

ODOT/BOLI Highway Construction Workforce Development Program



Office of Civil Rights

*Resources for Equity and Opportunity
in Oregon Transportation*



Final Report, IAA 30668
July 2015 – June 2017

Executive Summary

The primary goals of the ODOT/BOLI partnership are to expand and facilitate ODOT's existing Highway Construction Workforce Development Program to:

- increase awareness of highway construction careers (career exploration);
- provide highway construction training and career opportunities to a diverse population of individuals (services to apprenticeship seekers/applicants);
- reduce or remove barriers and provide supports for individuals who pursue opportunities to engage in the highway construction trades and related activities (services to current apprentices); and
- create a respectful workplace culture so that the work environment will be conducive to a diverse workforce.

The career exploration portion of the program is an ongoing work in progress, as ODOT/BOLI continues to refine how to balance the need for broad outreach in some areas (such as rural communities) and to our target populations (women and minorities) with the need to craft a more focused approach to working with youth, in particular. A lot of the career exploration during the period of this agreement has been through construction career camps for middle and high school students and career fairs that draw both students and job seekers.

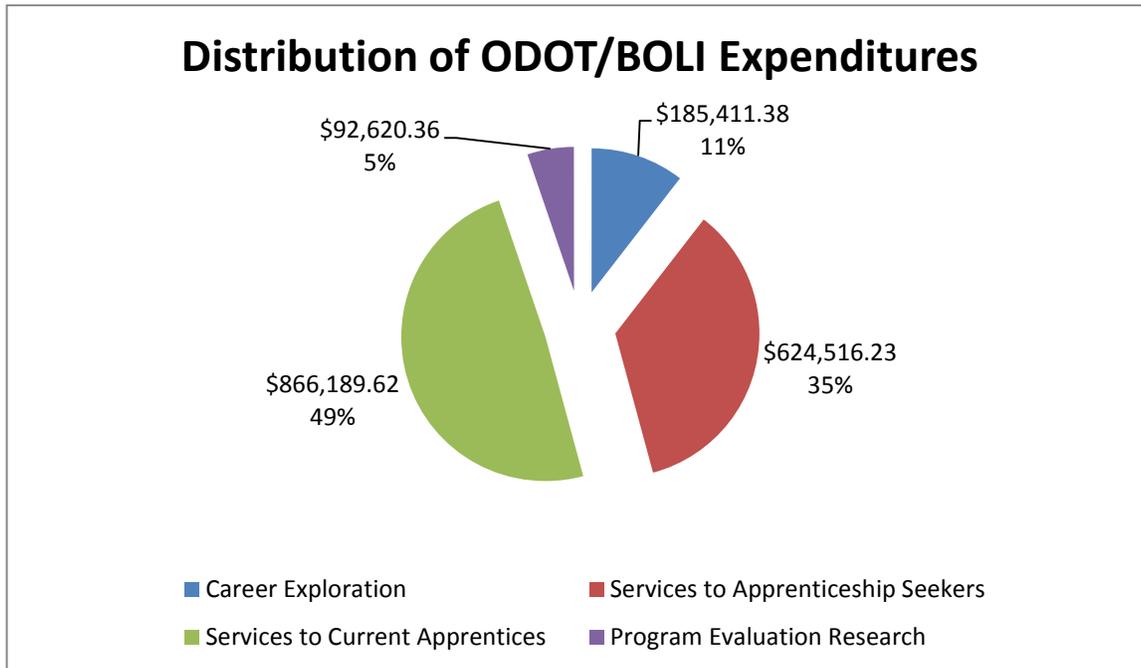
ODOT/BOLI has focused on bringing together pre-apprenticeship programs with highway construction apprenticeship programs to improve opportunities for individuals who graduate from a pre-apprenticeship program to get more trade-specific training and improved access to registration into a highway trade apprenticeship program. Through these efforts, ODOT/BOLI has improved placement efficiency and effectiveness, including two graduating classes from a carpenter trades specific class who were given the opportunity to enter the carpenter program with advanced standing (at 2nd period) and a third more abbreviated class (without advanced standing) that was offered at Linn-Benton Community College to offer opportunities outside of the Portland Metropolitan Area.

A substantial part of the program, focusing on supportive services for current apprentices in the highway trades, is now well established and is showing evidence of success, particularly for women apprentices (see the research findings). ODOT/BOLI has continued to refine the program in terms of design and service delivery as the number of new apprentices has grown and new barriers have been identified. One vendor (Cooper Zietz Engineers, dba Akana) has provided these services since the beginning of the program, which has provided a degree of consistency. To assure that others have the opportunity to participate, though, ODOT/BOLI will be issuing a new Request for Proposals for all of the services to current apprentices except for delivery of child care subsidies, which is going to be provided through an interagency agreement with the state's Department of Human Services.

Pilot projects were established to promote respectful workplaces in highway construction with initiatives emphasizing bystander training and supervisor training, as research has continued to show unacceptably high levels of harassment and discrimination.

In general, the career exploration, pre-apprenticeship programs, and trades intensive classes are part of the recruitment system for the highway construction trades, while the supportive services for current apprentices and initiatives to promote respectful workplaces are part of the retention efforts.

ODOT/BOLI expenditures for 2015-2017 were roughly evenly divided between recruitment and preparation (46%) and retention (49%) with about 5% devoted to program evaluation research.



In 2011, the Transportation Equity Network (TEN) touted the “Missouri Model”¹ (The Road to Good Jobs: Making Training Work, October 2011, p. 12), but when the country fell into recession the Missouri Model needed to shift from a focus on recruitment to one focused on retention:

*The structure of today’s training programs has to be focused on retention of workers, not just recruitment. In 2007, on the I-64 highway project, 80% of the workforce development program was focused on recruiting, 20% on retention. Today, that’s flip-flopped: 80% has to be on retention, 20% on recruiting. (Dr. John Gaal, Director of Training and Workforce Development at Carpenters’ District Council of Greater St. Louis, **The Road to Good Jobs**, p. 13)*

The *Oregon Model* is built to adapt to changing economic conditions, balancing all stages of recruitment, including pre-apprenticeship classes, with retention of current apprentices. The ODOT-BOLI program was featured in “Untapped Resources, Untapped Labor Pool: Using Federal Highway Funds to Prepare Women for Careers in Construction,” a report by the Institute for Women’s Policy Research that was issued in December 2014.

¹ TEN describes the Missouri Model as “reserving 0.5% of project budgets for on-the-job training and apprenticeship programs, and devoting 30% of the work hours to economically disadvantaged individuals, minorities, and women.”

Career Exploration

Career Exploration is a sort of a *What Color Is Your Parachute?* (© Richard Nelson Bolles) type of strategy that is directed toward Oregon’s highway construction industry. In Career Exploration activities, ODOT/BOLI engages middle school students, high school students, young adults (in or out of school), and adult community members in every corner of the state in learning about the job prospects in highway construction, the culture and tools of the industry, and some of the basic hands-on skills that are employed in building Oregon’s roads and bridges. The various elements of career exploration are reported under a single activity from the statute, i.e. orientations on the highway construction industry (ORS 184.866(3)(c)), but there are many ways to orient the community (in general) and youth (in particular) to highway construction.

