

Solar Workforce Priorities and Vision

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Welcome and Logistics

- Slides and transcript will be available on energy.gov/seto-webinars
- Submit questions in the chat
- For technical difficulties, chat or email Jamal Ferguson (jamal.ferguson@ee.doe.gov)

Solar Energy Technologies Office

Our mission is to accelerate the development and application of technology to advance low-cost, reliable solar energy in the U.S.

To achieve this mission, solar energy must:

- ▶ Be **affordable** and **accessible** for all Americans
- ▶ Support the **reliability**, **resilience**, and **security** of the grid
- ▶ Create a sustainable industry that **supports jobs**, **manufacturing**, and the **circular economy** in a wide range of applications

Driving Toward Administration Decarbonization Goals

- ▶ **Reduce hardware and soft costs** of solar electricity for all Americans to enable an affordable carbon-free power sector by 2035.
- ▶ Enable inverter-based technologies to provide essential grid services and black start capabilities while demonstrating the **reliable, resilient and secure operation of a 100% clean energy grid**.
- ▶ **Accelerate solar deployment and associated job growth** by opening new markets, reducing regulatory barriers, providing workforce training, and growing U.S. manufacturing.
- ▶ **Center energy justice** by reducing environmental impacts, removing barriers to equitable solar access, and supporting a diverse and inclusive workforce.
- ▶ **Support a decarbonized industrial sector** with advanced concentrating solar-thermal technologies and develop affordable renewable fuels produced by solar energy.

Solar Energy Technologies Office Leadership Team



Dr. Becca Jones-Albertus
Director



Garrett Nilsen
Deputy Director



Dr. Paul Basore
Chief Scientist



Nicole Steele
*Senior Advisor for Equity
and Workforce*



Sheila Moynihan
Operations Supervisor



Dr. Lenny Tinker
*Photovoltaics
Program Manager*



Dr. Avi Shultz
*Concentrating Solar-Thermal
Power Program Manager*



Dr. Guohui Yuan
*Systems Integration
Program Manager*



Dr. Markus Beck
*Manufacturing and
Competitiveness
Program Manager*



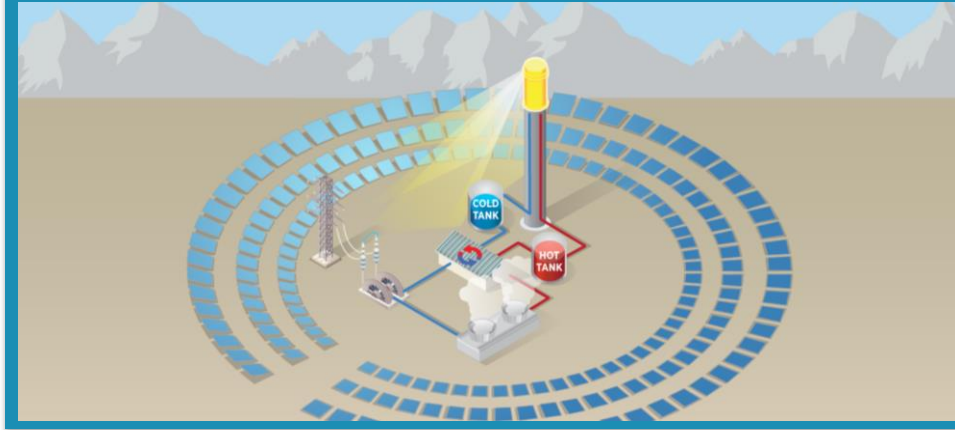
Michele Boyd
*Strategic Analysis and
Institutional Support
Program Manager*

SETO Research Areas

PHOTOVOLTAICS



CONCENTRATING SOLAR-THERMAL



BALANCE OF SYSTEMS/ SOFT COST REDUCTION



SYSTEMS INTEGRATION



MANUFACTURING AND COMPETITIVENESS





U.S. DEPARTMENT OF ENERGY

Summer of Solar



Learn More: energy.gov/solar

Get Updates: bit.ly/summerofsolar-newsletter

SolarAPP+ Challenge: 125 Communities by End of Summer



- Online platform that streamlines and automates residential solar permitting
- Launched in July 2021 after pilot testing
- Free for city and county governments
- Secretary Granholm **challenged 125 jurisdictions to adopt SolarAPP+** by the end of the Summer of Solar
- Join the challenge at solarapp.nrel.gov



