

Ten Ways to Make Apprenticeship Central to Learning and Careers in 21st Century Pennsylvania

Policy Options to Double Apprenticeship by 2025



KEYSTONE RESEARCH CENTER

A Report to the Pennsylvania Apprenticeship and Training Office (ATO)

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Introduction

Governor Wolf, as part of his Jobs that Pay strategy, established the Apprenticeship and Training Office (ATO) within the Pennsylvania Department of Labor and Industry (L&I) in 2016. The establishment of this office provides an opportunity for the state to systematically expand apprenticeships across Pennsylvania, helping Pennsylvania's employers develop highly skilled and productive workers, and providing good paying jobs for residents of our state. With the help of the ATO, in Governor's first term, the number of new apprenticeship registrations annually rose from less than 3,000 to more than 5,070 (45%).¹

To support its efforts, the ATO commissioned the Keystone Research Center (KRC) to research policies and program initiatives that Pennsylvania can pursue in order to expand registered apprenticeship (RA). KRC's research (1) examined challenges to expanding apprenticeship, (2) identified opportunities and assets Pennsylvania has that can help expand apprenticeships (including its industry-driven workforce development system and employer networks), and (3) distilled policy and program options for expanding apprenticeship, drawing from experience across the United States and in other countries. As the examples in Box 1 show, Pennsylvania already does a lot to support apprenticeship. This document focuses on what more it can do building on this foundation.

Box 1. Existing Funding for Apprenticeship in Pennsylvania

1. Department of Community and Economic Development (DCED) [Pre-Apprentice and Apprenticeship Grant Program](#) provides grants to expand apprenticeship in the state. Apprenticeship sponsors can apply for \$3,000 per apprentice per year for up to three years.
2. [Next Generation Industry Partnerships](#) grant funds are available for partnerships using the next generation sector partnership model that is employer driven. Funds can be used for a variety of things including apprenticeship, pre-apprenticeship or other work-based learning programs.
3. PAsmart: The new [PAsmart](#) program funded by the 2018/19 budget including \$7 million for the ATO to expand pre-apprenticeship and apprenticeship programs in the state.
4. L&I and the ATO have accessed U.S. Department of Labor (USDOL) support for expanding apprenticeship in the form of State Accelerator Expansion (SAE) grants, American Apprenticeship Initiative grants, and other competitive federal grants.
5. Workforce Innovation and Opportunity Act (WIOA) funding for individual training accounts (ITAs) can pay for classroom training and on-the-job training (OJT) can subsidize the wages of apprentices in their first months. An employer and/or group sponsor must be on the eligible training provider list (ETPL) to be eligible for WIOA funding. Once officially registered, apprenticeship program in Pennsylvania are automatically put on the ETPL.

¹Keystone Research Center (KRC) analysis of Registered Apprenticeship Partners Information Data System (RAPIDS) data. The estimate for 2018 is an annualized estimated of new registrations through November 7 - i.e., the figure through November 7 was 4,290. Multiplying that by 55/44 yields 5,070.



EXECUTIVE SUMMARY

Apprenticeship is a powerful learning model and a proven strategy for (a) developing a talented and trained pipeline of workers for employers and (b) expanding family supporting careers for individuals not pursuing a traditional four-year college track (without foreclosing their opportunities to pursue college down the road). Yet in Pennsylvania, as in states across the United States (U.S.), apprenticeship has been underutilized.

Governor Wolf understands the great potential of apprenticeships to grow businesses and good jobs. Under his leadership and with bipartisan support from the Pennsylvania legislature, Pennsylvania has been investing in apprenticeships in a variety of ways. In the Governor's first term, from 2015-18, the number of new apprenticeship registrations annually rose 53%, from less than 3,000 to 5,070.

In spring 2016, Governor Wolf established the Apprenticeship and Training Office (ATO) within the Pennsylvania Department of Labor and Industry (L&I). In 2017, the ATO hired three field representatives to help with outreach and new apprenticeship registration for employers, unions, and educators. It established a strategic partnership with Keystone Development Partnership (KDP), a labor-management partnership with extensive experience building Industry (training) Partnerships, to expand the state's outreach capacity to employers and unions about apprenticeship. The ATO also began engaging and sharing information with workforce boards across the state, elevating apprenticeships as a central Pennsylvania workforce development strategy and a key tool for expanding "employer driven" training. Since 2017, Pennsylvania has invested in expanding and assisting apprenticeship and pre-apprenticeship programs through grants from L&I (e.g., through the new PAsmart initiative) and through the Department of Community and Economic Development (DCED).

In Pennsylvania, we estimate that active apprentices now make up about 0.3% of the labor force. While climbing, this is still less than one fifth the share in places like Germany, Australia, Canada, England and France, where apprentices make up more than 1.5% of the labor force.² However,

²Estimated based on figures from the International Labour Organization (ILO) and the World Bank, "Towards a Model Apprenticeship Framework: A Comparative Analysis of National Apprenticeship Systems." ILO/World Bank, 2013; accessed at http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---sro-new_delhi/documents/publication/wcms_234728.pdf

England and South Carolina illustrate that the number of apprentices can increase significantly from the low (by international standards) levels in Pennsylvania and even from lower levels—as in South Carolina until recently. In 2007, South Carolina had 777 apprentices registered in the state (0.04% of the state’s jobs). By 2018 that number was 27 times larger (20,763 apprentices), 0.97% of the labor force. In England, the number of apprentices nearly doubled from 2009-10 to 2011-12. Both England and South Carolina illustrate that rapid expansion of apprenticeship programs is possible with financial incentives, marketing and outreach to employers. Recognizing the potential, Governor Wolf in his 2018 budget address committed to doubling apprenticeship by 2025. To help achieve this ambitious goal, Pennsylvania’s apprenticeship program implementing agency, the ATO, commissioned this survey of effective policies and best practices in other states (and countries) for expanding apprenticeships.

This report sketches the major challenges to the expansion of apprenticeships and the benefits of apprenticeships—which make the challenges worth overcoming. The second half of the report outlines 10 actions the ATO and Pennsylvania state government could take to grow apprenticeships and capture its benefits at a larger scale.

Challenges to Expanding Apprenticeship

Supportive policies and new public investment under Presidents Obama and Trump, and in many states, signal renewed United States’ (U.S.) interest in apprenticeships as a learning and training model. Despite this interest, challenges to expanding apprenticeship programs remain.

Apprenticeships are invisible to most employers and potential apprentices.

Apprenticeship’s invisibility stems from its lack of integration into our education system, our workforce system, and most of our industries. Many employers don’t know about apprenticeships because they have limited reach outside of the construction industry: 61% of Pennsylvania apprentices (between 2000 and 2014) were in the construction industry and another 27% in the public sector (the vast majority in corrections).

Cultural pressures push school students towards four-year degrees.

Over the last few decades powerful social pressures have focused school students on four-year colleges. Many guidance counselors, parents, students, and college-educated elites and policymakers think of apprenticeships as a less desirable path and of apprenticeships and college as mutually exclusive options. In fact, given the skills and judgment required in most jobs today, apprenticeships have broad relevance across a wide range of service as well as bluecollar jobs, and deploy a pedagogical model successful with doctors as well as plumbers. In the past in the United States and still today in Europe, many CEOs and executives began as apprentices, some then acquiring engineering or other college degrees on the way up the ladder.

Management culture and the cost and time to start an apprenticeship.

Many employers focus on sales, market share, and profits—and think employees should show up at their door trained and ready to go. The start-up costs of an apprenticeship program, and uncertainty regarding what those cost will be, serve as obstacles to shifting management culture towards investing in employees and becoming a self-conscious learning organization. One study found that 62% of employers see funding as a barrier to setting up an apprenticeship program. For individual small businesses, especially, the potential costs and time commitment can seem insurmountable.

The lack—until now in PA—of state technical assistance.

Another challenge has been a lack of a strong state apprenticeship office which supports apprenticeship expansion. Because of the limited reach of apprenticeship in the past, expansion will take technical assistance, marketing, outreach, and incentives. The state's establishment of and investment in the ATO signal the state's commitment to overcoming this challenge.

Lack of apprentice diversity.

Currently, African Americans make up only 5.3% of construction apprentice completers in Pennsylvania, and women only 1.5%. Across all occupations, women accounted for only 7% of Pennsylvania apprenticeship (between 2000 and 2014), and African Americans 10%.³ Moreover, African Americans and women disproportionately participate in the lowest-paying apprenticeships.⁴

Benefits of Apprenticeship

In Pennsylvania, apprenticeship returns \$35 to government for each dollar government invests.

There are proven social and economic benefits to apprenticeship for employers, workers, the community, and taxpayers. For every dollar invested in apprenticeship, there is an estimated return of \$35 over the career of an apprentice in Pennsylvania in higher tax collections or reduced expenditures on public assistance and unemployment compensation.

Apprenticeships develop loyal workers with skills and attitudes employers want.

Apprenticeships provide employers with a range of benefits. They can provide a stable pipeline of new, skilled workers, especially valuable for companies now facing a demographic cliff and a loss of skilled workers due to retirement. Workers who go through apprenticeship can be trained on company-specific technical and soft skills, and on the culture of the company. Many employers find workers who complete their apprenticeship a better fit and more loyal than skilled workers hired externally, cutting down on turnover.

³KRC analysis of RAPIDS data.

⁴Jessica Togli, "What We Know About Equity and Diversity in Apprenticeship," Jobs for the Future (JFF), 2017; accessed at <https://jfforg-prod-prime.s3.amazonaws.com/media/documents/Lit-Review-091517.pdf>

Apprenticeship boosts productivity.

On-the-job learning through apprenticeships enhances employee efficiency. Employees who complete an apprenticeship are typically more productive, and make fewer mistakes, than other new employees. The few companies who attempt to evaluate the payoff of apprenticeship programs find that the benefits outweigh the costs.

One U.S. health system found that the productivity of medical assistant apprentices reduced the need for overtime, leading to a ROI for the company of 40%. Studies in other countries also find that apprenticeship programs have a high ROI.

Apprentices earn \$300,000 more over a career than comparable peers.

Apprenticeships can have tremendous benefits to apprentices—an opportunity to learn on-the-job and earn credentials (and academic credits) while employed and getting paid. Apprentices earn an average starting salary of \$50,000 per year and typically earn \$300,000 more over a lifetime than their peers who did not participate in an apprenticeship. One study found that Pennsylvanian apprentices earned \$8,304 more per year than similar non-participants in their sixth year after induction, the second-largest earnings gain out of 10 states studied.

Apprenticeship can be the cheapest route to college.

A growing number of apprenticeships offer classroom training articulated with college credit, in some cases leading to Associates Degrees at the same time as a journeyperson's card. Apprenticeship can thus offer the cheapest—or a debt-free—route to college, a critical benefit given Pennsylvania's high cost of college and the fact that Pennsylvania college graduates have higher average student debt than their counterparts in every other state.

Ten Ways to Grow Apprenticeships in Pennsylvania

The purpose of the ATO is to address the challenges outlined. The ATO's goals include (1) increasing the number of Pennsylvania registered apprenticeships; (2) educating the uninformed (starting with employers, students, parents, and job seekers) about the benefits of RA; and (3) expanding apprenticeship into "non-traditional" occupations in which apprenticeship has rarely been used in the United States in the past (in Pennsylvania, this means virtually all occupations outside construction, skilled manufacturing jobs, and corrections).

There are many strategies that the ATO can pursue to reach these goals. To grow apprenticeship to the scales seen in England and South Carolina, there must be state investment in apprenticeship, in the "intermediaries" that organize "group apprenticeships" which connect to multiple employers, and in the ATO—the linchpin of Pennsylvania's apprenticeship moonshot. While the ATO should be lean and efficient, as with the original moon landing, some public investment—in this case in

the ATO and in capacity building in workforce organizations and Pennsylvania intermediaries—is needed to achieve Gov. Wolf’s ambitious goal of doubling apprenticeship programs.

We group strategies for Pennsylvania to pursue to achieve the governor’s goal into 10 categories. The first six are options that the ATO can primarily lead, in partnership with other state agencies, to implement Gov. Wolf’s apprenticeship vision. The last four require the Governor’s Office to play a larger role and/or require changes to state policy.

1. Engage employers & provide technical assistance.

One of the ATO’s responsibilities is to increase employer knowledge of the benefits of apprenticeship programs and provide technical assistance to launch new programs.

- A **statewide marketing campaign** could increase employer—and student, parent, and worker—awareness. The body of this report describes how South Carolina and England deployed marketing effectively.
- Deploying **employer and union champions for apprenticeships** is also an effective tool.
- **Technical assistance** should make the process of starting apprenticeship transparent and understandable, educate employers and sponsors on the different models of RA, and walk sponsors through the design, registration and implementation of an apprenticeship.