Construction Career Camps

“Building Girls” Career Camps in Portland

Girls Construction Camps (summer 2015):

Oregon Tradeswomen provided construction camps to high school and middle school girls in the summer of 2015. These camps were similar to those reported in previous final reports.

Constructing Hope and Northwest College of Construction Career Camp

ODOT-BOLI provided a construction career camp through OTI subcontractor Constructing Hope in partnership with Northwest College of Construction (NWCOC). This camp was similar to those reported in previous final reports.

Phoenix Charter School

ODOT/BOLI provided a free construction career camp for young girls, ages 11-14, to ‘Explore the Trades’ at the Phoenix School of Roseburg.

The Exploring the Trades 2017 Summer Camp targeted youth of Douglas County age 14 – 18. Two youth age 16 & 18 were also hired to assist volunteers and instructors and to help maintain a clean, healthy and safe worksite. Campers engaged in hands on workshop activities geared towards introducing them to entry level experience in five trades related to the highway industry. Construction Craft Laborer, Cement Mason, Carpentry, Iron Worker and Heavy Equipment Operator. Campers assisted in building a shed for local non-profit which included excavation site prep, foundation form and pour, and carpentry of structure. Daily safety meetings, apprentice style log booking, and daily end shift debriefs encouraged camper awareness of what they did and how it can relate in future employment opportunity. Campers and staff engaged with Wolf Creek Job Corps in a visit to their campus for a comprehensive tour and learning opportunity about their programs and services.

There were thirteen (13) participants in camp activities for a total of 535 hours of learning activities. Eighty (80) hours were compensated by the contract for junior advisor wages. Over \$1000.00 of in-kind materials were donated towards camp outcomes. These were sourced from Knife River donating the concrete. Wolf Creek Job Corps staff, Job Corps students, and other professionals donated 263 hours of volunteer time. Campers also participated in our summer lunch program. Its value is estimated at \$360.00. Heavy equipment time valued at \$1,750.00 was also donated.

Baker School District

ODOT/BOLI provided a construction career camp in the Baker School District in June 2017. The focus of the camp included an Introduction to Safety and Power Tools/Hand tools and an Introduction to Six Careers Related to Highway Construction. The camp included tours of work sites, and individuals completing the camp were presented with certificates of completion.

Participants attended the Women in Trades summer camp from June 19-23rd, 2017, as well as completing 3 days of instruction in Baker County and 2 days of instruction in Union County. One day was added to incorporate more time for drafting and 3D printing, and they added an architecture component with examples of how that career ties into the Trades.

The “Career exploration in the Trades” camp for girls/women included a total of 11 participants who were between 16 and 26 years of age. The camp focused on promoting success for women in the trades through education, leadership and mentorship.



- 1) Survey results measuring student interest in a Highway Construction career pathway and other trades are shown in the pre/post results that over 50% are interested. A career exploration exercise was completed along with a daily journal to address participants’ experiences and learning.
- 2) Tours Taken: Boise Cascade, Triple C Redi Mix, Natural Structures, Outdoor RV Manufacturing, ODOT, Eastern Oregon University, and downtown Historical Baker City.
- 3) Presentations:
 - a) Chris Parker - her experience as a carpenter and job foreman.

- b) Each tour (above) - jobs in the company and company operation.
 - c) Eastern Oregon University - opportunities and campus tour.
 - d) Marley Robb - architecture in historic Baker City and how to use your eyes to see buildings/space.
- 4) Skill Building experiences: Introduction to Hand/Power Tools, Surveying, Framing, Cement work, Robotics programming, drone piloting, heavy equipment simulators and real equipment operation, Introduction to CADD, Solidworks, Revit, and 3D Printing.



Participants were involved in a number of presentations, skill building experiences, and tours that helped facilitate their understanding and interest in a highway or construction trade. Speakers addressed many topics: job opportunities, resume building, soft skills, their experience and what was important in getting them to their goals, interview skills, training offered within companies to progress upward, and educational needs.

The women at ODOT offered mentorship, encouraged the girls to try new things, and find something they love to do as a career. The skill building experiences gave the participants experiences so they could see first-hand what could be involved in a future involving this work. Tours provided a real perspective of what a work environment could look like and what opportunities are offered in each company.

Career/Trade Fairs

ODOT/BOLI sponsored multiple career/trade fairs in different parts of the state, including the Women in Trades Fair in ODOT Region 1 (2016 and 2017), the National Association of Women in Construction (NAWIC) Construction Career Day in ODOT Region 2 (2016 and 2017), the Construction and Utility Career Day in ODOT Region 5 (2017 only), an Urban League Job Fair in ODOT Region 1 (2016 only), and an OTI Diversity Summit in ODOT Region 1 (2016 only).

Services to Apprenticeship Seekers/Applicants

The central component of services to apprenticeship seekers/applicants is pre-apprenticeship training. While most pre-apprenticeship training programs also provide career exploration services in order to generate demand for pre-apprenticeship training and provide other services post-graduation, the program identifies five inter-related activities from the statute as part of services to apprenticeship seekers/applicants: a) pre-apprenticeship programs (ORS 184.866(3)(a)); b) basic skills improvement classes (ORS 184.866(3)(d)); c) career counseling (ORS 184.866(3)(e)); d) remedial training (ORS 184.866(3)(f)); and entry requirements for training programs (ORS 184.866(3)(g)).

State Guidelines for Pre-Apprenticeship Training

The Oregon State Apprenticeship and Training Council (OSATC) has guidelines for approval of pre-apprenticeship programs that can be utilized for “direct entry” exceptions to JATC selection procedures for the purpose of increasing diversity:

1. *A letter of intent from a Registered Apprenticeship Program indicating the program has been designed to provide quality instruction and related work experience. That successful completion of the program will prepare participants to meet and/or exceed the minimum qualifications for the apprenticeship program;*

2. *A program packet that includes the information listed below:*

a. Cover Sheet

Identify the need for the pre-apprenticeship program and the target population.

Include a statement clearly describing the program and the organization operating the pre-apprenticeship training.

b. Objectives/Outcomes/Competencies/Indicators/Benchmarks

Provide a statement of what a pre-apprentice participant will have accomplished when they graduate from the program, for example:

Our graduates have demonstrated the ability to:

- *Maintain at least 90% attendance*
- *Dress appropriately for work (boots, sturdy pants, tool belt...)*
- *Remain drug free (we conduct random tests)*
- *Work comfortably with basic construction tools*
- *Understand essential construction practices and terminology*

Pass a set of construction competencies:

- *Measure and cut lumber accurately*
- *Identify common sizes of lumber, sheet goods and fasteners*
- *Read basic blueprints*
- *Lay out, frame and stand a stud wall*
- *Build a simple concrete form and participate in a concrete pour*
- *Set up a carpenter's workstation quickly and completely*

- *Demonstrate competency in using all stationary shop tools*

c. Course Outline

This is an overview of the academic and manipulative portions of the program. Individual course descriptions, class hours and measurement tool(s) used to determine successful completion of classes should be provided in this section.

d. Training Facilities

Description of the facilities used for pre-apprenticeship training.

e. Participant Population

What are the demographics of the intended program participants? What are the tools and activities used to recruit students, and how are women and minorities encouraged to enroll in the program?

f. Instructor Qualifications

List the knowledge, skills and abilities required to be an instructor in this program.

