Final Technical Report (FTR)

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b. *Award Number*	DE-EE0008577	
c. *Project Title*	National Solar Jobs Accelerator	
d. *Recipient Organization*	Interstate Renewable Energy Council	
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Signature of Certifying Official

Aug 25, 2023
Date

By signing this report, I certify to the best of my knowledge and belief that the report is true, complete, and accurate. I am aware that any false, fictitious, or fraudulent information, misrepresentations, half-truths, or the omission of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (U.S. Code Title 18, Section 1001, Section 287 and Title 31, Sections 3729-3730). I further understand and agree that the information contained in this report are material to Federal agency's funding decisions and I have any ongoing responsibility to promptly update the report within the time frames stated in the terms and conditions of the above referenced Award, to ensure that my responses remain accurate and complete.

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Executive Summary:

The aptitudes and experiences gained through military service—such as dynamic leadership, teamwork and critical thinking skills, technical specialization, and a mission-completion work ethic—make veterans exceptional candidates for a wide range of solar energy careers. The solar industry offers a highly collaborative and purpose-driven work environment that resonates with service members and veterans looking to rise to their next challenge, and solar employers are eager to tap into this valuable talent pool.

From October 2019 - February 2023, The National Solar Jobs Accelerator (publicly the Solar Ready Vets Network™ (SRV Network; SRVN)) enhanced and streamlined options for military service members and veterans to pursue solar training, certification, and employment, while advancing solar employers' efforts and capacity to invest in military talent as part of a long-term workforce development strategy. The SRVN was led by the Interstate Renewable Energy Council (IREC) in partnership with the Solar Energy Industries Association (SEIA), the US Chamber of Commerce Foundation's Hiring Our Heroes program (HOH) and the North American Board of Certified Energy Practitioners (NABCEP).

Through several direct-impact and indirect, high-impact capacity building initiatives aligned with six key objectives, the SRV Network strengthened solar career pathways, and promoted increased representation of military talent across all levels and sectors of the solar workforce. A work-based learning Corporate Fellowship model connected transitioning service members with on-the-job experience in leadership roles with solar employers nationwide. The project advanced broader veteran recruitment and talent development by expanding GI Bill eligibility and streamlining veterans' pathways for solar training and credentialing, supported direct connections to jobs with top solar employers, and led coordination among key education and industry partners to advance registered apprenticeships aligned with solar career pathways.

To ensure that the project best served the needs of all stakeholders, an Advisory Committee of military-connected solar professionals, solar employers, and training providers met biannually to guide project activities and sustainability plans. The project team engaged the broader "SRV Network" (comprised of over 2,000 veterans, employers and training organizations) through regular newsletters and targeted outreach to share resources, hiring fairs, webinars, and other opportunities for engagement.

The work done under this award builds on the previous iterations of the Department of Energy's Solar Ready Vets® program. As the solar industry continues to grow rapidly over the next decade, the military community will continue to be a highly valuable source of talent. The relationships established and work accomplished through this project will have an enduring positive impact well beyond the funding period.

Table of Contents:

Project Objectives:

Activities carried out through the Solar Ready Vets Network supported six key objectives. While direct impact activities served to facilitate connections between service members and veterans with training or employment opportunities, several indirect, high-impact capacity building efforts more broadly enhanced and streamlined veterans' options for pursuing solar training and employment, and supporting solar industry employers' efforts to recruit and hire from the veteran talent pool. Project objectives and initial proposed milestones by budget period are described below.

Budget Period 1: Oct 1 2019 - September 30, 2020
Budget Period 2: Oct 1 2020 - October 31, 2021
Budget Period 3: Nov 1 2021 - January 31, 2023

Obj	Activity / Goals	BP1	BP2	BP3	Total
1	Fellowships for transitioning service members	30	85	125	240
2	Training & employment matchmaking for veterans	50	120	150	320
3	GI Bill for NABCEP certifications	2	2	2	6
4	Community college partnerships	2	4	4	10
4	Community college WEAMS registrations	10	20	20	50
5	Veteran fast-tracks for NABCEP certifications	2	2	2	6
6	New apprenticeship registered with DOL	-	1	-	1

1: FELLOWSHIPS FOR TRANSITIONING SERVICE MEMBERS

Develop and provide at least 240 fellowship opportunities for transitioning service members across solar job categories including management and professional roles spanning technical sales; system design; installation and project development; operations, commissioning, and maintenance; and PV inspection.

Milestones by Budget Period (BP):

Number of fellowship placements made
BP1: 30 fellowships BP2: 85 (total 115) BP3: 125 (total 240)

2: FACILITATE TRAINING AND EMPLOYMENT CONNECTIONS

Develop and implement a matchmaking system to connect at least 320 veterans across a menu of options for education, professional development, and employment, including training programs, professional certifications, work-based learning opportunities, and jobs. The matchmaking system will primarily rely on a website to connect veterans with training, certification, job, and career assistance resources. Additionally, veterans, employers, training programs, and workforce intermediaries will be engaged through ongoing outreach activities; and the team will utilize surveys, website analytics, and other tools to measure participation and evaluate effectiveness.

Milestones by Budget Period:

Number of veteran connections to training / employment opportunities

BP1: 50 BP2: 120 BP3: 150 (total 320)

3: GI BILL FOR NABCEP CERTIFICATIONS

Register six (6) North American Board of Certified Energy Practitioners (NABCEP) photovoltaic-related certifications with the U.S. Department of Veterans Affairs, by obtaining approval from the appropriate “State Approving Agency” (the New York State Department of Veterans Affairs), so that the costs of the certification exams are eligible for reimbursement through GI Bill benefits nationally.

Milestones by Budget Period:

NABCEP Certifications Approved by VA
BP1: 2 BP2: 2 BP3: 2 (total 6)

4: COMMUNITY COLLEGE PARTNERSHIPS & WEAMS REGISTRATION

Catalyze at least ten (10) industry-community college adoptions and facilitate Web-Enabled Approval Management System (WEAMS) registration by at least fifty (50) NABCEP-registered community colleges, making additional locations eligible for accepting GI Bill education benefits.

