

On-site Solar for City Facilities

Presentation to the Utilities Committee, 10/27/22 - A review of potential on-site solar installations related to Ordinance No. 978-2020

- Presented by Sarah O’Keeffe, Director, Sustainability & Climate Justice
- Data compiled by Anand Natarajan, Energy Manager, and former Chief of Sustainability, Jason Wood
- Site feasibility reviewed by engineering teams in Mayor’s Office of Capital Projects, Cleveland Department of Water and by Property Management



CITY OF CLEVELAND

Mayor Justin M. Bibb

Overview

Structured Sept 2019 RFP to meet key City objectives **that are increasingly relevant in 2022:**

- 1.Support City goals for GHG emissions
 - SCMAP – 45% by 2030
 - CAP – 80% by 2050
- 2.Proof of concept resiliency installations
 - Including battery backups
- 3.Local workforce development
 - Exceed OEO Design-Build Goals
- 4.Potential savings over term of the project





SUSTAINABLE CLEVELAND
TOGETHER, WE'RE BUILDING A THRIVING
GREEN CITY ON A BLUE LAKE

Solar PV Installations on City Facilities (04 /2021)

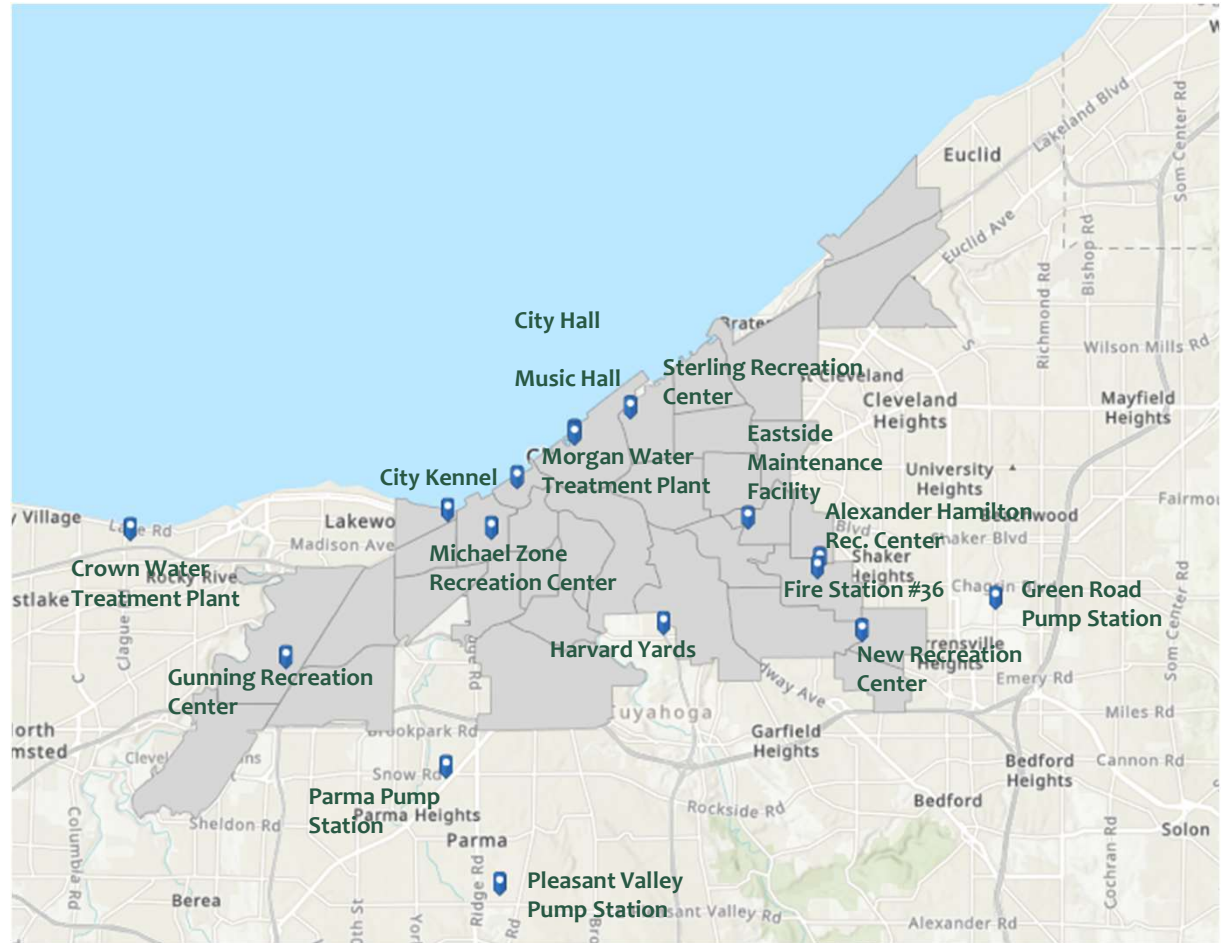
Potential Sites

15 sites included

- Earlier efforts analyzed over 100 City facilities and 65 other sites throughout the city