Pre-Apprenticeship Graduates Entering Apprenticeship

ODOT/BOLI provided support for pre-apprenticeship programs that collectively placed **99** graduates in apprenticeship programs in the highway construction trades from July 1, 2015 through June 30, 2017, including new registrations and apprentices returning or transferring during the biennium. Of these, **59** were graduates of Oregon Tradeswomen, Inc. (OTI) classes and **40** were graduates of Constructing Hope (CH) classes. In addition, **27** of these pre-apprentice graduates also completed a trades pre-apprenticeship class (20 for carpenters, 4 for laborers and 3 for ironworkers). Most of the pre-apprentice graduates were registered in either the union carpenter committee (67) or the union laborer committee (14).

Apprentice registrations overall were much higher for the period of July 2015-2017 for two of the largest apprenticeship committees served by the ODOT/BOLI program. We looked at new registrations, excluding those who later transferred. The union carpenter committee (MA 1057) registered 1243 new apprentices for an average of 621.5 per year compared with a 10-year average of 285.1 during the decade of 2001-2010. Likewise, the union laborer committee (MA 1058) registered 185 new apprentices for an average of 92.5 per year compared with a 10-year average of 66.4 during the decade of 2001-2010. Even with the strong growth overall, the rates of women and minorities being registered increased in the union programs overall in the 2015-2017 biennium compared with the decade before the program (2001-2010).

Looking at six union programs², the registration of women apprentices represented 9.9% of all registrations for the period of July 2015-June 2017 compared with a 10-year average of 8.2% prior to the

² MA 1013 (Ironworkers), MA 1015 (Cement Masons), MA 1024 (Painters), MA 1041 (Operating Engineers), MA 1057 (Carpenters), and MA 1058 (Laborers); the union programs have had a closer working relationship with the pre-apprenticeship programs and get the majority of placements. The percentage of women apprentices registered was considerably lower than the 10-year average for MA 1024 (13.6% versus 17.1%) and MA 1041 (6.5% versus 16.4%). The percentage of minorities registered was vastly lower for 1041 than the 10-year average (3.2% versus 16.4%). Others were comparable or higher. See Appendix D for all figures.

start of the ODOT/BOLI program. The union carpenter committee (MA 1057) stood out with respect to women apprentices during this period with 123 women registered out of 1243 new apprentices (9.9%) compared with a 6.6% average over the 10-year period of 2001-2010.

MA 1057 Registrations of Women in Biennium Compared with 10-Year Average		
	Average # Women per Year	% Women
January 2001-December 2010	18.7	6.6%
July 2015-June 2017	61.5	9.9%

Looking at the same six union programs, the registration of minority apprentices represented 33.5% of all registrations for the period of July 2015-June 2017 compared with a 10-year average of 24.5% prior to the start of the ODOT/BOLI program. The union carpenter committee (MA 1057) and the union painter committee (MA 1024) stood out with respect to minority apprentices during this period with 435 minorities registered out of 1243 new carpenter apprentices (35.0%) and 28 minority apprentices out of 66 new painter apprentices (42.4%) compared with 10-year averages of 22.5% and 22.7% respectively.

MA 1057 Registrations of Minorities in Biennium Compared with 10-Year Average		
	Average # Minorities per Year	% Minorities
January 2001-December 2010	64.2	22.5%
July 2015-June 2017	217.5	35.0%

MA 1024 Registrations of Minorities in Biennium Compared with 10-Year Average		
	Average # Minorities per Year	% Minorities
January 2001-December 2010	8.2	22.7%
July 2015-June 2017	14	42.4%

OTI and CH Pre-Apprenticeship Training

Oregon Tradeswomen, Inc. and Constructing Hope, nonprofits providing pre-apprenticeship training, job placement, supportive and retention services in the Greater Portland Area, including ODOT Regions 1 – 5, collaborated on the BOLI-ODOT pre-apprenticeship training and apprenticeship retention initiative. Through the course of the two-year contract period, intensive outreach efforts serving as a recruitment mechanism and career education component for the construction industry. Both organizations conducted career education and orientation sessions throughout the service areas, which not only serve as a recruitment tool for the pre-apprenticeship training, but also as a workforce pipeline directly to employers and registered apprenticeship providers in the skilled heavy highway trades.



In addition to the orientation sessions, we conducted targeted mailings to households and agencies to promote attendance at our annual Career Fairs, attracting over 1,745 women and girls over the course of the two-day event. This included display ads for in each ODOT Region, targeting print media in communities outside of the urban core, and print advertisements on public transportation at TriMet through leveraged marketing. Through our outreach efforts, we were able to connect other community-based organizations with Julie Myers of the Civil Rights Division at Oregon Department of Transportation to utilize National Apprenticeship Day as a vehicle to promote pre-apprenticeship training, registered apprenticeship and highlight women in skilled trades. The placement of graduates of the pre-apprenticeship training program exceeded the goals of the initiative with 48 placements as of the close of the initiative.

Success Story

Oregon Tradeswomen has produced the annual Women in Trades Career Fair since 1993 with the goal of increasing diversity and the overall number of women working in high-paying, high-skill careers in the construction, mechanical, technical, utility, and highway trades. The Fair offers authentic, hands-on workshops and activities designed to provide realistic experiences, leaving a lasting impact on career seekers, students, educators, and everyone who attends the event.



In partnership with dedicated industry sponsors, OTI's Women in Trades Career Fair serves to connect career explorers and aspiring tradeswomen with opportunities for apprenticeship training, employment, and careers while also offering a unique opportunity for school-age girls to explore career options they may not otherwise have the chance to consider.

Researchers from Portland State University conducted an evaluation of the pre-apprenticeship classes provided by Oregon Tradeswomen (OTI) and Constructing Hope (CH). Among the findings:

The OTI and CH pre-apprenticeship programs serve marginalized workers who would likely not find an alternate pathway into construction. Groups served by OTI and CH include: women, racial/ethnic minorities, low income individuals, and individuals with a history of criminal justice involvement.

Pre-apprenticeships have been successful in placing graduates in apprenticeships as well as in other jobs in construction. In our analysis of OAS data of all registered apprentices active in 2014-2015, we found that 21.7% of white women had completed a pre-apprenticeship and 31.5% of women of color had completed a pre-apprenticeship (in comparison to 2.1% of men of color and less than 1% of white men). Thus, pre-apprenticeships are an important mechanism for increasing diversity in the construction workforce in Oregon, particularly regarding the recruitment of female apprentices. Expanding pre-apprenticeships (particularly those with an emphasis on serving marginalized workers) will continue to promote the diversity of the construction trades.

Pre-apprenticeships also promote retention by offering social support services, such as individual and group mentoring. Open ended questions from participants who were graduates of pre-apprenticeship currently working as apprentices or in other jobs in construction noted that they found ongoing support from OTI and CH helpful in navigating their current jobs. Analysis of

OAS data show that receiving non-financial supportive services has a positive effect on completion rates.

Pre-apprenticeship graduates have significant challenges that will impact their ability to persist in an apprenticeship (e.g. being a woman, being a racial/ethnic minority, having a criminal record, having a history of poverty or low-income). This likely explains why pre-apprenticeship graduates are less likely to complete an apprenticeship than those who enter into apprenticeship through alternate pathways. Additional retention services would be helpful in promoting the retention of these workers.