2. Engage the workforce system & employer hubs with apprenticeships.

The ATO has limited resources and manpower, but it can extend its tentacles across the state through local workforce development boards and already established industry partnerships. The office has already begun this work with trainings on apprenticeship, by sharing best practices, through a 2018 statewide summit on apprenticeship, and through state grants.

3. Become a resource hub, leveraging a digital approach.

The ATO should become the go-to place for resources and information on apprenticeships in Pennsylvania. A website can house much of this information. The body of this report provides links to online apprenticeship resources in other states that Pennsylvania could learn from as it upgrades information on the web for employers, other program sponsors, students and other potential apprentices.

4. Support & grow the group apprenticeship approach.

Pennsylvania’s ATO also places a high priority on increasing awareness among employers and other stakeholders about group apprenticeships. In group apprenticeships, “intermediary” organizations (e.g., industry associations and local chambers, unions and labor-management partnerships, community colleges, and other non-profit organizations) may handle apprenticeship paperwork and other administration for multiple employers and coordinate delivery of classroom training. Group apprenticeships can be especially valuable to expanding apprenticeships at

small- and medium-sized firms which lack the human resource and administrative capacity for starting apprenticeships on their own.

5. Strengthen the Pennsylvania RA community of practice & Ambassador Network.

The ATO should strategically strengthen a Pennsylvania apprenticeship “community of practice” to promote peer learning and sharing of best practices among apprenticeship practitioners including program administrators, trainers and educators, employers, unions, labor management partnerships, the Pennsylvania Apprenticeship Coordinators Association (PACA), industry associations and partnerships, and workforce development staff. The ATO has already begun to do this through RA capacity building grants funded by PAsmart for the RA “Ambassador Network.” Capacity building could include regional, statewide and sector-specific convenings—like the kinds of capacity building Pennsylvania has conducted for industry partnerships in the past. One Ambassador Network initiative is launching the R4 Navigator apprenticeship program for staff of local workforce boards and workforce intermediaries (e.g., industry associations and other non-profits) on all aspects of RA, including marketing, starting an apprenticeship, leveraging funding from multiple sources, and best apprenticeship practices.

6. Build a pipeline of diverse apprentices.

The ATO takes a multi-pronged approach to increasing demographic diversity in apprenticeship by helping diverse populations learn about apprenticeship, meet entry requirements and complete programs; and by investing in pre-apprenticeships for out-of-school youth.

To attract a diverse pool of apprentices, the ATO and the state can (1) seek to expand apprenticeship into occupations other than construction and into occupations with more women (as has occurred in South Carolina); (2) market apprenticeship and conduct targeted outreach to minority communities, women, and vulnerable populations; (3) work with local workforce development boards and other entities to boost engagement of diverse labor pools in pre-apprenticeships and other pipelines to apprenticeship; (4) encourage programs to set apprenticeship hiring goals for women and minorities; (5) make such goals and their achievement criteria for awarding apprenticeship grant funds and other state contracts (e.g., on construction projects); and (6) lift up best-practice partnerships between communities and employers/sponsors that have increased nontraditional populations in apprenticeship.

The ATO should also seek to increase completion rates for underrepresented populations including through peer learning about best retention practices (e.g., use of mentors from the same demographic group and other peer support mechanisms); making completion rates a criterion in awarding state grants; and informing sponsors about state childcare subsidies for single mothers and other parents in apprenticeships. As part of its registration process, the ATO already requires programs to comply with Equal Employment Opportunity (EEO) guidelines and encourages programs to establish and enforce policies related to sexual harassment to ensure a safe and inviting workplace for women.

7. Provide new \$ & align existing \$ to support apprenticeships.

To expand apprenticeships, the state should provide employers with financial incentives to launch new, high-quality apprenticeship programs. One approach is for the state to pay for classroom training (just as the state now subsidizes non-apprenticeship occupational education at community colleges and career and technical education in high schools), either through direct grants or tax credits. Flexible grants and tax credits could also pay for equipment or tools for students. The cost of tools or materials is a barrier to low-income individuals participating in construction and some other apprenticeship programs. South Carolina offers employers a \$1,000 tax credit per apprentice, per year, demonstrating that the subsidy need not be large if—as in South Carolina—it is accompanied by investment in effective outreach (such as the RA Navigator apprenticeship). When providing subsidies, the state should focus on high-quality apprenticeships in which employers and workers also provide significant funding (the latter in the form of foregone wages) and which lead to good wages by the standard of the industry. As with other workforce programs, the state should not subsidize apprenticeship training for employers with bad jobs or high turnover that generates insatiable demand for more subsidies because workers keep quitting.⁵

The state can also funnel existing funding streams towards apprenticeship and pre-apprenticeship programs. Several funding streams, including the Workforce Innovation and Opportunity Act (WIOA), Trade Adjustment Assistance (TAA), Rapid Response funds, federal financial aid for college (see 10 below), the GI bill and Supplemental Nutrition Assistance Program (SNAP) can all support apprenticeships and apprentices. Making these pots of money known and accessible to apprenticeship sponsors, including group programs, will accelerate apprenticeship growth in Pennsylvania.

8. Lead by example by expanding public sector apprenticeships.

State government is the second-largest employer in Pennsylvania (behind only the federal government). It can practice what it preaches by expanding apprenticeships for state workers. To get started, the ATO could seek to identify two or three lead agencies to demonstrate the potential of apprenticeships to deliver jobs that pay and government that works and then use those agencies to champion apprenticeship within other state agencies and local government. Alternatively, or in addition, the state could ask each agency to work with the ATO and with state government's labor unions to identify one occupation each suitable for apprenticeship and then to walk the path of apprenticeship together. State government can also expand apprenticeship (and diversity within apprenticeship) by including preferences in its procurement processes for businesses that employ apprentices.

⁵On the importance of public workforce dollars in general not subsidizing low-road employers, see Laura Dresser, Hannah Halbert, and Stephen Herzenberg, "High Road WIOA: Building Higher Job Quality Into Workforce Development," Economic Analysis Research Network, December 2015; accessed at https://www.keystoneresearch.org/sites/default/files/KRC_WIOA.pdf

9. Integrate apprenticeship with secondary & postsecondary education.

Other countries that deploy apprenticeship at a much larger scale than Pennsylvania and in many industries (not just construction) integrate apprenticeship deeply with secondary and postsecondary education. Pennsylvania should do the same.

In high schools, this report points to the growing number of other states that have begun to strengthen links between career and technical education (CTE) programs and apprenticeships, and that have enacted or proposed supportive legislation from which Pennsylvania could learn. Pre-apprenticeships and other programs for out-of-school youth can also reconnect this population to the education system as well as diversify apprentices. To expand pre-apprenticeships, the ATO has developed pre-apprenticeship standards—which require, among other provisions, a strong link to registered apprenticeship programs—and begun to officially register programs that meet the standards.

At the postsecondary level, apprenticeships articulated with college credit could play a pivotal role in addressing the weakest link in Pennsylvania’s educational attainment profile—the large share of working-age adults that have no education beyond high school—with big payoffs for employers (a new generation of skilled workers) and young Pennsylvanians (greater economic opportunity). A smart state strategy—and possible build on PAsmart—could seek to make apprenticeship classroom training (“related instruction”) that earns college credits eligible for federal Pell grants. Currently Pennsylvanians at public colleges draw down an estimated \$250 million less in Pell grants than they should (given the size of our 19-34 population), in significant part because there are no community colleges in over 20 rural Pennsylvania counties—hence few or no affordable Pell-eligible postsecondary programs for high-school graduates or older adults.

10. Upgrade state apprenticeship data & develop an apprenticeship dashboard.

Pennsylvania should build the apprenticeship data base, the Registered Apprenticeship Partners Information Data System (RAPIDS), into a performance management and continuous improvement tool for apprenticeship in Pennsylvania. To facilitate this, L&I’s Center for Workforce Information and Analysis (CWIA) could provide technical assistance to ATO, using and enhancing RAPIDS (as is already happening through an effort to link RAPIDS with the Commonwealth Workforce Development System, CWDS) to deliver regular reporting on apprenticeship and more rigorous evaluations on a periodic basis. CWIA could also develop a dashboard that tracks progress towards the governor’s goal of doubling the number of apprentices, including examining apprenticeship growth and completion rates by industry, region, and demographic group.



Challenges to Expanding Apprenticeship in Pennsylvania

Apprenticeship programs are well-known, respected and fully integrated into the education and workforce system in places like Germany, Australia, Canada, England and France, where apprentices make up more than 1.5% of the labor force.⁶ In the United States, however, apprenticeship hasn't been pursued on a large scale and efforts to expand apprenticeship have paled in comparison to these other countries. Only recently has there been a renewed interest in apprenticeships nationally. Secondary schools have spent the last 30 years focused on getting youth into a four-year college track, government has not made major investments in apprenticeships, and employers outside of the construction industry don't know much about it.

President Obama and now President Trump have signaled their support for expanding apprenticeship nationally, backed by small increases in federal financial support. In 2014, President Obama set out to increase apprenticeships to 750,000 by the end of 2018.⁷ The number of apprentices nationwide passed 500,000 during the fourth quarter of 2016.⁸ In June 2017, President Trump announced an additional \$200 million investment in apprenticeship training. Despite renewed interest in apprenticeship nationally, and now in Pennsylvania, challenges remain.

The Invisibility of Apprenticeship

First, apprenticeship continues to be invisible. Because apprenticeship hasn't been integrated into our education system, our workforce system or most of our industries, employers don't know what the benefits are, how it works or how they would go about developing a program. Employers operating in the U.S. from countries with strong apprenticeship systems, like Germany, are often the champions of apprenticeships here because they know through firsthand experience that apprenticeship is good for business and can solve critical skill shortage problems within their companies.

Employers that are familiar with apprenticeship tend to associate it with the construction trades and unions. The result is that many don't see apprenticeship as relevant to their business and some non-union employers believe it will lead to, or would require, a unionized workforce.

⁶The ILO and the World Bank, "Towards a Model Apprenticeship Framework."

⁷Susan Helper et al., "The Benefits and Costs of Apprenticeships: A Business Perspective," Case Western Reserve and the US Department of Commerce (USDOC), 2016; accessed at

<https://www.commerce.gov/sites/default/files/migrated/reports/the-benefits-and-costs-of-apprenticeships-a-business-perspective.pdf>

⁸Data accessed from the US Department of Labor (USDOL), Employment and Training Administration (ETA) website:

https://doleta.gov/oa/data_statistics.cfm

Lack of Apprenticeship in Occupations Outside Construction

In Pennsylvania, 61% of apprentices who completed their program between 2000 and 2014 were in the construction industry and another 27% were in the public sector (almost all of them in corrections). This means that only 12% of apprentices were in the entire rest of the private sector other than construction. Despite recent efforts, apprenticeship enrollments in industries like manufacturing, health care, information technology (IT) and others remain low.

Stackable credentials with an accessible starter credential (think “starter house”) offer one route to expanding apprenticeships including in non-traditional occupations. In manufacturing, for example, a roughly one-year Industrial Manufacturing Technician apprenticeship provides a route to a portable credential for experienced or new manufacturing workers that can also be a stepping stone to more traditional four- or five-year manufacturing apprenticeships.⁹

Lack of Diversity within Existing Apprenticeships

The challenges that minorities and women face in general in the labor market are mirrored in registered apprenticeships leading to good jobs. Women and minorities are overrepresented in apprenticeship programs paying the lowest wages, and representation nationally for women is dismal (5.6% of federally registered apprenticeships in 2016).¹⁰

Minorities



Apprenticeship has a long history of exclusion. Civil rights protests in the 1960s by African Americans exposed the lack of access to apprenticeship in the trades. This sparked a USDOL study to explore the problem of discrimination in apprenticeship programs in the trades. In 10 cities across the United States (including Pittsburgh and Philadelphia), the study found almost no participation of African Americans in apprenticeship programs in the 1960s. Subsequent studies showed that the lack of African American participation in apprenticeship reflected discrimination, a lack of information about apprenticeship in minority communities, and a lack of family connections in the

trades.¹¹ Today, some African American families are wary of apprenticeships and other vocational

⁹On the IMT, see <https://www.ajactraining.org/apprenticeship/occupations/industrial-manufacturing-technician/>; Rhandi Berth, Laura Dresser, and Emanuel Ubert, “Moving Apprenticeship into Manufacturing’s Future: Industrial Manufacturing Technician,” February 21, 2017; <https://www.cows.org/moving-apprenticeship-intomanufacturings-future-industrial-manufacturing-technician>. In Pennsylvania over the past several years, Keystone Development Partnership has conducted extensive outreach about the IMT to increase Pennsylvania manufacturers engagement with apprenticeship, leveraging USDOL grants to two national non-profit organizations, the Wisconsin Regional Training Partnership (WRTP) and Jobs for the Future (JFF).

