of the eight deer tested by the department.

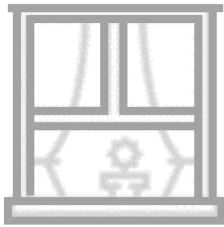
PFAS have been used for decades in a variety of household and consumer products, including non-stick cookware, carpet, waterproof clothing, and food packaging products such as pizza boxes and microwave popcorn bags.



Increased Building Ventilation



Enhanced Air Filtration



Operable Windows



Material Selections



Touchless Technologies



Hand Washing Stations



Improved Restroom Layouts



Student Traffic Flows

# Supporting Wellness

## TARGETING RED LIST FREE MATERIALS

VIEW FROM ENTRANCE



PRESCHOOL



**Red List** | Alkylphenols | Antimicrobials (marketed with a health claim) | Asbestos compounds | Bisphenol A (BPA) and structural analogues | California-banned solvents | Chlorinated Polymers | Chlorobenzenes | Chloroflourocarbons (CFs) and Hydrochlorofluorocarbons (HCFCs) | Formaldehyde | Monomeric, polymeric and organophosphate halogenated flame retardants (HFRs) | Organotin Compounds | Perflourinated and Polyfluorinated Alkyl Substances (PFAS) / Perfluorinated compounds (PFCs) | Phthalates (orthophthalates) | Polychlorinated biphenyls (PCBs) | Polycyclic aromatic hydrocarbon (PAHs) | Short and medium chain chlorinated paraffins | Toxic heavy metals | Volatile organic compounds (VOCs) | Wood Treatments containing creosote and pentachlorophenol

