CADMUS

City of Newton Solar Phase 3

December 12, 2018

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Newton Office of Sustainability

Newton Solar Phase 3 Information:
http://www.newtonma.gov/phase3

City of Newton's Carbon Footprint

Solar Phase 3 is Part of a Larger City Effort to Reduce Our Entire Community's Carbon Footprint

Climate Action Plan	The City is preparing a Climate Action Plan to address our efforts both to reduce the community's carbon footprint and to reduce our vulnerability to the effects of climate change. This involves the efforts of City government as well as residents and businesses.
Newton Power Choice	The City's contract on behalf of all Newton Eversource Basic Service customers includes 60% renewable power from sources like solar and wind. Customers do not have to participate, but can also opt up to 100% renewable power.
Solar Phases 1 and 2	Newton has installed solar arrays on 12 City facilities, including 2 canopies, 9 rooftops, and the ground mounted project at the Rumford Landfill.
Electric Vehicles	Newton has installed multiple charging stations, and is in the process of installing more, including at municipal parking lots around the City, which will be available for public use. The entire municipal fleet of sedans is transitioning to EVs. Ten percent of the parking spaces at the new Solar Phase 3 canopies will be ready for the installation of charging stations.

Solar Phase 3 Carbon Emissions Impacts

Expected Energy Generation Year 1	Tree Removal		Net Avoided CO2 Emissions	Equivalent to Carbon Sequestration by
MWh/year	Number of Potential Trees Removed	Annual Carbon Sequestration Lost (tons CO_2)	Tons CO_2/year	Acres of U.S. Forest
4907.2	82	4.47	2448.02	2,615.7

Avoiding **2,448 Tons of CO_2** is equivalent to:

Saving **2,615 acres of U.S. forest** per year

2,615 acres is approximately **22.3%** of Newton's land area

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 and modelling for red oak trees). The team utilized the EPA's Greenhouse Gas Equivalencies Calculator to generate equivalencies.

Solar Phase 3 Carbon Emissions Impacts

2,448 Tons of CO_2 is equal to:

The carbon sequestration of **2,615 acres of U.S. forest** per year

GHG emissions from **5,443,283 miles** driven by a passenger vehicle

CO_2 emissions from **2,429,823 pounds of coal** burned

CO_2 emissions from **249,901 gallons of gasoline** consumed

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Appendix: Carbon Summary

Macquarie

Sites	Tree Removal	Net Avoided CO_2 Emissions	Equivalent to Carbon Sequestration by
	Annual Carbon Sequestration Lost (U.S. tons/year)	Tons CO_2/year	Acres of U.S. Forest
Angier ES	0.05	29.9	32
Williams ES	0.22	49.8	53.2
Auburndale Cove	0.33	219.7	235
250 Albemarle Road	1.42	328.6	351
Pleasant Street Lot	0.22	59.8	63.9
Brown MS Lot	0.82	249.2	266
Memorial Spaulding ES Parking Lot	0.00	90.0	96.2
Oak Hill MS Parking Lot	0.05	99.9	107
Ed Center Parking Lot	0.00	180.0	192
Bigelow MS Parking Lot	0.54	129.5	138
Mason Rice ES Parking Lot	0.16	89.8	96
TOTALS	**3.81**	**1526.2**	**1630.3**

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Appendix: Carbon Summary

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Site	Tree Removal	Net Avoided CO_2 Emissions	Equivalent to Carbon Sequestration by
	Annual Carbon Sequestration Lost (U.S tons/year)	Tons CO_2/year	Acres of U.S. Forest
Zervas ES Rooftop	0.00	100.0	107
F.A. Day MS Rooftop	0.00	150.0	160
Ed Center Rooftop	0.00	46.0	49.2
Fire Station 3 Rooftop	0.00	46.0	49.2
Library Lot Canopy	0.66	149.9	160
Newton North HS Lowell Avenue Canopy	0.00	290.0	310
Newton North HS Walnut St. Canopy	0.00	140.0	150
Totals	**+0.66**	**921.9**	**985.4**

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