Participants were asked after completing the pre-apprenticeship classes, “What are three things you wanted to learn (or learn more about) but didn’t in your pre-apprenticeship program?” Students offered a variety of responses, of which the most common type of response was related to having more hands-on training and practice with specific skills. Other responses included: more information or skills related to specific trades, more information about construction culture, more information about green building, more information about union and open shop, and more information on budgeting and financial planning.

Portland Youthbuilders

ODOT/BOLI provided support for Portland Youthbuilders (PYB) pre-apprenticeship program in the last two months of the reporting period.

PYB Construction students had several opportunities to learn about apprenticeships and career pathways through field trips and visitors to PYB during this period. On May 4th, for instance, the Allied Mason Trades and Cement Masons Joint Training Center hosted students for a presentation and hands-on activities. This visit inspired one student to apply to the Cement Masons and supported the decision of another student to join the Brick Masons. Then, on May 11th, a large cohort of PYB's newest enrollees had the opportunity to visit the Laborers' and Sheet Metal Institute Training Centers.

In June, PYB Career Coach, Danny Van Voorhis, arranged mock-interviews with Michael Burch from the Carpenters and Bridget Quinn from IBEW Local 48 to better prepare students to be able to enter apprenticeship placements. Danny also took four students to visit the Northwest College of Construction to explore this pathway to entering the Laborers. Students have also connected with Oregon Tradeswomen, Inc. (OTI), as they continue to be a regular partner on worksites.

Overall, during the two months of this project (May and June 2017), PYB served 44 students in its construction pre-apprenticeship training program. The racial demographics for this group of students support the goal to increase diversity in the construction workforce: 25% African-American, 9% Asian-American/Pacific Islander, 25% Caucasian, 34% Latin-American, and 7% Native-American. The gender demographics for this group are: 80% Male, 20% Female. PYB continues to refine targeted outreach efforts to increase the number of women in the trades, and offers a Women-in-Construction specific-training to build community and reinforce support for women who enter PYB's pre-apprenticeship training program.

Twenty-two (22) new construction students completed PYB's Pre-Program Challenge (PPC) in the first week of May. These students were tasked with building a flat surface under the training roof of PYB's

main school site for students to work on their carpentry skills. They learned basic construction skills by framing a 32'x28' floor structure on 6x6 joists. In 6 one-hour classes, they framed 12 8'x8' pieces and three 4'x8' pieces to be bolted together and set level across PYB's uneven asphalt surface. In the framing process, students developed strong skills in site setup and organization, measuring and accurately marking, cutting with circular saws, basic framing layout and hand nailing flush on an uneven surface.

Current Job Sites/Projects

PYB continues to primarily work with Habitat for Humanity to build and refurbish housing for low-income families. In May, a PYB construction crew led work on siding the ninth house students have worked on in the Habitat Helensview Townhouse Development. During this period, crews worked on a few additional Habitat projects: repairing a fence on a single-family lot, framing and installing an office door in Hacienda office in the Living Cully building, and tearing off a roof and existing deck for another low-income family home. PYB also worked with partner O'Neill/Walsh at their St. Francis site during this time. A crew framed a garden/storage shed at the site. This partnership gave students exposure to a commercial construction site.

PYB crews continue to support local efforts to address homelessness through the construction of tiny houses, also called "homeless pods." The Re-Building Center has been the primary partner for these activities and the worksite for building the pods. Crews have worked on four pods during this two-month period, using both new and recycled materials to frame, insulate, sheet, roof and finish these structures. Students develop a broad array of construction skill sets during their time at PYB. The Construction Department has developed a number of projects on PYB's site that have given students more opportunities for education in green-building and sustainability practices as well as giving them more opportunities to show leadership in planning projects and collaborating on their completion.

During this two-month period, crews installed and stained permanent braces for the roof structure for PYB's Outdoor Classroom and built a temporary gable tent on top of the shed roof to dry the surface in order to install waterproof membrane and soil. Students also framed the new Outdoor Kitchen structure to match the style of the Outdoor Classroom. They framed in a space for a 12' countertop with a gas grill insert. They formed, poured and finished a concrete countertop for the kitchen and installed hardibacker for tile under the counter. Finally, as mentioned above, students have taken ownership of a project to build a construction training platform that models the platform at the Carpenter's apprenticeship training site. This project will address the difficulties students have training on PYB's uneven pavement as it will ease the process of framing and snapping lines.

Fourteen (14) construction students who were served in this period have earned a pre-apprenticeship BOLT Credential, and three of these students have earned their Tier 1 certification. Students earn this credential through building affording housing, mastering construction competencies, attending classes in construction basics, and receiving career coaching and placement assistance. Twenty-six of twenty-nine (26 of 29) students who are still enrolled in PYB program continue to work toward earning this certification. (Three current students already earned this certification and are working on academic goals as a part of PYB's programming.) PYB has a commitment to our network of employers and apprenticeship programs to recommend students who are work-ready and can assume the responsibilities associated with employment and apprenticeship.

Linking Pre-Apprenticeship with JATC Trade-Specific Intensive Classes

OTI Trades Intensive Classes (Cement Masons, Ironworkers, Laborers)

ODOT/BOLI's vendor OTI was provided Intensive Classes (aka Boot Camps) for one of the highway trades but was having difficulty getting enough pre-apprentice graduates to express interest in the additional preparatory training.

Akana Trades Intensive Classes (Carpenters)

Akana provided three Trades Intensive Classes with the Pacific NW Carpenters. The first two were five weeks in length and involved learning the aspects of Bridge Construction from start to finish with a different focus each week, as follows:

- Week One - Construction Trades Math. Students worked on their math skills and learned how trades math is applied in the field for different applications.
- Week Two - Basic Blue Print Reading. Students worked on basic blue print reading, including identifying symbols, lines, and where to locate information within the prints. This work also tested their math skills by adding/subtracting dimensions.
- Week Three - Leveling & Layout. Students used both math and blue print reading skills while learning how to level and layout the work presented in the plans. During these courses, students were able to build a 16' x 32' deck. This was the pre-empt work where there will be concrete forms set up for building an Anatomy of a Bridge in week five.
- Week Four - Basic Concrete. This class taught students about different types of construction and different types of form work and foundation work used to prepare for concrete placement in the building of highways and bridges.
- Week Five - Anatomy of Bridge Construction. Students constructed a box-girder bridge span.

During these courses, each student was evaluated on a daily basis, and for each week the evaluation was tallied to a percentage for the week. Students were then ranked by a score resulting from the evaluation percentage earned during the full course of the training.

The third class was held in Albany with students recruited by Blue Sun, who emphasize job placement for disabled veterans. This class did not include the bridge construction component but was an important opportunity for apprenticeship seekers outside the Portland metropolitan area.

