



# **NRG POWER PLANT FEASIBILITY STUDY AND ALTERNATIVES ANALYSIS**

**PREPARED FOR THE CITY OF DUNKIRK AND CHAUTAUQUA COUNTY**

**JUNE 2021**

**WITH**

# SUPPORT + GUIDANCE FROM

## OUR FUNDING PARTNERS + STEERING COMMITTEE

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<b>Nathan Aldrich</b>	Chautauqua County Dept. of Planning and Development, Special Projects Coordinator
<b>George Borello</b>	New York State Senator, 57th Senate District
<b>Dennis Elsenbeck</b>	Phillips Lytle LLP, Head of Energy and Sustainability
<b>Mark Geise</b>	Chautauqua County, Deputy County Executive for Economic Development and County of Chautauqua Industrial Development Agency, Chief Executive Officer
<b>Alison Hunt</b>	U.S. House of Representatives - Congressman Reed, District Director
<b>Jill Meaux</b>	City of Dunkirk, Interim Director of Planning and Development
<b>Jacqueline Phelps</b>	U.S. House of Representatives - Congressman Reed, Deputy District Director
<b>Wilfred Rosas</b>	City of Dunkirk, Mayor
<b>Harry Sicherman</b>	H. Sicherman + Company, President
<b>Paul Wendel</b>	Chautauqua County, County Executive
<b>Rebecca Wurster</b>	Chautauqua County Dept. of Planning and Development, Special Projects Coordinator



**BROWNFIELD GROUP**

**EMPIRE BUILDING DIAGNOSTICS**

# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b> .....	<b>i</b>
<b>INTRODUCTION</b> .....	<b>1</b>
PROJECT OVERVIEW.....	2
SOCIO-ECONOMIC CONTEXT .....	4
<b>SITE ANALYSIS</b> .....	<b>11</b>
SITE HISTORY .....	12
OWNERSHIP + LIABILITY .....	13
BUILDING + SITE INFRASTRUCTURE .....	14
TRANSPORTATION ACCESS.....	15
ENVIRONMENTAL CONDITIONS: PHASE I ESA .....	16
<b>ECONOMIC + MARKET ANALYSIS</b> .....	<b>17</b>
REGIONAL INDUSTRY PROFILE .....	18
REAL ESTATE MARKET ANALYSIS .....	20
OFFICE REAL ESTATE MARKET .....	21
KEY FINDINGS.....	22
<b>SITE RE-USE ALTERNATIVES</b> .....	<b>23</b>
POTENTIAL RE-USE ALTERNATIVES .....	24
POWER PLANT RE-POWERING .....	31
INDUSTRIAL DEVELOPMENT.....	32
DATA CENTER .....	35
BATTERY STORAGE FACILITY.....	38
OFF-SHORE WIND .....	40
MICROGRID DEVELOPMENT .....	41
CLEAN SLATE RE-USE .....	43
PREFERRED SITE RE-USE CONCEPTS.....	47
<b>IMPLEMENTATION</b> .....	<b>49</b>
IMPLEMENTATION STRATEGY .....	50
FUNDING OPPORTUNITIES .....	51
<b>APPENDICES</b>	
APPENDIX A: PHASE I ENVIRONMENTAL SITE ASSESSMENT	
APPENDIX B: MARKET ANALYSIS	
APPENDIX C: ENVIRONMENTAL REMEDIATION PLAN AND ESTIMATES	
APPENDIX D: DEMOLITION AND ABATEMENT COST ESTIMATES	

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# EXECUTIVE SUMMARY



## INTRODUCTION

The NRG Power Plant Feasibility Study and Alternatives Analysis is intended to identify potential redevelopment strategies for the NRG Power Plant site, which is located along the Lake Erie shoreline in the City of Dunkirk. NRG Energy, Inc. announced the abandonment of re-powering efforts to convert the facility from coal power to natural gas in 2016 due to extensive and necessary upgrades, as well as regulatory barriers.

This study analyzes a series of re-use alternatives for the NRG Power Plant site, which would result in a productive long-term use on the site. The re-use options set the stage for a strategy that will result in a long-term economic development solution for the Dunkirk community, which has been negatively impacted by former energy policies and the closure of the plant.

The document provides a review of existing conditions, an analysis of regional market trends and socio-economic characteristics, an evaluation of potential re-use options, and an implementation strategy to provide reasonable alternatives that will advance economic development objectives in the Chautauqua County region. Clean energy practices, which can be incorporated into the site's redevelopment strategy are also presented.



**The NRG Power Plant site is an underutilized property within the City of Dunkirk that has hindered the community's revitalization. This plan sets the stage for future reinvestment that supports economic development efforts and environmental sustainability within the region.**

## PROJECT CONTEXT + NEED

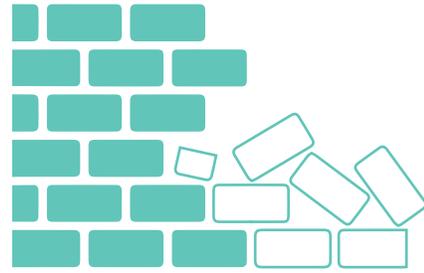
The NRG Power Plant, originally known as the Niagara Mohawk Power Plant, operated from the 1950's until 2015. The plant was officially mothballed in 2016 and began the decommissioning process in 2020. The NRG Power Plant was a economic engine in the City of Dunkirk contributing to approximately 40% of the City's tax base and providing close to 150 well paying jobs at its peak. The goal for this project is to determine a series of re-use options that will bring this site back to a viable and sustainable use and catalyze community revitalization efforts.

A redevelopment strategy for the NRG Power Plant site that mitigates direct and indirect impacts on the Dunkirk community is critical to the City's long-term economic recovery. Overall, the redevelopment strategy for the NRG Power Plant would have the greatest benefits if it allowed the community to access workforce development opportunities, generated tax revenue, included a clean energy component, supported public access to the waterfront, and aided in comprehensive economic development for the region.

### MARKET ANALYSIS KEY FINDINGS

A market analysis was conducted to understand market conditions within the local and regional area that will aid in the facilitation of the site's redevelopment. The following describes the key findings from this analysis:

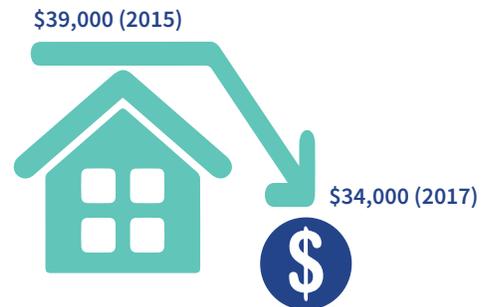
- There is an opportunity to introduce additional industrial and manufacturing uses to Chautauqua County to mitigate projected manufacturing job losses over the next five years.
- The County should support the high performing manufacturing industry by prioritizing and developing sites that can aid in their expansion.
- The County's industrial vacancy rates of 11% suggests that the County can accommodate additional business and industrial growth.
- Redevelopment of the NRG Power Plant site will require strong prospects for leasing and will likely involve a build-to-suit construction.
- The NRG Power Plant site is located in a federally-designated Opportunity Zone, which increases its attractiveness for potential investors and will aid in the feasibility of the property's redevelopment.
- A number of job openings are available in the County but require specialized training, such as welding, technicians, and project managers.



**THE CLOSURE OF THE NRG POWER PLANT RESULTED IN THE LOSS OF APPROXIMATELY 40% OF THE CITY'S TAX BASE**



**THERE WAS A SHARP RISE IN CITY UNEMPLOYMENT FROM 2012 TO 2015, WHICH ALIGNS WITH THE TIMELINE OF WHEN NRG FIRST ANNOUNCED ITS PLANS TO CEASE OPERATIONS.**



**THERE WAS A SUDDEN DECREASE IN MEDIAN HOUSEHOLD INCOME AND INCREASE IN POVERTY BETWEEN 2015 AND 2017, WHICH IS LIKELY ATTRIBUTED TO THE CLOSURE OF THE NRG POWER PLANT AND CONAGRA FOOD PLANT IN 2015.**

## SITE ANALYSIS

An inventory and analysis of existing conditions was performed to understand the site’s opportunities and constraints related to redevelopment. The following information was derived from this assessment:

EXISTING SITE / BUILDING(S) CONDITIONS	OPPORTUNITIES	CONSTRAINTS
<ul style="list-style-type: none"> <li>+ Approximately 76 acres in size;</li> <li>+ Zoned M-2 General Industrial;</li> <li>+ Site and buildings are privately owned by NRG Energy, Inc;</li> <li>+ Potential on-site surface, subsurface, and groundwater contamination;</li> <li>+ Potential asbestos, lead containing materials, and PCB-containing materials on site;</li> <li>+ Presence of active and inactive underground and aboveground storage tanks; and</li> <li>+ Presence of coal ash lagoons on site.</li> </ul>	<ul style="list-style-type: none"> <li>+ Access to CSX railroads;</li> <li>+ Site is in close proximity to NY Interstate-90;</li> <li>+ Located in the Dunkirk Harbor (deep draft commercial harbor) with dock access and barge unloading capabilities;</li> <li>+ Within close proximity to multiple large distribution markets;</li> <li>+ Opportunities to include renewable energy components within re-use strategy;</li> <li>+ Incentives related to site cleanup and redevelopment; and</li> <li>+ On-site buildings have the ability to be adaptively re-used, under some re-use scenarios.</li> </ul>	<ul style="list-style-type: none"> <li>+ Presence of electrical switchyard (4.48 acres) operated by National Grid located in the center of the site;</li> <li>+ Electrical interconnection needs to be established and further explored;</li> <li>+ Presence of coal ash lagoons on site;</li> <li>+ Environmental liability for past contamination on site and within existing buildings;</li> <li>+ Environmental remediation costs and community perception of contamination;</li> <li>+ Demolition and abatement costs; and</li> <li>+ Medium to high investment costs necessary to redevelop.</li> </ul>



## SITE RE-USE ALTERNATIVES

A total of seven site re-use alternatives were explored in this analysis. The alternatives presented do not represent an exhaustive list of options, but are intended to illustrate alternatives that are most likely to advance a viable redevelopment and improve the socio-economic characteristics of the City of Dunkirk and the Chautauqua County region. All alternatives have the ability to incorporate renewable energy components that can offset carbon emissions.

Each alternative was identified based on an understanding of the following project goals:

- Create an active waterfront re-use that supports community revitalization;
- Support expanded job opportunities for the local and regional economy;
- Generate tax revenue for the local community; and
- Incorporate environmental sustainability and renewable energy goals.

## CARBON OFFSETS APPLICABLE TO ALL ALTERNATIVES

The future development of the site will likely involve the production of carbon emissions. To support New York State's sustainability goal of reaching 100% clean energy production by 2040, the incorporation of concepts with carbon reducing potential were analyzed with the ultimate goal of making the site carbon neutral. These concepts can be incorporated into any of the re-use alternatives presented in this report. These include:

- + **Biomass power generation** - This concept involves a biomass power generation facility at the NRG Power Plant site. It is assumed that a 500 KW biomass plant operating at 80% capacity would generate a total of 4.38 million kWh of electricity in one year.
- + **Landfill methane gas carbon offsets** - This concept explores the use of landfill methane gas as a carbon offset to industrial production.
- + **Solar power generation** - Several sites in Chautauqua County could potentially house solar arrays to offset carbon emissions. Overall, between 80 million kWh and 132 million kWh of electricity could be produced in one year.

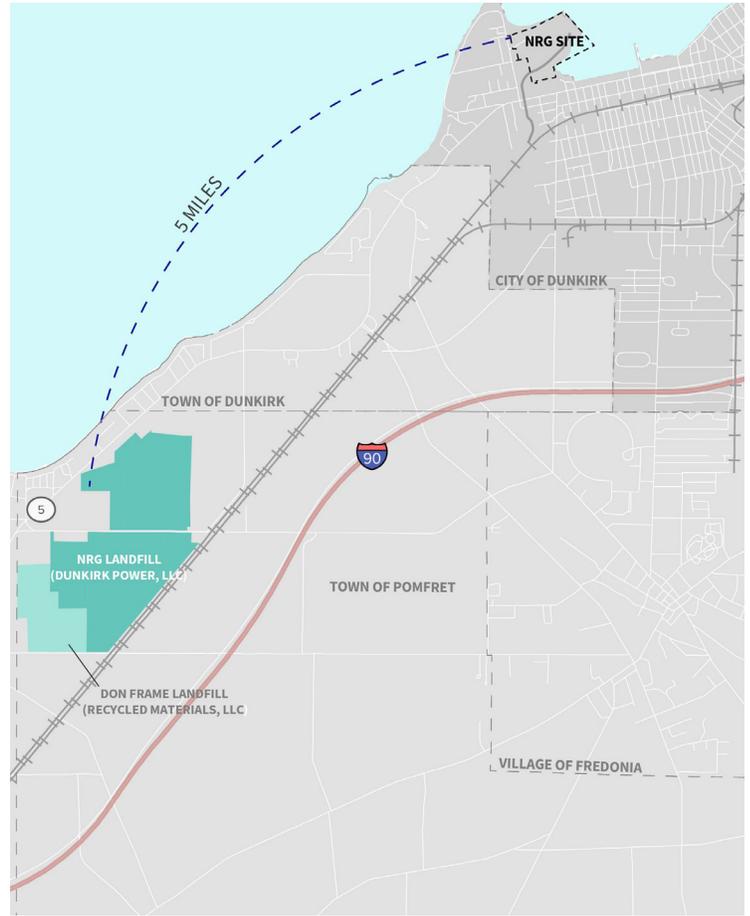
## SUMMARY OF RE-USE ALTERNATIVES

	RE-USE	DESCRIPTION	OPPORTUNITIES	CONSTRAINTS
1	Power Plant Re-powering	Re-powering the NRG Power Plant from a fuel source of coal to natural gas.	N/A	<ul style="list-style-type: none"> <li>+ Interconnection cost of approximately \$114 million</li> <li>+ Significant infrastructure upgrades needed</li> <li>+ Conflicts with NYS energy and sustainability goals</li> </ul>
2	Industrial Development	Adaptive re-use or demolition and rebuild of the existing facilities to advance an industrial distribution and logistics center, including potential packaging and shipment of goods, or an industrial business park.	<ul style="list-style-type: none"> <li>+ Access to rail, water, and interstate</li> <li>+ In proximity to multiple large distribution markets</li> <li>+ Adaptive re-use of structures</li> <li>+ Lower environmental remediation cost</li> <li>+ Water piers are in good condition for re-use</li> <li>+ Local job creation</li> <li>+ Potential ACOE investment in waterside infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>+ Electrical switchyard on site</li> <li>+ High investment cost to build structure or adaptively re-use existing buildings</li> <li>+ Would require private purchase by developer</li> </ul>
3	Data Center	Re-use of the site for a data center that has the ability to process and host large quantities of data.	<ul style="list-style-type: none"> <li>+ Reuse existing infrastructure</li> <li>+ Lower environmental remediation cost</li> <li>+ Renewable energy component</li> <li>+ Successful comparable projects in NYS</li> </ul>	<ul style="list-style-type: none"> <li>+ High amount of power and investment cost is necessary</li> </ul>
4	Battery Storage	Re-use of the site to facilitate the storage of renewable energy.	<ul style="list-style-type: none"> <li>+ Could store more than 80 MW</li> <li>+ Existing electrical infrastructure would allow for large energy transfers</li> <li>+ Potential adaptive re-use of existing structures</li> <li>+ Lower environmental remediation cost</li> <li>+ Combination with renewable energy</li> <li>+ Compatible with microgrid</li> </ul>	<ul style="list-style-type: none"> <li>+ Electrical interconnection required</li> <li>+ High amount of power and investment cost is necessary</li> <li>+ Low job creation</li> </ul>
5	Off-shore Wind on Land Interconnect	Provide an offline interconnect to the off-shore wind turbines along the Lake Erie shoreline (if they become a reality)	<ul style="list-style-type: none"> <li>+ Utilization of Lake Erie shoreline location</li> <li>+ Existing electrical infrastructure and utilities</li> <li>+ Lower environmental remediation cost</li> </ul>	<ul style="list-style-type: none"> <li>+ Electrical interconnection required</li> <li>+ High amount of power and investment cost is necessary</li> <li>+ Low job creation</li> </ul>
6	Microgrid Development	Creation of a microgrid that has the ability to disconnect from the larger power grid.	<ul style="list-style-type: none"> <li>+ Can source energy from renewables</li> <li>+ Energy cost savings</li> <li>+ Low environmental remediation cost</li> </ul>	<ul style="list-style-type: none"> <li>+ High investment cost</li> <li>+ Financial feasibility is uncertain</li> <li>+ Dunkirk does not have a compelling energy issue</li> </ul>
7	Clean Slate	Demolition of the existing buildings and environmental remediation of the site to facilitate a range of re-use options (mixed use, open space, etc)	<ul style="list-style-type: none"> <li>+ Public use and enjoyment</li> <li>+ Revenue producing options</li> <li>+ Combination of commercial and residential options</li> <li>+ Job creation opportunities</li> </ul>	<ul style="list-style-type: none"> <li>+ Electrical switchyard location</li> <li>+ Development partner required</li> <li>+ Environmental remediation and building demolition is likely necessary</li> <li>+ High environmental remediation costs</li> </ul>

## PREFERRED RE-USE CONCEPTS

All potential re-use concepts explored present a unique opportunity to leverage the site’s locational advantage, and accessible infrastructure and utilities, to create an economic driver in the City of Dunkirk. Two preferred re-use concepts have been selected for the NRG Power Plant site and associated landfill sites (in the Town of Pomfret) based on feasibility and market demand. The landfill sites are included as a redevelopment strategy due to their potential to increase job opportunities and incorporate clean energy practices. These preferred site alternatives are anticipated to bring the largest benefit to the region. However, if changing conditions in the economy and market were to take place and new opportunities for redevelopment arose, deviations from the preferred concepts would be considered. The two preferred site re-use concepts are included in the chart below.

