

# THE ROAD TO **500,000** APPRENTICES

Ideas for Expanding Apprenticeship in California

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## Contents

Introduction	5
Idea I. Accelerate New Program Growth in Nontraditional Fields with Sector Intermediaries and a Statewide Quality Framework	13
Idea II. Accelerate Growth of Apprenticeship Through a Regional Investment Strategy	18
Idea III. Leverage Public Investment and Employment to Support the Growth of Nontraditional Apprenticeship Programs in Critical Sectors	22
Idea IV. Design and Implement a Statewide Strategy for Connecting Youth to New and Existing Apprenticeship Opportunities that Advance Their Career and Education Goals	26
Conclusion	31

## Introduction

In 2018, California Governor Gavin Newsom set an ambitious goal of reaching 500,000 active apprentices by 2029. He did so because apprenticeship is a proven model and clear strategy for connecting Californians to good jobs. It has a strong track record for workers and employers in the skilled trades and in firefighting, but apprenticeship innovations are also emerging in new sectors, such as health care, information technology, advanced manufacturing, and education, opening up access to good jobs for workers and students through a combination of paid, on-the-job training, and debt-free postsecondary credentials.

The governor's ambition to reimagine apprenticeship in the labor market builds on California's decades-long legacy of investing in its people to generate prosperity. And it comes at a critical juncture. California has long nurtured the development of cutting-edge, knowledge-intensive industries including technology, aerospace, and entertainment. But most Californians struggle to access opportunities in these sectors, which are concentrated along the state's coastal corridor. In the last century, the Golden State has built a world-class system of higher education and designed it to be affordable and accessible. Yet today there are pronounced equity gaps in postsecondary educational attainment: not enough young people are on a clear path to a career, and millions of working learners struggle to balance the competing demands of learning and work. Finally, even as California's labor movement has pioneered accessible pathways to good jobs for a diverse range of workers from farms to ports to hospitals, the state has not been spared the national decline in unionization.

Access to a good job and family sustaining career is a critical cornerstone for building a more inclusive economy for communities that have always been cut off, or who today find themselves increasingly distant from opportunities to share in the state's prosperity. But paths to a good job for California's workers and students have only narrowed. Left unchecked, accelerating technological change threatens to exacerbate these challenges in an uncertain future of work.<sup>1</sup> Today, the ongoing impact of COVID-19 is making the important work of creating more clear pathways to good jobs and care simultaneously more complicated, more urgent, and more expansive in scale. COVID-19's impacts on the state's economy, especially on the small businesses which employ nearly half of Californian workers, mean more uncertainty for workers in the coming years, especially for those who were already on the fringes of a changing labor market. Like all other states, California will have many policy priorities to manage with diminished budget resources.

On their face, current economic challenges spell trouble for the governor's apprenticeship expansion goal. Historically, the number of active Californian apprentices has fluctuated with the rhythms of the economy. Today the number

stands at nearly 100,000 active Registered Apprentices, which is by far the largest share of any state in the nation.<sup>2</sup> But while the governor's goal validated the importance of the current Registered Apprenticeship system, the governor's goal also challenges that system reach further across the state's economy.

Reaching a half a million apprentices by 2029 will rest on a strong base of apprenticeship in the building trades and firefighting, where the majority of the state's apprentices are concentrated today. But it will also demand a more expansive and inclusive Registered Apprenticeship system, where today nearly 70 percent of Californian apprentices are racial minorities, but only 7 percent are women.<sup>3</sup> Apprenticeship is a strategy that can and should be applied much more broadly across California's workforce: the medical assistant on a nursing pathway who cannot afford to drop out of the workforce to go back to school; the small manufacturer looking to keep pace with new technology while keeping workers on the payroll; and the high school senior choosing between the need to earn money now and pursuing a degree for a good job in the future. If the governor's goal is to become a reality, it is likely that California's 500,000th apprentice will have a different experience than most apprentices in California today (see Box 1).

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→ **BOX 1: CALIFORNIA'S 500,000TH APPRENTICE**

Jessica of Anaheim will have just turned 38 in September 2029, the same month that she becomes California's 500,000th active apprentice. For years she's held multiple jobs in restaurants and worked part time at a law firm. Since 2025, she has taken a blend of community college and online IT courses trying to break into a new career. Now hired by the Superior Court of California in the County of Los Angeles, Jessica is starting as a business systems analyst apprentice. She will be working 30 hours a week, earning about \$50,000 plus benefits, at the beginning of the two-year apprenticeship. She will spend the rest of her work week taking a mix of online and in-person classes for a bachelor's degree program in information systems at Cal State Fullerton. She makes her course selections in coordination with her manager in order to fulfill new responsibilities at work. Unlike the coursework she took before her apprenticeship, as a Registered Apprentice in the Los Angeles/Orange County Regional Apprenticeship Consortium, she does not pay tuition. When she graduates, Jessica will be making about \$70,000 a year at the court. Her manager is slated to retire in two years. Jessica will be ready to take on the job.

Expanding apprenticeship opportunities into new industry sectors can help extend the critical guarantees of Registered Apprenticeship to more workers and students across California's diverse economy. Access to structured, high-quality skills training tied to real work, income with progressive wage gains, and affordable postsecondary credentials are all important for connecting Californians to good jobs. More Californians need access to what apprenticeship can uniquely offer to navigate the economic uncertainty brought on by the pandemic and the changing worlds of learning and work. The great value of Governor's expansion goal is that it asks for a reimagining of the applications of apprenticeship in California, and as a result, the role of the state in making it happen.

## The Role of State Policy

Meeting the governor's ambitious goal requires a proactive role for state policymakers to support the expansion of the apprenticeship system. There is a precedent for such bold action. In 1960, California's first Master Plan for Higher Education transformed its university system from one that served only a privileged few into an engine of economic growth and mobility for decades to come.<sup>4</sup> To help cope with today's education and labor market challenges, and to meet the 500,000-apprentice goal, California needs a master plan for apprenticeship.

Specifically, state policymakers must take steps to close the implementation gap between the ambitious 500,000 goal and the need to mobilize and build the capacity of new and existing industry, labor, education, and regional partners. This implementation gap is most pronounced in nontraditional sectors outside of the skilled trades and firefighting. Just as important, only the state government can play the critical leadership role of aligning the varied interests of industry, labor, education, workers, and students in the development of an expanded apprenticeship system in California. Apprenticeship can and should be a strategy integrated within a broader agenda related to job quality, workforce and economic development, as well as postsecondary attainment. But a clear state plan for apprenticeship itself is needed to sustainably expand the system over time.