¹⁰Toglia, “What We Know About Equity and Diversity in Apprenticeship.”

¹¹F.R. Marshall and V.M. Briggs, Jr., Remedies for Discrimination in apprenticeship programs. Cornell University, ILR School, 2017; accessed at <http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1134&context=articles>

education because of a perception that these programs funnel minority and low-income students into lower-paying, lower-status occupations. In Pennsylvania, 10% of apprentice completers between 2000 and 2014 were African American, slightly below their share of the Pennsylvania population (12%).¹² Two percent of apprenticeship completers were Hispanic, much below the Hispanic/Latino share of Pennsylvania's population (7%).

Women

In Pennsylvania, women represent only 7% of apprenticeship completers despite making up over half of the Pennsylvania population. Of those women who completed apprenticeships in Pennsylvania from 2000 to 2014, 74% had completed a public sector correction officer apprenticeship.

A 2012 Mathematica study found that women's participation in apprenticeship differed from men's in several ways. Women participate in apprenticeship at lower levels, train in different occupations and have lower completion rates than men in construction and other skilled trades apprenticeships.



Women reported multiple challenges to participation in apprenticeship. First was the lack of access to consistent, flexible and affordable childcare, including during classroom training before or after typical daycare is open or in weeks set aside for related instruction. Other women had problems because apprenticeship supervisors, usually men with no childcare responsibilities, did not allow flexibility on the job in cases of emergency (a sick child, or tardiness due to caregiver responsibilities). Third was the lack of pay for classroom training. This was a challenge in lower-paying corrections and social service apprenticeships (which include most Pennsylvania female apprentices) in which unpaid classroom training sometimes took place prior to paid employment. Women also reported challenges entering and completing apprenticeships in male-dominated industries like construction: a lack of knowledge about the skilled trades and apprenticeship opportunities; apprenticeship work schedules, which can have long commute times and unpredictable hours; and harassment and discrimination on the job.

Class Bias

Misperceptions or negative views of apprenticeship also reduce interest among students and their parents. Because of apprenticeship's primary home in construction in the United States, many associate apprenticeships with blue-collar work. In recent decades, there has been an overwhelming push for high school graduates to pursue a college degree—with few recognizing yet that apprenticeship can be the most affordable route to a two-year degree (with the possibility for further

¹²Sources: <https://www.census.gov/quickfacts/fact/table/PA/PST045216> and KRC analysis of RAPIDS data.

college not precluded). Simultaneously, there has been a de-valuing of jobs where people work with their hands. The “Maker Movement,” which celebrates making things with modern, affordable computer-controlled equipment may help restore the status of—and even brand as cool again—working with your hands (and head).¹³ Still today, any pathway other than four-year college, including apprenticeship, is thought by many as an inferior pathway.

Management Culture & the Cost & Time to Start an Apprenticeship

Many employers focus on sales, market share, and profits. They think employees should show up at their door trained and ready to go—that getting workers to this point is somebody else’s job. A manager at Penn United Technologies, a Pennsylvania manufacturer that invests heavily in apprenticeship, pinpoints this as a central reason some companies struggle to find qualified workers.¹⁴ “You talk to any manufacturer you will hear complaints about how hard it is to get people...You have to accept that it’s your problem. We’re manufacturers, we solve problems every day. If you look at it as your problem, you’re going to be able to fix it. Not if you look at as the school’s problem.” In manufacturing and beyond, the view that skill development is someone else’s responsibility means that companies don’t plan ahead about retirements or the need to develop the skills of the current or future workforce. The cost of starting up an apprenticeship program, and lack of knowledge about that cost, also impede expansion. One survey found that 62% of employers see lack of funding strategies as a barrier to setting up apprenticeships.¹⁵ Small businesses especially may simply assume that the time and money associated with apprenticeship are beyond their reach.

Lack of State Capacity

The lack of a state entity to help employers set up and register new apprenticeships has been a barrier in the past—because so many employers are not familiar with apprenticeships and need dedicated guidance and assistance. One survey found that 42% of employers surveyed found the process of navigating state and/or federal registration processes a challenge.¹⁶ Another challenge can be the complexity of establishing articulation agreements between apprenticeships and educational institutions (high schools, CTE programs and colleges). Establishing the state’s ATO, with responsibility for providing technical assistance to employers and program sponsors should help to get new apprenticeships off the ground. So should the ATO’s efforts to build additional capacity to market, start, and improve apprenticeship beyond its own staff—e.g., through PAsmart “Ambassador Network” grants (Box 2).

¹³For more on the maker movement and its potential impact on education, see Stephen Herzenberg and Diana Polson, “Pathways to Shared Prosperity: A Framework for Forging Next Generation Makers in Southwest Pennsylvania,” Remake Learning Network, Pittsburgh, 2017; accessed at: http://remakelearning.org/wp-content/uploads/2018/01/Pathways-to-Shared-Prosperity_Dec2017-1.pdf

¹⁴Stephen Herzenberg and Diana Polson, “Inventory of Pre-Apprenticeship Programs Across Pennsylvania,” a report written under contract to the Pennsylvania Workforce Development Board (PA WDB), January 7, 2019, Penn United Technologies case study, p. 41.

¹⁵John Colborn and Nneka Jenkins, “Recasting American Apprenticeship: A Summary of the Barriers to Apprenticeship Expansion Research Project,” The Aspen Institute: Skills for America’s Future, 2017.

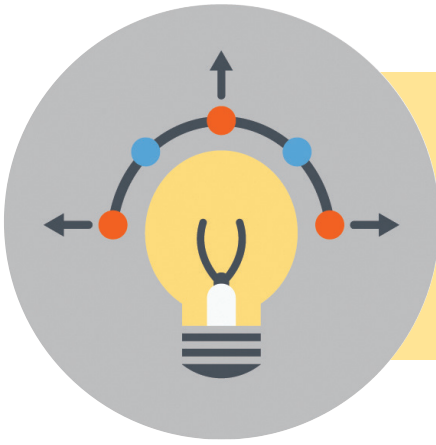
¹⁶Colborn and Jenkins, “Recasting American Apprenticeship,” 2015.

Box 2. Pennsylvania’s ATO Builds Capacity to Grow High-Quality Apprenticeships

The state’s ATO has expanded its technical assistance to employers and group sponsors to launch apprenticeships in two main ways.

Direct ATO staff support: Within the last year the ATO has added two more apprenticeship and training field representatives, a manager of field representatives, a grants officer and an administrative assistant. This growth of the ATO team will provide some of the human capacity needed to expand apprenticeships. The entire ATO team remains very lean—about 10 people.

Pennsylvania’s Apprenticeship Ambassador Network: Through PAsmart, the ATO has awarded grants to build the capacity of workforce intermediaries to provide technical assistance to apprenticeship programs. For example, Keystone Development Partnership is launching an apprenticeship program that trains participants on all aspects of RA, including marketing, starting an apprenticeship, leveraging funding from multiple sources, the RAPIDS apprenticeship data base, and best apprenticeship practices. Successful apprentices will become an “RA Navigator.” The RA Navigator apprenticeship will recruit from local Workforce Development Boards and other “workforce intermediaries” (e.g., business associations, labor-management partnerships and unions and other non-profits). Using the apprenticeship model to build their own skills should instill in RA Navigators a deeper understanding of the model which they champion with employers and other program sponsors.



Benefits of Apprenticeship

Acknowledging the challenges, there is also a great opportunity to meet the workforce needs of employers, help workers access good-paying jobs, and boost the state economy by expanding apprenticeships in Pennsylvania. This could increase productivity, reduce student debt, and reduce unemployment including among non-traditional apprentices. A 2012 Mathematica study found that the social benefits of RA programs (to employers, workers, and government) outweigh the social costs by more than \$49,000 over the course of an apprentice's career. For every government dollar invested in apprenticeship, there is a return of \$27 to society over a career—and \$35 in Pennsylvania.¹⁷ The benefits to society include an increase in tax revenue due to the higher wages of people who complete an apprenticeship, and lower costs of public assistance including unemployment benefits.

For Employers

For employers, apprenticeship effectively develops the technical and soft skills needed on the job.¹⁸ It can also help replace retiring baby boomers in many skilled occupations.

Training the next generation of skilled workers

Apprenticeships can provide a stable pipeline of new skilled workers, which many employers cite as a critical need. Especially with waves of baby boomers retiring, many industries face a shortage of experienced, skilled workers. This is particularly important in Western Pennsylvania, home to some of the oldest counties in the U.S.¹⁹ Expanding the pool of skilled workers is also important to companies that have exhausted local labor pools or have been unable to find workers with the specific skills they need.²⁰ As more younger workers enter apprenticeship, retiring workers can serve as mentors for new apprentices, helping to transfer and preserve institutional knowledge.



¹⁷Debbie Reed et al., "An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States," Mathematica Policy Research, July 2012; accessed at https://wdr.doleta.gov/research/FullText_Documents/ETAOP_2012_10.pdf

¹⁸Categorization from Helper et al., "The Benefits and Costs of Apprenticeships."

¹⁹Natasha Lindstrom, "Workforce to shrink as baby boomers retire, birth rates fall," Trib Live, June 27, 2015; accessed at <http://triblive.com/news/adminpage/8122486-74/pittsburgh-region-workforce>

²⁰Helper et al., "The Benefits and Costs of Apprenticeships."

Skills customized to the occupation & business

Apprenticeships can be customized (to some degree) to develop the specific skills needed in an occupation for individual employers.²¹ Apprentices are immersed in a company's work culture, which often leads to workers who fit well within the company.²² Apprenticeships can also educate incumbent workers on new technology or work processes, ensuring that companies remain competitive.

Loyal employees & high retention

Some employers worry that, if they invest in an apprenticeship, their workers will be poached by other employers. But workers who go through an apprenticeship typically have more loyalty and commitment to the company that trained them, which results in enhanced retention.²³ Only one in four employers who sponsor apprenticeships in the U.S. thought of poaching as a significant concern and of those, 85% would still recommend apprenticeship to others. In other countries, employers have also found that apprenticeship increases worker loyalty. Many employers have even seen the establishment of apprenticeships as boosting worker morale for both apprentices and experienced incumbent workers.²⁴

A way to increase diversity

While not traditionally attracting diverse participants, case studies demonstrate that apprenticeships can help employers expand their ranks of women, minorities, veterans and the longer-term unemployed.²⁵ Well designed with cultural sensitivity, the blend of learning-by-doing and mentoring, with limited hours in the classroom, can serve workers from diverse backgrounds well.



High productivity

Research demonstrates that apprenticeship's mix of on-the-job learning, mentoring, and aligned classroom training develops productive employees. Furthermore, most apprentices earn lower wages until they become more productive (e.g., 50% or 60% of journeyworkers' wages at the start of apprenticeship), with wages increasing gradually with experience and skill level until successful graduating apprentices earn a full 100% wage. On average, a U.S. Department of Commerce (USDOC) study found that apprenticeship graduates are more productive and make fewer mistakes than peers without the benefit of apprenticeship.²⁶ A 2012 study in 10 states also found that employers perceive apprentices to be more productive than non-apprentices.²⁷

²¹Sarah Ayres Steinberg and Ben Schwartz, "The Bottom Line: Apprenticeships Are Good for Business," Center for American Progress, July 14, 2014; accessed at <https://www.americanprogress.org/issues/economy/news/2014/07/14/93768/the-bottom-line-apprenticeships-are-good-for-business/>

²²Helper et al., "The Benefits and Costs of Apprenticeships."

²³Helper et al., "The Benefits and Costs of Apprenticeships." Employment and Training Administration Advisory System, US Department of Labor, "Training and Employment Guidance Letter No. 2-07," July 12, 20017; accessed at <https://wdr.doleta.gov/directives/attach/tegl/tegl2007/tegl2-07acc.pdf>

²⁴Steinberg and Schwartz, "The Bottom Line."

²⁵Helper et al., "The Benefits and Costs of Apprenticeships."

²⁶Helper et al., "The Benefits and Costs of Apprenticeships."

²⁷Reed et al., "An Effectiveness Assessment and Cost Benefit Analysis."



Safety

Registered apprenticeships also promote safety, both through a basic work safety component of classroom training and through learning and mentoring on the job. Greater safety can have financial benefits to companies because of fewer lost-time accidents and lower worker compensation costs.²⁸

High return on investment

Overall, the benefits of apprenticeship appear to outweigh the costs, although the U.S. research literature on this issue is sparse and the costs and benefits of course vary for each apprenticeship program.

