Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington DC 20515

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February 7, 2020

SUMMARY OF SUBJECT MATTER

TO: Members, Subcommittee on Aviation
FROM: Staff, Subcommittee on Aviation
RE: Subcommittee Hearing on "Looking Forward: The Future of America's Aviation Maintenance and Manufacturing Workforce"

PURPOSE

The Subcommittee on Aviation will meet on Tuesday, February 11, 2020, at 10:00 a.m. in 2167 Rayburn House Office Building to hold a hearing titled, "Looking Forward: The Future of America's Aviation Maintenance and Manufacturing Workforce." The hearing will examine the current state of the U.S. aviation manufacturing and maintenance workforce, challenges to ensuring this workforce can meet future industry demands and needs, and current Government and industry initiatives designed to address those challenges. The Subcommittee will hear testimony from the Federal Aviation Administration (FAA), U.S. Government Accountability Office (GAO), the Aviation High School, Long Island City, N.Y., Vaughn College, Delta Air Lines, Gulfstream Aerospace, and the LIFT Academy.

I. OVERVIEW

The U.S. aviation industry is in the midst of an economic renaissance. Just over a decade ago, the 2008 financial crisis led to an unprecedented wave of industry restructuring that ultimately resulted in a loss of more than 100,000 jobs.[1] The effect of the crisis was so profound that the industry did not return to pre-crisis payroll levels until November 2017.[2] Now, for the first time in history, U.S. carriers have recorded three consecutive years of record or near-record profits, largely due to low oil prices and more efficient operations.[3]

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[1] Gov't Accountability Office, GAO-14-237, *Aviation Workforce: Current and Future Availability of Aviation Engineering and Maintenance Professionals* p.1 (2014).
[2] Seth Borko. "10 Years Later: How the Travel Industry Came Back From the Financial Crisis", *Skift*, (Sept. 14, 2018), *available at*: https://skift.com/2018/09/14/10-years-later-how-the-travel-industry-came-back-from-the-financial-crisis/.
[3] Brianne Eby and Paul Lewis, "Aviation Workforce Challenges in the United States and the United Kingdom", *Eno Center on Transportation* (March 2019) p. 23 *available at:* www.enotrans.org/wp-content/uploads/2019/03/3.26-US-UK-Aviation-Workforce_final.pdf.

In 2014, aviation accounted for more than 5 percent of U.S. Gross Domestic Product (GDP), contributed $1.6 trillion in total economic activity, and supported nearly 11 million jobs.[4] Aviation manufacturing was and continues to be the Nation's top net export, accounting for 0.8 percent of the U.S. GDP in 2014.[5] Recent events have affected U.S. manufacturing and the Secretary of Commerce has stated that U.S. GDP growth could be reduced by 0.5 percentage points.[6] These effects have also been felt down the supply chain including layoffs and costs to airlines could be more than $1 billion.[7]

The airline industry growth in recent years has driven production of new aircraft to record numbers, delayed retirements of older jets, and increased spending on aircraft maintenance, increasing demand for a skilled workforce in the aircraft maintenance and manufacturing fields.[8] But as the airline industry has grown in recent years, it has become more difficult to hire and train qualified workers to service, repair, and design an increasing amount of new aircraft and aviation products. For instance, in a recent survey by the Aeronautical Repair Station Association, 55 percent of its members reported having unfilled maintenance technician positions and 82 percent experienced at least some difficulty in finding qualified workers to fill open positions.[9]

Hiring difficulties during times of high growth and low unemployment is not uncommon among industries that depend on a skilled workforce. Additionally, the surging number of retirements among the baby boomer generation will likely make the problem much worse.[10] Without effective strategies to address these underlying workforce challenges, the aviation industry's economic growth and technological advances could be hampered in the future.

II. STATE OF THE U.S. AVIATION MAINTENANCE AND MANUFACTURING WORKFORCE

A. Occupational Profiles

The aviation maintenance workforce generally falls into two categories: (1) certificated mechanics and service technicians (repairman) and (2) avionics technicians.[11] FAA-certificated mechanics inspect and repair aircraft fuselages and wings (airframes) and engines (powerplants).[12] Generally, it takes between one and three years of education or training to become FAA-certificated and the worker can be certificated to repair airframes, engines, or both (A&P certificated).[13]

