

Academy Energy Group Develops Collaborative Solar PV Design, Procurement, Installation, and Commissioning Program

By: Andy Lynch & Alan Bowen, NABCEP®

NYC Local Law 92/94 & DoD Resiliency

NYC Local Law 92/94: Became effective November 15, 2019, New York City's Sustainable Roofing Zone law mandates that all new buildings, expansions, or structural roof alterations must provide a Sustainable Roofing Zone ("SRZ").

The SRZ must consist of either-or combination of:

- Roof-Top Green Roof Vegetation and Plants
- Roof-Top Solar Photovoltaic "PV" Power System

To support this initiative, Academy Energy Group (AEG) developed a Collaborative 50-Step Solar PV Design, Procurement, Installation Training, and Commissioning Program. AEG creates value for the Owners, Architects, Engineers, & Installation Contractors for Solar PV systems through coordinated collaboration. This effort "simplifies the complex". While the entire process includes more steps and details, below of a summary outline of the approach at a high level

- Project Viability Assessment
 - Solar PV Shade Study
 - Energy Modeling
- Structural Assessment
- Design Process Confirmation & Responsibility Assignment
- Contractual Responsibility & Scope of Work Assignment
- Design Team Kickoff & Design Concept Stage
- Design to 30%
- Long Lead-Time Material Procurement
- Design to 60% ConEd Interconnection Application
- Design to 100% NYC Department of Building Permit
- Procurement of Materials
- Pre-Installation Training
- Installation (by Installation Contractor)
- System Commissioning / Start-Up System

AEG provides Solar PV Design, Procurement, and System Commissioning. AEG coordinates the Solar PV design advancement with the Architect, Structural Engineers, and Electrical Engineers. AEG provides coordinated Procurement for the Project Team while supporting the Installation Contractor. AEG provides Installation Support to the Electrical and Roofing Installation Contractors. AEG provides the System Commissioning and Start-Up of the Solar PV system and monitoring system.







Project Collaboration – Selecting the Right Teammates

A rooftop Solar PV System requires significant coordination and collaboration required from Owner, Solar PV System Designer, Architect, Structural Engineer, Electrical Engineer, Electrical Contractor, and Roofing Contractor. According to the Design-Build Institute of America's (DBIA) Best Practice #4:

"The project team should focus on the design management and commissioning/turnover processes and ensure that there is alignment among the team as to how to execute these processes. Successful projects start with system commissioning being planned during the design phase."

The AEG approach is to design the Solar PV System and select the proper system components, along with Solar PV system monitoring during the design phase per DBIA Best Practice. AEG also performs the system commissioning/inverter start-up, and Solar PV monitoring system start-up. It is a seamless process from start to finish.

"NABCEP®"

academy **energy**

GROUP

Successful Solar PV projects also require a Solar PV Specialist for the PV System Design, product selection, product specifications, and system commissioning. Fortunately, the North American Board of Certified Energy Practitioners ("NABCEP®") provides quality credentialing and certification programs for profession practitioners in the renewable energy industry with their NABCEP® Solar PV Certifications.

AEG's Solar Project Manager, Alan Bowen is NABCEP® Certified and has completed over 60 projects over his 15-year career. AEG's EVP of Business and Project Development, Andy Lynch has participated in over 50 Solar PV projects. Ultimately, AEG reduces risk to the Owner, Engineers, and Installers through quality control and assurance with our "cradle to grave" approach of the "Design-Supply-Systems Commissioning" Teaming Program.

Using the guiding principles and best practices of both DBIA and NABCEP®, Academy Energy Group (AEG) has developed a 50-step collaborative Multi-Engineering Discipline and Multi-Trade Installation coordinated solar rooftop Project Development & Execution Plan. This plan is the road map to guide Owners and Project Teams to success. This starts with the project viability assessment, assignment of the appropriate Solar PV system design responsibility, utility interconnection agreement, permitting, construction, oversight, and system commissioning (inspection and approval from governing authorities).



The NYC Market Driver: OneNYC2050

OneNYC2050 is a bold and comprehensive plan without doubt. It may be the first of its kind in an American city. Undoubtedly other cities have long-term plans to address things like changes in population, infrastructure needs, and safety where New York's plan may offer suggestions. But OneNYC2050 is more than a forward-thinking plan.



The Climate Mobilization Act, a "package" of 2019 laws intended to meet the goals of the <u>OneNYC 2050</u> initiative. Local Law 92/94 was distinct in that it was the only law in the "package" with an effective date of 2019; others had delayed compliance deadlines, indicating the emphasis and urgency around sustainable roofing.

nycgovparks.org

Local Law 92/94 adds another layer of sustainability to the City's vision in requiring a SRZ in all new buildings, expansions, and structural roof alterations.



