

THE NNSA GRADUATE FELLOWSHIP PROGRAM: A LEGACY IN NUCLEAR SECURITY LEADERSHIP DEVELOPMENT

Bethany Lavelle, Pacific Northwest National Laboratory
Tom Gray, Pacific Northwest National Laboratory

Abstract:

The year 2020 marked a monumental occasion for the National Nuclear Security Administration (NNSA) Graduate Fellowship Program (NGFP): The program celebrated 25 years in operation building the next generation of NNSA and national security leaders. At the same time, the program faced the unprecedented task of transitioning into full-time remote operations. Thanks to its proven resilience in adapting to an ever-evolving threat environment, the program safely and securely transitioned online. Unique in size, structure, and approach, NGFP has become a premiere program for attracting high-quality graduate students to the complex world of nuclear security. This paper will outline the program's history, evolution, and impact made possible by a refined, reliable, and replicable approach that is building experienced, next-generation professionals fit to serve the nation's security missions.

Since its humble beginnings of just three fellows supporting one NNSA mission space, NGFP has become a renowned institutional succession pipeline. Today, the program hires more than 60 fellows per year and serves nearly every NNSA program office. Having garnered interest from other national security stakeholders, the program has leveraged its nimble management approach to incorporate assignments with the Department of State and the Defense Threat Reduction Agency. Of the more than 600 fellows who have entered the program, approximately 85% accepted positions with ties to national security, and many still reside there today. The NGFP mission to build future leaders, along with each fellowship cohort's commitment to grow and serve, revitalizes the nuclear security enterprise with a generation of agile, diversely skilled professionals.

This paper synthesizes a variety of data, including historical program documents, surveys, recruiting statistics, and interviews, to share the best practices and approaches that have been successful at recruiting, training, and retaining next-generation nuclear security leaders for over 25 years.

Introduction

At the National Nuclear Security Administration (NNSA), people are the number one asset—a diverse team of talented scientists, engineers, technicians, and support staff working together to strengthen the nation through nuclear security. To sustain this high-caliber, dynamic cohort, the NNSA Graduate Fellowship Program (NGFP) was designed to hire high-performing, diversely skilled graduate students for a year of hands-on experience and specialized training. Through a unique national laboratory-administered program management model, NGFP provides year-long, paid fellowships for students with a passion for national security and diverse technical and policy skillsets to work with NNSA staff across the nuclear security enterprise and with partners around the world.

The year 2020 marked a monumental occasion for NGFP: 25 years in operation building the next generation of NNSA and national security leaders. At the same time, the program faced the unprecedented task of transitioning into full-time remote operations. Thanks to its proven resilience in adapting to an ever-evolving threat environment, the program safely and securely transitioned online, successfully onboarding its second class completely virtually in June 2021. While NGFP had to adapt to meet the challenges of a virtual fellowship, this is only the latest evolution in the program's long history. As the needs of NNSA have evolved, so has the NGFP fellowship.

To address the changing needs of NNSA, NGFP has pursued five core programmatic elements: 1) a holistic approach to leadership development, 2) a commitment to diversity, 3) strong relationships with its stakeholders, 4) a robust network of leaders across the national security sector, and 5) an adaptable and nimble project management approach. The following sections share the program's history, evolution, and impact made possible through each of the programmatic elements above.

Background

Since its humble beginnings of just three fellows supporting one NNSA mission, NGFP has become a renowned institutional succession pipeline. NGFP was established for the NNSA Defense Nuclear Nonproliferation mission in 1995. In 25-plus years of operations, the program has grown steadily with the NNSA's increasing need for leading-edge talent in diverse mission spaces (Figure 1). The program now spans most of the NNSA, typically placing fellows within Defense Nuclear Nonproliferation, Defense Programs, Counterterrorism and Counterproliferation, and Safety, Infrastructure, and Operations. The program also expanded to include NNSA site offices across the nation, giving fellows opportunities to serve outside the Washington D.C. metropolitan area.