Now Open: American-Made Prize Competitions

Perovskite Startup Prize

- \$3M to accelerate commercialization of perovskite solar cells
- Applications due **September 30, 2021**

Solar Prize Round 5

- \$5M to support U.S. solar manufacturing and rapid, equitable solar deployment
- **Hardware** and **Software** tracks
- Optional Justice, Equity, Diversity, and Inclusion (JEDI) contest
- Applications due **October 5, 2021**



A graphic for Solar Prize Round 5. It features a dark blue background with a red banner at the top that reads "ENERGIZE INNOVATION IN U.S. SOLAR TECHNOLOGIES". Below the banner, it says "Two competitive tracks". On the left, there is a "Hardware Track" icon (solar panel) with a "\$3 million prize focused on solar hardware components". On the right, there is a "Software Track" icon (code symbol) with a "\$1.6 million prize seeking new solar software technology". In the bottom right, there is a large "ROUND 5" logo. The "AMERICAN MADE SOLAR PRIZE" gear logo and "U.S. DEPARTMENT OF ENERGY" text are also present. At the bottom, it says "SUBMIT BY OCT 5" and provides the website "americanmadechallenges.org/solarprize/round5".

SETO Award Selections

Small Business Innovation Research and Small Business Technology Transfer

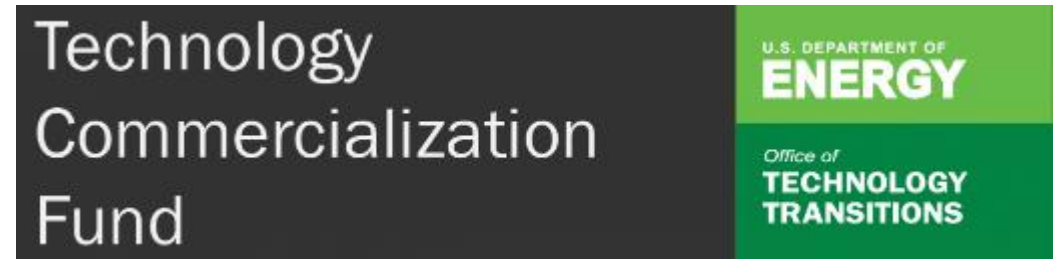
- Commercialize small business solar innovations
- Phase I announced on June 7, 2021
 - Up to \$200,000 per project
- Phase II announced on July 20, 2021
 - \$1M - 1.6M per project

Technology Commercialization Fund

- \$2M for bringing solar energy technologies to market
- Announced June 24, 2021

SETO Fiscal Year 2021 Systems Integration and Hardware Incubator

- \$45M for projects to integrate solar onto the grid and advance domestic manufacturing
- Announced August 11, 2021



QUESTIONS?



Capacity and Economic Impact

Solar capacity has grown **40-fold** in the last 10 years. Solar energy accounted for **40% of all new electrical** generating capacity installed in 2020.



10,000+

Solar businesses in the U.S.