Source: International Living Future Institute

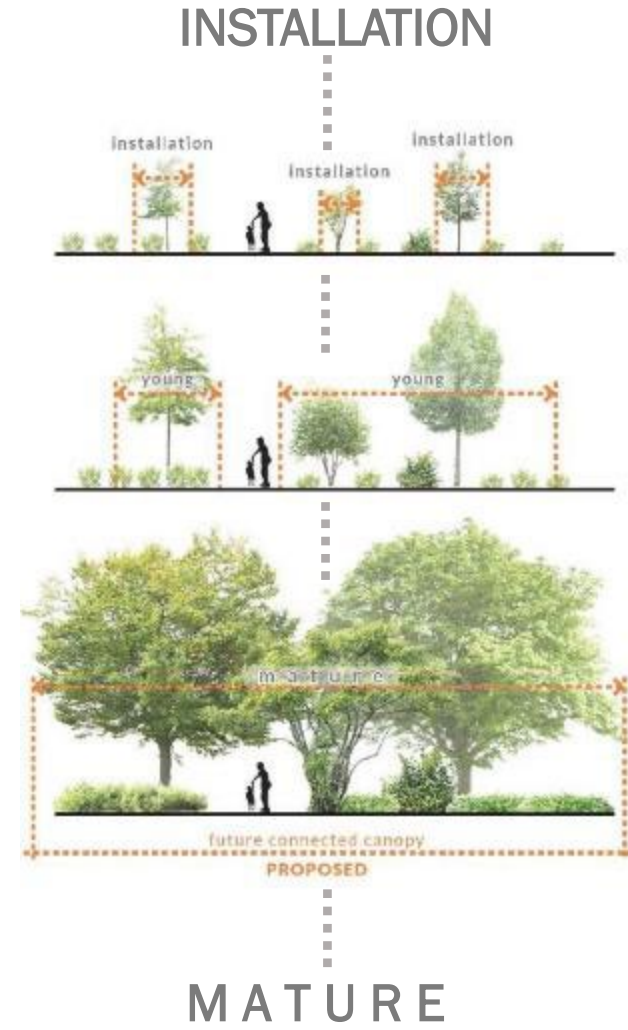
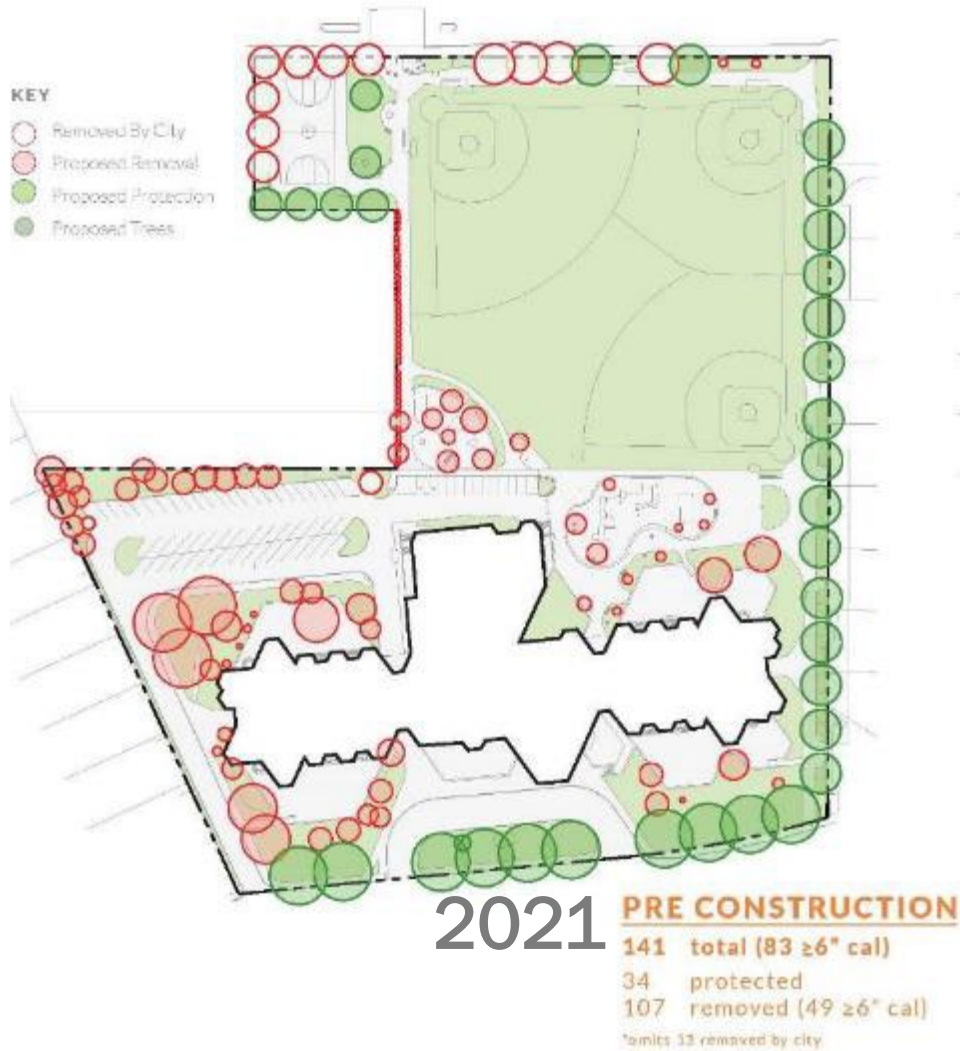