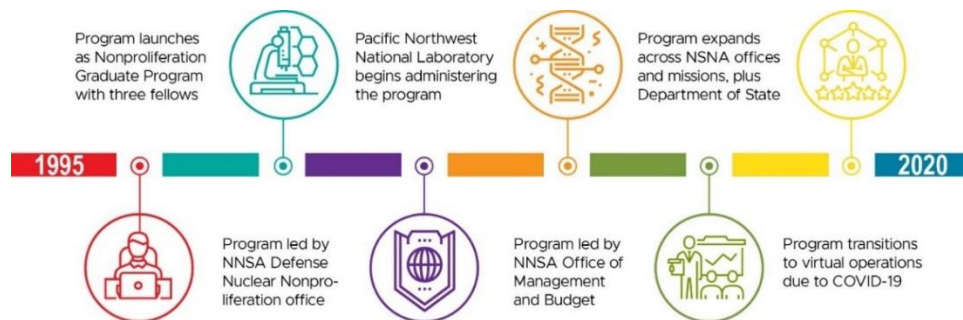


Figure 1. NGFP history

As a result of the growing mission needs and hiring demand, the number of fellows has more than quadrupled since its inception (Figure 2). Today, the program hires more than 60 fellows per year and their assignments span the NNSA enterprise as well as the U.S. Department of Energy Office of Intelligence and Counterintelligence, Department of State, and the Defense Threat Reduction Agency. The program has become a recognized resource for bringing top talent

to the nation's critical nuclear security missions and providing unique opportunities for its fellows, given its strong reputation.



Figure 2. Evolution of the NGFP class size

As interest in the program grew, so did its size and scope, more than tripling in size in the first 10 years and providing fresh talent to support all of NNSA's nonproliferation missions, even including placement of fellows at DOE/NNSA offices internationally. In the early 2010s, in response to growing interest in the program, NGFP made its greatest pivot to date, expanding its scope outside NNSA's nonproliferation mission, including NNSA's stockpile stewardship mission and others. With this expansion came a greater need for technical expertise to support NNSA's stockpile stewardship mission. As a result, the NGFP recruitment program evolved to attract a greater diversity of applicants from both technical and policy backgrounds. Moreover, as the program's scope expanded to include other NNSA missions, including NNSA site offices that provide oversight for NNSA's laboratories and plants, the needed skillsets continued to expand to include business, project management, and procurement. Beginning in 2016, the program made another important expansion outside NNSA as it began offering fellowship positions at the Department of State and the Defense Threat Reduction Agency. This expansion is a testament to the breadth of impact of the program, as former fellows who progressed in their careers outside NNSA desired to bring the program to their new organizations.

Finally, in the wake of this expansion in size and scope, the NGFP focus on career development has also evolved. Since NGFP does not guarantee post-fellowship employment, the program has adapted to provide fellows more tools and networking opportunities to ensure each fellow is in a strong position to secure post-fellowship employment. Fortunately, as the cadre of former fellows now exceeds 600 with approximately 85% working in the national security sector, the program enjoys a broad network of supporters who understand the unique skillset that NGFP fellows can bring to their organizations.

The NGFP Approach to Success

NGFP has relied on the following five programmatic elements to achieve successful growth and adapt to the changing needs of NNSA.

A Holistic Approach to Leadership Development

NGFP has become a model program for developing and retaining top talent in national security and promoting awareness of opportunities for careers within NNSA, while providing transformational opportunities that build future leaders. Fellows support the full breadth of NNSA mission capabilities, and they make powerful programmatic contributions across both the technical and policy realms. Fellows grow as future leaders through their unique, experience-based assignments as well as an annual fellowship agenda packed with professional development and training opportunities.

As NGFP has grown over the years, the fellowship opportunities for professional growth and leadership development have evolved as well. The annual training, networking, and development agenda now includes a standard suite of opportunities, such as leadership briefings, alumni panels, and career skills workshops. Most recently, the program incorporated NNSA's Aspiring Leadership Certification Program into the curriculum. The program, which comprises a combination of in-person and self-paced courses, covers practical topics, such as time management and effective communications, but also topics meant to help fellows identify their own leadership approach, including emotional intelligence, strengths assessments and developing organizational trust.

Unique to NGFP in comparison to other government fellowship programs, fellows are allocated \$10,000 for travel and training aligned to their individual assignments and professional development needs. In a typical year, the fellows often use this funding to join their office on business trips, where they can get hands-on experience implementing NNSA's mission with its partners both domestically and internationally. Beyond travel, many fellows use the allocation to find exciting new ways to better serve their office by developing new skillsets and credentials, such as foreign language training, attending conferences, and pursuing certifications.