Milestones by Budget Period:

Number of partnerships initiated:
BP1: 2 BP2: 4 BP3: 4 (total 10)

Solar training programs registered with WEAMS to accept GI Bill benefits
BP1: 10 BP2: 20 BP3: 20 (total 50)

5: VETERAN “FAST TRACKS” TO NABCEP CERTIFICATION

Develop fast-track pathways that will allow transitioning service members and veterans to abbreviate eligibility requirements for six (6) NABCEP PV-related certifications based on their previous experience and qualifications.

Milestones by Budget Period:

Number of fast tracks developed
BP1: 2 BP2: 2 BP3: 2 (total 6)

6: NEW APPRENTICESHIP FRAMEWORK REGISTERED WITH DOL

Work with solar industry, education providers, workforce intermediaries, the public workforce system, and the Department of Labor Apprenticeship system to develop and register at least one (1) new apprenticeship program with the U.S. Department of Labor (DOL) related to NABCEP’s credentials. Registered apprenticeship programs help formalize and standardize industry work-based learning opportunities and enable important incentives for veterans and employers. The development and registration of

additional Registered Apprenticeship Programs (RAPs) or Industry-Recognized Apprenticeship Programs (IRAPs) will be explored.

Milestones by Budget Period:

Number of apprenticeship frameworks developed, registered with USDOL:
BP1: - BP2: 1 BP3: - (total 1)

Project Results and Discussion:

1: FELLOWSHIPS FOR TRANSITIONING SERVICE MEMBERS

The Solar Ready Vets Fellowship was implemented through the Hiring Our Heroes Corporate Fellowship Program. The fellowship connect mid- to senior-level transitioning service members with 12 weeks of on-the-job work experience with a potential employer, supporting a smooth transition from active duty to meaningful civilian careers in high-demand sectors. Through an interview process, candidates are matched with participating companies based on their knowledge, skills and interests, for roles where the company had an open requisition.

The Fellowship is a registered US Department of Defense SkillBridge program, which allows service members to pursue career training within 180 days of separation. As fellows are still on active duty, and receive their military salary and benefits throughout their fellowship, there is no cost to employers to participate. Three cohorts are offered each year, with an “off-cycle” option for service members whose transition schedule does not fit the standard cohort timeline. Fellows received high-touch professional development support from Hiring Our Heroes throughout their fellowship, and solar fellows were provided with a self-paced “Solar 101” orientation curriculum covering market / technology /policy dimensions of the industry.

SRV partners recruited and held individual consultation calls with well over 100 solar industry employers that had expressed strong interest in hosting service members for on-the-job experience in management and leadership-level roles. Over the course of the project, a total of 87 fellows were placed with solar employers ranging from small start-ups to major national companies in roles spanning operations and logistics, asset management, project management, business development, policy/government relations, communications, talent acquisition, and more. Most received offers of employment in these roles at the end of their fellowship.

At the beginning of each cohort, the SRV team virtually gathered all fellows placed at solar companies for a welcome session, then again at the mid-point to ensure that fellows were having positive and productive experiences with their solar host companies, and to allow them to network with one another, learn from others’ experiences, and raise any questions or challenges for the project team to address.

During the first year of the project, the coronavirus pandemic impacted placement numbers: solar hiring activity was greatly restricted, and Hiring Our Heroes (HOH) found that fellowship applications were down program-wide during this time, as many service members were choosing not to transition during a period of heightened economic uncertainty. As normal business operations resumed, the project team encountered two key challenges in placing fellowship candidates with solar employers. First, solar employers participating in the fellowship are in competition for talent with major, well-known employers in other industries that often offer fellowship candidates more favorable compensation/ benefits, have better name recognition, and perception of greater career advancement opportunities, job stability, location flexibility, and other characteristics job seekers are looking for. Second, many solar employers were reluctant to bring on mid-senior level talent that lack industry-specific experience, even with substantial transferable skills and experience in the military. Solar employers' follow-through with the entire fellowship placement process was low relative to the number of companies (140) that had expressed interest and took initial steps to participate. While companies were generally interested in the program, hiring demand for solar talent (especially in spring-fall) is largely concentrated in technical and skilled trade roles, so companies didn't necessarily have the capacity, or the leadership buy-in to dedicate the time and effort to the fellowship program.

As these challenges became apparent during the first two years, the team strategized and implemented new practices to garner interest among service members and engage employers throughout the entire process. Starting in 2021, the team began producing a Solar Host Company Guidebook for each cohort, which summarized participating employers' current positions, locations, benefits, etc. to help increase visibility and generate interest among fellowship candidates for solar opportunities. As part of the broader program communications strategy, the project team published profiles of successful solar fellows and shared these widely with employers to showcase the high level of talent that solar companies were recruiting through the program. The team held webinars with employers to explain the fellowship program process and highlight success stories, and solar employers were prominently featured alongside other companies in HOH's Employer Preview events for fellowship candidates. (*Please see Appendix B for links to these resources*).

For reasons described above, the final placement numbers were significantly lower than the original program metrics. However, nearly all of the fellows placed with solar companies reported a positive experience, and most received employment offers following their fellowship.

Project Goal: 240 transitioning service members placed in fellowships with solar employers

Final Outcome: 87 transitioning service members were placed in fellowships with solar employers. The number of fellowship offers made by solar employers was much higher: at least 155 fellowship offers were made since tracking of this metric began in 2021.

The following chart provides cohort-level metrics. *Please see Appendix A for a full summary of fellowship placements including employers, roles, and hiring outcomes.*

Cohort (timeframe)	**Solar Fellowship Placement Goals**	**Fellowship offers made by solar employers**	**Actual Solar Fellowship Placements**
2020-02	10	unknown	2
2020-03	20	unknown	7
2021-01	25	11	8
2021-02	30	24	8
2021-03	30	29	8
2022-01	40	15	12
2022-02	40	30	11
2022-03	45	15	12
2023-01	n/a	16	10
2023-02	n/a	15	9
ALL	240	155	87

2: FACILITATE TRAINING AND EMPLOYMENT CONNECTIONS

Over the project period, the broader “SRV Network” grew to encompass over 2,000 veterans, solar employers and training organizations and other stakeholders. A regular newsletter, targeted email communications, a central program website and social media were the primary channels to share outreach and education materials, resources, and opportunities for engagement supporting veteran connections to solar training and employment opportunities. Career development tools and resources for veterans, such as virtual hiring fairs, and “service to solar” mentorship events supported awareness of diverse solar career pathways and connections with employers. To engage solar industry employers, SEIA led efforts to develop and share best practices and resources related to recruiting, hiring, developing and retaining veteran talent at all levels of the workforce, and regularly met with employers on an individual basis to support their efforts and strategies, and make direct referrals to appropriate resources and partners.