The USDOC study reported the results of a survey of employers who participated in USDOL's Leaders of Excellence in Apprenticeship Development (LEADERS) Program, including CVS Health, Dartmouth-Hitchcock, Ford Motor Company, Hypertherm, Oberg Industries (see Box 3), and Siemens USA as well as other organizations and intermediaries engaged in apprenticeship (Apprenticeship Carolina, AFL-CIO, SEIU, NIMS, Vermont HITEC, AUW, etc.). Dartmouth-Hitchcock (see below) and Siemens both conducted detailed cost/benefit analyses.

Dartmouth-Hitchcock, a non-profit academic health system paid about \$59,700 per apprentice for the first year (including training, overhead, and mentorship costs). Apprentices' wages and benefits accounted for 70% of the cost, tuition 15% (including an instructor and project leader), and an intermediary organization received 12% of the cost (about \$7,000 per apprentice) for curriculum development, recruitment, classroom supplies and uniforms. The full cost per apprentice exceeded that to hire a trained Medical Assistant by about \$22,000. Offsetting benefits included lower overtime costs (\$48,000 per apprentice); reduced physician turnover; and an increase in primary care appointments (\$7,000 per apprentice more in annual revenue). The researchers estimated the ROI of hiring apprentices to be at least 40%.²⁹

Studies in other countries also find a healthy ROI from apprenticeship. In Canada, researchers collected data from employers in 15 trades (including some construction and manufacturing occupations, automotive repair, cooks and others). For every dollar spent on apprenticeship, employers saw an average return of 38 cents. Employers also reported that training "homegrown" workers resulted in workers who fit better within the company, had greater overall productivity, made fewer mistakes and improved health and safety.³⁰

²⁸Ben Olinsky and Sarah Ayres, "Training for Success: A Policy to Expand Apprenticeships in the United States." Center for American Progress, November 2013; accessed at https://cdn.americanprogress.org/wpcontent/uploads/2013/11/apprenticeship_report.pdf

²⁹Helper et al., "The Benefits and Costs of Apprenticeships"

³⁰Allan Bruce et al., "Apprenticeship—Building a Skilled Workforce for a Strong Bottom Line," Canadian Apprenticeship Forum, June 2006.

Box 3. Oberg Industries Manufacturing in Pennsylvania and Return on Investment

Oberg Industries, headquartered in Armstrong County, Pennsylvania, and with production facilities in neighboring Butler County, first established an apprenticeship in 1971 and now has over a dozen registered apprenticeships, most of which are variations on four main programs—toolmaker, grinder, CNC operator, and press operator.³¹ An employee-owned company, Oberg makes medical devices and is a contract manufacturer of customized precision metal components for many industries, including aerospace, energy, automotive, metal packaging, housing/construction, and consumer product sectors—“we make things to print.” The company has 700 employees in Pennsylvania, over two-thirds of its global workforce.

Oberg’s apprenticeships are all “single company,” but at a scale that dwarfs many group apprenticeships, with about 50 apprentices in the second half of 2018 and 30-50 in each of the past several years.³² Oberg’s apprentices have a stunning record of success in the classroom, partly because of rigorous up-front screening and testing of applicants. The company accepts only 5% to 10% of apprenticeship applicants. Apprentices must receive at least an 80% grade in all their classes and only two apprentices have failed to do that in the past 34 years.³³ A USDOC study found that Oberg is one of the few U.S. companies that conducts internal ROI calculations on its apprenticeship programs, based in part on tracking individual productivity data for apprentice and non-apprentice hires. While Oberg did not share details of its ROI estimates because of confidentiality concerns, “...Oberg finds a wide range of consistently positive ROI for its apprentice graduates on average.”³⁴ For example, Oberg estimated the ROI for apprentice graduates in 2016 as ranging from 131% to 326%.³⁵

A survey of the literature on Germany, Switzerland, the United Kingdom, and Australia (as well as Canada) also finds that most firms benefit from investing in apprenticeship, although the financial returns vary by company. Some companies see a return on their investment within the apprenticeship period, while others don’t see the return until accounting for reduced turnover, initial training costs and recruitment costs.

While ROI is an important element to share with employers, most employers do not embrace apprenticeship based on ROI estimates.

A recent study found that employers started apprenticeships for a variety of reasons: employers could control the design of the training which included acculturation to the firm and development of company-specific skills; they were European employers and already knew the benefits of apprenticeship; they enable companies to tap more diverse labor pools; or because of outreach by an intermediary.

³¹This profile is based in part on Herzenberg and Polson, “Inventory of Pre-Apprenticeship Programs,” pp. 38-39. See also Helper et al., “The Benefits and Costs of Apprenticeships”; and Keith Rolland, “Apprenticeship Guide,” Federal Reserve Bank of Philadelphia, 2017 pp. 33-38; accessed at https://www.philadelphiafed.org/-/media/community-development/publications/specialreports/apprenticeship-guide/apprentguide_web_full.pdf?la=en

³²According to the Philadelphia Federal Reserve Bank, Oberg had 61 apprentices as of February 1, 2017, 9% of its U.S. workforce. That figure may include some apprentices in Illinois. See Rolland, “Apprenticeship Guide,” p. 33.

³³Rolland, “Apprenticeship Guide,” p. 35.

³⁴Helper et al., “The Benefits and Costs of Apprenticeships,” p. 69.

³⁵Rolland, “Apprenticeship Guide,” p. 36.

Rather than thinking of apprenticeship in monetary terms, many employers characterize their interest in apprenticeship as integral to the success of their businesses, and a way to develop, since they cannot find, the talent they need to thrive.³⁶

21st Century Soft Skills

The World Economic Forum reports the top three skills needed for jobs in 2020 as 1) complex problem solving, 2) critical thinking, and 3) creativity.³⁷ Apprenticeships combine theoretical classroom learning with hands-on, experiential training and offer an ideal environment to hone these skills.

Apprenticeship has proven a powerful learning model that effectively prepares students for today's world of work. While the U.S. was once an educational beacon for the rest of the world, we are no longer a leader in education that combines both practical and academic skills.³⁸ Among the reasons the U.S. has fallen behind: "both vocational education with its overly specific training and academic education with its tendency to become too abstract and decontextualized have abandoned the requirements of work."³⁹ As state governments and the country have begun to confront this reality, many employers and government officials



have turned to apprenticeship as one potential answer. Apprenticeships, along with other programs that combine work and classroom education such as internships and cooperative education, impart skills and know-how that other forms of education too often shortchange. While "learning by doing" has never been limited to craft skills in construction (plumbers, electricians) and manufacturing (machinists, toolmakers), the similarities between artisanal training and "professional" training go mostly unacknowledged. The general model in both is the same: learners couple academic preparation with experiential skill acquisition, working alongside peers and colleagues, and teacher-mentors of established competence to further skill development. Novices learn from experts, whether expert welders or expert surgeons. The experts pass along tacit skills and know-how of the sort largely missing in classroom settings.

³⁶Colborn and Jenkins, "Recasting American Apprenticeship," 2015.

³⁷Alex Gray, "The 10 skills you need in the Fourth Industrial Revolution," World Economic Forum, January 19, 2016; accessed at: <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourthindustrial-revolution/>; Vivien Luu, "The 10 Skills You'll Need By 2020 (And Beyond). Career FAQs," 2016; accessed at <https://www.careerfaqs.com.au/news/news-and-views/the-10-skills-you-ll-need-by-2020-and-beyond>

³⁸OECD, "Skills Matter: Further Results From the Survey of Adult Skills," Paris: OECD, 2016. See also World Bank, "Learning: To Realize Education's Promise," Washington, DC: World Bank, 2018; accessed at <https://www.worldbank.org/en/publication/wdr2018>

³⁹Frank Achtenhagen and W. Norton Grubb, "Vocational and Occupational Education: Pedagogical Complexity, Institutional Diversity," in Virginia Richardson, ed., Handbook of Research on Teaching, Fourth Edition, Washington, DC: American Educational Research Association, 2001, pp. 604-639; quotation from p. 625.

This is how artists, musicians, and actors learn, and how aircraft pilots, police officers, and scientists cap off their postgraduate training. There is ample opportunity to expand apprenticeship learning to occupations that have yet to benefit.⁴⁰

For Job Seekers

Higher wages and income

The benefits for apprentices start in many (but not all) cases with higher wages and income. One study found that apprentices earn an average starting salary of \$50,000 per year and earn \$300,000 more over a lifetime on average than their peers who did not complete an apprenticeship.⁴¹ A Mathematica study of 10 states, including Pennsylvania, found that participants in a registered apprenticeship had an average gain in annual earnings of \$5,839 over the earnings of non-participants in the ninth year after enrollment.⁴² In Pennsylvania, the apprentice advantage was larger: \$7,825. Out of the 10 states, Pennsylvania's apprentices saw the second largest gain, trailing only Maryland.

The cheapest route to college and no college debt

In many apprenticeships, articulation agreements between apprenticeship training programs and 2- to 4-year colleges enable apprentices to earn college credit for their classroom related instruction and in some cases an Associate Degree. (Some apprenticeship and training programs have also become accredited postsecondary institutions and so can themselves provide apprentices with college credit.) With ever-growing college costs, the opportunity for apprentices to gain college credits while they earn (and learn) becomes even more attractive. This is especially true in Pennsylvania because we rank highest for college-student debt of any state. The average debt at graduation of those who borrow for college equals \$36,193 in Pennsylvania, with 67% of Pennsylvania students graduating with debt.⁴³



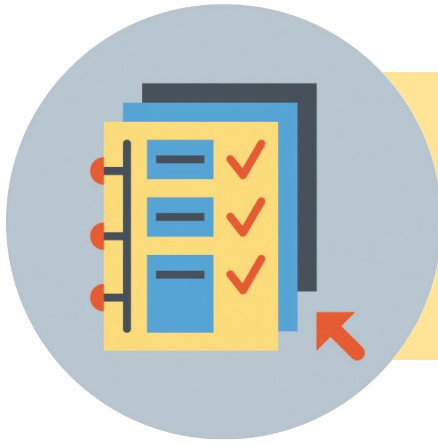
⁴⁰Excerpted in part from: Stephen Herzenberg and John Alic, "Towards an AI Economy that Works for All: A Report of the Keystone Research Center Future of Work Project sponsored by the Hein Endowments," February 2019; accessed at

https://www.keystoneresearch.org/sites/default/files/FOW_TowardAIEconomyForAllFinalEdit.pdf

⁴¹USDOL website, "Frequently Asked Questions"; accessed at <https://www.dol.gov/apprenticeship/toolkit/toolkitfaq.htm>

⁴²Reed et al., "An Effectiveness Assessment and Cost Benefit Analysis," Table 1, p xv.

⁴³LENDEDU, "Average Student Loan Debt Statistics by School by State 2019," August 8, 2018; accessed at <https://lendedu.com/blog/student-loan-debt-statistics-by-school-by-state-2017>



Ten Ways for Pennsylvania to Grow Apprenticeship

With the establishment of Pennsylvania’s ATO comes a great opportunity to address the challenges to expanding apprenticeship and enabling more employers and individuals to enjoy its benefits. The ATO has several goals:

- Increase the number of Pennsylvania registered apprenticeships.
- Educate the uninformed (employers and job seekers) about the benefits of RAs.
- Expand apprenticeships in non-traditional occupations.
- Expand apprenticeships for non-traditional apprentices.
- Ensure that registered apprenticeships and pre-apprenticeships are quality programs that meet minimum standards set at the state level.

To overcome the challenges to expanding apprenticeships, the ATO pursues multiple strategies and leverages existing strengths within the Commonwealth including a strong workforce development system and established industry partnerships and intermediaries. The next section fleshes out 10 ways for the ATO and the state to build on the work already undertaken since 2016. Many of the options the ATO already pursues; others are informed by policies and practices in other states and countries.

1) Engage Employers & Provide Technical Assistance

The ATO can help to expand apprenticeship through ongoing employer engagement and technical assistance. Employer engagement and technical assistance strategies include: reaching out to employers across the state; providing technical assistance to those starting and implementing registered apprenticeships; leveraging existing workforce development and employer networks; providing apprenticeship sponsors with access to new and existing funds; facilitating informational and programmatic exchange among apprenticeship programs and; teaching about group models of apprenticeship, which is especially relevant to small- and medium-sized employers who can’t afford the money or time to start up an apprenticeship program on their own.

Outreach to employers: Statewide marketing campaign

Building on its successful outreach since 2016, the ATO should consider investing in a branded statewide marketing campaign that elevates apprenticeship as a good solution to employers’

workforce challenges as well as makes apprenticeship better known as a viable alternative or complement to college. Marketing targeted at generating demand from business is a proven strategy. South Carolina has increased the number of apprentices from 777 in 2007 to 20,763 today (0.97% of the labor force) using a dual strategy of a business tax credit for each apprentice employed *and* a statewide marketing campaign.⁴⁴ Marketing apprenticeship is one of the five key functions of Apprenticeship Carolina (the others being building relationships with employers; assisting with apprenticeship registration; identifying core job competencies; and coordinating curricula for job-related education with the technical college system).⁴⁵ The South Carolina case shows that investment does not have to be large. Few states engage in large-scale marketing and “even a relatively small investment can spur significant interest among businesses.”⁴⁶ Some of the outreach and technical assistance by technical colleges to grow apprenticeship in South Carolina may be undertaken in Pennsylvania in the near future by RA Navigators that complete the new apprenticeship program being launched by KDP.

