

Education Development Center



# WOMEN VETERANS IN STEM CONVENING PROCEEDINGS: Strengthening the Pipeline from Service to STEM

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## **Executive Summary**

In March 2021, Education Development Center (EDC) led a virtual convening on recruiting and retaining women veterans in the STEM workforce. The convening was funded by the National Science Foundation (NSF) as part of NSF's <u>INCLUDES</u> program, and by a generous gift from the Boeing Corporation. The event capped an 18-month effort to map the current landscape of women veterans' support services. In addition, the event provided an opportunity to engage experts in relevant fields in identifying strategies to strengthen existing services and develop new programs to effectively engage, train, and retain women veterans in the STEM workforce.

Prior to the convening, EDC worked with an advisory board comprising women veterans, representatives from nonprofits and federal agencies that serve veterans, universities, STEM professionals, and STEM industries to develop a series of <u>"state of the state" white papers</u>. The series began with an <u>introduction</u> to the topic and then addressed four critical areas: <u>transition services</u>, <u>STEM workforce development</u>, <u>STEM education</u>, and <u>health and well-being</u>.

During the convening, participants considered key aspects of recruiting, training, and retaining women veterans in the STEM workforce and discussed the urgent and unmet needs in supporting them. In addition, participants generated ideas on how to address gaps in existing programs and services as well as new ways to meet women veterans' needs.



As a result of the convening, the Women Veterans in STEM project team developed actionable recommendations for actions that employers, policymakers and government agencies, higher education institutions, and professional organizations can take to strengthen the pipeline from service to STEM for women veterans. These recommendations can be found in *Women Veterans in STEM: Recommendations to Strengthen the Pipeline from Service to STEM* (available on our website).



The overwhelming consensus of convening participants was that our country needs better coordination of resources and services. They strongly supported the establishment of a national resource clearinghouse and technical assistance center to serve women veterans. They envisioned that the center would fill the following gaps:

- » Consolidate information about services and resources available to women service members and veterans and provide advisory services for these women.
- » Provide technical assistance to STEM industry employers and institutions of higher education on how they can better recruit and retain women veterans.

The center would address participants' recommendations, which fall into five topic areas. More information about these topic areas and related recommendations can be found in this document:

- » Mentoring: Tapping the Power of Women Veterans
- » Expanding Networking Opportunities
- » Building Strong Systems to Support Transitions
- » Engaging Higher Education and Employers
- » Partnering with the Department of Defense to Change Culture

These convening proceedings provide additional information about the four-day event and the recommendations that developed from discussions during the convening.



# **Convening Proceedings**

On March 2–5, 2021, EDC held a virtual convening on engaging and retaining women veterans in the STEM workforce, particularly those from populations currently underrepresented in STEM. The meeting was funded by NSF as part of NSF's <u>INCLUDES</u> program and by a generous gift from the Boeing Corporation. Participants included researchers, practitioners, policymakers, university and higher education leadership, STEM industry professionals and entrepreneurs, nonprofit organizations and federal agencies that serve veterans, and women veterans themselves.

The four-day convening began with a plenary session on March 2, 2021. Participants were given an overview of the Women Veterans in STEM project and were provided with copies of the five white papers. Four highly regarded women veterans gave keynote addresses about their experiences in transitioning from service to the civilian workforce. The following two days were devoted to interactive work-group sessions in which participants conducted in-depth examinations of each of the four convening strands:

- » Women Veterans Transitioning to the STEM Workforce
- » STEM Education Pathways for Women Veterans
- » STEM Careers for Women Veterans
- » Issues Affecting the Health and Well-Being of Women Veterans in STEM Careers

In breakout groups, participants discussed the current landscape of what services, supports, and programs exist, and the challenges and barriers currently faced, to engage and retain women veterans in STEM fields. They also generated detailed recommendations to address challenges or expand promising current practices. Work groups voted on their top recommendations, which were captured by graphical notetakers. For an outline of the guiding questions and images of the graphical notes, see the "Session Guide" below. To facilitate the breakout group discussion and voting process we used virtual whiteboards (example below) which allowed participants to add recommendations, comments, and vote for their top choices for final recommendations.



# What recommendations for peer mentoring can we make to boost women veterans' participation and persistence in STEM careers?



The final recommendations were then shared with the closing-day speakers for further discussion. Three expert panels of STEM industry employers, federal agency representatives, and members of our advisory board provided their reactions to the recommendations and potential next steps. The recommendations and insights from these breakout groups were the driving force behind the content of our final report. The project team then summarized the groups' recommendations to disseminate them to a broader audience through this report.