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[4] Federal Aviation Administration, "The Economic Impact of Civil Aviation on the U.S. Economy" (November 2016).
[5] *Id.*
[6] *Anneken Tappe*, "Boeing's 737 Max crisis will weigh on America's GDP growth in 2020", *CNN Business*, (December 19, 2019) *available at*: https://www.cnn.com/2019/12/18/economy/boeing-gdp-impact/index.html.
[7] *Emma Newburger*, "Boeing 737 Max crisis could slow US growth by a half point in 2020, Mnuchin says", *CNBC*, (January 12, 2020), *available at*: https://www.cnbc.com/2020/01/12/mnuchin-says-boeing-737-max-grounding-could-slow-us-growth-by-a-half-point.html.
[8] *Id.*
[9] *Id.*
[10] Laura Schneider, "How Retiring Baby Boomers Affect the Job Market", *The Balance Careers,* (November 29, 2019), *available at*:"https://www.thebalancecareers.com/retiring-boomers-affect-job-market-2071932
[11] Gov't Accountability Office, GAO-20-206, *Aviation Maintenance: Additional Coordination and Data Could Advance FAA Efforts to Promote a Robust, Diverse Workforce* p.5 (2020)
[12] *Id.* at 3.
[13] *Id.*

There are generally three ways to become eligible to take the test to become an FAA-certificated mechanic: (1) military training and experience; (2) aviation maintenance technician (AMT) schools; and (3) practical work experience under the supervision of a certificated mechanic.[14]

FAA-certificated repairmen service aircraft components and must be recommended for certification by their existing employer to perform specific tasks like welding or painting.[15] It generally takes a year to receive the necessary training or education to become a certificated repairman and, unlike mechanics, a repairman's certification is limited to the employer who issued it.[16] Mechanics and repairman who are not certificated may still perform repair work, but they must be supervised by an FAA-certificated mechanic or repairman. One of the primary differences between certificated mechanics and repairman is that only a certificated mechanic can approve an aircraft for return to service.[17]

Avionics technicians generally install, inspect, test, or repair avionics equipment, such as radar, radio, navigation, and missile control systems in aircraft and space vehicles.[18] There is no required test to become an avionics technician, but the technician may hold an A&P, repairman, or related FAA certificate.[19]

Though the aviation manufacturing workforce contains mechanics and repairmen, it also includes a variety of other professions as well. These include business strategy, cyber security, data science, and direct manufacturing, among other things.[20] While all these professions support the aviation manufacturing industry, the profession that is most directly linked to the design of new aircraft is aerospace engineering. Aerospace engineers design, construct, and test aircraft and aircraft components to ensure they function according to design.[21] Most entry-level positions for professional aerospace engineers generally require a bachelor's degree, although some may require a master's degree or doctorate.[22]

B. Labor Shortage

Aviation maintenance and manufacturing companies are growing increasingly concerned about a labor shortage. The FAA predicts that more than 50 percent of the current science and engineering workforce is expected to soon hit retirement age.[23] Half of the 330,000 FAA-certificated mechanics and repairmen as of December 2018 were between 50 and 70 years old.[24] The problem is not limited to just retirements; for example, the number of students receiving degrees in avionics has significantly decreased in recent years.[25] The Aviation Technician Education Council (ATEC)

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[14] *Id.*
[15] *Id.*
[16] *Id.*
[17] *Id.*
[18] *Id.* at 7
[19] *Id.*
[20] Eno Center, supra note 3, at 41.
[21] GAO-14-237 at 4.
[22] Learn.org, *What Training Do I Need for a Career in Aerospace?, available at:*
https://learn.org/articles/What_Training_is_Necessary_for_a_Career_in_Aerospace.html
[23] Federal Aviation Administration. "Aviation and Space Education".
https://www.faa.gov/about/office_org/headquarters_offices/ang/offices/tc/education/aviation/?set=whycare.
[24] GAO-20-206
[25] GAO-14-237 at 16.

estimates that while 30 percent of the current workforce is at or near retirement age, new entrants comprise only two percent of the workforce annually.[26]

A recent analysis by the GAO found that, while not definitive, there was evidence of hiring difficulties consistent with a potential labor shortage for aircraft mechanics and service technicians.[27] The same analysis found even stronger evidence of a labor shortage for aerospace engineers.[28]

Moreover, nearly 39 percent of aerospace companies predict an "extreme" effect on their business growth caused by a labor shortage.[29] A 2014 report estimated that U.S. manufacturers face reduced earnings of up to 11 percent due to revenue losses stemming from skills shortages.[30] And Boeing predicts that the aviation industry will require 754,000 new aircraft technicians over the next two decades.[31]

