

A photograph of construction workers in safety vests and hard hats working on a site. The image is split diagonally from the bottom-left to the top-right. The upper-left portion is tinted yellow, and the lower-right portion is tinted green. A large, semi-transparent 'S1' is overlaid on the left side of the image. The 'S' is yellow and the '1' is white.

S1

SOLARone

GREEN WORKFORCE PROGRAM

INTRODUCTION

Solar One is a 501(c)(3) not-for-profit organization whose mission is to design and deliver innovative education, training, and technical assistance that fosters sustainability and resiliency in diverse urban environments.

We empower learning that changes the way people think about energy, sustainability, and resilience by engaging and educating a diverse set of stakeholders and beneficiaries. Our programs help individuals and communities explore new ways of living and working that are more adaptive to a changing world.



Originally founded in 2004 to manage Stuyvesant Cove Park, a two-acre native plant park and a small environmental education center, Solar One has grown into an award-winning organization with a thriving array of programs including: **Green Design Lab**, K-12, environmental STEM education and career readiness for high school students; **Green Workforce Training**, building skills and equitable career pathways for un- and underemployed adults; and **Here Comes Solar**, technical assistance promoting sustainability and resiliency; and solar job creation in diverse, mostly low-and moderate-income (LMI) urban environments throughout New York City and the larger metropolitan area.



PROGRAM DETAILS

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For over ten years, Solar One's Green Workforce program has successfully provided sustainability-focused education and training for un- and underemployed adults with the hard-skills needed to enter or advance in high-growth clean energy careers, including fields such as: energy efficiency, renewable energy, green construction, and green building operations and maintenance.

Solar One provides programming headquartered at our training lab in Long Island City where trainees have the opportunity to complete hands-on projects in carpentry, electrical and plumbing; work with mock demos for multifamily steam and hydronic heating systems, and learn wiring and installation best practices through small scale solar PV projects.

To date, the Green Workforce team has trained over 4,000 STUDENTS. Collaborating with our long-term workforce partners, we have been able to achieve an average yearly job placement rate EXCEEDING 70%.

Post-training employment examples include: carpentry, construction, laborer, building maintainer, porter, HVAC technician, electrician's helper/apprentice, plumber's helper/apprentice, steam heat and boiler repair technician, solar PV installer, solar PV designer, and more.



PROGRAM DETAILS

THE GREEN WORKFORCE HAS TWO PRIMARY PROGRAM DELIVERY MODELS:



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ENTRY-LEVEL

The majority of the Green Workforce training focuses on providing un- and underemployed individuals with basic and intermediate **transferable skills** in a course or set of courses average 4-6 weeks in length. The goal is to offer a wide range of content in a condensed format in order to open multiple different pathways to employment following completion. Most participants have limited or zero experience in any of the fields we specialize in, and some may not have been in an educational setting in many years. Because of this, our instructors dedicate parts of the class introductions to subjects such as math, earth science, and basic physics review before moving into more specialized material and hands-on training; this ensures that students not only understand how to properly build or fix something, but *why* they're completing a certain task and how it has a macro effect on overall energy efficiency and sustainability.

PROGRAM DETAILS

THE GREEN WORKFORCE HAS TWO PRIMARY PROGRAM DELIVERY MODELS:



INCUMBENT

The Green Workforce team also has ample experience working with the incumbent sector, with past efforts focused on upskilling and providing certifications to individuals already working in the field with the goal being to connect a more energy efficient approach to their day-to-day roles.

Our team and instructors have crafted customized training programs to provide hands-on training for porters, building maintainers, property managers and resident operators that have shown significant carbon emissions reductions in their building portfolios; this ultimately leads to significant savings for the property management firms while also trending toward a more sustainable management practice.

We also offer building walkthrough services, where one of the Green Workforce instructors will do a roof-to-basement energy efficiency assessment alongside various staff members of the building in order to offer suggestions and guidance on areas for improvement. This type of service can prove especially useful for properties aiming to improve their energy efficiency scorecards to comply with NYC's Local Law 97.