Green Roof

As we noted at the beginning of the article, an SRZ is an area on a roof dedicated to either Solar Power Generating Panels, a Green Roof, or a combination of the two. A green roof (a/k/a vegetative or eco–roof) is a layer of vegetation planted over a waterproofing system that is installed on top of a flat or slightly–sloped roof (for more information about the three main types of

green roofs, click <u>here</u>). Green roofs reduce energy costs by absorbing heat instead of attracting heat as do black tar roofs. They also provide natural insulation for buildings. A study by the National Research Council of Canada concluded that even a six-inch extensive green roof can reduce summer energy demands by as much as 75%. The reduction in air-conditioning run times will reduce associated air pollution and greenhouse gases.







Pros and Cons

Green roofs reduce the heat island effect that occurs where there are many tall buildings in a cluster that absorb and contain heat. The plants on a green roof remove air particulates, produce oxygen, and provide shade. The heat absorption characteristic of green roofs can double the expected roof life as traditional rooftops. Because green roofs absorb and filter water, there is a much lower risk

of flash flooding and sewer overflows (green roofs absorb up to 90% of precipitation that falls on them in the summer and up to 40% in the winter). Water runoff is a major cause of flooding and pollution.

However, green roofs present many challenges to building owners. There are considerations such as determining whether the current underlying roof structure can support vegetation without modification, leaks and other repairs that may need to be done to the roof, the weight of the vegetation on the roof under various weather conditions such as rain and snow, wind speeds atop the structure and blowing debris, drainage and run-off, routine maintenance, and installation, which may require a roofer and a landscaper.



Solar PV Systems

The other option for compliance with ONENYC 2050, which can be used separately, or in combination with the green roof is a Solar PV system. Solar panels generate power to reduce energy costs and, additionally, can qualify for federal tax credits and other local incentives. The panels also "pay for themselves" over time.

Selecting A Green Roof vs. Solar PV System

Five Important Factors for Owners, Engineers, and Contractors:

- Available sunlight due to shading from nearby obstructions such as trees and in NYC buildings.
- Structural load calculations to determine the buildings' ability to support weight.
- Available Roof Space / Mechanical Equipment Location
- Intent of Space Use by Owner
- Project Cost and Return-On-Investment (ROI)





Academy Energy Group Develops Collaborative Solar PV Design, Procurement, Installation, and Commissioning Program

The DoD Market Driver: Resiliency

Military Installations now have increased awareness and need to ensure operations throughout utility disruptions and need to provide "military installation resilience". This is further defined under <u>10</u> U.S.C. \$101(e)(8)

as the capability of a military installation to avoid, prepare for, minimize the effect of, adapt to, and recover from extreme weather events, or from anticipated or unanticipated changes in environmental conditions, that do, or have the potential to, adversely affect the military installation or essential transportation, logistical, or other necessary resources outside of the military installation that are necessary in order to maintain, improve, or rapidly reestablish installation mission assurance and mission-essential functions. (Emphasis added)

The "Climate Change Adaptation and Resilience" (DOD Directive 4715.21)), DOD has defined resilience as the:

"Ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions." This definition is associated explicitly with the impacts of climate change and applies to all aspects of DOD

This need for DoD Resiliency has increased the need for energy efficiency, renewables, energy storage and microgrids to provide needed power and water to sustain military installations in event of utility power, gas, and water service interruptions.

Academy Energy Group's is prepared to support and provide service for the needs for DoD Resiliency.





Academy Energy Group (AEG)



AEG: About Us

Academy Energy Group (AEG) is a Design-Build Assist Consultative Electrical Distributor, Preconstruction and Design Services Provider. AEG provides consultative services such as: Pre-Construction Services, In-house Lighting Design, In-house Solar PV Design, Design Development Support, Application Engineering Support, Energy Assessments, Product Selection, and Product Supply for: Lighting/Lighting Controls, Power Distribution, Metering & Automation, Controls, Microgrids, Solar PV, & HVAC Dehumidification.

AEG: Our Promise

Academy Energy Group is prepared to serve and support others to achieve the Goals of Local Law 92/94, New York State Energy Plan, and our Federal/DoD and Corporate Clients. Please contact us to discuss how we can Team with you.







AEG Contacts:

Andy Lynch <u>Andy.Lynch@AcademyEnergyGroup.com</u> EVP of Project & Business Development (312) 931-7443

Bobby Frank Bobby.Frank@AcademyEnergyGroup.com EVP of NY (917) 968-7931 Alan Bowen, NABCEP® <u>Alan.Bowen@AcademyEnergyGroup.com</u> Solar PV Project Manager (419) 460-6725

Laurie Pollay <u>Laurie.Pollay@AcademyEnergyGroup.com</u> Business Development – Upstate NY (518) 222-3697



AEG Project Locations:

Created with mapchart.net





New York State Certified Service-Disabled Veteran-Owned Business