State policymakers do not have to start from scratch. New public investments, such as the California Apprenticeship Initiative, show nascent regional innovations and partnerships with experience to build upon. Below, we provide an outline of four policy strategies by which state leadership, policy, and guidance can support apprenticeship expansion:

1. **Accelerate new program growth in nontraditional fields through sector intermediaries and a statewide quality framework:** New industry, labor, education, and workforce partners need clear entry points

into the system, flexibility to pursue innovation, and sector-focused capacity to generate efficiencies that accelerate new program development and growth.

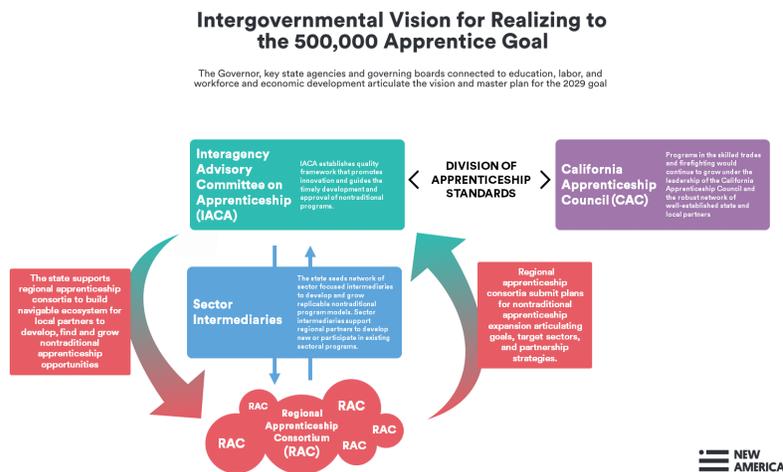
2. **Accelerate growth of apprenticeship through a regional investment strategy:** Leadership, greater coordination, and dedicated capacity at the regional level is needed to support the development and sustainability of new programs across industry sectors in a way that aligns systems and makes it easier for new employers and apprentices to navigate opportunities.
  
3. **Leverage public investment and employment to support the growth of nontraditional apprenticeship programs in critical sectors:** The connection between apprenticeship and public investment must be extended to new investments in digital infrastructure, public services, and the state and local government workforce.
  
4. **Design and implement a statewide strategy for connecting youth to apprenticeship opportunities that advance their career and education goals:** Clearer connections for youth to apprenticeship opportunities will help catalyze greater alignment between apprenticeship and the state K-12, higher education, and workforce systems that serve millions of Californians.

Within each of these four policy directions are a number of specific actions for state policymakers to consider to support the expansion of Registered Apprenticeship, particularly in nontraditional industry sectors. Generated through extensive engagement with innovators on the ground, as well as local and state leaders across the public and private sectors, these policy ideas include both near- and long-term actions. Furthermore, some of these policy directions in the near-term can be advanced by leaders other than state policymakers. Philanthropy, industry groups, employer champions, and regional partnerships, as well as individual community colleges, school districts, and local workforce boards all have a role to play in initiating and continuing to demonstrate the potential of apprenticeship to improve the economic and educational outcomes of Californians.

While there are near-term opportunities to advance specific priorities, these policy ideas are interconnected to support a more expansive and inclusive Registered Apprenticeship system. A clear quality framework for nontraditional apprenticeship programs sets the rules and expectations for a system that promotes innovation while also ensuring rigor. But sector intermediaries are critical for making that innovation happen, creating the space for industry to lead and develop programs recognized and valued by employers across regions. The success of these sector intermediaries, however, depends on employer,

education, and workforce partners working together at the regional level. Regional consortia with the capacity to support apprenticeship programs across multiple industry sectors are key to developing a visible ecosystem for local employers, workers, and students to connect with.

Statewide public sector employment and youth apprenticeship strategies can also help jumpstart the development of the needed infrastructure at the state and regional level for nontraditional apprenticeships. The state can continue to support the demand for apprenticeships through public investment not only for the building and firefighting trades, but also for investments in nontraditional sectors such as information technology, health and human services and education. The state can also support the demand for apprenticeship by using it to meet its own workforce needs in Sacramento and beyond. Finally, a deliberate statewide focus on ensuring access to multiple apprenticeship options for youth will be a catalyst for greater alignment between apprenticeship, higher education and K-12 education. California’s apprenticeship system must get younger not only to grow in size, but also to more equitably serve California’s future learners.



The potential impact of these policies on California’s workers, students, and communities could be transformative. Realizing a system that serves 500,000 active apprentices annually by 2029 would mean a half of a million Californians earning fair wages, earning debt-free postsecondary credentials, and billions of dollars of new private investment in the development of a globally competitive workforce.”

Reaching 500,000 will also mean thousands of new employers, unions, industry groups, colleges, and community-based organizations across California working

together, aligning resources, pushing on polices to develop programs that better deliver for apprentices and employer sponsors. Partnerships across the state will have the programs and strategies in place needed not only to serve California's 500,000th apprentice in 2029, but also the cohorts of apprentices each year that come after.

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## Summary of Policy Ideas and Recommendations

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### **Accelerate new program growth in nontraditional fields through sector intermediaries and a statewide quality framework:**

New industry, labor, education, and workforce partners need clear entry points into the system, flexibility to pursue innovation, and sector-focused capacity to generate efficiencies that accelerate new program development and growth.

- Clarify the mandate and functions of the Interagency Committee on Apprenticeship to accelerate the expansion of “IACA approved” nontraditional apprenticeship programs to meet the 500,000 goal through executive order
- Establish an expeditious, but probationary, approval process to support efficiency, innovation, and improvement of IACA apprenticeships.
- Clarify that IACA-approved nontraditional apprenticeships may be competency-based or hybrid (i.e., including both time-based and competency-based components), in addition to the traditional 2,000-hour time-based option.
- Establish a public, online inventory of program standards for IACA apprenticeship programs
- Establish a joint review committee within DAS to guard against potential conflicts and overlap between programs in the traditional and nontraditional space.
- Establish a sector intermediary support fund to seed development and growth of IACA apprenticeships to address strategic workforce priorities.

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## Summary of Policy Ideas and Recommendations

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**Accelerate growth of apprenticeship through a regional investment strategy:** Leadership, greater coordination, and dedicated capacity at the regional level is needed to support the development and sustainability of new programs across industry sectors in a way that aligns systems and makes it easier for new employers and apprentices to navigate opportunities.

- Pursue annual appropriations to support dedicated regional apprenticeship consortia.

- Develop apprenticeship consortium performance metrics oriented towards system-level rather than program-level outcomes alone

- Develop a regional manual for the use of state higher education funding to support credit-bearing RSI in nontraditional apprenticeship programs

- Explore employer-based incentives for engaging with regional apprenticeship consortia.

**Leverage public investment and employment to support the growth of nontraditional apprenticeship programs in critical sectors:** The connection between apprenticeship and public investment must be extended through new investments in digital infrastructure, public services, and the state and local government workforce.