While each fellowship position is different, one thing is consistent: fellows engage in real-world tasks that deliver meaningful impact to an NNSA office and mission space. Examples from the recent class include:

- Supporting efforts advancing emerging technologies, nuclear and radiological security multilateral activities, and interagency coordination;
- Assisting capacity-building efforts with partner nations on issues of sanctions and illicit financing;
- Providing technical assistance for experiments and operations at sites like the Nevada National Security Site and North Las Vegas Facilities;
- Coordinating deliverables and participating in key events such as a bilateral safeguards and security workshop with Sudan's nuclear regulatory agency; and
- Supporting the working groups in the areas of Robotics and Autonomous Solutions, Space Sciences, and Programmatic Recapitalization.

A Commitment to Diversity

NGFP supports complex nuclear security missions that require diverse thought leadership. For that reason, the program is committed to building a diverse, engaged, and highly skilled

workforce in the fields of science, technology, engineering, mathematics (STEM), policy, and project management. However, as NGFP has evolved over the last 25-plus years, the definition of a diverse workforce has also evolved and broadened. In its early days, the program considered diversity primarily in terms of gender. While the program has had success in promoting gender diversity since its beginning, NGFP has had particular success in reducing gender disparity in the past five years, with the Class of 2021 being the most gender-balanced class to date and representing more than 80% reduction in gender disparity since 2015 (**Error! Reference source not found.**)¹ This marked improvement in gender diversity can be attributed to 1) using gender-neutral language in the job description, 2) connecting with organizations in the national security enterprise that promote diversity and inclusion, such as Women of Color Advancing Peace and Security, and 3) providing more opportunities for current and former female fellows to share their experiences and opportunities during information sessions with university students.

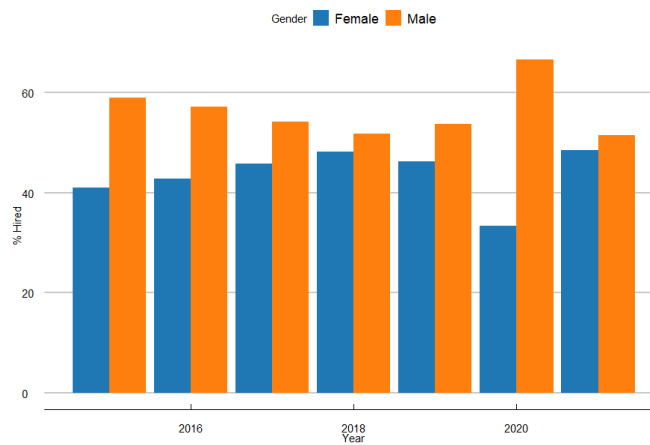


Figure 3. NGFP applicants hired by gender

Beyond gender diversity, NGFP has made strides in seeking academically diverse applicants. Historically, most fellows had policy degrees, but in 2012, when NGFP expanded its scope to include NNSA’s stockpile stewardship mission, the program was tasked with recruiting more candidates with technical backgrounds. Since then, NGFP has continued to augment recruitment to attract students in STEM fields. However, since government salaries for STEM graduates are often incomparable with those offered by private industry, NGFP recruiters must be able to clearly communicate the unique technical opportunities offered by the fellowship and build excitement for NNSA’s mission among these highly sought-after students. Annual training for recruiters includes communications lessons learned and testimonials from STEM fellows describing the value the fellowship provides for others with similar skillsets. As demonstrated in Figure 4, these techniques have been successful, with technical fellows accounting for 50% of the current fellowship class (Class of 2021).

¹ Gender data is only provided since 2015 because 1) programmatic data on gender was not recorded prior to 2015 and 2) class sizes prior to 2015 were much smaller and may not provide good representatives samples for gender in the general population. Additionally, the large anomaly in the gender data for 2020 is not yet understood.

