

# THE WORKING POOR FAMILIES PROJECT

POLICY BRIEF ■ SUMMER 2011

## IMPROVING ACCESS TO APPRENTICESHIP: STRENGTHENING STATE POLICIES AND PRACTICES

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### THE WORKING POOR FAMILIES PROJECT

Strengthening State Policies for  
America's Working Poor

Millions of American breadwinners work hard to support their families. But, despite their determination and effort, many are mired in low-wage jobs that provide inadequate benefits and offer few opportunities for advancement. In fact, nearly one in three American working families now earn wages so low that they have difficulty surviving financially.<sup>2</sup>

Launched in 2002 and currently supported by the Annie E. Casey, Ford, Joyce, and Mott foundations, the Working Poor Families Project is a national initiative that works to improve these economic conditions. The project partners with state nonprofit organizations and supports their policy efforts to better prepare America's working families for a more secure economic future.

For more information:  
[www.workingpoorfamilies.org](http://www.workingpoorfamilies.org)

### INTRODUCTION

Although the labor market is flush with out-of-work job seekers competing for few employment opportunities, businesses are still reporting difficulty finding qualified staff.<sup>3</sup> This skills mismatch has persisted despite rising enrollment in postsecondary education and training programs.<sup>4</sup> The media is awash with stories of unemployed workers returning to school for retraining only to remain jobless upon graduation because their career choice or newly acquired skills do not meet the needs of employers.<sup>5</sup> If left unchecked, these mismatches could likely worsen in the coming years as the U.S. economy emerges from the Great Recession radically transformed from a generation ago—requiring workers who have a different and more advanced set of skills to fill growing occupations in service, technology, and knowledge-based fields.<sup>6</sup>

More than ever before, it is critical that the United States invests more deeply in education and skills development strategies that are driven by the demands of the labor market and, while doing so, are readily accessible to all levels of the labor force. Fortunately, a tried and true approach already exists for directly tying education to employment, ensuring that workers acquire skills and work experiences needed to fill actual jobs. Apprenticeship, wrongly pigeonholed as an on-the-job training apparatus solely for unionized construction trades, is ripe for a rebirth as the nation's premier pathway to higher education and sustainable careers across a wide range of industries, work settings, and geographic regions.

For apprenticeship to reach its potential, both public and private sectors will need to commit to providing support. Typically, employers have borne most, if not all, of the costs of developing apprenticeship programs and training and paying apprentices, while federal and state governments have assumed

advisory and policing roles, setting and enforcing standards for programs choosing to register with them. Government investment and outreach is critical to building a more robust apprenticeship system.

The **WORKING POOR FAMILIES PROJECT (WFPF)** supports efforts of state nonprofit organizations to strengthen state policies that can assist families striving to work their way into the middle class and achieve economic security. WFPF encourages its partners to engage state policymakers to ensure that postsecondary education and skills development programs sufficiently serve and capably prepare low-skilled adults for family-sustaining careers—in short, educate and train them for growing occupations that can support their families economically. To do so, states need to align systems and resources toward market-driven, skill-building strategies such as apprenticeship.

A few states, including several with WFPF partners, are in the forefront of advancing public policies that support a broad-based expansion of apprenticeships. This brief describes state efforts for engaging employers through outreach, apprentice recruitment, and training subsidies while strengthening linkages to postsecondary and workforce development systems and improving rates of entry and successful completion of low-skilled adults. The brief makes specific policy recommendations and suggests strategies for ensuring their passage.

## **APPRENTICESHIP MODEL AND GOVERNMENT STANDARDS**

An apprenticeship is a wage-paying job that incorporates extensive workplace and classroom training in preparation for a highly skilled occupation. Apprentices earn incremental wage increases based on their demonstrated proficiency in an array of job tasks as well as related academic content. Training ranges in length from one to six years depending on the occupation, but most programs last four years.<sup>7</sup> Upon successful completion, apprentices attain journey-level status in their chosen profession. Apprentices are

considered employees of the firms and organizations where they are training. Private employers, industry associations, labor-management organizations, and the U.S. military all sponsor apprenticeship programs, generally taking on the responsibility to develop, operate, and pay for training on their own.

The U.S. Department of Labor Office of Apprenticeship (OA) oversees the national system of registered apprenticeship programs. To attain formal registration, apprenticeship sponsors must comply with federal rules governing content, quality, and length of training, as well as safety, wage, and equal employment protections for apprentices.<sup>8</sup> Registered programs must provide a minimum of 2,000 hours of on-the-job learning and 144 hours of related classroom instruction; however, programs can avoid time-based requirements by establishing competency-based assessments. In return, their apprentices are awarded a portable, industry-recognized certificate of completion demonstrating their attainment of journey-level status.

Employer outreach, program registration, and enforcement activities are carried out in the field by either OA field staff<sup>9</sup> or state personnel, depending on whether a given state has sought direct oversight authority as 26 states and the District of Columbia have done.<sup>10</sup> A state labor or education department typically assumes the oversight duties and, for federal purposes, is identified as the “State Apprenticeship Agency,” or SAA. States with a SAA are mandated to convene an apprenticeship council comprised of union, management, and other stakeholders to advise and aid in oversight duties.

Any state, regardless of its federally recognized role, can and should take steps to increase apprenticeship participation. SAA states can set and enforce their own standards on registered apprenticeship programs. As a result, some apprenticeship programs only meet state requirements and, therefore, are not listed in the national registry. Typically, this is the case when states approve programs in occupational fields not yet vetted by the federal government as

apprenticeable (at least three SAA states have to approve programs in a new apprenticeable field to obtain federal recognition).

Aside from federal- and state-approved programs, an untold number of employers operate informal, unregulated apprenticeships, in which case apprentices may not be trained or paid properly and could face difficulty proving their journey-level qualifications to other potential employers.

The Labor Department reports that nearly 430,000 individuals participated in federal and state approved apprenticeships in Fiscal Year 2010; 29,000 apprenticeship sponsors representing 250,000 employers offer programs. The national registered system consists of 1,000 apprenticeable occupations,<sup>11</sup> yet half of all registered apprentices are training to work in the construction trades. While the construction sector was crippled by the economic downturn, apprenticeship is growing in transportation and communications sectors<sup>12</sup> and taking root in health care. Several of the top apprenticeable occupations are in non-trade positions, such as chefs, childcare development specialists, dental assistants, fire medics, and law enforcement agents.<sup>13</sup>

Union-based employers sponsor more than half of all registered apprenticeships, while the other half are nonunion. Although employer sponsorship is perhaps a more politically tenable solution for spurring apprenticeship expansion in union hostile regions of the nation, private sponsors have not yet measured up to union-based sponsors when comparing quality of skills development, work opportunities, and graduation rates. For instance, construction apprentices enrolled in programs that are sponsored jointly by unions and contractors are more likely to complete training and are less likely to drop out than those enrolled in programs

sponsored solely by employers.<sup>14</sup> In addition, most employer-sponsored apprenticeships provide less generous wages and benefits than union apprenticeships.

Expanding apprenticeship would seem well worth the effort, considering these benefits:

- ♦ **Apprenticeship leads to family-sustaining careers.** For Fiscal Year 2008, the Labor Department reported that the average hourly wage for a journey person who completed an apprenticeship was \$23.94, which translates to \$49,795 annually.<sup>15</sup> That wage is more than double what is needed to take a family of four out of poverty (\$10.55), while exceeding the threshold needed for greater self-sufficiency (\$21.11). By comparison, two-thirds of U.S. jobs fall under occupations with median wages below the sufficiency level.<sup>16</sup>
- ♦ **Apprenticeship produces larger earnings bump.** After accounting for total training costs, apprenticeship produces a positive earnings gain of \$269,000 over a lifetime, much higher than \$96,000–\$123,000 projected for community college students and about \$40,000 per trainee of Workforce Investment Act programs.<sup>17</sup>
- ♦ **Apprenticeship trains workers at far less public expense.** The number of registered apprentices equals roughly the combined number of individuals receiving training through the Adult and Dislocated Worker programs of the Workforce Investment Act, the Job Corps, and Trade Adjustment Assistance,<sup>18</sup> yet the federal government spends 190 times more on these programs than the budget for the Office of Apprenticeship.<sup>19</sup>

## BOX 1. A BRIEF NOTE ON DATA

In the past, the U.S. Department of Labor has published relatively few data elements about the Registered Apprenticeship System. To more fully understand the successes and challenges of apprenticeship, this brief largely relies on information collected from individual states as well as survey data produced by researchers, most notably Robert Lerman of the Urban Institute, Cihan Bilginsoy of the University of Utah, and the Government Accountability Office. For instance, GAO has surveyed 10 states with large apprenticeship participation that were able to provide apprentice data by industry, sponsor, and occupation, as well as some information on completions, on-time completions, and wages.<sup>20</sup> Washington is among a few states that report a fairly comprehensive set of apprenticeship data to measure program performance.<sup>21</sup>

The Labor Department does maintain a large database of individual-level records for apprentices participating in programs in the 25 states where it has direct oversight and from state apprenticeship agencies that have chosen to report into this system (there are currently eight SAA states that do so). The other SAA states maintain their own data and collect various pieces of information on apprenticeship. But, these states provide the Labor Department with only aggregate counts of active and new apprentices, program completers, and active and new programs.