- Extend public apprenticeship incentives to nontraditional fields through alignment with procurement and broader public investment priorities.

- Review potential barriers and identify priority opportunities for the development of civil service apprenticeship pathways.

- Partner with county and local governments to develop an ecosystem of civil service apprenticeship opportunities in critical fields.

**Design and implement a statewide strategy for connecting youth to apprenticeship opportunities that advance their career and education goals:**

Clearer connections for youth to apprenticeship opportunities will help catalyze greater alignment between apprenticeship and the state K-12, higher education, and workforce systems that serve millions of Californians.

- Develop joint interagency guidance to support the development and sustainability of high-quality Registered youth apprenticeship programs
- Launch statewide youth apprenticeship pilot initiative to support college-connected apprenticeships at California’s career academies.
- Incentivize county offices of education to work with districts as sponsoring employers for high-quality youth apprenticeships.
- Provide targeted support to pre-apprenticeship pathways that connect out-of-school youth to apprenticeship opportunities.

## **Idea I. Accelerate New Program Growth in Nontraditional Fields with Sector Intermediaries and a Statewide Quality Framework**

Meeting the 500,000-apprentice goal demands dramatic growth of nontraditional programs. California needs clear processes for new, diverse partners to enter and support the Registered Apprenticeship system, as well as capacity and expertise to support innovation, generate efficiencies, and guide program development. At the same time, new nontraditional programs must offer critical job quality guarantees to apprentices and deliver return on investment for sponsoring employers. California's policymakers can take important steps now to ensure innovation happens within the system, rather than outside of it.

Outside of a select set of traditional Registered Apprenticeship occupations in the firefighting and building trades, the employers, education institutions, and community partners needed to develop new programs are largely on unfamiliar terrain. Even with critical support available from consultants from California's Division of Apprenticeship Standards (DAS), new entrants often discover that the process of developing and registering new programs can be complex, unpredictable, and time-consuming.

In fields such as health care, information technology, education, and financial services, apprenticeship may look different from traditional offerings. New programs in these fields should meet baseline requirements of a Registered Apprenticeship, but the state can also take steps to help ensure that new programs make the most of existing resources and align with occupation-specific requirements. For example, degree apprenticeship programs, which integrate on-the-job training with credit-bearing coursework at a college, are likely to be of more importance in nontraditional fields where career advancement remains tied to a college degree.<sup>5</sup>

Since 2018, the legislatively authorized Interagency Advisory Committee on Apprenticeship (IACA) has convened representatives from diverse industry sectors with nontraditional apprenticeship program experience.<sup>6</sup> IACA has also formed a number of subgroups by industry sector that are well positioned to create guidelines and templates for new entrants into the system. IACA serves as a forum for sharing how Registered Apprenticeship program and partnership models can adapt to and align with new industry sectors, and its interagency representation allows it to address the roles the state's education, workforce, and human services systems must play the expansion of apprenticeship into new fields.

Creating new entry points alone for apprenticeship partners will not be enough to support new program formation and expansion, however. Employer and educational partners will need ongoing, sector-specific technical assistance to help them build and deliver training that is aligned to industry standards.

In the building trades and firefighting, this role has been served by joint training funds that receive resources through collective bargaining agreements. The California Firefighter Joint Apprenticeship Committee, for example, was formed as a statewide intermediary to supporting high-quality apprentice training across subscribing fire departments and their labor partners. In health care, the SEIU-UHW-West & Joint Employer Education Fund supports a range of education and training options including apprenticeship, working with multiple hospitals and health systems across the state. But in many nontraditional apprenticeship occupations, no such intermediary support currently exists.

Without sector-focused intermediary organizations that can work across multiple regions and employers, program development will likely continue in a limited, piecemeal fashion, one employer and one community at a time. Sector intermediaries are important for harmonizing training standards and practices to ensure apprentices' skills and competencies are portable across employers and regions. They are also helpful for pooling demand and investment across multiple employers, which can create more employer engagement and lower the risk of losing apprentices to a competitor. Additionally, sector intermediaries can be useful for advancing broader state priorities through the apprenticeship system, such as supporting equitable representation of women and racial minorities in apprenticeship.

Following the lead of other states, policymakers in California can support the development of sector intermediaries in a way that is targeted to meet strategic workforce needs. In 2008, Washington State seeded the formation of the nonprofit Aerospace Joint Apprenticeship Committee (AJAC), which works with employers of all sizes across to bolster the aerospace workforce, which is critical to the state's economy. In California, Early Care and Education Pathways to Success (ECEPTS) exemplifies the sector intermediary approach, by supporting the development of apprenticeship programs in the early care and education workforce, the strength and quality of which is critical for the state's economy (see Box 2).

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→ **BOX 2: EARLY CARE AND EDUCATION PATHWAYS TO SUCCESS**

In 2015, the Service Employees International Union (SEIU) began exploring apprenticeship as a strategy to address the alarming shortage of qualified early care and education (ECE) workers. Over four years, three apprenticeship models were created, implemented, and registered with the California Division of Apprenticeship Standards: the Early Educator Center-Based Apprenticeship, the Family Child Care Apprenticeship, and the Head Start Apprenticeship.

The experience of these pilots, which to date have served over 400 apprentices statewide, paved the way for the formation of an ECE sector-focused intermediary organization, Early Care and Education Pathways to Success (ECEPTS). Launched in 2019, ECEPTS was established as a nonprofit intermediary organization to help employers, educational institutions, and community partners develop and implement apprenticeship programs in the ECE sector. Through a growing base of state and philanthropic support, ECEPTS has built the expertise and dedicated capacity to begin expanding the reach of apprenticeship to include related child- and family-serving fields such as home visitation and social services.

ECEPTS strikes an important balance as a sector intermediary that can support multiple programs through a blend of technical assistance, professional networks, and financial resources, making it easier for partner programs to build rigorous program models that are relevant to the needs of their communities, without having to start from scratch. Further, ECEPTS is able to advance strategic priorities across regions for the ECE field as a whole. It is currently breaking new ground, working with communities across the state to develop and implement youth apprenticeship models in partnership with employers and community colleges that recast entry-level ECE positions as springboards to well-paid careers in ECE and in human services.

ECEPTS demonstrates the role that sector-focused intermediaries can play in supporting the development and growth of rigorous apprenticeship programs in nontraditional fields. These sector intermediaries are not a substitute for the leadership of local employers and colleges, but they can accelerate program start-up, generate efficiencies, and promote cross-regional knowledge sharing. Supporting both existing and start-up sector intermediaries will be critical to the role apprenticeship can play in advancing the state's workforce and economic development imperatives.