NRG Energy, Inc (under Dunkirk Power, LLC) and Don Frame (under Recycled Materials, LLC) own several landfill sites located approximately 5 miles from the NRG Power Plant site. The preferred alternatives include a strategy that utilizes both the NRG site and landfills due to their proximity and ability to incorporate clean energy practices, which will result in regional economic development benefits.



PREFERRED RE-USE CONCEPTS:	KEY RE-USE ELEMENTS ON:	
	NRG POWER PLANT SITE	NRG AND DON FRAME LANDFILL SITE(S)
<b>DATA CENTER</b>	<ul style="list-style-type: none"> <li>+ Adaptive re-use of existing facilities or new construction for a data center</li> <li>+ Installation of a solar array</li> <li>+ Potential installation of a complementary battery storage facility</li> <li>+ Potential use of biomass</li> <li>+ Integration of a waterfront trail connection with public access points as part of final design plan</li> </ul>	<ul style="list-style-type: none"> <li>+ Development of an industrial business park</li> <li>+ Potential installation of a solar array</li> <li>+ Potential development of a battery storage facility</li> <li>+ Potential mining and re-use of fly ash</li> </ul>
<b>INDUSTRIAL USE / DATA CENTER</b>	<ul style="list-style-type: none"> <li>+ Adaptive re-use of existing facilities or new construction for industrial use (business park or data/logistics facility), which may or may not include a data center component</li> <li>+ Installation of a solar array</li> <li>+ Potential installation of battery storage facility</li> <li>+ Integration of a waterfront trail connection with public access points as part of final design plan</li> </ul>	<ul style="list-style-type: none"> <li>+ Potential mining and re-use of fly ash</li> <li>+ Potential installation of a solar array</li> <li>+ Potential development of a battery storage facility</li> </ul>

## NEXT STEPS

The following outlines immediate next steps the City of Dunkirk and Chautauqua County should move forward with to better understand site and building constraints and future opportunities, and position the site for funding to facilitate redevelopment. The securement of additional funding may be necessary to assist in the completion of these actions - potential sources include the New York State Energy Research and Development Agency (NYSERDA), New York State Department of Environmental Conservation (DEC), Appalachian Regional Commission (ARC), among others.

### 01 COLLABORATE WITH NRG ENERGY

Since NRG Energy is the property owner of the NRG Power Plant site, collaboration with NRG will be critical to facilitating realistic site redevelopment. The County and City should work directly with NRG to understand priorities and opportunity for future investments. Open lines of communication should also exist to understand which entity is most appropriate to take the lead on future grant opportunities.

### 02 PURSUE BUILD-READY PROGRAM APPLICATION

NYSERDA recently announced the Build-Ready Program, which is intended to advance large-scale renewable energy projects on qualifying sites. Dormant electric generating site, sites of at least 65 acres, former industrial sites, and landfills are preferred. The NRG Power Plant site and associated landfills fall into these categories. If and when the timing makes sense, the County should pursue a Build-Ready Site nomination in collaboration with NRG Energy to advance necessary analyses for redevelopment.

### 03 INVESTIGATE INTERCONNECTION COSTS

While the redevelopment of the site can potentially include an energy re-use component, specifics related to cost of interconnection is currently unknown. A feasibility study focused on the cost of interconnection infrastructure is needed to facilitate energy transfer is recommended.

### 04 DETAILED FACILITIES AND SITE INFRASTRUCTURE ASSESSMENTS

Detailed facility and site infrastructure assessments are necessary to further inform potential re-use options on the NRG Power Plant site.

### 05 ENERGY MODELING

New York State's push for carbon neutrality by 2040 is one of the drivers for the inclusion of renewable energy as part of the redevelopment strategy for the NRG Power Plant site. Building energy modeling is recommended to understand the energy consumption of the existing NRG facility and potential new industrial buildings. This assessment will help inform the amount of renewable energy necessary to offset production, with the ultimate goal of the creating a carbon neutral development.

### 06 COLLABORATE WITH THE NYS CLIMATE JUSTICE WORKING GROUP

The Climate Justice Working Group is an advisory committee to the Climate Action Council (CAC). This group is tasked with establishing the criteria for a "disadvantaged" community for the purposes of grant funding through the Climate Leadership and Community Protection Act (CLCPA). The County should work directly with the Working Group to position the City of Dunkirk for funding to advance site redevelopment that will positively benefit Dunkirk residents.

### 07 SITE MARKETING AND PROMOTION

A strategic marketing plan and campaign to broadcast the site's redevelopment opportunities and generate private developer interest of the site will be key to its re-use. The County/City should work with NRG to develop a marketing webpage geared toward generating interest from developers to position the site for viable re-use.

# 1 INTRODUCTION

The former NRG Power Plant sits on the shores of Dunkirk, New York. This plant was mothballed in 2016 resulting in a significant loss of jobs, tax revenue and underutilized waterfront land, which significantly impacted the local Dunkirk community. This study is intended to explore re-use alternatives that will not only facilitate returning the site into an active use but support the City and County's revitalization efforts.

## PROJECT OVERVIEW

The former NRG Power Plant sits on approximately 76 acres of waterfront property in the City of Dunkirk, New York. In 1950, this 600 MW plant was one of the largest operating coal-fired power plants in New York State. Unfortunately, after several years of re-powering efforts, NRG Energy announced that they would not be pursuing natural gas re-powering due to extensive upgrades and regulatory barriers.

In 2019, the City of Dunkirk and Chautauqua County issued a Request for Proposals (RFP) to study potential re-use options for this prime waterfront property that will produce a re-use to benefit the Dunkirk community. This study is intended to identify viable alternatives for the site to leverage its geographic location on the shore of Lake Erie and recent revitalization efforts within the City of Dunkirk.

The need to identify a redevelopment strategy for the NRG Power Plant site that will jump-start the area's revitalization serves as the driving impetus of this plan. The re-use options in this document set the stage for a strategy that will ultimately result in a long-term economic development solution for the Dunkirk community, which has been significantly negatively impacted by former energy policies. Several clean energy options are also presented to support environmental sustainability efforts and reduce greenhouse gas emissions.

The plan provides a review of existing conditions, an analysis of regional market trends, an evaluation of potential re-use options, and an implementation strategy to provide reasonable alternatives that will advance economic development objectives in the Chautauqua County region.

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## PROJECT OBJECTIVES | IDENTIFY VIABLE RE-USE OPTIONS THAT



Creates an active waterfront use



Supports community revitalization



Creates jobs and employment



Generates tax revenue



Incorporates renewable energy

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## LOCAL + REGIONAL CONTEXT

The former NRG Power Plant is within the City of Dunkirk, which is located in Chautauqua County in the westernmost portion of New York State. The City and County sit on the Lake Erie shoreline within 75 miles of the greater Buffalo region and 150 miles of the greater Pittsburgh, Cleveland, and Toronto, Ontario regions.

The City of Dunkirk is 4.55 square miles and has a population of approximately 11,980, while Chautauqua County is home to approximately 130,000 residents. Dunkirk is a waterfront city with a grid-pattern downtown business district, access to parks and trails, diverse population, and major employers, such as SUNY Fredonia, Holiday Harbor at Chadwick Bay, Brooks Memorial Hospital and Fieldbook Food / Wells, among others.

Recent planning initiatives have taken place in the City that are driving County-wide revitalization efforts, including the City of Dunkirk Brownfield Opportunity Area, City of Dunkirk Comprehensive Plan Update, and the Northern Chautauqua County Local Waterfront Revitalization Plan. Recent investments, such as the Dunkirk Marina Development and the construction of the Athenex facility (just outside of the City) have infused jobs and an increased tax base into the local economy.

In addition to these efforts, the newly formed Chautauqua County Partnership for Economic Growth recently completed a County-wide economic development strategy. This initiative is a public-private partnership with a mission of advancing economic prosperity efforts through five topic-specific working groups, each tasked with core strategies and initiatives. Top priorities through this effort include targeted site development, housing opportunity expansion, workforce development, and tourism promotion.




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### ATHENEX MANUFACTURING FACILITY

New York State is currently building a 350,000 SF pharmacy oncology manufacturing facility in the Town of Dunkirk. Athenex has brought an investment of approximately \$200 million for its construction of this facility and will ultimately create more than 400 direct jobs in the Dunkirk area. Construction is anticipated to be completed in late 2020.

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## SOCIO-ECONOMIC CONTEXT

To understand the impact the closure of the NRG Power Plant has had on the community, it is necessary to review Dunkirk’s socioeconomic characteristics. These characteristics provide a baseline understanding of a community and revitalization needs, goals, and objectives. The socioeconomic characteristics showcased in this section indicate the direct influence of NRG’s closure and exemplify the need for economic investment in the City.

### POPULATION TRENDS

The City of Dunkirk is comprised of approximately 11,850 residents. The City’s population has steadily decreased from its 2000 population of 13,131, and is projected to continue to decrease through 2025 to approximately 11,350 residents.

### DIVERSITY

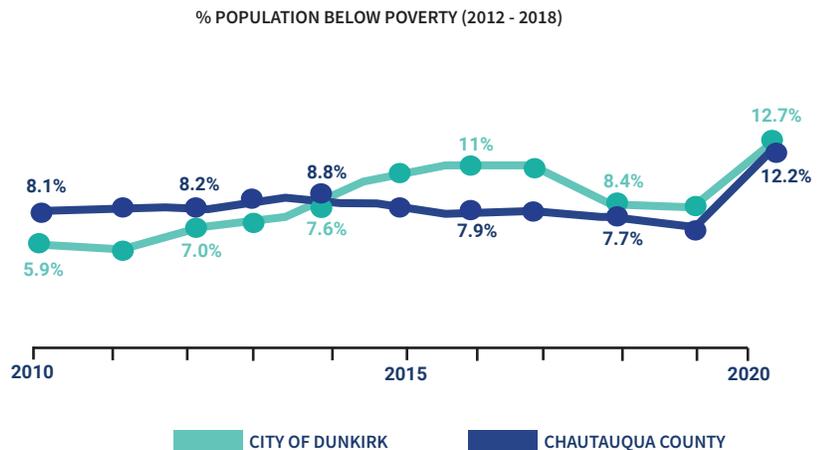
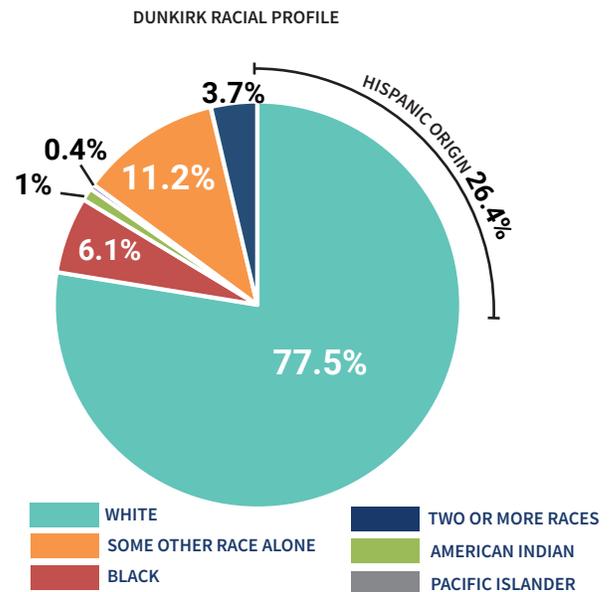
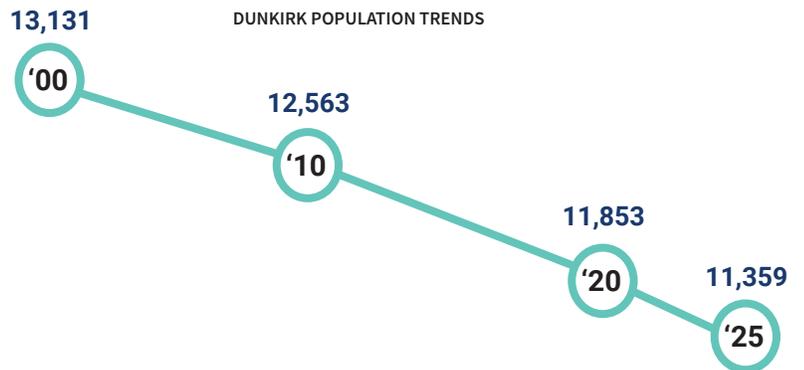
The City of Dunkirk is diverse in terms of its racial and ethnic composition with 77.5% “white” residents, approximately 15% identifying as “some other race alone” or “two or more races”, and approximately 6% “black” residents.

The City has a large Hispanic presence with more than one-quarter of its residents of Hispanic origin. As such, the City has a unique Hispanic culture.

### UNEMPLOYMENT

Unemployment rate provides a sense of labor market conditions in an area or region. The unemployment rate in the City in 2020 is 12.7%. This is up from an unemployment rate of 8% in 2019, likely due to the effects of the COVID-19 pandemic.

Trends in unemployment within the City indicate that there was a sharp rise in unemployment from 2012 to 2015, which aligns with the timeline of when NRG first announced its plans to mothball the Dunkirk facility to when the plant ceased all operations. *This is especially notable when compared to the more steady and decreasing unemployment rates at the County-level during the same time period.*



## SOCIO-ECONOMIC CONTEXT

### INCOME + POVERTY

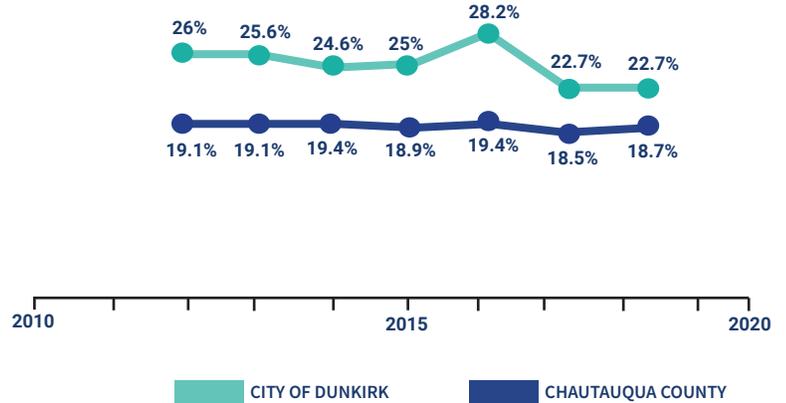
Income and poverty levels are indicators of an area’s general economic situation and community well-being. The median household income in the City is \$36,727 (2020). The median household income for City residents show a sudden decrease from \$39,000 (2015) to \$34,000 (2017). This sudden fluctuation is likely tied to the closure of the ConAgra Food plants and NRG Power Plant during this timeframe, which caused a significant loss of jobs in the community. Income levels have been increasing steadily since 2017.

The poverty level trends show that poverty is more prevalent in the City as compared to the County. A total of 28.2% of the City’s residents were below the poverty level in 2016 as compared to 25% in 2015, an increase of 3.2%. Similar to the trends seen in median household income, this uptick in City poverty levels may also be attributed to the closure of the NRG Power Plant and the ConAgra Food plant.