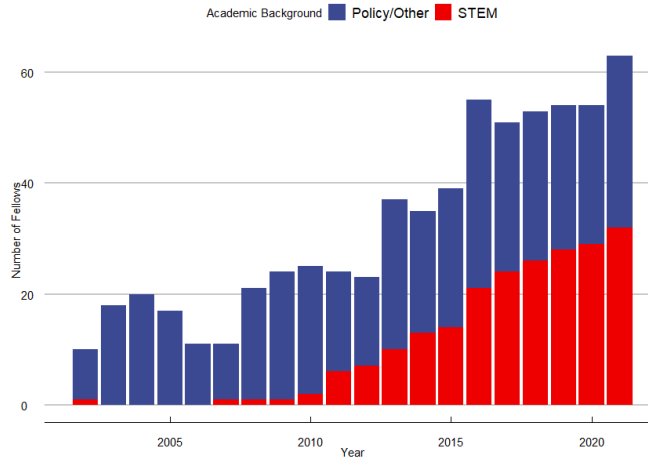


Figure 4. Evolution of fellow academic backgrounds

Finally, in pursuit of improved diversity and inclusion, the program evolved its recruitment strategy again in 2017 to reach more diverse student populations and build its reputation and relationships in new communities, professional societies, and student groups. Most notably, the program began fostering relationships with Minority-Serving Institutions (MSIs) to build awareness of the fellowship in communities that were historically overlooked in the program’s outreach. To do this, NGFP had to make big changes in its recruitment efforts, shifting from primarily 1-2 recruiters to a diverse team of University Relationship Managers (URMs). This transition allowed the program to match URMs’ backgrounds with an institution’s population, enabling stronger relationships with academic advisors and students. Prior to this, the program had hired only one fellow from a MSI since its inception. The new approach boosted applications from 15 partner MSIs, resulting in fellowship employment for 35% of these applicants. See Figure 5 for the results of NGFP’s approach to improving its ethnic diversity.

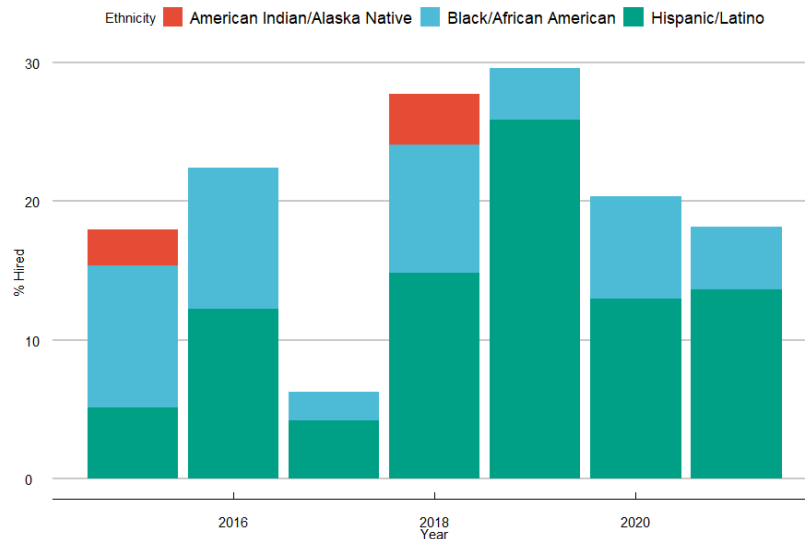


Figure 5. Proportion of underrepresented minorities hired into NGFP

Strong Relationships with Stakeholders

To achieve its success, NGFP must have strong relationships with several key stakeholder groups: 1) the NNSA offices and other organizations where the fellows are embedded; 2) the Pacific Northwest National Laboratory (PNNL) organizations that support fellow hiring, clearances, and human resources; 3) the university partners from which future fellows are recruited; and 4) the large network of program alumni who are crucial to supporting the fellowship's leadership development events and sharing opportunities for post-fellowship employment. Given this stakeholder diversity, NGFP has adopted a tailored approach to engage with each group based on their individual needs, which are summarized below:

NNSA Offices and Other Organizations: Without question, this stakeholder group is the most critical to sustained success for NGFP. Close communication and coordination between NGFP and the individual offices supported by fellows is important to ensuring that the needs of those offices is met and that the fellows are having enriching professional experiences that align with their professional goals. This requires many communication touchpoints with the offices each fellowship year, including monthly fellowship status reports, quarterly fellowship activity highlights, and biannual check-in sessions with fellow supervisors. It also includes training for new NGFP supervisors and in advance of NGFP interviews, which typically occur in mid-November. Finally, a direct line of communication is always open between the supervisors and NGFP management (NNSA and PNNL) to resolve fellowship issues in a timely, professional manner.