England also saw tremendous growth in apprenticeships—from 279,000 in 2009-10 to 520,600 just two years later in 2011-12, the equivalent of nearly one apprentice for every 100 citizens in the country. Much of England’s strategy for expanding apprenticeship was a large-scale marketing campaign. Informational ads can be found across England on subway posters, taxis and in newspapers. The country has invested in an extensive online (<https://www.getingofar.gov.uk/>) and social media presence as well as establishing a new “App-renticeships” app, which allows residents to search for apprenticeship opportunities.⁴⁷

A Pennsylvania marketing campaign could target key industries in which the state hopes to expand apprenticeships, such as IT, health care, manufacturing, transportation and energy. Messaging should dispel the myth that apprenticeship is only for the construction trades. Marketing materials should also include a diverse group of apprentices in different occupations, so a diverse pool of potential applicants can see that apprenticeship is an opportunity for them.

⁴⁴US DOL, Apprenticeship USA, “US Department of Labor Fact Sheet: National Apprenticeship Week Celebrates Advancements in Apprenticeship”; accessed at https://www.dol.gov/apprenticeship/NAW/pdf/Final_DOL_NAW_Factsheet.pdf

⁴⁵Ben Olinsky and Sarah Ayres, “Training for Success: A Policy to Expand Apprenticeships in the United States,” Center for American Progress, November 2013; accessed at https://cdn.americanprogress.org/wpcontent/uploads/2013/11/apprenticeship_report.pdf

⁴⁶Sarah Ayres Steinberg, Ethan Gurwitz, and Ben Schwartz, “Policies States Can Enact to Promote Apprenticeship,” Center for American Progress, 2014; accessed at <https://www.americanprogress.org/issues/economy/news/2014/06/30/92841/policies-states-can-enact-topromote-apprenticeship/>

⁴⁷Olinsky and Ayres, “Training for Success.”

Use Pennsylvania employer and union champions of apprenticeships

Employers and unions who run successful apprenticeship programs are the best advocates and champions for apprenticeships. This isn't surprising given that 97% of employers who have an apprenticeship program would recommend it to others.⁴⁸

The ATO has already begun to identify and use employer champions such as the Hanover Chamber of Commerce. Case studies and testimonials from employers already engaged in apprenticeship can expose other business leaders to the benefits and possibilities, as well as provide an example of how to get there, the steps to take to establish such a program, etc.

Because apprenticeship systems are much more developed in many European countries, it is often the case that employers in the U.S. with European roots get apprenticeship and its value quickly. Giving European employers and their associations (such as the German American Chamber in Pittsburgh) platforms to serve as spokespeople on apprenticeship can help other companies understand the benefits.⁴⁹

Make the process of starting apprenticeship transparent and understandable

A primary role of the ATO is to provide technical assistance to employers and other apprenticeship sponsors. ATO field representatives can share resources, generate interest in apprenticeship, and guide new sponsors through the process of setting up and registering an apprenticeship program. An easy-to-understand pathway to apprenticeship is critical to convincing employers that apprenticeship is not too daunting and time consuming. This pathway should include easily accessible information on the occupation in which the employer(s) want(s) to indenture apprentices and to apprenticeship curricula and industry-recognized credentials for that occupation. All this information should be accessible online (see 3 below).

Educate employers on different models of apprenticeship

One advantage of apprenticeship is its flexibility. This allows employers to pick the apprenticeship model that suits them—sponsoring their own apprenticeship or participating in a group apprenticeship—and then customizing whichever model they choose, including the on-the-job learning that happens in their workplace.

⁴⁸Robert I. Lerman, Lauren Eyster, and Kate Chambers, "The Benefits and Challenges of Registered Apprenticeship: The Sponsors' Perspective," Urban Institute, Center on Labor Human Services and Population, March 2009; March 2009; accessed at <https://www.urban.org/sites/default/files/publication/30416/411907-The-Benefits-andChallenges-of-Registered-Apprenticeship-The-Sponsors-Perspective.PDF>

⁴⁹For a profile of the German American Chamber's apprenticeship and pre-apprenticeship programs, see Herzenberg and Diana Polson, "Inventory of Pre-Apprenticeship Programs," p. 31.

2) Engage the Workforce System & Employer Hubs with Apprenticeships

Pennsylvania has a strong workforce development system, with workforce development boards (WDBs) serving as nodes that connect in each region to local employers, industry associations, education partners, workforce development partners and community groups (with connections to job seekers in each neighborhood and to each demographic group). The ATO's strategy has been to work closely with WDBs to leverage their connections, expanding the ATOs reach and band width despite a small staff.

Local WDBs, with ATO guidance and support, bring together partners to educate employers and other members of the local workforce development community on the benefits of apprenticeship and walk them through the process for establishing such programs. The ATO can empower local WDBs to continue to build relationships with stakeholders who could benefit from apprenticeship and convene and spark new apprenticeships.

WDBs can also play an important knowledge-sharing role, making sure that schools, programs and non-profits that work with different labor pools have knowledge of pre-apprenticeship and apprenticeship opportunities. In addition, PA CareerLink® staff, who already implement local business engagement strategies, should be trained and encouraged to educate employers about apprenticeships. Recruiting some WDB and CareerLink® staff into the RA Navigator apprenticeship can further leverage the workforce system's capacity to grow apprenticeship.

In addition to working closely with WDBs, the ATO should build relationships (and encourage WDBs to do so) with employer groups, especially in key industries where Pennsylvania wants to expand apprenticeship. These groups include industry partnerships, industry associations, local chambers of commerce and other employer conveners. The ATO, in partnership with local WDBs, should continue to sponsor apprenticeship conversations with key employer groups and other local stakeholders, as it did in Washington County in October 2017. Using concrete examples of multi-employer apprenticeships in the state in these forums can bring to life how group apprenticeships work and why the benefits often outweigh the investment of time and money.

3) Become a Resource Hub, Leveraging a Digital Approach

The ATO should become a resource hub for all information related to apprenticeship in the state of Pennsylvania. The ATO should build on its [existing website](https://www.dli.pa.gov/Individuals/WorkforceDevelopment/apprenticeship/Pages/default.aspx) (<https://www.dli.pa.gov/Individuals/WorkforceDevelopment/apprenticeship/Pages/default.aspx>) to create an online resource where (1) employers and other program sponsors can access information they need at different stages of apprenticeship development. Employers who are curious about apprenticeship and want to learn more about it and its benefits should be able to find resources there. Employers who have decided to establish an apprenticeship should find resources on the steps to do so, including examples of curricula for different occupations, standardized forms and examples of articulation agreements. Employers who want to connect with other workforce partners, educational

institutions nearby or other employers who have previously established apprenticeships in a similar industry should find the necessary information at the website.

The website should also be a place where (2) residents of the state can learn about apprenticeship opportunities.

Other states from whose online web resources the ATO can learn include the following. California has a searchable database for those interested in finding an apprenticeship opportunity (<https://www.dir.ca.gov/databases/das/aigstart.asp>). Residents can learn about apprenticeship opportunities in different fields and counties. Employers can learn the steps involved in starting an apprenticeship program (see <https://www.dir.ca.gov/DAS/das.html>), about potential funding sources (https://www.dir.ca.gov/DAS/Funding_Source.htm), and find links to other resources (<https://www.dir.ca.gov/das/forms.html>). Another page provides information for program sponsors (<https://www.dir.ca.gov/DAS/ProgramSponsor.htm>).

Other states have websites aimed at providing more information about the benefits of apprenticeship, the process and resources, including Apprenticeship Carolina (<http://www.apprenticeshipcarolina.com/index.html>); Wisconsin's Bureau of Apprenticeship Standards (<https://dwd.wisconsin.gov/apprenticeship/default.htm>); Washington State (<http://www.lni.wa.gov/TradesLicensing/Apprenticeship/default.asp>); and New York State (<https://www.labor.ny.gov/apprenticeship/appindex.shtml>).

One purpose of a central hub is efficiency—government that works. Program sponsors and employers would not need to rely entirely on ATO's lean staff to provide information. Such a site should also enable employers and sponsors to avoid reinventing the wheel and to borrow and adapt components of existing successful program.

Career Wise Colorado (<http://www.careerwisecolorado.org/>), while not a state website, is also a model from which Pennsylvania could borrow some features.

Additional online capacity to support the growth of apprenticeship should emerge from a partnership between KDP and TranZed Apprenticeship Services to develop a statewide network to support employers to participate in RA and pre-apprenticeship programs and/or become sponsors. To support this "Keystone Apprenticeship Alliance" TranZed will establish an on-line presence.

4) Develop & Encourage the Group Apprenticeship Approach

The group model provides an opportunity for smaller employers to participate in apprenticeship without having to take on all the cost and time commitment by themselves. In some group models, each individual employer registers a separate apprenticeship but an

intermediary like a local chamber, an industry-specific association (like the German-American Chamber in Pittsburgh), educational institution (like Penn College of Technology), a labor management training fund, or another non-profit administers some or all of the classroom part of the apprenticeship (the “related instruction”) for multiple employers. In other group models, the intermediary is the official sponsor. It administers most aspects of the program, including registration with and reporting to the state but the program and its curriculum are still shaped by participating employers.

The group model can achieve efficiencies and “economies of scope” when multiple employers in a region have similar skill needs and can come together to create a standard curriculum (although on-the-job training and even some aspects of the classroom training may still be customized to each employer). The group apprenticeship model is especially attractive to small and medium-sized employers who fear the upfront investment of time and money is their reach. By working with the sponsor and other employers, each employer can participate and give input into the training delivered, without having to organize the entire apprenticeship or pay for the entire endeavor.

Pennsylvania’s ATO’s emphasis on the group model makes sense because of the model’s efficiencies (economies of scale and scope) and because the model can make more employers willing and able through the help of an intermediary to participate in an apprenticeship. Where apprenticeship exists at scale in the U.S.—coordinated by labor-management training funds in construction—and outside the U.S. (where educational institutions are usually central coordinating players), some form of group apprenticeship is usually why.

As one tool for engaging employers and expanding business-led group model apprenticeships, the Center for American Progress suggests creating a competitive grant program for chambers of commerce or economic development corporations to conduct needs assessment to understand the region’s ongoing needs for a skilled workforce, barriers to meeting those needs and the potential for apprenticeship to fill that gap. Other industry associations could also be invited to compete along with labor-management partnerships spanning multiple employers. This type of process could create additional buy in from participating organizations and the business community to apprenticeships. Such a grant program would build on the considerable work the ATO has already done with groups such as the Hanover Chamber, the German American Chamber, the Manufacturers’ Association of South Central PA, and the Keystone Development Partnership.⁵⁰

5) Build a Pipeline of Diverse Apprentices

Apprenticeship in the U.S. has a history of disparities for women and minorities. The ATO has an opportunity, and a responsibility, to expand apprenticeship throughout the state in an equitable and inclusive way. A multi-pronged approach in Pennsylvania can attract, prepare and retain a diverse apprenticeship population, including women, minorities and underserved populations. This includes interventions at the recruitment, preparation and apprenticeship (retention) stages.

⁵⁰Ben Olinsky and Sarah Ayres 2013. Accessed at: https://cdn.americanprogress.org/wpcontent/uploads/2013/11/apprenticeship_report.pdf

Expand apprenticeship beyond construction and into female-dominated occupations

An Urban Institute study of South Carolina’s apprenticeship efforts found substantial increases in the number of women apprentices since 2007 as a direct result of expanding apprenticeship into new occupations with high proportions of women.⁵¹

Target outreach to groups embedded in underserved demographics

It is an obvious point, but to attract minorities and female apprentices, it is vital to target outreach to ensure the participation of a diverse cohort. Such outreach, however, must be cognizant of the entry requirements for apprenticeship, recruiting candidates with a realistic chance of induction after a pre-apprenticeship and/or other supports. One way to target outreach is to partner with community groups serving women and minorities, including nonprofits, housing organizations, churches, veteran networks, or others. Another way is to focus efforts to develop links with CTE programs on schools with high shares of minorities.

Encourage programs to set apprenticeship hiring goals for women and minorities

Competitive grants offered by the state to apprenticeship programs can also include, as part of the application process, preference for programs with strong female and minority apprentice goals and effective strategies meeting those goals.