Changes are afoot. The Labor Department is collaborating with SAAs to expand the number of data elements reported federally. The Office of Apprenticeship has provided incentives including limited grant funds to encourage and facilitate this data sharing on a quarterly basis. OA does not currently have regulatory authority to compel states to provide this individual-level data. The expanded data elements would cover:

- ◆ Total Number of Active Served
- ◆ Total Number of Active Apprentices
- ◆ Total Number of Apprentices in Programs with five (5) or More Apprentices
- ◆ Total Number of New Apprentices
- ◆ Beginning Count (BOP)
- ◆ Ending Count (EOP)
- ◆ Number of Interim Credentials Issued
- ◆ Number of Completion Certificates Issued
- ◆ Number of Completers
- ◆ Apprentice Average Beginning Wage (Wages range from \$8.67 - \$32.31)
- ◆ Apprentice Average Completion Wage (Wages range from \$8.67 - \$57.74)
- ◆ Gender: Active Male
- ◆ Gender: Active Female
- ◆ Minority: Active Male
- ◆ Minority: Active Female
- ◆ Veteran: Active Male
- ◆ Veteran: Active Female
- ◆ Total Number of Programs Served
- ◆ Total Number of Active Programs
- ◆ Total Number of Provisional Programs Registered
- ◆ Total Number of Programs with five (5) or More Apprentices
- ◆ Total Number of New Programs with five (5) or More Apprentices
- ◆ Total Number of Employers Served
- ◆ Total Number of Labor/management Programs Registered
- ◆ Total Number of Unilateral Programs Registered
- ◆ Beginning of Period (BOP)
- ◆ Total Number of Programs with Competency-based Occupations
- ◆ Total Number of Programs with Hybrid Occupations
- ◆ Total Number of Programs with Interim Credentials
- ◆ End of Period (EOP)

## CHALLENGES AND OPPORTUNITIES FOR APPRENTICESHIP EXPANSION

Any attempt at expansion will wrestle with several challenges regarding employer engagement, enrollment of disadvantaged workers, high training costs, and low completion rates. With these challenges come opportunities to build stronger linkages to postsecondary and workforce development systems to ensure publicly supported skill-building efforts align to labor market demands.

### DIFFICULTY ENGAGING EMPLOYERS

The biggest challenge in expanding the role of apprenticeships in workforce development is increasing the number of employers and industry sectors that offer apprenticeships. Although 97 percent of registered apprenticeship sponsors recently surveyed say they would recommend the programs to others,<sup>22</sup> the number of apprenticeship offerings has stagnated in recent years. Due to the economic downturn, it can be assumed that employers have fewer jobs and fewer resources to devote to extensive training. Apprenticeship does not come cheap. While public sector expenses have been relatively low, employers and apprentices invest at least \$1 billion per year.<sup>23</sup>

Expansion teeters as much on the public sector helping to lower employer cost of apprentice training as on increasing penetration within occupations and industries that are growing and need a highly skilled workforce. It has been suggested that the Office of Apprenticeship could do more to systematically identify new occupations suitable for apprenticeship programs and address employer concerns over requirements that have deterred program development.<sup>24</sup> Gaining a foothold in some industries and regions of the country also will take shedding the perception of a union and construction training apparatus, while maintaining their high standards for training and wages. As an initial step, OA has published reports highlighting successful apprenticeship programs and strategies in emerging fields, including health care,<sup>25</sup> health information technology,<sup>26</sup> and green energy.<sup>27</sup>

## OBSTACLES TO ENTRY FOR UNDER-REPRESENTED WORKERS

Another important challenge is broadening access to apprenticeship. In the short-term, the economic downturn has sharply reduced apprenticeship opportunities, particularly in traditional fields like construction, because many experienced tradesmen are out of work. However, even after the economy finally rebounds, disadvantaged and low-skilled adults could continue to struggle penetrating apprenticeship fields, whether in construction or emerging high-tech and health care fields.

In recent years, apprenticeship programs have enrolled some low-skilled and disadvantaged adults: one-quarter of active apprentices did not finish high school or only have a GED and one-third are minorities. Debunking the youth label, three-quarters of apprenticeships are filled by adults older than 24, with 28 percent over age 35.<sup>28</sup> However, their ability to persist and complete programs is questionable, as discussed below. Moreover, enrollment of women remains low, at 5 percent across all apprenticeship fields.<sup>29</sup>

Recognizing the need to expand access to more minorities and women, the registered system has long held sponsors with five or more apprentices to affirmative action requirements for recruitment and selection.<sup>30</sup> To be most meaningful, however, the compliance must be monitored and enforced. In 2004, OA field staff reviewed only 4 percent of programs in the 23 states where it had direct oversight.<sup>31</sup> As enforcement reportedly weakened in past decades, the participation of women in construction apprenticeships has deteriorated.<sup>32</sup>

Improved enforcement alone will not solve the issue. Recruitment of apprentices remains fairly insular. Two-thirds of sponsors report that their current employees are an effective source for recruiting new apprentices, and 40 percent cite educational institutions that deliver related instruction.<sup>33</sup> In contrast, One-Stop Career Centers receive low marks as do “pre-apprenticeship” programs.<sup>34</sup> The bottom line, it would seem, is that learning about apprenticeship opportunities is difficult for workers who either lack personal ties to current apprentices or are not currently enrolled in relevant coursework.

Pre-apprenticeship programs differ greatly in the quality and breadth of services provided to participants. Generally, programs include basic, introductory information about an apprenticeable occupation; some form of entry-level education and skills covering job readiness, specific vocational and occupational elements; and a range of supportive services. Many programs offer hands-on work experience, stipends, or training wages. A range of nonprofit, public, and private-sector entities operate and fund programs. Nonprofit community and faith-based organizations are the most common program providers, and federal, state, and local governments are among the most frequent and largest contributors of funding.<sup>35</sup>

A recent national survey of construction pre-apprenticeship programs found relatively few achieved high placement rates in apprenticeships.<sup>36</sup> This can be attributed in part to the sharp decline in construction jobs that stemmed from economic recession. According to the survey, there were other factors at play. First, many pre-apprenticeship programs operate in markets with limited apprenticeship opportunities even in the best of times. Second, many programs may steer participants who are not a good fit or are not ready away from apprenticeship. Their primary goal is to place participants in family-sustaining jobs, whether or not it is in an apprenticeship or, even, a related occupational field.<sup>37</sup>

On the other hand, unions and worker advocates have criticized some pre-apprenticeship programs for exploitative labor practices, in which they funnel cheap, unskilled labor to construction contractors, thereby undercutting the training rigor and wage progression of the apprenticeship system.

Acknowledging the range of shortcomings, programs using the moniker “apprenticeship prep” are re-emphasizing the necessity for placing participants in registered apprenticeships.

### **HIGH TRAINING COSTS**

Tuition costs are yet another barrier for apprentices receiving technical instruction through community colleges, primarily for non-union programs. High costs can preclude some low-income adults from

applying for apprenticeships and employers from setting up or expanding apprenticeship programs. Among sponsors surveyed, 70 percent of programs covered apprentices’ tuition costs for related courses at community colleges.<sup>38</sup> This still leaves a sizeable portion of apprentices footing the bill. Aside from paying for tuition and textbooks, many apprentices have to pay for work tools and clothing.

### **LOW COMPLETION RATES**

Persistence in apprenticeship programs also poses a major problem. In construction trades, nearly six in 10 registered apprentices fail to complete training,<sup>39</sup> a trend that is worsening.<sup>40</sup> Across apprenticeable fields, completion rates are substantially better for some programs<sup>41</sup> and some states<sup>42</sup> while generally worse for women and minorities.<sup>43</sup> In California, among other states, union-based construction programs have achieved higher completion rates than non-union providers.<sup>44</sup> The Office of Apprenticeship does not track the reasons for non-completions;<sup>45</sup> however, according to sponsors recently surveyed by the Urban Institute, a third identified personal issues and performance problems on the job or in classroom as the most common causes for attrition of their apprentices.<sup>46</sup> Academic readiness is more likely a barrier for the one-quarter of apprentices who did not finish high school or only have a GED.

### **INSUFFICIENT TIES TO EDUCATION AND WORKFORCE SYSTEMS**

Closer collaboration with community colleges and workforce development systems could strengthen employer outreach, reduce training costs, and improve individuals’ access and success in apprenticeships as well as in college. However, a number of barriers prevent leveraging education and workforce systems to their fullest. Issues include incorporating apprenticeship within college degrees and utilizing the workforce system to recruit apprentices and pay for training.

The relationship between technical colleges and apprenticeship programs varies by state, trade, and local area. Community colleges deliver the related technical instruction for an estimated 10 to 32 percent of apprentices, according to recent surveys.

By contrast, more than half of unionized construction apprentices receive technical instruction at their sponsor's facility.<sup>47</sup> Growing this partnership would represent a dependable training and recruiting grounds for sponsors, while delivering to colleges a fertile crop of motivated students to raise enrollment revenue and, potentially, degree attainment rates—just as critical in an era of heightened accountability. Most importantly, linking apprenticeship to college would expose students to new fields and forms of learning, while building a steady pathway to a college degree for apprentices. Although a postsecondary credential does not carry the reputation of a journey card in the construction, college education can open doors to higher-level managerial positions in the trades, while in other industries like advanced manufacturing and healthcare, college is critical for career advancement.