NNSA Offices and Other Organizations: Considering NGFP fellows are hired as PNNL staff during the term of their fellowship, NGFP works hand-in-hand with PNNL support organizations to manage fellows' administrative and human resource needs, including hiring, onboarding, offboarding, leave and benefits, and clearances. Given the short duration of the fellowship, these tasks, particularly hiring and clearances, must be completed in a timely manner. NGFP accomplishes this primarily through the diligent use of standard project management tools, including project plans with clear timelines and stakeholder responsibilities. However, it also requires buy-in and support from PNNL upper management to ensure that, when issues arise, appropriate resources can be prioritized for resolution in a timely manner.

University Partners: The NGFP recruitment model stands on building relationships with university professors, advisors, leadership, and graduate career centers to better identify the right students at the right point in their academic career. The program uses a quarterly cadence for communications with each university, which has strengthened the university partnerships by increasing communication touchpoints and providing more students with the tools to be successful through the application and fellowship process. Quarterly communications allow URM students to gain a more comprehensive understanding of the eligible student body and provides new opportunities to access previously untapped spaces such as student organizations, career service centers, and online university platforms.

NGFP Alumni: Now numbering more than 600, NGFP alumni are vitally important to the fellowship in three primary ways: 1) they often directly ensure the high-caliber fellowship experience is maintained, because many NGFP alumni are current supervisors and leaders at

NNSA; 2) they frequently participate in fellowship development events, enhancing the experience for current fellows; and 3) they often share career opportunities with NGFP or participate in the annual NGFP Career Fair, ensuring that a large majority of NGFP fellows (~85%) remain working for the national security sector after the fellowship. As such, much of the communication with NGFP alumni happens organically while managing each fellowship class. However, the program also communicates deliberately with alumni through quarterly newsletters and by inviting all NGFP alumni to participate in the NGFP Closing Ceremony and Alumni Reception that takes place each year in May.

A Robust Network of Leaders Across the National Security Sector

Given the reputation NGFP has built over its 25 years, NGFP alumni are highly sought after by employers in the nuclear security enterprise and more broadly in the national security sector. This means that many fellows have gone on to apply their NNSA mission knowledge and experience at a broad set of agencies across the U.S. government and organizations worldwide. In fact, a large majority of the 600-plus alumni remain connected to the nuclear security mission through federal positions at NNSA, DOE, national laboratories, or other national security stakeholders. Importantly, as shown in Figure 6, due to the growing reputation and reach of the NGFP alumni, many fellows have found impactful opportunities outside NNSA and the national labs, demonstrating the value of fellows’ skills and expertise within the national security sector.

