## SCS Dell 014136 Yorktown, LLC

Dell Avenue Solar Farm Yorktown, Westchester County, New York



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# Tree Mitigation Plan (Preliminary)

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#### 1.0 INTRODUCTION

#### 1.1 **Project Description and Purpose**

SCS Dell 014136 Yorktown, LLC proposes to construct and operate the Dell Avenue Solar Farm Project, a 3,625 kWac fixed-tilt ground mount solar energy system and associated facilities (the Project) on property located on Dell Ave in the Town of Yorktown, Westchester County, New York. The Project Site consists of two parcels totaling 62.33 acres (parcel IDs 70.11-1-16, 70.15-1-2). A figure depicting the Project Site overlaying United States Geological Survey (USGS) maps are presented as Figure 1. Site plans have been submitted to the Town Planning Board.

The Project will produce renewable energy that will provide global, national, statewide, and local benefits. The global community's increased focus, demand, commitment, and development of clean renewable energy resources are being driven by immediate and long-term concerns for the environment, energy reliability, and security.

Clean renewable sources of energy produced domestically, such as the Project, also reduce the United States' need for oil imports, reducing its dependency on foreign nations to meet this demand, and thereby enhancing national energy security. Domestically produced energy also keeps money at home, enhancing the national economy and strengthening the dollar. As the United States' solar industry grows, so does its benefits to the national economy. There are now nearly 174,000 solar workers in the United States employed at 6,100 businesses in every state, injecting life into the United States' economy (Solar Energy Industries Association, 2021).

In June 2019, New York State passed the New York Climate Leadership and Community Protection Act, which outlines the state's clean energy goals. As stated on the New York State Energy Research and Development Authority's website, New York State has some of the most aggressive energy and climate goals in the country, including:

- The Clean Energy Standard (CES), a mandate to get 70 percent of New York's electricity from renewable sources by 2030;
- A proposed target of 100-percent carbon-free electricity by 2040;
- A 40-percent reduction in greenhouse gas emissions by 2030 (using 1990 as a baseline); and
- A proposed target of 6,000 MW in distributed solar deployment by 2025.

The Project will support the CES's goals, which aim to "fight climate change, reduce harmful air pollution, and ensure a diverse and reliable low carbon energy supply" (New York State Energy Research and Development Authority, 2021). Renewable energy facilities, such as the Project, will offset the need to import fossil fuels and assist the state in reaching its goal of having 70 percent of its energy production from renewable resources.

The Hudson Valley is part of a high-demand or high "load" area in New York that does not have access to many major hydropower resources or wind energy projects. However, there is still



unutilized land in the Hudson Valley, such as the Project Site, available for developing solar generating facilities, or SGFs (Scenic Hudson, 2019). Therefore, SGFs, such as the Project, can help reach the goal "to rapidly transition the Hudson Valley to a sustainable, low-carbon region increasingly powered by renewable energy in order to mitigate climate change, while protecting and preserving the region's invaluable scenic, historic, agricultural, environmental and economic resources (Scenic Hudson, 2018)."

The Project will contribute electrical power from a renewable resource to the local grid, providing clean electricity to residences and business in Yorktown. The Project will also provide increased tax revenue for the Town of Yorktown.

The Project consists of arrays of solar panels accessed by pervious gravel drives. The arrays will consist of rows of solar panels installed aboveground on a metal racking framework. In addition, a small number of concrete pads for electric equipment will be installed.

Areas under and between the solar panels will be seeded with low-growth plants. Other areas throughout the Project are proposed to be seeded with pollinator-friendly species of wildflowers to encourage the presence of pollinating insects and other small wildlife. The existing forested areas on the boundaries of the Project, outside the Limit of Disturbance (LOD), will be left undisturbed. This existing vegetation will provide a visual barrier that will obscure views of the Project from adjacent properties. Shrubs and trees planted around the perimeter of the solar array will increase this visual barrier.

The total LOD, including the solar arrays, access drive, electrical equipment pads, tree clearing, and construction laydown areas, is 23 percent (14.1 acres) of the Project Site. The Project will convert 22 percent (12.3 acres) of existing protected at the Project Site into meadow habitat, access drive, and concrete equipment pads.

The siting principles in *Clean Energy, Green Communities: A Guide to Siting Renewable Energy in the Hudson Valley* (Scenic Hudson, 2018) were taken into consideration during Project planning. The Project has been carefully designed to meet the following design goals:

- Avoid wetlands and 100-foot adjacent areas to wetlands;
- Minimize impacts to steep slopes;
- Maintain a 200-foot setback from residences;
- Minimize tree clearing and cut and fill; and
- Minimize demand on local services.