For entry-level technical roles, the project team made direct introductions between employers and two training organizations preparing veterans for craft and skilled trades careers. Both programs support trainees with career advising and job placement assistance, and referrals to each of these partners had high potential to yield sustained hiring relationships beyond the award period.

1. Home Builders Institute (HBI) Military Program is a 12-week SkillBridge and pre-apprenticeship program with operations at 10 military bases. HBI's training focuses on basic carpentry and electrical skills.
    - SRV connected 37 solar companies to HBI. In that time, 25 veteran graduates of their program have been hired into solar jobs. The majority of placements were with a national residential installation company that has proactively sustained their relationship with HBI and connected with graduates from each training cohort.
2. Airstreams Renewables offers a 6-week hands-on training program primarily for service members and veterans interested in technical/ trades careers in renewable energy and wireless communication industries. The program emphasizes electrical skills and troubleshooting as well as workplace safety and fall protection, which are all highly valuable to solar employers.
    - SRV connected 63 solar companies to Airstreams. During this time, 76 veteran graduates have been hired into solar jobs at companies connected by SRV. Compared to HBI, Airstreams more proactively facilitates employer connections with students in each training cohort, as reflected by the greater hiring yield.

The project team hosted four virtual solar hiring fairs to create opportunities for veterans, service members and military spouses to connect with solar industry employers and explore a wide range of open positions across the country. These events were hosted by Hiring Our Heroes, and candidates were pre-screened by the HOH Career Connectors team. Ahead of each of these hiring fairs, the project team hosted a virtual workshop: *Transferring your Skills into a Career in the Solar Industry,* to prepare veteran jobseekers for the career fair by sharing information on typical solar roles and career paths, and featuring participating solar employers. These events were capped at around 25 employers, focused on major employers with national or large regional scope.

- November 2020: 50 veteran job seekers and 19 employers participated. 178 connections were recorded, with next steps including 21 interviews, 43 further screenings, 65 in the pipeline for future opportunities.

- April 2021: 411 job seekers attended (579 registered) and 26 employers attended. This event was focused on technical / skilled trades roles and was the most well attended virtual hiring event that HOH had hosted to date (of any industry) – demonstrating significant interest in the veteran population for jobs in the solar industry. Promotional support by the Department of Veterans Affairs yielded higher than average registration.

- September 2021: 64 veteran job seekers (269 registered) and 28 employers participated. 79% of job seekers moved on to "next steps" in the hiring process
    - After the career fair, one job seeker followed up with an email sharing their success: *"Thank you. I did accept a position with StraightUp Solar as a solar installer. I have been working for them for about nine weeks now"*

- April 7, 2022: 117 veterans (325 registered) and 22 employers participated. An 80% conversion rate to “next steps” in the hiring process was on par with our running average from past events.

Feedback collected from three major national employers following these events:

- “We have made offers to at least 3 candidates thus far and many more are moving through the screening process. It was a GREAT event!”
- “There have been 2 folks we have kept engaged on a few of our openings. We are awaiting feedback from the hiring managers, but it was great to be able to see a connection with participants and our open roles.”
- “We’ve been able to connect candidates who followed up with us directly and applied to a specific opening with the applicable recruiter… We are not far from ground zero in regard to our efforts to establish our veteran recruiting SOP.”

During the project period, the SRV Network held two “Solar Ready Vets Careers Connect” networking and mentorship events which facilitated small group discussions in virtual breakout rooms, where veterans serving in various leadership roles across the industry shared their “service to solar” stories and offered career advice for veterans and service members who were looking to start a career in solar or advance within the solar industry.

- November 2020: 80 veteran job seekers and 13 mentors participated. This event featured a keynote discussion between SEIA CEO Abby Hopper, and Army veteran and industry leader Kevin Johnson, about the value of military talent in the solar workforce.

- In August 2021: 20 veterans and 6 mentors participated. This event was smaller in scope, focused more on advanced / professional roles, and hosted in partnership with the Atlantic Council’s Veterans Advanced Energy Project conference.

Through October 2022, 109 veterans had earned certification through the Veterans’ Pathways (see objective 5). Redevelopment of NABCEP’s Certification Management Platform was intended to track veterans applying for certification (through all available pathways) throughout the project period, but faced significant delays. As of October 2022, at least 337 veteran candidates had applied for PV certifications and at least 118 had completed the coursework to qualify for the exams.

Project Goal: Facilitate connections of at least 320 veterans to solar industry training, work-based learning, professional development, and employment opportunities

Final Outcome: The program facilitated over 900 connections between veterans and training, professional development, and employment opportunities.

3: GI BILL FOR NABCEP CERTIFICATIONS

In 2020, the project team secured approval from the US Department of Veterans Affairs for NABCEP credentials and board certification costs to be eligible for reimbursement under the GI Bill. These include the PV Associate credential, and Board certifications related to solar including: PV Installation Professional, PV Technical Sales Professional, PV System Inspector, PV Design Specialist, PV Installer Specialist, and PV Commissioning & Maintenance Specialist.

Project Goal: 6 NABCEP board certifications become eligible for GI Bill benefits

Final Outcome: 7 NABCEP credentials & board certifications are now eligible for GI Bill benefits

4: COMMUNITY COLLEGE PARTNERSHIPS & WEAMS REGISTRATION

The program catalyzed ten industry-led partnerships to support veteran-friendly community and technical college solar training programs. The project team initiated substantive engagements with employers to support training and hiring outcomes. These partnerships include activities such as curriculum review and recommendations, guest lectures, site visits / field trips, work-based learning opportunities such as internships and job shadowing, donations of lab equipment, serving on the college's industry advisory board, and preferential hiring relationships. Partnership activities were tailored to the needs and goals of each party, with overarching objectives to align training with workforce needs at regional scales, and support career outcomes and job readiness for students. Industry engagement was primarily focused on medium-sized, regionally based employers with high anticipated workforce demand.