III. KEY CHALLENGES AFFECTING THE U.S. AVIATION MAINTENANCE AND MANUFACTURING WORKFORCE

A. Retirement of "Baby Boomer" Generation

By the year 2029, a majority of Americans who were born between 1946 and 1964 will have retired, and nearly one-fifth of the U.S. population will be 65 or older.[32] And their retirements have already started. It is estimated that since 2011, nearly 10,000 baby boomers reach retirement age every day.[33] In terms of aviation, for example, Boeing estimates that nearly 10 percent of its U.S. workforce is eligible for retirement.[34] As the baby boomer generation continues to exit the workforce, it becomes even more vital for Government and industry to develop strategies that expand the pipeline of workers into the aviation maintenance and manufacturing industry.

B. The Skills Gap

Many employers in the aviation industry express concern over the potential for a labor shortage, but when it comes to maintenance workers, employers are not concerned about just the supply of workers, but also the supply of qualified workers. For instance, according to a 2014 GAO report on the availability of aviation maintenance and engineering professionals, nearly 70 percent of

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[26] Eno Center, *supra* note 3, at 27.
[27] GAO-20-206 at 29-30.
[28] *Id.*
[29] Aerospace Industries Association. "The Defining Workforce Challenge in U.S. Aerospace & Defense". *Available at*: https://www.aia-aerospace.org/wp-content/uploads/2016/09/STEM_Report_lowres_V11.pdf
[30] Accenture . "The Manufacturing Skills and Training Study". (2014) *Available at*: http://www.themanufacturinginstitute.org/Research/Skills-and-Training-Study/~/media/70965D0C4A944329894C96E0316DF336.ashx
[31] Leslie Josephs. "College of $70,000 a year? Aviation Industry scrambles for mechanics as retirements loom." (September 3, 2018), *available at*: https://www.cnbc.com/2018/09/03/airlines-search-for-young-mechanics-as-retirement-wave-looms.html.
[32] Richard Fry. "Millennials Are the Largest Generation in the U.S. Labor Force". (April 11, 2018). *Available at:* https://www.pewresearch.org/fact-tank/2018/04/11/millennials-largest-generation-us-labor-force/ *Also,* Schneider, *supra* note 6.
[33] Schneider, *supra* note 6.
[34] Eno Center, *supra* note 3, at 41.

employers interviewed by the GAO expressed some level of difficulty hiring workers with the desired experience levels.[35]

This "skills gap" stems from several causes. One cause is the limited supply of certificated maintenance workers compared to the larger aviation maintenance workforce. For instance, from fiscal year 2001 to 2012, about 16,000 workers trained in aviation maintenance related occupations separated from the military annually.[36] However, the vast majority of these workers will not obtain an A&P certificate before entering the civilian workforce, making them less desirable to employers.[37] Since the military serves as a primary source of workers for employers looking to hire mechanics and service technicians, the lack of certificated workers among separated service members could limit employers' hiring pools.

Another cause for the skills gap is the lack of skilled workers in positions requiring more than a high school diploma but less than a four-year college degree. In a 2014 report on the manufacturing industry, more than 75 percent of respondents cited a shortage of skilled workers, primarily in positions that only required an associate degree or other form of vocational training.[38]

The 2014 report echoes a more recent finding by the GAO that nearly 70 percent of employers in the aviation industry expressed hiring difficulties, specifically with respect to workers with craft skills—such as upholstery and cabinetry—which are typically gained through either technical training or community college programs.[39] In a white paper published last year, a U.S. aviation maintenance and repair company pointed to this workforce challenge as the primary reason the company had nearly 400 openings at its five U.S. facilities and two Canadian facilities.[40]

C. Outdated Curriculum for AMT Schools

Many aerospace employers are reluctant to hire recent graduates since their education alone may not prepare them to begin work in their specified field.[41] According to a GAO report, employers have expressed concern that the curriculum taught at AMT schools focuses too much on outdated technologies, such as aircraft built with dope and fabric, and not enough on modern technologies, such as composite materials, which are increasingly being used by manufacturers.[42] Additionally, researchers have identified other subjects, such as soldering and welding, as issues in the curriculum that could be completely eliminated or condensed.[43] The current AMT school requirements, which are prescribed through FAA regulations, do not always provide schools with the flexibility needed to control how these subjects are taught.[44]

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35 GAO-14-237 at 23.
36 *Id.* at 18.
37 *Id.*
38 Accenture, *supra* note 26.
39 GAO-14-237 at 23.
40 Rob Mark. "AAR White Paper Focuses on Maintenance Technician Shortage". (February 5, 2019) Flying. *Available at*: https://www.flyingmag.com/aar-maintenance-technician-shortage/
41 GAO-20-206 at 14.
42 GAO-14-237 at 24.
43 *Id.*
44 *See* 14 CFR Part 147.