### 1.1.1 Tree Inventory

TRC surveyed 1,007 alive protected trees and 48 dead trees with DBH equal to or greater than 8 inches within the 14.1-acre LOD. The tree locations are presented in Figure 2 – Sheet C-101 Existing Features, which is excerpted from the Site Plan set. The results of the tree survey have been submitted to the Town Planning Board.



#### 1.2 **Project Setting**

The Project Site is within the Manhattan Prong Physiographic Province of New York State. This Physiographic Province is defined by low, hilly terrain with a gentle relief (New York State Geological Survey, 2018).

As shown on the USGS Ossining, NY 7.5-minute quadrangle, the Project Site is defined by a valley dipping gently to the southwest between a ridge along the western portion of the Project Site and a hill, known as Hog Hill, in the northeastern corner of the Project Site (see Figure 1). The valley broadens out in the southern portion of the Project Site where it reaches its lowest elevation of approximately 220 feet above mean sea level (AMSL). A saddle is between the ridge and Hog Hill in the northern portion of the Project Site. The terrain slopes steeply to the east from the saddle to Hog Hill. The highest elevation is approximately 510 feet AMSL at the top of Hog Hill in the northeastern corner of the Project Site. Despite the presence of sections of steeper terrain, the average slope across the entire Project Site is approximately 5 percent, and the Project Site's topography would be considered gently sloping.

The Project Site resides in the Eastern Broadleaf Forest (Oceanic) Province and Lower New England Section ecoregions of the United States as defined by the USDA Forest Service (Bailey, 1995).

Ecoregions are ecosystems of regional extent. The USDA identifies ecoregions by ecosystem characteristics into the following classifications:

- Domains: the largest ecosystem, which are groups of related climates and are differentiated based on precipitation and temperature.
- Divisions: represent the climates within domains and are differentiated based on precipitation levels and patterns, as well as temperature.
- Provinces: Subdivisions of divisions, which are differentiated based on vegetation or other natural land covers.
- Sections: Subdivisions of provinces based on terrain features, sections are the finest level of detail described for each subregion.
- Mountainous Areas: Mountainous regions that exhibit different ecological zones based on elevation.

The Eastern Broadleaf Forest (Oceanic) Province is characterized by a temperate deciduous forest dominated by tall broadleaf trees. Forest vegetation in this province is divided into three major associations: mixed mesophytic, Appalachian oak, and pine-oak (Bailey, 1995). The forest vegetation of the Lower New England Section includes oak-hickory, white-red-jack pine, maple-beech-birch, and aspen-birch cover types (McNab et al., 2007).



Similarly, the NYSDEC has divided New York State into specific ecological regions (Ecozones). Boundaries of the Ecozones of New York State were derived from Will et al. (1982) and Dickinson (1983) and then further modified by the NYSDEC. The Ecozones of New York State have been classified into Major and Minor Zones. The Project Site is located within the Manhattan Hills Major Zone, which does not have any Minor Zones. The Manhattan Hills Major Zone is in the oak natural vegetation zone and young stands of pioneer hardwoods and oaks are common.

#### 1.3 Ecological Communities

Recent aerial orthoimagery of the Project Site and surrounding vicinity, obtained from Google Earth and Environmental Systems Research Institute, Inc., indicates that the Project Site is covered by temperate deciduous forest and wetlands.

The ecological community, as defined by *Ecological Communities of New York State* (Edinger et al., 2014), identified at the LOD was a beech-maple mesic forest. According to the New York Natural Heritage Program (NYNHP), beech-maple mesic forests are considered apparently secured in the state. Based on information from the New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper (ERM), there are no significant natural communities at the Project Site or within its immediate vicinity.

Based on the criteria in the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* (Kiviat and Stevens, 2001), the woodland present at the LOD can be classified as a mature mesophytic forest. This habitat can be identified by a forest where the majority of trees are equal to or greater than 12 inches DBH (Kiviat and Stevens, 2001). TRC identified 677 trees with a DBH equal to or greater than 12 inches within the LOD, which accounted for 64 percent of all protected trees identified.