\$24 billion

Value of the U.S. solar market in 2020

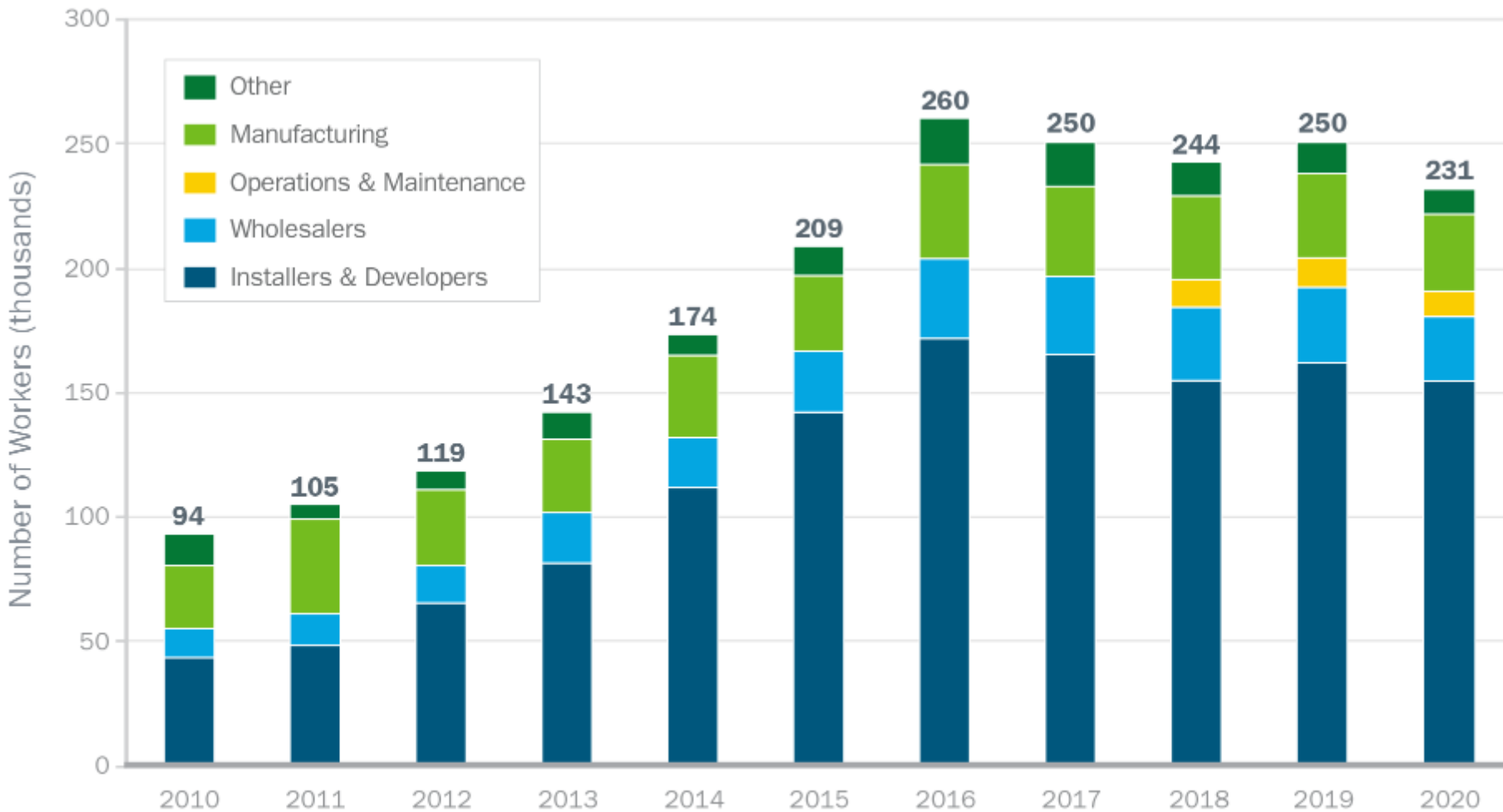


45% ↓

Solar PV prices have dropped almost in half over the last 5 years

Source: Data from SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight Report

230,000+ U.S. Jobs in the Solar Industry



- Since 2010, solar employment has grown by 148%
- 10.3% of solar workers are unionized, above the national average and comparable with similar trades
- Veterans make up a larger share of the solar workforce (9%) than the overall economy
- Women in solar grew from 26% to 30% of the workforce from 2019 to 2020
- Since 2015, solar industry employment has grown faster for people of color than the overall solar job growth rate

Source: "2020 National Solar Jobs Census" (The Solar Foundation)
Graphic courtesy of the U.S. Department of Energy Solar Energy Technologies Office.

Solar Energy Technologies Office – Workforce Portfolio

Year	Name	Description
2009-2014	Solar Instructor Training Network (STN)	Partnerships with the Depts of Labor and Education to develop curriculum, identify career pathways, and provide training for the PV installation workforce
2013-2018	Grid Engineering for Accelerated Renewable Energy Deployment (GEARED)	Partnership with universities focused on power systems operations
2016-2018	Solar Training and Education for Professionals (STEP)	Education and training for related professionals – real estate, code officials, etc.
2016-2018	Solar Ready Vets Pilot (SRV)	On-base training for PV installation jobs for transitioning military personnel
2019-2022	FY18 Workforce Awards	Eight workforce awards focused primarily on PV installation, including two new projects in the Solar Ready Vets Network
2019-2023	Solar District Cup	University competition for students to design solar based micro-grids
2021-2024	EMPOWERED Awards	Collaboration with the EERE Buildings and Vehicles Offices to provide training for firefighters, building and code officials

