THE CLARKSTOWN LANDFILL SOLAR FIELD AND GERMONDS PARK SOLAR PARKING LOT PROJECTS

Presented By:
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Town of Clarkstown
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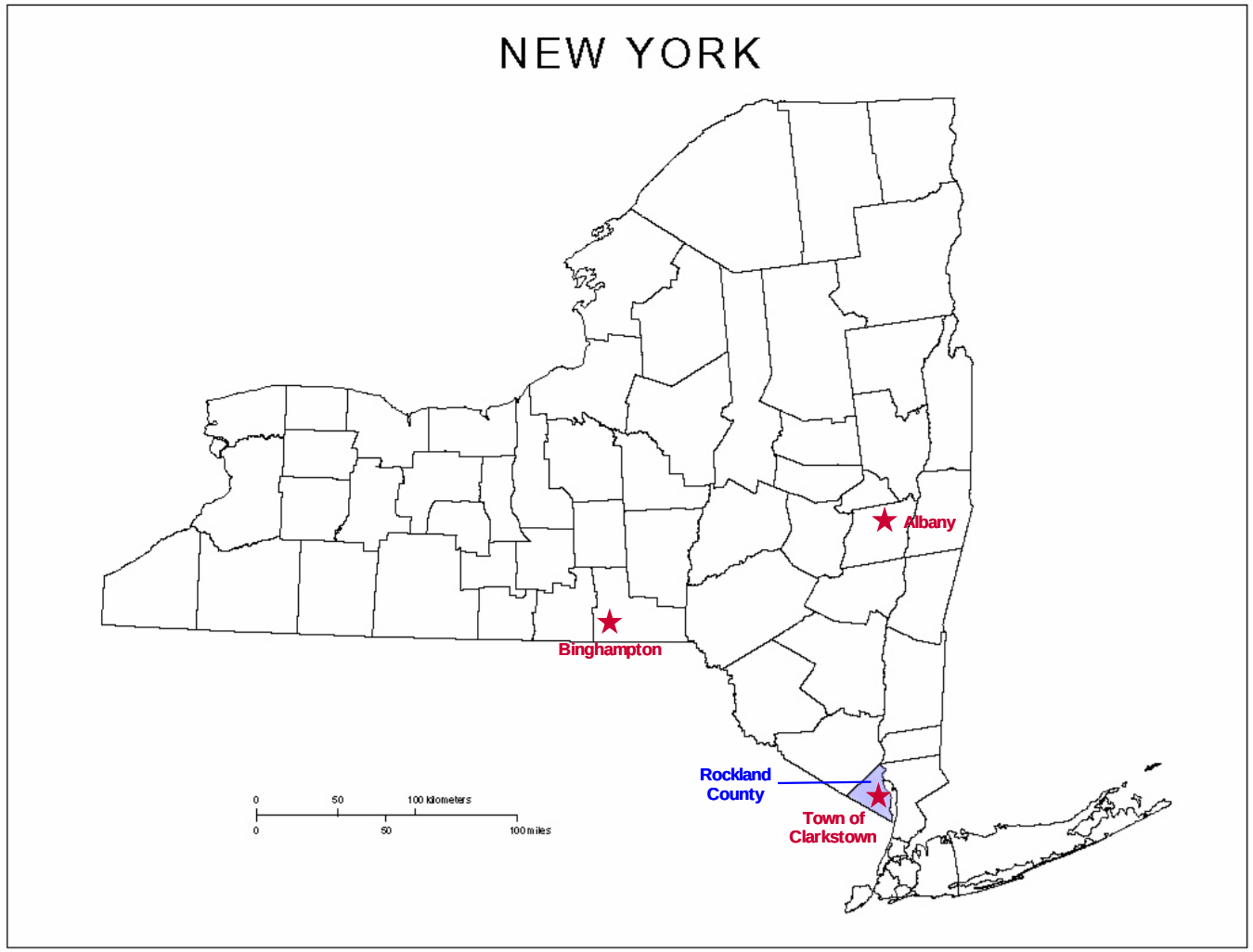