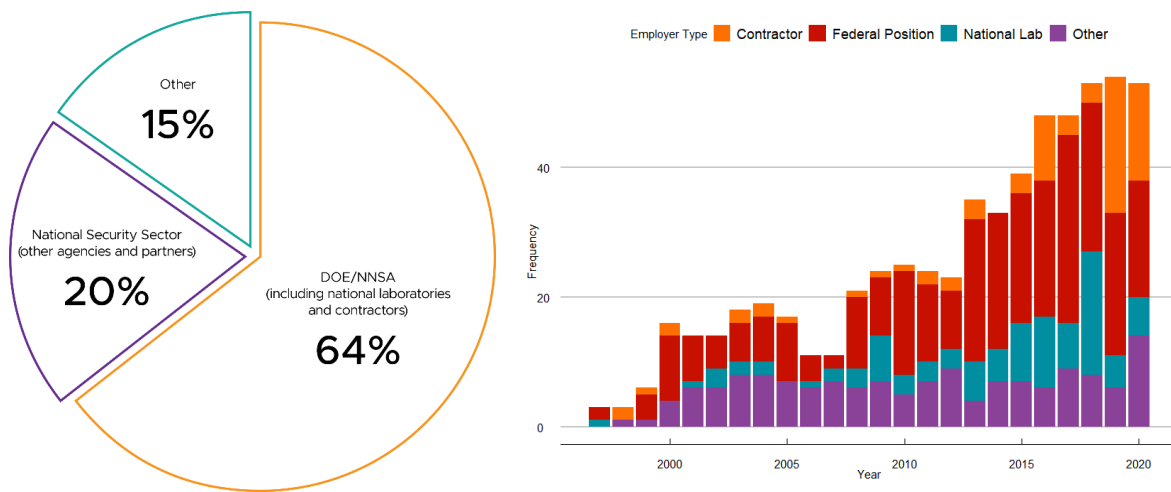


Figure 6. NGFP alumni employment

Beyond the breadth of the NGFP impact, true to its mission to build future leaders, many alumni have risen to notable leadership roles serving the national security and STEM community in meaningful ways. For example, Joyce Connery (Class of 1999) was designated Chair of the Defense Nuclear Facilities Safety Board by President Biden in January 2021 and was confirmed by the Senate to the post for a term expiring in October 2024. Kelly Cummins (Class of 2001) has served as the Senior Advisor to former Secretary of Energy Ernest Moniz, Deputy Assistant Deputy Administrator for Production Modernization in the NNSA’s Office of Defense Programs, and most recently the Associate Deputy Director for Field Operations of the U.S. Department of Energy Office of Science. Amanda Richardson (Class of 2003) is the Chief of Operations for the Defense Threat Reduction Agency’s Research and Development Directorate, leading the

strategic operations, management, and integration of the research, development, test, and evaluation activities. Lastly, Dr. Clark Cully (Class of 2008) serves as Senior Advisor to the U.S. Department of Defense Chief Information Officer responsible for advising on emerging technology, driving innovation, and implementing Defense's Digital Modernization Strategy.

NGFP alumni in more recent classes have also distinguished themselves in several ways. The first two inaugural Hutchison Fellowships with the International Atomic Energy Agency were both awarded to NGFP fellows, and seven fellows have received the Linton F. Brooks Medal for Dedication to Public Service. The award recognizes NNSA employees with less than five years of federal experience whose actions and deeds exemplify former NNSA Administrator and Ambassador Linton Brooks' spirit of commitment and achievement.

Adaptable and Nimble Project Management

Notably, one of the most consistent themes of NGFP is that it is constantly changing and evolving. While these changes have presented challenges, this evolution has allowed the program to succeed, even as the size and scope of the fellowship expanded, sometimes exponentially. This evolution was only made possible due to the nimble project management approach that NGFP employs. Specifically, two aspects distinguish NGFP from other similar programs:

Partnership Model: The NNSA federal management team and PNNL management are partners in NGFP, sharing the same vision for administering the program within the same framework for efficacy. They take a unified approach to developing the program's strategy and accomplishing its mission. In practice, this means that when programmatic changes are necessary, NGFP can adapt quickly, with NNSA and PNNL working hand-in-hand to sustain mission impact. The success of this approach was most apparent at the beginning of the COVID-19 pandemic. While many fellowship and internship programs were cancelled or reduced in scope, NGFP quickly pivoted to virtual delivery such that the fellowship experience and the programmatic contributions by the fellows would be no different from any other fellowship year.

Lifecycle Management Approach: As the program has evolved, NGFP has managed the program based on a well-defined program lifecycle, integrated program elements, and opportunities for continuous improvement. In practice, this means that NGFP coordinates the four core program elements—program management, recruitment, hiring, and professional development—concurrently throughout the year, while simultaneously planning, administering, and implementing three different fellowship classes: 1) onboarding and administering the current class of fellows; 2) recruiting and hiring the incoming class; and 3) recruitment planning for the future class. This approach leverages feedback collected from each fellowship class to make adjustments for the next fellowship class, and it has been particularly valuable to NGFP recruitment, which seeks to continually improving its practices to recruit highly qualified, diverse applicants to become future nuclear security leaders.

Conclusions

After two-and-a-half decades of operations, the ever-pressing NGFP mission to build future leaders remains purposefully unwavering. The rapidly changing nature and landscape of nuclear security work requires that people, policies, and technology be as ready and as cutting-edge as

our technical solutions. NGFP fellows' commitment to grow and serve as future leaders revitalizes our enterprise with a generation of agile, diversely skilled professionals—and their timing could not be more meaningful.

While other internship and fellowship programs may exist, it is clear why NGFP has become the premiere program for attracting high-quality graduate students to the complex world of nuclear security. As demonstrated above, NGFP has taken a holistic approach to leadership development, which has directly led to a robust network of leaders across the national security sector. That success is founded on a commitment to diversity, strong stakeholder relationships, and an nimble project management approach, that has enabled continued programmatic success.

The program's greatest and most inspiring transformation remains its mission impact—whether online or in person, at program offices in Washington D.C. or site offices across the nation, NGFP is delivering next-generational leadership development and meaningful programmatic impact to enhance the nation's security.