For years, apprenticeship sponsors have worked successfully with community colleges to award college credit to apprentices for education and job-related skills acquired through apprenticeship programs. This has enabled apprentices to earn credit for related technical instruction delivered through colleges, bypass classes for which they have already mastered the competencies, and earn an associate's degree in less time and for less money. However, available research suggests only a small share of apprentices are pursuing Associate's degrees or even having their workplace learning and academic courses count toward a degree.<sup>48</sup> Moreover, when credit-articulation agreements are put in place, they do not usually apply to other colleges in which apprentices may wish to enroll and are not binding for other apprenticeship programs. This piecemeal approach inhibits student transfers mid-degree and does little to enhance educational and career pathways for apprentices across the registered system. Moreover, a lack of system-wide linkages between apprenticeship programs and colleges inhibits the implementation of other state policies, such as setting uniform tuition rates for related technical instruction and accrediting classroom training delivered by apprenticeship providers.

Apprenticeship programs also face barriers to building closer ties with the public workforce development system. Many One-Stop officials are wary of using WIA funds to subsidize training and equipment costs for apprentices, out of concern that participation in apprenticeships does not satisfy WIA performance measures. Their major sticking point is how and when to exit apprentices from the WIA system in order to report gainful employment. As further evidence of poor alignment between WIA and apprenticeship systems, SAA and OA staff is not usually co-located at One-Stops. Doing so would provide a home base in local areas for apprenticeship staff to recruit and support program sponsors, while helping One-Stop personnel to promote apprenticeship as a viable employment and training option for their clients.

## RECENT FEDERAL EFFORTS TO IMPROVE APPRENTICESHIP

In the past few years, the U.S. Department of Labor has attempted to address several of these challenges. The agency recently revised apprenticeship rules<sup>49</sup> in an effort to entice more employers and industries into offering apprenticeships. Revised rules allow greater flexibility in program delivery (such as competency-based and distance learning approaches), quicker preliminary program approvals, and for state licensures and other industry-recognized credentials to count toward apprenticeship requirements. Meanwhile, DOL has established new quality control measures to thwart dismal apprenticeship completion rates. Work also is underway to build stronger ties between apprenticeship and the workforce development system, as well as education institutions. OA field officials are now held accountable to performance goals around strengthening collaboration in their state. DOL also requires state apprenticeship agencies to demonstrate that they are making linkages and coordinating with their state's workforce development system as well as economic development strategies. In addition, DOL has issued guidance and convened regional workshops to demonstrate to states and local workforce areas how WIA can support apprenticeship (see Table 1).

**Table 1: DOL recommendations for leveraging WIA to support apprenticeship<sup>51</sup>**

POLICY IDEA	REQUIREMENTS	ADVANTAGES
Award Individual Training Accounts to support related classroom instruction.	Awarded per apprentice, subject to eligibility for WIA Adult or Dislocated Worker programs and inability to obtain grant assistance from other sources to pay for education and skills development.	Makes apprenticeships more affordable for low-income and unemployed individuals.
Deliver customized training to support related classroom instruction.	Development of a course of education and skills development for an employer or group of employers, acting as apprenticeship sponsor. Requires sponsor to pay for at least 50 percent of the cost of education and skills development (states can apply for waivers to reduce matching requirement for small to medium sized employers) and to commit to hire or continue to employ trainees. Education and skills development programs developed and delivered by one-stops or partner agencies.	Encourages employers to start up or expand apprenticeship programs, which is of particular importance in states with low sponsorship of apprenticeship programs and low union density.
Award On-the-Job Training (OJT) funds to subsidize training wages.	Awarded to employers to pay for up to 50 percent of apprentice wages earned during workplace-based education and skills development. States can apply for a waiver to reduce the required match to 25 percent for small employers. Education and skills development programs developed and delivered by apprenticeship sponsor.	Like customized training, encourages employers to start up or expand apprenticeship programs; of particular importance in states with low sponsorship of apprenticeship programs and low union density.
Use discretionary and incentive funds to support apprenticeship and preparatory programs.	Considerable flexibility exists for the use of governors' statewide 15 percent funds and incentive funds. No requirements for employer match or eligibility criteria for individuals.	Provides a flexible, albeit limited, state-level funding source to support apprenticeship and preparatory programs. States can use the funds for any number of activities, such as to: <ul style="list-style-type: none"> <li>- Provide seed money for the development of new programs</li> <li>- Award incentive money for apprenticeship sponsors that expand apprentice slots</li> <li>- Cover tuition costs for related classroom instruction, subsidize apprentice wages</li> <li>- Spur on other program innovations.</li> </ul>
Promote apprenticeship through one-stop career center system.	No federal requirement exists for disseminating apprenticeship information through one-stop career center system.	Suggested one-stop activities include: <ul style="list-style-type: none"> <li>- Routinely integrate information about apprenticeship and preparatory programs into career guidance and career exploration services</li> <li>- Integrate apprenticeship electronic database with the state job matching system</li> <li>- Co-locate apprenticeship staff at one-stops to strengthen partnerships with case managers and to promote programs to clients and employers</li> <li>- Co-sponsor career fairs with apprenticeship staff</li> <li>- Coordinate development of apprenticeship prep programs between apprenticeship sponsors and community-based organizations.</li> </ul>

Similarly, DOL is hoping to establish a definition and quality framework for pre-apprenticeship programs. DOL is working with an advisory committee to iron out details and will then provide technical assistance to OA field offices and SAA staff.

Finally, to ensure greater accountability, the U.S. Department of Labor recently changed rules to require states with oversight duties to establish its state apprenticeship agency, not its apprenticeship council, as the entity ultimately responsible for program approval and regulatory enforcement.<sup>50</sup> This ensures state governments have a vested interest in the quality of apprenticeship programs. Yet, considering that the registered apprenticeship system is decentralized, the federal government still needs states to take on a more willing and active interest in expanding apprenticeship, including those states without oversight authority.

## LEARNING FROM STATE INNOVATION

While the federal government can play an important role in expanding and strengthening opportunities for the apprenticeship system, several states are taking proactive and innovative steps to (1) encourage employers to offer apprenticeships, (2) improve access to and success in apprenticeships, particularly for low-skilled and disadvantaged adults, and (3) enhance apprentices' pathways to postsecondary degrees and industry-recognized credentials. States have taken these strides whether or not they have federally granted oversight authority, strong or weak union ties, or long-established or more recent involvement with the apprenticeship model. Most of their efforts transcend any particular industry sector.

In addition, states have adopted a number of policies and strategies, most notably apprenticeship utilization requirements, to increase the use and funding of apprenticeships on publicly funded construction projects. These efforts are discussed in detail in the Working Poor Families Project's 2010 report, *Building Opportunity: How States Can Leverage Capital and Infrastructure Investments to Put Working Families on a Path to Good Jobs*.<sup>52</sup>

## 1. ENCOURAGING MORE EMPLOYERS TO OFFER APPRENTICESHIPS

State strategies to engage more employers in offering apprenticeships include stepping up outreach to potential program sponsors through community colleges and One-Stop Career Centers, offering incentives for creating apprenticeship positions, awarding competitive grants to support program development, and defraying the cost of related technical instruction through community colleges and vocational schools.

Leading the way is **South Carolina**. At the urging of the state chamber of commerce,<sup>53</sup> South Carolina has invested in a series of strategies to persuade employers to offer apprenticeships as a way to meet their skilled workforce needs. Since 2007, these efforts have cultivated new apprenticeships and programs, raising once meager levels by a rate of one new program a week, with nearly a three-fold increase in active apprentices. To accomplish this, South Carolina has poured between \$700,000 and \$1 million a year of general revenue into the state's technical college system to promote and support the development of apprenticeship programs.<sup>54</sup> The initiative, Apprenticeship Carolina, guides employers through the process of developing apprenticeship programs, identifying appropriate service providers and resources, and drawing up and submitting paperwork mandated for federal registration. Apprenticeship Carolina now generates more than 60 percent of the state's apprenticeship leads.<sup>55</sup>

In a state as unfriendly to unions as it is to federal intervention, the college system has become the face of the South Carolina's apprenticeship outreach efforts. OA field staff largely works behind the scenes, approving apprenticeship program applications and conducting compliance reviews.<sup>56</sup> The college system assists potential program sponsors whether or not they wish to use one of the campuses to deliver related technical instruction. Despite the open-access policy, Apprenticeship Carolina has bolstered ties between apprenticeship programs and community colleges: more than half of sponsors use the technical college for at least some portion of their training, and about 15 percent

of programs incorporate an associate's degree into their apprenticeship requirements.<sup>57</sup>

To aid outreach efforts, South Carolina offers financial incentives to employers to develop apprenticeship programs and employ apprentices. The South Carolina Small Business Chamber of Commerce successfully lobbied the state to enact a \$1,000 tax credit that employers can claim for each registered apprentice they employ per year for up to four years of employment.<sup>58</sup> In addition, the state Workforce Investment Board has contributed a total of \$1.65 million in WIA funds to aid apprenticeship sponsors: \$1 million was awarded competitively to seed new programs, while the remaining funds provide ongoing support to programs. In addition, local WIBs have received incentive money for creating a plan to increase the number of apprenticeships in their areas.<sup>59</sup> Some local WIBs also have awarded extra points on incumbent worker training applications to employers who intend to use the funds to support apprenticeships. Through this effort, state and local WIBs have funded about one-fifth of all registered apprenticeship programs, one-third of which are in the healthcare field.<sup>60</sup> Other growing apprenticeship fields in South Carolina include advanced manufacturing and information technology.

Several other states have developed similar strategies to encourage greater employer participation in apprenticeships.