The FAA is responsible for approving and overseeing AMT schools as well as establishing the minimum curriculum and training requirements students need to obtain before becoming eligible to take the FAA mechanic tests.[45] Due to rising concerns from industry and AMT schools that FAA curriculum and testing requirements are becoming obsolete, the FAA has recently proposed to modernize these requirements, which have remained largely unchanged for decades.[46] Unfortunately, there has been little progress since the FAA issued its proposed rule aimed at modernizing the AMT educational curriculum in 2015.

At the same time, AMT schools are increasingly pushing back against the Federally-mandated curriculum and training requirements. For instance, in 2018, Southern Utah University (SUU) unsuccessfully petitioned the FAA for exemption from the Federal training requirements of approved curricula.[47] In its petition, SUU claimed that FAA requirements severely limited the school's ability to design a program that met its students' needs and that the current rules required training on items that most AMTs will never utilize in their careers.[48] Many in industry assert that if AMT students were taught subjects more relevant to modern industry needs, employers would be more willing to hire applicants straight out of school.

D. Lack of Diversity

To meet industry demand for new, skilled aviation workers, employers will need to expand the pool of workers from which they traditionally hire. One way to expand this candidate pool is to recruit workers from historically underrepresented groups in the aviation industry. Currently, the percentage of female FAA-certificated A&P mechanics remains low at only 2.4 percent.[49] Only 13 percent of aerospace engineers are women, while 75 percent of aerospace engineers are white.[50] In contrast, women and minorities make up 50 and 40 percent of the U.S. population, respectively.[51] These significant discrepancies suggest that increased outreach to these underrepresented groups could expand the hiring pool and help alleviate a future labor shortage in the aviation maintenance and manufacturing industry.

E. The Glamour Gap and Industry Competition

Another reason the aviation maintenance and manufacturing industry is having hiring difficulties relate to the waning interest among younger generations to enter the aviation field, otherwise known as the "Glamour Gap."[52] For instance, enrollment at FAA-certificated AMT schools has decreased by 2 percent in recent years and AMT school programs are currently only

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[45] GAO-20-206 at 6.
[46] *Id.*
[47] Eno Center, *supra* note 3, at 25.
[48] *Id.*
[49] GAO-20-206 at 28.
[50] Peter Dizikes, "Why Do Women Leave Engineering?". *MIT News* (June 2016). *Available at*: http://news.mit.edu/2016/why-do-women-leave-engineering-0615; *Also* Sophia Shaw, "75% of US Scientists and Engineers are White. We Need Diversity to Lead on STEM". *The Guardian* (June 2015). *Available at*: https://www.theguardian.com/commentisfree/2015/jun/02/75-per-cent-scientists-engineers-white-diversity-stem
[51] U.S. Census Bureau, *"Quick Facts". Available at*: https://www.census.gov/quickfacts/fact/table/US/LFE046218
[52] Jim Freaner, "Aerospace Skills Gap: Workforce Declines, As Talent Needs Increase". *Area Development. Available at:* https://www.areadevelopment.com/Aerospace/q3-2015-auto-aero-site-guide/Aerospace-Skills-Gap-Workforce-Declines-Needs-Increase-45711.shtml

operating at 50 percent capacity.[53] Several employers and stakeholders point to the declining number of "shop" classes in high school and the perception that well-paying professions can be obtained only through four-year institutions as leading causes of the growing disinterest among young people to seek jobs in the aviation maintenance and manufacturing fields.[54]

This trend appears to be made worse by industry competition. For instance, the lack of job security resulting from the cyclical nature of the aviation industry has made it harder for aviation companies to compete with other industries, such as the financial services or information technology industry, to attract and retain engineers and other professionals with similar skill sets..[55] In fact, 20 percent of graduates of AMT schools ultimately pursue careers in fields outside of aviation.[56]