TOWN OF CLARKSTOWN

Town of Clarkstown Environmental Initiatives

- Memberships
  - International Council for Local Environmental Initiatives (ICLEI) (2007)
  - United States Mayors Climate Protection Agreement (2008)
  - Climate Smart Community (2011)

- Education/Public Outreach
  - Greening Clarkstown Event (2009)
  - Clarkstown Environmental Summit (with over 400 attendees) (2011)
  - Smart Home/Smart Choices Event (2014)

- Planning Studies
  - Award Winning Comprehensive Plan modelled as a GEIS (2009)
  - NYSDEC Climate Smart Communities (NY Rising) program to develop Resiliency and Climate Action Plans (2013)
  - NYSERDA Cleaner Greener Community Grant for Nanuet Transit Oriented Development Project (2017)
  - Comprehensive Plan Update (2019-ongoing)

Town of Clarkstown Environmental Initiatives

- Local Laws/Policies
  - Open Space Program funded at $22 million, purchased over 200 acres (2000 - ongoing)
  - Tree Preservation Law to prevent the clear-cutting and indiscriminate removal of trees, collected close to $100,000 for tree fund (2006)
  - Development Coverage Law set limitations on building and impervious coverage(2016)
  - Stormwater Mitigation Law requires on site mitigation of stormwater 10% greater than net zero (2019)
  - Community Choice Aggregation with Joule Assets (2019 - ongoing)

- Infrastructure
  - Purchased 6 hybrid vehicles and smaller more efficient cars (33+mpg) (2007)
  - Contracted with “The Daylight Savings Company” to perform an energy audit of all Town buildings (2007)
  - Installed energy saving devices in all Town buildings (2008)
  - Installed 4 LED street lights as part of an Orange & Rockland Utilities pilot program (2009)
  - Purchased 3,873 street lights from Orange & Rockland Utilities and upgraded them from high pressure sodium to LED (2017)
  - Solar Field on capped town landfill (2015)

https://www.lohud.com/story/news/local/rockland/clarkstown/2017/06/30/clarkstown-led-streetlights/443238001/

Landfill Solar Field Project Facts

- 1st MW Scale Municipal Photovoltaic (PV) Array System in New York State (2015)
- Public/Private Partnership Project
- Closed/Capped Landfill (1997)
- Landfill:
  - 161 Acre Property
  - 76 Acres Capped with 16 Acre Plateau at Top
- Solar Field:
  - 13 Acres on Capped Area
  - 2.364 MW
  - 376 Racks
  - 1,128 Ballasts
  - 8,744 Solar Panels – Canadian Solar, Inc.
- Zero Development Cost to Town
- Projected Power Use Savings = $4.6 million over 30 years

Overall Project Issues

- **Town Issues**
  - Radio flyers
  - Approval of NYSDEC
  - Agreement with Rockland County Solid Waste Authority
  - Cost: Bond vs. Power Purchase Agreement (PPA)

- **Utility Issues (Orange & Rockland)**
  - Utility Interconnection
  - Remote Net Metering
  - Monitoring requirements
  - Energy provider versus Consumer
  - Study Cost/Preparation

- **NYSDEC Issues**
  - Integrity of capped landfill
  - Maintaining access to existing operations
  - Ongoing operation and maintenance
  - Methane gas collection system
  - Approval of Installation Work Plan

Construction Issues

- Access to site over landfill cap drainage swales
- Staging area locations
- Access along landfill perimeter road
- Utility coordination
- Utility service to site
- Following approved Installation Work Plan
- Layout of site on landfill
- Use of pre cast/poured in place concrete ballasts
- Stripping of existing cap cover material
- Use of recycled crushed glass for ballast base
- Concrete delivery for ballast
- Installation of racking system
- Installation of solar panels - (Union Project Labor Agreement prevailing wage)
- Installation of electrical feed/wiring system
- Inverter location/delivery
- Switchgear installation/elevation
- Trenching/cover damage