Partnerships were launched in the following employers and training programs:

1. Strata Solar and Tidewater Community College (Norfolk, VA).
2. Texas Solar Outfitters and Houston Community College (Houston, TX).
3. Sunrun and Miracosta Community College (Miracosta, CA)
4. US Light Energy and Hudson Valley Community College (Troy, NY)
5. Tampa Bay Solar and Erwin Technical College (Tampa, FL)
6. Pure Power Contractors and Central Piedmont Community College (Charlotte, NC)
7 Trinity Solar and Bunker Hill Community College (Boston, MA)
8. Solar States and Delaware Technical Community College (Dover, DE)
9. TruNorth Solar and Century College (Minneapolis, MN)
10. Enel North America and Kankakee Community College (Kankakee, IL)

The project team also provided technical assistance to community colleges to register solar training programs for GI Bill education benefits, expanding availability of GI Bill-eligible solar training opportunities. The Web Enabled Approval Management System (WEAMS) is the system and process used by the Department of Veterans Affairs to track programs that are eligible for GI Bill education benefits. These approvals are done for specific courses and education programs (degree or non-credit) at the state-level by a state approving agency.

Additionally, SRV developed a comprehensive directory of solar training opportunities, featuring the 52 WEAMS-registered solar training programs along with scores of others that are not yet registered with the VA as well as several other training programs nationwide. This resource is one of the most comprehensive lists of solar training offerings available. *The training directory is linked in the below Products section.*

Project Goal: Ten local workforce development partnerships established; at least 50 community colleges complete WEAMS registration.

Final Outcome: Ten local workforce development partnerships established; 52 community college solar programs are WEAMS registered.

5 VETERAN “FAST TRACKS” TO NABCEP CERTIFICATION

The Solar Ready Vets Network launched several new streamlined Veterans Pathways to certification, making it easier for veteran candidates to qualify for NABCEP credentials and certifications and advance their solar careers. These new certification eligibility options allow service members and veterans to utilize their experience in the military to meet the requirements for NABCEP PV-related certifications and credentials.

To develop the Veterans Pathways, NABCEP convened a committee of NABCEP-certified veterans with diverse military and solar experience. Committee members had first-hand familiarity with the rigorous level of training and study required to become Board Certified, as well as ways that skills and experience gained through military service could be applied to the solar industry.

The most common NABCEP credential, the PV Associate (PVA), prepares individuals for a variety of career options in the solar industry, and is often a first step toward more advanced and specialized board certifications. Non-veteran candidates qualify to sit for the PV Associate exam through either an Education Pathway (by taking a course from a NABCEP-registered training provider) or an Experience Pathway (by demonstrating at least six months of relevant work experience). In addition to these two standard pathways, veterans may now choose to follow the Veterans Pathway, which recognizes relevant skills and experience gained through military service, in any of the following categories that align with the PVA Job Task Analysis: electrical, construction, roofing, solar, engineering, HVAC, etc, verified by Military Occupation Specialty (MOS) code. Upon passing the PVA exam, they then also qualify to have 18 hours of non-technical

training exempted from their PV Installation Professional application, providing an additional streamlined pathway to board certification.

For Board Certifications beyond the PV Associate credential, NABCEP designed one fast-track based upon the “Decision Making Role” necessary to qualify for those exams For example, a veteran candidate can qualify for the PV Technical Sales Board Certification exam, by demonstrating that they displayed a “Decision Making Role” by either having their name listed on a sales proposal or having a work supervisor confirm that they participated in the data-collection process to complete the sale.

Veterans Pathways were approved by the NABCEP Board for the following credentials and board certifications.

1. PV Associate
2. PV Installation Professional
3. PV Installer Specialist
4. PV Commissioning & Maintenance Specialist
5. PV Technical Sales Professional
6. Energy Storage Specialist (new certification to be launched in spring 2023).

As of October 2022, over 100 veteran candidates had earned a NABCEP certification through the Veteran Pathways. The vast majority (97) received the PV Associate Credential.

Project Goal: Develop eligibility pathways that will allow transitioning service members and veterans to meet requirements for six NABCEP PV-related certifications based on their military experience and qualifications.

Final Outcome: Veterans’ Pathways for six credentials / board certifications have been approved by the NABCEP Board. Five of these have been implemented in the NABCEP Certification Management Platform, and the sixth will become available in the spring of 2023 when the new certification is launched.

6: NEW APPRENTICESHIP FRAMEWORK REGISTERED WITH DOL

The project set out to coordinate with industry, training and workforce development stakeholders to develop and register at least one new Registered Apprenticeship Program (RAP) with the US Department of Labor (USDOL). The earn-while-you-learn model makes RAPs an effective recruitment tool, particularly for veterans who can receive GI Bill housing allowance benefits while participating. By providing comprehensive training in an occupation, and a clearly defined, high-quality career pathway, registered apprenticeships are one of the best ways to develop and retain a skilled workforce and attract veteran talent.

In 2019, the project team convened an Apprenticeship Committee in partnership with the Urban Institute to draft a Residential Solar Photovoltaic Installer Competency-Based Occupational Framework for Registered Apprenticeship. The Urban Institute was under

contract to the US DOL to develop competency-based frameworks for a number of occupations and was asked to create on for Solar Installers because the Bureau of Labor Statistics continues to recognize it as one of the fastest growing occupations in the country. The model framework for registered apprenticeships was submitted to DOL for approval, and after a year of review it was rejected with the feedback that they were unable to come to consensus on the “apprenticeability” of the occupation.

IREC and SEIA continued to lead efforts to connect with solar employers, community college and other leading training organizations, workforce development professionals with experience in the registered apprenticeship space, and other subject matter experts to understand the RAP landscape, and define next steps toward designing and registering apprenticeship programs.