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By building on the coordinating capacity of IACA and state and national examples of sector-focused intermediaries, California can drive innovation and nontraditional program expansion within the Registered Apprenticeship system to bring the guarantees of apprenticeship to more of its students and workers. Suggested actions include:

- **Clarify the mandate and functions of the Interagency Committee on Apprenticeship to accelerate the expansion of “IACA approved” nontraditional apprenticeship programs to meet the 500,000 goal through executive order.** The governor’s order should articulate that the mission of IACA is to support innovation, quality, and growth of nontraditional Registered Apprenticeship programs. It should establish a quality and procedural framework for IACA’s review and approval of nontraditional apprenticeship programs. These programs would be registered under the same basic conditions established in CCR 8(2)(1)(4)§212, including progressive wage gains, but create a more efficient way for nontraditional programs to innovate.
- **Establish an expeditious, but probationary, approval process to support efficiency, innovation, and improvement of IACA apprenticeships.** IACA should commit to the timely review, in 45 days or less, of program standards for the probationary approval of new apprenticeships by standing up an online application process. This would allow programs to move quickly to pilot and continue to recruit new employer partners through the process. All programs would be subject to reapproval following a more in-depth assessment, which would also allow the space for improvements based on experience. Leveraging IACA’s interagency representation, taking steps to align the registration process with required reviews by additional relevant state agencies and licensing boards could further streamline new program development.
- **Clarify that IACA-approved nontraditional apprenticeships may be competency-based or hybrid (i.e., including both time-based and competency-based components), in addition to the traditional 2,000-hour time-based option.** IACA should offer clear guidance to correct the common misconception that competency-based and hybrid apprenticeships are not an option in California. By allowing easy hybrid or competency-based program registration at the state (rather than national) level, IACA can simplify the process of marketing apprenticeship to nontraditional apprentice employers.
- **Establish a public, online inventory of program standards for IACA apprenticeship programs.** Direct IACA’s industry subcommittees to collect all currently approved apprenticeship program standards, and, in partnership with California’s Workforce Development Board, to identify high quality, in-demand jobs that do not currently have minimum industry training criteria (MITCs). These collected MITCs should be made

accessible to the public online. For example, the Governor's Office of Business and Economic Development (GO-Biz) and the California Workforce Development Board could create a searchable repository of MITCs for IACA approved apprenticeships that includes ways to connect with IACA subcommittee leads as well as established apprenticeship practitioners in the state.

- **Establish a joint review committee within DAS to guard against potential conflicts and overlap between programs in the traditional and nontraditional space.** A review committee within the Department of Apprenticeship Standards composed of members of the California Apprenticeship Council (CAC) and IACA should identify any substantive overlap between IACA approved nontraditional programs and CAC-approved programs in the building and firefighting trades.
- **Establish a sector intermediary support fund to seed development and growth of IACA apprenticeships to address strategic workforce priorities.** The sector intermediary support fund for IACA approved apprenticeships would issue a competitive request for proposals (RFP) from nonprofit, labor, and industry groups to serve as intermediaries for developing new and growing existing IACA approved apprenticeships. The RFP could be modified periodically to reflect the state's changing workforce priorities including in the areas of cybersecurity, early care, energy, and logistics. It could also be modified to reflect imperatives around diversity, support for distressed regions, or specific populations. This fund could be managed and resourced through modifications to the Employment Training Panel (ETP) Apprenticeship Training Pilot, which has supported apprenticeship expansion since 2012.<sup>7</sup>

## Idea II. Accelerate Growth of Apprenticeship Through a Regional Investment Strategy

California is already a national leader in public investment to support apprenticeship, providing new and established programs with two regular sources of funding. Montoya, or “Related Supplemental Instruction (RSI) funding,” has been in place since 1970 to reimburse training providers for the costs of apprenticeship related coursework.<sup>8</sup> And since 2016, grant funding has been made available through the California Apprenticeship Initiative (CAI) to support regional projects looking to start and operate new apprenticeship programs.<sup>9</sup>

In the 2019–20 fiscal year alone, California appropriated over \$90 million from the General Fund to support apprenticeship administration and reimbursement for related and supplemental instruction, including \$15 million for the competitively awarded CAI grants.<sup>10</sup> Though well-funded, each of these funding sources has its limits. RSI funding only reimburses training costs, and so primarily benefits established programs. CAI funds, by contrast, can provide important seed funding for new programs, but because this funding is awarded on a project basis, it tends to incentivize programs to get enrollment numbers quickly to meet performance metrics, rather than developing sustainable strategies and partnership models with the ability to grow over time.

As a result, Californian public funding for apprenticeship reinforces a program-level rather than system-level orientation. The future of apprenticeship and the 500,000-apprentice goal demand clear regional strategies for programs across multiple sectors. In the Bay Area, for example, a broad coalition of local workforce boards, industry, colleges, districts, and community organizations have convened around “Apprenticeship Bay Area” to pursue and align resources to support apprenticeship in the information technology sector. Other examples of multi-partner coalitions are found in San Joaquin County and Los Angeles, and the Inland Empire (see Box 3).

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→ **BOX 3: LOCAL APPRENTICESHIPS UNITING A NETWORK OF COLLEGES AND HIGH SCHOOLS (LAUNCH)**

The idea behind the LAUNCH Network was simple: create a single, streamlined user experience for businesses and learners interested in apprenticeship—whatever their sector of interest, and wherever they're located across the sprawling Inland Empire. To do that, LAUNCH drew on the infrastructure of the Inland Empire Desert Region Consortium (IEDRC) a network of 12 community colleges and nearly 60 school districts charged with coordinating career and technical education opportunities in the region.

By building on the expertise and existing relationships of the IEDRC, the LAUNCH Network was able to design and implement a regional memorandum of understanding that set up shared processes and expectations, eliminating the patchwork of apprenticeship options that users encounter when colleges and districts go it alone. Since its founding in 2018, the LAUNCH Network has worked to help reduce the time it takes for new apprenticeship programs to get off the ground.

LAUNCH's work was initially buoyed by growth in the education, health care, and logistics and transportation sectors: the Inland Empire region added nearly 31,000 non-farm jobs between October 2018 and October 2019, outstripping averages both within California and nationwide. The coronavirus pandemic has quickly changed the region's fortunes, however.

Key to LAUNCH's resilience in the current moment is the flexibility it provides through its college-connected apprenticeship models. In LAUNCH's programs, community college curricula can serve as the backbone for almost any occupation. Without the need to design programs from scratch, LAUNCH Network institutions offer apprenticeships that can serve employers with a variety of needs—whether that's training entry level talent, upskilling incumbent workers, or both. To date, only one of the LAUNCH Network's 110 manufacturing production apprentices have been laid off, and new programs in IT and automotive technology are slated to start soon.

