

# NY Prize Stage 2: Update

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Technical Assistance Partnership



U.S. DEPARTMENT OF ENERGY

**CHP Technical Assistance Partnerships**

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# Introduction: NY Prize

- *“A first-in-the-nation competition to help communities create microgrids - standalone energy systems that can operate independently in the event of a power outage”*
- offered support up to \$100,00 for feasibility studies (*Stage 1*) 83 winners selected
- audit-grade engineering design and business planning (*Stage 2*), up to \$1 Mil. 11 selected
- Project build-out and post-operational monitoring (*Stage 3*).



# Stage 2 Winning Projects

## Project

## Location

Buffalo-Niagara Medical Campus

Western New York

City of Syracuse

Central New York

Sunnyside Yard

New York City

Empire State Plaza

Capital Region

Clarkson Avenue

New York City

Rockville Centre

Long Island

Village of Freeport

Long Island

Town of Huntington

Long Island

University Heights

Capital Region

City of Binghamton

Southern Tier

East Bronx

New York City



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# Stage 2 Projects by total project size (in kW)

Project	Total System Size (MW)	Aggregate Consumption (MWh)	Peak Load (MW)	Facilities Served
City of Syracuse	44.5	72,270	15.0	17
East Bronx	29.0	122,655	21.0	21
Buffalo-Niagara Medical Campus	18.9	565,807	8.3	307
Sunnyside Yard	18.2	Redacted	22.3	4
Village of Freeport	17.0	30,952	62	46
Empire State Plaza	16.0	146,043	25.2	10
Clarkson Avenue	14.4	11,343	18.0	54
Rockville Centre	9.1	N/A	58	34
Town of Huntington	8.5	N/A	4.7	6
University Heights	4.1	26,448	6.8	9
City of Binghamton	3.0	5,938	1.5	6

# Stage 2 projects by CHP system size (kW)

Project	CHP (MW)
East Bronx	24
Empire State Plaza	16
Buffalo-Niagara Medical Campus	7.7
Rockville Centre	7.5
Sunnyside Yard	6
University Heights	3.3
City of Syracuse	2
Town of Huntington	0.8
City of Binghamton	0.3
Clarkson Avenue	0
Village of Freeport	0



# CHP as a % of total system capacity (kW)\*

Project	Size (MW)	CHP
City of Syracuse	44.5	4%
East Bronx	29	83%
Buffalo-Niagara Medical Campus	18.9	41%
Sunnyside Yard	18.2	33%
Village of Freeport	16.97	0%
Empire State Plaza	16	100%
Clarkson Avenue	14.4	0%
Rockville Centre	9.1	83%
Town of Huntington	8.5	9%
University Heights	4.1	80%
City of Binghamton	3.0	10%



# NY Prize Stage 2 Projects: Capital Investments

Project	Capital Investment (\$M)
Buffalo-Niagara Medical Campus	35.8
Village of Freeport	34.7
East Bronx	34.4
Sunnyside Yard	30.1
Town of Huntington	18.8
University Heights	16.9
Rockville Centre	12.6
Clarkson Avenue	9.7
Empire State Plaza	9.2
City of Syracuse	6.2
City of Binghamton	5.0



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## NY Prize Stage 2 projects: B/C ratios & net benefits