IV. KEY INITIATIVES SUPPORTING THE U.S. AVIATION MAINTENANCE AND MANUFACTURING WORKFORCE

A. Congressional Mandates and Initiatives

Aviation Maintenance Workforce Grants. Section 625 of the *FAA Reauthorization Act of 2018* directed the Department of Transportation (DOT) to establish a grant program to "support the education and recruitment of aviation maintenance technical workers and the development of the aviation maintenance workforce."[57] The first-of-its-kind program is authorized at $5 million for each fiscal year through 2023. The program—delegated to the FAA—will provide grants for educational programs, scholarships, apprenticeships and other outreach initiatives to expand educational opportunities in the field of aviation maintenance.[58]

Student Outreach Report. Section 601 of the *FAA Reauthorization Act of 2018* directed the FAA to submit a report to Congress describing the agency's outreach efforts to elementary and secondary students interested in STEM careers in order to prepare them for aviation- and aeronautical-related careers and mitigate the anticipated shortage of pilots and other aviation professionals.[59] The FAA completed the report and submitted it to Congress in September 2019. In the report, the FAA highlighted a 20 percent increase in the number of outreach representatives and a 50 percent increase in the number of its outreach events.[60]

Youth Task Force and Women in Aviation Advisory Board. The *FAA Reauthorization Act of 2018* included several other provisions targeted toward recruiting more young people and women to pursue careers in the aviation industry.

- Section 612 of the Act directed the FAA to create the Women in Aviation Advisory Board, which is tasked with "promoting organizations and programs that are providing education,

[53] Eno Center, supra note 3, at 26.
[54] *Id.*
[55] GAO-14-237 at 16.
[56] *Id.*
[57] P.L.115-254, § 625 (2018).
[58] *Id.*
[59] P.L.115-254, § 601 (2018).
[60] Federal Aviation Administration, *Section 601 Youth in Aviation Student Outreach Report*, p.2, *available at* https://www.faa.gov/about/plans_reports/congress/media/Section_601_Youth_in_Aviation_Student_Outreach_Report.pdf

training, mentorship, outreach and recruitment of women in the aviation industry." The FAA solicited nominations for the board in October 2019 and anticipates selections to be announced in the spring of 2020.

- Section 602 of the bill directed the FAA to establish the Youth Access to American Jobs in Aviation Task Force. The task force is responsible for providing recommendations and strategies to the FAA that will facilitate and encourage high school students to enroll in high school career and technical courses that would prepare them for an aviation career or enroll in a course of study related to an aviation career, including aviation manufacturing, engineering, and maintenance.[61] The FAA solicited nominees for the task force in October 2019 and anticipates selections to be announced in the spring of 2020.

B. FAA Programs and Initiatives

FAA Office of Aviation and Space Education. The FAA's Science, Technology, Engineering, and Math (STEM) Aviation and Space Education (AVSED) program was created to expose students to aviation and aerospace careers, help recruit new workers into these fields, and promote STEM education to students at all levels.[62] For example, through the program, the agency works collaboratively with government and private sector entities to promote aviation-related STEM skills and grow the pipeline of students interested in working in these fields.[63] AVSED has produced promotional materials, such as brochures and DVDs, that it shares with college recruiters and guidance counselors and distributes at career fairs. Additionally, AVSED is also involved in initiatives such as the Real World Design Challenge, a high school engineering competition and the Build a Plane program, which provides schools with actual aircraft to be used as teaching tools.[64] The AVSED program has been in existence since 1961, but it has been criticized for not having a dedicated budget for these programs and not instituting mechanisms for evaluating the effectiveness of its outreach efforts.[65]

FAA Aviation Workforce Steering Committee. The FAA's Aviation Workforce Steering Committee (Steering Committee) was established in February 2019 to determine agency goals for addressing aviation workforce challenges, exploring options [for resolving those challenges], and facilitating cross agency strategic coordination.[66] The Steering Committee's charter emphasizes providing diverse populations with clear pathways into aviation careers to expand the talent pool from which both Government and industry may recruit.[67] While the Steering Committee considers all aviation professions, it identifies its immediate challenge is to focus on the shortage of pilots and technicians.[68]

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[61] P.L.115-254, § 602, 612 (2018).
[62] Federal Aviation Administration. *About STEM AVSED. Available at*: https://www.faa.gov/education/about/
[63] GAO-14-237 at 30
[64] *Id.*
[65] *Id.*
[66] Federal Aviation Administration. *Section 601 Youth in Aviation Student Outreach Report*. Pg. 15. *Available at*: https://www.faa.gov/about/plans_reports/congress/media/Section_601_Youth_in_Aviation_Student_Outreach_Report.pdf
[67] GAO-20-206 at 19.
[68] *Id.*