PROGRAM DETAILS

PARTNERSHIP MODEL

The Green Workforce team builds strategic partnerships with other leading New York and New Jersey organizations who deliver similar services and workforce development programs to support job placement for priority populations in the clean energy sector.

This partnership model allows each group to focus on their core competencies: Solar One acts as the hard skills and sector-focused trainer, while our partners recruit participants deliver essential services in the job readiness field, such as resume writing, interview preparation and practice, social and mental health aid, and connections to employment opportunities following training completion.

At this time, The Green Workforce Program does not offer open enrollment opportunities to individuals from outside one of these strategic partnerships.



PARTNERSHIPS OVER THE YEARS

Andromeda
Bed Stuy Restoration
Building Works
First Service Energy
The Fortune Society
Green City Force
The HOPE Program
Housing Works
Ironbound Community Corporation
LaGuardia Community College

New Jersey Reentry Corporation
Nontraditional Employment for Women
New York Power Authority
New York City Parks Department
RISEBORO Community Partnership
St. Nicks Alliance
Strive International
The Door
Volunteer of America
WE ACT for Environmental Justice

PROGRAM DETAILS

Our student demographics are broad, but have a specific focus on disadvantaged communities who have experienced barriers to long-term employment and career building opportunities. This includes people with previous criminal justice involvement; those experiencing homelessness; people struggling with substance abuse issues; and young adults in search of alternative pathways.

PROGRAM HIGHLIGHTS

HARD-SKILLS TRAINING ON RIKERS ISLAND

In partnership with the Fortune Society, Solar One has delivered hands-on, hard-skills programs in Green Construction, Green Building Operations and Maintenance, and Solar PV to people who are incarcerated on Rikers Island. Our team revised its curriculum into a slightly more condensed format to accommodate the training environment, but still successfully delivered hands-on education to prepare students for job opportunities when reentering the community.

MULTIPLY SOLAR

The Green Workforce team collaborated with Green City Force to recruit, train and place NYCHA residents in solar installation jobs for the nearly 2 MW project at the Queensbridge Houses in Long Island City, Queens. Some of the participants lived in the same buildings that the solar was installed on top of, making this a truly full-circle training and employment program. This project encompasses 27 different houses in the NYCHA complex and provides enough energy to power 400 homes.

NYSERDA PROGRAMS

Solar One has years of experience developing partnerships with new and existing partners to apply for funding to support future energy-related workforce training programs. Since 2017, the team has successfully applied for and delivered over \$2.5 million worth of training services to underserved communities across the City to prepare them for job opportunities in this growing sector.

COURSE DESCRIPTIONS

COURSE DESCRIPTIONS

Solar One offers a variety of training options to suit our partner's particular needs and those of any connected employer post-training. We deliver a combination of proprietary curriculum and industry recognized certifications to provide students with a wide range of experience in a relatively brief amount of time.

The instructional team strives to balance classroom-based theory with hands-on training projects throughout the duration of the training program in an effort to keep students engaged in an active learning environment.

Each program can be customized to a partner's liking based on the available time and budget, along with related job opportunities post-training. The majority of organizations that Solar One works with participate in a four-week program, although we are able to deliver something as condensed as one-week and as expansive as six-weeks.

The Green Workforce Program consists of three primary courses: **Green Construction**, **Green Building Operations & Maintenance**, and **Solar PV Installation**. The lengths listed on the next page are the suggested time to cover 100% of the available content without modification:



COURSE DESCRIPTIONS

Green Construction

Green Construction is a one to two-week course covering three Solar One training modules and one Solar One certificate of completion.



MODULE 1

Carpentry: focuses on understanding the basics of carpentry, greener construction practices, and framing methods and material usage. Students will be familiarized with the essential math skills needed for working in the field and taught how to use basic hand and power tools, including: hammers, nails, screws, drills, saws, and more. Groups will work together to build structures that increase in difficulty throughout the module, beginning with a simple box and increasing in difficulty to a fully-framed walled structure with a subfloor.