# Sessions



#### **Keynote Opening**

#### **Keynote Speakers**

Graciela Tiscareno-Sato, CEO, Gracefully Global Group

- Stephanie Primeaux, Cost Analyst, NASA
- Dr. Kristin Saboe, Global Leader for Employee Listening, Research, and Talent Strategy Functions, Boeing
- VR Small, CEO, Veteran Women's Enterprise Center

Moderated by: Jess Juliuson

# **Keynote Speakers**



Graciela Tiscareño-Sato Gracefully Global Group



Stephanie Primeaux NASA



Dr. Kristin Saboe Boeing



VR Small Veteran Women's Enterprise Center





#### Women Veterans Transitioning to the STEM Workforce

- 1. What recommendations can we make regarding how to improve the transition services available to women veterans?
- 2. What recommendations can we make to help women veterans overcome barriers to pursuing STEM careers?
- 3. What recommendations can we make to help more women veterans learn about STEM careers?







#### **STEM Education Pathways for Women Veterans**

- 1. What recommendations can we make to improve educational pathways to STEM degrees for women veterans?
- 2. What recommendations can we make to help more women veterans develop a STEM identity?
- 3. What recommendations can we make to improve the support services available for women veterans pursuing STEM degrees?
- 4. What recommendations can we make to fortify the services available to women veterans moving from STEM education into the workforce?





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#### **STEM Careers for Women Veterans**

- 1. What recommendations can we make to help women veterans leverage their relevant training and experience toward pursuing a STEM career?
- 2. What recommendations can we make to improve recruiting pipelines for women veterans pursuing STEM careers?
- 3. How can peer mentoring boost women veterans' participation and persistence in STEM careers?
- 4. What strategies can we recommend to further boost women veterans' STEM career development?







# Issues Affecting the Health and Well-Being of Women Veterans in STEM Careers

- 1. What recommendations can we make to help women veterans overcome the health challenges they face when pursuing STEM careers?
- 2. What recommendations can we make to better support women veterans' mental health as they transition into civilian STEM employment?
- 3. What recommendations can we make to better support women veterans in identifying satisfying and rewarding employment?
- 4. What recommendations can we make to make it easier for women veterans to access services and support?







#### **STEM Industry Panel**

#### **Discussant Panel**

Dr. Trillitye Paullin, CEO, Free to Feed

Joel Simon, Managing Director—Workforce Strategies, Burning Glass Technologies

Melissa Boatwright, Global Lead, LinkedIn

Moderated by: Jessica Juliuson





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#### Federal Agencies Panel

#### **Discussant Panel**

- Meg O'Grady, National Veterans' Employment Manager, Veterans' Employment and Training Service, U.S. Department of Labor
- Tamre Newton, Director, Military-Civilian Transition Office, U.S. Department of Defense
- Dr. Amy Street, Deputy Director, Women's Health Sciences Division, National Center for PTSD, U.S. Department of Veterans Affairs

Moderated by: Jessica Juliuson





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#### **Convening Co-Chairs Panel**

#### **Discussant Panel**

- Dr. Anthony Dean, Assistant Dean for Research, Batten College of Engineering and Technology, Old Dominion University
- Dr. Tomika Greer, Assistant Professor and Undergraduate Program Coordinator in the College of Technology, University of Houston
- Rosalinda Vasquez Maury, Director of Applied Research and Analytics at the Institute of Veterans and Military Families, Syracuse University
- Micah Taylor, Education and Training Manager, Air National Guard; Idaho Area Manager, Hire Heroes USA

Moderated by: Jessica Juliuson



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# **Five Key Themes and Recommendations**

Working from the ideas generated during the convening, the following five key themes emerged to supporting women veterans' pursuing careers in STEM: mentoring, networking, transition services, civilian education, and cultural change within the military. Below, we describe each theme and present related recommendations.

1

## Mentoring: Tapping the Power of Women Veterans

As outlined in our *STEM Careers for Women Veterans* white paper, women working in STEM fields have a higher rate of turnover than women working in other fields. The majority of these moves occur within the first five years; after about 12 years, 50% of women who originally worked in STEM have left, compared with only 20% of other professional women (Glass et al., 2013). Studies show that ongoing mentoring support helps veterans not only enter but also stay in STEM fields. Mentoring has been shown to promote interest and persistence in STEM for women generally (Buse, 2018; Dennehy & Dasgupta, 2017; Stoeger et al., 2016) and for women veterans in particular (Elliott, 2020; Gagliardo, 2020; Landry et al., 2017; Mehra et al., 2017).