DUNKIRK MEDIAN HOUSEHOLD INCOME (2010 - 2020)



% POPULATION BELOW POVERTY (2012 - 2018)

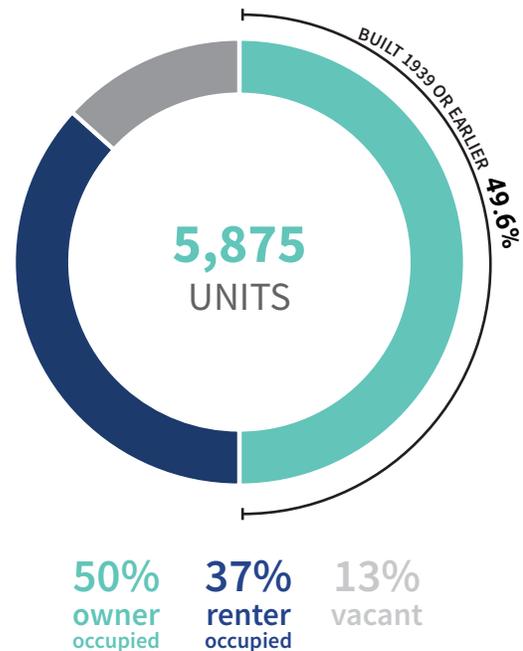


ConAgra Brands is an American packaged food company headquartered in Chicago, Illinois. The company formerly owned two food packing plants in Chautauqua County (City of Dunkirk and Village of Fredonia) . These two facilities closed in 2015, which resulted in the loss of over 400 jobs in the community.

## SOCIO-ECONOMIC CONTEXT

### HOUSING UNITS + TENURE

There are a total of 5,875 housing units within the City of Dunkirk. Of these units, 50% are owner-occupied, 36.7% are renter-occupied and 13.3% are vacant. The majority of housing within the City are detached single-family dwellings (59.5%) and two-family dwellings (23.3%), approximately 50% of which were built in 1939 or earlier. Based on this housing data, it can be assumed that newer diversified housing options are needed within the City of Dunkirk, such as multi-family housing developments to attract a diverse range of residents to the area.



### HOW THE NRG POWER PLANT HAS IMPACTED THE CITY OF DUNKIRK

The data presented in this section shows the range of impacts the NRG Power Plant has had on the Dunkirk community. The City of Dunkirk is a diverse community with a strong influence of Hispanic culture. The City has seen steady population decline since 2000 and has a high rate of residents with a low median household income that has contributed to over 25% of the population living below the poverty line. Within the last 10 years, the community has suffered economic hardship due to the closure of two ConAgra Food plants and the NRG Power Plant, which resulted in the significant loss of jobs. The closure of the NRG Power Plant itself contributed to the loss of approximately 40% of its tax base, which has placed a strain on municipal and County operating budgets.

A redevelopment strategy for the NRG Power Plant site to mitigate direct and indirect impacts on the Dunkirk community is critical to City's long-term economic recovery. Overall, the redevelopment strategy for the NRG Power Plant would benefit the City most if it allowed the community to access workforce development opportunities, included a clean energy component, supported public access to the waterfront, and aided in comprehensive economic development for the region.

## THE IMPACTS OF THE NRG POWER PLANT ON DUNKIRK

The recent closure and anticipated full decommissioning of the NRG Power Plant is just one of many coal-fired power plants that have closed in the United States due to a sharp decline in coal demand. The City of Dunkirk and Chautauqua County region once received tremendous economic benefit from the NRG Power Plant, which formerly contributed to approximately 40% of the City's tax base and provided close to 150 well paying jobs at its peak. The long lasting impacts of this plant's closure on the City of Dunkirk has become a major impediment to the community's revitalization.

The Dunkirk community has been negatively impacted by past energy policies, which placed the NRG Power Plant along the Lake Erie shoreline. To no fault of Dunkirk residents, the closure of this plant has resulted in a severely underutilized and unsightly site on prime waterfront property. Based on current NYS policies, repowering as a coal or natural gas facility is highly unlikely. It has also contributed to a disproportionate poverty rate and lower median household income within a community that has a greater presence of minority races.

The loss of direct and indirect jobs in the community is one factor that will be difficult to overcome. Often communities that are in proximity to large metropolitan regions will have a greater chance of finding alternative forms of employment. Factors, such as the distance of the City of Dunkirk from the Buffalo-Niagara region, lower levels of educational attainment and workforce training, higher rates of poverty, and residents with language barriers, have made accessing quality jobs for former employees of the NRG Power Plant more difficult.

Overall, the Dunkirk community is in dire need of transforming this site into an active and viable use that has the ability negate the long lasting impacts of former energy decisions and contribute to community and economic revitalization of the area.

### HOW THE NRG POWER PLANT IS EFFECTING THE COMMUNITY:

- The Dunkirk community has lost a substantial share of its tax revenue due to the closure of the NRG Power Plant.
- More than 140 employees were transferred or lost their jobs over the course of six years.
- Efforts to diversify job opportunities and increase tax revenue in Dunkirk have taken place; however, they are not nearly enough on their own to combat the financial and psychological strain of the underutilized NRG Power Plant site on the community.
- The abandonment of the repowering efforts by NRG was devastating for the local economy and community.
- The presence of the vacant facility is a reminder of burden and loss for residents.

## PROJECT SITE

The NRG Power Plant site, owned by NRG Energy, is an approximately 76-acre property between the City of Dunkirk Harbor, Cedar Beach and Point Gratiot Beach on Lake Erie. The site is located adjacent to residential uses to the west and commercial and residential uses to the south. The property is occupied by a former coal-fired power plant that was originally constructed in the early 1950's. Prior to the plant closing, it contained four active generating units that produced approximately 635 MW of power; two, 100 MW units and two, 218 MW units. This infrastructure still exists on site today.

The site also contains coal storage areas to the east of the structure, three ash ponds, maintenance and parking facilities, as well as an operational electrical switchyard in the center of the property (owned by National Grid). This switchyard formerly provided grid interconnection to the operating units of the plant.

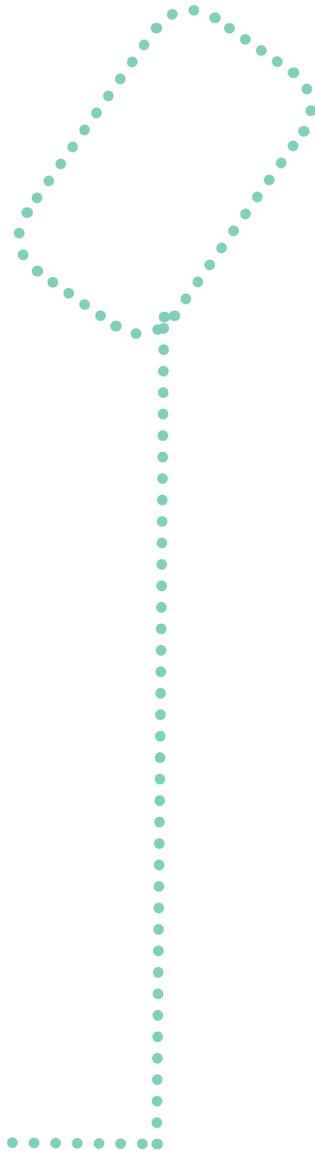
The site contains access to CSX rail lines that travel along the southern edge of the property and connect to the power plant structure, as well as on-site dock access with barge unloading capabilities. The site is also approximately four miles from the New York State Interstate 90 which travels eastwardly through the state and westwardly toward Erie, Pennsylvania.

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### NRG ENERGY

NRG Energy, Inc is one of the largest companies in power generation and retail electricity in the United States. NRG serves approximately 6 million customers with their vast portfolio of nuclear, coal, wind, solar, and oil generation.

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**National Grid, an electric power provider in Western New York, owns an electric switchyard in the center of the NRG Power Plant Site.**

# PROJECT LOCATION - NRG POWER PLANT

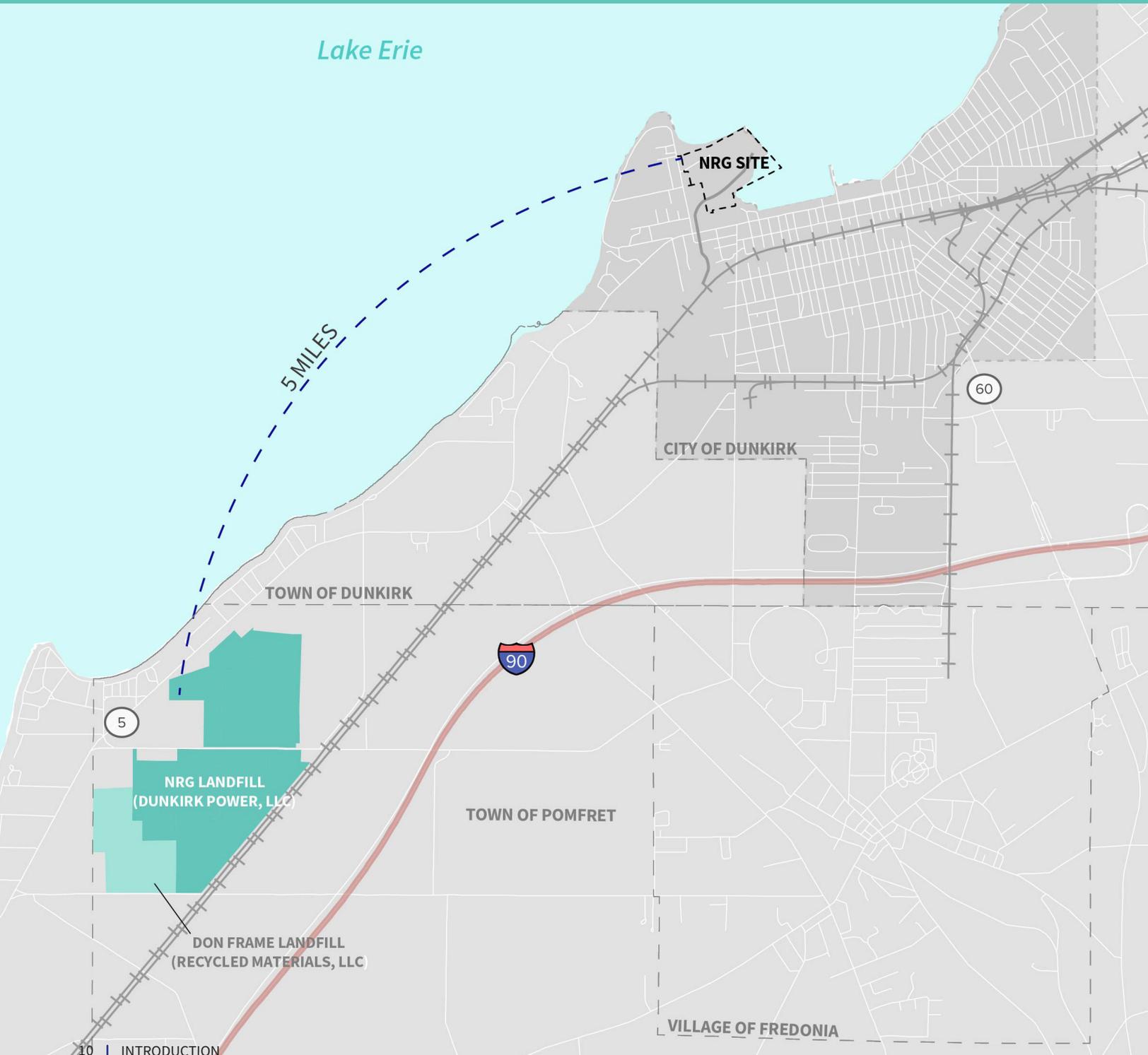
DUNKIRK HISTORIC LIGHTHOUSE

Lake Erie



## DUNKIRK POWER LLC FLY ASH SITE

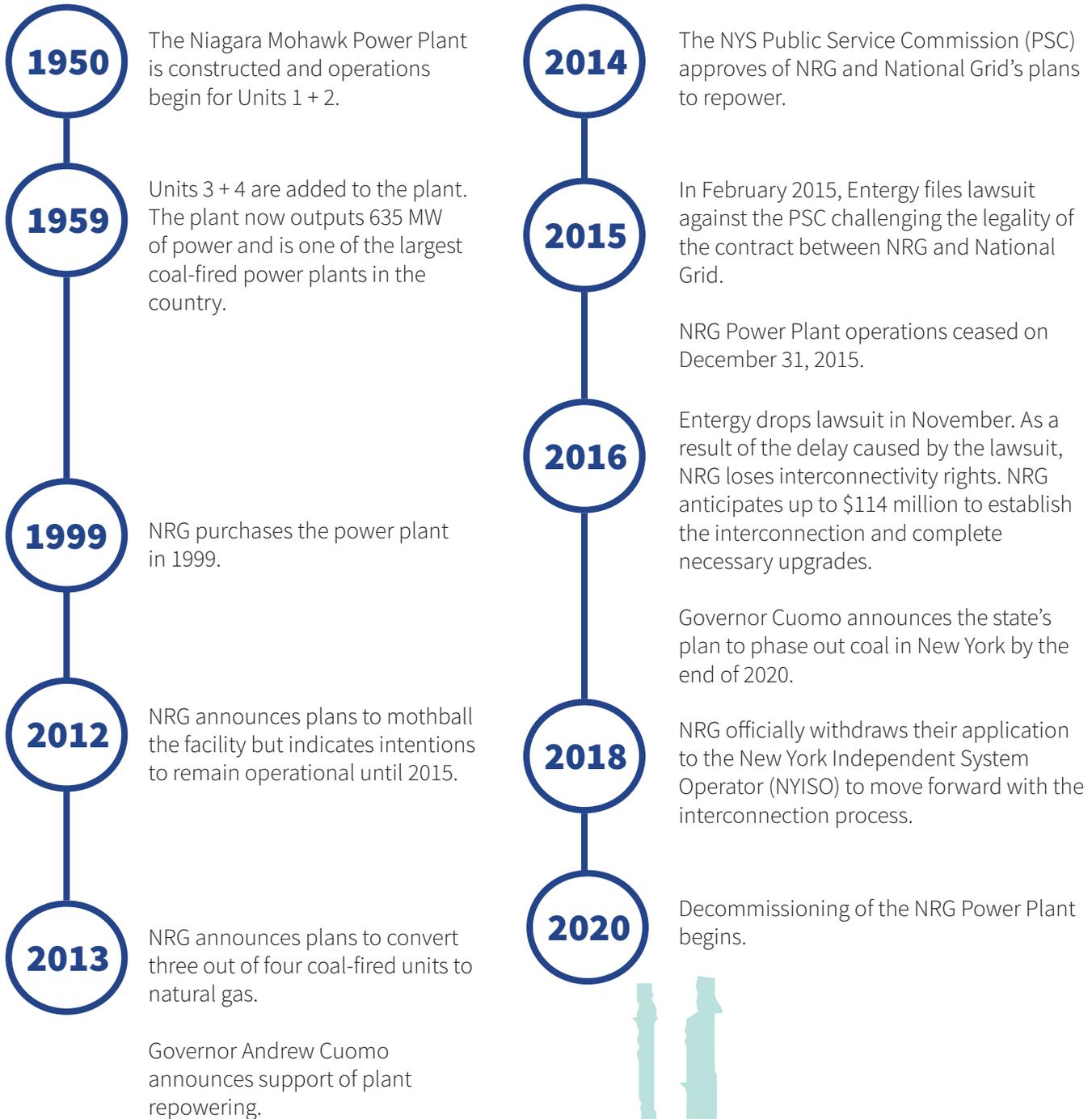
NRG Energy, under the legal name, Dunkirk Power LLC, owns approximately 500 acres of land in the Town of Pomfret, NY, approximately 5 miles from the NRG Power Plant. This land was formerly utilized to dispose of fly ash produced from the operation of the coal powered energy plant and is currently a double-lined landfill of fly ash. Approximately 70 acres of land located adjacent to the NRG landfill to the southwest was purchased by a developer and is known as the “Don Frame landfill”, owned by Recycled Materials, LLC. The fly ash on this portion of the site is classified as “Class F” fly ash and could be utilized as a Portland cement replacement. The fly ash exhibits advantages over traditional Portland cement and is therefore in high demand as a partial substitute for major highway projects. Detailed information on the utilization of fly ash on the landfill sites are described on page 34.



# 2 SITE ANALYSIS

This section describes the existing conditions on the NRG Power Plant site, including structures, utilities and infrastructure, and environmental conditions. This information provides an understanding of the opportunities and constraints of the site to inform the identification of viable options for the site's redevelopment.

