

# MBTA Green Initiative

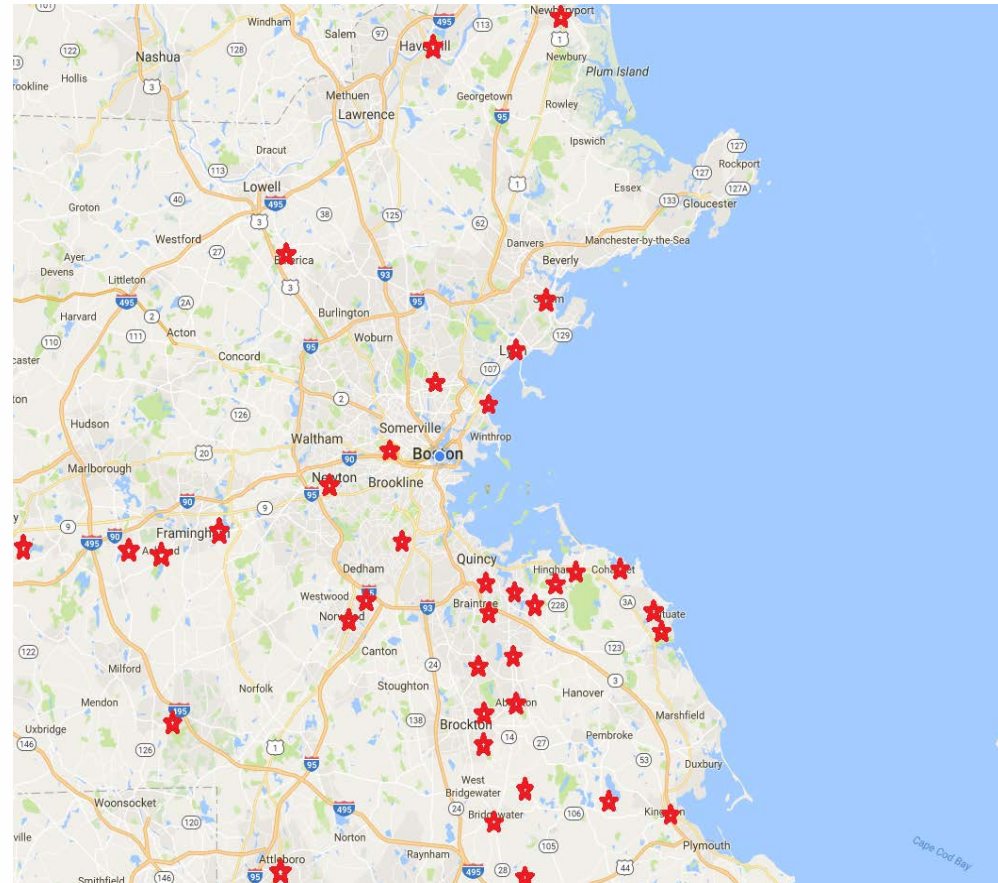
# **SOLAR CANOPIES**

## Parking Lots & Garages



# PROJECT OVERVIEW

- Solar canopies will be installed on parking lots and garages at 37 MBTA Stations by MAP Energy/ Omni.
- 20-year lease after implementation.
- Full implementation of all 37 sites expected by December, 2018.



# PROJECT BENEFITS

- Project contributes to Commonwealth's goal to reduce carbon emissions.
- MBTA commuters will be provided with covered parking spaces which will prevent snow in the winter and keep cars cooler in the summer.
- LED lights will be installed on the bottom of each canopy, providing better lighting for MBTA commuters.
- Snow removal maintenance and costs are anticipated to decrease.



# ENVIRONMENTAL BENEFITS

- The entire project will reduce carbon emissions by 28,825 metric tons annually.
- That reduction is equivalent to the following:
  - 69,083,598 miles driven by an average passenger vehicle.
  - 9,148 tons of waste recycled instead of landfilled.
  - 30,759,016 pounds of coal burned.
  - 66,736 barrels of oil consumed.