Women veterans often have lower levels of social support than do male veterans (Frayne et al., 2006) and may especially benefit from peer mentoring, particularly as they transition to civilian careers. Mentors can be instrumental in supporting women veterans in their transition to school or the workforce.

#### Existing mentoring programs targeted to women veterans include the following:

- » <u>ACP's Women's Veteran Mentoring Program</u>, a one-year mentoring program that pairs a woman veteran with a woman entrepreneur or business leader.
- » <u>Veterati</u>, an online platform that connects veterans with mentors; veterans can search for potential civilian and veteran mentors.
- » <u>Foundation for Women Warriors</u> (in partnership with Veterati), a free online platform that provides on-demand mentoring to women veterans as they navigate career changes.
- » <u>Academy Women's eMentor program</u> matches service members with a mentor who shares a common history or has professional expertise in a particular area of interest.

Presently, however, there is no system or structure that provides women veterans with information about the different types of mentoring programs available and how they can be helpful. In addition, it is critical to begin assisting service members with the transition to the civilian workforce as early as possible, and for many service members, existing programs occur too late in this process or are not sufficient to meet their needs.

Women veterans in academia and in STEM industries are a largely untapped resource for organizations that seek to hire, retain, and better understand veterans. Veterans who have successfully transitioned from the military have firsthand experience with military life, the skills learned during service, and the challenges that recently retired service members will face, and they are well-placed to mentor other veterans. They can provide insight into the company culture, introduce industry jargon, and let veterans know about the benefits available to them.

Women veterans could serve as advisors to STEM businesses and higher education institutions, expanding their views regarding the value and strength of women veterans. They could also provide training to civilian women who want to serve as mentors to veteran mentees in situations where women veteran mentors aren't available.



## Recommendations

#### **For Policymakers**

- » Include in the proposed national center's resource clearinghouse:
  - All mentorship programs and services targeted to women veterans, particularly around STEM education and careers, searchable by location and topic
  - All STEM relevant professional organizations, a description of what membership requires and entails, and benefits of membership

#### **For Employers**

» Sponsor affinity groups for women veterans within their organizations, and host networking events to match veteran employees with potential peer mentees.

#### For Employers and Professional Organizations

» Hire women veterans to provide training to civilian women who want to serve as mentors to veteran mentees.

#### For Technical and Higher Education Institutions

» Establish student interest groups specifically for women veterans interested in STEM careers.

# For Employers, Higher Education Institutions, and Professional Organizations

- » Examine existing mentoring resources with a critical eye; see if they should be consolidated or reconfigured or if new mentoring programs tailored to the specific needs of women veterans in STEM should be created.
- » Ensure that mentoring programs for women veterans use the latest technology and social networking tools to help them identify and access mentors.



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- » Consider partnering with a national networking organization (e.g., LinkedIn, Facebook Groups mentoring program) to streamline the mentor-mentee matching process and broaden the reach and impact of such programs.
- » Seek women veterans as advisors to better understand the unique needs of women veterans and more effectively attract them to and retain them in STEM education and the workforce.

2

## **Expanding Networking Opportunities**

Networking is a critical component of job-seeking, yet it is not a skill that service members have necessarily had to develop and make use of in their careers. Teaching women service members to network before they leave the military would provide them with a mechanism for seeking job opportunities and building a social support system. Upon entering the civilian world, networking groups and professional organizations could better assist women veterans during this transition, allowing them to grow their personal networks while gaining insider knowledge about opportunities and challenges in STEM fields.

Many networking groups are designed to connect women veterans with those who share common interests and experiences, such as the following:

- » The <u>Women Veterans Network (WoVeN)</u> groups offer eight-week programs for 6-10 women veterans to meet regularly with trained peer leaders to reflect and share, with a focus on a specific theme chosen by the group (e.g., reducing stress, improving self-esteem, and navigating the transition to the civilian world).
- » LinkedIn Groups offers nearly 300 groups for <u>women veterans</u> and over 400 for <u>women</u> in <u>STEM fields</u>.
- » Professional organizations, such as the <u>Association for Women in Science</u>, provide outreach to women in service and to women veterans currently pursuing STEM careers.
- » The <u>IEEE Computer Society</u> organizes networking events and supports career development for women in STEM professions.
- » The <u>Foundation for Women Warriors</u> offers a number of opportunities and forums for transitioning active-duty women to network with women leaders in business and academia.