Fiscal Year 2018 Workforce Awards

Blue Lake Rancheria

- Native American Tribe in N. CA
- Partners with GRID Alternatives to provide hands-on installation training for NAs
- Capacity building workshops for Tribal Leaders

Safer

- Chicago-based organization focused on returning citizens
- Provides wrap-around training and support to transition Previously Incarcerated Individuals into the solar industry

Midwest Renewable Energy Association

- Partners with 5 local CC to offer NABCEP courses
- Engages with local installers to host student interns to provide on-the-job training

Philadelphia Energy Authority

- Public-private org. promoting clean energy solutions in PA
- Developed a solar program for a vocational high school in Philadelphia
- Partners with Youth Build Philly to provide solar internships for Opportunity Youth

Electric Power Research Institute

- Partners with 5 universities to develop new curriculum for grid operations focused on IT, AI, and cybersecurity

Illinois Green Economy Network

- Consortium of 39 CC in IL focused on green careers
- Develop solar curriculum and expand recruitment efforts

SunSpec Alliance

- DER industry assoc. in CA
- Partners w/ UCSD to develop online training focused on DER cybersecurity and grid integration

Solar Ready Vets

- The Solar Foundation partners with Hiring Our Heroes to provide corporate fellowships for transitioning military
- Partners with NABCEP and SEIA to build additional capacity for veterans to pursue solar careers



Philadelphia Energy Authority: Youth Training Program



Emily Schapira
President and CEO
Philadelphia Energy Authority



Michelle Anderson
Executive Director
Career and Technical Education
Philadelphia Public Schools