\*Source: United States Environmental Protection Agency

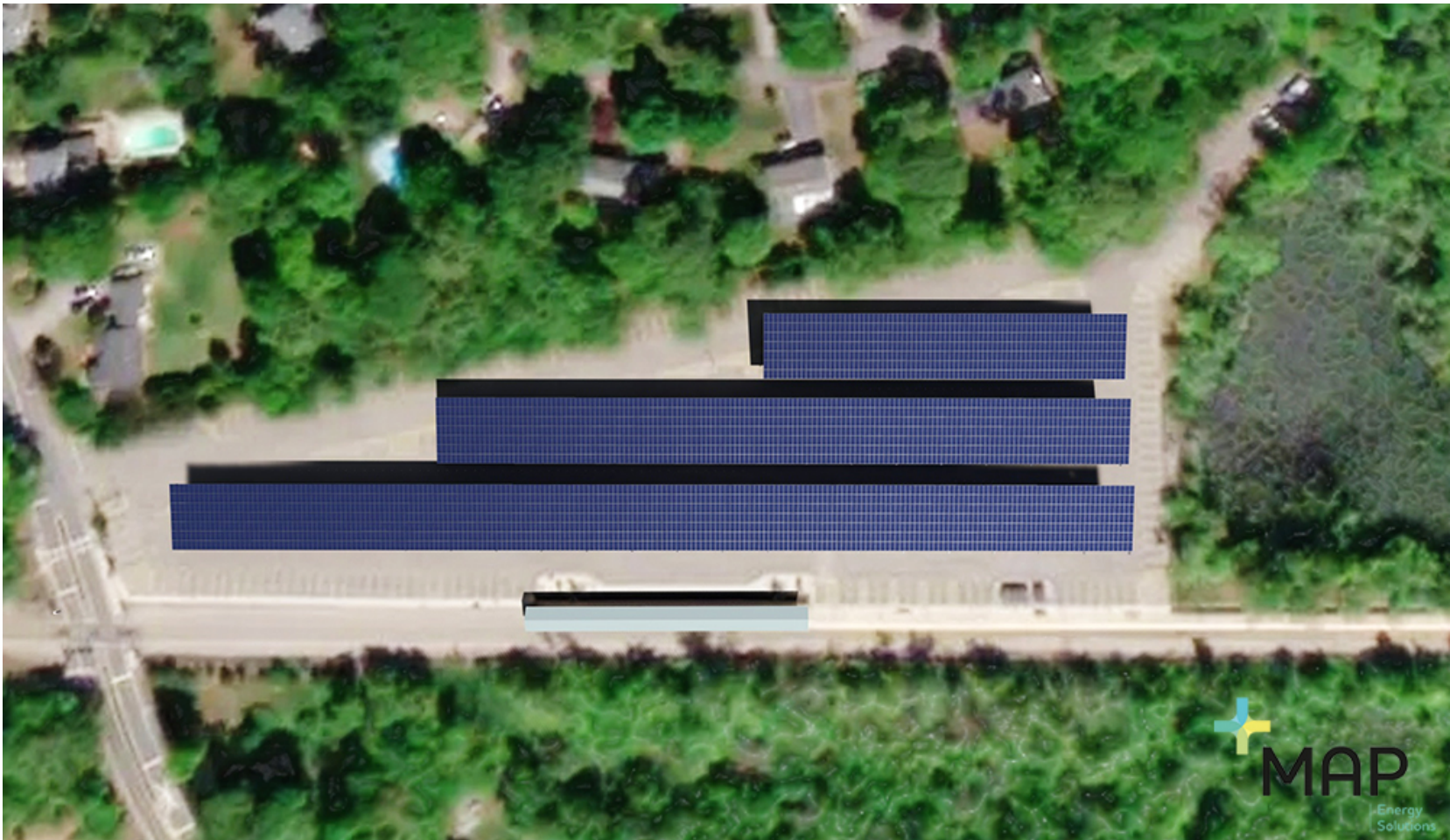




# NANTASKET JUNCTION



# NANTASKET JUNCTION – TOP VIEW





# 7-PANEL DESIGN — SIDE VIEW



# 7-PANEL DESIGN — FRONT VIEW





Technical drawing of a solar panel array structure. The drawing shows a side elevation of the array, which is inclined at an angle of  $46^{\circ} 51' 16''$ . The array is supported by a vertical W10x67 steel column. The base of the column is shown with a steel base plate and concrete foundation. The array consists of PV modules, with dimensions of  $2'-9\frac{7}{8}"$  and  $3'-9\frac{1}{8}"$  indicated. The drawing also shows the minimum clearance of  $15'-0"$  and the overall height of the array at the end, which is  $28'-1\frac{5}{16}"$ . The drawing includes various callouts and dimensions for the structure, including the steel lap plate welded to the column and bolted to the top beam, and the steel base plate and concrete foundation.