However, the vast number of options, coupled with a lack of experience and skills in networking, can make it difficult for women veterans to find the right fit for their needs and interests. There is also a need to help women veterans network with those currently in the field and learn about the multiple pathways available and how to navigate them while pursuing a career in STEM.





### **Recommendations**

#### **For Policymakers**

- » Establish a professional networking alliance specifically for women veterans to connect with STEM professionals.
- » Include in the national center's resource clearinghouse:
  - All relevant networking groups, searchable by location, number of members, and topic
  - All relevant professional organizations and their functions
  - Upcoming conferences, searchable by location, topic (e.g., veterans and STEM, veteran advocacy), and target audience (e.g., transitioning service members, veterans pursuing further education)
  - Resources to support women veteran-oriented programming and communities of practice focused on STEM.

#### For Professional Organizations

- » Encourage organizations for veterans to be more inclusive and to specifically reach out to and support women veterans, particularly those with an interest in STEM fields. For example:
  - Include chapters, subgroups, or specific programs for women vets in STEM
  - Offer free membership for the first year of post-service transition
  - Provide passes to annual conferences and include networking sessions and content specifically for women veterans in STEM

#### For Policymakers and Professional Organizations

» As part of the national center, offer technical assistance to relevant professional networking organizations regarding the needs of women veterans in STEM.

# 3

## **Building Strong Systems to Support Transitions**

The transition from the military to civilian life is complex and multi-faceted. Before being discharged, service members enter the **Transition Assistance Program (TAP)**, which provides counseling and career or educational planning. However, the scope of this program is limited and occurs late in the transition process for some. As a result, many veterans find themselves unprepared for the challenges of navigating, for example, new health-care systems and the civilian job market, sometimes for the first time in their adult lives.

Civilian education and workplaces have vastly different cultures from the military. Many job postings are based on civilian experience, and the application requirements are outlined accordingly.



Even if veterans have the necessary training and skills for a civilian job, it's likely that their experience is presented in a format that companies aren't familiar with. For example, some women veterans have received extensive training and have experience in managing and analyzing sensitive data and ensuring that it is secure in high-pressure situations from their service, but they may need help translating the relevance of that experience to civilian employers in cybersecurity.



### Recommendations

#### For the Department of Defense

Encourage transitioning service members to look for companies and organizations that have committed to hiring and retaining veterans, such as those who received the Department of Labor's <u>HIRE Vets Medallion Award</u> or those with a high ranking on <u>VETS Indexes</u>.

#### For Policymakers and the Department of Defense

- » Ensure that transition planning starts long before departure and assists women in identifying and translating the skills and knowledge gained in service to relevant STEM fields, so they are better equipped to gain employment in the well-paying careers available in the STEM workforce.
- » Expand <u>SkillBridge</u>, which helps service members match civilian opportunities to their job training and work experience, and TAP, which offers employment workshops and career exploration tools.
- » Include more robust and customized transition resources both in the resource center and as part of military-provided transition programs, for example:
  - Education resources, such as information about the G.I. Bill, scholarships, vocational tracks including skilled trades, potential STEM degrees related to their skills and knowledge, and higher education institutions with model student veteran support services and programs
  - Mentorship opportunities with other veterans in STEM fields
  - Profiles of veterans who made a career switch into STEM careers, along with road maps of their steps to success and career advancement, so women veterans can identify their goals and see a path to achieve them
  - Professional development and training opportunities, such as apprenticeship or internship opportunities with STEM employers; existing programs include Amazon's Military Apprenticeship Initiative and MassBioEd's Life Sciences Apprenticeship program, which specifically aims to recruit veterans
  - Webinars or guides to coach veterans in reframing their training, their experience, and the leadership and problem-solving skills they learned during service to match the requirements and priorities of the civilian workforce, along with assistance in resume development



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• Webinars, resources, and support to coach veterans in advocating for themselves to secure employment in the civilian sphere, as well as building interviewing skills so they are prepared for the experience



#### **Engaging Higher Education Institutions and Employers**

Women veterans face biases and preconceptions on many fronts in their efforts to enter or reenter the civilian job market including within the institutions for the education and training they need to pursue STEM careers.

Though women veterans bring many sought-after skills to the workforce, they may lack the knowledge to ascertain whether their skills and training properly suit them to pursue education and employment in STEM fields. They often lack industry-specific experience or have trouble understanding and explaining how their military work applies to a civilian context, which can make it difficult to determine which fields to pursue.