Sites selected based on:

- Site control
- Solar potential at each site
- Available ground or roof space
- Ground and roof conditions
- Recent or upcoming capital roof replacements/improvements. **Sites are still relevant and appropriate in 2022.**



Project Scope

Key Project Features:

- Design/Build Project
- “Take and pay” contract (if no electrons, do not pay)
- Vendor responsible for permitting and interconnection arrangements
- Vendor responsible for system monitoring, operation and maintenance
- No upfront construction costs and minimal design costs if any. All costs paid on a monthly basis, similar to any electricity supplier payment
- Resilience options at select recreation facilities via battery back-up



“Behind the Meter” v. “Front of the Meter”

All proposed installations are “Behind the Meter” (BTM) installations

- Primarily determined by where power is used
- BTM – majority of electricity is used on the location where it is generated
- Front of the Meter (FTM) – majority of electricity is sold back to the grid



Estimated Facility Specific Information – *Pro Forma, 2020*

Site	Utility	Application	System Size (kW DC)	System Size (# Panels)	Approx. System Size (Sq. Ft.)	Facility Usage (kWh)	Yr 1 Solar Gen. (kWh)	% of Usage Offset by Solar	Year 1 \$/kWh Avoided Cost	Est. Net 25 Years Savings	Est. Year 1 Net Savings
A. Hamilton Rec Center	CPP	Rooftop	106.4	264.0	5,280	114,264	117,742	102.87%	\$0.1488	\$201,416	\$5,453
Crown Water Treatment	FE	Ground	2,039.7	5,005.0	100,100	24,810,256	2,488,217	10.28%	\$0.0679	(\$1,603,542)	(\$82,240)
Garrett Morgan Water Treatment	CPP	Ground	848.4	2,106.0	42,120	31,025,550	1,001,334	3.29%	\$0.1155	\$746,623	\$13,449
Green Road Pump Station	FE	Ground	1,460.6	3,758.0	75,160	1,817,555	1,747,473	96.17%	\$0.0829	\$377,509	(\$8,970)
Gunning Rec Center	FE	Rooftop	286.7	712.0	14,240	602,644	328,380	53.83%	\$0.0837	(\$55,119)	(\$1,838)
Harvard Yards Complex	FE	Rooftop	346.3	878.0	17,560	911,760	412,954	45.10%	\$0.0867	(\$66,730)	\$1,476
Michael Zone Rec Center	CPP	Rooftop	129.5	322.0	6,440	347,242	140,314	40.42%	\$0.1417	\$213,579	\$6,158
New Dobbins Maintenance Facility	CPP	Ground	146.4	378.0	7,560	114,518	169,537	147.90%	\$0.1312	\$177,457	\$510
New Fire Station #36	CPP	Ground	105.7	280.0	5,600	111,440	120,334	108.18%	\$0.1546	\$269,152	\$4,968
New Kennel	CPP	Ground	216.3	562.5	11,250	230,674	245,833	106.74%	\$0.1578	\$497,244	\$6,182
F.Douglass – Ward 1 Rec Center	CPP	Rooftop	323.3	805.0	16,100	238,911	325,103	136.21%	\$0.1413	\$511,462	\$8,069
Parma Pump Station	FE	Ground	1,779.7	4,420.0	88,400	9,080,568	2,168,648	23.82%	\$0.0833	(\$439,836)	(\$10,388)
Pleasant Valley Pump Station	FE	Ground	225.8	561.0	11,220	1,876,800	274,960	14.86%	\$0.0735	(\$131,421)	(\$5,277)
Public Auditorium - Music Hall	CPP	Rooftop	239.9	595.0	11,900	3,625,362	257,093	7.12%	\$0.1267	\$270,336	(\$19,066)
Sterling Rec Center	CPP	Rooftop	116.9	291.0	5,820	260,560	124,698	47.84%	\$0.1388	\$176,785	\$5,209

Notes:

- Assumes flat rate of \$0.11 per kWh; Avoided costs accounts for cost of 2018 supply, some transmission & distribution costs, but not peak shaving, and not 5% line losses
- Year 1 positive cash flow/savings were not the primary goal
- Combination of resilience, sustainability, risk mitigation, price stability and net savings were driving factors
- Flat rate was required as a price risk mitigation mechanism
- Based on a conservative 1.5% annual utility escalator
- For commercial installations, only a portion of utility costs are avoided/offset by solar generation
- Net savings include applicable overproduction credits

*7,420,632 kWh / yr offset from First Energy sites
2,501,988 kWh / yr offset from CPP sites*

Net portfolio savings = \$1.1M @ year 25

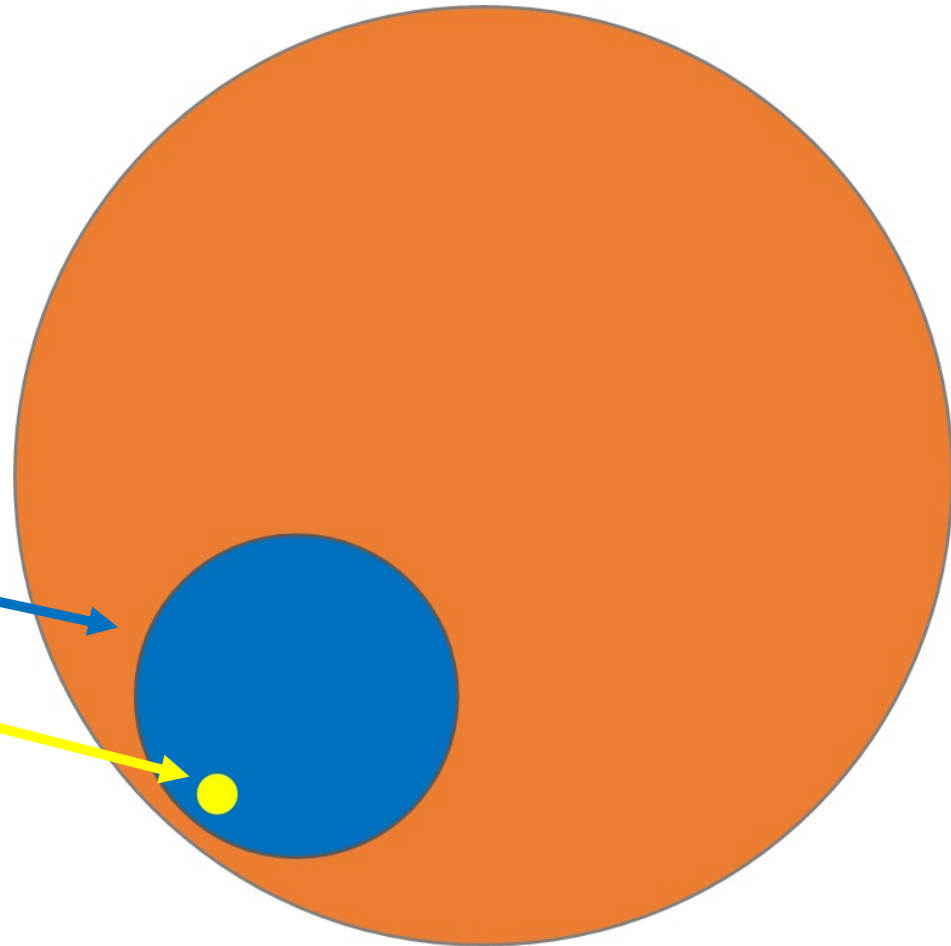
Potential Impact on CPP

Overall impact on CPP is relatively small

- CPP Sales (2018) – approx. 1.6 billion kWh
- City annual purchase from CPP – approx. 189 million kWh
- Amount of annual electric purchase offset by these installations – approx. 2.5 million kWh

Approximate net effect on CPP is 0.2% decrease of total kWh sales

However, having on-site solar installations will also allow CPP to benefit from transmission and capacity credits that can offset this decrease.



New in 2022: Inflation Reduction Act

For all solar projects – stabilizing of solar market and fair wages:

- An extension through 2024 of the existing 30% investment tax credit ("ITC") for solar
- The prevailing wage requirement (for)...all employees, contractors and subcontractors involved in the construction and alteration or repair of a project.
- 10-15% labor hours in the projects must go to qualified apprentices

May pertain to Cleveland:

- An additional ITC amount is also available for certain projects located in low-income communities
- *Combination of factors related to the IRA could allow for a similar level of net portfolio savings for shorter period than 25 years*
- *May also allow traditional capital financing by enterprise fund facilities, with faster overall payback*



Questions?

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