To proactively address Oregon's shortage of skilled trades workers, the Oregon Bureau of Labor and Industries (BOLI) and the Oregon Department of Transportation (ODOT) initiated several programs to build public awareness about careers in the heavy highway construction trades and to provide critical support to current apprentices—especially among women, minorities, and underrepresented groups. To build a robust statewide initiative, the agencies awarded a contract to provide Trade Specific Pre-Apprenticeship Training and Apprentice Social Support Services to do targeted outreach and support services for the underrepresented groups of women and minority populations. Akana, formerly Cooper Zietz Engineers, Inc., has been the prime contractor and has been supported by its subcontractors Pacific Northwest Carpenters Institute (PNCI), Oregon Tradeswomen Inc. (OTI), Constructing Hope (CH) Pre-Apprenticeship programs, BlueSun Inc. Pre-Apprenticeship Programs.

This interim report summarizes our team's efforts during the period of July 1, 2015 to June 30, 2017 to provide the following services:

- **Career Exploration:** Services to educate, interview, assess and guide qualified applicants towards available career pathways in the Pacific Northwest Carpenters apprenticeship training programs.
- **Carpenters Trade Specific Training:** Services to inform, educate, support and prepare qualified applicants for direct entry into the Pacific Northwest Carpenters Institute Apprenticeship Training program.
- **Pre-Employment Counseling:** Support services provided for potential applicants including: assessment, education, guidance, and training about other career opportunities in the heavy highway trades apprenticeship programs, as well as providing screened applicants with case management, career guidance, vocational instruction, and financial assistance.

From July 2015 through June 2017, three training classes were conducted by our subcontractor PNCI. Two 5-week Bridge Anatomy classes were held in Region 1 at the PNCI training center in Portland. One 3-week Carpenters Preparation Training class was held by PNCI training staff in Region 2 at Linn-Benton Community College in Albany. A total of 30 individuals were graduated from these classes. Seventeen were men (67%) and 13 were women (43%). Women and minorities represented 93% of the total.

Career guidance, case management, and mentoring were provided to all 30 graduates as well as graduates from trade specific training classes held in previous years. Overall, it is estimated that 40 graduates were contacted and provided with the above services during the 2015-2017 period.

Carpenters Trades Intensive Class for Racial/Ethnic Minority Men

The Carpenters Trades Intensive Class for minority men was held during the month of October 2015. There were 11 men who were selected for the carpenter intensive class and 11 who completed. During this period, the men completed all the required training, including: Construction Math, Blue Print Reading, Construction Leveling and Layout, and Concrete

training. All of these 11 graduates have been registered with the Bureau of Labor and Industries as apprentices in a carpenter-related trade.

All of these apprentices were given credit for previous experience and registered at 2nd period for having completed the carpenter intensive class.

Based on ‘registration to an apprenticeship program’ being the measure of success, we report the following results:

11 individuals were selected to enter the class. Of these 11,

- 11 (100%) completed the class;
- 11 (100%) were confirmed by BOLI to have been registered as apprentices by the end of the report period with advanced standing at the 2nd period in the wage progression; and
- 9 (81.1%) were still active at the end of the report period.

Akana provided continued counseling, ranging from assistance with job placement to supportive services. Akana staff continued checking-in with the men on a monthly basis to make sure they were still working, see how work was going and see if they needed any type of support. The women also continued to be invited on a monthly basis to attend Constructing Hope’s Mentor Meetings.

Carpenters Trades Intensive Class for Women

The Carpenters Trades Intensive Class for women was held during the month of January 2016. There were 9 women who were selected for the carpenter intensive class and 9 who completed. During this period, the women completed all the required training, including: Construction Math, Blue Print Reading, Construction Leveling and Layout, Concrete training and Anatomy of a Bridge (where the women actually built a bridge crossing). All of these 9 graduates have been registered with the Bureau of Labor and Industries as apprentices in a carpenter-related trade.

All of these apprentices were given credit for previous experience and registered at 2nd period for having completed the carpenter intensive class.

Based on ‘registration to an apprenticeship program’ being the measure of success, we report the following results:

9 individuals were selected to enter the class. Of these 9,

- 9 (100%) completed the class;
- 9 (100%) were confirmed by BOLI to have been registered as apprentices by the end of the report period with advanced standing at the 2nd period in the wage progression; and
- 9 (100%) were still active at the end of the report period.

Akana provided continued counseling, ranging from assistance with job placement to supportive services. Akana staff continued checking with the women on a monthly basis to make sure they

were still working, see how work was going and see if they needed any type of support. The women also continued to be invited on a monthly basis to attend the Oregon Tradeswomen's monthly Mentor Meeting. These women really bonded during their training, both at the Oregon Tradeswomen Pre-Apprenticeship training, as well as the Pacific Northwest Carpenters training, so they keep in contact with each other. This created a very strong support system for them.

Carpenters Trades Intensive Class for Mid-Valley

The Carpenters Trades Intensive Class for Mid-Valley (without the "anatomy of a bridge" portion and without advanced placement) was held in Albany in June 2017. There were 16 individuals were selected for the Mid-Valley trade specific pre-apprenticeship class. Ten (10) individuals graduated and applied to the union carpenters' apprenticeship. Of these, 6 were registered as apprentices by the end of August 2017.

Services to Current Apprentices

Studies have found that women and minorities complete apprenticeship programs at lower rates than do white male apprentices. By providing services to current apprentices, the Program attempts to create a more level playing field by removing barriers to the successful advancement of women and minorities who are in training to become new highway construction journey workers.

The services offered include assistance for transportation (fuel to get to work and required classes), lodging when working out of town, meals when working out of town, child care, work tools, personal protective equipment (PPE), and work clothes. These services are available to all apprentices in certain trades (carpenter, cement mason, ironworker, laborer, operating engineer, and painter) and to other apprentices who are actively working on a road or bridge project. ODOT/BOLI's subcontractors place an emphasis in reaching apprentices in their first year of training and women and minority apprentices. There are three activities in the statute that are included under this category: a) supportive services and assistance with transportation (ORS 184.866(3)(h)); b) child care and other special needs (ORS184.866(3)(i)), and c) job site mentoring and retention services (ORS 184.866(3)(j)).

ODOT/BOLI provided these services through Akana (Cooper Zietz Engineers, Inc.) for all trades except the union laborers. For most of the biennium, ODOT/BOLI provided services to union laborers through the Oregon Southern Idaho Laborers-Employers Training Trust. In April 2016, child care subsidies for union laborer apprentices were moved to the Akana contract.

Akana (Cooper Zietz Engineers, Inc.)

ODOT/BOLI's contract with Akana (Cooper Zietz Engineers, Inc.) was the program's largest statewide contract and produced a wide range of results.

To proactively address Oregon's shortage of skilled trades workers, the Oregon Bureau of Labor & Industries (BOLI) and the Oregon Department of Transportation (ODOT) initiated a program to build public awareness of careers in the heavy highway construction trades and provide critical support to current apprentices—especially among women, minorities, and underrepresented groups. As part of an effort to build a robust statewide initiative, the agencies awarded a contract to Akana (formerly Cooper Zietz Engineers, Inc.) in January 2011, the Heavy Highway Workforce Development Program. This contract included providing counseling and financial support for on-the-job apprentices. The Apprenticeship Support Services contract involved five tasks:

- **Communication and Outreach.** Develop and distribute informational materials describing current services available to apprentices within the heavy highway related trades in Oregon and Southwest Washington.
- **Transportation Support.** Provide necessary fuel, lodging and per diem financial assistance to apprentices in highway related trades to assist them in accepting job assignments further than 60 miles from home.
- **Child Care Support.** Award child care subsidies to apprentices in highway related trades who need child care financial assistance to remain employed or attend required training.
- **Job Site Readiness Support.** Provide financial services for tools clothing, safety gear, etc. to apprentices who need assistance, so they can report to work or continue working in a highway related trade.
- **Information and Referrals.** Provide and/or collect information in order to understand and ascertain the needs of the apprentice and provide services needed or make appropriate referrals for the apprentice.