Most higher education institutions do not give credit for military training toward degree requirements. While many have veteran services departments or centers, these often lack many of the services that women veterans need including opportunities to network with other student veterans and mentorship opportunities from veteran alumni. Some faculty lack an understanding of the unique experiences of women veterans that can make their transition to civilian life more challenging, and campuses overall may lack an understanding of military culture. The University of Texas-Dallas's Military and Veteran Center is an example of how higher education institutions can better support student veterans by offering peer networking and support programs, alumni groups, career development training, transfer orientations, and efforts to establish a military-friendly campus culture.

Many STEM jobs require applicants to have specific degrees rather than relevant experience, which excludes applications from women veterans who may have developed extensive knowledge and training in STEM-related fields through their military assignments. Many employers lack awareness of what active military service entails and the job skills and training that service members gain, and simply view military service as a gap in employment history. In addition, the human resources departments of many companies use recruiting software to prescreen applicants' resumes; biases that exist within human screeners also inherently exist in the software algorithms and exclude many qualified candidates.

To break down these barriers, higher education institutions and employers need to be better informed about women veterans' needs, the issues they face upon returning to the civilian world, their obstacles to success, and their unique strengths. A better-informed community and more-inclusive education and work environments are attainable goals that can ease this aspect of transition for women veterans.





### Recommendations

#### **For Policymakers**

- » Include resources for employers and higher education in the national center's resource clearinghouse, for example:
  - Tools to help higher education create a military-friendly campus culture and examples of existing models of veteran support programs such as <u>University of Texas-Dallas</u>, <u>University of Arizona</u>, <u>University of Indiana</u>, and <u>Colorado State University</u>
  - Self-assessment tools for employers to objectively assess their progress toward instituting policies and practices that promote recruitment and retention of women veterans
  - Opportunities for employers and higher education administrators and educators to attend anti-bias training in regard to women veterans
  - Resources to support employers, educators, and others—family, friends, mentors—in understanding women veterans' mental health issues, help them combat stigma, locate local health-care providers with expertise in working with veterans, and learn how to support women veterans in times of crisis

#### **For Employers**

» Broaden networks to include vocational schools, community colleges, and apprenticeship programs, which may reach more women veterans.

#### For Technical and Higher Education Institutions

Institute a Veteran Students Center on campus, a dedicated space to coordinate support services and resources for veterans—including meeting space, tutoring, and other academic services—and to help student veterans with the transition from military to civilian life. The Veterans Education Empowerment Act, bipartisan legislation currently in Congress, offers grants to universities and colleges across the nation to create such centers (Congress.gov, n.d.).

#### For Employers and Higher Education Institutions

- » Learn more about veterans' experiences by tapping veteran employees as advisors to create new engagement and retention practices as well as veteran alumni to serve as mentors to help student veterans transition and excel in higher education.
- » Coach post-secondary advisors and human resources professionals on translating military experience to civilian language.



## Partnering with the Department of Defense to Change Culture

Traditionally, the U.S. military service has been a male-dominated culture. Many women service members report feeling unsupported, undervalued, and excluded during their service. Further, women in the military are significantly more likely than men to face sexual harassment or sexual assault during service (Kimerling et al., 2007). Military sexual trauma has a strong association with post-traumatic stress disorder, a condition that creates additional roadblocks over time to these service members' lives and successful post-service transition.

To make the military a safer and more-inclusive place for women, the culture needs to change. With male service members as allies, women will have a more positive service experience, which could lead to an easier transition to the civilian world.



### **Recommendations**

#### For the Department of Defense

- Ensure that all service members, independent of their leadership, military occupation, or duty station (location), have equitable access to transition support, including post-service career planning (pre-transition), support during the transition, and post-transition resources.
- » Create a transition services office that serves all branches, rather than individual offices for each branch; the various branches could then share existing resources and create a uniform plan for their service members.
- » Hire an independent external agency to assess TAP, with a particular focus on the unique experiences, needs, and challenges of women veterans, how the program has worked and not worked for them, and what improvements they suggest. The assessment findings should then be translated into action.

#### For Policymakers and the Department of Defense

- » Build on and improve existing services that provide military-wide equity and inclusion training, educate male service members on women's contributions to the military and on strategies for supporting and advocating for their female cohorts, and enforce zero tolerance for harassment and disrespect.
- » Share transition and post-transition information, supports, and resources available through, and actively participate in, the national center's resource clearinghouse.



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