The LAUNCH Network is an example of how regional partnerships that align education and workforce are critical to the development, growth, and resilience of apprenticeship programs in nontraditional fields. Regional partnerships make it easier for new employers and prospective apprentices to engage with the Registered Apprenticeship system. Their tight integration with community college offerings also mean programs are less tied to the fate of any individual employer, and can adjust to changing needs in the regional economy.

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In lieu of an innovation and expansion strategy exclusively reliant on competitive grants, state policymakers can make investments in nontraditional apprenticeship expansion that support dedicated capacity, and greater coordination at the regional level. Funding for nontraditional apprenticeship programs could be designated for each region to support the development of regional plans that help align education, industry, and workforce partners toward shared goals for apprenticeship expansion that work up to the 500,000-apprentice goal. Regions could still benefit from program-level funding from RSI, and competitive state grants such as the CAI could continue to provide a catalyst for new program start-up. However, structured regional collaboration would serve to better integrate new apprenticeship programs with sustainable education and workforce funding streams.

Several existing regional systems could form the basis for this new regional collaborative process, including the Career and Technical Education (CTE) Regional Consortia of California's Community Colleges or the Regional Planning Units used for strategic workforce planning and the administration of Workforce Innovations and Opportunity Act (WIOA) funds. Regional entities in each system have played key roles in nontraditional program expansion, whether through colleges and local education agencies participating in the California Apprenticeship Initiative, or through local workforce development boards.<sup>11</sup> Regardless of how funding flows, key players in higher education, workforce development, K-12, and economic development should be required partners in a joint regional apprenticeship plan.

The objective of these funds would not be to support strategy and planning alone. A clear regional identity and plan for apprenticeship can streamline employer engagement, provide a mandate for new partnerships, and provide comprehensive supports that reduce barriers to apprentice access and success. Furthermore, regions should be able to use funds to build dedicated capacity to support program development and implementation in new sectors. Depending on the region, this capacity could be embedded within an existing institution, such as a community college, or funds could be used to start or secure the services of one or more intermediary organizations. As an example, funding from a California Apprenticeship Initiative Grant to the San Luis Obispo County Office of Education has helped seed the development of SLOPartners, a dedicated intermediary that works with employer and training partners to set up apprenticeship programs in the information technology and manufacturing sector.<sup>12</sup>

To support collaborative regional apprenticeship planning, California's state government could:

- **Pursue annual appropriations to support dedicated regional apprenticeship consortia.** Leveraging IACA's interagency representation, the state can request regional designees to establish apprenticeship consortia by submitting five-year apprenticeship plans for supporting nontraditional programs. DAS field staff can support plan development, which should identify target industry sectors for new

programs, articulate key roles and responsibilities within each consortium, and emphasize the use of existing education and training options to support core program costs. Consortia leads would commit to collecting and reporting data on IACA-approved apprenticeship programs within the region in order to inform progress and technical assistance needs over time. In return, regions should receive base funding of no less than \$3 million yearly.

- **Develop apprenticeship consortium performance metrics oriented towards system-level rather than program-level outcomes alone.**

Exact consortium allocations could be tied to performance metrics including the attainment of Strong Workforce Program Student Success points by college districts.<sup>13</sup> These metrics focus on building or procuring the capacity to carry out:

- Industry intermediary activities, to include employer engagement and dissemination of labor market information to college and K-12 CTE staff
- Education intermediary activities, to include new program development and updating of existing programs, building regional awareness, and coordination and articulation of competencies between K-12, employers, and higher education institutions
- Coordination of supportive services and identification of economies of scale in the provision of remedial education and pre-apprenticeship, transportation, child care, and other basic services for apprentices

- **Develop a regional manual for the use of state higher education funding to support credit-bearing RSI in nontraditional apprenticeship programs.** Montoya funds are likely to remain a key source of support for non-credit apprenticeship opportunities. But as nontraditional programs supported by regional consortia are likely to develop in fields where college degrees may impact career advancement for apprentices, emphasis should be placed on helping programs leverage full-time equivalent student (FTES) funding to support RSI costs as established by AB 1809 (2018).<sup>14</sup>

- **Explore employer-based incentives for engaging with regional apprenticeship consortia.** The ETP can be a useful tool for incentivizing employers to engage with regional consortia. For example, employers sponsoring Registered Apprenticeships in partnership with regional consortia may be eligible for “priority of use” of ETP funds to reimburse on-the-job training costs. Over time, ETP funds could be limited to employers engaged directly with consortia-supported programs.

## **Idea III. Leverage Public Investment and Employment to Support the Growth of Nontraditional Apprenticeship Programs in Critical Sectors**

To meet the 500,000-apprentice goal, state policymakers can build on what is already working and extend these principles to support new apprenticeship programs in nontraditional fields. California's 2019–20 budget allocated \$3.5 billion in capital outlays for building, repair, and renovation projects.<sup>15</sup> Since 2016, many of these public projects have supported inclusive employment practices by mandating the use of apprenticeship-trained workers, ensuring that large annual public investments in public works, infrastructure, and government services also support workforce development and economic opportunity.

The state is well positioned to replicate this linkage of public investment to good jobs and career pathways by encouraging further apprenticeship opportunities in fields including information technology, human services, education, and civil service. To complement steps to make the apprenticeship system easier to navigate at the state and local level, public investment can be used to open up access to good jobs in the public and private sector, with a focus on underrepresented workers. New state public contract legislation could provide a boost to nontraditional apprenticeship program growth across a range of fields and realize broader equity objectives, even if hiring requirements for nontraditional apprentices are initially set somewhat lower than those that currently benefit traditional apprenticeship occupations.

Like contractors that carry out public projects, state and local governments themselves are also a source of good jobs for workers across California. Collectively, government agencies employ over 1.5 million full-time workers,<sup>16</sup> including many in collective bargaining units that do not yet have apprenticeship programs in place. By taking steps to make it easier and more attractive for state and local agencies to develop apprenticeship opportunities alongside sector intermediaries and regional partnerships, Californian policymakers would allow the public sector to lead by example, using apprenticeship to fill new entry level positions and to upskill existing workers into positions that help government services maintain and modernize critical technologies (see Box 4).

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→ **BOX 4: ZSYSTEMS APPRENTICESHIP**

Mainframe computers are among the oldest types of computer technology, but billions of daily transactions still depend on them. In addition to their roles in banking, electronic health records, and inventory tracking, mainframes also put in a lot of work supporting the operations of state governments.

At Californian agencies like the Employment Development Department, the Department of Motor Vehicles, and the Franchise Tax Board, administration of unemployment insurance, drivers' licenses, and tax collection simply wouldn't work without mainframes. So when the vacancy rate in jobs for critical technology professionals in California's state government reached 38 percent, there was cause for alarm. Enter California's first public-private apprenticeship partnership: the zSystems Apprenticeship Program, a Registered Apprenticeship for mainframe professionals in state civil service.