Between July 2015 and June 2017, Akana distributed over \$293,000 in support funds to 372 different apprentices. Support Services included travel, per diem, tools, protective clothing, and child care. Direct support expenditures averaged approximately \$790 per person. When adding in Akana's labor costs (services and program administration), the average cost of the program per person was approximately \$1,747. Overall, Akana labor costs were about \$1.20 per \$1.00 distributed.

Of the 372 apprentices served, 291 were male (78%) and 81 were female (22%). Females plus minorities totaled 222 or 60% of all apprentices. The most requested services were for tools, protective clothing, and child care.

The trades associated with the Union Carpenters make up the largest group of apprentices receiving services from the contract with Akana. Collectively, Akana provided \$237,572.53 in financial support to apprentices in the union carpenter apprenticeship (MA 1057), including \$129,455.33 for child care subsidies, \$88,886.65 for job readiness supplies, and \$9,795.93 for lodging when traveling more than 60 miles from home for work or classes.

Apprentices registered to other union programs in the highway trades received \$53,746.00 in financial support, including \$27,145.91 for child care subsidies, \$11,372.16 for job readiness supplies, and \$9,177.76 for lodging when traveling more than 60 miles from home for work or classes.

Apprentices registered to non-union committees in the highway trades received \$9,914.14 in financial support, including \$3,591.82 for child care subsidies, \$4,170.99 for job readiness supplies, and \$977.59 for lodging when traveling more than 60 miles from home for work or classes.

Overall, Akana provided supportive services to 528 apprentices during the biennium with an average financial assistance of \$573. There were 59 apprentices who received child care subsidies, which averaged \$2,715.

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The model for delivery in the contract with the Union Laborers has been one that integrates the supportive services into the training and dispatch functions already being performed. For this reason, union laborer apprentices were aware of services earlier, and the Union Laborers were able to target some services in the course of general operations.

In spite of these perceived advantages, the Union Laborers had staff turnover during the biennium that resulted in inconsistencies in tracking and reporting, so the Program transferred the child care subsidies out of the Laborer contract and into the Akana contract in April 2016. The Program let this contract expire at the end of the biennium and shifted the remaining services to the Akana contract in July 2017.

The Union Laborers provided \$113,591.82 in financial support to apprentices in the union laborer apprenticeship (MA 1058), including \$19,236.00 for child care subsidies, \$27,463.86 for job readiness supplies, \$48,207.37 for fuel assistance, and \$18,679.59 for lodging when traveling more than 60 miles from home for work or classes.

Overall, the Union Laborers provided supportive services to 212 apprentices during the biennium with an average financial assistance of \$536. There were 7 apprentices who received child care subsidies from the Laborers, which averaged \$2,748.

Respectful Workplaces

Oregon Tradeswomen and Green Dot Etc., Inc.

Workplace culture has been shown to have a significant impact on the retention of diverse workers in the construction industry. This is demonstrated through research done by Portland State University and feedback from diverse apprentices to programs like Oregon Tradeswomen and Constructing Hope. In January of 2015, a collaboration between BOLI-ODOT Highway Construction Workforce Development Program, the Metropolitan Alliance for Workforce Equity, Oregon Tradeswomen, and Constructing Hope emerged to look at creative solutions. A series of ten focus groups were held with stakeholders in the industry from workers: new

apprentice to seasoned journey worker and leadership: foreman to superintendents and company owners. The focus groups indicated that a bystander intervention model intended to prevent harmful behaviors may be effective in the industry. These focus groups helped with the development of the BOLI-ODOT RFP for the Respectful Workplaces Project. Funded in April 2016, this project is a collaboration between Oregon Tradeswomen, Constructing Hope, Green Dot Etc., Inc. and Portland State University focusing on a pilot project to increase retention for diverse workers by reducing and preventing bullying, hazing and harassment in construction. This project is funded across biennia and will continue until December 2018.

The project is organized into four categories that are meant to address this issue from both a top-down and bottom-up approach: worksite awareness, worker education and organizational training, bystander training, and opportunities for voice and social support. During the course of this project we have developed supplemental materials to adapt the Green Dot model for construction, created a survey to evaluate the impact of the project, conducted multiple public presentations and outreach for the project. At the beginning of the project, we had identified a highway contractor to pilot with – but after several iterations of their plan, they decided not to continue with the project. As a pilot, there is a lot of development and challenges that became too onerous on a small company. We are hoping to identify a new highway contractor as a partner but we currently have instructors trained with Hoffman Corporation, Hoffman Structures, NECA-IBEW and IBEW Local 48, and PNCA with the NW Regional Council of Carpenters. Additionally, we have leveraged federal funding to look at EEOC policies and best practices, created a panel for workers as a part of Women in Apprenticeship Day, and hold monthly social hours for networking. Overall, community response to the project has been overwhelmingly positive with many groups pushing for implementation to happen more quickly.

In October 2016, we held the first test of the bystander intervention training for workers. A group of 14 tradeswomen participated over the course of two hours with training for 1.5 hours and 30 minutes for feedback and assessment. The responses were overwhelmingly positive about the training. They particularly supported very interactive training for trades workers and commented that it was positive that the project did not further target diverse workers. There was one activity that we were able to redevelop based on feedback from this group.

Second, in July 2017 we held the first official management training for the Courthouse Project in Multnomah County. This was the culmination of two years of work that is considered the first official kick-off of the pilot training on that project. We scheduled the training to be 45 minutes with a 15-minute Q&A period. There were 37 individuals total in this training which included company leadership, project managers, superintendents, and foreman. Hesitation was clear at the beginning of the presentation. However, by the end folks were enthusiastically participating. We stayed an additional hour after the presentation answering questions and responding to requests to come and conduct trainings at their companies.

University of North Carolina - Supervisor Training

Jaime Bochantin (UNC Charlotte) and Renee Cowan (Queens University) were commissioned through an inter-agency agreement between the Oregon Department of Transportation (ODOT)

and the Bureau of Labor and Industries (BOLI) to develop and implement a training workshop for supervisors in the highway construction trade. The goal was to create a training program around how supervisors can cultivate more respectful and supportive workplaces for apprentices. Specifically, this training intervention was designed to decrease the prevalence of aggressive, counter-productive workplace behaviors including workplace bullying, discrimination, and mistreatment/ harassment on the job by supervisors. This will allow for better treatment of apprentices on the job and help with retaining and attracting a skilled and dedicated workforce. These factors are essential to an organization's productivity and profitability and will lead to better working conditions for diverse populations in the highway construction trade including women and people of color.

