

Larry Pritchett

To: Mayor; City Council
Cc: City Manager; Community Development Director; Energy Committee
Subject: Energy Committee > City Electricity Use > Assessment of Solar PV Potential

Hi All,

I am writing to provide Council with a quick overview of the total electricity used annually by departments in City government and to note options the Energy Committee and City staff are exploring for producing electricity from Solar Photovoltaic arrays (i.e., "Solar PV" or simply "PV") to offset some/most of that purchased electricity.

(Note: The text of this memo and a couple of maps are in the attached PDF)

City Electricity Usage & Roof Mount Solar PV

Derived mostly from three year averages, the City is budgeted to spend a total across all departments of \$466,184 for electricity in FY16. In short it takes the equivalent of all of the City's portion of property tax revenue from approximately 282 median priced homes to pay the City's annual electric bill.

The Energy Committee has mostly been focused on cost effective options to lower the City's energy usage of all fuels. But, committee members have been monitoring technology developments for various community power generation options (CHP/CoGen, Biomass, Solar PV, Solar Thermal, et. al.).

Several years ago the Committee briefly considered roof mounted solar options, but most of the roofs on City buildings cannot support the added weight of PV or have the wrong orientation or both. And the amount of electricity used by the City is out of scale to the total roof space on all City buildings.

Ballasted & Ground Mount Solar PV

However the prices and options for various types of ground mounted solar PV systems have been declining and the US EPA has approved rules for siting ballasted PV units on capped landfills and "Brownfield" sites which opens up additional areas as potential locations for larger PV installations.

Also, ground mount systems appear to have the lowest installation cost per KWH (i.e., acquisition, mobilization, installation, and connection costs) when installed in solar arrays that are at least 660 kw or larger (i.e., a solar array where the PV panels would mostly cover roughly four acres).

Based on projects in Massachusetts and Vermont and the City's electricity usage, conceptually it might prove to be cost effective for the City to install solar PV panels covering from four up to twenty acres to offset some/most of the electricity used across City departments.

Possible Ground/Ballast Mount PV Options On City Land

The City's already closed and capped Quarry 2 South (i.e., the quarry the City used to dispose of municipal solid waste for decades before building the transfer station) is one area that could potentially provide about four acres for solar PV (see red outlined area on attached PDF).

The two parcels that comprise the old North School lot (5.23 acres total) appear also to potentially be a viable site (good solar exposure, no significant shading, electrical connection at the site, etc.) that could be developed and still leave space for other uses (trails, parking, some development, etc.).

There are also other large (i.e., thirteen to fifteen acre) city parcels like Snow Marine Park and JC Park that have unused (or little used) portions that might warrant consideration for PV. The Energy Committee and the Community Development Director are compiling information on various city sites for Council to consider.

Current Data/Information Gathering On City Options

To have a productive discussion, the City needs to know which sites are technically viable, the approximate costs of developing PV at a site, the energy cost savings over time, and the community/environment benefits.

To get the lowest possible KWH rate for the City, a key aspect of a solar project is developing a "Lease to Own/Power Purchase" agreement that would maximize federal New Markets, Solar Renewable Energy, and Accelerated Depreciation tax credits along with regional/midcoast grid expansion alternative incentives.

With technical and fiscal information in hand on those aspects of the project, it would then be possible to weigh the merits of developing some form of municipal/community solar PV at these sites as compared to other potential uses of these areas.

City staff and committee members are cognizant that council (and the community) may prefer other uses for some of these areas. Since the UU Fellowship is the one party that has expressed interest in parts of the North School site in the past, the City is reaching out to staff and members about this solar info gathering process.

Next Steps/Community Questions

The point of the current phase of information gathering and data analysis is simply to compile the essential, basic information on which to start a productive discussion. The City will likely issue some form of RFI/RFS in the next week or so to test interest from potential solar developers and to get the technical analysis needed.

Given the heightened interest in energy related questions, I wanted Council members to be aware of this. If you get any questions, please stress this is at the very basic info gathering stage and direct questions to Brooks or I on the Energy Committee or to Audra. As reference info, I have included links to a couple of projects below.

Best,
Larry R. Pritchett, Chair
City of Rockland Energy Committee
Phone: (207) 594-8806

Stafford Hill Solar Farm, Rutland VT (2.5 MW PV on capped landfill adjacent to a school)

http://www.greenmountainpower.com/innovative/solar_capital/stafford-hill-solar-farm/

<http://news.greenmountainpower.com/press-releases/leading-edge-vermont-solar-farm-wins-2015-project---11g035194-001?feed=d51ec270-a483-4f6c-a55e-8e5fbe2238c2>