Developed through a partnership between multiple state agencies, the Apprenticeship and Workforce Innovation team at California's Division of Apprenticeship Standards, SEIU Local 1000, and IBM (which supplies assessment tools and technical expertise to identify and support apprentices working on its mainframe products), the basic structure of the zSystems apprenticeship is the same as any other. Apprentices receive on-the-job training under the mentorship of experienced supervisors in California's civil service, combined with related supplemental instruction from American River College. To make this nontraditional apprenticeship work in government employment, the program was adapted into a training and development assignment, an existing civil service structure that allows incumbent employees to train for new roles.

The zSystems program's sponsors are now exploring how to expand the successes of their first cohort in Sacramento to agencies in other regions. While mainframe training is only currently needed in Sacramento, it's hoped that the framework built to support zSystems could also be used to train apprentices statewide for cybersecurity positions in the civil service. To grow their recruiting pool, the partnership is working to develop a pre-apprenticeship that will help candidates prepare for the program, and is also taking steps to open the program up to candidates who are not yet government employees.

Though still in its early days, zSystems demonstrates the power of the largest employer in the state—the state itself—to realize the full potential of apprenticeship to open up opportunities and generate employment opportunities in new critical fields for Californians.

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Capital outlays are likely to be smaller as the coronavirus economic crisis hits California's budget. Still, state and local governments will be able to incentivize employment of current and completed nontraditional apprentices, and to use apprenticeship to support high quality public sector jobs as a part of broader economic recovery efforts. Taking steps today to lay the groundwork for better use of the state's authority and its own workforce to drive apprenticeship expansion will pay dividends for years to come, helping address retirements and meeting California's critical public health and digital infrastructure needs.

A combination of new and existing authorities can allow state policymakers to use public spending and employment to better serve California's workers. These include policy opportunities that:

- **Extend public apprenticeship incentives to nontraditional fields through alignment with procurement and broader public investment priorities.** To drive the adoption of apprenticeship in new critical fields, such as information technology, public health, and education, the state can integrate apprenticeship as a workforce requirement or incentive across a range of public investments. This could include legislation that extends existing Skilled and Trained Workforce requirements of the Public Contract Code for apprenticeship programs to also reach nontraditional occupations. In the near term, the governor could direct the Department of General Services to inventory all service contractors that were in receipt of at least \$3 million in state funds during fiscal year 2019–20 and, in partnership with IACA and DAS, to identify opportunities for engaging these entities in apprenticeships expansion efforts.
- **Review potential barriers and identify priority opportunities for the development of civil service apprenticeship pathways.** The governor could initiate an interagency review panel to identify barriers to civil service apprenticeships related to workforce classification, licensure, or other statutes. The state could additionally conduct a survey of agencies to evaluate which jobs have the highest vacancy rates or are most likely to be impacted by changes in technology. By partnering with IACA's civil service subcommittee, MITCs could be developed for these occupations and transmitted to the leadership of CalHR for dissemination to relevant sponsoring state agencies, along with new directives and goals for using apprenticeship as both an initial hire and incumbent upskilling strategy.
- **Partner with county and local governments to develop an ecosystem of civil service apprenticeship opportunities in critical fields.** Replicating the state-level interagency review and guidance for civil service apprenticeship pathways, the governor could direct IACA to

survey county and local government human resources departments to identify shared in-demand occupations to target for the development of MITCs. This review could be used to add to the standards inventory described under Idea One, and to set goals that support new apprenticeship program development in critical fields such as information technology, health and human services, financial and public administration, and education.

## **Idea IV. Design and Implement a Statewide Strategy for Connecting Youth to New and Existing Apprenticeship Opportunities that Advance Their Career and Education Goals**

Apprentices in the U.S. tend to be older than in countries with higher rates of apprenticeship participation.<sup>17</sup> This distinction speaks to apprenticeship's value as a workforce strategy for career-changers, and the participation of learners in their 30s, 40s, and 50s is a significant advantage of the American system. However, it also means that many workers come to apprenticeship opportunities after a string of low-paying jobs, and possibly after spending considerable time and money on other postsecondary education options.

Youth apprenticeship opportunities, which typically begin in the high school years, could help put young people on a stronger economic footing much earlier.<sup>18</sup>

Youth apprenticeship's paid work experience, structured mentorship, and access to postsecondary credentials help prepare young people for the labor market. Moreover, the exposure youth apprenticeship provides to professional networks can help offset inequities in social capital that create a critical but often unseen barrier to good jobs and careers.

There have been promising efforts in California to better connect youth to apprenticeship. For example, starting in 2014, a partnership between the California Department of Education, the California Labor Federation, North America's Building Trades Unions and the State Building and Construction Trades Council of California launched a pilot pre-apprenticeship program in partnership with high schools across the state. Students receive real-world work experience in the construction trades and earn industry credentials while following the Multi-Craft Core Curriculum (MC3)<sup>19</sup>, whose coursework was designed to count toward the admission requirements of the University of California or California State University systems.

Outside of California, employers across the U.S. are experimenting with youth apprenticeship to address core talent challenges, whether that means confronting a coming wave of retirements, or building a more inclusive talent pipelines that better mirror the diversity of their community and customers.<sup>20</sup> Youth apprenticeship also creates opportunities for young people to work and prosper in the communities where they grow up, supporting the future dynamism of local economies (see Box 5).

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## → **BOX 5: APPRENTICESHIPS REACHING CAREER HORIZONS (ARCH)**

Of California's 15 largest counties, San Joaquin was hit hardest by the Great Recession. In 2009, its unemployment rate reached 18 percent—about the same level it reached in April 2020. Homelessness spiked, and the county suffered a wave of teen suicides. In 2012, the county seat of Stockton filed for bankruptcy to mend its \$26 billion budget gap.

San Joaquin County's Great Recession traumas have since cultivated a new willingness to experiment with progressive policies and bold regional collaborations, including youth apprenticeships. Led by the San Joaquin County Office of Education (SJCOE), the Apprenticeships Reaching Career Horizons (ARCH) initiative has worked over the past year to design youth apprenticeships in information technology, automotive technology, home care, and logistics. A \$500,000 California Apprenticeship Initiative (CAI) grant in late 2019 provided the program with crucial state-level validation for its fledgling Registered Apprenticeship partnership between the region's employers, schools districts, and community college.

Targeting public as well as private sector employers with its approach, ARCH has found ready advocates even as recession again threatens the health and future livelihood of the region's young people. ARCH's IT support apprentices could just as easily work for state or local governments as for nearby businesses. Districts themselves are leading by example as partners in the initiative: three will be hiring their first apprentices this year for the inaugural IT support specialist program, and six others have programs in the works in nursing, automotive mechanics, and transportation and logistics.