This project was initiated in August of 2016 and was carried out in four distinct phases ending in May of 2017. First we developed and disseminated an initial needs assessment survey for supervisors and apprentices. Second, we reviewed reports and data provided by ODOT. Thirdly, we developed the training modules based on the needs assessment survey results as well as existing literature on conditions in the highway trade. Lastly, we facilitated a pilot training workshop with a group of supervisors. We collected feedback and evaluations from the participants in order to make any necessary changes to the program. Our initial research into the working environment for apprentices in the highway construction trades revealed that harassment, discrimination and aggressive workplace behavior runs rampant in the highway construction trades, especially towards women and people of color. Supervisors and fellow (more senior) coworkers are the typical perpetrators. Additionally, supervisors and apprentices have had little to no training on harassment, discrimination or how to create more respectful/supportive workplaces. Thus, the development of this training program is timely.

Based on the data we collected and the literature we reviewed, we developed a 4.5-hour training workshop for supervisors consisting of three modules: 1) Situational Awareness: Recognizing Counter-Productive Workplace Behaviors; 2) Self and Other Awareness: Cultivating Trust and Supportive Workplaces; 3) Resolving Conflict: How to Address and Stand up to Bullying. The workshop utilized a diverse combination of instructional components including lecture, assessments, break-out discussions, and experiential activities to assist with learning. We piloted the training program on 26 supervisors (unfortunately, due to challenges in recruiting an ODOT partner to pilot the training program, we had to use a different industry but it is comparable to the highway construction industry in terms of demographic make-up and similar challenges faced). We collected feedback from all 26 participants on the quality of the training workshop as well as the materials we developed. In general, the training workshop was extremely well received by the participants with very little room for improvement.

In total, we provided eight specific recommendations moving forward. They are all of equal importance and designed to improve the training program and its facilitation/dissemination. The largest priorities include: 1) piloting the training program with an ODOT-affiliated construction company, 2) increasing the length of time for the workshop from 4.5 hours to 6 hours (or include an online component), 3) develop a train-the-trainer program for better accessibility to the training, and 4) conduct a program evaluation once the training program gets rolled out.



Nutrition and Wellness

University of Iowa

Diane S. Rohlman, PhD, College of Public Health, University of Iowa

Megan A. Parish, MPH, Confluence Health, Wenatchee, Washington

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Factors impacting construction workers' health and safety reach beyond traditional occupational hazards. Workplace factors such as low autonomy, high stress and variable physical environments impact health, including the ability to maintain a healthy diet. In turn, poor diet is linked to chronic diseases that can predispose individuals to

workplace injuries.

An online nutrition training was developed for apprentices in collaboration with researchers, health educators, and key members of the community. Training topics included the impact of nutrition on job performance, barriers to healthy eating associated with work organizational factors, and solutions to promote healthy eating. Peer-to-peer messages were included through images and videos featuring apprentices and journeymen on the construction site sharing personal stories, modeling healthy behaviors, and recommending methods for overcoming barriers to healthy eating.



The training was evaluated with a pretest-posttest control group design. Knowledge was measured prior to and twelve weeks following the training. Participants in the intervention group demonstrated improvements in knowledge immediately following the training but these were not maintained at the 12-week follow-up. The intervention group reported modest weight loss and decreased BMI from baseline to follow-up compared to the control group. This project established the feasibility of using an online, self-guided training among apprentices. Feedback from apprentices who took the training was favorable; over 70% of participants who participated in the evaluation study would highly recommend the training for co-workers or others in their

occupation and over 75% believe employees should be required to take health and safety trainings like the nutrition training.

Based on these results, the training was revised to prepare for a second evaluation study in the next biennium. The study will be expanded to include a series of “toolbox talks” that reinforce training concepts. These will be a series of interactive activities on nutrition topics. Potential topics include how to read a food label, build a healthy breakfast, and calculate the long-term financial cost of sugary drinks. To evaluate the potential effects of toolbox talks on retention of training knowledge and adoption of healthy behaviors, we will administer the training in two waves. Wave 1 will complete the training and questionnaires at baseline and six months following the training. Wave 2 will participate in toolbox talks in addition to the aforementioned activities. In addition, additional recruitment materials were developed to boost interest in the training among apprentices and apprentice representatives. These include handouts, fliers, and posters that will be posted and distributed in apprentice classrooms.

Findings from the project were presented at the 2016 Pacific Northwest Apprenticeship Education Conference and the 2016 annual meeting of the American Public Health Association.

Rohlman DS, Parish M (2016). A Foundation of Health: Evaluation of a Nutrition Training for Apprentices in Oregon. Presented at the Pacific Northwest Apprenticeship Education Conference; Portland, OR.

Rohlman DS, Parish M, Hanson G, Williams L (2016). Building a healthier workforce: An evaluation of a nutrition training for apprentices in the heavy highway trades. Presented at the American Public Health Association Annual Meeting; Denver, CO.

Hardship Assistance

Labor’s Community Service Agency

Labor’s Community Service Agency has held the BOLI-ODOT Service Category 6: Hardship Assistance grant since June, 2016. We have provided \$3,960.00 in hardship assistance to eight (8) apprentices represented by the Carpenters, Laborers, Operating Engineers and Painters. Of this, 87% was applied towards rental assistance and the remaining 13% was used to fix the primary vehicle of the apprentice in need.

The majority of our referrals deal with unstable housing situations. This reflects the housing crisis in Portland and throughout Oregon. Labor’s Community Service Agency places a priority on housing funds to combat this issue that destabilizes the working class. In addition to this grant, LCSA leverages additional programs that we use to help apprentices with supplementary resources, such as further assistance for bills &/or food cards. These are not charged to the BOLI-ODOT and are absorbed by LCSA. With each referral, there is extensive education about the 211 service to help the apprentice find other community resources, as needed.

Success Story 1

For the past eighteen months Julie Smith, Oregon & Southern Idaho Laborers Training Center, has been living in transitional housing as she completed her inpatient and outpatient treatment for addiction. She has made incredible progress on her short term goals and was making positive steps towards her long term goal of a career pathway. The referral we received from her training facility stated that she was a model apprentice and hoped that the BOLI-ODOT funds could provide assistance on housing so that she would be able to focus more of her energies on her schooling. Julie combined resources and with the BOLI-ODOT funds, she was able to obtain a spot in a recovery based home that will also allow her children to live with her. The hard work Julie has put into her vocational education and recovery is admirable and the BOLI-ODOT funds provided the necessary stable housing so she could advance to the next stage of her apprenticeship program.

Success Story 2

Theodore Murray II, Pacific Northwest Carpenters Institute (PNCI), had all of his belonging destroyed in a fire started by a neighbor in his apartment complex. He received assistance immediately with Red Cross for short term housing but when contacted by Labor's Community Service Agency, he was currently homeless and risked stability in his apprenticeship program due to these hardships. The BOLI-ODOT fund provided a security deposit for a new apartment/room rental and Theodore was able to get the stability necessary to stay in his apprentice program and focus on work.

“Thank you for providing the funds to help keep apprentices concentrating on their career pathways.” - Eryn Byram, Executive Director LCSA

Research Findings

In the following section we identify progress toward goals established by the Program since the previous biennium (2014). We highlight where progress has and has not been made and later offer recommendations for continued efforts at diversifying the skilled highway trades workforce. The table in each section displays key performance measures for the previous (2014) and current (2016) biennia and indicates whether the policy goal set by the Program has been met and/or if progress is being made toward each goal. Key performance measures are divided into four key areas: outreach and recruitment, supportive services, workplace culture, and diversity of journey workforce.

