

March 31, 2016

Dear Councilors,

As you know, the City is developing solar power on a variety of municipal sites: at the old Rumford Landfill, on school and municipal building rooftops, and in municipal parking lots -- as carport canopies with solar panels on top.

A number of questions have been raised about the proposal to install two canopies at the Library parking lot. These questions center on three issues: (1) the costs and benefits of this installation; (2) the effect on aesthetics and atmosphere; and (3) the impact on trees. In addition, some of the questions asked for information about the relation of the Library panels to the overall solar development initiative.

We thought it would be helpful to set forth all the facts in one place, as they relate to those issues. In addition to this explanation, we have attached some Exhibits that may also be helpful

SUMMARY OF NEWTON'S SOLAR DEVELOPMENT INITIATIVE

The city's solar projects are being built in three phases. Phase 1 was completed in 2014, with solar arrays on five school rooftops, totaling approximately 450 kilowatts (kW) of solar capacity. Phase 2 is ongoing: the City Council approved ten of the twelve sites originally proposed, rejected one (solar panels on the roof of City Hall) and is voting next week on the Library parking lot, which has been approved by the Finance and Public Facilities committees.

Phase 2 will add approximately 3,745 kW or 3.7 megawatts (MW) -- enough to power about 450 homes -- and will be operational by the end of 2016.

The Phase 1 and 2 installations will save the City about \$14M in energy costs over the 20 year contract with the developer.

Phase 3 is now out for bid, to add more sites and to develop a unique, community share solar program, for an estimated 80% of Newton residents who cannot take advantage of solar programs because of the structure or orientation of their rooftops, because they are renters, or because they can't afford to install the panels.

COSTS AND BENEFITS OF THE PROPOSED LIBRARY SOLAR CANOPY (see Exhibits A and B, attached; schedules of power and savings for each installation)

- **Costs:** The city will not pay anything for the design, installation, maintenance and removal of the panels at the end of the contract. No parking spaces will be lost as a result of the

installation, but parking in the Library lot will be limited, or curtailed, for about two months during construction.

- **Benefits:**
 - **Cost Savings:** The Library parking lot canopies will save the city an estimated \$457,000 over twenty years
 - **Energy savings:** The canopies will produce an estimated 237,000 kilowatt hours per year, 5% of the total output of Phase 2 -- enough to power about twenty five homes.
 - **Environmental benefits:** The Library panels will avoid carbon emissions equivalent to taking 34 cars off the road for 20 years. For tree planting to accomplish the same amount of carbon emission reduction, it would require planting 138 acres of new trees.
 - **Cover and shade:** the canopies will provide cover and shade for cars in inclement or hot weather
 - **Educational benefits:** The Library gets 700,000 visits a year and will create an exhibit about solar power, with outdoor signage that describes the panels and how they work, and with an app that will provide additional information including the amount of energy being produced and the associated environmental benefits.

IMPACT ON TREES (see Exhibit C - map of trees.)

- A total of nine trees will have to be transplanted or replaced to accommodate the canopies: seven young trees will be transplanted and two medium sized trees will be replaced. Two other trees are dying and need to be removed from the lot whether or not the canopies are approved.
- The eighty-year-old oak at the back of the lot will remain, reducing the energy output of the canopies by approximately 2.7%. The City will have to trim the tree annually so as to avoid any additional loss of output. This pruning will also help maintain the health of this venerated tree.
- The city will replace the two trees that need to be removed with 20-25 new trees at a cost of about \$6000.

IMPACT ON AESTHETICS (see Exhibits D and E- renderings of Library canopies)

- We have attached two renderings of the Library canopies. The poles are shown in white, but many other colors are available
- The renderings show optional brick cladding at the bottoms, to cover the concrete stanchions. The covering brick can be the same color as the Library brick.

We hope this information is helpful. For additional information, please contact Josh Morse, Commissioner of Public Buildings at 617-796-1600, or Andy Savitz, Director of Sustainability at 617-796 -1019.

Sincerely,

Josh and Andy

Revised 3/28/16-First Year Net Savings From Solar Projects

	<u>kWh</u>	<u>% of Total</u> <u>kWh</u>	<u>First Yr</u> <u>Savings</u>	<u>20 Yr Savings</u>
South HS canopies	281,798	6%	\$ 28,180	\$ 537,612
South HS roof	87,886	2%	\$ 8,789	\$ 167,668
Angier	57,136	1%	\$ 5,714	\$ 109,004
Oak Hill	171,203	3%	\$ 17,120	\$ 326,619
Bowen	95,598	2%	\$ 9,560	\$ 182,381
Zervas	186,960	4%	\$ 18,696	\$ 356,680
sub-total	880,581	17%	\$ 88,058	\$ 1,679,964
Main Library canopy	237,245	5%	\$ 23,725	\$ 452,614
LFCC	15,096	0%	\$ 1,510	\$ 28,800
FD 10	13,665	0%	\$ 1,367	\$ 26,070
70 Elliot	-	0%	\$ -	\$ -
Elliot St DPW Yd.	741,157	15%	\$ 74,116	\$ 1,413,972
sub-total	1,007,163	20%	\$ 100,716	\$ 1,921,456
Total Roofs and Canopies	1,887,744	37%	\$ 188,774	\$ 3,601,420
Rumford Landfill	3,200,000	63%	\$ 544,000	\$ 10,378,380
Grand Total	5,087,744	100%	\$ 732,774	\$ 13,979,800

Newton Solar Phase 2-Proposed PV Sites

	<u>LOCATION</u>	<u>PROJECT DESCRIPTION</u>	<u>KW</u>
1	DPW: 60 Elliot Street, (to be moved to 70 Elliot St)	car ports	622
2	Newton South High School: 140 Brandeis Rd, 02549	car ports	230
3	Newton South High School: 140 Brandeis Rd, 02549	roof mounted	75
4	Library Parking lot : 330 Homer St, 02459	car ports	22
5	Angier School:1697 Beacon St., 02468	roof mounted	46
6	Oak Hill School: 130 Wheeler Rd, 02459	roof mounted	135
7	Lower Falls Com. Center : 545 Grove St, 02453	roof mounted	12
8	Bowen School: 280 Cypress St., 02459	roof mounted	79
9	Fire Station 10 and wires Building: 755 Dedham St., 02459	roof mounted	11
10	Zervas School (new construction):30 Beethoven Avenue, 02469	roof mounted	130
11	Landfill: Rumford Ave, 02466	ground mounted	2400

1 We will be asking Public Facilities to change 60 Elliot to 70 Elliot.

4 Library site is on hold.

Newton Solar Phase 1-Existing PV Sites

<u>LOCATIONS</u>		<u>KW</u>	<u>Date Installed</u>
Countryside Elementary School	roof mounted	63.70	12/31/2013
Memorial Spaulding Elem. School	roof mounted	111.45	12/31/2013
Brown Middle School	roof mounted	247.00	12/31/2013
Newton North High School	roof mounted	263.25	4/14/2014
Newton South High School	roof mounted	52.00	2010