ARCH programs are built on a set of guidelines administered by SJCOE, but individual school districts have flexibility in terms of the occupations they select and the employers they choose to work with. Juniors and seniors age 16 and older can sign up, and ARCH thoughtfully integrates the apprenticeship coursework (RSI) with existing dual enrollment provisions. Thus, even though placing apprentices with employers during the coronavirus pandemic will be a challenge, program participants were able to start pursuing RSI at San Joaquin Delta College immediately this fall. It is hoped this RSI front-loading will allow learners to quickly ramp up their productive work once their on-the-job training can begin.

ARCH's youth programs are a new look for apprenticeships in California. They connect high school students to local paid opportunities in in-demand fields, taking advantage of the considerable talent needs of private and public sector employers, including school districts themselves. ARCH also shows how youth apprenticeship can be formally integrated with the state's considerable dual enrollment and CTE infrastructure to bridge K–12 and higher ed to support students' career and higher education plans.

Young people in California need more pathways to economic success—pathways that lead to and through postsecondary education, not alternatives that work around it. The disruptions of COVID-19 to the state’s education system and economy mean that a rising generation is confronting choices between schooling and work, and between meeting short-term needs and long-term goals. In a state where over 40 percent of community college students were already working learners struggling to balance multiple obligations, there is great potential for youth apprenticeship pathways in California to keep young people connected to education and training systems, while still being able to earn income.<sup>21</sup>

To support California’s goals for apprenticeship expansion, but more importantly to address the critical short- and long-term needs of young people and regional economies, policymakers can take steps to accelerate experimentation with youth apprenticeship pathways. These include:

- **Develop joint interagency guidance to support the development and sustainability of high-quality Registered youth apprenticeship programs.**

Youth apprenticeship programs demand alignment and coordination across industry, K-12, and higher education partners. Clear policy guidance from the Department of Education, the Labor and Workforce Development Agency, and the California Community College Chancellor’s Office can go a long way in providing the clarity local partners need. Guidance should be developed in consultation with local school boards, the State Board of Education, parents, administrators, as well as the California Teachers Association and California’s Federation of Teachers. The Department of Education’s College & Career Transition Division is well positioned to coordinate the development of this interagency guidance, which should address:

- Definition of youth apprenticeship in relation to the broader work-based learning spectrum, emphasizing youth apprenticeship’s unique characteristics of paid employment, RSI, structured mentorship, and attainment of postsecondary credentials and credit
- Youth employment laws and apprenticeship registration regulations and procedures related to the hiring and on-the-job training of youth apprentices under age 18
- Availability of various state career and technical education, higher education, and apprenticeship funding streams to support the costs of RSI

- Use of Proposition 98 funding as well as WIOA funds to support transportation and other expenses for students
- Implementation of youth apprenticeships under Early and Middle College High School and College and Career Access Pathways (CCAP) partnerships, including measures to ensure that school districts do not face adverse financial impacts from reduced state apportionments if students pursue youth apprenticeships
- Accumulation of high school and postsecondary credit for structured on-the-job training and RSI, and flexibility in school day scheduling to allow for off-site learning

• **Launch statewide youth apprenticeship pilot initiative to support college-connected apprenticeships at California’s career academies.** Youth apprenticeship in California has a clear foundation to build on, thanks to the education and industry partners involved with the network of districts engaged with Linked Learning, the California Partnership Academies, and beyond.<sup>22</sup> In these programs, students received a blend of rigorous academic and technical coursework, work-based learning, and support services as early as 10th grade, all of which can provide an on-ramp to youth apprenticeship pathways that start in the final years of high school. Existing industry and postsecondary partners can be engaged in new ways to develop youth apprenticeship as a capstone for these opportunities. Using a blend of discretionary resources from the Perkins Career and Technical Education Act state leadership fund, as well as existing appropriations to supporting career academies, California can provide competitive grants to K-12, higher education, industry, and workforce partners to pilot “Career Academy Plus” youth apprenticeship capstone programs across a range of in-demand fields.

• **Incentivize county offices of education to work with districts as sponsoring employers for high-quality youth apprenticeships.** California’s offices of education and school districts are not all new to Registered Apprenticeship, but they can take on new roles as model employers that hire students into entry level roles in nontraditional fields such as information technology, human resources, marketing, and communications. Building on ARCH’s example, the state could support the efforts of other offices of education to provide early work experience and on-the-job training for apprenticeship pathways, keeping young people connected to learning and work at a moment of historic

uncertainty in the labor market. While budgets in the near-term will likely be constrained, integrating county-level pilots with future federal or state recovery efforts would be one way to link the employment and education needs of students in the final years of high school with the service needs of districts as a whole.

- **Provide targeted support to pre-apprenticeship pathways that connect out-of-school youth to apprenticeship opportunities.**

Developing integrated youth apprenticeship pathways for students in their final year of high school is a critical way to smooth the transition from education into the labor market. The state must also focus on ensuring out-of-school youth have clear on-ramps to existing apprenticeship opportunities, so pre-apprenticeship opportunities with alignment to existing programs should also be directly supported. Following the lead of states such as Washington, the governor could use discretionary Workforce Innovation and Opportunity Act funding to support partnerships between local workforce development boards and existing Registered Apprenticeship programs to develop, improve, and strengthen pre-apprenticeship opportunities for out-of-school youth.

## Conclusion

Informed by the experience of innovators across the state, the four policy directions suggested here are structured to support the dramatic expansion of apprenticeship in California through a rethinking of apprenticeship applications across the state's labor market. Within these broader strategies are a blend of near- and longer-term opportunities for state policymakers to realize the 500,000-apprentice goal. Some are more procedural or administrative in nature, while others will require legislative change. Some build on existing investments and resources, while others call for new funding.

There is no doubt that the economic uncertainty resulting from the COVID-19 pandemic will have an impact on which apprenticeship policies are prioritized, and what level of resources will be available to support them. But despite its ambition, the 10-year goal of a 500,000-apprentice system creates the necessary time and space for policymakers to evaluate and implement the necessary actions. At the same time, many of the policy ideas outlined here are mutually reinforcing, and as such will have the greatest potential when taken together as part of a comprehensive roadmap for expanding the availability of high-quality apprenticeship opportunities in new and emerging nontraditional industry sectors.

Just as importantly, while these policy ideas outline actions that the state can take, this important work cannot depend on the initiative of the state alone. Industry, philanthropy, regional public-private partnerships, and even individual education institutions, districts, and workforce boards can all take steps to expand nontraditional apprenticeships that model and strengthen the ideas outlined here. In the grip of a pandemic, the state will depend on the energy and initiative of such partners to support the integration of apprenticeship into the broader economic recovery.