In November 2021, IREC and SEIA hosted an information session for solar employers and other relevant stakeholders. The event attracted over 100 attendees from solar companies including a mix of HR, Training, Installation, and Operations Professionals, and executives (with over 250 having registered). The session covered basic information about apprenticeships including benefits and opportunities for solar employers. Employers expressed the following reasons for their interest in pursuing apprenticeships: improving or standardizing training; attracting new talent; and preparing for labor policy changes that could require apprenticeships to receive federal incentives (pre-Inflation Reduction Act).

In January 2022, IREC & SEIA hosted a virtual meeting for solar employers to explore the scope of the Solar Installer occupation as it relates to the development of National Guidelines for Apprenticeship Standards. The meeting included subject matter experts representative of all segments of the industry, and break-out sessions explored questions such as:

- Can a broad solar installer apprenticeship covering all segments (i.e. residential, commercial and utility scale) effectively serve all employers across the industry?
- What is the role of a solar installer, in relation to other adjacent occupations like electricians and operations & maintenance technicians?
- What other relevant technologies should a standard include? (i.e. solar thermal, storage, EV charging, etc)

It became clear that pursuing efforts to register a program to train solar installers would not be feasible at the federal level, given lack of consensus and pushback from organized labor; however, during the project period the State of Florida did approve a Solar Installer apprenticeship program aligned with state licensing for the occupation (roughly half the states manage apprenticeships at the state rather than federal level). Support from construction labor unions is essential for any construction related occupation to become registered with USDOL. Several existing apprenticeable occupations overlap with the role of a solar installer, with multiple trades, including laborer, electrician, carpenter, roofer, and iron worker all purporting that solar installation is a part of their trade, rather than being a separate distinct occupation that someone can be trained in. The most feasible pathway for solar installation companies

to implement registered apprenticeships is through these existing apprenticeable occupations. Therefore, the project team continued to identify existing approved occupations that are aligned with solar job tasks, to determine which of these existing programs (considering scope of training, length of program, etc) would best meet industry needs, and create technical assistance resources to share findings to supporting employers navigating the apprenticeship landscape with technical assistance resources and networks.

In July 2022, SEIA & IREC led a virtual *Solar Apprenticeship Employer Group Meeting* with over 40 industry attendees. We provided an overview of Registered Apprenticeship basics, and two utility-scale employers (Wanzek and McCarthy) shared their experiences with their apprenticeship programs. Also in July, IREC and SEIA launched a Solar Industry Employer Apprenticeship Survey to gather feedback and employer perspectives about their level of interest in apprenticeship programs, the models/ types of programs they are most interested in, and where they think they need support.

This new focus on existing occupations became particularly important with passage of the Inflation Reduction Act in August 2022, which created sudden and significant demand and interest from solar employers for resources and support around registered apprenticeship programs by tying 80% of the value of the investment and production tax credits to labor provisions requiring a minimum percentage of work be performed by registered apprentices and all construction labor to be paid prevailing wages.

Following passage of the IRA, the team continued work toward creating resources for the industry to understand the options and steps toward implementation, while building relationships with labor unions, construction trade associations, workforce intermediaries, state and federal apprenticeship agencies, education institutions, and others engaged in the registered apprenticeship system.

At the RE+ conference in September 2022, SRV partners SEIA and IREC held an in-person meeting: *Meeting IRA Apprenticeship Requirements.* The event provided a concise overview of the basics of RAPs, then featured structured networking for approximately 150 attendees to connect with workforce organizations including leading organized labor organizations, and the DOL-funded intermediary advancing employer-sponsored clean energy apprenticeships. At this conference, IREC presented a poster, *Addressing Skilled Worker Shortages with Registered Apprenticeships,* covering types of programs and approved occupations, for employers navigating the Registered Apprenticeship landscape, and benefits for veterans and other job seekers.

During National Apprenticeship Week (mid-November) 2022, SEIA published and promoted a blog pointing companies towards concrete steps and resources to help them prepare to participate in registered apprenticeships.

In December 2022, SEIA and IREC held a Virtual Meet & Greet: Preparing for IRA Apprenticeship Requirements. The event provided a very brief overview on the basics of Registered Apprenticeship Programs and the apprenticeship provisions in the IRA, and

then it included 1.5 hours of networking time where over 300 attendees (700+ registered) were able to connect virtually with these labor unions, trade associations and additional apprenticeship sponsoring or apprenticeship-supporting organizations below. Each organization listed below had its own dedicated breakout room with companies who chose to visit their room for four different rounds. Each attendee was able to choose to meet with up to 4 organizations during the event.

- o Adaptive Construction Solutions (DOL-contracted Intermediary)
- o IBEW – International Brotherhood of Electrical Workers
- o LIUNA – Laborers' International Union of North America
- o UBC – United Brotherhood of Carpenters
- o IEC – Independent Electrical Contractors
- o WECA – Western Electrical Contractors Association
- o ABC – Associated Builders and Contractors
- o AGC - Associated General Contractors of America
- o AACC - American Association of Community Colleges

Into 2023, the project team continued to develop and share technical assistance resources to support employers, focused on commercial and utility-scale companies adapting to new IRA provisions, to understand RAP options, and implement solutions aligned with existing approved occupations. The team organized another Meet and Greet "Power Hour" event to be held at the RE+ Northeast Conference in February 2023. IREC developed an online toolkit for clean energy employers to launch registered apprenticeships, and SEIA produced a similar guide for their solar employer members covering apprenticeship requirements under the Inflation Reduction Act of 2022, the types of programs and existing DOL-approved occupations solar employers can leverage, and resources to connect with (or become) a program sponsor.

Significant Accomplishments and Conclusions:

The work done through this project has advanced the relationships between solar industry employers, training institutions, veteran career services, and military talent necessary to support sustained engagement over the long term. The program has made strides in raising awareness and interest among military service members of career pathways available in the solar industry, while supporting solar employers' understanding of the military talent pool. This awareness and interest in solar career pathways among (mid-senior level) service members was one factor contributing to fellowship placement numbers being significantly lower than prescribed milestones (among other important challenges described in Objective 1).

However, the Hiring Fairs (Objective 2) demonstrated that with the right volume of outreach to a broader target audience, there is significant interest in solar career opportunities among service members and veterans. For example, the April 2021 hiring fair, which was promoted in a newsletter by the Department of Veterans Affairs, was the best attended hiring event (of any industry) Hiring Our Heroes had seen to date.