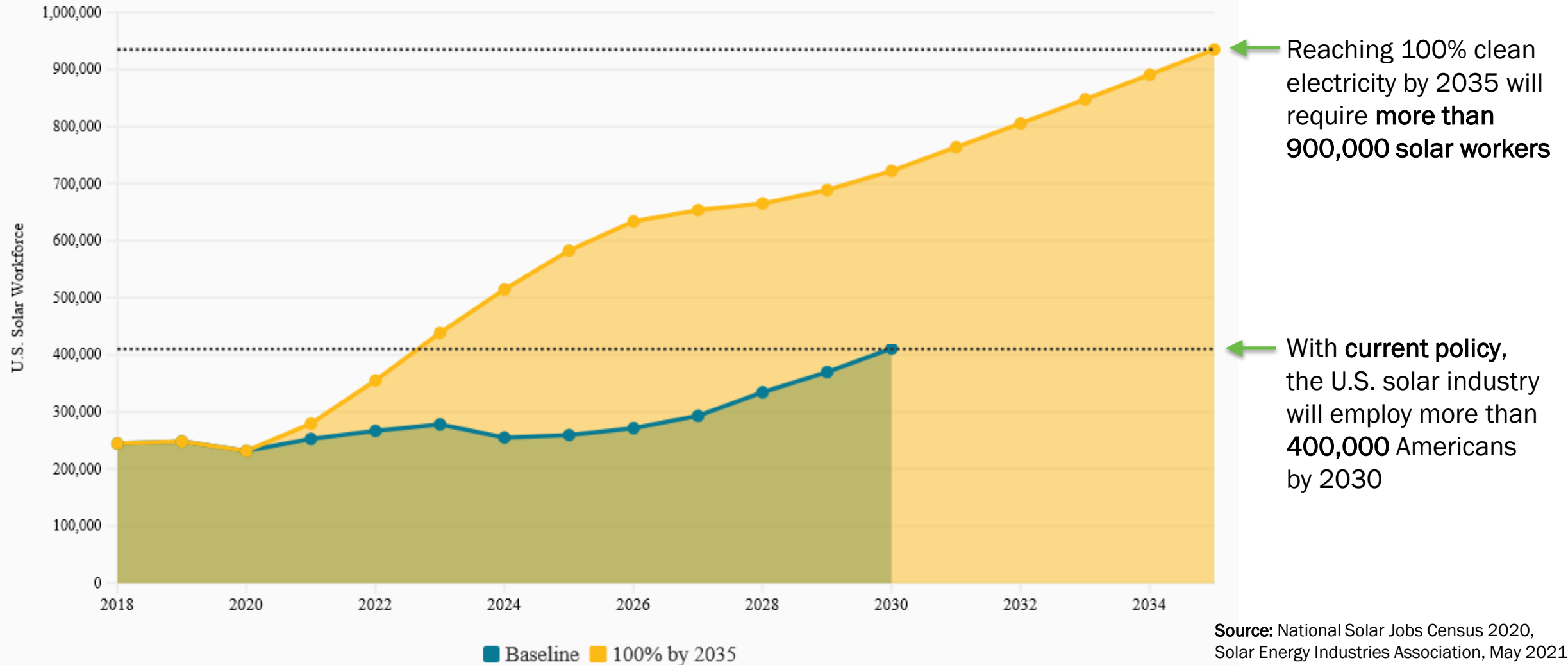
PHILADELPHIA
ENERGY AUTHORITY



THE SCHOOL DISTRICT OF
PHILADELPHIA

Future Workforce Needs

Baseline Solar Employment Forecast vs. Workforce Needed to Reach 100% Clean Electricity by 2035



Workforce Information Gathering Pathways

Goal: Gather input on workforce development programs, strategies, and tools to support the development of a **diverse and skilled clean energy workforce**

Convenings with Workforce Stakeholders

- May 11: Utility Scale Installers and Developers
- May 25: Distributed Generation Installers
- May 27: Labor Organizations
- June 1: Job Training Organizations

Request for Information

- Feedback from industry, academia, government agencies, worker organizations, unions, and other stakeholders
- Due June 1, Received 45 Responses

Workforce Primary Takeaways

Every job category across the solar industry was in **high demand**, especially **installers**

Support is needed for **increasing awareness and unlocking barriers** to job opportunities and career pathways in historically excluded, frontline and communities of color

- DOE could help create new collaborations around jobs and training by leveraging community-level organizations

There were perceived concerns expressed around **cost differences** with union labor and **availability** of union infrastructure

DOE has a role to help aggregate and **standardize labor classifications and curriculum** and work with the Department of Labor to **create new programming**

- For under-resourced communities, funding for wrap-around services should be prioritized, including basic job prep, technical literacy, and soft skills, as well as finding ways to provide career training that accounts for transportation needs, dependent care, psychological health, and other critical issues

Workforce Program Goals and Priorities

Workforce Program Goal: Enable the continued growth of the solar industry by supporting a **diverse** and **well-supported workforce** including **training, mentorship, and job placement**.

Industry-Driven

- Provide training for the jobs & skills the industry needs

Diversity, Equity, and Inclusion

- Increase diversity in the solar workforce and expand access for under-resourced communities, including returning citizens

Employee-Centered

- Support pathways to family-supporting, prevailing wage careers

Workforce Next Steps



SETO is using this information to develop future programming



May run additional convenings or public events to maintain momentum or gather additional information on this topic area



Workforce topics in SETO's Fiscal Year 2022 Budget include:

- *National career accelerator to train and diversify the solar and clean energy workforce and build pathways for career placement and advancement. The program will work with other EERE offices to promote cross sector job opportunities, provide worker training, mentorship and benefits, and support industry's workforce needs.*
- *The program will work with labor unions to increase opportunity to create good paying jobs with a free and fair chance to join a union and bargain collectively.*

Panel: Solar Workforce Development

Moderator



Nicole Steele

*SETO Senior Advisor for
Equity and Workforce*



Rob Wallace

*Power52 Energy Solutions
CEO and Co-Founder*



Elbert Walters III

*Powering Chicago
Executive Director*



Chris Perron

*Nexamp
Senior Vice President of
Engineering, Procurement,
and Construction*

QUESTIONS?



Thank you for attending!

- Read the full [findings of SETO's workforce outreach](#)
- Share in the Summer of Solar at energy.gov/solar
- Join the SolarAPP+ Challenge at solarapp.nrel.gov
- Apply for open funding opportunities at bit.ly/seto-funding
- Find all SETO events & webinars at energy.gov/seto-events



SIGN UP NOW:

energy.gov/solar-newsletter

bit.ly/summerofsolar-newsletter