

OFFICE OF SUSTAINABILITY

JANUARY UPDATE 1-10-2019

SOLAR PHASE 3: The Projects

Community Meetings Held

- ▶ December 11th and 12th at the War Memorial Auditorium from 6:30 to 9:00 pm with a presentation and public comments on all projects.
- ▶ December 18th, 2018 at the Newton Free Library from 6:30 to 9:00 pm with a focus on the library project.
- ▶ Meetings were well attended and all attendees were given a chance to speak at least once.
- ▶ We have made revisions to the scope and design as a result of comments made during these meetings.

The City's Progress in Reducing its Electricity Carbon Footprint

- ▶ Reduction in electricity use since 2008: 20%
- ▶ Solar energy since 2013, Phases 1 and 2: 21%
- ▶ Phase 3 Solar: 21%

PPA (Purchase Power Agreement) Basics

- ▶ 20 year contracts.
- ▶ The project economics are based on the State's solar incentive programs.
- ▶ Solar Company responsibilities:
 - ▶ Design, finance, own, maintain and operate.
 - ▶ Provide a minimum performance guarantee.
- ▶ City responsibilities:
 - ▶ Provide site.
 - ▶ Review and approve project designs.
 - ▶ Provide access to site for maintenance and operation.
 - ▶ Purchase electricity generated by the projects at a reduced cost.

Project Scope Revisions

- ▶ March 14, 2018-
List presented to PF included 40 locations
- ▶ July 2018-
RFP included 26 locations.
- ▶ Revised to 19 after review of proposals.
- ▶ Revised to 17 locations after Community Meetings

Projects Removed from Scope After Community Meetings

- ▶ Albemarle Road- 26 trees
- ▶ Bigelow Middle School-10 trees

Projects Redesigned After Community Meetings

- ▶ Auburndale Cove canopy- 6 trees to 1 tree removed
- ▶ Brown Middle School- 15 trees to 1 tree removed
- ▶ Oak Hill Middle School- 1 tree to 0 trees removed
- ▶ Pleasant St lot- 4 trees to 2 trees removed
- ▶ Newton Free Library- add 24 to 36 parking spaces.

Will move 5 of the 12 impacted trees.

Will plant 68 replacement trees.

Tree Plan

- ▶ The original proposals called for removal of 94 trees.
- ▶ The revised scope of projects calls for removal of 28 trees.
- ▶ 15 of these will be moved. 13 will be cut down.
- ▶ 140 new trees will be planted.
- ▶ 10 trees will be trimmed

Carbon Reduction from Solar Phase 3

- ▶ Solar Phase 3 will generate carbon free electricity in place of electricity generated from fossil fuels.
- ▶ It will offset 2,192 tons of carbon emissions.
- ▶ Equivalent to 2,340 acres of forest.
- ▶ Equivalent to reducing vehicle miles travelled by 4,861,000 miles.
- ▶ This will be the largest single project for carbon impact done by the City for municipal sites.

Solar Phase 3 Carbon Emissions Impacts

Expected Energy Generation Year 1	Tree Removal		Avoided CO ₂ Emissions	Equivalent to Carbon Sequestration by	Equivalent to
	Number of Potential Trees Removed	Annual Carbon Sequestration Lost (tons CO ₂)	Tons CO ₂ /year	Acres of U.S. Forest	Miles driven by an average passenger vehicle
MWh/year					
4,333	13	2.94	2,192	2,340	4,861,978

Cadmus conducted an analysis of the Carbon Dioxide Emissions impacts of the Solar Phase 3 Sites. The team utilized the EPA's Avoided Emissions and Generation Tool (AVERT) to calculate regional avoided emissions based on kW capacity (AC). The team utilized the USDA's CUFR Tree Carbon Calculator for carbon sequestration potential of removed trees (using developer assumptions). The team utilized the EPA's Greenhouse Gas Equivalencies Calculator to generate equivalencies.

Oak Hill Middle School-Redesign

- ▶ Shift location of one canopy to avoid tree shading.
- ▶ Remove no trees instead of one.
- ▶ Solar will generate 192,208 kWh which is 31% of the school's electricity use.

Brown Middle School-Redesign

- ▶ Remove canopy row closest to the trees at edge of parking lot.
- ▶ Add a canopy in front of entrance to Brown School.
- ▶ Remove or relocate one tree instead of 20 .
- ▶ If removed, replace with 7 trees on site.
- ▶ Solar will generate 447,572 which is the second largest of all the sites.
- ▶ This is 96% of the schools electricity use.

Auburndale Cove- Redesign

- ▶ Shorten solar canopy layout on west side
- ▶ Remove 1 tree instead of 6
- ▶ Plant 24 trees in park area beyond right field of baseball field
- ▶ Will generate 420,779 kWh which is the third highest of all 17 sites.

Newton Free Library- Redesign

- ▶ Remove berms to increase parking.
- ▶ Add 24 parking spaces with two walkways. Add 36 without walkway.
- ▶ Improve water management.
- ▶ Move 5 trees and replace 7 trees with 68 trees.
- ▶ 3 to 4 trees can be relocated on site. The remaining trees will be replanted or relocated in the area.
- ▶ Add three solar parking canopies which will generate 415,000 kWh per year which is the fourth largest of all the sites.
- ▶ About 49% of the Library's use.
- ▶ Library Board of Trustees has given conditional approval.

Projects Connected to Buildings

Solar Project Meeting Building Demand	FY 2018		
Facility	kWh	Solar kWh	%
Newton North HS canopies	3,896,363	908,893	23%
Brown Middle School canopies	464,764	447,572	96%
Education Center roof and canopies	802,013	429,616	54%
Main Library canopies	839,940	415,000	49%
F A Day MS roof	1,198,428	303,215	25%
Zervas New School roof	543,408	216,094	40%
Memorial Spaulding ES canopies	237,760	197,303	83%
Mason-Rice ES canopies	224,760	195,822	87%
Oak Hill MS canopies	620,468	192,208	31%
Williams ES roof	174,440	152,891	88%
Angier Elementray School roof	450,672	102,448	23%
FD 3# and HQ New roof	484,200	77,395	16%
Carr School roof	260,560	75,651	29%
Cabot New School roof	463,606	75,582	16%
Total	10,661,382	3,789,690	36%

EV Charging Stations

- ▶ At least 10% of the parking spaces under the canopies will be EV charging station ready.



South High School

Solar Canopies
on line since
January 2017

SOUTH HIGH SCHOOL

Solar canopies
on line since
January 2017