The work on registered apprenticeships (Objective 6) became a focal point of the project during the last budget period. With passage of the Inflation Reduction Act (August 2022), which introduced significant new apprenticeship requirements and other

labor provisions for large commercial and utility scale projects, there became an immediate need among solar employers for resources and technical assistance to navigate the registered apprenticeship landscape as they were taking steps to prepare for the new standards. Learning from the program's earlier efforts and explorations related to the occupation of solar installer (see a discussion in Objective 6), SRV partners IREC and SEIA advised the industry to leverage existing DOL-approved occupations, and supported employers with key information and forums for meeting program sponsors and other potential partners.

Path Forward:

With funding from the Department of Energy, IREC will expand the Solar Ready Vets Network to meet the primary goal of increasing the pipeline of military-connected talent (veterans, transitioning service members, and military spouses) into the U.S. solar industry through a number of complementary initiatives. The new program will continue to develop, promote, and deliver an array of resources to support the military community in navigating solar training and career pathways; support solar employers' capacity to effectively recruit, develop, and retain military talent at all levels of the workforce; and provide direct assistance to military-connected individuals in obtaining solar education, training, certifications, mentoring, and job placement, including into labor union apprenticeships. The program will continue to facilitate placements into hands-on and on-the-job training opportunities available to transitioning service members through the Department of Defense SkillBridge program and Department of Labor registered apprenticeship programs, and will support employers with implementing or participating in SkillBridge and registered apprenticeship programs to attract veteran talent. IREC anticipates this program launching in summer 2023 with a two-year period of performance.

Products:

PROGRAM WEBSITE: www.SolarReadyVeterans.org
The site serves as a platform to communicate program objectives, activities and accomplishments, and to promote opportunities for stakeholder engagement.

- **SRV Fellowship:**
  - **Landing page:** https://irecusa.org/programs/solar-ready-vets/solar-ready-vets-fellowships/
  - **Profiles of past fellows** https://irecusa.org/programs/solar-ready-vets/solar-ready-vets-fellowships/meet-a-solar-ready-vets-fellow-desmine-greene/
- **National Solar Training directory:** https://irecusa.org/programs/solar-ready-vets/solar-career-pathways/

EARNED MEDIA

Military experience provides natural transition to clean energy careers, veterans say
Energy News Network
https://energynews.us/2019/11/11/midwest/military-experience-provides-natural-transition-to-clean-energy-careers-veterans-say/

Two programs launched to get veterans working in solar
PV Magazine
https://pv-magazine-usa.com/2019/11/11/two-programs-launched-to-get-veterans-working-in-solar/

How Solar Power Heats Up Competition for Vets
Triple Pundit
https://www.triplepundit.com/story/2019/how-solar-power-heats-competition-hiring-veterans/85661

Good news: NABCEP solar certifications now eligible for GI Bill benefits
Solar Builder Magazine
https://solarbuildermag.com/news/good-news-nabcep-solar-certifications-now-eligible-for-gi-bill-benefits/

The Sun is Shining on Veterans in Solar
The Business Download
https://clean-energy.thebusinessdownload.com/vets-shine-in-solar-a-solar-powered-promise-for-veterans/

Solar Ready Vets Network Prepares Veterans for Solar Industry Careers
Environmental and Energy Study Institute
https://www.eesi.org/articles/view/solar-ready-vets-network-prepares-veterans-for-solar-industry-careers

The 9 Best Job Programs for Veterans Separating in 2021
Military.com
https://www.military.com/veteran-jobs/9-best-job-programs-veterans-separating-2021.html

Military Veterans are poised to help lead record solar growth
PV-Magazine

https://pv-magazine-usa.com/2021/02/15/military-veterans-are-poised-to-help-lead-record-solar-growth/

Solar Ready Vets Network looking for transitioning service members and Veterans
US Department of Veterans Affairs VAntage Point Blog
https://blogs.va.gov/VAntage/86224/bright-future-military-transitioning-servicemembers-veterans-solar-energy-industry/

Solar Ready Vets Network & NABCEP Career Education
UMA Solar Radio - Podcast hosted by Rick Vaske of Florida Solar School and UMA Solar
https://www.buzzsprout.com/1767745/8701967-solar-ready-vets-network-nabcep-career-education.mp3?download=true

Clean Energy Apprenticeships Podcast
ODEP News Brief Newsletter
https://www.dol.gov/agencies/odep/publications/news-brief

Workology Podcast The Future of Work
https://workology.com/episode-313-richard-lawrence-program-director-irec-megan-howes-program-specialist-at-the-solar-foundation/

Veterans Serve on the Clean Energy Fontlines
Solar Power World
https://www.solarpowerworldonline.com/2021/11/veterans-serve-on-the-clean-energy-front-lines/

New Florida milestone highlights the value of apprenticeships for the solar industry
Solar Power World
https://www.solarpowerworldonline.com/2022/04/new-florida-milestone-highlights-the-value-of-apprenticeships-for-the-solar-industry/

Solar Apprenticeships are key to meeting renewable energy goals
Solar Power World
https://www.solarpowerworldonline.com/2022/05/contractors-corner-solar-apprenticeships-key-renewable-goals/

Battlefields to solar fields: How veterans are finding careers in renewable energy
Spectrum News
https://spectrumlocalnews.com/nys/capital-region/news/2022/04/13/veterans-find-careers-in-renewable-energy

Solar Ready Vets and other job programs for veterans
Solar Reviews
https://www.solarreviews.com/blog/solar-jobs-programs-for-veterans

Everyday Superheroes: Women in Energy Careers
Solar Ready Veterans Network Project is highlighted on page 58 of the book.
https://stemsuperheroes.com/stem-superheros-book-series/

Veterans Bring Unique Skills to Solar Construction
Solar Power World
https://www.solarpowerworldonline.com/2022/11/veterans-bring-unique-skills-to-solar-construction/

BLOG POSTS

Veterans Find Bright Futures in Solar Industry Careers: https://www.hiringourheroes.org/veterans-in-solar-industry-careers