Provide employer incentives to hire disadvantaged populations

New York State provides tax credits to employers for hiring registered apprentices, and larger tax credits if those apprentices are disadvantaged youth between the ages of 16 and 24. Pennsylvania could also establish tax credits or grants to encourage the hiring of diverse workforce through apprenticeship.⁵²

Leverage best practices that link apprenticeships to nontraditional populations

In construction, given the long history of hiccups with pre-apprenticeships successfully enrolling diverse participants in apprenticeship, Pennsylvania should identify best-practice programs and convene initiatives from the state’s cities and regions to promote peer learning.

⁵¹Daniel Kuehn, “Diversity and Inclusion in Apprenticeship Expansion: Lessons from South Carolina.” Urban Institute, 2017; accessed at <https://www.urban.org/sites/default/files/publication/93831/diversity-and-inclusion-in-apprenticeship-expansion.pdf>

⁵²Bryan Wilson, “Work-Based Learning Policy.”

In both Pittsburgh and Philadelphia, new initiatives to diversify the construction pipeline show potential, and a convening could enable these efforts to learn from each other as well as mentor other regions.

More generally over the next several years, the ATO could seek to identify and elevate best practice diverse apprenticeships, to aggregate experiential learning within the apprenticeship community of practice, and to distill best-practice guidelines customized (to some degree) based on occupation.

Incorporate diversity provisions into registered pre-apprenticeship standards

Pre-apprenticeship can be a great on-ramp for a diverse population into apprenticeship. But the quality of pre-apprenticeships varies greatly. In one study, most employers (2/3 of those surveyed) reported their best source of recruitment was their current employees—which means new hires will mirror the demographics of the current workforce. One-Stop workforce centers and pre-apprenticeship programs, however, got consistently low scores from employers as sources of quality apprenticeship recruits.⁵³

Good pre-apprenticeship programs have strong community ties but also strong business/industry ties. They recruit candidates with a chance to succeed and provide case management that enables those candidates to succeed, including support for transportation, childcare, etc.⁵⁴ They also help participants navigate the apprenticeship application. The highest quality pre-apprenticeships are closely aligned with RA programs to ensure that students have a real shot at becoming apprentices once they complete their pre-apprenticeship. A lack of standards and of technical assistance, however, have reduced the success of some pre-apprenticeship programs and left many without strong connections to registered apprenticeships.

To address these problems, the USDOL established standards for pre-apprenticeship programs (see https://wdr.doleta.gov/directives/attach/TEN/TEN_13-12.pdf). Several states—Florida, Maine, Massachusetts, and now Pennsylvania (since 2017)—have begun registering pre-apprenticeship programs to make sure they meet minimum standards and have ties to registered apprenticeships. These standards should help maintain good quality while also allowing flexibility so as not to discourage the establishment of pre-apprenticeship programs.⁵⁵ Competitive grants can be given in the state to launch pre-apprenticeship programs aimed at preparing low-skilled adults, women and minorities.⁵⁶

⁵³Alstadt, “Improving Access to Apprenticeship.”

⁵⁴For examples of promising pre-apprenticeship programs that have attracted a diverse pool of workers into apprenticeship see <http://www.jff.org/blog/2015/11/04/expanding-path-apprenticeships-women-and-minorityworkers>

⁵⁵Alstadt, “Improving Access to Apprenticeship.”

⁵⁶Alstadt, “Improving Access to Apprenticeship.” A table on p. 13 outlines the elements of these preapprenticeship regulations

In addition, apprenticeship programs should provide childcare support and encourage programs to accommodate single mothers' schedules. The ATO should also work to ensure all registered pre-apprenticeship and apprenticeship programs are complying with EEO and enforce policies to prevent harassment and discrimination.

Encourage programs to connect apprentices with mentors and peer support

A strong mentor can be the difference between whether an apprentice completes a program or not.⁵⁷

6) Strengthen the Apprenticeship Community of Practice & Ambassador Network

Across the state and in local areas, the ATO should convene apprenticeship programs and stakeholders to foster sharing of experiences, lessons learned and new and successful models of apprenticeship. Such peer-to-peer exchanges can build a strong and well-grounded community of practice that will upgrade the quality and scale of apprenticeship in Pennsylvania, and address the specific challenges discussed above (e.g., diversifying apprentices).

To begin more formally developing a Pennsylvania apprenticeship community of practice the ATO recently provided grants for capacity building through the "Ambassador Network" funding category within PAsmart. To follow up that initiative, ATO could seek to convene those grantees, the longstanding Pennsylvania Apprenticeship Coordinators Association (PACA), and other interested apprenticeship partners and stakeholders to an inaugural apprenticeship peer learning conference. Alternatively, or in addition, the ATO could, in fall 2019, emulate—or piggyback on—an annual interactive Industry Partnership conference that the PA Workforce Development Association organizes in State College (usually in October in recent years). Such a conference could feature rich discussion of effective practices (e.g., in specific sectors or occupations) and group reflection on how to build a high-performing apprenticeship community of practice in Pennsylvania. For example, what program and frequency of statewide and regional convenings make sense? Would industry specific convenings (e.g., of manufacturing or construction apprenticeships) make sense? Would "best practice PA apprenticeship" profiles have value for the community of practice as a whole? Would programs be willing to nominate and vote on which of their peers should be profiled?⁵⁸

⁵⁷Debbie Reed et al., "An Effectiveness Assessment and Cost Benefit Analysis"

⁵⁸Recent mini-case studies of Pennsylvania apprenticeship program include the profiles of Oberg Industries and Penn United Technologies in Keystone Research Center, "Inventory of Pre-Apprenticeship Programs Across Pennsylvania," Keystone Research Center (KRC), January 7, 2019. Four profiles of joint construction apprenticeship programs (the Finishing Trades Institute, Steamfitters Local 449, IBEW Local 375, and the Keystone Mountain Lakes Lebanon Training Center) can be found in Stephen Herzenberg, Diana Polson, and Mark Price, "Construction Apprenticeship in Pennsylvania," Capital Area Labor-Management Council, Inc., Harrisburg, PA, 2018.

Would apprenticeship programs be willing to invest time in developing standardized “apprenticeship profiles” or an annual survey and report that supplements RAPIDS data with additional qualitative and quantitative information on programs?

Another option for the ATO that could strengthen the community of practice would be to supplement RAPIDS data with periodic surveys of apprenticeship programs and of employer and individual participants in apprenticeships. Washington state conducted participant surveys early this decade and then produced a report online at http://www.wtb.wa.gov/Documents/2_Apprenticeship_2013.pdf

7) Align Existing Funding & Provide New \$ to Support Apprenticeships

Unlike many European countries that invest heavily in apprenticeships, the federal government does not offer tax incentives to employers to help offset the costs. (President Obama did invest \$175 million for American Apprenticeship grants to expand apprenticeship—but this is a small amount, only a little over a dollar per U.S. worker.) Therefore, efforts to expand apprenticeship at the state level are even more important.

The examples below show that other states offer a variety of incentives for employers who participate in apprenticeship programs: tax credits to businesses or other entities that sponsor apprenticeships, direct subsidies in the form of competitive grants, and per apprentice subsidies for tuition (or other costs). State investment in apprenticeship has proven a smart investment. In Washington state, one study found that for every \$1 invested in apprenticeship by the state, the net taxpayer benefit was \$23. This was significantly higher than any other workforce program in the state.⁵⁹

Tax credits

At least 13 states (plus Guam) offer tax credits for apprenticeship (Alabama, Arkansas, Connecticut, Louisiana, Maryland, Missouri, Montana, Nevada, New York, Rhode Island, South Carolina, Virginia and West Virginia).⁶⁰ Perhaps the best-known example is South Carolina, which offers a \$1,000 tax credit to eligible businesses for each apprentice employed for at least seven months during each year (up to four) of the apprenticeship program.

The response to the program has been tremendous, in part because a statewide intermediary—Apprenticeship Carolina—has marketed the tax incentive to employers and guided them through the process of establishing and registering apprenticeship.⁶¹ Between 2007 and 2012,

⁵⁹Workforce Training and Education Coordinating Board, “2013 Workforce Training Results”; accessed at http://www.wtb.wa.gov/Documents/2_Apprenticeship_2013.pdf

⁶⁰Source: Department of Labor, Employment and Training Administration, <https://doleta.gov/oa/taxcredits.cfm>

⁶¹Robert Lerman, “Marketing Apprenticeships in the United States: The Case of South Carolina,” in Salim Akoojee et al., editors, *Apprenticeship in a Globalised World: Premises, Promises and Pitfalls*, Lit Verlag, Zurich, 2013.

South Carolina saw an increase of 570% in employer-sponsored apprenticeship programs, and apprenticeship has continued to increase since then.⁶²

Connecticut also offers tax credits to employers in manufacturing, plastics and plastics-related trades of up to \$4,800 and 50% of total wages paid to apprentices during the first half of a two year apprenticeship or the first three quarters of a four-year apprenticeship. The state offers a similar support package to employers in the construction trades.

Michigan and Arkansas both have tax credits for youth apprenticeship. Arkansas has tax credits of up to \$2,000 or 10% of wages earned (whichever is less) for employers hiring a youth apprentice between the ages of 16-20. Michigan offers a tax credit of up to \$2,000 per year for each registered apprentice that is trained.⁶³

Two states enacted tax credits in 2017 for employers with registered apprenticeships. New York established the Empire State Apprenticeship Tax Credit (A 3009) for employers who hire registered apprentices in occupations outside of construction. The tax credit is \$2,000 for the first year, and it increases to \$6,000 for fifth-year apprentices. The tax credit is higher for employers hiring disadvantaged youth (16-24), ranging from \$5,000 to \$7,000. In 2017, Maryland passed the More Jobs for Marylanders Act (SB 317), which provides employers with a tax credit (\$1,000) for each apprentice hired for at least seven months of the taxable year.⁶⁴

Grants

Some states—including Pennsylvania—also provide grants to apprenticeships. Connecticut offers some of the most generous to manufacturers: up to \$9,500 per apprentice for year one and \$9,250 for year two.⁶⁵

In Iowa, the Apprenticeship and Training Act in 2014 allocated annual appropriations for apprenticeship of \$3 million per year (the equivalent of \$12 million in Pennsylvania), which tripled the amount of money available to support the growth of apprenticeships in the state.

⁶²Olinsky and Ayres, "Training for Success"; Steinberg et al., "Policies States Can Enact to Promote Apprenticeship." Center for American Progress. For data showing the continued growth of apprenticeship in South Carolina, see the USDOL Employment and Training Administration (ETA) website, https://doleta.gov/oa/data_statistics.cfm

⁶³Michigan Department of Career Development, "School-to-Registered Apprenticeship Program and Tax Credit"; accessed at https://www.michigan.gov/documents/School-ToRegistered_Apprenticeship_Program_and_Tax_Credit_5785_7.pdf

⁶⁴Bryan Wilson, "Work-Based Learning Policy for Out-of-School Youth and Disadvantaged Adults," National Skills Coalition, October 2017; accessed at https://www.nationalskillscoalition.org/resources/publications/file/NSCWBL_PolicyToolkit.pdf

⁶⁵This assistance includes: 1) a wage subsidy reimbursement of \$5.00 per hour (not to exceed \$6,000 per apprentice for year one and \$7,000 for an apprentice in year two); 2) related instruction tuition and training costs to a CT-approved related instructor (not to exceed \$2,500 in year one and \$1,250 in year two); and 3) credentialing reimbursement for industry recognized credential costs (not to exceed \$1,000 in year one and two). The reimbursement may not or may not exceed the amount of money spent by, or on behalf of an apprenticeship sponsor in each year. See <http://www.ctdol.state.ct.us/appmifapp.htm>

This funding provides competitive grants to apprenticeship sponsors for related classroom instruction and purchasing equipment.⁶⁶ The Iowa grants can be used to expand apprenticeship in high-growth, high-demand occupations. Under the PAsmart program, Pennsylvania has also provided grants to apprenticeship (and pre-apprenticeship) programs. The Working Poor Families project recommends giving extra weight to applications with detailed strategies and goals around recruiting diverse groups of apprentices.⁶⁷

Tuition support

Other states earmark funds specifically for the classroom component of RAs.⁶⁸ For example, California has funded apprenticeship classroom related instruction delivered by community colleges through the Montoya funds for 50 years. The state awarded \$14.1 million in 2015-16 for related instruction and \$15 million to facilitate pre-apprenticeships, support innovative apprenticeship programs and an Apprenticeship Accelerator program. California has also invested over \$30 million in the last three years in an Apprenticeship Training Pilot program which supplements the Montoya funds.⁶⁹ Texas provides funding to either public school systems or postsecondary institutions that provide training to registered apprentices.⁷⁰

Florida and Washington state also give tuition support. Florida has a statute that waives apprentices' tuition and fees in the State University System of Florida (four-year colleges), Florida College System (which includes community colleges), or school district workforce education program when students are enrolled in a registered apprenticeship program. Community and technical colleges in Washington state have reduced apprentice's classroom instruction costs by 50%.⁷¹ Providing funding for or reducing the cost of classroom training is especially important during the first year of an apprenticeship, when individuals are often still struggling to get on sound financial footing. To avoid a financial disincentive for educational institutions, the state must offset waived tuition and fees.