## SITE HISTORY



## OWNERSHIP + LIABILITY

The NRG Power Plant site and buildings are owned by NRG Energy, Inc, which bought the property in the 1990s. It is assumed that any environmental contamination on the site, whether within the soil or groundwater, is the environmental liability of NRG Energy.

It should be noted that through this feasibility assessment, *all* environmental liabilities of NRG Energy in regard to this site are unknown. Since this information is unclear, it remains unknown if this liability would be transferred or retained by NRG Energy if the property was sold.

### LIABILITY ASSUMPTIONS + SITE REDEVELOPMENT

Environmental liability of contaminated sites are often one of the largest hurdles to their redevelopment. Often times, property owners do not want to assume liability due to the necessary clean up and potential fines that may be associated with potential contamination. Assumptions of liability by private companies has been used to release property owners from liability within the United States.

For example, Brayton Point Power Station in Somerset, Massachusetts, was successfully redeveloped into an off-shore wind hub and logistical port with the help of liability assumption. In 2018, the property was purchased by a brownfield developer, Commercial Development Company, Inc. (CDC). An affiliate of the company assumed environmental liabilities and provided the mechanisms to remediate the site. The site was attractive to CDC due to its location on the waterfront, deep water port, brownfield status, high-voltage transmission infrastructure, and accessibility to public transportation networks.



IMAGE CREDIT: JEFFERY PETERSON

## BUILDING + SITE INFRASTRUCTURE

The NRG Power Plant site currently contains numerous buildings that formerly facilitated the operation of the coal-fired power plant. There is one larger building and several other small buildings in close proximity that are approximately 60-65 years of age. Due to the age of construction, the presence of asbestos and lead containing material is highly probable. The buildings also contain elevators, incinerators, waste treatment systems, and hydraulic lifts, which may present environmental contamination concerns related to site redevelopment.

Due to its former use as a coal-fired power plant, the NRG Power Plant site is serviced by public water, sewer, electric, and gas connections. The exact location and capacity of these utilities is unknown and should be further inventoried and analyzed. Easements related to utilities and access are also located on the site; however, it is unknown exactly where on the property these easements lie. Due to the former use of Lake Erie water to cool equipment, the site is also equipped with a large capacity water draw system.

Additionally, an active electrical switchyard currently owned by National Grid exists on site. Permanent easements also exist on this portion of the site. Some elements of the electrical infrastructure are directly connected to the NRG Power Plant building, but will be released within a four to five year timeframe.

### SITE DEVELOPMENT HISTORY

The site was undeveloped prior to 1950. The Dunkirk Power Plant was constructed in the 1950s and operated until it was mothballed in 2016. The plant was owned and operated by Niagara-Mohawk Power Company until it was acquired in 1999 by NRG Energy.



## TRANSPORTATION ACCESS

### RAILROADS

The NRG Power Plant site has accessibility to the CSX main line, which lies just south of the site. This line provides a range of freight transportation options throughout the Mid-Atlantic and North Eastern U.S. There are several rail spurs from this main line that connect to the northwestern portion of the site near the Lake Erie shoreline. Shipping and receiving of goods and materials could be part of a viable re-use option via the rail transportation access provided on this site.

### INTERSTATES

The NRG Power Plant site is within a nine minute driving time to the New York State Interstate-90, with the closest on-ramp located in the Town of Dunkirk off Route 60. The connection, via Route 5 and Route 60, does not provide the most direct access for roadway transportation; however, this interstate system allows for wide distribution of goods via trucking.

### WATER TRANSPORT

The NRG Power Plant site is located in the Dunkirk Harbor, which is a deep draft commercial harbor. The site is equipped with dock access and barge unloading capabilities that were utilized for coal delivery while the Plant was in operation. This accessibility provides site re-use options related to water transport and shipping of goods within the Great Lakes.



## ENVIRONMENTAL CONDITIONS: PHASE I ESA

As part of this study, a Phase I Environmental Site Assessment (ESA) was conducted on the NRG Power Plant site to determine the preliminary presence or suspected presence of environmental contaminants. The Phase I ESA included a review of environmental databases, historical aerial imagery, site visits, and interviews with site personnel/adjacent property owners. The Phase I ESA is attached as Appendix A.

According to this study, there were a number of Recognized Environmental Conditions (REC), Historic Recognized Environmental Conditions (HREC), Controlled Recognized Environmental Conditions (CREC), and Business Environmental Risks (BER) associated within the site. Major environmental conditions on the site include:

- Potential on-site surface, subsurface, and groundwater contamination on site;
- Presence of active and inactive underground and aboveground storage tanks;
- Presence of coal ash lagoons and potential subsurface soil and groundwater contamination;
- Potential PCB-containing materials on site;
- Multiple historic regulatory compliance violations associated with air emissions, State Pollutant Discharge Elimination System (SPDES), and chemical storage/use on the site (there are no open violations);
- Potential asbestos and lead containing materials;
- Presence of rail line spurs on site; and
- Presence of an active electrical switchyard operated by National Grid.

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### SIGNIFICANT DATA GAPS:

The project team performed due diligence to obtain any and all information regarding the NRG Power Plant site; however, a number of data gaps were identified during the Phase I ESA. These include:

- The Project Team was unable to access a number of referenced NYS DEC documents.
  - Asbestos surveys on the Subject Property were reportedly completed; however, limited information was provided.
  - A full Site Plan of the Subject Property was not provided for use during this Phase I ESA.
  - Coal Combustion Residual (CCR) Monitoring pursuant to 40 CFR 257.94(b) was documented for the Subject Property in a letter to the NYSDEC, dated May 15, 2018. This report was not made available.
  - Dredging data was not available for review at the time of this Phase I ESA.
  - The locations of all storage tanks on the Subject Property are unknown.
  - Historic PCB-material removal did not indicate the origin of the material or what triggered the removal.
  - Limited information was available with respect to surrounding subsurface or groundwater impacts related to the settling coal ash lagoons.
- 

### RECOMMENDATIONS:

- + Review existing asbestos survey and abatement documentation to understand level of potential contamination;
- + Perform a pre-renovation asbestos, lead-based paint, and PCB-caulk survey;
- + Consider the completion of a Phase II Environmental Site investigation to:
  - Determine extent of contamination in surface/subsurface soil and groundwater;
  - Delineate potential areas of concern that should be addressed as part of the site's redevelopment plan; and
  - Determine environmental clean up costs strategies.

# 3 ECONOMIC + MARKET ANALYSIS

A market analysis was conducted to understand local and regional market trends as well as identify opportunities and constraints associated with redeveloping the NRG Power Plant site. This section presents key market analysis findings. The full version of the Market Analysis is provided as Appendix B.

## REGIONAL INDUSTRY PROFILE

A regional industry profile was created for Chautauqua County to understand the area's industry and employment trends in comparison to Western New York and New York State. Data and trends within this section will provide an understanding of potential site re-use options for the NRG Power Plant site. The data utilized in this analysis was collected prior to the COVID-19 pandemic; therefore data and trends should be continued to be monitored as market conditions change.

### INDUSTRY + EMPLOYMENT TRENDS

As of 2019, Chautauqua County has 52,625 jobs. Jobs in the County fell by 2% from 2014 to 2019, despite some industries experiencing job gains. From 2019 to 2024, the County is projected to lose an additional 516 jobs, though this represents a slower pace of job loss (1% over five years) than the prior period. Industries projected to grow most significantly over the next five years include Educational Services (9%), Utilities (5%), Administrative and Support and Waste Management and Remediation Services (4%), and Construction (4%). However, in terms of the total number of jobs added, the Health Care and Social Assistance industry is projected to add 273 jobs. Projected job losses are concentrated in Manufacturing and Retail Trade, which are expected to contract by over 400 jobs each over the next five years.

Chautauqua County (19%) has a larger proportion of Government jobs compared to Western New York (17%) and New York State (15%). Chautauqua County also has a significantly larger share of Manufacturing jobs—17%—compared to the region's 10% and the State's 4%. The County lags compared to the region and State in terms of the proportion of jobs in the following industries: Professional, Scientific, and Technical Services; Finance and Insurance; Educational Services; and Management of Companies and Enterprises.

### TOP JOB EMPLOYMENT SECTORS - CHAUTAUQUA COUNTY (2014-2024)

	2014 JOBS	2019 JOBS	2024 JOBS
Government	9,557	9,866	9,946 ↑
Manufacturing	9,435	8,945	8,503 ↓
Health Care + Social Assistance	7,416	7,951	8,224 ↑
Retail Trade	6,873	6,286	5,854 ↓
Accommodation + Food Services	5,005	4,927	4,993 ↔

### LARGEST INDUSTRIES BY GEOGRAPHY (2019)

	CHAUTAUQUA COUNTY	WNY	NYS
Government	19%	17%	15%
Manufacturing	17%	10%	4%
Health Care + Social Assistance	15%	14%	16%
Retail Trade	12%	11%	9%
Accommodation + Food Services	9%	9%	8%
Other Services (except Public Administration)	4%	4%	5%
Construction	4%	4%	5%
Administration + Support and Waste Management + Remediation Services	2%	5%	5%
Transportation and Warehousing	2%	3%	3%
Professional, Scientific and Technical Services	2%	5%	7%
Wholesale Trade	2%	3%	3%
Arts, Entertainment and Recreation	2%	2%	2%

\*Western New York is defined as Chautauqua, Erie, Niagara, Cattaraugus and Allegany counties.

## REGIONAL INDUSTRY PROFILE

### RELATIVE INDUSTRY CONCENTRATION

Location quotient (LQ) is a measure of a region's industrial specialization relative to a larger geographic unit (typically at a national level). This tool provides a means to identify growth opportunities and regional advantages. An LQ analysis was performed for Chautauqua County utilizing 2019 job counts.

According to this analysis, the County has a striking relative concentration of jobs in the Engine, Turbine, and Power Transmission Equipment Manufacturing industry, which has an LQ of over 47 and employs over 1,500 people. Other industries that are unique or specialized in the County (i.e. that have both significant job counts and high LQs) include Dairy Product Manufacturing; Fruit and Vegetable Preserving and Specialty Food Manufacturing; and Other Fabricated Metal Product Manufacturing.

These industries are vital to the County's prosperity, since industries with a high LQ and high employment numbers typically export their goods and services beyond the immediate area, bringing money into the County.

INDUSTRY	2019 LQ	2019 JOBS
Engine, Turbine, and Power Transmission Equipment Manufacturing	47.36	1,508
Dairy Product Manufacturing	14.80	719
Hardware Manufacturing	13.73	112
Clay Product and Refractory Manufacturing	12.07	163
Animal Food Manufacturing	11.94	245

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### LOCATION QUOTIENT:

Location quotient (LQ) analysis identifies which industries in Chautauqua County are unique or specialized as compared to national averages for the proportion of jobs associated with each industry.

$$LQ = \frac{\% \text{ Local Industry Jobs}}{\% \text{ National Industry Jobs}}$$

Industries with a high LQ and high employment numbers are assumed to produce more than what is needed (i.e. a surplus) and export their products and services beyond the locality.

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## OFFICE REAL ESTATE MARKET

### RELATIVE INDUSTRY CONCENTRATION

The Shoreline Region has a very low office vacancy rate of 3.3% (because of limited supply), notably lower than the nearly 9% vacancy rate for the greater Buffalo area real estate market. No new non-owner-occupied office space is anticipated in the next few years, and vacancy rates are expected to remain very low during that period despite some negative net absorption in 2019-2020.

Office rents are \$14.65/SF, having climbed from a 2012 low of \$13.25/SF and then tapered off slightly in 2019. CoStar expects office rents to increase to nearly \$15/SF by 2025 after potentially dropping by over \$1/SF during the COVID-19 economic contraction.

### OFFICE REAL ESTATE SUMMARY

	CURRENT	1 YEAR PRIOR	1 YEAR CHANGE
Inventory	787,000 SF	784,000 SF	+0.4%
Vacancy Rate	3.3%	2.7%	+0.6%
Market Rent / SF	\$14.65	\$14.84	-1.3%
12 Month Net Absorption	(1,200) SF	(10,300) SF	-112.0%
Under Construction	0 SF	3,500 SF	-100%

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### OTHER REAL ESTATE CONSIDERATIONS:

All industrial and office properties under construction in the larger Buffalo-area real estate market are being pre-leased. In Chautauqua County's economic environment, speculative construction projects are extremely unlikely. Redevelopment of the Site will require strong prospects for leasing and likely involve build-to-suit construction.

The Site has the advantage of being located in a **federally-designated Opportunity Zone**, adding to its attractiveness for investors interested in the program's capital gains tax benefits. Although those benefits lessen as the program ages, the Opportunity Zone incentive could still boost a project's annual rate of return enough to tip the balance in favor of a real estate project moving forward.

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## KEY FINDINGS

- [1]** The manufacturing industry is critical to Chautauqua County's economy; however, projections indicate that Chautauqua County's Manufacturing and Retail Trade industry will contract by over 400 jobs over the next five years. This presents an opportunity to introduce additional industrial and manufacturing uses to Chautauqua County to mitigate projected losses.
- [2]** Industries such as Engine, Turbine and Power Transmission Equipment Manufacturing, Dairy Product Manufacturing and Fruit and Vegetable Preserving and Specialty Food Manufacturing are unique and specialized in Chautauqua County. The County should support these industries through prioritizing sites that can aid in their expansion.
- [3]** The industrial real estate vacancy rate in Chautauqua County is approximately 11% with a market rent for industrial properties at \$4.70 / square foot. These rates suggest that the County can accommodate additional business and industrial growth and may be more advantageous for relocation of businesses as compared to the Buffalo-area market.
- [4]** Area office vacancy is extremely low at 3.3%, and no new deliveries of non-owner-occupied office space are anticipated in the next few years.
- [5]** Redevelopment of the NRG Power Plant site will require strong prospects for leasing and will likely involve a build-to-suit construction.
- [6]** The NRG Power Plant site is located in a federally-designated Opportunity Zone, which increases its attractiveness for potential investors and will aid in the feasibility of the property's redevelopment.
- [7]** Significant job openings are available in the County but require specialized training, such as welding, technicians, and project managers.

# 4 SITE RE-USE ALTERNATIVES

The purpose of this section is to clearly identify potential redevelopment options for the NRG Power Plant site that will result in a viable re-use. While there are a number of unknowns associated with the potential re-use of the NRG Power Plant site, the menu of alternatives presented sets the stage for decision makers and identifies further study that may be warranted. The alternatives draw upon the potential to take advantage of the site's existing infrastructure and facilities, which are intended to result in a sustainable solution that benefits the Dunkirk community in terms of job creation and tax revenue. All concepts will require strong partnerships between private and public entities to facilitate a realistic redevelopment scenario.

## POTENTIAL RE-USE ALTERNATIVES

This report assesses a total of seven potential re-use alternatives for the NRG Power Plant site based on market trends and feedback from local officials and stakeholders. These options consider the physical and regional market opportunities and constraints present on the site and in Chautauqua County. These options do not represent an exhaustive list of options, but are intended to illustrate alternatives that are most likely to advance a viable redevelopment and change the socioeconomic conditions of the City of Dunkirk. The potential re-use alternatives in this section identify redevelopment options that have the ability to:

- Create an active waterfront re-use that supports community revitalization;
- Support expanded job opportunities for the local and regional economy;
- Generate tax revenue for the local community; and
- Incorporate environmental sustainability and renewable energy goals.

### [1] POWER PLANT RE-POWERING

This option involves re-powering the NRG Power Plant from a fuel source of coal to natural gas.

### [2] INDUSTRIAL DEVELOPMENT

This option involves the adaptive re-use or demolition and rebuild of the existing facilities to advance an industrial distribution and logistics center, including potential packaging and shipment of goods, or an industrial business park. This option could also incorporate the use of the fly ash disposal site located in the Town of Pomfret.

### [3] DATA CENTER

This option includes the re-use of the site for a data center that has the ability to process and host large quantities of data.



[4]

## BATTERY STORAGE

This option involves the re-use of the site to facilitate the storage of renewable energy and would support the push from New York State to become less reliant on carbon-producing energy sources.

[5]

## OFF-SHORE WIND

This option involves the development of off-shore wind turbines along the Lake Erie shoreline and the potential to connect to the NRG Power Plant site.

[6]

## MICROGRID DEVELOPMENT

This option includes the creation of a microgrid that has the ability to disconnect from the larger power grid. This grid could potentially be powered with solar, wind, or battery storage and locally utilized.

[7]

## CLEAN SLATE

This option involves the demolition of the existing buildings and environmental remediation of the site to facilitate a range of re-use options, from open space to mixed-use development, that is intended to serve local residents and aid in community revitalization.