MODULE 2

Electrical: teaches the basics of electrical safety, electrical tools, electrical systems, and energy efficiency. Students will receive hands-on experience with basic and intermediate wiring techniques and tool usage, including: wire pulling and cutting, splicing, stripping, circuitry and switching.

MODULE 3

Water System Efficiency and Basic Plumbing: is a high level overview of different building water systems, applications, and materials. Students will complete simple projects to understand the usage of different fittings and valves, low-flow fixtures, and basic sink and toilet repair and maintenance.

SOLAR ONE CERTIFICATE OF COMPLETION

Students will be quizzed throughout and then given a final exam on the three modules at the end of the end of the course. Those who score 70% or higher on the final exam will receive a **Solar One Certificate of Completion in Green Construction.**

COURSE DESCRIPTIONS

Green Building Operations + Maintenance (GBOM)

GBOM is a two-week course covering three Solar One training modules, three industry certifications, and one Solar One certificate of completion.

MODULE 1

Building Science: the study of buildings and how heat, air, and moisture are addressed with different building materials.

MODULE 2

Heating Systems: covers the operations and maintenance of steam, hydronic, and HVAC systems, as well as opportunities for improvements in energy efficiency and sustainability.

MODULE 3

Multi-family Buildings: explanations regarding different building systems, building codes, building zones and areas to investigate their effect on occupant health, safety, and comfort.

SOLAR ONE CERTIFICATE OF COMPLETION

Students will be quizzed throughout and then given a final exam on the three modules at the end of the end of the course. Those who score 70% or higher on the final exam will receive a **Solar One Certificate of Completion in Green Building Operations + Maintenance.**



THREE INDUSTRY CERTIFICATIONS

- OSHA 30
- NYC Department of Buildings Site Safety Training
- Urban Green's GPRO: Operations + Maintenance

COURSE DESCRIPTIONS

Solar PV Installation

Solar PV Installation is a two-week course covering three Solar One training modules and Solar One certificate of completion, with an option to include an industry certification. This course is combined with elements of the Carpentry and Electrical courses included in the Green Construction course.



MODULES 1+2

Carpentry and Electrical: students will participate in abbreviated versions of the Carpentry and Electrical modules to gain hands-on experience with tools and hardware as it relates to the job of a solar PV installer.

MODULE 2

Solar Photovoltaic (PV): is a deep dive into solar technology and its systems, components beyond the panel, and installation and systems integration. Students will participate in hands-on activities to install both roof-mounted and ballast-mounted solar PV systems, building upon skills the learned in the Carpentry and Electrical modules.

SOLAR ONE CERTIFICATE OF COMPLETION

Students will be quizzed throughout and then given a final exam on the three modules at the end of the end of the course. Those who score 70% or higher on the final exam will receive **Solar One Certificates of Completion in Green Construction and Solar PV Installation.**

CERTIFICATIONS

NABCEP PV Associate (optional)

CERTIFICATIONS

CERTIFICATIONS

Nested within each course are varying combinations of the following certifications. These certifications can be viewed “a la carte” in the sense that partner organizations may choose to add or remove certain choices depending on its specific training situation and desired outcomes (i.e., time constraints or requirements, funding availability, previous training already provided, employer requirements, and more). Solar One suggests certain course structures that balance length with the maximum amount of content and certifications applicable for each situation.

CERTIFICATIONS

Solar One Offerings

OSHA 30

Length = 30 hours, five class days

Exam = N/A

Details:

- OSHA 30 is mandated by many hands-on occupations in the NYC area, including construction and solar PV jobs.
- Students must attend all 30 hours to be awarded the OSHA 30 certification. Any missing time will disqualify them from receiving their certification. Absences may be made up with another program's OSHA 30 class at a future date, pending schedule availability.

Pricing = \$3,750 per class of up to 25 students.

NYC DEPARTMENT OF BUILDINGS SITE SAFETY TRAINING (SST)

Length = 10 hours, two class days

Exam = N/A

Details:

- NYC passed [Local Law 196](#) in 2018, which now mandates that any construction worker receive at least 40 hours of approved training to be eligible for work on a jobsite. The SST course is combined with the OSHA 30 course to reach 40 hours of approved training.
- Students must attend all 10 hours to be awarded the SST certification. Any missing time will disqualify them from receiving their certification. Absences may be made up with another program's SST class at a future date, pending schedule availability.