Fund apprenticeship intermediaries

Industry partnerships, industry associations, WDBs, local chambers of commerce, and workforce non-profits are examples of intermediaries that can broker the relationships between employers, trainers and potential apprentices. Grants (planning grants and then implementation grants) can be given to intermediaries for activities such as enrolling staff in the RA Navigator apprenticeship, marketing apprenticeships, recruiting employers into group apprenticeship programs, screening apprentices, providing/helping to start pre-apprenticeship

⁶⁶Angela Hanks and Ethan Gurwitz, "How States Are Expanding Apprenticeship." Center for American Progress, 2016; accessed at <https://www.americanprogress.org/issues/economy/reports/2016/02/09/130750/how-states-are-expanding-apprenticeship/>

⁶⁷David Alstadt, "Improving Access to Apprenticeship: Strengthening State Policies and Practices," the Working Poor Families Project, summer 2011; accessed at http://www.workingpoorfamilies.org/pdfs/WPFP_PolicyBrief_Summer2011.pdf

⁶⁸For some example, see the USDOL ETA website, <https://doleta.gov/oa/taxcredits.cfm>

⁶⁹Hanks and Gurwitz, "How States are Expanding Apprenticeship."

⁷⁰Bryan Wilson, "Work-Based Learning Policy."

⁷¹Bryan Wilson, "Work-Based Learning Policy."

programs for those not yet ready to enter apprenticeships, and providing case management for apprentices.⁷²

Funnel existing funding streams towards apprenticeship

Aside from new tax credits and other subsidies for apprenticeships, Pennsylvania should also align existing workforce funding and make these funding options transparent to group apprenticeship intermediaries and sponsors of single-employer apprenticeships.

Box 4. WIOA Funds Available for Apprenticeship

Some WIOA funds can support job seekers entering or already in apprenticeship. These funds must go to WIOA-eligible participants⁷³ but can free up employer funds for others. For eligible participants, WIOA can support:

- 1) Pre-apprenticeship to prepare participants for apprenticeship.
- 2) Training: Individual Training Accounts (ITAs) can fund apprenticeship classroom training if the trainer is on the state's eligible training provider list (which all registered apprenticeships are). ITAs can pay for tuition, fees, books or other "related costs" depending on local workforce board policies. ITAs can be used in conjunction with on-the-job training funds (OJT, see next item). ITAs are also available for out-of-school youth aged 18-24.
- 3) OJT funds support the OJT part of registered apprenticeship. Under WIOA, governors and local WDBs can choose to reimburse employers up to 75% of apprentices' wages.
- 4) Incumbent Worker Training: WIOA allows local workforce areas to use 20% of their adult and dislocated workers funds for incumbent worker training. (States may also use a 15% "state set aside" (<https://www.ffis.org/node/3952>) for apprenticeship.) Apprenticeship for incumbent workers can upgrade skills and recognize existing skills via the apprenticeship credential.
- 5) Customized Training: WIOA funds can be used to support employers in customized training for new employees or incumbent workers, including for apprenticeship in some instances.
- 6) Supportive Services: WIOA funds can pay for supportive services like transportation or childcare services for pre-apprentices or, in some cases, apprentices (although apprentices earn a wage that steadily increases and may have less need for supportive services as they advance). Such supports are especially important for low-income people and single moms/parents and can mean the difference between participation and not. Tutoring services (for youth) and case management can also support apprentices.
- 7) Youth program funds (20%) must be spent on OJT, potentially including for apprentices.⁷⁴

⁷²Bryan Wilson, "Work-Based Learning Policy."

⁷³WIOA eligibility criteria depend on whether a person applies for funds from Disaster Grants or for adults, dislocated workers, or In-school or out-of-school youths. For adults, for example, the person must be 18 years or older, a U.S. Citizen and eligible to work. Priority is given to those on public assistance, low-income or those with basic skills deficiencies. See Bureau of Workforce Partnership and Operations (BWPO), "CWDS Data Entry for WIOA Title I-B Programs Desk Aid," Effective September 2, 2015.

⁷⁴U.S. Department of Labor (USDOL), "Making ApprenticeshipUSA Work for the Public Workforce System: Using Workforce Funds to Support Apprenticeship"; accessed at <https://www.dol.gov/apprenticeship/toolkit/docs/DeskAid-Use-of-Funds.pdf>

Other federal funds that can support apprenticeship include:

- Federal Financial Aid: Apprentices may be eligible for federal financial aid, like Pell Grants or work-study grants, if the apprenticeship is connected to a postsecondary institution (one reason to steer apprenticeship sponsors towards partnerships with postsecondary institutions). Pell grants include \$3,000 on average per student (support varies by student income level) which can go towards tuition, books, fees, etc. Work study can provide up to \$2,000, including towards wages of student apprentices.⁷⁵ South Carolina’s Technical College System provides the training for many of the apprentices in their state. Financial aid offices at these school’s work with employers to design apprenticeships that align with the college’s existing academic coursework. The South Carolina apprenticeship system’s tight integration with the state’s technical college system facilitates these colleges’ collaboration with employers on apprenticeship and their ability to help students access financial aid.⁷⁶
- GI Bill: Registered Apprenticeships can be approved for the GI Bill (a process typically taking under 30 days) which can pay classroom tuition and fees and a monthly stipend (tax-free) up to \$1,509. ⁷⁷ The ATO could advise registered apprenticeships to become certified under the GI Bill in order to allow veteran apprentices to get access to these funds.
- Trade Adjustment Assistance (TAA), through which workers dislocated because of trade gain access to extended (e.g., up to two years) training—which could include apprenticeship related instruction—as well as income maintenance and other supports.
- Rapid Response funds.⁷⁸
- Supplemental Nutrition Assistance Program (SNAP): State agencies administering SNAP also receive employment and training program funding (known as SNAP E&T). These funds are for SNAP recipients to gain skills and training that can lead to employment or for subsidized work. The state can make apprenticeship and pre-apprenticeship a part of SNAP Employment and Training plans.⁷⁹
- Temporary Assistance to Needy Families (TANF): The Wolf Administration is in the process of restructuring TANF in Pennsylvania which will partly require local WDBs to contract out delivery of TANF services. However, TANF services are delivered, the ATO could work with the Department of Human Services administration to enable more TANF recipients to bridge into pre-apprenticeship and apprenticeship programs.

⁷⁵USDOL, “Making ApprenticeshipUSA Work for the Public Workforce System.”

⁷⁶USDOL Employment and Training Administration (ETA), “The Federal Resources Playbook for Registered Apprenticeship”; accessed at <https://www.doleta.gov/oa/federalresources/playbook.pdf>

⁷⁷USDOL, “Making ApprenticeshipUSA Work for the Public Workforce System”; USDOL ETA, “The Federal Resources Playbook.”

⁷⁸On Pennsylvania’s Rapid Response program, see Stephen Herzenberg, Diana Polson, and Mark Price, “Building on the Strengths of Pennsylvania’s Rapid Response Program: Mediating Employment Transitions in a Changing Economy,” Keystone Research Center, revised February 2017, deliverable 3 for the Pennsylvania Department of Labor & Industry, BWDA Rapid Response Improvement Project.

⁷⁹USDOL ETA, “The Federal Resources Playbook.” See page 16 for details on the Connecticut and Wisconsin programs that include SNAP recipients.

8) Lead by Example—Expand PA Public Sector Apprenticeships

As the second largest Pennsylvania employer (behind only the federal government),⁸⁰ the Commonwealth of Pennsylvania has an opportunity to lead by example on apprenticeship. The public sector already has the second largest number of apprentices in the state after construction, with 27% of the state's apprentices thanks to the apprenticeship program for state correction officers.⁸¹ But, there is significant opportunity to expand apprenticeship beyond corrections in both blue- and white-collar public sector jobs.

To get started, the ATO could encourage (friendly) competition among agencies to lead the expansion of apprenticeship within government and then use these lead agencies as models and champions for apprenticeship within other state agencies and local government. Alternatively, or in addition, the state could ask each agency to work with the ATO and with state government's labor unions to identify one occupation each suitable for apprenticeship and then to walk the path of apprenticeship together.

The state, as a large purchaser of goods and services throughout Pennsylvania, can also encourage apprenticeship in contractors via preferences for businesses that employ significant numbers of apprentices including from diverse backgrounds.⁸²

The ATO has begun a new apprenticeship program to train workforce development staff with expertise in apprenticeship expansion across the state. See Box 2 for more information on Pennsylvania's Ambassador Network.

9) Integrate Apprenticeship with Secondary & Postsecondary Education

Other countries that deploy apprenticeship at a much larger scale than Pennsylvania and in many industries (not just construction) integrate apprenticeship deeply with secondary and postsecondary education. Pennsylvania should do the same.

Deepen collaboration between apprenticeship and CTE

The ATO should support and encourage tighter collaboration between CTEs and apprenticeship. The two approaches have much in common pedagogically, including supporting hands-on experience coupled with classroom learning. Both are focused specifically on enabling students to develop marketable skills in their career of choice. In Pennsylvania there are over 80 Career and Technical Centers (CTCs) (serving multiple school districts) and 120 school districts that self

⁸⁰Pennsylvania Department of Labor and Industry, Center for Workforce Information and Analysis. "Pennsylvania, 4 th Quarter, 2018. Combined Government Ownerships." Accessed at: http://www.workstats.dli.pa.gov/Documents/Top%2050/Pennsylvania_Com_Top_50.pdf

⁸¹Keystone Research Center analysis of Registered Apprenticeship Partners Information Data System (RAPIDS).

⁸²Steinberg et al., "Policies States Can Enact to Promote Apprenticeship."

provide CTE programs.⁸³ CTE programs are natural feeder programs for apprenticeship that could also benefit from the employer connections of apprenticeship programs (in some cases where apprenticeships are just getting started, apprenticeship programs could benefit from CTE employer connections).⁸⁴ Because of these existing resources in communities across Pennsylvania focused on a similar mission, the ATO in partnership with local WDBs should prioritize building strong relationships with CTCs and CTE.

The U.S. Department of Education, Office of Career, Technical, and Adult Education profiles best practices for linking high-school CTE programs with apprenticeship. These case studies revealed three, partly overlapping approaches.⁸⁵

- High school students in North Carolina participate directly in registered apprenticeships.
- In several states (Connecticut, Florida, Kentucky, North Carolina and Washington), high school students participate in pre-apprenticeship programs that lead directly into specific registered apprenticeship programs.
- In Rhode Island, students enroll in CTE courses that align to RA programs in high-demand industries. Participating students earn credits towards an apprenticeship program during high school.

States can work to overcome the challenges of CTEs working closely with apprenticeship, such as limited resources, the isolation of CTE programs within the education system (or “silo”), and misperceptions about registered apprenticeships in high schools. One key step is fostering deeper collaboration between the agencies responsible for CTE and apprenticeship—the Department of Education (PDE) and L&I in the case of Pennsylvania. Florida co-located CTE and registered apprenticeships within the same state office. Resource manuals and how-to guides could also describe the process for developing youth apprenticeship program and how CTE and apprenticeships can work together, including responsibilities of each party involved. North Carolina has taken this approach (see their guide at <http://www.ncpublicschools.org/docs/cte/work-based/wbl-toolkit.pdf>).

States have also addressed liability issues that employers may have with hiring youth apprentices. In Kentucky, for example, apprentices are officially employed by third-party agencies so that employers don’t have to take on workers’ compensation liability insurance for high school youth.⁸⁶

⁸³For information on career and technical Education in Pennsylvania, see

<http://www.education.pa.gov/K12/Career%20and%20Technical%20Education/Pages/default.aspx#tab-1>

⁸⁴For an example where such connections are already developing, see the profile of the Penn College of Technology pre-apprenticeship programs in Keystone Research Center, “Inventory of Pre-Apprenticeship Programs Across Pennsylvania,” Keystone Research Center (KRC), January 7, 2019.

⁸⁵Olivia Rice, Jordan Hudson, Laura Rasmussen Foster, and Steven Klein, Connecting Secondary Career and Technical Education and Registered Apprenticeship: A Profile of Six State Systems, prepared for the U.S. Department of Education Office of Career, Technical, and Adult Education by the National Center for Innovation in Career and Technical Education, RTI International, July 2016; accessed at https://s3.amazonaws.com/PCRN/reports/Connecting_Secondary_CTE_and_Registered_Apprenticeship.pdf

⁸⁶Olivia Rice et al., “Connecting Secondary CTE and RA.” See page 30 for more details on Kentucky’s third-party employer.