### INCREASING OUTREACH TO EMPLOYERS

To expand apprenticeship programs in their states, Alaska and Kansas have used local One-Stop Career Centers as a major recruitment grounds for new sponsors. **Alaska** has stepped up its outreach efforts out of a concern that state residents lack the skills to compete with out-of-state workers for good-paying jobs. Considering apprenticeship as one of the best routes to skills development and jobs for residents, state officials have directed staff time and WIA resources to promote the training model to employers. As a federally administered apprenticeship state, employer outreach had been the sole responsibility of the two-person OA field staff. Since 2008 the state has trained 25 local One-

Stop employees as “apprenticeship specialists” to supplement the federal office. The effort has paid off. One-Stop specialists recruited half of the state’s new apprenticeship programs in 2010. Their accomplishments are due in large part to their closer relationships with local employers and their ability to more readily access WIA and federal On-the-Job Training money to support apprenticeship sponsors. Alaska has modified its WIA State Plan and other workforce development policy documents to include apprenticeship.<sup>61</sup> As a result, Alaska has expanded registered apprenticeship programs and active apprentices three-fold since the late 1990s.<sup>62</sup> Many of the new programs are for non-construction occupations, like office manager, dental hygienist, and auto mechanic.

**Kansas**, which oversees registered apprenticeship directly, has stationed state apprenticeship agency staff at local One-Stops to conduct employer outreach in those local areas. The state also has trained economic development staff so they can share with employers the basics about apprenticeship. As a service to employers, the One-Stop in Wichita serves as the recruitment grounds for apprenticeship sponsors. The Wichita One-Stop posts apprenticeship openings on the state job bank and offers to screen and refer qualified applicants to program sponsors. According to One-Stop officials, apprenticeship sponsors, including labor-management organizations, appreciate the hiring support because they typically do not have the staff to vet apprenticeship applications properly. In addition, the One-Stop pitches its services as a way for sponsors to comply with EEO rules because of the diversity of jobseekers walking through its doors each day.

### OFFERING INCENTIVES FOR HIRING APPRENTICES

Several other states offer tax credits and other incentives to employers for providing jobs to apprentices. Unlike South Carolina, most other states limit eligibility to certain industries. The most generous, **New Jersey** offers a one-time financial incentive to manufacturing industry employers of up to \$5,000 for each new or current employee sponsored as a registered apprentice.<sup>63</sup> **Connecticut** and **Rhode Island** each offer employers up to \$4,800. Connecticut targets manufacturing,

construction, and plastics-related trades;<sup>64</sup> and Rhode Island targets machine tool, metal, and plastic trades.<sup>65</sup> **Michigan**<sup>66</sup> and **Arkansas**<sup>67</sup> each have tax credits of up to \$2,000 for youth apprentices. Finally, **Louisiana** and **West Virginia** give employers a tax break of \$1,000. The former has not set any industry-specific criteria (although the credit is due to expire at the end of 2011),<sup>68</sup> while the latter targets the construction trades.<sup>69</sup>

## CUTTING TUITION COSTS

Several states have sought ways to cut employer costs for related technical instruction delivered through community colleges and vocational schools. This strategy aims both to attract new program sponsors and establish closer ties between apprenticeship and public training institutions.

The **Washington** State Community and Technical College Board discounts tuition for related technical instruction, waiving half the credit-hour or clock-hour rates.<sup>70</sup> The State Board also sets minimum rates, adjusted biennially, for contractual training as well as facility rentals, in the event that program sponsors need classroom space to handle technical instruction themselves.<sup>71</sup> Washington established the fee schedule in 2007 to ensure uniformity across community colleges. Previously, sponsors obtained different deals from different colleges, while colleges suffered financial losses when serving apprenticeship programs with few students enrolled in classes.<sup>72</sup>

As funding permits, the **Maine** Department of Labor underwrites up to 50 percent of tuition costs through public education institutions.<sup>73</sup> **Virginia** provides employers with a tax credit to defray costs for putting their workers through apprenticeship or noncredit training.<sup>74</sup> Employers can claim 30 percent of costs for workers who attend classes at Virginia community colleges or \$100 per worker attending private schools. This tax credit is limited to \$2,500 per year. **Kansas** has used federal stimulus grant money to cover the cost of related technical instruction for apprentices in the state's growing energy and advanced manufacturing sectors.<sup>75</sup> Eligibility is limited to dislocated workers. Finally, **Florida** has established a flexible funding pot that local school districts and

community colleges draw on to offer workforce training to employers, including technical instruction for apprenticeship programs as well as support for pre-apprenticeship programs.<sup>76</sup>

## 2. IMPROVING PARTICIPANT ACCESS TO AND SUCCESS IN APPRENTICESHIPS

Several states have launched other strategies to increase rates of entry and completion by low-skilled and disadvantaged workers. Strategies include recruiting individuals for apprenticeships through One-Stops, supporting pre-apprentices and strengthening their ties to apprenticeship programs, and providing outreach to active apprentices in an effort to raise completion rates.

### STEPPING UP RECRUITMENT AND TRAINING THROUGH ONE-STOPS

In **Kansas**, job seekers as well as employers benefit from apprenticeship recruitment through the Wichita One-Stop. One-Stop caseworkers discuss apprenticeship with jobseekers who otherwise may not have considered that option. Rather than simply disregard unqualified candidates, the One-Stop helps individuals to improve their skills so they can retest. They also help them find a temporary job until apprenticeships are offered again in their field of choice. In addition, One-Stop caseworkers meet with newly hired apprentices to determine if they need and are eligible for either WIA-funded supportive services, which can pay for work supplies and textbooks, or an Individual Training Account, which can cover tuition for related technical instruction.<sup>77</sup>

Other One-Stops in Kansas do not provide this level of assistance. In lieu of a strong state example, Wichita demonstrates what other local One-Stops and state workforce development systems can do to support client entry into apprenticeships. According to Wichita staff, states and local workforce areas do not need to request federal waivers or adopt new policies to strengthen ties to apprenticeships. Rather, they already have federal authority to (1) make state apprenticeship agency staff a mandated partner of local One-Stops, (2) automatically add apprenticeship programs to the WIA eligible training provider list, ensuring

that apprentices can qualify for funds, and (3) use WIA funds to serve apprentices and report apprenticeship attainment toward WIA performance measures. On the latter point, Wichita staff notes that apprentices can meet WIA employment goals only if they register through the One-Stop before applying and accepting an apprenticeship. Active apprentices can be exited from the WIA system 90 days after receiving their last service.<sup>78</sup>

**Wisconsin** has identified several policy steps to improve the integration of WIA and apprenticeship through its statewide sector strategy framework, known as Regional Industry Skills Education (RISE).<sup>79</sup> The RISE action plan<sup>80</sup> was developed by the Wisconsin Technical College System and the Wisconsin Department of Workforce Development, and funded in part through a “Shifting Gears” grant from the Joyce Foundation. The plan seeks to align workforce, education, and apprenticeship systems to develop career pathways in high-demand, well-paid career fields—building on successful programs across the state.<sup>81</sup>

## ENHANCING PRE-APPRENTICE PATHWAYS TO APPRENTICESHIPS

States have stepped up funding and oversight of pre-apprenticeship programs as yet another strategy for improving entry into apprenticeships for low-income and under-represented individuals. Primarily, these efforts have focused on the construction sector but could be expanded into other apprenticeable occupations.

Several states have leveraged public infrastructure money to pay for construction pre-apprenticeship programs targeting low-income, low-skilled adults, minorities, and women. **Wisconsin**,<sup>82</sup> **Michigan**,<sup>83</sup> and **Minnesota**<sup>84</sup> each have drawn down federal highway money, and **New Jersey**<sup>85</sup> has tapped state school construction funds to prepare under-represented individuals for building trades jobs and apprenticeships. (See the *Building Opportunity* report for more information.)

For several decades, **Indiana** has funded a statewide program to prepare and recruit under-represented individuals for building trades

apprenticeships or, more generally, jobs on construction projects. The program, known as the Indiana Plan, is a vestige of the War on Poverty, which spawned Hometown Plans around the country to help federal contractors fulfill their minority and women recruitment requirements; the federal criteria and approval process for Hometown Plans is spelled out in regulations still in effect.<sup>86</sup> While other states have long jettisoned their operation of Hometown Plans, Indiana has maintained its support at \$400,000 per year, appropriated through a special fund of its Unemployment Insurance system. Nowadays, the Indiana Plan handles affirmative action mandates for contractors on federal projects; and program staff draws up and undertakes recruitment activities, such as attending job fairs. In addition, the Indiana Plan operates a pre-apprenticeship program based on the AFL-CIO’s multi-craft pre-apprentice curriculum.<sup>87</sup> It pitches the program to labor-management apprenticeship sponsors as an effective way for them to find qualified apprentice applicants while complying with recruitment goals for minorities and women.

Aside from funding pre-apprenticeship programs or training opportunities for specific construction projects, other states have taken a different approach to strengthen pre-apprenticeships across a wide range of industries and occupations. **Florida**, **Maine**, and **Massachusetts** are among the states that have established a formal registration process for pre-apprenticeship programs. In general, the approval process is designed to set minimum standards for entry, training content, and treatment of pre-apprentices, while requiring ties to registered apprenticeship programs (see Table 2). These state-level standards ensure quality control, but generally allow programs the flexibility to design and deliver program content as they see fit. Although state rules typically focus on high school youth enrolled in secondary career-technical education, they also have been applied to adult participants and community colleges.