California has already led the way in the country by articulating a powerful vision for apprenticeship that both validates Registered Apprenticeship as one of the few sure bets remaining for workers and students, and challenges it to go further. The 500,000-apprentice goal calls for innovation and experimentation, but also continued stewardship the Registered Apprenticeship model that has already supported millions of careers in the building and firefighting trades. An old trope holds that "as California goes, so goes the nation." If this is true, then the stakes of the 500,000-apprentice goals are high for workers and students across the U.S., today and in the future.

## Notes

- 1 See "Future of Work Commission," California Labor & Workforce Development Agency, accessed October 22, 2020, <https://www.labor.ca.gov/labor-and-workforce-development-agency/fowc/>. Materials from past Future of Work Commission meetings are available at "Future of Work Commission Meetings," Labor and Workforce Development Agency, accessed August 19, 2020, <https://www.labor.ca.gov/labor-and-workforce-development-agency/meetings/>.
- 2 According to the U.S. Department of Labor, in 2019 California had 94,761 active apprentices. The next nearest state was South Carolina with 22,186. "Data and Statistics," USDOL Employment and Training Administration, accessed August 19, 2020, <https://www.dol.gov/agencies/eta/apprenticeship/about/statistics>
- 3 From the California's Division of Apprenticeship Standards Apprenticeship e-Newsletter (Vol. 2 Issue 4, Sep 15, 2020).
- 4 For an overview, see "California Master Plan for Higher Education," Institutional Research and Academic Planning, University of California Office of the President, accessed August 19, 2020, <https://www.ucop.edu/institutional-research-academic-planning/content-analysis/academic-planning/california-master-plan.html>. For a deeper exploration of the Master Plan's successes and shortcomings with regards to workforce training, see *The Master Plan for Higher Education in California and State Workforce Needs* (Sacramento: CA Governor's Office of Planning and Research, 2018), [https://opr.ca.gov/docs/20181226-Master\\_Plan\\_Report.pdf](https://opr.ca.gov/docs/20181226-Master_Plan_Report.pdf)
- 5 See Lul Tesfai, *Creating Pathways to College Degrees through Apprenticeships*, (Washington, DC: New America, September 2019), <https://www.newamerica.org/education-policy/reports/creating-pathways-postsecondary-credentials-through-apprenticeships/> and Michael Prebil, *Solid Foundations: Four State Policy Approaches for Supporting College-Connected Apprenticeships*, (Washington, DC: New America, September 2019), <https://www.newamerica.org/education-policy/reports/solid-foundations-four-state-policy-approaches-supporting-college-connected-apprenticeships/>.
- 6 AB-235 (2017–18) added §3071.5 to the Labor Code, establishing the Interagency Advisory Committee on Apprenticeship. See, [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB235](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB235), accessed August 19, 2020.
- 7 "Apprenticeship Training: Pilot Summary," California Employment Training Panel, March 23, 2012, accessed August 19, 2020, [https://etp.ca.gov/wp-content/uploads/sites/70/2018/11/02-25-2019\\_ApprenticeshipTrainingPilot\\_Summary.pdf](https://etp.ca.gov/wp-content/uploads/sites/70/2018/11/02-25-2019_ApprenticeshipTrainingPilot_Summary.pdf)
- 8 See Prebil, *Solid Foundations*, <https://www.newamerica.org/education-policy/reports/solid-foundations-four-state-policy-approaches-supporting-college-connected-apprenticeships/>.
- 9 See "California Apprenticeship Initiative," Foundation for California Community Colleges, accessed October 22, 2020, <https://foundationccc.org/What-We-Do/Workforce-Development/Workforce-Services/California-Apprenticeship-Initiative/>.
- 10 See item 6870-101-0001 and Budget Act of 2019, AB-74 (2019–20), accessed August 19, 2020, [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201920200AB74](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB74)
- 11 See *Expanding Non-Traditional Apprenticeships in California: The Role of 45 Local Workforce Development Boards*, (San Francisco, CA: The James Irvine Foundation, updated March 2020), accessed October 22, 2020, <https://caihub.foundationccc.org/Portals/0/Documents/Expanding-non-traditional-apprenticeships-report-WEB.pdf/>.

12 See "About SLO Partners," accessed October 22, 2020, <https://www.slopartners.org/about/>.

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14 AB-1809 (2017–18) replaced §79149.3 of the Education Code, establishing a new procedure for reimbursing colleges for credit-bearing apprenticeship coursework. Colleges providing credit-bearing coursework may be reimbursed by this funding option or by the RSI hourly reimbursement rate established in Education Code §79149.1, but not both. See, [https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill\\_id=201720180AB1809](https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB1809), accessed August 19, 2020.

15 "The 2019–20 Budget: California Spending Plan—Capital Outlay," Budget and Policy Post, Legislative Analyst's Office, October 17, 2019, accessed August 19, 2020, <https://lao.ca.gov/Publications/Report/4105>

16 "State and Local Government Employment Data," 2019 Annual Survey of Public Employment and Payroll, U.S. Census Bureau, accessed August 19, 2020, <https://www.census.gov/data/datasets/2019/econ/apes/annual-apes.html>

17 According to a 2012 study, the average age of American apprentices is about 30. Robert Lerman and Felix Rauner, "Apprenticeship in the United States," *Work and Education in America: The Art of Integration*, edited by Antje Barabasch and Felix Rauner (New York: Springer Press, 2012). Apprentices in the United Kingdom appear to be younger: less than half of apprentices are 25 or older, although the number of older apprentices increased from 2017–18 to 2018–19. Niamh Foley, "Apprenticeship Statistics," Briefing Paper number 06113, House of Commons Library, April 9, 2020, accessed August 19, 2020,

<https://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf>.

18 See Foundation for California's Community Colleges, Facts and Figures, <https://foundationccc.org/About-Us/About-the-Colleges/Facts-and-Figures> and for national definition of youth apprenticeship pathways see, [https://s3.amazonaws.com/newamericadotorg/documents/PAYA\\_11x17\\_v6b-pages3.pdf](https://s3.amazonaws.com/newamericadotorg/documents/PAYA_11x17_v6b-pages3.pdf)

19 "State Schools Chief Tom Torlakson Launches Pre-Apprenticeship Pilot Project," California Department of Education (August, 2014), <https://www.cde.ca.gov/nr/ne/yr14/yr14rel86.asp>

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21 See "Facts and Figures," Foundation for California Community Colleges, accessed October 22, 2020, <https://foundationccc.org/About-Us/About-the-Colleges/Facts-and-Figures/>.

22 See "California Partnership Academies (CPA)," California Department of Education, updated October 23, 2019, accessed October 22, 2020, <https://www.cde.ca.gov/ci/gs/hs/cpagen.asp>, and John Osborn d'Agostino and Michelle Maitre, "Map and Charts of Career Academies in California—2014," *Ed Source*, September 14, 2014, accessed October 22, 2020, <https://edsources.org/2014/linked-learning-academies-throughout-california/65441>.



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