As the examples below show, states across the U.S. have begun experimenting with strengthening youth apprenticeship opportunities including through deeper connections between CTE and apprenticeships.

Maryland

In Maryland, there were efforts to pass the *Career Apprenticeship Opportunity Act of 2017, SB335*, which died in committee but is still a significant example of efforts to expand youth apprenticeship. The bill sought to establish a tax credit of \$1,000 per youth apprentice for the first year of apprenticeship (total cost capped at \$500,000 for three years) aimed at generating interest about apprenticeship among employers. The legislation would have required the Maryland Department of Labor, Licensing and Regulation (DLLR) to recommend state goals for apprenticeship registration each year, as well as to develop annual earnings goals for high school graduates who have not earned an advanced degree by age 25. The bill set a goal of 45% for CTE completion by high school graduates, twice the current 23% for Maryland high school graduates who complete a CTE program, an apprenticeship or an industry skill certification. The policy would promote occupational credentials as well as AP courses in high schools, with the goal of communicating that career-readiness has a value on a par with college-readiness. The legislation also would have required the DLLR to study options to integrate youth apprenticeship programs with registered apprenticeship programs and pursue integrating apprenticeship into the public sector (state agencies). If it had passed, a system would have been set up by government to measure and analyze student engagement in CTE and apprenticeships, tracking the impact of the policy.⁸⁷

Georgia

Georgia has a youth apprenticeship program, which serves nearly 7,000 high school students. Nearly 75% of the state's 195 school systems participate. State funding pays for coordinators in local school systems who help coordinate the apprenticeship programs. Students learn about the apprenticeship program during the first two years of high school and can apply to become an apprentice in a range of occupations as juniors and seniors.

Once they graduate, students will have a high school diploma and an industry-recognized credential or postsecondary certificate. Apprentices have a higher graduation level than nonparticipants and 95% of employers have seen great benefits to their company as a result of the program.⁸⁸

⁸⁷Senator Jim Rosapepe and Delegate Cory McCray, "Career Apprenticeship Opportunity Act of 2017, SB 335 (as amended by the Senate)," PowerPoint presentation, April 2017. For additional information, go to http://mgaleg.maryland.gov/2017RS/fnotes/bil_0005/sb0335.pdf

⁸⁸Robert I. Lerman and Arnold Packer, "Youth Apprenticeship: A Hopeful Approach for Improving Outcomes for Baltimore Youth," Abell Foundation 28:2, April 2015; accessed at https://www.urban.org/sites/default/files/publication/52166/2000217-youth-apprenticeship_1.pdf

North Carolina

North Carolina began its high school apprenticeship program in 1995. High school students in North Carolina can dually enroll in CTE and RA programs or pre-apprenticeship programs. CTE classes fill the classroom-based component and students work part-time for an employer with a registered apprenticeship. Businesses work with high school and CTE personnel (teachers, administrators, faculty) and the state RA office to create customized training plans with the needed coursework. CTE staff and registered apprenticeship consultants work together on the recruitment of students. Students often do an internship prior to the apprenticeship to confirm their interest in the occupation and the employer, and parents get invited to a parents' night. This program (and those in most other states) remain small. In 2014-15, 200 students participated in the program with 31 different employers, with a quarter of those students in pre-apprenticeship programs. While programs are developed at the local level, the state RA office plays an important role which includes developing policy and guidelines in coordination with the CTE and the creation and distribution of a handbook on apprenticeship. Any sponsor of an RA in North Carolina is eligible to develop a youth apprenticeship program.⁸⁹

Kentucky

The Office of Career and Technical Education and the Kentucky Labor Council started the Tech Ready Apprentices for Careers in Kentucky (TRACK) in 2013, a pre-apprenticeship program for high school students. The program is managed by the state CTE office (operational support including recruiting employers and students, ensuring program compliance, etc.) and the Apprenticeship Office (registering and regulating the TRACK programs).⁹⁰ Students can choose from a variety of *TRACKS* including carpentry, electrical, manufacturing or welding. Employers with established registered apprenticeships may participate and help develop the pre-apprenticeship to meet their needs. Employers work directly with schools—recruitment is primarily done through CTE programs. There has been great student interest in the program, making TRACK enrollment very competitive.⁹¹ All 119 pre-apprentices (100%) following the first year of the program moved on to registered apprenticeship programs.⁹²

Wisconsin

Wisconsin has one of the oldest youth apprenticeship programs in the country (started in 1991). High school students complete two-to-four semesters of classroom instruction and 450-900 hours of onsite learning during a one- or two-year program. Students are paid for their work and graduate from the program with an industry certification and college credit (in some cases). Students can choose from 11 different program areas (partially depending on what is offered in their region) including marketing, health science, agriculture, food and natural resources, transportation and others.⁹³ This program is connected to the state's registered apprenticeship program and helps connect graduates with an apprenticeship after graduation.

⁸⁹Olivia Rice et al., "Connecting Secondary CTE and RA."

⁹⁰Olivia Rice et al., "Connecting Secondary CTE and RA."

⁹¹Olivia Rice et al., "Connecting Secondary CTE and RA."

⁹²The Council of State Governments, "Emerging State Policies on Youth Apprenticeships," March 2017; accessed at http://knowledgecenter.csg.org/kc/system/files/CR_apprenticeships.pdf; Kentucky Department of Education. "TRACK: Tech Ready Apprentices for Careers in Kentucky," 2019; accessed at <https://education.ky.gov/cte/cter/pages/track.aspx>

Colorado

This effort, launched in June 2017 and funded entirely by the private sector, has invested \$9.5 million to kick start a program aimed at growing apprenticeship for high school youth. Using the Swiss model, this project aims to “provide a business-led, student-centered program” by giving students two-to-three days of hands-on work experience coupled with two-to-three days of classroom training a week. Apprenticeships are three years and can be in finance and insurance, technology, advanced manufacturing, business operations or health care. In a student’s sophomore year in high school, students apply to a participating employer that begins the summer before their junior year. Graduates will have earned \$30,000 in wages, have a nationally recognized credential and have college credit for one year once they finish the program. Students can then decide whether to go on to college or to take a job with the company if they get an offer. In 2017 the program started with 116 high school apprentices at 40 companies in Denver, Grand Junction and Fort Collins.⁹⁴ The program aims to have one out of 10 high school students participate in the apprenticeship program by 2027.⁹⁵

Other state youth pre-apprenticeships are profiled in the US Department of Education, Office of Career, Technical, and Adult Education report.⁹⁶

Linked also with its efforts to diversify apprenticeships, Pennsylvania should also expand pre-apprenticeship and other feeder programs for out-of-school youth. Research has found that youth unemployment rates tend to be lowest in places where apprenticeship is common. The national unemployment rate for youth (ages 16-24) was 8.5% in May 2019 (down from a peak of nearly 20% in early 2010).⁹⁷

Use apprenticeship to help offer affordable postsecondary education

At the postsecondary level, apprenticeships articulated with college credit could play a pivotal role in addressing the weakest link in Pennsylvania’s educational attainment profile—the large share of working-age adults that have no education beyond high school—with big payoffs for employers (a new generation of skilled workers) and young Pennsylvanians (greater economic opportunity). A smart state strategy—and possible build on PAsmart—could seek to make apprenticeship classroom training (“related instruction”) that earns college credit eligible for federal Pell grants. Currently Pennsylvanians at public colleges draw down an estimated \$250 million less in Pell grants than they should (given the size of our 19-34 population), in significant part because there are no community colleges—hence few or no affordable Pell-eligible postsecondary programs—in over 20 rural Pennsylvania counties.

⁹³State of Wisconsin Department of Workforce Development website. Accessed at: <https://dwd.wisconsin.gov/youthapprenticeship/>

⁹⁴CareerWise Colorado website at <http://www.careerwisecolorado.org/>

⁹⁵The Council of State Governments 2017. http://knowledgecenter.csg.org/kc/system/files/CR_apprenticeships.pdf

⁹⁶Olivia Rice et al. 2016. Accessed at: https://s3.amazonaws.com/PCRN/reports/Connecting_Secondary_CTE_and_Registered_Apprenticeship.pdf

⁹⁷Source: Federal Reserve Bank of St. Louis at <https://fred.s.tlouisfed.org/series/LNS14024887>

A statewide initiative could seek to link apprenticeship and postsecondary education more systematically, assisting apprenticeships that do not currently provide credit with developing articulation agreements covering their classroom related instruction (or becoming accredited postsecondary institutions if they have the capacity to do that).⁹⁸ The same initiative could seek to ensure that apprenticeship classroom instruction is Pell-eligible, hence paid for by federal funds as much as possible. The basic concept would be to use state money to pay for the articulation and program accreditation processes then leverage the Pell funds to help scale up the effort. In counties that do not have community college campuses, the state could use a competitive process to select a lead postsecondary institution with responsibility for working with apprenticeship programs that want to deliver classroom related instruction in those counties. Existing apprenticeship programs that already have become accredited postsecondary institutions (such as the Finishing Trades Institute and the 1199C Training and Upgrading Fund in Philadelphia) could also be encouraged/incentivized to expand their apprenticeships to counties without community colleges where there is employer and participant demand.

The state could also explore a partnership with the Registered Apprenticeship-College Consortium (RACC) run by USDOL and the US Department of Education.⁹⁹ The purpose of RACC is to expand the articulation of the registered apprenticeship certificate for college credit on a national scale.¹⁰⁰ RACC members include employers, labor-management groups and other entities that sponsor registered apprenticeships¹⁰¹ as well as two- and four-year postsecondary institutions.¹⁰² Joining RACC can benefit both colleges and apprenticeship sponsors. Colleges can expand their student body by bringing in motivated degree seekers that may otherwise not be interested in the school. They can also be a part of building college-to-career pipelines in a variety of occupations.¹⁰³ Sponsors get access to a network of postsecondary institutions that accept the apprenticeship certificate and potential recognition as a prestigious apprenticeship program that offers apprentices college credit, which can help apprentices in the future and help sponsors recruit.¹⁰⁴ To join each entity needs to agree to abide by the framework which outlines the collective principles developed by educational institutions and RA programs that have successfully developed credit articulation agreements.¹⁰⁵

⁹⁸Alstadt, "Improving Access to Apprenticeship."

⁹⁹Department of Labor, "RACC: Registered Apprenticeship-College Consortium Frequently Asked Questions (FAQs)"; accessed at https://www.doleta.gov/oa/pdf/RACC_FAQs1.pdf

¹⁰⁰Department of Labor Employment and Training Administration website. Accessed at: <https://www.doleta.gov/oa/racc.cfm>

¹⁰¹Department of Labor Employment and Training Administration website at: https://www.doleta.gov/oa/RACC/Apprenticeship_Members.cfm#PA

¹⁰²Department of Labor Employment and Training Administration website at: https://www.doleta.gov/oa/RACC/College_Members.cfm#PA

¹⁰³Department of Labor. "RACC: Factsheet for Colleges." Accessed at: https://www.doleta.gov/oa/pdf/RACC_One_Pager_for_Colleges.pdf

¹⁰⁴Department of Labor. "RACC: Factsheet for Sponsors." Accessed at: https://www.doleta.gov/oa/pdf/RACC_sponsor1.pdf

¹⁰⁵Department of Labor. "Registered Apprenticeship College Consortium (RACC): Registered Apprenticeship College Consortium Articulation Framework." Accessed at: https://www.doleta.gov/oa/pdf/RACC_framework.pdf

10) Upgrade PA Apprenticeship Data & develop a Dashboard to Track Expansion

USDOL oversees the U.S. apprenticeship data base, RAPIDS, in partnership with the states. The ATO is linking RAPIDS data with the state's workforce data system (the Commonwealth Workforce Development System). To support this effort and use an enhanced RAPIDS data extract for Pennsylvania as a performance management and continuous improvement tool, L&I could charge a team at the CWIA with providing data analytic technical assistance to ATO. This team could enable ATO to more regularly and rigorously evaluate apprenticeship programs (at the individual, industry, regional, and statewide level), possibly in partnership with academics willing to provide low- or no-cost evaluation in charge for access to data.

A CWIA apprenticeship analysis team could also develop a dashboard that tracks progress towards the governor's goal of doubling apprenticeship. Such a dashboard might include (1) sector-, occupation-specific, and regional targets for growing apprenticeship and pre-apprenticeship enrollment, overall and for minorities and women; and (2) completion rate targets broken down in the same ways. Engaging the workforce system and stakeholders with developing the dashboard and annually reviewing progress could unify the state's apprenticeship community of practice around achieving the team goal of scaling up apprenticeship.



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