Massachusetts’ policy requires that pre-apprenticeship providers sign a formal agreement with a registered apprenticeship sponsor, spelling out the sort of advanced standing that program

**Table 2: State Regulations for Pre-Apprenticeship Programs**

	<b>Florida<sup>88</sup></b>	<b>Maine<sup>89</sup></b>	<b>Massachusetts<sup>90</sup></b>
Primary objective	Provide Florida residents with educational and training opportunities to enable them, upon completion of pre-apprenticeship training, to obtain entrance into a registered apprenticeship program.	The successful completion of training courses will enable a participant to meet the qualifying standards for the apprenticeship or apprenticeships for which the participant has expressed a serious interest.	The pre-apprenticeship program should provide the graduates with the skills needed to successfully pass the interview process in order to enter a full registered apprentice program.
Involvement of registered apprenticeship sponsor	Must be sponsored by apprenticeship program.	Undefined role in program delivery.	Must hold a written agreement with an apprenticeship program.
Training tied to one or more apprenticeable occupations	Yes	Yes	Yes
Entry into apprenticeship	Apprenticeship sponsors shall give primary consideration for admission to persons who complete sponsor's preapprenticeship program. New apprentices shall be exempted from repeating any related course of instruction, if they pass a competency examination.	Yes. Requires a "letter of intent to hire" upon successful completion of program.	Agreement must establish a pre-determined policy for awarding credit to pre-apprentices who are accepted into a registered apprenticeship program.
Program Length	6-24 months	Not to exceed 24 months	Not defined
Related Technical Instruction	Required. If offered, sponsor sets hours.	Required. Not to exceed 750 hours. Must be enrolled in vocational school	Required. Recommends 150 hours for each year of pre-apprenticeship. Apprenticeship sponsor must approve content.
Instructional provider	Apprenticeship sponsor, school districts, and colleges	School districts, colleges, and others	Undefined training facility
On-the-Job Training	Not required. If offered, sponsor sets length and must pay at least minimum wage.	Required. Not less than 250 hours in two-year programs. Must pay at least minimum wage.	Restricted. Work on construction projects is not permitted until full status as apprentices is reached.
Worker ratios	Up to 2 pre-apprentices for every 3 journey workers in construction; otherwise, ratios are established by program committee.	1 pre-apprentice for every 3 journey workers.	Not defined.
Safety training	Required	Required	Required
EEO activities	Required	Required	Not Stated
Process for deregistering programs and terminating enrollment of individuals	Yes	Yes	Yes

completers can expect if they become an apprentice. Some arrangements provide pre-apprentices with as much as six months of credit toward apprenticeship work hours or class time.

According to a recent survey by the Aspen Institute, the majority of pre-apprenticeship providers do not favor strict program requirements.<sup>91</sup> Among their chief concerns, many programs suggested that they might have to turn away individuals who do not have sufficient basic skills rather than working with them for a longer time. In addition, they do not want to be judged harshly for placements in non-apprenticeship jobs, even though that might be a good first step for particular participants. They also cautioned against having the same performance standards year after year in a cyclical industry, like construction.

### PROVIDING OUTREACH TO ACTIVE APPRENTICES

**Wisconsin** funds a mentorship program for building trades apprentices in an effort to improve completion rates, which a legislative study found were particularly dismal for African Americans.<sup>92</sup> The state labor department leveraged \$100,000 in WIA discretionary dollars to award competitive grants to two community-based organizations in Milwaukee and Madison.<sup>93</sup> Under the initiative, registered apprentices are paired with mentors who have past apprenticeship experience to talk through work and personal issues. For instance, mentors, many of whom are minorities and women themselves, help apprentices distinguish between workplace treatment that is typical for apprentices and those that are acts of discrimination due to their race and gender. Unfortunately, newly elected Governor Scott Walker has discontinued the use of WIA funding for the program.

Worth noting, **Ohio** researchers have produced a best practices guide on how to improve completion rates for construction apprenticeship programs, drawing on successes and insights of workers and employers in the Cincinnati metro area.<sup>94</sup>

### 3. IMPROVING APPRENTICES' PIPELINES TO POSTSECONDARY AND INDUSTRY-RECOGNIZED CREDENTIALS

At least five states—**Florida, Indiana, New Jersey, West Virginia, and Wisconsin**—have established bold and innovative policies for rewarding apprentices with a significant portion of college credits toward an Associate's degree, which can be completed at any community and technical college in the state. These statewide credit articulation agreements, unlike those that only bind a single college and apprenticeship program, provide a uniform pathway for all apprentices across all apprenticeship programs to complete college in less time for less money.

Each state has taken a different approach for how program content is delivered and evaluated and for how academic credits are assigned to a degree. In Indiana, Wisconsin, and West Virginia, hours spent in related technical instruction and on-the-job training components of registered apprenticeship program often fulfill all degree-specific requirements aside from general education courses. In New Jersey, the number of credits depends on the agreement between an apprenticeship sponsor and college, which other colleges are required to recognize. Florida takes a different approach altogether, by awarding credit for the attainment of industry-recognized credentials that have been embedded in apprenticeship program curriculum rather than basing credits on time spent in the classroom and at the job site. Indiana, Wisconsin, and West Virginia have community college systems that ease the way for the enactment of statewide articulation policies. However, creative steps taken by Florida and New Jersey prove statewide articulation policies are still possible in states where colleges operate more independently and, often times, in competition.

Moreover, the role of community colleges in delivering related technical instruction also varies. In Wisconsin and West Virginia, the majority of apprentices attend state college and technical colleges, arguably making it easier to award credits; whereas, in Indiana and New Jersey, apprenticeship sponsors typically provide the training themselves. In New Jersey, this has spawned a more time-consuming and costly evaluation process, which may not be sustainable. Finally, Indiana has the most aggressive degree

attainment policy, requiring apprentices to graduate from college before they can obtain journey-level status. As a downside, Indiana has set higher educational standards for entering apprenticeships, making them less accessible for low-skilled adults. In contrast, other states have sought to award credit for apprenticeship content as a way to encourage apprentices, who may not consider themselves college material, to continue their education.

As established through its long-standing state apprenticeship law, **Wisconsin** bestows on the state's community and technical college system the responsibility for delivering related technical instruction for registered apprenticeship programs.<sup>95</sup> The college system has established standards and procedures for granting 39 credits for related technical instruction and OJT toward the Journeyworker Associate in Applied Science (JW-AAS) Degree.<sup>96</sup> Apprentices need to complete an additional 21 credits in general education courses to attain their degree. Apprentices can choose when, if at all, to enroll in the coursework. According to state officials, 468 apprentices have enrolled in the JW-AAS degree program over the past 11 years, and 204 have graduated. In 2010, 29 apprentices attained the degree, the largest graduation class to date.<sup>97</sup> Wisconsin is unique among the 50 states in requiring that employers pay apprentices for both time worked and time spent in the required classroom instruction.<sup>98</sup> Although apprentices are responsible for paying for books and tuition, the wage benefit effectively defrays these costs. Apprentices are not offered this wage benefit while attending general education courses.

In **West Virginia**, the community and technical college system has formed an agreement with OA field staff and the state's building and construction trades council to award at least 42 credits toward an Associate in Applied Science in Occupational Studies.<sup>99</sup> Apprentices earn 30 to 40 credits for related technical instruction and 12 credits for OJT, leaving 20 general education credits for completion of degree. The state also awards academic credits for on-the-job training that apprentices receive in early childhood education programs.

**Indiana** is the only state to require apprentices to complete an Associate's Degree in order to obtain journey-level status.<sup>100</sup> The degree requirement was established in the mid-1990s, initially as a pilot project, in response to employers' expectations for workers with college degrees. The state's Ivy Tech community college system provides articulated credit for labor-management apprenticeship programs, while Vincennes University works with nonunion sponsors.

For the former, apprentices co-enroll in Ivy Tech and the apprenticeship program. Apprenticeship sponsors handle related technical instruction, while Ivy Tech offers the general education courses, typically contextualized to the competencies needed for the particular apprenticeable occupation and offered at convenient times and online to accommodate the busy work schedules of apprentices. When the program was first conceived, representatives of the Indiana Commission of Higher Education, Ivy Tech, and others visited apprenticeship programs to evaluate the quality of training and ensure their credit-worthiness. However, they discontinued this formal evaluation process after recognizing that the labor-management apprenticeship programs are typically based on well-vetted nationwide curricula.

In all, apprentices earn 19 credits in general education and 66 to 75 credits through apprenticeship training toward an Associate of Applied Science; hours in on-the-job training equate to two credits a semester. The degree articulates as two years of credit toward bachelor's degrees offered at Indiana State, Indiana University–Purdue, Sullivan University, and Indiana Wesleyan. Ivy Tech is able to offer the degree at no charge to apprentices and their sponsors because money made available through the state's unemployment insurance trust fund covers the cost of textbooks and instructors. Due to the degree completion requirements, apprenticeship sponsors typically restrict program entry to applicants who hold at least a high school diploma or GED.

**New Jersey** evaluates the credit-worthiness of training delivered by apprenticeship sponsors, although funding cuts may derail the effort.

Conceived by Governor Jon Corzine before leaving office in 2010, NJ Place has received funds through the state’s unemployment insurance trust fund to cover the cost of program evaluations conducted by national accreditors such as the American Council on Education. Through this process, apprenticeship programs have been assigned between 25 and 45 credits toward an Associate of Applied Science degree. Each apprenticeship program establishes an articulation agreement with one of the county based, independently run community colleges; however, NJ Place policies mandate that other community colleges accept credits and offer in-county tuition rates for apprentices from across the state who may want to complete their degree there. This enables apprentices to “enroll” in the college that offers the most credits toward a degree and then transfer to their local college to complete degree requirements. By doing so, New Jersey is supporting system building while optimizing educational opportunities for apprentices and the use of state resources.

