# Consider Landscape-Level Planning for Large-Scale Solar Energy Development in the Hudson Valley

Under New York's goal to get 50 percent of its energy supply from renewable sources by 2030, 431-630 megawatts (MW) of utility-scale solar energy capacity is predicted to be developed in the area known as Load Zone G (Hudson Valley), as delineated by the New York Independent System Operator (NYISO), the entity that controls the New York grid. Load Zone G, made up of Rockland, Orange, Putnam and Dutchess counties as well as portions of Sullivan, Ulster, Westchester, Greene, Columbia and Albany counties, contains an estimated 4,684,023 acres. Assuming that a large-scale solar facility requires from 5-10 acres per MW, this means that a high estimate of 6,300 acres of land is required for large-scale solar energy development in this area. While this is only .13 percent of the total land area, the Hudson Valley would greatly benefit from a landscape-level or regional planning exercise to identify the low-impact and low-conflict areas for solar energy development that align with the principles and recommendations contained in this guide. Such planning can help direct development to appropriate locations and maximize the chance for successfully meeting renewable energy targets.

Landscape-level or regional renewable energy planning—which involves examining an entire region to determine those areas acceptable for development (such as brownfields, closed landfills and previously disturbed areas) and those that are not (active prime farmland soils, wildlife corridors and critical habitat like wetlands)—can help stakeholders simultaneously meet the dual goals of renewable energy development and natural resources conservation. Such a plan utilizes "Smart from the Start" principles by identifying areas that should be protected, guiding development to low-conflict sites and providing mitigation strategies to offset any impacts that do occur.

The regional planning process should include opportunities for public and community input on identifying those areas posing the least conflict for development, as well as the lands, wildlife, and visual, agricultural and other resources in the Hudson Valley that warrant protection. It also should identify those areas that have high energy potential—i.e., have optimal grade and exposure for solar panels. In addition, sites that are located close to necessary interconnection and transportation infrastructure should be identified, and information provided on the availability of interconnection points and their capacity. Additional useful information includes the locations of brownfields, closed landfills and other previously disturbed sites where development should be incentivized.
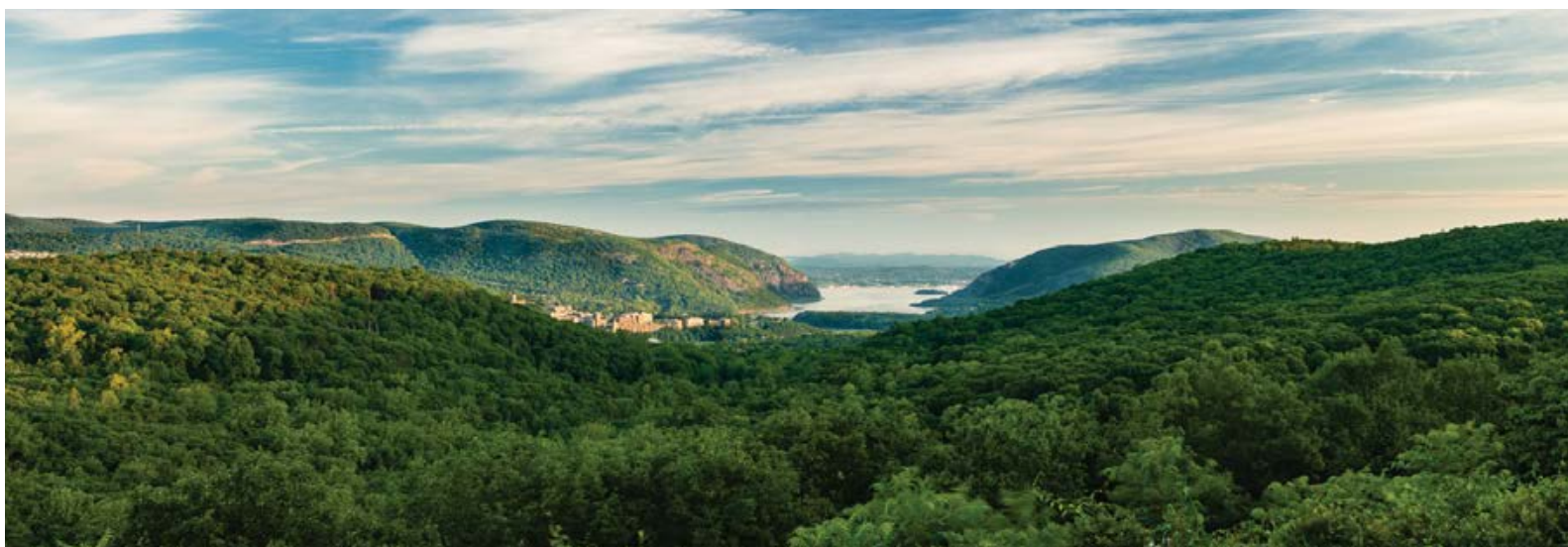
(Robert Rodriguez, Jr.)

Online Resource Mapping, GIS and Other Information

A significant amount of accessible, online resource inventory mapping and digital Geographic Information System (GIS) data exists for the Hudson Valley. It can be useful in conducting landscape-level or regional renewable energy planning. The following list is merely a starting point and by no means exhaustive. Prior to relying on any data, users should ensure that it is accurate and up to date.