Pricing = \$2,000 per class of up to 25 students.



CERTIFICATIONS

Solar One Offerings

URBAN GREEN GREEN PROFESSIONAL (GPRO) CERTIFICATIONS

OPERATIONS + MAINTENANCE

Description: Two-day class covering strategies and actionable measurements for energy efficiency in buildings and their systems. Targeted for students interested to become property managers and building staff in both residential and high-rise commercial buildings, including: building superintendents, operators, facility and property managers, operating engineers and stationary engineers. Students must attend all days and pass exams to be awarded the GPRO National Certification

Length = 12 hours, two class days.

Exam = Self-paced online within three days of class completion

Pricing = \$160 per student for materials and exam fees, plus a \$25 processing fee. If a student fails the exam and would like to retake, each exam costs an additional \$25.

ELECTRICAL SYSTEMS

Description: Two-day class covering the latest innovations in the electrical industry and how they lead to increased efficiency and cost savings. New technologies and practices are compared to conventional approaches, allowing participants to understand their direct role in improving building performance. Ideal for a range of professionals in the electrical industry including subcontractors, installers and technicians.

Length = 12 hours, two class days

Exam = Self-paced online with three days of class completion

Pricing = \$160 per student for materials and exam fees, plus a \$25 processing fee. If a student fails the exam and would like to retake, each exam costs an additional \$25.

MECHANICAL

Description: Two-day classing explaining how to make HVAC equipment as efficient as possible, while providing the same level of comfort to occupants. Ideal for a range of professionals in the heating, ventilation, air conditioning and refrigeration industries, including subcontractors, installers, technicians and estimators.

Length = 14 hours, two class days

Exam = Self-paced online with three days of class completion

Pricing = \$160 per student for materials and exam fees, plus a \$25 processing fee. If a student fails the exam and would like to retake, each exam costs an additional \$25.



CERTIFICATIONS

Solar One Offerings

NABCEP SOLAR PV ASSOCIATE

Description: The NABCEP PV Associate Program recognizes individuals who have demonstrated knowledge of the fundamental principles of the application, design, installation, and operation of solar PV systems.

Length = 30 hours, five class days

Exam: Self-paced online within six months of class completion.

Also available to offer in-person to the entire class following course completion.

Pricing: \$155 per student

BUILDING PERFORMANCE INSTITUTE (BPI) MULTIFAMILY BUILDING OPERATOR (MFBO)

Description: The BPI Multifamily Building Operator (MFBO) certification helps building operators, property managers, and other building professionals demonstrate their understanding of multifamily building science operations and maintenance. These professionals examine the relationship between the building's various systems and gauge their effect on occupant health, safety, and comfort as well as on the building's energy efficiency and durability. The MFBO uses building science principles to apply operations and maintenance strategies to improve those factors and save money for the building owners and occupants.

Length = 30 hours, five class days

Exam = Two separate exams: 1. Online exam administered to the entire class following course completion. 2. For those who pass the online exam, field practical exams are offered individually to students.

Pricing = \$175 per individual exam, or \$350 per student if taking both exams. Due to the time and space commitment for Solar One staff, each day of field practical exams will cost an additional \$500 for up to three exams per day.



TEAM BIOS

TEAM BIOS



GEOVANI CALDERO, **INSTRUCTOR**

Geovani Caldero (he/him/his) is an environmental educator for the Green Design Lab K-12 Program, as well as an instructor

on the Green Workforce Team. born and raised in Puerto Rico. With more than three years of experience as an educator, he has designed, developed, and implemented a variety of programs targeting a diverse audience with multiple backgrounds, including K-12 STEM education and Citizen Science programs. As a workforce instructor, he provides life changing skills and opportunities to under- or unemployed individuals from underrepresented communities. Along with four other environmental educators, Geovani is the co-founder of CLEA (Latin American Coalition of Environmental Educators). The work of CLEA aims to break down the many barriers that limit access to high-quality environmental education resources and opportunities for Spanish-speaking and Latinx populations in the United States and across Latin America. Geovani graduated with a Bachelor's degree in Secondary Education with an emphasis in Biology from the University of Puerto Rico in Rio Piedras, and holds a Master's degree in Environmental Conservation Education from New York University.