## SUPPORTING COMMUNITY REVITALIZATION

The Site's existing electricity infrastructure and its locational advantage make this site a competitive and feasible option for a range of development types. These alternatives should not be pigeon-holed into an "either / or" option, but can be easily matched in a redevelopment plan to create the most viable re-use for this site that also supports revitalization in the City of Dunkirk. It should also be noted that the site's re-use as a purely energy producing operation is unlikely to be feasible without substantial political and financial support.



# 100% CLEAN ENERGY BY 2040

As part of New York State's Green New Deal, Governor Cuomo has formulated the most aggressive climate change program in the nation. The plan is to incorporate a number of renewable energy sources to support a carbon neutral state by 2040. The recently passed Climate Leadership and Community Protection Act mandates the following targets:



+ **70% ENERGY FROM RENEWABLE SOURCES BY 2030**

+ **REDUCE 85% OF GREENHOUSE GAS EMISSIONS BY 2050**



+ **DEPLOY 9,000 MW OF OFF-SHORE WIND ENERGY BY 2035**

+ **DEPLOY 6,000 MW OF SOLAR ENERGY BY 2025**



+ **DEPLOY 3,000 MW OF ENERGY STORAGE BY 2030**

Due to the strong push for renewable energy options in the State over the next 20 years, renewable energy options for the NRG Power Plant site have been considered and analyzed.

## CARBON OFFSETS APPLICABLE TO ALL RE-USE ALTERNATIVES

Significant reduction in carbon emissions is at the forefront of New York State’s sustainability goals leading into 2040. A series of carbon emission reduction concepts were developed for the NRG Power Plant site due to the fact that the future redevelopment of the site may involve carbon emissions. The incorporation of these offsets into the range of redevelopment options included within this document is intended to increase the site’s opportunity for funding assistance through governmental channels, as well as incentivize political will to move the site’s redevelopment forward. Concepts with carbon reduction potential include fly ash re-use, biomass power generation, landfill methane re-use, and solar power generation.

### BIOMASS POWER GENERATION

A biomass power generation facility at the NRG Power Plant site would presumably use one or more of the following feedstocks: ethanol, biodiesel, wood, wood waste, municipal waste, landfill gas or other non-wood waste. A biomass power generation facility would likely have to operate at a relatively small scale at the NRG Power Plant site so that feedstock sourcing would meet the New York State renewable portfolio standards. These feedstocks would likely involve municipally-collected tree and yard waste, wastewater facilities sludge, and waste wood produced locally. Given the available footprint at the NRG Power Plant site, it appears that a 500 KW production facility could be accommodated.

There are many challenges to creating a biomass power generation facility, including the fact that “...many states have found that biomass power emissions exceed those of coal power generation; a finding that may lead to reduced government assistance in the future and instead divert government assistance to target wind and solar operations.”

To estimate potential carbon emissions savings, assumptions for biomass production at the NRG Power Plant site include:

- + A suitable and relatively consistent supply of feedstock is available;
- + The plant would be able to operate at 80% capacity on average, year-round;
- + The feedstock employed would be carbon-neutral; and
- + The electricity produced by the plant would offset electricity otherwise produced from a coal-fired power plant.

With these assumptions, a 500KW biomass plant operating at 80% capacity on average would generate a total of 4.38 million kWh of electricity in a year.

### BIOMASS CONVERSION TO ENERGY

Biomass is renewable organic matter that comes from plants and animals. Biomass is an important form of energy production and can be utilized for electricity and heat generation through direct combustion.

### BIOMASS POTENTIAL AT THE NRG SITE

The size of the NRG Power Plant could potentially support a 500KW biomass plant operating at 80% capacity. On average this could generate a total of 4.38 million kWh of electricity in one year.

According to the U.S. Energy Information Administration’s (EIA) Greenhouse Gas Equivalencies Calculator, producing 4.38 million kWh of power from conventional sources would create 3,097 tons of CO<sub>2</sub> in a given year. Therefore, a carbon-neutral biomass power plant would save a total of roughly **93,000 tons of CO<sub>2</sub> over a 30-year time period.**

## CARBON OFFSETS APPLICABLE TO ALL RE-USE ALTERNATIVES (CONTINUED...)

### LANDFILL METHANE GAS CARBON OFFSETS

The Chautauqua County Landfill located in the Town of Ellery contains six methane-feed engines with a capacity of 10 MW. With its current methane flow, three to four engines are used at any one time, with the others utilized to accommodate additional flow.

The debt service required to pay off the bonds used to build the power plant at this landfill amounts to approximately \$1 million per year. Although the facility sold power for well above that amount previously on an annual basis, low energy prices in the spot market in recent years have caused annual revenues to come in below the \$1 million level, creating a negative cash flow for the County. One option to mitigate this cash flow is to shutter the power plant and sell the gas to a third party for the annual cost of the remaining debt service payments. The County is currently contemplating an off-take agreement with a third party that would produce renewable natural gas (RNG). If the agreement is consummated by the County and the RNG operator, power production at the landfill would cease. The RNG operator would utilize all methane utilized at the landfill to create RNG.

As described above, this situation has resulted from the prevailing low energy prices of recent years. The low energy prices are themselves largely a reflection of the abundance of natural gas being added to the market from the advances in hydraulic fracturing (or “fracking”) techniques in the oil and gas industry. This is because natural gas is used in many power plants, including critical “peaker” power plants, and therefore has an outsized influence on the spot price of electricity. As shown in the chart to the right, the Henry Hub benchmark for natural gas prices in the U.S. has generally been well below \$4 per MCF since 2015. According to the U.S. Energy Information Administration, the Henry Hub benchmark is expected to continue to stay well below \$4 for the rest of this year and through the end of next year.

Until energy prices rebound significantly, power production at the landfill will likely be a cash flow negative operation for the County. Therefore, we believe it makes sense for the County to continue its consideration of the RNG operator’s proposal to enter into a long-term agreement to offset all produced landfill gas.

### WHAT IS RNG GAS?

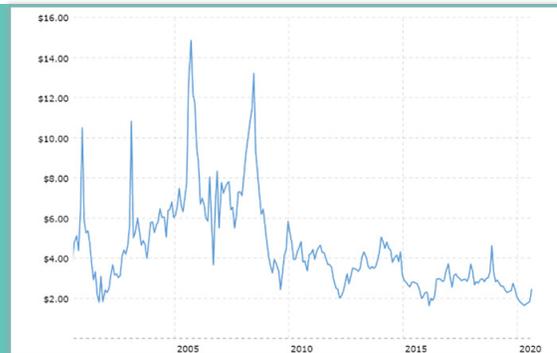
Renewable Natural Gas (RNG) is landfill gas that has been purified and mixed with natural gas and can be used to replace natural gas feedstock in certain industrial processes. For example, in previous years, fossil fuel refiners were obligated to purchase this gas. In some cases, certain Canadian operations are still required to use RNG in their processes.

### LANDFILL METHANE CARBON OFFSETS

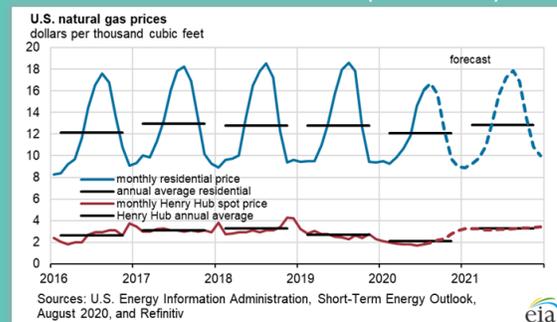
The landfill gas energy production of 1,200 MCF (thousand cubic feet) at the Chautauqua County Landfill could produce a **carbon offset of 115,422 tons of CO2 per year, or approximately 3,500,000 tons of CO2 over 30 years.**

### APPLICABILITY TO THE NRG SITE

This concept could potentially be applied to the NRG Power Plant site if an industrial user were to locate at the NRG Power Plant site and enter into a contract to buy the RNG produced from the landfill gas. As such, this concept may not make a compelling case to regulators or potential funders for the site’s re-use if not used for industrial purposes.



HISTORICAL NATURAL GAS PRICES (HENRY HUB)



USEIA NATURAL GAS PRICE OUTLOOK

## CARBON OFFSETS APPLICABLE TO ALL RE-USE ALTERNATIVES (CONTINUED...)

### SOLAR POWER GENERATION

Three sites within Chautauqua County could potentially house a land-based solar array, including the NRG Power Plant site, the Don Frame landfill, and NRG landfill.

Each of these locations has specific opportunities and challenges, including:

- + **NRG Power Plant Site** – Due to the various impediments at the site itself, including roadways, buildings, ponds and the switchyard, a preliminary estimate of the available acreage for a solar array is around 40+/- acres.
- + **Don Frame Landfill** – Should the fly ash recycling project move forward, this land would likely be encumbered for the next 10 years. It would also require fill and grading to bring the base back up to ground level. Some loss of acreage is likely due to the relatively wet nature of the landscape. Therefore it is assumed that about 35 acres would be available in the next 10 years.
- + **NRG Landfill** – Several impediments include the currently active landfill that would need to be capped and closed prior to solar array installation and the presence of wetlands at the site. It is assumed that 150 acres could be available for a solar array in the short term. However, most of the ash at this site is Class C fly ash, which is stable and hardens with time into a rock-lock layer; therefore, additional solar arrays could potentially be added in the future after the landfill is capped and closed, opening up an additional 150 acres of solar power production at the site. Therefore, we estimate between 150-300 acres could eventually be developed over time.

One of the advantages of a solar installation at these locations is the presence of the electrical switchyard at the NRG Power Plant site, presumably allowing for an interconnection to the grid at a relatively reasonable cost. Additionally, a railroad right-of-way connects the two fly ash landfills to the NRG Power Plant site, which could accommodate a connection line (at sub-transmission line voltages) between the sites. New legislation enacted by New York State related to large renewable energy plants specifically prioritizes brownfields and that all three sites listed above would likely qualify for this preferential treatment.

In total, between **225 and 370 acres** on the three sites could accommodate large-scale solar array installation to facilitate renewable energy production. A feasibility study specific to solar array installation would be required to determine the actual amount of suitable acreage.

### POTENTIAL SOLAR ENERGY PRODUCTION

Assuming six acres of land can produce 1 MW of solar energy, the three sites could support a capacity of 38-62 MW. The USEIA's most recent figure for the capacity factor of solar (2019) is 24.5%, which indicates that 1 MW of solar panels will generate 2,146 megawatt hours of energy per year on average.

**The solar array sizing on the three sites would translate into ~80 million kWh to 132 million kWh of electricity produced per year. This level of carbon-neutral electric power would save ~57,000 to 94,000 tons of CO2 emissions per year. Therefore, over 30 years, we estimate total CO2 emission savings of between 1.7 million and 2.8 million tons of CO2 emissions.**

ITEM	LOW	HIGH
Acreage	225	370
Acres per MW	6	6
MW Capacity	37.5	61.67
USEIA Solar Capacity Factor	24.5%	24.5%
Hours per Year	8,760	8,760
kWh of Production	80,482,500	132,349,000
kWh to CO2	1,414	1,414
Tons of CO2 (annual)	56,918	93,599
Tons of CO2 (30 years)	1,710,000	2,810,000

## SOLAR ARRAY IMPLEMENTATION ON THE NRG LANDFILL

A preliminary solar array feasibility analysis was conducted for a portion of the NRG Landfill on Van Buren Road in the Town of Pomfret. Approximately 22 acres can accommodate a solar array system size of 3 MW-AC, which would produce about 4,900,000 kWh annually. To successfully implement this project, it is crucial to connect to a three-phase conductor. The closest three-phase conductor is approximately 0.5 miles from the landfill on Berry Road and will require interconnection infrastructure to connect to the conductors.



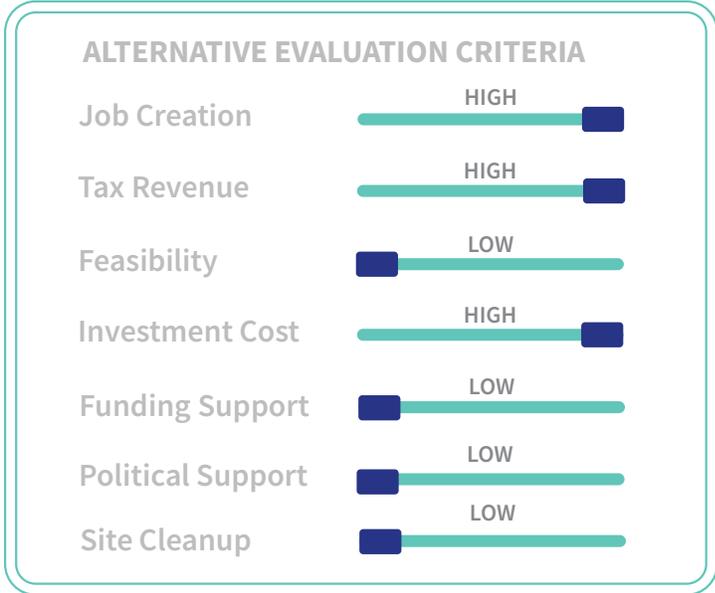
PHASE	COST
<b>DESIGN, INSTALLATION + PROCUREMENT</b> (Including permitting, survey, inspections, construction)	~\$5,500,000
<b>ELECTRICAL INTERCONNECTION</b>	~\$1,000,000
<b>TOTAL</b>	<b>~\$6,500,000</b>

# [1] POWER PLANT RE-POWERING

This option involves re-powering the NRG Power Plant from its original fuel source of coal to natural gas. Natural gas re-powering was pursued by NRG Energy in 2013; however, major hurdles such as lawsuits and reconnection costs forced the company to halt these efforts.

If re-powering efforts were continued, the interconnection process from coal to gas would cost upwards of \$114 million and require significant infrastructure upgrades, which could take until 2024 to complete. Additionally, the political support and will to re-power former coal plants across New York State is low because of clean energy and sustainability goals.

Natural gas re-powering of the NRG Power Plant site is not recommended as a feasible development alternative.



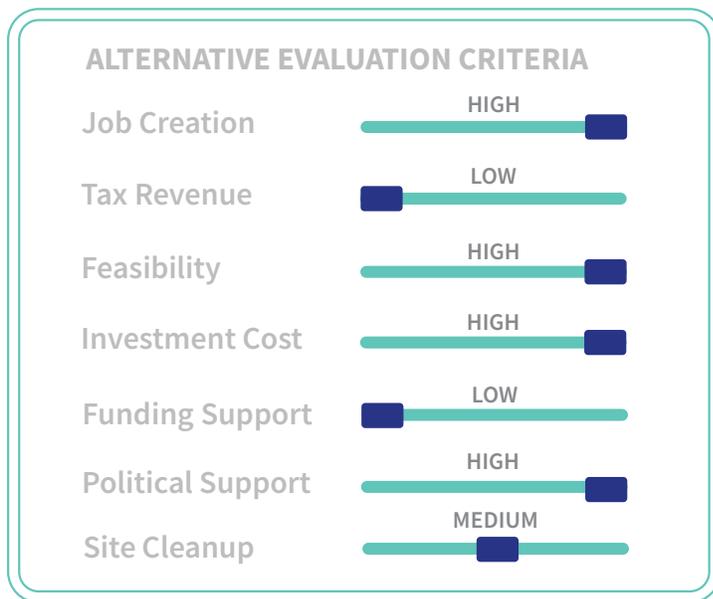
NRG POWER PLANT SITE | DUNKIRK, NY

## [2] INDUSTRIAL DEVELOPMENT

This option involves the re-use of the site for industrial development, such as a distribution and logistics center or a large industrial and business park. Since the site has convenient access to rail and water barge access and is well positioned near Interstate 90, this site is a prime location for multi-modal distribution, warehousing and logistics. Dunkirk is within a reasonable driving distance of the Buffalo-Niagara region, the Toronto, Ontario region, as well as Pittsburgh, PA, Columbus, OH and Detroit, MI. This locational advantage can accommodate an increased demand for rapid shipping times and products.

An industrial park could also be accommodated on the NRG landfill site located on Van Buren Road. Targeted industry sectors for an industrial park could include light manufacturing, research and development, or professional office space intended to support job opportunities for the City of Dunkirk and Chautauqua County region.

This re-use option would require either the demolition of the existing structures and construction of a new facility, or the adaptive re-use of the buildings on site. If new construction were pursued, an approximately 40,000 to 50,000 SF building size could be accommodated on the site, taking the electrical switchyard on site into account. This alternative would require environmental remediation. However, this would be at a much lower clean up level and cost as compared to other alternatives.