NJ Place initially evaluated apprenticeship programs in building trades, but has since expanded coverage to include automobile engineering technology, certified nursing assistant, and culinary and corrections positions, among others. However, accreditors have since raised evaluation rates and UI funds are drying up, putting the future of NJ Place in jeopardy.

Finally, **Florida** is piloting an effort that awards college credits for industry-recognized credentials that have been embedded in apprenticeship curriculum. The certificates are evaluated for their credit-worthiness rather than program curriculum, class and work time, and quality of instructors.

The articulation policy grew out of an effort to create a new apprenticeship program for existing employees of a major manufacturing firm. Program curriculum was designed by the state’s Banner Center for Advanced Manufacturing, an industry-specific organization funded through the state WIB to grow businesses by tapping workforce and economic development services.<sup>101</sup> The Banner Center’s curriculum incorporated the Manufacturing Skill Standards Certification, for which Polk State University has agreed to award

15 credits toward an Associate in Engineering Technology. After a lobbying effort, the Florida Department of Education formally recognized the credit-worthiness of MSSC and, since then, more than 100 other industry-recognized certificates. Now, any Florida college that offers students the MSSC certification has to do so for-credit. So far, the Banner Center has sold its apprenticeship curriculum to nine other Florida community colleges, incorporating credits for the MSSC certification in their degree offerings. Banner staff suggests that awarding credits for the certificate has opened the door for apprentices who otherwise would not have considered college.

**Table 3: Statewide Credit Articulation Policies**

	Program elements that articulate to credit toward degree		
	Related Technical Courses	On-the-Job Training	Industry-recognized credentials
Florida			✓
Indiana	✓ <sup>A</sup>	✓	
New Jersey	✓ <sup>B</sup>	✓	
West Virginia	✓ <sup>C</sup>	✓	
Wisconsin	✓ <sup>D</sup>	✓	

<sup>A</sup> Indiana’s Ivy Tech college system awards credit for courses delivered by apprenticeship sponsors.

<sup>B</sup> New Jersey Place evaluates credit-worthiness of courses delivered through apprenticeship sponsor.

<sup>C</sup> For courses delivered through West Virginia Community and Technical College System.

<sup>D</sup> For courses delivered through Wisconsin Technical College System.

## STATE POLICY RECOMMENDATIONS

States have several policy and program options for expanding access to apprenticeship programs for low-income, low-skilled adults. States have adopted some of these options already, while others have yet to be applied. Given the current funding climate,

recommendations are identified as either budget-neutral or investment strategies. In general, states should look for ways to tie apprenticeship to their sector partnership and career pathway initiatives. Doing so would likely spur growth of apprenticeships in high-demand, non-construction sectors; and encourage innovations such as interim credentials, which provide apprentices with momentum points toward program completion as well as industry recognized skillsets. Additionally, sector strategies and career pathways initiatives provide a framework for strengthening alignment with workforce and education systems in ways that connect apprenticeship to college degrees and WIA resources.

### ENCOURAGE EMPLOYERS TO OFFER MORE APPRENTICESHIPS

1. Expand apprenticeship promotion efforts by increasing staff levels of the state apprenticeship agency or, in case of states overseen by federal staff, by supporting positions within community college or workforce development agencies to conduct employer outreach and advance systems alignment (*investment*).
2. Give employers a state tax credit for each apprentice in each year of their employment. States should consider awarding employers a higher credit for employing low-skilled or disadvantaged workers as registered apprentices (*investment*).
3. Establish competitive grants to develop and expand apprenticeship programs in high-growth, high-demand occupations. Add weight or extra points for proposals that have well-defined strategies and goals for employing under-represented and low-income individuals as apprentices, exceeding Equal Employment Opportunity compliance requirements (*investment*).
4. Identify and promote apprenticeship as an allowable use of incumbent worker training money awarded to employers. Add weight or extra points to proposals that have well-defined strategies and goals for engaging entry-level, low-wage employees in apprenticeships (*budget neutral*).

### STEP UP RECRUITMENT AND TRAINING THROUGH ONE-STOPS

5. Add the state or federal apprenticeship office to the list of mandated partners for the state WIA system, and require their co-location at local One-Stop Career Centers (*budget neutral*).
6. Adopt a policy that automatically adds apprenticeship sponsors to the WIA eligible training list (*budget neutral*).
7. Ensure that apprenticeship is listed as a permissible employment and training model in the state WIA plan, as well as other state workforce development initiatives (*budget neutral*).
8. Issue guidance to local One-Stops explaining effective strategies for promoting and supporting apprenticeship, including engaging employers as apprenticeship sponsors, offering to assist in their recruitment and screening activities, and actively informing One-Stop clients about apprenticeable opportunities and using available WIA formula funds to support their training and equipment needs. Provide technical assistance on proper registration and reporting process to ensure apprenticeship placements count toward WIA performance measures (*budget neutral*).
9. Leverage WIA discretionary funds to create incentive money awarded to local One-Stops that have engaged employers as apprenticeship sponsors, supported recruitment through One-Stop, and increased number of clients entering apprenticeships (*investment*).
10. Modify the WIA state plan to ensure at least 5 percent of local formula funds go to support apprenticeship recruitment and training (*investment*).

### ENHANCE PRE-APPRENTICE PATHWAYS TO APPRENTICESHIPS

11. Establish a state certification process for registering pre-apprentices and ensuring quality control of programs. Standards

should set wage and safety protections for pre-apprentices and establish requirements that pre-apprenticeship programs form a partnership with at least one registered apprenticeship program. The formal partnerships must spell out advanced standing that pre-apprentices attain if accepted as an apprentice; however, states should avoid setting overly prescriptive standards for program design and delivery so not to quash innovation or discourage enrollment of hard-to-employ individuals (*budget neutral*).

12. Award competitive grants to launch or expand pre-apprenticeship programs in compliance with above-mentioned state standards. Grants should be targeted to high-growth, high-demand occupations and provide training opportunities for low-skilled adults, not just youth. Grantees should articulate a plan for bridging gaps between community, labor, and employers, and for using WIA funds in creative ways to support training and related services (*investment*).

#### PROVIDE OUTREACH TO ACTIVE APPRENTICES

13. Award competitive grants for mentorship programs that engage apprentices at risk of non-completion (*investment*).
14. Fund and train staff at One-Stops, community colleges, and/or community-based organizations to act as “retention specialists” who work directly with employers to reduce attrition among active apprentices (*investment*).
15. Establish a pilot project, with competitive grant money, for apprenticeship programs that incorporate academic remediation into related technical instruction (modeled after Washington I-BEST or similar successful initiatives) to support apprentices at risk of non-completion due to academic deficiencies (*investment*).

#### LEVERAGE EDUCATIONAL SYSTEM TO SUPPORT APPRENTICESHIP AND IMPROVE PIPELINES TO POSTSECONDARY AND INDUSTRY-RECOGNIZED CREDENTIALS

16. Develop statewide process for awarding college credit toward a degree for related technical instruction, on-the-job training, and embedded industry-recognized credential (*budget impact depending on strategy undertaken*).
17. Establish statewide uniform tuition rate for related technical instruction delivered at community colleges and subsidized with state higher education funds (*investment*).
18. Ensure apprenticeship training is an allowable use of state funds that go to school districts and community colleges for career-technical education (*budget neutral*). Otherwise, consider establishing funding source to support apprenticeship training through public education institutions (*investment*).
19. Utilize Unemployment Insurance Trust Fund dollars to support related technical instruction costs, credit articulation processes, and/or curriculum development for apprenticeships in new or emerging fields (*investment*).

## CONCLUSION

Apprenticeship holds the promise of providing good jobs and a path to self-sufficiency. However, unless states take bold actions to expand apprenticeship opportunities and strengthen entry and completion, low-skilled, low-wage adults may be left behind.

Several states have enacted programmatic and policy innovations to encourage employer development of apprenticeships, increase recruitment, preparation, and completion rates of under-represented individuals, and build apprentices' pathways to postsecondary and industry-recognized credentials. Along the way, states have formed closer ties between the registered apprenticeship system and community college, workforce development, and pre-apprenticeship programs. States have leveraged numerous funding sources to aid in apprenticeship expansion and services, including WIA, OJT, general revenue, federal construction funds, bonds, and the Unemployment Insurance Trust Fund, as well as enactment of tax breaks.

With state budgets running thin for education, workforce development, it is imperative that states find innovative, sustainable ways to support apprenticeship. Based on the experience of many states, this report recommends a variety of budget neutral strategies, as well as some that require financial investment.

### TIPS FOR BUILDING THE CASE FOR APPRENTICESHIP EXPANSION

- ◆ Request access to data collected on apprenticeship programs, enrollments, and outcomes broken out by demographics. If the state resists or does not have the data to respond to the request, engage legislators or the state inspector general to conduct their own audit of apprenticeship system.
- ◆ Enlist the business community to champion apprenticeships as an effective strategy for building a highly skilled workforce.
- ◆ Engage OA apprenticeship staff. Their job performance depends on actively working to improve alignment with community colleges and workforce development agencies. The same goes for state apprenticeship agencies.
- ◆ Replicate and/or continue momentum of Regional Action Clinics as a way to share information and boost coordination among key stakeholders in the state.