AMT Curriculum and Testing Reform. In 2015, as mentioned earlier, the FAA issued a notice of proposed rulemaking (NPRM) to modernize and remove outdated portions of the curriculum to become a certificated AMT.[69] However, the rule did not move forward until April 2019, when the agency published a supplemental NPRM[70] in which the FAA proposed allowing AMT schools the option of including certain competency-based training requirements and allowing satellite training locations, among other things, in an effort to provide AMT schools with more flexibility in teaching the curriculum.[71] Even with the additional flexibility, some still believe that the rule as currently proposed does not go far enough. For instance, ATEC—an organization that advocates on behalf of the aviation maintenance education community—has expressed concern that many of the new requirements in the proposed rule are duplicative and do not provide the flexibility needed to train the next generation of aviation technicians.[72]

The FAA has yet to issue a final rule for modernizing curriculum requirements, as required by section 624 of the *FAA Reauthorization Act of 2018*. According to the FAA, the final rule is scheduled for release by October 2020, with revised mechanic standards to be finalized soon thereafter.[73]

C. Other Government Initiatives

In addition to FAA-led efforts, there are several other Government programs that seek to help address the mounting need for aviation maintenance and manufacturing workers. For instance, in addition to the Joint Services Aviation Maintenance Technician Credentialing Council (JSAMTCC) bridge program, which allows military service members to take the A&P exam after completion, the Defense Department also administers the Credentialing Opportunities On-Line (COOL) program, which creates a pathway for service members to earn industry recognized professional certifications and licenses.[74] The program provided more than $5 million toward aviation maintenance-related credentials from 2015 through 2018 for more than 2,500 service members.[75]

The Department of Labor (DOL) also has programs directed towards growing the aviation maintenance workforce. The DOL's Registered Apprenticeship Program awards grants to provide employer-driven training opportunities that combine on-the-job learning with related classroom instruction.[76] The Labor Department has awarded nearly $3.8 million in grants and contracts from 2014 through 2018 to promote these apprenticeships for aviation maintenance workers.[77]

Further, over the course of the last decade, the Department of Education (ED) has also pursued a number of initiatives to promote aviation education and careers. For example, in June 2017, ED announced a new grant program, the High School Career and Technical Education (CTE)

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[69] GAO-20-206 at 23.
[70] *Id.*
[71] 84 Fed. Reg. 15533 (April 16, 2019)
[72]ARSA, "Congress Fully Funds New Aviation Maintenance Workforce Grant Program". September 2019. https://www.atec-amt.org/part-147.html
[73] GAO-20-206 at 26.
[74] *Id.* at 15.
[75] *Id.*.
[76] *Id.*
[77] *Id.*

Teacher Pathway Initiative to address the shortage of CTE programs.[78] The ED has also partnered with the FAA to hold career fairs at colleges and universities, including Historically Black Colleges and Universities.[79] Across the aerospace industry, there is growing interest in and support for greater access to scholarships and student loan assistance for those attending technical colleges.

D. Industry Initiatives

Many companies are establishing their own training programs and outreach initiatives to further develop and maintain their workforce. Below are several examples of industry-led initiatives and partnerships.

- In an effort to hire 2,000 mechanics over the next decade, a major airline is providing $350,000 in grants to nine aviation high schools around the country in an effort to expand its workforce.[80]

- Another major airline is focusing on recruiting and developing its workforce internally, allowing its ramp workers to apprentice and become mechanics.[81]

- An aviation maintenance and repair company is creating a program at schools located near its repair stations to demonstrate how students can learn skills leading to multiple career paths at the company. The learned skills that students develop within the program can then be used to pursue an A&P mechanic certificate.[82]

[78] *See*: https://www.atec-amt.org/news/department-of-ed-announces-high-school-cte-teacher-pathway-initiative.
[79] *See*: https://sites.ed.gov/whhbcu/2014/01/29/the-federal-aviation-administration-faa-at-the-u-s-department-of-transportation-is-hiring/.
[80] Josephs, *supra* note 27.
[81] Eno Center, supra note 3, at 23.
[82] Rob Mark, "AAR White Paper Focuses on Maintenance Technician Shortage," FLYING. (Feb. 2019). *Available at:* https://www.flyingmag.com/aar-maintenance-technician-shortage/

WITNESSES

Panel 1

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