SOLAR RESOURCES

The **NY Solar Map** helps determine solar potential for a particular address and provides several map layers, including statewide solar radiation.
https://nysolarmap.com/

WIND RESOURCES

Wind Power and Biodiversity in New York: A Tool for Siting Assessment and Scenario Planning at the Landscape Scale was developed by scientists from The Nature Conservancy, The New York Natural Heritage Program and The Cornell Laboratory of Ornithology in collaboration with NYSERDA to help decision-makers balance environmental concerns with energy infrastructure siting.
https://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/newyork/climate-energy/working-with-wind.xml

AGRICULTURAL RESOURCES

The **Web Soil Survey** provides information produced by the National Cooperative Soil Survey. Operated by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS), it provides access to the world's largest and most authoritative natural resource information system. NRCS has soil maps and data available for more than 95 percent of the nation's counties; it anticipates having 100 percent in the near future.
https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

New York State Agricultural Districts
https://www.agriculture.ny.gov/ap/agservices/agricultural-districts.html#Columbia

Scenic Hudson's **Foodshed Conservation Plan** outlines a roadmap for protecting the agricultural land that supplies fresh, local food to the people of the Hudson Valley and New York City.
https://www.scenichudson.org/foodshedplan

VISUAL RESOURCES

Hudson River Scenic Areas of Statewide Significance recognize unique, highly scenic landscapes in the Hudson Valley that are accessible to the public.
https://www.dos.ny.gov/opd/programs/HudsonSASS/Hudson%20River%20Valley%20SASS.pdf

New York State Scenic Byways are transportation corridors that connect travelers with sites of scenic, recreational, cultural, natural, historic or archaeological significance within a region.
https://www.dot.ny.gov/display/programs/scenic-byways/maps

There also are a significant number of **Designated Scenic Roads** in the Hudson Valley.
https://www.dot.ny.gov/display/programs/scenic-byways/ScenicRoads-no-detailed-info

NATURAL RESOURCES

NYSDEC **Environmental Resource Mapper** features an interactive mapping application that can be used to identify some of the state's natural resources as well as environmental features that are state or federally protected, or of conservation concern.
http://www.dec.ny.gov/animals/38801.html

NYSDEC **New York Nature Explorer** offers an online tool for accessing biodiversity information about a specific neighborhood or area of interest. It is intended for landowners, land managers, citizens, municipal officials, planners, consultants, project developers, researchers, students and anyone else interested in the natural world.
https://www.dec.ny.gov/animals/57844.html

Scenic Hudson's **Hudson Valley Conservation Strategy** is a rigorous framework for landscape-scale conservation in the region that meets multiple ecological objectives. It is a tool that transforms land protection efforts by identifying the most efficient and synergistic network of properties for conserving long-term climate resilience, biodiversity and landscape connectivity across the Hudson Valley, including productive and scenic working farmland.
https://www.scenichudson.org/HVCS

New York State's 2016 **Open Space Conservation Plan** describes current open space conservation goals, actions, tools, resources and programs administered by state and federal agencies and conservation nonprofits.
http://www.dec.ny.gov/lands/98720.html

HISTORIC RESOURCES

State Historic Sites Map
https://data.ny.gov/Recreation/State-Historic-Sites-Map/axpc-mqms/data

National Register of Historic Places Interactive Map allows users to identify designated historic sites and districts by community. Note: data last updated in April 2014.
https://www.nps.gov/maps/full.html?mapId=7ad17cc9-b808-4ff8-a2f9-a99909164466

The **Hudson River Valley National Heritage Area**, designated by Congress in 1996, is one of 49 federally-recognized National Heritage Areas throughout the U.S. The website provides information on more than 100 homes, museums and other sites recognized for their historic or cultural significance.
http://www.hudsonrivervalley.com/sites

PREVIOUSLY DISTURBED SITES

The U.S. Environmental Protection Agency's **RE-Powering Mapper** is an online interactive web application that allows users to visualize EPA information about renewable energy potential on contaminated lands, landfills and mine sites.
https://www.epa.gov/re-powering/re-powering-mapper

INTERCONNECTION

Hosting Capacity Maps indicate the amount of Distributed Energy Resources that may be accommodated without adversely impacting power quality or reliability under current configurations and without requiring infrastructure upgrades.

Central Hudson
https://www.cenhud.com/dg/dg_hostingcapacity

Orange & Rockland
https://www.oru.com/en/business-partners/hosting-capacity

Con Edison
https://www.coned.com/en/business-partners/hosting-capacity

EXISTING AND PROPOSED RENEWABLE ENERGY FACILITY MAPS

Solar Electric Programs Reported by NYSERDA: Beginning 2000 provides information about solar electric (PV) projects in New York State by county, region or statewide. Available data include project counts, production, capacity and trends.
Community Solar (CDG) Solar Electric Projects (Completed and Pipeline): Beginning 2000 allows users to locate completed and in-progress Pipeline Community Solar (CDG) projects in the state.
https://data.ny.gov/Energy-Environment/Solar-Electric-Programs-Reported-by-NYSERDA-Beginn/3x8r-34rs

Mapping Clean Energy: New York features a series of interactive maps illustrating clean energy's economic impact in the state.
https://www.e2.org/mappingcleanenergyny/

GLOBAL INFORMATION SYSTEM (GIS) DATA

GIS is a computer system for capturing, storing, checking and displaying data related to positions on Earth's surface. By relating seemingly unrelated data, GIS can help individuals and organizations better understand spatial patterns and relationships.

New York State GIS Clearinghouse, operated by the state ITS GIS Program Office, disseminates information about New York's **Statewide GIS Coordination Program** and provides access to the **New York State GIS Data and Metadata Repository**.
http://gis.ny.gov/

New York OPD Geographic Information Gateway is a one stop, state-of-the-art website providing public access to data, real-time information, interactive tools and expert knowledge relevant to the Office of Planning and Development's activities throughout the state. Interactive maps enable users to easily download, visualize and explore geographic data.
http://opdgig.dos.ny.gov/#/home

Cornell University Geospatial Information Repository provides free and open access to geospatial data for New York State and worldwide. It focuses on data relevant to agriculture, ecology, natural resources and human-environment interactions.
https://cugir.library.cornell.edu/