Four Ways to Prepare for the IRA's Upcoming Apprenticeship Requirements

https://www.seia.org/blog/four-ways-prepare-iras-upcoming-apprenticeship-requirements

Solar Employers Recruit Military Talent through the Solar Ready Vets Fellowship
https://irecusa.org/blog/workforce-development-training/solar-employers-recruit-military-talent-through-the-solar-ready-vets-fellowship/

IREC and SEIA Announce a New Solar Career Development Guide
https://irecusa.org/blog/workforce-development-training/irec-and-seia-announce-a-new-solar-career-development-guide/

From Service to Solar: Advancing Solar Career Pathways for Military Talent
https://irecusa.org/blog/workforce-development-training/from-service-to-solar-advancing-solar-career-pathways-for-military-talent/

IREC and NABCEP Streamline Industry Certification for Veterans
https://irecusa.org/blog/press-release/nabcep-and-irec-streamline-industry-certification-for-veterans/

WEBINARS

Solar Ready Vets Fellowship Employer Information Session
https://register.gotowebinar.com/recording/1333369362859049987

Solar Ready Vets: Training, Credentialing and Career Pathways
https://register.gotowebinar.com/recording/5478518304608560143

Solar Ready Vets: Recruiting and Retaining Military Talent in the Solar Workforce
https://www.seia.org/events/workforce-development-veterans

Training and Certification for Veterans in the Solar Workforce: Resources, opportunities and initiatives for solar training providers

Solar Ready Veterans: Strategies, Opportunities, Resources for Solar Industry Workforce Development
https://createenergy.org/renewable-energy-education-webinars/

Innovation in the Energy Workforce - A webinar series from the National Association for Community College Entrepreneurship (NACCE)
https://www.nacce.com/events/innovation-in-the-energy-workforce

Transferring your Skills into a Career in the Solar Industry
https://www.hiringourheroes.org/resources/transferring-your-skills-into-a-career-in-the-solar-industry/

Solar Ready Vets: Cultivating the Next Generation of Solar Industry Leaders
https://youtu.be/OvOhge6Gq60

Employer Roundtable: How to Host a Solar Ready Vets Fellow
https://youtu.be/ZLuunRvDSLg

Solar Installer Apprenticeships Employer Info Session
https://www.youtube.com/watch?v=9gpc-ZO86KY

Attracting Veteran Leadership with Hiring Our Heroes Corporate Fellowship Program
https://youtu.be/_Fw9flqAtzU

Solar Apprenticeship Employer Group Meeting
(Interactive virtual meeting to discuss what Registered Apprenticeship Programs are and with two companies sharing their success with RAPs)
https://www.youtube.com/watch?v=yIGYXElF8T4

CONFERENCE PRESENTATIONS

Solar Ready Vets: Recruiting and Retaining Military Talent in the Solar Workforce
Solar Power International: Regulatory Innovation and Policy Drivers Microconference, Virtual, September 2020.

Building Career Paths for Service-Disabled Veterans in the Clean Energy Industry, National Association of State Workforce Agencies 2022 Veterans Conference, Washington DC, June 2022

Employment and Workforce Development Panel Veterans Advanced Energy Summit, Chicago IL, August 2022

Partnerships for Recruiting Veteran Talent RE+ 2022, Anaheim CA, September 2022

OTHER PRODUCTS

Dynamic Careers in The Solar Industry: A Guide for Career Counselors and Job Seekers
https://irecusa.org/resources/dynamic-careers-in-the-solar-industry-a-guide-for-career-counselors-and-job-seekers

Brief Guide to Attracting, Hiring & Retaining Military Veterans and Spouses
https://www.seia.org/brief-guide-attracting-hiring-retaining-military-veterans-and-spouses

NABCEP landing page for veteran resources:
https://www.nabcep.org/veterans-2

Video: NABCEP PVA Veterans Pathway
https://www.youtube.com/watch?v=DRV3waGS5_0

Video: WEAMS Registration Tutorial

https://www.youtube.com/watch?v=T592QUL3NYo

Two-pager : GI Bill for Solar Training & Credentials
https://irecusa.org/wp-content/uploads/2021/06/Trainer-flyer_finalpdf-1.pdf

Poster (RE+ 2022): Addressing Skilled Worker Shortage with Registered Apprenticeships
https://f5cb18b31bcff05c4c68-a0ad32938c5dd185096ff3214cd552d4.ssl.cf1.rackcdn.com/2092393-1656945221.pdf

Project Team and Roles:

Interstate Renewable Energy Council
As prime recipient, IREC leads team coordination, oversees and ensures successful implementation of all program operations and communications, and leads program evaluation, reporting and sustainability planning activities. IREC will lead development of a program-wide communications plan, covering efforts such as developing and maintaining a web presence, media relations, messaging and talking points, and general programmatic outreach. While each subrecipient assumes a leadership role in tasks associated with their area of expertise and target audience, as the program lead, IREC will play a lead or strong supporting role across all objectives to ensure that program activities meet or exceed short term targets while best serving the long-term impact, expansion and sustainability of the program.

U.S. Chamber of Commerce Foundation Hiring Our Heroes
The U.S. Chamber of Commerce Foundation “Hiring Our Heroes” program (HOH) will lead program outreach to the military community and will be responsible for ensuring awareness of solar fellowship opportunities and selection of cohorts of transitioning service members for participation in fellowships. HOH will play a strong supporting role in program communications to the military/veteran community such as through representing the program at relevant events and conducting on-base outreach to potential participants.

North American Board of Certified Energy Practitioners
NABCEP will lead efforts to register Board Certifications and related credentialing and training programs with the VA for GI bill eligibility and will lead the development and implementation of “fast tracking” mechanisms for veterans to meet certification eligibility requirements through applicable military credentials and experience. NABCEP will co-lead program outreach and communications to the training community. Alongside project partner SEIA, NABCEP will co-lead the “matchmaking” effort with emphasis on training stakeholders, and will co-lead (with IREC) efforts to improve accessibility of solar training to veterans at community colleges (via encouraging VA WEAMS registration of eligible training programs). Additionally, NABCEP will support the development of industry apprenticeship programs and their registration with DOL.