# WEST HINGHAM





# WEST HINGHAM DESIGN – TOP VIEW



# WEST HINGHAM RENDERING

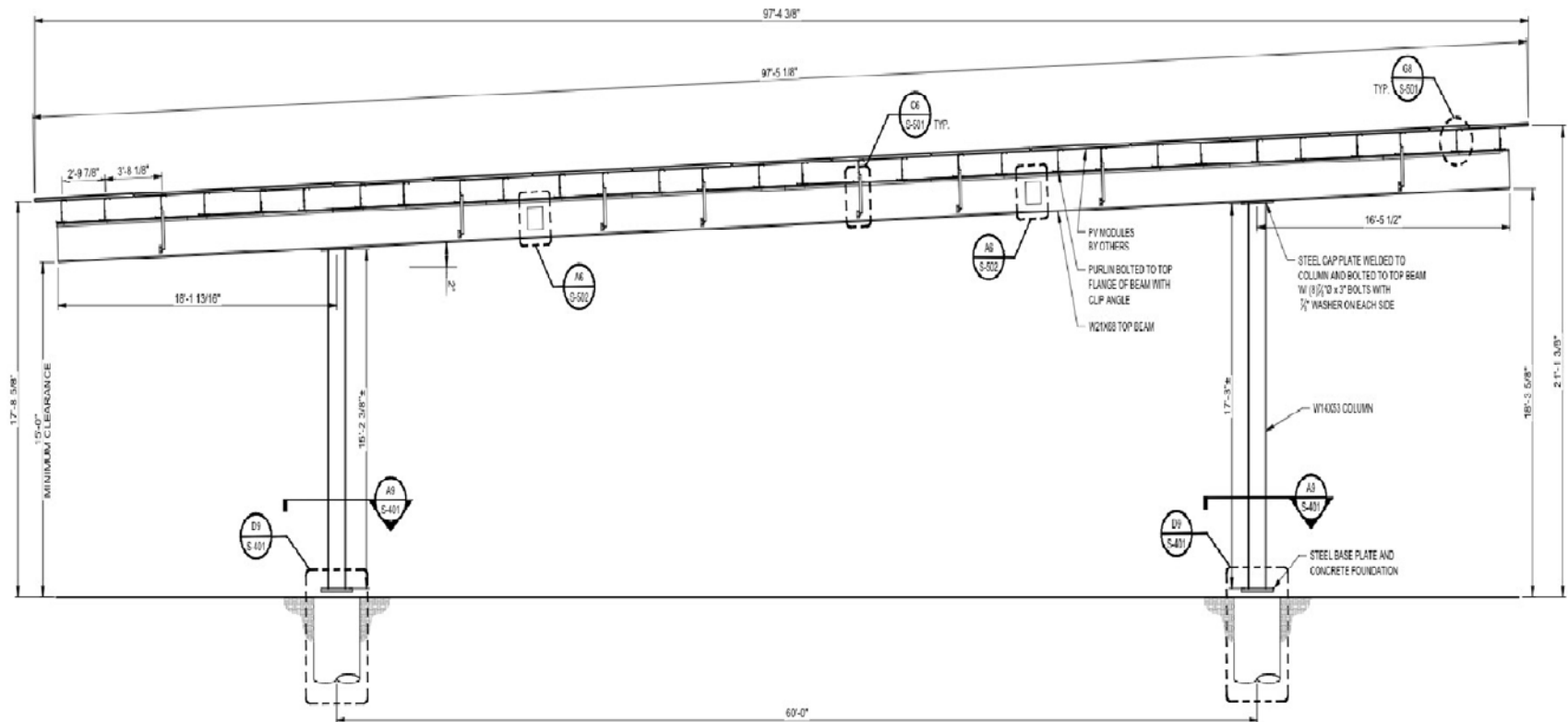




# WEST HINGHAM RENDERING



# CANOPY ELEVATIONS



Long-Span Side View





# NANTASKET JUNCTION STATION

- Solar canopy size is 684kWac and will generate approximately 840,000 kWh annually.
- This will power about 84 homes\*.
- Entire power generated will be purchased by Hingham Light Department.

\*Source: United States Environmental Protection Agency



# WEST HINGHAM STATION

- Solar canopy size is 360 kWac and will generate approximately 440,000 kWh annually.
- This will power 44 homes\*.
- Entire power generated will be purchased by Hingham Light Department.

\*Source: United States Environmental Protection Agency



# SCHEDULE AND IMPLEMENTATION PLAN

- Power Purchase and Interconnection Agreements signed with Hingham Municipal Light Department.
- Site implementation to begin late-March until early September 2018
  - Construction to happen in a phased manner to ensure minimum disturbance to the commuters
- Phased construction approach will ensure that enough parking will be available for MBTA commuters during construction.
  - Nantasket Junction parking spots – 495
  - W. Hingham parking spots – 214
- Nantasket parking lot utilization below 35% to absorb any temporary closing of parking spots at W. Hingham
- No permanent loss of parking.





# BENEFITS TO THE TOWN

- The project will reduce ~1,280 metric tons of carbon dioxide equivalence annually.
- Power Purchase price is competitive with other renewable options
- Long term price hedges HMLD's cost of power procurement
- Commuters get covered parking lot without any loss of parking spots

\*Source: HMLD 2016 Annual Report