BRIDGE PORT LOGISTICS CENTER | NEW JERSEY

Educational partnerships with academic institutions, such as SUNY Fredonia, can facilitate the potential for workforce and job training in high-tech industries, such as renewable energy and sustainability.

OPPORTUNITIES	CHALLENGES
<ul style="list-style-type: none"> <li>+ Access to rail, water, and interstate</li> <li>+ In proximity to multiple large distribution markets</li> <li>+ Potential adaptive re-use of structures</li> <li>+ Lower environmental remediation cost</li> <li>+ Water piers are in good condition for re-use</li> <li>+ Opportunity for local job creation</li> <li>+ Potential ACOE investment in waterside infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>+ Electrical switchyard on site</li> <li>+ High investment cost to build structure or adaptively re-use existing buildings</li> <li>+ Would require private purchase by developer</li> </ul>

## [2] INDUSTRIAL DEVELOPMENT

### MARKET POTENTIAL

Chautauqua County has a large share of manufacturing jobs compared to the Western New York region and New York State. Comparatively, the going-rate for market rent for industrial properties is lower; meaning that Chautauqua County and the City of Dunkirk can strongly support additional industrial uses. Additionally, since the availability of industrial real estate property in the Buffalo-Niagara region is 3.5%, there is a need and demand to increase the shovel ready industrial space within the area.

Known environmental contamination on the site is also an incentive for developers to invest, even if it may require more effort to develop than an available greenfield site in the region. A developer could potentially utilize incentives and programs such as the NYSDEC Brownfield Cleanup Program as well as the site's status within a federally-designated Opportunity Zone. Additionally, the site's location, utility and transportation access of the site is advantageous.

### POTENTIAL USACE INVESTMENTS

In February 2019, the U.S. Army Corps of Engineers (USACE) commissioned a Federal Interest Determination (FID), authorized by Section 107 of the 1960 River and Harbor Act. The purpose of the FID was to determine if there is a federal interest in pursuing a feasibility study to investigate physical improvements to reduce the high energy wave environment in the Dunkirk Harbor that is responsible for property damage and economic loss.

The FID determined that extension to the existing breakwall at the Marina and elsewhere is a justifiable use of expenses. A detailed design study is necessary to determine the improvement cost. Federal funding may be available to implement these improvements; however, it has been stated that investments from the USACE would not be contributed without future commercial or industrial re-use of the NRG Power Plant site.

### TRANSFORMATION OF A STEEL MILL INTO A LOGISTICS HUB



A former Bethlehem Steel Mill site on the shores of the Chesapeake Bay outside of Baltimore, Maryland, was once the world's largest steel making complex. Steel production halted in 2012 causing the loss of 2,000 jobs and significant tax revenue for Baltimore County. This 3,100 acre site was acquired by Environmental Liability Transfer, Inc (ELT) and Hilco Trading for \$72 million through bankruptcy. As a condition of sale, ELT agreed with regulators to assume legacy environmental liabilities of the site. The site was attractive to private investors due to its deep sea port and connection to short-line rail access and developers saw an opportunity to transform this site into a major distribution and logistics center. Re-use of the site required significant environmental cleanup, and today the majority of the remediation is completed. The complex was re-branded as Tradeport Atlantic, a global logistics hub with large companies such as Amazon and FedEx. At full build out, Tradeport Atlantic is projected to generate 11,000 permanent jobs, and \$2.9 billion in annual economic impact.

### INFORMATION GAPS

The following gaps in information exist and should be further investigated to move forward with this option.

- Consider the completion of a Phase II ESA to understand the impacts of environmental contamination on the site as it relates to industrial re-use.
- Perform an assessment to determine facility re-use capabilities.

## 2 INDUSTRIAL DEVELOPMENT

### INDUSTRIAL RE-USE AND THE FLY ASH LANDFILL

NRG Energy and Recycled Materials, LLC currently own a cluster of parcels along Van Buren Road in the Town of Pomfret that could potentially be utilized to enhance a future industrial use of the NRG Power Plant site or off-set carbon emissions to support a carbon emission reduced development with the utilization of the existing fly ash. Approximately 70-acres of land adjacent to the NRG landfill, owned by Recycled Materials, LLC, is known as the “Don Frame landfill”.

According to the developer of the Don Frame landfill, there exists approximately 2 million tons of Class F fly ash in the Don Frame landfill and around 1 million tons in the NRG landfill. The fly ash that exists on the site has the ability to be utilized as a substitute for Portland cement used in the production of concrete. This use has seen support at the state level:

- + New York State Department of Transportation is actively seeking this ash for its projects;
- + New York State Department of Environmental Conservation is supportive since the Don Frame landfill is below modern-day storage standards and is beyond its post-closure monitoring period; and
- + NYSERDA was recently awarded a \$500,000 grant to another company utilizing the same processes.

Should the project move forward, the developer has stated it would take 5-10 years to deplete the fly ash available at both landfills.

In terms of carbon savings or carbon offset, the general rule is that it takes 1 ton of CO<sub>2</sub> emissions to create 1 ton of Portland cement. Should all of the assumed Class F fly ash at both landfills be consumed for concrete production, the carbon offset would equate to about 3,000,000 tons of CO<sub>2</sub> saved. This does not include the CO<sub>2</sub> savings that would result from the superior quality of the concrete produced, which would extend the life-cycle of the concrete and thus avoid an energy-intensive rebuild.

Additionally, the processing and distribution of fly ash could potentially occur at the NRG Power Plant site through the utilization of its existing building infrastructure and railroad access.

#### MODERN FLY ASH USE IN CONSTRUCTION

The closure of many carbon producing power plants around the U.S. has resulted in the reduction in coal ash production and disposal. However, the market has responded to the changes in coal ash by adopting new logistics and strategies to put these resources to productive use and reduce the amount of fly ash in landfills around the country. One such method is the use of fly ash in concrete production. Fly ash is a desirable material for this concrete production due to its durability and significantly reduced greenhouse gas emissions during processing.

The International Energy Agency has estimated that cement production will increase by between 12% and 23% by 2050 to meet the needs of the world’s growing population, and there is new research to find a suitable replacement of Portland cement by supplementary cementitious materials, such as fly ash.



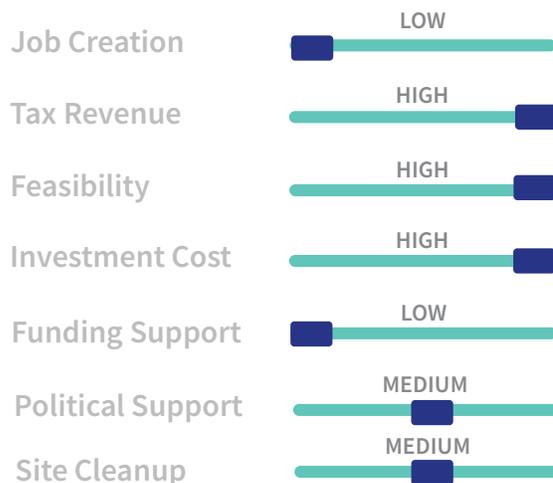
### [3] DATA CENTER

A data center is a facility that houses a network of computer systems and associated components, such as telecommunications and storage systems. Demand for data centers has been ramping up in recent years as digital infrastructure has become more and more necessary for everyday life and business functionality, including streaming, storage, shopping, and gaming. Several former industrial sites, such as the NRG Power Plant site have been successfully adaptively re-purposed into data center facilities due to their existing infrastructure networks. These sites are highly equipped with power utilities and transportation routes.

The NRG Power Plant site has all of the necessary infrastructure components to facilitate the development of a data center, such as the availability and reliability of electrical infrastructure. It is not likely that the existing buildings on site could be utilized to house the data center due to their age and the need for state-of-the-art HVAC and electrical infrastructure needed; however, further investigation would be required. This re-use requires a lower level of environmental clean up as compared to more ground disturbing uses, due to minimal site grading and minor soil disturbance necessary for new construction.

A data center on this site could potentially be paired with renewable energy sources, such as solar and wind. Battery storage could also be utilized on this site to use and store energy generated from these renewable sources.

#### ALTERNATIVE EVALUATION CRITERIA



STATE LINE DATA CENTER - HAMMOND, INDIANA

OPPORTUNITIES	CHALLENGES
<ul style="list-style-type: none"> <li>+ Re-use of existing infrastructure on site will reduce construction costs</li> <li>+ Lower environmental remediation cost</li> <li>+ Could be combined with renewable energy sources to offset high electric needs</li> <li>+ Existing water draw system in place to cool future equipment, if necessary</li> <li>+ Successful comparable projects in New York State</li> </ul>	<ul style="list-style-type: none"> <li>+ Requires high amount of power</li> <li>+ Higher investment cost to build new structure</li> </ul>

## [3] DATA CENTER

### SITE AND GENERAL CONSIDERATIONS FOR DATA CENTERS

There are several considerations that are generally evaluated when selecting a site for a data center. These are summarized below:

- + **General Environment** – Areas that are prone to natural disaster risks (seismic vulnerability, extreme weather events, flood plain jeopardy) are typically assigned a higher risk factor and, thus, are generally excluded from consideration. In the case of the NRG Power Plant site, risk of this nature is considered low provided a satisfactory remedial alternative is completed on the property. Further, temperate climates (such as Dunkirk) are a growing subset of the environmental factors evaluated. These locations provide options for 100-percent outside air (free) cooling or air-water economization — thus driving down power usage, a major consideration in data centers.
- + **Access to Power** – Power availability from local utilities is a key driver in data center site selection. On-site utility yards are often constructed in conjunction with the data center to support the high energy demands of the facility. Clean power is also a key criterion in the site selection process. Data center owners/operators seek reliable, efficient renewable energy options such as hydro, air, wind and, to a lesser degree, solar. Fuel cells are also emerging as a viable power option. These alternatives address a growing need to be more eco-conscious and to reduce grid dependency. The NRG Power Plant site has these benefits either with an on-site solar facility, an allocation of NYPA renewable energy and/or solar generation at the coal ash landfill.
- + **Access to Transportation** – Proximity to prime corridors can be viewed as both favorable and unfavorable. Access to major transportation modes, such as airports, rail lines and interstate roadways, creates the potential for increased risk should a disaster occur on or at the transportation link. Conversely, the ability to provide employees, vendors, and suppliers timely and direct access to respond effectively to events is also paramount.
- + **Fiber Network Connectivity** – Understanding latency limits and the location of preferred fiber providers and telecommunication points-of-presence in advance of identifying sites increases the overall success of the site selection process. This entails working with the owner's/operator's network administrator(s) to establish requirements for connectivity and applying those criteria to potential sites.
- + **Construction and Permitting Costs** – Construction and permitting costs are key factors in the site selection equation that can be evaluated based on several factors, including proximity to critical infrastructure, availability of qualified construction labor, and existing geological conditions.
- + **Labor** - Labor, while usually a minimal consideration given the weight of other drivers (data centers typically employ fewer than 30 employees), should not be overlooked. This factor can be easily assessed by an examination of skilled IT workers within reasonable commuting distance (60-90 minutes) of a potential site.

## [3] DATA CENTER

### MARKET POTENTIAL

While data center developments are still in the growth phase in the industry, there is no doubt that this is a rapidly expanding market in the United States. Through 2025, the industry's overall contribution to the U.S. economy will increase at an annualized rate of 2.3% faster than the overall economy's projected growth. This industry is highly competitive and the falling price of computer hardware has the potential to make construction of a new center more financially feasible.

These facilities also have the advantage of being able to rely on non-regional demand; for example, international and national markets can provide demand for data hosting and processing supplied in the City of Dunkirk. Furthermore, the location of these facilities is not a major factor in evaluating project viability.

### SWAPPING COAL FOR CLOUD

The demand for cloud service storage has been an increasing trend due to extreme technological advances throughout the country. This trend is likely to be even more apparent following the recent COVID-19 pandemic. As more people rely on the internet and data storage, demand in the amount of data centers needed in the United States is anticipated to increase.

An example of a successful data center conversion project is the State Line Power Plant in Hammond, Indiana. This coal-fired power plant was originally built in 1928 with a maximum power capacity of 515 MW on the shores of Lake Michigan. The plant was decommissioned in 2012. Due to the existing infrastructure on the site and the site's location 12 miles from downtown Chicago, plans were developed to convert the site into a mega-scale data center. The first phase of the project cost approximately \$40 million to construct a high-capacity, energy-efficient, state of the art data center campus. The campus includes a 105,000 square foot data center, a start-up incubator, greenhouse, and solar farm. The data center utilizes renewable energy from solar and wind sources to power the system, as well as water from Lake Michigan to cool the data equipment. The entire Digital Crossings project will eventually include the construction of up to three more data center buildings for a total project cost of \$200 million. Once the first data center is leased out to users, the next phase of construction can begin.

### CONSIDERATIONS

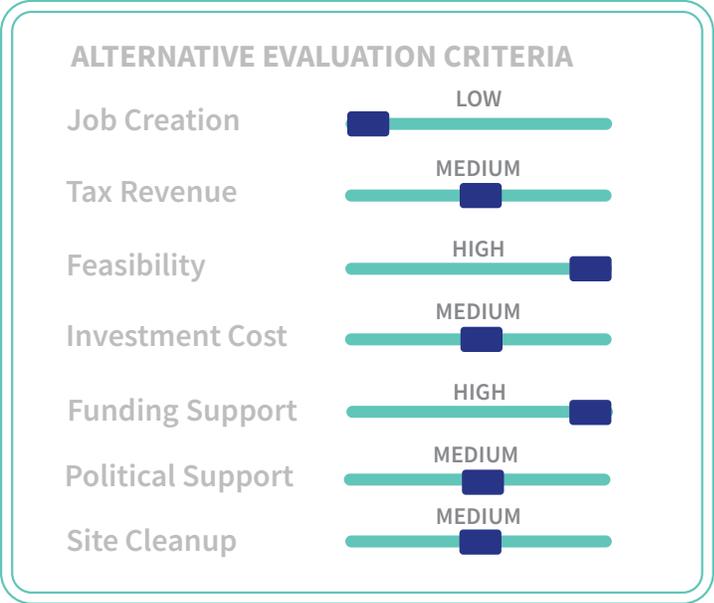
- Data centers require a large amount of infrastructure and generate significant heat. The site is equipped with necessary infrastructure and can utilize water from Lake Erie to cool data center equipment with no negative environmental risk.
- Data centers have the ability to attract high-tech companies to Chautauqua County and help diversify the local workforce.
- Temperate climates and locations with low environmental disaster risk, such as the City of Dunkirk, would make a prime location for a data center facility.

## [4] BATTERY STORAGE FACILITY

Battery storage power stations use batteries to store electrical energy, a critical piece of the puzzle for leveraging renewable energy sources and making power distribution more efficient. As renewable power sources such as wind and solar increasingly become a higher priority in New York State’s energy goals, utility-scale storage will support clean energy availability when and where it is most needed.

The NRG Power Plant site could potentially support the construction and utilization of a battery storage facility, which would be most cost effective if built at a larger scale (approximately 80 MW). The available land, existing electrical infrastructure, access to the electrical grid, and buildings provide opportunities related to the development of this option since this use would require a large amount of power distribution and protection from the outdoor elements. The existing site buildings could potentially store battery units, though upgrades to the buildings would likely be necessary to meet fire codes. A modern, industrial building could also be constructed to house the batteries.

This use would be most beneficial if paired with renewable energy, such as solar or wind generation, since proximity of the power generation source allows for a more operable and stronger electrical current to the batteries. Therefore, a solar array could potentially be located on the NRG Power Plant site or on land owned by NRG in the Town of Pomfret. Electrical interconnection would need to be further investigated to understand the feasibility and cost of energy transfer.



OPPORTUNITIES	CHALLENGES
+ Could store more than 80 MW	+ Electrical interconnections need to be explored
+ Existing electrical infrastructure would allow for large energy transfers	+ Requires large amount of power
+ Potential adaptive re-use of existing structures	+ Higher investment cost to build new structure
+ Lower environmental remediation cost	+ Low employment opportunity
+ Could be combined with renewable energy sources	
+ Off-site NRG property could potentially house solar array to provide power	
+ Could potentially power a microgrid	



LARGE SCALE BATTERY STORAGE FACILITY  
38 | SITE RE-USE ALTERNATIVES

## [4] BATTERY STORAGE FACILITY

### MARKET POTENTIAL

Given the potentially long development timeline for this Site, the cost of battery technology and facilities could potentially drop dramatically, increasing feasibility for this development scenario. For example, some models estimate that battery storage will gain a clear and permanent competitive edge over natural gas peaker plants in high-cost power markets like the Northeast within a few years. Technology advancements may take the form of alternative materials. For example, the New York Power Authority has incentivized pilots of “zinc air” battery solutions, which have safety, toxicity, efficiency, and materials sourcing advantages over traditional lithium-ion batteries.