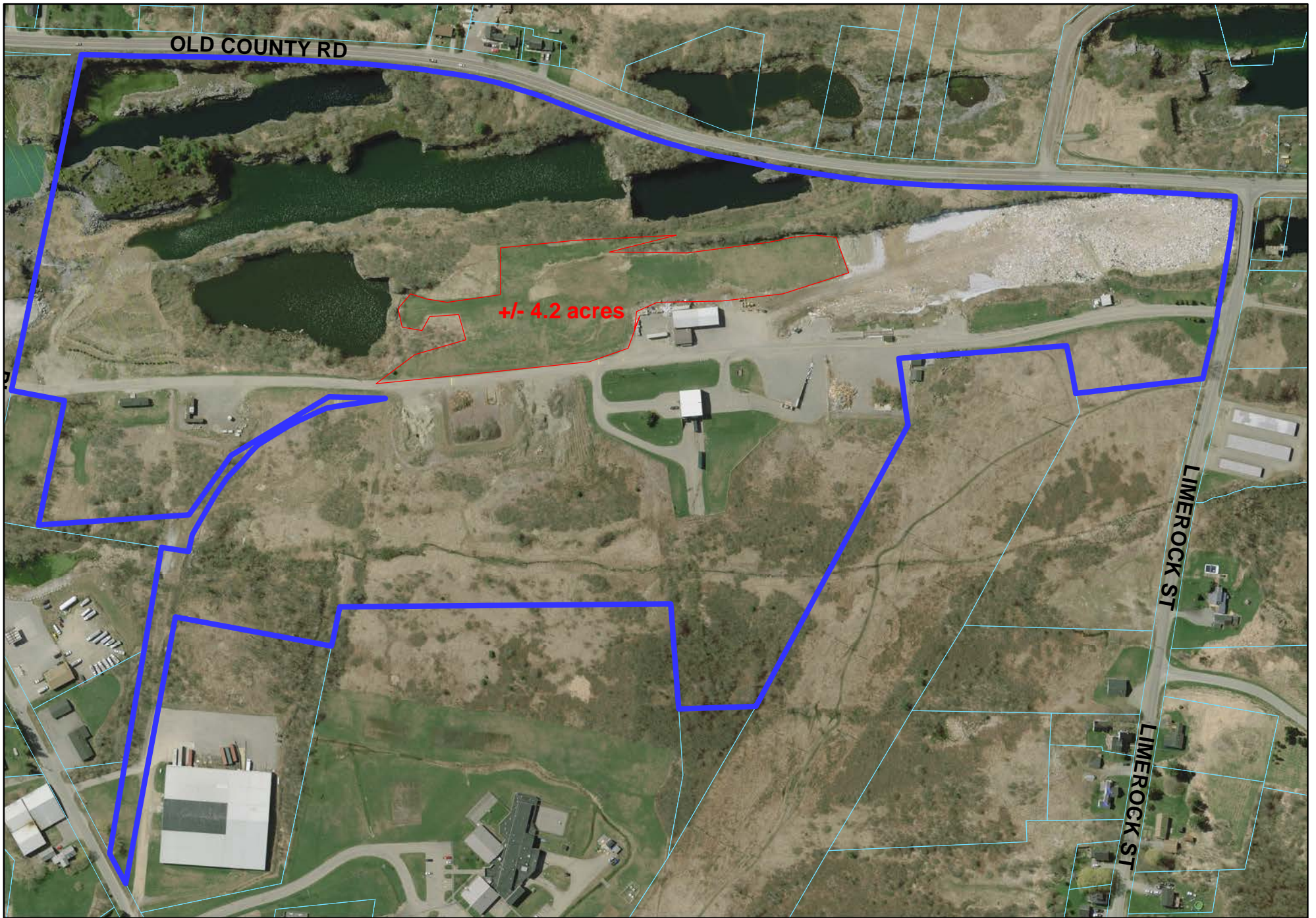
GroSolar (Firm that developed Stafford Hill project form GMP)

<http://www.grosolar.com/landfill>

2013 Boston Globe article covering PV on capped landfills

(Note: PV costs are now lower than when these projects were developed)

<https://www.bostonglobe.com/metro/regionals/south/2013/11/17/marshfield-solar-farm-becomes-state-build-atop-former-landfills/oh0K6qPAKmEFuGLQmrBGoJ/story.html>



OLD COUNTY RD

+/- 4.2 acres

LIMEROCK ST

LIMEROCK ST

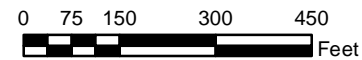


CITY OF
ROCKLAND
KNOX COUNTY
MAINE

400 Limerock
19.3 Acres

Printed: 6/4/2015

1 inch = 300 feet



DISCLAIMER

Tax maps are compiled from aerial photography, existing surveys, deeds, and landowner's descriptions. They are to be used for assessment purposes only, and not for conveyance

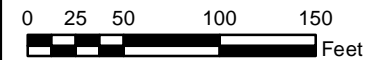


**CITY OF
ROCKLAND
KNOX COUNTY
MAINE**

**330 & 338 Broadway
North School
330 Broadway: .94 acres
338 Broadway: 4.3 acres**

Printed: 6/4/2015

1 inch = 100 feet



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