Operational Issues

- Power surges/Arc
- Wind toppling panels
- Vegetation growing beneath panels
- Maintenance - cleaning panels, cutting grass, repairs, monitoring

Safety & Security Provisions

- Locks supplied by Clarkstown Solar have been installed on the Inverters and Electrical switchgear.
- A six foot fence is to be installed around the inverter platform

- MOAB and SCADA

Financial Analysis:

- Initial service fee $100,000
- Escalator costs 2% annually
- Determining existing electric use rate
  - $0.09611/KWH usage + delivery (2013)
- Estimate of solar panel production loss
- Useful life of solar panels – 30 years
- End use of solar panel field – What are the options?
  - Renew and upgrade PPA 20 more years
  - Maintain 15 years (Burn rate testing less than 1% per year)
  - Dismantle

Lessons Learned

- Have realistic expectations about the ability and experience of the utility company
- Have a clear understanding of the Interconnection Agreement with the utility company
  - Our utility company had not dealt with this before
- Assign a Project Manager from the municipality – especially after construction
- Verify that utility will allow credit for electricity produced to be applied to more than one account
  - Our utility company initially only allowed credit to a limited number of bills
- Ensure capability of the utility to verify what is produced
  - Our utility company only has one staff person to conduct this process through meters resulting in significant lag time
  - As a result, the Town received several shutoff notices
  - Some utility companies have automatized processes, ours does not – be aware
  - Verify and agree on location of meter for credit.

Lessons Learned

- Understand that company that builds the solar installation may sell
  - Our company sold to a company in Utah under a separate LLC.
- Evaluate the use of bonding instead of a Power Purchase Agreement
  - We are saving, but the debt service on a bond could be more attractive
- Have an emergency operations plan in place to manage the solar field
- Verify who has the Maintenance Contract
- Have a breakdown of each agency’s responsibilities to avoid down time

To date the solar field has generated 12.9 GW hours of power which is equivalent to:

- Planting about 229,000 trees
- Not burning about 1 million gallons of gasoline

http://s33711.mini.alsoenergy.com/Dashboard//2a5669735066323742414 54b772b71593d

Germonds Park Parking Lot Solar Canopies

Germonds Park at a glance:

- 78.3 acres
- 2 swimming pools, water slides, diving pool and bathhouse
- Ballfields and basketball courts
- Playground and picnic areas
- Miniature golf course
- Walking trail

Germonds Park Parking Lot Solar Canopies

- The Town is seeking grant funding for Phase I of the project under NYSERDA's Net Zero Energy for Economic Development Program

- The project will transform the 3 acre parking lot into 1.41 GW hours per year (approximately 1 MW) electricity generating facility by installing solar canopies over the course of 3 phases.

- Phase I: design the entire project and install one single and one double row of solar panels
  - 20 months: 6 months for design and engineering; 2 months for letting and bid selection; 12 months to complete construction, which must occur in the off-season for the park

- Phases 2 and 3: complete the installation of solar canopy consisting of four double rows of panels
  - 20 months: 10 months for each phase

<u>Phase I Funding Breakdown</u>

- Engineering - $350,000 – Town Funded

- Construction/Renovation (site testing/prep) - $78,596 – Town Funded

- Construction/Renovation - $999,991 – Net Zero Grant Funded

- Total Phase I Cost: $1,428,560

Germonds Park Parking Lot Solar Canopies

- Phase 1 will produce all the electricity needed for the park facilities, 0.352 GW hours, which in the offseason is approximately 6% of the Town's power needs and a savings of $63,560.

- Phases 2 and 3 will bring the total generated to 1.41GW hours, or 18.9% of the Town's total power needs.

- The project will generate $1,012,983 in savings over the first ten years and $3,640,394 over 20 years for life of the facility.

QUESTIONS?

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