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## ENDNOTES

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<sup>3</sup> *American Worker Survey Telebriefing: Findings from the American Worker and American Employer Surveys commissioned by Business Roundtable's Springboard Project*. The Business Roundtable: 2010: <http://businessroundtable.org/studies-and-reports/american-worker-survey-telebriefing/>.

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<sup>7</sup> U.S. Department of Labor Office of Apprenticeship. FAQs, Updated: March 09, 2010: <http://www.doleta.gov/oa/faqs.cfm>.

<sup>8</sup> For more information on program quality and apprentice welfare and wage standards, see 29 CFR Part 29, in particular §29.4–6: <http://www.doleta.gov/oa/pdf/FinalRule29CFRPart29.pdf>. For equal employment opportunity requirements, see Title 29, CFR Part 30: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=99c9a20e960f56be66f17ae91b52c888&rgn=div5&view=text&node=29:1.1.1.1.23&idno=29>.

<sup>9</sup> List of Office of Apprenticeship field staff: <http://www.doleta.gov/oa/stateoffices.cfm>.

<sup>10</sup> For a current list of state apprenticeship agencies, see: <http://www.doleta.gov/oa/stateagencies.cfm>.

<sup>11</sup> See <http://www.iowaworkforce.org/apprenticeship/apprenticeableoccupations.pdf>.

<sup>12</sup> Lerman, Robert. *Training Tomorrow's Workforce: Community College and Apprenticeship as Collaborative Routes to Rewarding Careers*. Center for American Progress. December 2009: [http://www.americanprogress.org/issues/2009/12/pdf/comm\\_colleges\\_apprenticeships.pdf](http://www.americanprogress.org/issues/2009/12/pdf/comm_colleges_apprenticeships.pdf).

<sup>13</sup> FAQs, 2010

<sup>14</sup> Bilginsoy, Cihan. “Delivering Skills: Apprenticeship Program Sponsorship and Transition and Training.” *Industrial Relations*, Vol. 46, No. 4. October 2007.

*Registered Apprenticeship Programs: Labor Can Better Use Data to Target Oversight.* Government Accountability Office. Prepared for U.S. Senate Committee on Health, Education, Labor, and Pensions. August 2005: [www.gao.gov/new.items/d05886.pdf](http://www.gao.gov/new.items/d05886.pdf).

<sup>15</sup> FAQs, 2010

<sup>16</sup> Working Poor Families Project analysis of May 2010 Occupational Employment Statistics, BLS.

<sup>17</sup> Kevin Hollenbeck, “State Use of Workforce System Net Impact Estimates and Rates of Return,” presented at the Association for Public Policy and Management Meetings. Los Angeles, California, November 2008.

<sup>18</sup> Kelly Mikelson and Demetra Nightingale. 2004. *Estimating Public and Private Expenditures on Occupational Training in the United States.* Report to the U.S. Department of Labor. Employment and Training Administration. <http://www.urban.org>.

<sup>19</sup> Lerman 2009.

<sup>20</sup> Registered Apprenticeship Programs: Labor Can Better Use Data to Target Oversight. Government Accountability Office. 2005: <http://www.gao.gov/new.items/d05886.pdf>.

<sup>21</sup> *Workforce Training Results Report: Apprenticeship.* Washington State Workforce Training and Education Coordinating Board. December 2008: [http://www.wtb.wa.gov/Documents/WTR\\_Apprenticeship.pdf](http://www.wtb.wa.gov/Documents/WTR_Apprenticeship.pdf).

<sup>22</sup> Lerman, Robert and Lauren Eyster and Kate Chambers. *The Benefits and Challenges of Registered Apprenticeship: The Sponsors’ Perspective.* The Urban Institute. March 2009: [http://www.urban.org/UploadedPDF/411907\\_registered\\_apprenticeship.pdf](http://www.urban.org/UploadedPDF/411907_registered_apprenticeship.pdf).

<sup>23</sup> Registered Apprenticeships: Labor Could Do More to Expand to Other Occupations. U.S. Government Accountability Office. September 2001: <http://www.gao.gov/new.items/d01940.pdf>.

<sup>24</sup> Ibid.

<sup>25</sup> *Using Registered Apprenticeship to Build and Fill Healthcare Career Paths: A Response to Critical Healthcare Workforce Needs and Healthcare Reform.* U.S. Department of Labor. Undated: [http://www.doleta.gov/oa/pdf/Apprenticeship\\_Build\\_HealthCare\\_Paths.pdf](http://www.doleta.gov/oa/pdf/Apprenticeship_Build_HealthCare_Paths.pdf).

<sup>26</sup> *Using Registered Apprenticeship to Build and Fill Career Paths in Health Information Technology: A Response to Critical Healthcare Workforce Needs and Healthcare Reform.* U.S. Department of Labor. Undated:

[http://www.doleta.gov/oa/pdf/HIT\\_HealthCare\\_Report.pdf](http://www.doleta.gov/oa/pdf/HIT_HealthCare_Report.pdf).

<sup>27</sup> *The Greening of Registered Apprenticeship: An Environmental Scan of the Impact of Green Jobs on Registered Apprenticeship and Implications for Workforce Development.* U.S. Department of Labor. June 2009: [http://www.doleta.gov/oa/pdf/Greening\\_Apprenticeship.pdf](http://www.doleta.gov/oa/pdf/Greening_Apprenticeship.pdf).

<sup>28</sup> Lerman 2009.

<sup>29</sup> Ibid.

<sup>30</sup> For equal employment opportunity requirements, see Title 29, CFR Part 30: <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=99c9a20e960f56be66f17ae91b52c888&rgn=div5&view=text&node=29:1.1.1.1.23&idno=29>.

<sup>31</sup> GAO 2005.

<sup>32</sup> Berik, Gunseli and Cihan Bilginsoy. Still a Wedge in the Door. Women Training for the Construction Trades in the U.S. University of Utah. Working Paper No: 2005-05. October 2005: [http://www.econ.utah.edu/activities/papers/2005\\_05.pdf](http://www.econ.utah.edu/activities/papers/2005_05.pdf).

<sup>33</sup> Lerman 2009B.

<sup>34</sup> Ibid.

<sup>35</sup> Conway, Maureen and Allison Gerber and Matt Helmer. *Construction Pre-Apprenticeship Programs: Interviews with Field Leaders.* Aspen Institute. 2010: <http://www.aspenwsi.org/Publications/10-014.pdf>.

<sup>36</sup> Conway, Maureen and Allison Gerber. *Construction Pre-Apprenticeship Programs: Results from a National Survey.* Aspen Institute. July 2009: <http://www.aspenwsi.org/publications/09-007.pdf>.

<sup>37</sup> Ibid.

<sup>38</sup> Lerman 2009.

<sup>39</sup> Glover, Robert and Cihan Bilginsoy. “Registered Apprenticeship in U.S. Construction Industry.” *Education and Training.* Vol. 47, No. 4. Page 337–349. 2005: <http://www.cpwr.com/pdfs/Bilginsoy%20and%20Glover.pdf>.

<sup>40</sup> GAO 2005.

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<sup>42</sup> GAO 2005.

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<sup>44</sup> Wilson, Corrine. *Construction Apprenticeship Programs: Career Training for California's Recovery*. Center on Policy Initiatives. September 2009:  
<http://www.onlinecpi.org/downloads/Construction%20Apprenticeship%20Programs%20report.pdf>.

<sup>45</sup> GAO 2005.

<sup>46</sup> Lerman 2009B.

<sup>47</sup> Lerman 2009.

<sup>48</sup> Ibid.

<sup>49</sup> See 29 CFR Part 29:  
<http://www.doleta.gov/oa/pdf/FinalRule29CFRPart29.pdf>

<sup>50</sup> For more information, see § 29.13 of above federal rule.

<sup>51</sup> Training and Employment Guidance Letter NO. 02-07: Leveraging Registered Apprenticeship as a Workforce Development Strategy for the Workforce Investment System:  
<http://wdr.doleta.gov/directives/attach/TEGL/tegl2007/TEGL2-07.pdf>.

<sup>52</sup> See:  
[http://www.workingpoorfamilies.org/pdfs/Building\\_Opportunity.pdf](http://www.workingpoorfamilies.org/pdfs/Building_Opportunity.pdf).

<sup>53</sup> The South Carolina Chamber of Commerce published two reports to encourage apprenticeship development: the 2002 report, *Apprenticeship: An Important Avenue for Building a Skilled Workforce in South Carolina*  
<https://21stcenturyapprenticeship.workforce3one.org/view/2001027280545678076> and the 2003 report, *Apprenticeships in South Carolina: Baseline Report and Recommendations*  
<https://21stcenturyapprenticeship.workforce3one.org/view/2001027280191812384>.

<sup>54</sup> The South Carolina General Assembly embedded the funds for Apprenticeship Carolina within the overall budget for the South Carolina Technical College System with the understanding that they would be used for the purpose of expanding registered apprenticeship in the state.

<sup>55</sup> Author interview of Ann Marie Stieritz, March 23, 2011.

<sup>56</sup> Ibid.

<sup>57</sup> Lerman 2009.

<sup>58</sup> See Section 12-6-3477 of the South Carolina Code of Laws:  
<http://www.scstatehouse.gov/code/t12c006.htm>.

<sup>59</sup> South Carolina Department of Employment and Workforce. *PY 2008 Workforce Investment Act Report*. Prepared for the U.S. Department of Labor Employment and Training Administration. October 1, 2009:  
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<sup>60</sup> Stieritz 2011.