### BATTERY STORAGE IN NEW YORK STATE

In October 2019, the New York State Public Service Commission (PSC) approved the construction of the largest battery facility in NYS history. This facility will be built on a portion of the Ravenswood Generating Station in Long Island City. The batteries will support a charge and discharge of 316 MW and is anticipated to go online in March 2021.

The New York Power Authority (NYPA) also announced that it is moving forward with a large-scale energy storage project in Franklin County, NY. The 20 MW facility will support Governor Cuomo’s energy goal of 3,000 MW by 2030. This project will cost approximately \$29.8 million and involves the construction of a one-hour lithium-ion battery system to absorb excess generation for later delivery.

### NEW YORK STATE INCENTIVES

New York State Retail Storage Incentives provide funding for standalone, grid-connected energy storage or systems paired with clean on-site generation. Energy systems must be at least 5 MW, and if paired with a solar array, must also be approved through NY SUN. This industry has grown faster than anticipated since these incentives were announced in 2018.

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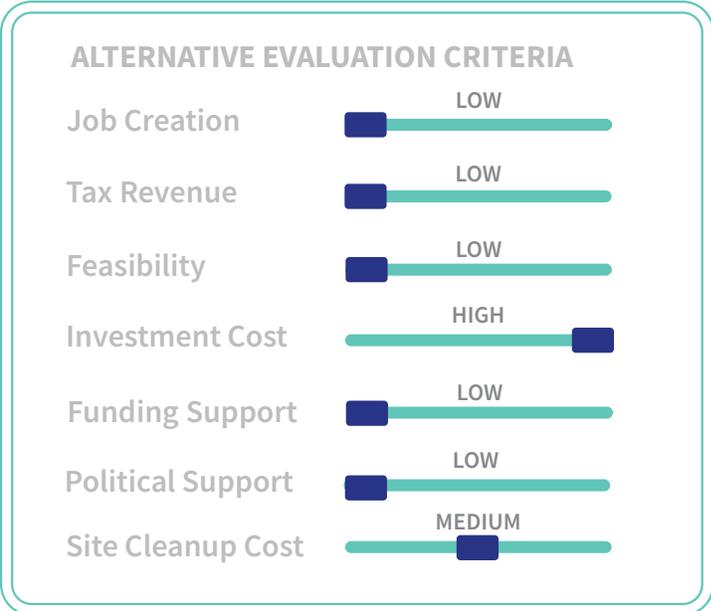
### INFORMATION GAPS

- Feasibility assessment for electrical interconnection to the NRG Power Plant site
  - Feasibility study for building re-use to accommodate a battery storage facility
-

## [5] OFF-SHORE WIND

The interconnection to off-shore wind was considered as a re-use option for the NRG Power Plant site. This option would involve the development of off-shore wind turbines along the shoreline to capture and use wind from Lake Erie as a renewable energy resource, with the land interconnection being the NRG Power Plant. Wind capture has been a popular component of redevelopment strategies for former power plant sites due to the large amount of infrastructure that exists and their positioning along shorelines.

In 2010, a feasibility study completed by NYSERDA indicated that Lake Erie near the City of Dunkirk was a “primary area of interest” for the development of off-shore wind. However, at the NYS level, off-shore wind development on the Great Lakes is not well supported and would not likely be funded to reach the state’s renewable energy goals. For example, an off-shore wind solicitation was recently announced in 2020 to develop wind in NYS; however, the only eligible areas considered for funding were located off Long Island.



OPPORTUNITIES	CHALLENGES
<ul style="list-style-type: none"> <li>+ Utilization of Lake Erie shoreline location</li> <li>+ Existing electrical infrastructure and utilities would allow for large energy transfers</li> <li>+ Lower environmental remediation cost</li> <li>+ Could be combined with other renewable energy sources</li> </ul>	<ul style="list-style-type: none"> <li>+ Electrical interconnections need to be explored</li> <li>+ Low support from NYS for off-shore wind on Great Lakes</li> <li>+ High investment cost</li> <li>+ Low employment opportunities</li> </ul>

**PENDING SENATE LEGISLATION**

In September 2019, Senator Jacobs and Senator Borrello sponsored a senate bill related to the establishment of the building or placement of wind turbines on freshwater waterbodies within New York State.

## [6] MICROGRID DEVELOPMENT

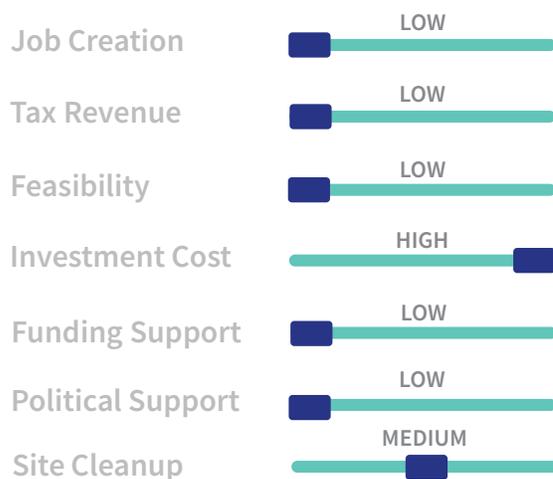
The development of a community microgrid was also examined as a potential re-use option for the NRG Power Plant site. This option would involve the distribution of power, presumably produced at the site, directly to customers and effectively bypassing the typical power distribution grid.

Although natural gas is the prevailing source of energy for most microgrids today, microgrids can source energy from a variety of clean and renewable sources including wind and solar. Through the incorporation of energy-efficient and low/no emission technologies, microgrids can reduce greenhouse gas emissions and dependence on fossil fuels. Microgrid developments may transition to more renewable energy generation as these sources become more financially viable.

While a microgrid could potentially bring benefits to the City of Dunkirk, there are significant challenges to developing a community microgrid at the NRG Power Plant site, including:

- Utilization of fossil fuel-based power generation will likely not be supported by state government;
- Using solar power generation alone is not a viable alternative for a microgrid, as the power supply is intermittent. Although it is possible to use battery storage in combination with solar power generation, this only adds to the upfront cost of the microgrid. And, unlike a natural gas-powered CHP system, there is no additional revenue stream possible from selling waste steam.
- The financial feasibility of a microgrid is uncertain, and can be reliant on external funding or additional revenue streams to offset half of the expected investment costs.
- It does not appear that Dunkirk has a specific, compelling energy issue that would balance the above barriers and challenges, such as regular natural disaster-related power outages, other reliability issues, or a NYPA power cap.

### ALTERNATIVE EVALUATION CRITERIA



### WHAT IS A MICROGRID?

Microgrids are independently controlled power systems with the capability of operating independently or concurrently with the main power grid. Microgrids are a group of interconnected loads and distributed energy sources that can be sourced from natural gas-fueled turbines, small modular nuclear reactors, renewable sources, or other sources. Though microgrid projects across the country continue to transition to some amount of renewable energy production, most are anchored by a large fossil fuel-fired power plant. Additionally, microgrids often involve “combined heat and power” (CHP) whereby both electricity and steam are produced and sold directly to the consumer.

Community microgrids often also have a specific emphasis on critical public services including hospitals, universities, water treatment facilities, municipal buildings, and large individual consumers.

## [6] MICROGRID DEVELOPMENT

### MARKET POTENTIAL

Microgrids can lead to energy cost savings, and many communities have received a low-cost energy allocation from NYPA. These developments can generate revenue from several channels including metered electricity for consumers, metered thermal energy, and selling excess power back to the macro grid; however, the financial viability of these projects is often defined by high levels of uncertainty. The burden of high investment and replacement costs required for the NRG Power Plant site to implement a microgrid would likely be prohibitive. Fixed costs including the design, planning, approvals, construction, and other capital costs, would likely exceed the potential benefits to the consumers, and extensive upgrades to the site's existing electrical infrastructure would likely be necessary to ensure sufficient distribution of energy generated by the microgrid.

One concept where a microgrid might be appropriate would be in biomass-based power generation. Biomass, if a reliable feedstock supply can be secured, would provide a source of base power that could feed the microgrid in a consistent manner. To that base power could be added power from other generating assets, such as those described in the solar arrays concept. Additionally, a biomass plant could also operate as a CHP system, selling waste heat for additional revenue to the system operator. For this to occur, the microgrid sponsor would need to undertake a significant feasibility assessment to identify the critical loads the microgrid would serve, the potential purchasers of the waste heat, the optimal system design, cost estimation, and the securing of agreements between the various stakeholders.

### VILLAGE OF WESTFIELD MICROGRID FEASIBILITY ASSESSMENT

As part of NYSERDA's 2015 NY Prize competition, 83 municipalities across New York State were awarded grant funding to conduct microgrid feasibility assessments. Located approximately 20 miles southwest of Dunkirk, the Village of Westfield, NY, conducted one such NY Prize study. Eight critical loads were identified as the primary beneficiaries of this microgrid development that would ensure electrical supply in the event of an unforeseen disruption to the main grid. Overall, the proposed microgrid would serve those loads and approximately 3,200 other customers, with a proposed facility with a nameplate capacity of 3.25 MW, which is the minimum size required to meet electricity demand of the eight identified critical loads. The system was comprised of two 1.5 MW CHP plants, a 250-kW battery storage system and a master controller.

Several benefits were identified in the Village's study including energy efficiency and reliability upgrades. The cost savings of the proposed microgrid were most apparent in the winter months when demand exceeded the MW allocation set by the NY Power Authority. Each winter, demand for electricity among Village residents would exceed the allocation, forcing the Village to purchase wholesale energy on the retail market. The Village paid approximately \$7 per kWh on the retail market to meet excess demand. In 2014, this amount totaled over \$1,000,000 in electricity overruns, driving the Village to secure short-term financing to meet energy obligations.

The proposed microgrid was identified as the optimal size to meet the energy demand of critical loads and reduce strain on the macrogrid during peak loads of the cold winter months. Even so, the proposed development was determined to be unlikely to pay for itself through energy savings over the facility's lifetime. In particular, the high costs of the distribution network installation and communications upgrades were cited as prohibitive.

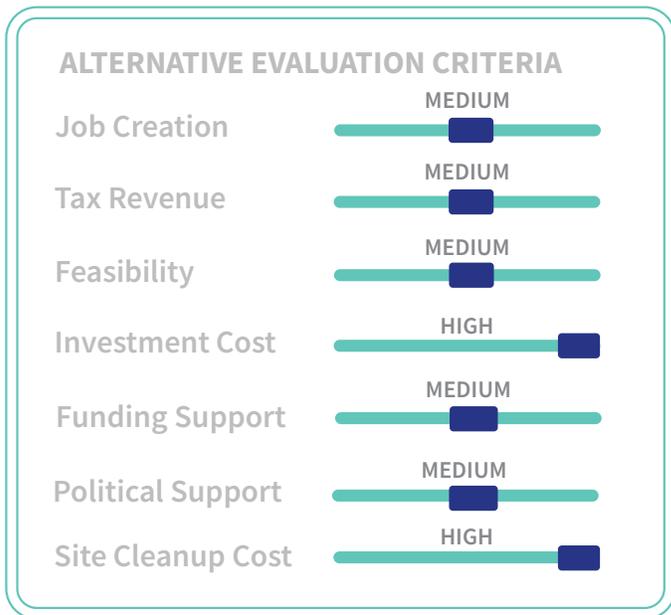
### INFORMATION GAPS

- Feasibility assessment for electrical interconnection to NRG Power Plant site.
- Feasibility assessment to identify critical loads, system design, potential customers, estimated costs, and agreements between potential stakeholders.

## [7] CLEAN SLATE RE-USE

This option is intended to facilitate a range of redevelopment options (revenue producing or not revenue producing) on the NRG Power Plant site, such as a public park space, housing development, or a mixed-use development. These options support opening up the site to public enjoyment, whether in the form of recreational, residential uses and a mix of development types that could aid in job creation and serve community needs. This re-use option provides the most flexibility in the exploration of viable end use scenarios that can take full advantage of what the site has to offer to result in the highest community benefit.

Facilitation of these re-use options will require site preparation work, including full demolition of the existing structures, environmental remediation (to specific NYS DEC use standards), and removal or relocation of the existing electrical switchyard owned by National Grid. To move forward with this option, redevelopment is estimated at a base cost of up to \$38,000,000. This cost is anticipated to vary based on the final site re-use plan.



RE-USE OPTIONS	OPPORTUNITIES	CHALLENGES
<b>PUBLIC PARK</b>	<ul style="list-style-type: none"> <li>+ Open up prime waterfront property for public use and enjoyment</li> <li>+ Opportunity to host large public events</li> <li>+ Electrical switchyard can potentially be relocated</li> </ul>	<ul style="list-style-type: none"> <li>+ Environmental remediation is necessary</li> <li>+ Building demolition may be necessary</li> <li>+ Low to no-tax revenue producing end use</li> <li>+ Electrical switchyard present in center of site</li> </ul>
<b>HOUSING DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>+ Tax revenue producing end use</li> <li>+ Incorporate public greenspace into redevelopment</li> </ul>	<ul style="list-style-type: none"> <li>+ Site remediation and building demolition may be necessary</li> <li>+ Existing electrical switchyard present in center of site (has the potential to be relocated)</li> </ul>
<b>MIXED-USE DEVELOPMENT</b>	<ul style="list-style-type: none"> <li>+ Largest revenue producing end use</li> <li>+ Incorporation of commercial uses into site redevelopment</li> <li>+ Job creation</li> </ul>	<ul style="list-style-type: none"> <li>+ Site preparation cost</li> <li>+ Development partner required</li> <li>+ Wide variety of potential end uses to assist with community revitalization</li> <li>+ Presence of electrical switchyard</li> </ul>

**BASE SITE PREPARATION COST**  
(ANTICIPATED TO VARY BASED ON FINAL SITE RE-USE)

<b>EXISTING STRUCTURE DEMOLITION</b>	<b>\$12,000,000</b>
<b>STRUCTURE ASBESTOS ABATEMENT</b>	<b>\$6,000,000</b>
<b>BASE SITE REMEDIATION</b>	<b>\$20,000,000</b>

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**UP TO \$38,000,000**

**PUBLIC SUPPORT CAN LEAD TO REAL CHANGE**

Base site preparation costs for the NRG Power Plant are on the higher end; however, the redevelopment of this site is a high priority of the community. Funding assistance at the public level will undoubtedly lead to substantial benefits for the Dunkirk community in terms of economic change. Public investment in this site will open the door for a multitude of redevelopment options and can support the expansion of clean energy in the WNY region.

## [7] CLEAN SLATE RE-USE

### PUBLIC PARK OPTION

The development of a public park could be facilitated if environmental remediation was completed on this site. This option would reconnect the Dunkirk community with expanded recreational opportunities, such as boating, fishing, walking trails, and passive open space, intended to increase resident quality of life and well-being. Introducing potential pedestrian and bicycle facilities along the waterfront would expand multi-modal transportation options and enhance connectivity to recent Dunkirk Harbor Pier improvements.

This option also presents an opportunity to develop a creative and unconventional site re-use strategy. If funding were available, a myriad of options are possible to develop an end use that supports community well-being and potentially become a regional destination residents and visitors in the Chautauqua region. For example, the facility could potentially be adaptively re-used, in part or in whole, to house commercial and retail components that support recreational use of the property. Commercial uses could include bicycle, boating and fishing rentals, or a local fresh food market and eatery, which have the ability to increase tourism opportunities in the area.

### BUFFALO RIVERWORKS: A RECREATIONAL DESTINATION



The Buffalo RiverWorks complex was once a prime industrial property on Ganson Street in the City of Buffalo, NY. After years of redevelopment, this site is now the home to a significant recreational waterfront attraction in the WNY region. The complex is the city's first waterfront tourism, sports, and entertainment destination. The facility was adaptively redeveloped as a venue for a number of recreation-based entertainment options, such as open-air hockey rinks, rock climbing wall, boating launches, and concert venue supported with a restaurant, brewery, and distillery. The project builds on the unique history of its location and features the site's grain silos and utilizes public art with original industrial rebar.

### NATIONAL GRID'S ELECTRICAL SWITCHYARD

National Grid operates an active electrical switchyard in the center of the NRG Power Plant site that is seen as a redevelopment constraint for site's future re-use; however, if funding were available, National Grid may be willing to negotiate relocation of the electrical switchyard to a different location.