The Project Site is part of a core forest. Core forests are defined as interior forest areas at least 100 meters from the edge of an unfragmented forest patch that is at least 100 acres. A forest condition index was developed by the Hudson River Estuary Program to assess the condition, connectivity, stress, and ecosystem value of forest patches at least 100 acres (Conley et al., 2019). The forest condition index of the Project Site is within the bottom 20<sup>th</sup> percentile of forest patches within the Hudson River Estuary. This low forest condition index indicates that while the Project Site is part of a larger forest patch with a core forest, it has limited connectivity with other large forest patches, provides limited habitat and ecosystem value, and has experienced environmental stressors from surrounding human activity and development.

The forest at the Project Site is representative of forests in the area. The Project Site likely has a history of human disturbance. Rock walls were observed at the Project Site. Overall, the habitats found at the Project Site are entirely consistent with the surrounding landscape.

#### 2.0 IMPACTS

The proposed solar array will be located within the existing protected woodland at the Project Site. Clearing of the protected woodland at the Project Site will be required for the solar array and



associated facilities. Some areas along the fence surrounding the solar array will be replanted with wildlife-friendly native trees, shrubs, and pollinator-friendly wildflowers.

Based on TRC's tree inventory and the Project's LOD, it is estimated that 1,007 protected trees will be removed from the Project Site (see Figures 2A and 2B). Tree clearing for the solar array will convert 12.3 acres of the protected woodland at the Project Site to a meadow. Edge forest is defined as forested land within 100 meters of the edge of a forest (Conley et al., 2019). Tree clearing will convert a portion of core forest at the Project Site to edge forest. As mentioned previously, the core forest at the Project Site is already in the bottom 20<sup>th</sup> percentile in terms for forest condition; therefore, it is not a high-quality core forest.

Following construction, the solar array field will be seeded with a mix of grasses. The vegetation will be mowed as needed to keep the vegetation below the solar panels. A pollinator-friendly seed mix of grasses and native wildflowers will be used in designated pocket areas to be determined outside of the solar array field and adjacent to the perimeter fence.

An herbaceous layer of vegetation will remain underneath the panels, in between the panel rows, and the general surrounding area. Therefore, solar projects do not create the same impervious cover that other types of development do, such as parking lots and buildings. The minimal impervious features associated with solar projects are mitigated with post-construction stormwater design features such as bioretention areas or other stormwater management practices. The impervious features, such as equipment pads, are considered when designing the project and stormwater control as to avoid altering surrounding wetland hydrology.

Native plant species will be used for planting under and around the arrays, which will prevent the introduction of exotic/invasive species. Best Management Practices (BMPs) from the Stormwater Pollution Prevention Plan (SWPPP) will also limit the spread of invasive species. The Project will not result in a major increase in impervious features and these features are considered when modeling the water runoff and designing the SWPPP. Stormwater will flow off panels and drain to the ground as normal.

This Project will include a perimeter chain link fence to discourage trespassing and access of large animals onto the Project. The perimeter fence will have a gap off the ground to allow smaller animals to pass through the Project and inhabit the facility following construction. Large animals will still have access to the remaining portion of the Project Site not enclosed by the perimeter fence.

#### 3.0 MITIGATION

In accordance with Chapter 270 of the Town Code of Yorktown, the Project requires a tree mitigation plan in order to obtain a tree removal permit for land conversion and woodland disturbance greater than 6 percent of the protected woodland at the Project Site.



#### 3.1 Tree Reforestation

The proposed landscaping plan includes planting 179 new native evergreen trees. A summary of the trees to be planted are provided in Table 1. The locations of the trees to planted on-site are included in the landscaping plan part of the site plan.

#### Table 1. Proposed Tree Plantings

Species Name	Common Name	Quantity
Juniperus virginiana	Eastern Red Cedar	20
Picea glauca	White Spruce	29
Thuja occidentalis	Northern White Cedar	17

The proposed trees shall be planted during appropriate timeframes and stages throughout the construction of the Project so that the reforestation efforts are completed simultaneously with the installation of the solar panels to the best extent possible.

#### 3.2 Yorktown Tree Bank Fund Payment

According to Chapter 270 of the Town Code of Yorktown, payment into the Tree Bank Fund may be used in lieu of replacing lost protected tree or disturbance to a protected tree. Based on the payment of \$100 for every protected tree removed, \$100,700 is required to compensate for the 1,007 alive protected trees to be removed as part of the Project. Based on the payment of \$300 for every 5,000 square feet of protected woodland disturbed, \$32,147.28 is required to compensate for the 12.3 acres (535,788 square feet) of protected woodland to be disturbed as part of the Project. Sol Systems proposes to make a contribution of \$132,847.28 to the Yorktown Tree Bank Fund to compensate for the removal of protected trees and protected woodland disturbance.