<sup>61</sup> Alaska WIA State Plan: <http://labor.state.ak.us/awib>

Alaska Gas Line Workforce Plan: <http://labor.state.ak.us>

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<sup>62</sup> "Apprenticeships in Alaska." *Alaska Economic Trends*. Vol. 29 No. 2, Alaska Department of Labor. 2009:  
<http://labor.alaska.gov/trends/feb09.pdf>.

<sup>63</sup> New Jersey Registered Apprenticeship Incentive Program for the Manufacturing Industry:  
[http://lwd.dol.state.nj.us/labor/employer/training/registered\\_apprenticeship\\_manufacturing.html](http://lwd.dol.state.nj.us/labor/employer/training/registered_apprenticeship_manufacturing.html).

<sup>64</sup> Connecticut tax credits for apprenticeship training in manufacturing, construction and plastics-related trades.  
[http://search.cga.state.ct.us/dtsearch\\_pub\\_statutes.asp?cmd=getdoc&DocId=8211&Index=I%3a%5czindex%5csurs&HitCount=2&hits=2b2+2b3+&hc=4&req=%28number+contains+12%2D217g%29&Item=0](http://search.cga.state.ct.us/dtsearch_pub_statutes.asp?cmd=getdoc&DocId=8211&Index=I%3a%5czindex%5csurs&HitCount=2&hits=2b2+2b3+&hc=4&req=%28number+contains+12%2D217g%29&Item=0).

<sup>65</sup> Rhode Island Tax credit for machine tool, metal trade or plastic process technician apprenticeships  
<http://www.rilin.state.ri.us/statutes/title44/44-11/44-11-41.htm>.

<sup>66</sup> Michigan's School-To-Registered Apprenticeship Program  
[http://www.state.mi.us/career/Core/pdfactsheet/SchoolToRegister-104\\_CP.html](http://www.state.mi.us/career/Core/pdfactsheet/SchoolToRegister-104_CP.html).

<sup>67</sup> Arkansas Youth Apprenticeship Tax Incentive for Employers:  
<http://ace.arkansas.gov/youthapprenticeship/TaxIncentivesforEmployers.doc>.

<sup>68</sup> Louisiana Registered Apprenticeship Tax Credit:

<http://www.legis.state.la.us/lss/lss.asp?doc=453221>.

<sup>69</sup> West Virginia Apprenticeship Training Tax Credits: <http://www.legis.state.wv.us/WVCODE/Code.cfm?chap=11&rt=13W#13W>.

<sup>70</sup> WAC 131-28-026  
<http://apps.leg.wa.gov/wac/default.aspx?cite=131-28-026>.

<sup>71</sup> Washington State Board of Community and Technical Colleges' fee schedule for related technical instruction: [http://www.sbctc.edu/college/workforce/2010\\_11\\_fee\\_guidance.pdf](http://www.sbctc.edu/college/workforce/2010_11_fee_guidance.pdf).

<sup>72</sup> Washington Apprenticeship Funding Guidelines: [http://www.sbctc.edu/college/workforce/apprenticeshipguidelines\\_June07.pdf](http://www.sbctc.edu/college/workforce/apprenticeshipguidelines_June07.pdf).

<sup>73</sup> See 5A-I:  
<http://www.mainelegislature.org/legis/statutes/26/title26sec2006.html>.

<sup>74</sup> Virginia Worker Retraining Tax Credit:  
[http://www.tax.virginia.gov/Web\\_PDFs/busforms/WRC.pdf](http://www.tax.virginia.gov/Web_PDFs/busforms/WRC.pdf).

<sup>75</sup> Kansas Demonstration Projects Targeting Dislocated Workers:  
<http://www.kansasapprenticeship.org/Pages/DislocatedWorkerGrant.aspx>.

<sup>76</sup> For more information on the Florida Workforce Development Education Fund, see <http://www.oppaga.state.fl.us/reports/pdf/0156rpt.pdf>, as well as apprenticeship specific information at <http://www.oppaga.state.fl.us/profiles/2121/>.

<sup>77</sup> Author interview with Linda Sorrell, April 5, 2011.

<sup>78</sup> Ibid.

<sup>79</sup> For more information on Wisconsin Rise, see: <http://risepartnership.org/>.

<sup>80</sup> Policy Recommendations and Action Plan for Wisconsin Rise. Updated February 2010:  
[http://risepartnership.org/pdf/policy\\_agenda.pdf](http://risepartnership.org/pdf/policy_agenda.pdf).

<sup>81</sup> For more information on best practices, see: *Mapping Green Career Pathways: Job Training Infrastructure and Opportunities in Wisconsin*. The Apollo Alliance and the Center on Wisconsin Strategy. January 2010:  
<http://apolloalliance.org/wp-content/uploads/2010/01/mappingreportwisconsinjan27.pdf>.

<sup>82</sup> Wisconsin's Transportation Alliance for New Solutions program:  
[www.dot.wisconsin.gov/business/engrserv/newsletter/qtr1/trans.htm](http://www.dot.wisconsin.gov/business/engrserv/newsletter/qtr1/trans.htm). Note: the Governor Walker's administration has suspended apprenticeship requirements on highway construction projects. See:  
[http://dwd.wisconsin.gov/apprenticeship/executive\\_order108](http://dwd.wisconsin.gov/apprenticeship/executive_order108).

htm.

<sup>83</sup> Michigan Road Construction Apprentice Readiness program: [www.michigan.gov/nwlb/0,1607,7-242-52874-210085--,00.html](http://www.michigan.gov/nwlb/0,1607,7-242-52874-210085--,00.html).

<sup>84</sup> Minnesota statute requiring use of training funds and submission of biannual report:  
<https://www.revisor.state.mn.us/statutes/?id=174.03>.

<sup>85</sup> New Jersey Construction Trades Training Program for Women and Minorities:  
[www.doleta.gov/Performance/Results/AnnualReports/PY2007/NJ\\_WIA\\_Annual\\_Report\\_Narrative-2008.pdf](http://www.doleta.gov/Performance/Results/AnnualReports/PY2007/NJ_WIA_Annual_Report_Narrative-2008.pdf).

<sup>86</sup> See page 150–151 of Chapter 60 of federal regulations: Office of Federal Contract Compliance Programs, Equal Employment Opportunity:  
<http://www.gpo.gov/fdsys/pkg/CFR-2010-title41-vol1/pdf/CFR-2010-title41-vol1-subtitleB-chap60.pdf>.

<sup>87</sup> More information, see: [http://www.encycitycities.org/wp-content/uploads/062309/BCTD%20TriFold\\_v6.pdf](http://www.encycitycities.org/wp-content/uploads/062309/BCTD%20TriFold_v6.pdf).

<sup>88</sup> Pre-Apprenticeship 6A-23.010. Florida Administrative Code:  
[https://www.flrules.org/gateway/notice\\_Files.asp?ID=9762873](https://www.flrules.org/gateway/notice_Files.asp?ID=9762873).

<sup>89</sup> Maine Department of Labor (1992). "Apprenticeship rules: Rules relating to labor standards for registration of pre-apprenticeship programs." 26 MRSA §2006:  
[www.maine.gov/sos/cec/rules/12/181/181c003.doc](http://www.maine.gov/sos/cec/rules/12/181/181c003.doc).

Connecticut state regulation setting standards/registration process for youth pre-apprenticeship program. See Sec. 31-51d-2(f) and Sec. 31-51d-3.(b):  
[www.ctdol.state.ct.us/progsupt/appren/appregs.htm](http://www.ctdol.state.ct.us/progsupt/appren/appregs.htm).

<sup>90</sup> Chapter 7.00: Apprenticeship Training. Code of Massachusetts Regulations. See: 7.05: Registration for Pre-Apprentices and Pre-Apprentice Programs:  
[http://www.mass.gov/Elwd/docs/dat/Single\\_Column\\_Regulations\\_6Dec10.pdf](http://www.mass.gov/Elwd/docs/dat/Single_Column_Regulations_6Dec10.pdf).

<sup>91</sup> Conway, Maureen et al. 2010.

<sup>92</sup> Legislative Audit Bureau. 2010.

<sup>93</sup> For more information on the Wisconsin Regional Training Partnership (WRTP)/BIG STEP (one of the two organizations awarded funding), see page 8 of the Apollo Alliance report (2010): <http://apolloalliance.org/wp-content/uploads/2010/01/mappingreportwisconsinjan27.pdf>.

<sup>94</sup> Bready, Pat et al. *Construction Apprentice Retention: Best Practice Research*. Greater Cincinnati Workforce Network: July 2011:  
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<sup>95</sup> See 38.001:

<https://docs.legis.wisconsin.gov/statutes/statutes/38>. Also see:  
2.60.1:

<http://systemattic.wtcsystem.edu/Instruction/ESM/2.0-Program-Standards/2.60.1-APPRENTICESHIP-PROGRAMS.doc>.

<sup>96</sup> See 6.12.1:

<http://systemattic.wtcsystem.edu/Instruction/ESM/6.0-Apprentice-Related/6.12.1-Technical-Studies-Journeyworker-AAS.doc>.

<sup>97</sup> Author interview with Karen Morgan, Director of the Wisconsin Bureau of Apprenticeship Standards, May 2, 2011.

<sup>98</sup> See: <http://dwd.wisconsin.gov/apprenticeship/faq/faq2.htm>.

<sup>99</sup> See:

<http://www.wvctcs.org/downloads/AAS%20in%20Occupational%20Development.pdf>.

<sup>100</sup> See: <http://www.ivytech.edu/workforce-solutions/apprenticeship-national.html>.

<sup>101</sup> See: <http://www.banner-mfg.org/>.