Solar Energy Industries Association
SEIA will lead activities related to establishing employer partnerships for fellowships for transitioning service members, will lead the development of an “introduction to solar” pre-placement curriculum, support employer partners on the development of work-based learning plans for the fellowships, and lead the development of starter kits to facilitate expansion of program to other military installations. SEIA will engage employers on direct employment and/or work-based learning for existing veterans. Toward this goal, SEIA will support program communications related to apprenticeships and lead outreach to their national solar database.

Appendix A Fellowship Outcomes

The following table shows SRV fellowship placement by cohort, including host employer, fellowship role and hiring outcomes where data is available.

COHORT	EMPLOYER	FELLOWSHIP ROLE
Cohort 2020-2	IcarusRT	Quality Systems Manager
Cohort 2020-2	IcarusRT	Operations Manager
Cohort 2020-3	FTC Solar	Project Manager
Cohort 2020-3	FTC Solar	Project Manager
Cohort 2020-3	FTC Solar	Construction Manager
Cohort 2020-3	Built Well Solar	Director of New Business
Cohort 2020-3	Energy Toolbase	Logistics Manager
Cohort 2020-3	Solar Support	Project Manager
Cohort 2020-3	SunPower	Market Development & Policy
Cohort 2021-1	Core Development	Operations Management
Cohort 2021-1	IcarusRT	Business Management
Cohort 2021-1	IcarusRT	Project Management
Cohort 2021-1	SunPower	Project Management
Cohort 2021-1	Core Development	Business Development
Cohort 2021-1	SunPower	Project Manager
Cohort 2021-1	FTC Solar	Project Manager
Cohort 2021-1	Silicon Ranch	Project Manager
Cohort 2021-2	Scenic Hill Solar	Business Development
Cohort 2021-2	Sunrun	Talent Acquisition
Cohort 2021-2	Sunrun	Talent Acquisition
Cohort 2021-2	DNV GL	Project Management
Cohort 2021-2	SunRun	Talent Acquisition
Cohort 2021-2	Icarus RT	Operations & Project Management
Cohort 2021-2	Sunlight Financial	Learning & Leadership Development
Cohort 2021-2	SunRun	Talent Acquisition
Cohort 2021-3	Sunfolding	Project Manager
Cohort 2021-3	DEPCOM	Procurement Manager
Cohort 2021-3	Standard Energy Solution	Branch Manager

Cohort 2021-3	Directional Services	Site Manager Trainee
Cohort 2021-3	Green Power Monitor	Project Manager
Cohort 2021-3	Directional Services	Site Manager Trainee
Cohort 2021-3	Sunfolding	Project Manager
Cohort 2021-3	IcarusRT	Operations
Cohort 2022-1	Omnidian	Project Manager - Customer Service Operations
Cohort 2022-1	Omnidian	Talent Acquisition
Cohort 2022-1	Radiance Solar	Project Manager
Cohort 2022-1	Radiance Solar	Project Manager
Cohort 2022-1	DNV Renewables	Project Manager - Electric Storage Systems
Cohort 2022-1	FTC Solar	Project Management
Cohort 2022-1	Spark Solar	Project Management
Cohort 2022-1	Hannah Solar	Procurement Specialist
Cohort 2022-1	DNV Renewables	M&A Advisory Consultant
Cohort 2022-1	DEPCOM	Assistant Project Manager
Cohort 2022-1	Silicon Ranch	Project Manager
Cohort 2022-1	DNV Renewables	Engineering Project Management
Cohort 2022-2	DEPCOM	Operations Management
Cohort 2022-2	Omnidian	Cyber Security Manager
Cohort 2022-2	Silicon Ranch	Project Management
Cohort 2022-2	Icarus RT	Operations
Cohort 2022-2	Hohm Energy	Project Management
Cohort 2022-2	GreenPowerMonitor	Customer Success Specialist
Cohort 2022-2	GreenPowerMonitor	Project Team Member
Cohort 2022-2	Hohm Energy	Project Management
Cohort 2022-2	Hohm Energy	Project Management
Cohort 2022-2	GreenPower Monitor	Business Development
Cohort 2022-2	Radiance Solar	Project Management
Off Cycle	DNV Renewables	Technical Project Manager, Measurements
Cohort 2022-3	Green Power Monitor	Project Engineer
Cohort 2022-3	IcarusRT	HR Operations

Cohort 2022-3	Green Power Monitor	Project Engineer
Cohort 2022-3	DNV Renewables	Program Manager
Cohort 2022-3	Icarus	Project Manager
Cohort 2022-3	DNV Renewables	Project Manager, Solar Independent Engineering
Cohort 2022-3	Silicon Ranch	Asset Manager
Cohort 2022-3	Silicon Ranch	Senior Manager-Operational Improvement
Cohort 2022-3	Onyx Renewables	Project Development
Cohort 2022-3	DNV Renewables	Project Management
Cohort 2022-3	Green Power Monitor	Project Engineer
Cohort 2023-1	Silicon Ranch	Project Manager
Cohort 2023-1	IcarusRT	HR Project Management
Cohort 2023-1	IcarusRT	Senior Program Manager
Cohort 2023-1	Icarus	Project/Operations Manager
Cohort 2023-1	Silicon Ranch	Project Manager
Cohort 2023-1	Silicon Ranch	Operations & Maintenance
Cohort 2023-1	Clearway Energy	Project Manager
Cohort 2023-1	Clearway Energy	Project Manager
Cohort 2023-1	Silicon Ranch	Procurement Specialist
Cohort 2023-1	Rev Energy Ventures	Project Manager
Cohort 2023-2	Clever Energy	Independent Solar Consultant
Cohort 2023-2	Icarus	IT / Mechanical Technician
Cohort 2023-2	Clearway Energy	Logistics / Supply
Cohort 2023-2	Green Power Monitor	Project Engineer
Cohort 2023-2	Silicon Ranch	Sr. Associate Project Development
Cohort 2023-2	DNV	Project Manager
Cohort 2023-2	Silicon Ranch	Business Development
Cohort 2023-2	Green Power Monitor	Project Engineer
Cohort 2023-2	Silicon Ranch	Sr. Associate Project Development