## [7] CLEAN SLATE RE-USE

### HOUSING / MIXED-USE DEVELOPMENT OPTION

The NRG Power Plant site is located on prime waterfront property, which could support a range of development options to aid in community revitalization and act as an anchor for the City of Dunkirk. Several mixed-use buildings on the site could potentially accommodate a variety of residential, light industrial uses, flex space, incubator facilities, as well as office space and retail services. These uses would extend Dunkirk's current street grid and neighborhood accessibility to the waterfront through a series of walkable shops, services, and public amenities. Retail services, such as restaurants, convenience retail, and child care, has the potential to serve both the needs of employees as well as the larger community. Additionally, retail offerings could be geared to celebrate local heritage and support the strong Hispanic population of the area.

Numerous mixed-use development combinations can be supported on this site. Public/private partnerships opportunities with local anchor institutions, such as SUNY Fredonia, Cornell Cooperative Extension, Brooks Memorial Hospital, UPMC Chautauqua, could be leveraged to produce an end use that is advantageous for the overall Dunkirk community through the creation of a community space and potential workforce and educational training opportunities.

This option also presents an opportunity to integrate clean energy technology into the end use to offset or reduce greenhouse gas emissions and support the State's energy goals. As described previously, a solar array or battery storage facility could be constructed and incorporated on either the NRG Power Plant site or the associated landfill sites to produce more power than the building's re-use would consume.

### BELOIT COLLEGE DEVELOPMENT ON FORMER COAL POWER PLANT SITE



The former Blackhawk Generating Station, a steam-powered coal-fired power plant in Beloit, Wisconsin was shut down in 2010. This historic building and site sat vacant for many years until leaders at Beloit College took the leap to transform this deteriorating site into a viable use. The College was searching for a central gathering space for more than 30 years and a location to house their recreational facilities for students. This \$38 million project, dubbed the Powerhouse, re-purposed this former power plant into a 120,000 SF student center, complete with several amenities for students to enjoy.

### THE STEEL YARD | PROVIDENCE, RHODE ISLAND



The Providence Iron and Steel Company, located along the Whoonasquatucket River just outside of Providence, Rhode Island, closed in 2001 and was purchased and redeveloped into a community gathering space for people interested in the creative arts. Now referred to as the Steel Yard, this facility acts as an industrial arts space and incubator for small businesses. The campus offers adult art classes, a workforce training program, and a fabrication space for artists to design and produce street furniture that are installed in the downtown. The space also acts as a public event venue for the downtown and surrounding neighborhoods.

## [7] CLEAN SLATE RE-USE

### MARKET POTENTIAL

This option provides an understanding of the site preparation work that is necessary to facilitate redevelopment, including environmental remediation, building demolition, and abatement costs. While the individual components of this re-use strategy will not produce tax revenue at the same proportion as the formerly operational NRG Power Plant, this option has significant ability to provide the most community benefit to Dunkirk and Chautauqua County residents.

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### INFORMATION GAPS

The following gaps in information exist and should be further investigated to move forward with this option.

- Consider the completion of a Phase II ESA to understand the real impacts of environmental contamination on the site.
  - Further investigate cost to relocate National Grid switchyard off the NRG Power Plant site.
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Please refer to Appendix C: Environmental Remediation Plan/Estimates and Appendix D: Demolition and Asbestos Abatement Estimates for more detail regarding site redevelopment preparation costs.

## PREFERRED SITE RE-USE CONCEPTS

All potential re-use concepts explored present a unique opportunity to leverage the site's locational advantage, and accessible infrastructure and utilities, to create an economic driver in the City of Dunkirk. Two preferred re-use concepts have been selected for the NRG Power Plant site and associated landfill sites (in the Town of Pomfret) based on feasibility and market demand. The landfill sites are included as a redevelopment strategy due to their potential to increase job opportunities and incorporate clean energy practices, with the ultimate goal of creating a carbon neutral project. These preferred site alternatives are anticipated to bring the largest benefit to the region. However, if changing conditions in the economy and market were to take place and new opportunities for redevelopment arose, deviations from the preferred concepts would be considered. The two preferred site re-use concepts are described below.

### [1] DATA CENTER

This re-use concept involves the redevelopment of the NRG Power Plant into a regional data center and takes advantage of the associated NRG landfills in the Town of Pomfret to create a synergistic relationship between the two sites. Specifically, this concept includes the development of a data center on the NRG Power Plant site that would be powered by renewable energy both on the NRG site and landfill. Renewable energy sources could include biomass and/or solar power on the NRG Power Plant site, or solar power and/or the beneficial use of the fly ash on the associated landfills. The use of renewable energy in this concept is intended to create a sustainable, carbon neutral development.

This site re-use fulfills a need to create a comprehensive economic development strategy that leverages cumulative opportunities. Ideally, the NRG Power Plant re-use would occur in tandem with the development of an industrial business park on the NRG landfill site in proximity to the potential solar array. The development of this industrial business park would likely require environmental assessment and site remediation; however, it presents a sustainable option as compared to greenfield development in a different area of the County. This site could also provide workforce development opportunities for the region.

### [2] INDUSTRIAL REDEVELOPMENT WITH DATA CENTER

This re-use concept involves the redevelopment of the NRG Power Plant site for industrial use paired with a data center. The industrial use of this property could include a distribution and logistics center or the development of an industrial business park that leverages proximity to critical transportation and infrastructure networks. Similar to the first preferred re-use concept, this concept would also involve the use of renewable energy sources to create a carbon neutral development. Based on future building assessments, this concept could include the adaptive re-use of some of the existing facilities or entirely new construction.

Due to the barge and rail capabilities of the NRG Power Plant site, an opportunity exists to use the site to distribute fly ash generated from the associated landfills in the Town of Pomfret. There is expressed interest from the owners of the Don Frame landfill, whom currently utilize Class F Fly Ash, to utilize the NRG Power Plant site for fly ash distribution due to the existing rail network connections and barge access.

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# 5 IMPLEMENTATION

Defining an actionable implementation strategy for the NRG Power Plant site is critical to setting the stage for its redevelopment. This section provides a link between the potential re-use options and the actions necessary to realize on-the-ground change for the site.



## IMPLEMENTATION STRATEGY

While there are several options that could potentially create a viable re-use for the NRG Power Plant site, there are still several unknowns and information gaps that will require attention for redevelopment to move forward. The City of Dunkirk and Chautauqua County should move forward with the following actions to better understand site and building constraints and future opportunities, and position the site for funding to facilitate redevelopment.

### 01 COLLABORATE WITH NRG ENERGY

Since NRG Energy is the property owner of the NRG Power Plant site, collaboration with NRG will be critical to facilitating realistic site redevelopment. The County and City should work directly with NRG to understand priorities and opportunity for future investments. Open lines of communication should also exist to understand which entity is most appropriate to take the lead on future grant opportunities.

### 02 PURSUE BUILD-READY PROGRAM APPLICATION

NYSERDA recently announced the Build-Ready Program, which is intended to advance large-scale renewable energy projects on qualifying sites. Dormant electric generating sites, sites of at least 65 acres, former industrial sites, and landfills are preferred. The NRG Power Plant site and associated landfills fall into these categories. If and when the timing makes sense, the County should pursue a Build-Ready Site nomination in collaboration with NRG Energy to advance necessary analyses for redevelopment.

### 03 INVESTIGATE INTERCONNECTION COSTS

While the redevelopment of the site can potentially include an energy re-use component, specifics related to cost of interconnection is currently unknown. A feasibility study focused on the cost of interconnection infrastructure is needed to facilitate energy transfer is recommended.

### 04 DETAILED FACILITIES AND SITE INFRASTRUCTURE ASSESSMENTS

Detailed facility and site infrastructure assessments are necessary to further inform potential re-use options on the NRG Power Plant site.

### 05 ENERGY MODELING

New York State's push for carbon neutrality by 2040 is one of the drivers for the inclusion of renewable energy as part of the redevelopment strategy for the NRG Power Plant site. Building energy modeling is recommended to understand the energy consumption of the existing NRG facility and potential new industrial buildings. This assessment will help inform the amount of renewable energy necessary to offset production, with the ultimate goal of the creating a carbon neutral development.

### 06 COLLABORATE WITH THE NYS CLIMATE JUSTICE WORKING GROUP

The Climate Justice Working Group is an advisory committee to the Climate Action Council (CAC). This group is tasked with establishing the criteria for a "disadvantaged" community for the purposes of grant funding through the Climate Leadership and Community Protection Act (CLCPA). The County should work directly with the Working Group to position the City of Dunkirk for funding to advance site redevelopment that will positively benefit Dunkirk residents.

### 07 SITE MARKETING AND PROMOTION

A strategic marketing plan and campaign to broadcast the site's redevelopment opportunities and generate private developer interest of the site will be key to its re-use. The County/City should work with NRG to develop a marketing webpage geared toward generating interest from developers to position the site for viable re-use.

## FUNDING OPPORTUNITIES

The following funding opportunities are available to advance the redevelopment of the NRG Power Plant site.

### NYSERDA - FUNDED OPPORTUNITIES

#### BUILD-READY PROGRAM

The Build-Ready Program is intended to foster and encourage siting and development of renewable energy facilities and targets previously developed sites, including brownfields and dormant electric generating facilities. This solicitation proactively seeks nominations from elected officials, local community leaders, private companies and interested parties for potential sites. The deadline for Round One of the program is on July 2021.

#### CLEAN ENERGY FUND

The Clean Energy Fund is a core component to achieving Governor Cuomo’s energy and sustainability goals for the State. It includes approximately \$5 billion to support clean energy market development and innovation. As part of the Climate Leadership and Community Protection Act (CLCPA), a portion of this fund is dedicated toward communities that may be defined as “disadvantaged”.

#### ELECTRIC POWER TRANSMISSION AND DISTRIBUTION (EPTD) HIGH PERFORMING GRID

This opportunity is funded through the Clean Energy Fund and is intended to make investments in research and development that accelerate the realization of an advanced, digitally enhanced electric grid.

#### NY-SUN COMMERCIAL / INDUSTRIAL INCENTIVE PROGRAM

NYSERDA provides performance-based incentives for the installation by contractors of new grid-connected electric photo voltaic (PV) systems that are ranging from 750kW to 7.5MW in the Upstate region. Incentives are allocated on a first-come, first-served basis and applications will be accepted until December 29, 2023 or until fully committed. Brownfield sites can receive an additional \$0.15 per watt DC for eligible capacity on top of the base MW block incentive.

### NEW YORK STATE CLIMATE ACTION COUNCIL (CAC)

The New York State Climate Action Council (CAC) is a 22-member committee tasked with preparing a scoping plan to achieve the State’s energy and sustainability goals set forth by Governor Cuomo. This council oversees several sector-specific advisory panels to help implement recommendations. One of the goals of this Council is to invest in “disadvantaged” communities through clean energy and efficiency programs.

The Council works with the Climate Justice Working Group, which provides strategic advice for incorporating the needs of disadvantaged communities in the overall scoping plan. This group will establish the criteria to define a disadvantaged community. While the criteria has not been specifically defined, generally a disadvantaged community are areas that are:

- Burdened by cumulative environmental pollution and other hazards that can lead to negative public health effects
- Contain concentrations of people that are low income, high unemployment, high rent burden, low levels of home ownership, low levels of educational attainment, or members of groups that have historically experienced discrimination on the basis of race or ethnicity
- Vulnerable to the impacts of climate change such as flooding, storm surge and urban heat island effects.

## **BULK STORAGE INCENTIVES**

This program provides financial support for new energy storage systems over 5 MW of power measured in alternating current (AC) that provide wholesale market energy, ancillary services, and/or capacity services. Systems may be interconnected at the transmission, sub-transmission, or distribution level and may provide distribution services in addition to wholesale services.

## **RETAIL STORAGE INCENTIVES**

This program provides financial incentives for new grid-connected energy storage systems up to five megawatts of alternating current (AC) connection located either with load or connected directly into the distribution system. Energy storage systems under this program must be operated primarily for electric load management or shifting electric generation to more beneficial time periods while operating in parallel with the utility grid. Eligible energy storage systems are chemical, thermal, or mechanical systems that may be installed alone or paired with another distributed energy resource technology. If paired with a solar component, the project must also be approved through the NY SUN program.

## **NET ZERO ENERGY INCENTIVES**

NYSERDA has \$15 million of incentives available to support economic development projects across New York State for projects that are regionally significant and designed to net zero energy or carbon neutral performance. Incentives are categorized in two parts; Net Zero Facilities or Net Zero Communities.

## **NY PRIZE**

NY Prize helps communities reduce costs, promote clean energy, and build reliability and resiliency into the electric grid. NY Prize is a part of a statewide endeavor to modernize New York State's electric grid, spurring innovation and community partnerships with utilities, local governments, and private sector. This program is structured in two parts and in competition form. Current funding is uncertain at this time.

## **FLEXTECH (FLEXIBLE TECHNOLOGY) PROGRAM**

This program is intended to help customers make informed clean energy investment and sustainability decisions through the completion of an energy study on buildings. Eligible facilities include commercial, industrial and multi-family buildings in New York State that pay into the electric SYstem Benefits Charge (SBC).

## **NY GREEN BANK - FUNDED OPPORTUNITIES**

The NY Green Bank is a \$1 billion state-sponsored investment fund and is a division of NYSERDA. The Green Bank helps to alleviate funding gaps for clean energy markets and offers a plethora of financing options. A few open opportunities applicable to the NRG Power Plant site are described.

### **RFP 10: FINANCING FOR CDG SOLAR PROJECTS INCLUDING PROJECTS PAIRED WITH ENERGY STORAGE**

This opportunity is targeted at developers and/or owners of solar photo voltaic (PV) projects that: (i) are in advanced stages of development; (ii) form part of the Community Distributed Generation Program; (iii) are compensated under the Value of Distributed Energy Resources Phase One Tariff; (iv) comply with all applicable provisions established under the Uniform Business Practices for Distributed Energy Resource Suppliers; (v) generate power using Tier 1 technology; (vi) earn revenue by selling volumetric or monetary credits to project members under revenue contracts; (vii) are 500 kWac to 5 MWac in size, ground-mounted, canopy-mounted or non-residential rooftop PV solar projects at a single location; and (viii) may be paired with an electrical energy storage component.

### **RFP 13: FINANCING FOR ENERGY STORAGE PROJECTS**

This opportunity is geared toward energy storage developers and other storage market participants targeting New York State energy storage projects, to propose transactions to NY Green Bank that contemplate the financing of the purchase and ownership of energy storage projects.

## NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION - FUNDED OPPORTUNITIES

### NYS DEC BROWNFIELD CLEAN UP PROGRAM (BCP)

The BCP encourages the redevelopment of formerly developed sites plagued with contamination to promote their viable redevelopment. The program offers incentives for redevelopment based on the level of site clean up necessary and the site's final end use.

### APPALACHIAN REGIONAL COMMISSION

The Appalachian Regional Commission (ARC) is an economic development partnership agency of the federal government and 13 state governments that focus on 420 counties in the Appalachian Region, which includes Chautauqua County.

### POWER INITIATIVE

ARC's POWER (Partnerships for Opportunity and Workforce and Economic Revitalization) Initiative helps communities and regions that have been affected by job losses in the power industry. This initiative supports economic efforts to combat the impacts of coal. In October 2020, ARC announced \$43.3 million to 51 projects. Past funding rounds have included implementation and technical assistance grants.

## U.S ECONOMIC DEVELOPMENT ADMINISTRATION

### ECONOMIC ADJUSTMENT ASSISTANCE

A portion of the EDA's Economic Adjustment Assistance funds are set aside for "communities that have been negatively impacted by changes in the coal economy." Competitive projects can include:

- Economic and workforce development integration to address the re-employment needs of regional workers displaced by changes to the coal economy
- Workforce development activities
- Implementing economic diversification strategies
- Developing business incubator programs.
- Enhancing broadband access to support job creation
- Facilitating access to private capital investment and providing related technical assistance to maximize utilization of capital investment for business development and job creation
- Facilitating and promoting market access for goods and services created and manufactured by businesses in the impacted community

## SITE MARKETING AND PROMOTION

Collaboration should take place with NRG Energy to develop marketing materials and online webpage for the NRG Power Plant site. This online webpage could host information regarding site characteristics, future re-use opportunities, and potential partners for investment. The purpose of this webpage would be to solicit interest from developers or partners to advance a viable redevelopment option for the NRG Power Plant Site.

The NRG Huntley Power Plant in Tonawanda, New York, recently created a similar webpage for the recently closed facility. This site can be found at [www.huntelystationreuse.com](http://www.huntelystationreuse.com).