JAMES KINYANJUI, **PROGRAM** **MANAGER &** **INSTRUCTOR**

James Kinyanjui is the program manager and an

instructor on the Green Workforce Team. James was originally a student at Solar One 2010, and was brought on as an intern after graduating the training program. Through his work with Solar One, James had the opportunity to conduct site visits and evaluations to boiler rooms, rooftops, solar installations, and HVAC installations, giving him the hands-on experience to tie into his instruction in the classroom. His goal is to make the energy efficiency field more accessible to people from all backgrounds, and the ability to share his love and appreciation of math and technical subjects is a major focal point and passion in his work. James is grateful that he is able to give others the education and opportunities that he had as a student in the same program.



MAX LEVITZKE, **DIRECTOR**

Max Levitzke (he/him/his) joined Solar One in 2017 and leads the Green Workforce

Program. He has had a passion for renewable energy since he was teenager and has done various work and research related to climate change, electric vehicles and shifting society from fossil fuels toward renewables. Max studied Environmental Science and Business at the University of Missouri and graduated in 2013, followed by a move from the Midwest to New York City shortly after. Before joining the Solar One team, Max worked in multiple roles that included product/program management and operations at a renewable energy education start-up. He's found great fulfillment at the intersectionality of clean energy and workforce development, turning his excitement for renewables into a career that continues fighting the climate crisis through education, as well as providing those at need with sustainable job opportunities.

TEAM BIOS



SARAH PIDGEON,
CO-DIRECTOR OF PROGRAMS

Sarah Pidgeon joined Solar One in 2009 as part of the K-12 Education Program. Sarah is passionate about inspiring people to bring sustainability into their schools and communities. Prior to joining Solar One, Sarah worked as an educator at the Center for the Urban Environment

in Brooklyn, where she taught classes in Urban Design and Ecology. Sarah holds an MBA in Management for Mission Driven Organizations from Marlboro College in Vermont.



GARY SMITH, INSTRUCTOR

Gary Smith joined Solar One in 2011 as the coordinator of Solar One's Whole Buildings Education program where he helped buildings achieve energy savings and reduce their environmental impact through education, creating awareness, and encouraging behavior change. Gary transitioned to Solar

One's Green Workforce Team as an instructor in 2014. He is certified in BPI Building Analyst, BPI Multifamily Building Operator, and GPRO Operations and Maintenance, and has also completed Envirolution's Win-Win Campaign for energy auditors. Prior to his work with Solar One, Gary served as an after-school educator for Boys and Girls Harbor and taught GED math.



JOSH VEDDER, INSTRUCTOR

Joshua Vedder joined Solar One in 2012 as an instructor for the Green Workforce Team. Josh teaches green building science, GPRO, and BPI Multifamily Building Operator as well as carpentry, plumbing and electrical courses. Formerly a trade school instructor, Josh has over ten years of experience in the

building sector. During his first few years in the field, Josh was also completing his degree from Dowling College as a pilot and had trained for two years as an electrical engineer. He is certified in BPI Building Analyst, BPI Multifamily Building Operator, GPRO Operations and Maintenance, and GPRO Electrical. Josh has spent many years volunteering and working with underserved youth; he originally discovered Solar One through Build It Green, where he still volunteers to this day.



VERA FIGUEREDO, NJ STEM
EDUCATION AND INSTRUCTOR

Vera comes to Solar One with over ten years of experience working in environmental and energy education in school-based programs. Vera holds a Masters in Environmental Sciences from the Institute for the Environment and Sustainability at Miami University,

OH. Vera leads Solar One's Newark career and technical education programs for high school age youth as well as our solar installation training program at New Jersey Reentry Corporation.



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To learn more, please visit our website at www.solar1.org
or send an email to workforce@solar1.org.