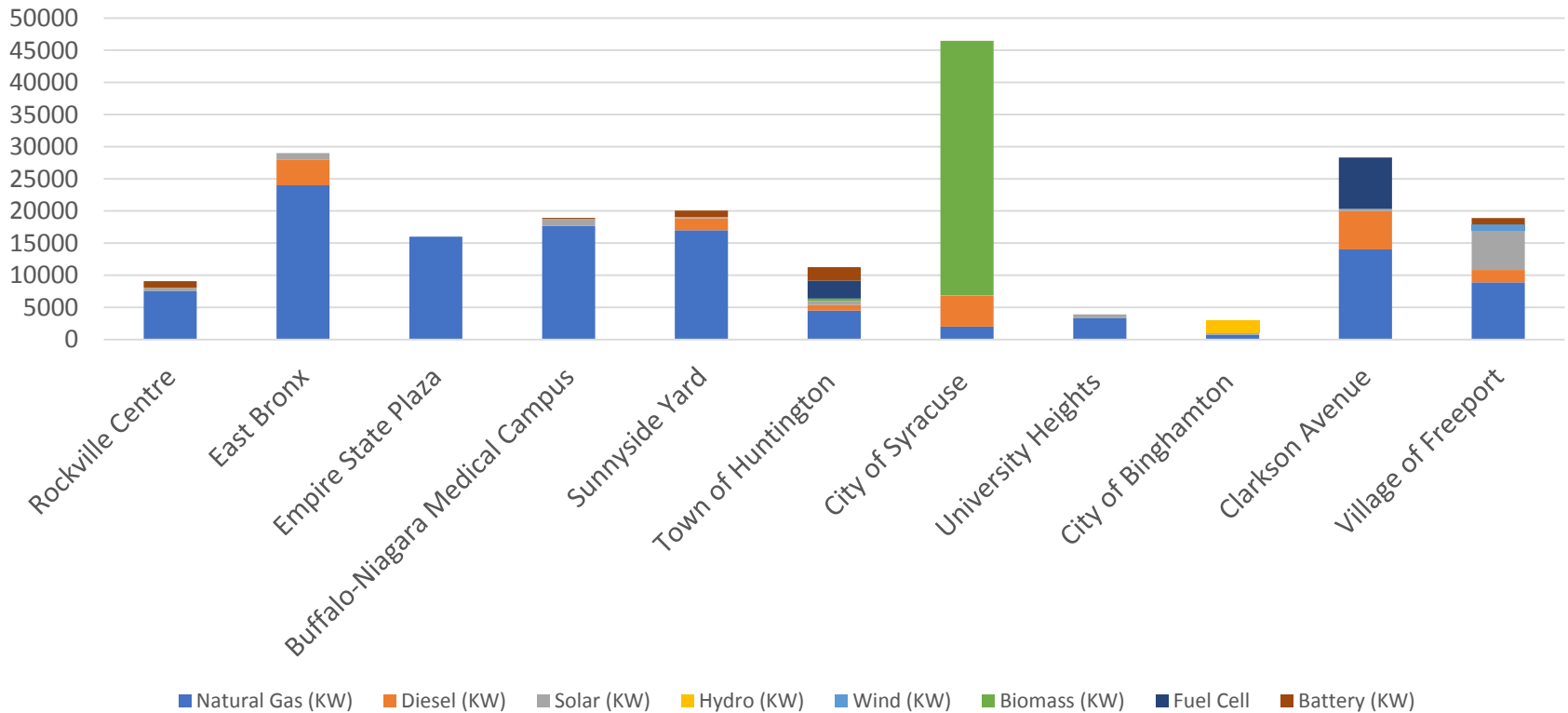
Project	Net Benefits - Present Value (\$M)	BCA
Rockville Centre	111.1	4.9
City of Syracuse	53.2	2.6
City of Binghamton	12.3	1.6
Village of Freeport	35.2	1.4
East Bronx	87.2	1.4
Clarkson Avenue	22.8	1.2
Empire State Plaza	28.2	1.1
Town of Huntington	2.8	1.1
University Heights	-24.3	0.7
Sunnyside Yard	-28.4	0.9
Buffalo-Niagara Medical Campus	-21.4	0.9





# Distribution of DERs

Distribution of DERs (KW)



# Buffalo-Niagara Medical Campus

Serving Kaleida Health / Buffalo General Hospital; Roswell Park Cancer Institute; SUNY Buffalo School of Medicine; Cleveland Biolabs; and portions of the Fruitbelt neighborhood sharing common feeder

Includes a diverse mix of power systems (combustion turbines, photovoltaics, & batteries)

Intended to sustain, at a minimum, an outage duration of 7 days

CHP system will offset some of the thermal needs on the campus that are currently being served by the boilers at each site. Thermal loads at Kaleida and Roswell will be combined to achieve greater efficiencies



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# Buffalo-Niagara Medical Campus

New Assets 7,692 kW CHP + 2 X 5,000 kW IC Engines + 150 kW of Li Ion battery storage

Total of 17,842 of new dispatchable generation assets

320 kW<sub>DC</sub> Solar Kaleida Health – Children’s Hospital,  
260 kW<sub>DC</sub> Solar U.B. School of Medicine, and 500kW  
distributed rooftop PV at Fruitbelt neighborhood

Will attempt to incorporate revenue streams from the NYISO and when available new REV distribution services markets



# East Bronx Healthcare Microgrid (EBHM)

Purpose: Maintaining reliable thermal and electric operations for three large healthcare institutions and a medical college in the Bronx:

Montefiore Medical Center's Jack D. Weiler Hospital (Weiler);

the Albert Einstein College of Medicine (Einstein);

Jacobi Medical Center, part of NYC Health + Hospital (Jacobi); and

Calvary Hospital (Calvary).

EBHM is designed to provide 100% of the electric load and provide for the thermal needs of four mission-critical customers in the East Bronx



# East Bronx Healthcare Microgrid (EBHM)

24 MWs of CHP running 8,000+ hrs/year thermal by product for winter space heating, summer cooling using absorption chillers, and year round production of domestic hot water.

5x4.6 MW's CHP and 2x2MW Diesel generators at Jacobi, 1 MW Microturbine Calvary, 1 MW PV

Net Benefits – Present value = \$87.2 Million .. BC ratio of 1.4  
... CO<sub>2</sub> reductions 38,621 tons

The electrical and thermal loads for the EBHM are summarized as follows:

Peak Load: 21,006 kW Average Load: 14,001 kW

Annual Energy Use: 122,654,951 kWh



# Town of Huntington

- Comparatively Diverse set of DERs including: CHP, Photovoltaics, Fuel Cells, Battery Storage, & Diesel
- CHP system partially (25%) fuelled with biogas from waste-water treatment plant
- Facilities served are mostly community-based, adding resiliency
- Comparatively low capital costs (\$18.8M) for the variety of DERs included
- NPV of savings is close to capital costs



# Empire State Plaza

- Expected to remove 15MW of demand from grid
- 3/11 connected facilities can hold up to 30,500 people; adds resiliency
- Seventh largest project; comparatively low capital costs (\$9.2M)
- Not all facilities will be served by thermal output from CHP
- CHP will meet 81.4% of its electricity consumption



# Thank You

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<http://www1.eere.energy.gov/manufacturing/distributedenergy/ceacs.html>