#### 4.0 CONCLUSION

The Project Site is part of a core forest; however, this forest has a low forest condition index. The functions and values of the protected woodland at the Project Site have been limited due to human activity and development in the surrounding vicinity.

The Project has been carefully designed to minimize impacts. Only 20 percent (12.3 acres) of the protected woodland at the Project Site will be converted to pollinator-enhanced meadow habitat benefiting various wildlife species. Sol Systems will contribute \$132,847.28 to the Town of Yorktown Tree Bank Fund to mitigate for protected tree removal and disturbance of protected woodland for the Project as required by the Planning Board.



#### 5.0 REFERENCES

- Bailey, R.G. 1995. Description of the ecoregions of the United States. Miscellaneous Publication No. 1391. Second edition, revised. Washington, DC: United States Department of Agriculture (USDA) Forest Service.
- Conley, A.K. et al. 2019. *Hudson Valley Forest Patch Update and Assessment*. New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry, Albany, NY.
- Dickinson, N.R. 1983. A division of southern and western New York State into ecological zones. Unpublished Report for NYSDEC, Wildlife Resources Center, Delmar, New York.
- Edinger, G. J. et al. (editors). 2014. *Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State.* NYNHP, NYSDEC, Albany, NY. <u>https://www.dec.ny.gov/docs/wildlife\_pdf/ecocomm2014.pdf</u>. Accessed March 2021.
- Kiviat, E. and Stevens, G. 2001. *Biodiversity Assessment Manual for the Hudson River Estuary Corridor*. Hudsonia Ltd., New York Department of Environmental Conservation, Albany, NY.
- McNab, W.H. et al. (comps.) 2007. *Description of ecological subregions: sections of the conterminous United States*. Gen. Tech. Report WO-76B. Washington, DC: USDA Forest Service
- Miller, N.A. and Klemens, M.W. 2004. Croton-to-Highlands Biodiversity Plan: Balancing development and the environment in the Hudson River Estuary Catchment. MCA Technical Paper No. 7, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York
- Mudd, J.P. et al. 2017. *The Hudson Valley Conservation Strategy: Conservation in a Changing Climate*. Poughkeepsie, NY: Scenic Hudson, Inc.
- NYSDEC. 2021d. *Environmental Resource Mapper*. <u>http://www.dec.ny.gov/gis/erm/</u>. Accessed June 2022.
- NYSDEC. 2021f. *Hudson Valley Natural Resource Mapper*. Published by NYS Department of Environmental Conservation Hudson River Estuary Program, New York Cooperative Fish & Wildlife Research Unit at Cornell University, and the New York Natural Heritage Program. <u>http://www.dec.ny.gov/gis/hre/</u>. Accessed June 2022.
- New York State Department of Transportation. 2013. Geotechnical Design Manual. Office of Technical Services, Geotechnical Engineering Bureau.



- New York State Energy Research and Development Authority. 2021. *Clean Energy Standard*. <u>https://www.nyserda.ny.gov/all-programs/programs/clean-energy-standard</u>. Accessed March 2021.
- Penhollow, M. E. et al. 2006. Wildlife and Habitat Conservation Framework: An Approach for Conserving Biodiversity in the Hudson River Estuary Corridor. New York Cooperative Fish and Wildlife Research Unit, Cornell University and New York State Department of Environmental Conservation, Hudson River Estuary Program, Ithaca, NY.
- Scenic Hudson. 2018. *Clean Energy, Green Communities: A Guide to Siting Renewable Energy in the Hudson Valley*. <u>https://www.scenichudson.org/sites/default/files/renewables-siting-</u> <u>guide\_web.pdf</u>. Accessed March 2021.
- Scenic Hudson. 2019. A Regional Response to Climate Change: Scenic Hudson's Role in the Hudson Valley's Transition to Renewable Energy. <u>https://www.scenichudson.org/wp-</u> <u>content/uploads/2019/10/A-Regional-Response-to-Climate-Change-2019-2.pdf</u>. Accessed June 2022.
- Solar Energy Industries Association. 2021. *Solar Benefits All Consumers*. <u>https://www.seia.org/research-resources/solar-benefits-all-consumers</u>. Accessed March 2021.
- Will, G.B. et al. 1982. *The ecological zones of northern New York*. Unpublished report for NYSDEC, Albany, New York.



# FIGURES





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