# Landscape & Open Space





# Urban Tree Canopy



## PRE + POST CONSTRUCTION COMPARISON

Tobin Montessori + Vassal Lane Upper Schools

TRAVERSE



# Solar Panel Coverage

ABOVE VASSAL LANE LOOKING NORTH





# Fossil-Free with Biodiesel backup

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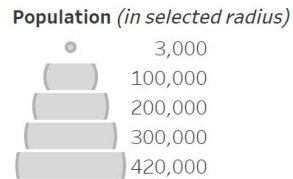
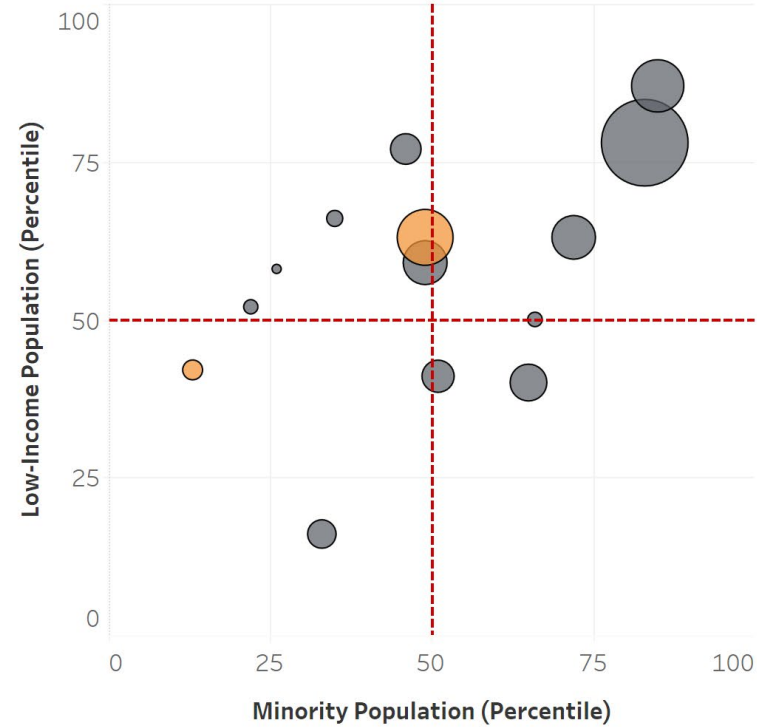
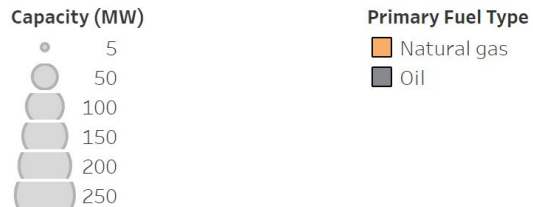
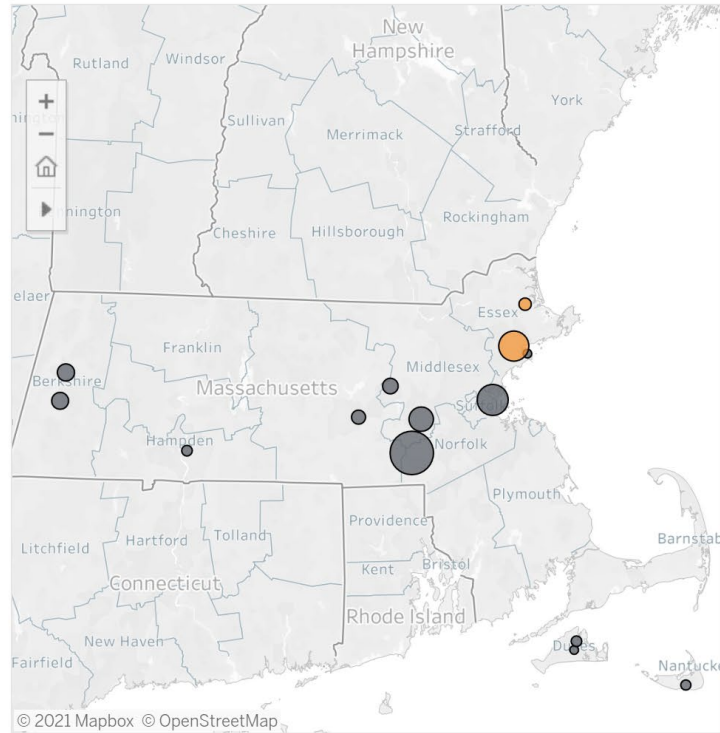
# Resilient Planning





# Battery Storage and Peaker Plants

FOSSIL FUEL PLANTS COST MORE THAN SOLAR – THEY’RE STILL BEING BUILT!



## A new skirmish in the war over the future of the region's power grid

Without state intervention, construction on a 55 megawatt “peaker” — a power plant designed to operate during peak demand for electricity — could start in the next few weeks. It would cost \$85 million, spew

<https://www.psehealthyenergy.org/our-work/energy-storage-peaker-plant-replacement-project/massachusetts/>



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