Outreach and Recruitment

Since the previous biennium, progress has been made and policy goals have been met for recruitment of both women and racial/ethnic minority apprentices in the highway construction trades. Among apprentices active in the most current reporting period (2014-2015), 21.5% were men of color, reaching the goal of having men of color comprise 20.6% of apprentices in highway construction trades. Also, 2.1% of new apprentices in 2014-2015 were women of color, reaching the Program's goal of having women of color comprise 2% of highway construction

trades apprentices. However, progress has stalled in the recruitment of white women apprentices: in the previous reporting period (2011-2013), white women comprised 6% of apprentices in the highway construction trades, yet white women comprised 5% of apprentices in the highway construction trade during the most recent reporting period.

ODOT/BOLI Highway Construction Workforce Development Program - Key Performance Measures					
Policy Goal/Key Performance Measure	Previous Reporting Period	Current Reporting Period	Goal	Goal Met (within 2%)	Progress Made
Outreach and Recruitment - Registering a More Diverse Cohort of Apprentices in the Highway Construction Trades					
Percentage of newest cohort of apprentices in the highway construction trades (white women)	6.0%	5.0%	≥ 8.0%		
Percentage of newest cohort of apprentices in the highway construction trades (women of color)	1.5%	2.1%	≥ 2.0%	✓	
Percentage of newest cohort of apprentices in the highway construction trades (men of color)	19.3%	21.5%	≥ 20.6%	✓	

Supportive Services

In general, more eligible apprentices are aware of and are using financial supportive services in the current reporting period compared to those in the previous period. Progress has been made on all measures, including the percentage of women and people of color in eligible trades aware that supportive services exist and the percentage of women and people of color in eligible trades receiving services. Goals have been met for the percentage of white women in eligible trades aware that supportive services exist, percentage of active apprentices in eligible trades who receive the Program’s financial supportive services, and percentage of women of color in eligible trades who receive the Program’s financial supportive services. Further progress needs to be made in making men and women of color more aware of supportive services and in encouraging men of color to use supportive services in order to reach goals set by the Program.

ODOT/BOLI Highway Construction Workforce Development Program - Key Performance Measures					
Policy Goal/Key Performance Measure	Previous Reporting Period	Current Reporting Period	Goal	Goal Met (within 2%)	Progress Made
Supportive Services - Awareness and Use of Supportive Services					
Percentage of survey respondents in eligible trades who are aware that ODOT-BOLI supportive services exist (white women)	40.9%	52.0%	≥ 50.0%	✓	✓
Percentage of survey respondents in eligible trades who are aware that ODOT-BOLI supportive services exist (men of color)	33.9%	44.4%	≥ 50.0%		✓
Percentage of survey respondents in eligible trades who are aware that ODOT-BOLI supportive services exist (women of color)	28.6%	33.3%	≥ 50.0%		✓
Percentage of active apprentices working in eligible trades who receive ODOT-BOLI financial supportive services (white women)	18.2%	26.9%	≥ 25.0%	✓	✓
Percentage of active apprentices working in eligible trades who receive ODOT-BOLI financial supportive services (men of color)	17.5%	21.0%	≥ 25.0%		✓
Percentage of active apprentices working in eligible trades who receive ODOT-BOLI financial supportive services (women of color)	41.4%	52.2%	≥ 50.0%	✓	✓
Percentage of active apprentices in eligible trades receiving mentoring services (white women)	7.8%	5.5%	≥ 30.0%		✗
Percentage of active apprentices in eligible trades receiving mentoring services (men of color)	2.8%	2.0%	≥ 30.0%		✗
Percentage of active apprentices in eligible trades receiving mentoring services (women of color)	9.8%	4.3%	≥ 30.0%		✗

Workplace Culture

Continued effort needs to be made in changing perceptions of workplace culture for apprentices in the highway construction trades. Among white women and women of color, progress has not been made to lower the rate at which experiences of discrimination or harassment on the jobsite due to race/ethnicity or gender are reported. Some progress has been made, however, among men of color: while in the previous reporting period 35.1% of men of color reported experiencing discrimination or harassment due to race/ethnicity or gender, only 30.7% did so in the 2016 survey. While the apprentice survey is not generalizable across all apprentices in the highway construction trades, it is troubling that, particularly among women of color, reporting discrimination or harassment on the jobsite in our survey has increased since 2014. Progress also needs to be made in the percentage of apprentices who report any type of harassment or discrimination due to race/ethnicity, gender, apprentice status, or other reasons. In the 2016 survey, 80% of white women, 83% of women of color, and 60% of men of color reporting experiencing one or more forms of discrimination or harassment on the job site. It is important to note, however, that 50% of white men in the 2016 survey also reported experiencing discrimination or harassment due to their status as an apprentice, suggesting the need to change perceptions of workplace culture for all apprentices.

ODOT/BOLI Highway Construction Workforce Development Program - Key Performance Measures					
Policy Goal/Key Performance Measure	Previous Reporting Period	Current Reporting Period	Goal	Goal Met (within 2%)	Progress Made
Workplace Culture - Experience of Discrimination or Harassment					
Percentage of survey respondents who report experiencing discrimination or harassment due to race or gender (white women)	68.7%	69.0%	≤ 17.1%		
Percentage of survey respondents who report experiencing discrimination or harassment due to race or gender (men of color)	35.1%	30.7%	≤ 17.1%		
Percentage of survey respondents who report experiencing discrimination or harassment due to race or gender (women of color)	65.5%	70.8%	≤ 17.1%		
Percentage of survey respondents who report experiencing any type of discrimination or harassment (white women)	69.0%	80.0%	≤ 50%		
Percentage of survey respondents who report experiencing any type of discrimination or harassment (men of color)	35.0%	60.0%	≤ 50%		
Percentage of survey respondents who report experiencing any type of discrimination or harassment (women of color)	66.0%	83.0%	≤ 50%		

Diversity of Journey Workforce

Recruitment and retention efforts appear to be paying off with greater diversity of new cohorts of apprentices in the highway construction trades and greater diversity of cohorts completing apprenticeship programs. However, we did not find an increase, yet, in completion rates of female and racial/ethnic minority apprentices. Completion is measured several ways in this report: percentage completing in six years, percentage of those not active (completed or terminated) completing, and race-gender distribution of completers in a given time period. For all apprentices in heavy highway construction trades, six-year completion rates declined between the previous and current reporting period. Among the 2005-2007 cohorts, 44.9% of white women completed within six years, and the same percentage of white women in the 2008-2009 cohorts completed within six years (43.5%). Similarly, six-year completion rates between the two periods remained stable among women of color, with 29.8% of previous cohorts completing in six years and 30.2% of more recent cohorts completing in six years. Among men of color, six-year completion rates declined from 41.6% in the previous reporting period to 35.6% in the current reporting period. Continued efforts need to be made to increase completion rates for women and apprentices of color to what they are for white men, or around 50%.

An additional measure of completion, one that enables measurement of more recent cohorts of apprentices, shows similar lack of progress in diversity of the workforce in the heavy highway construction trades. Completion rates for those terminated or completed declined between reporting periods, particularly among white women and women of color. Completion rates among those completed or terminated among white women in the previous reporting period was

54.7% yet declined to 36.3% in the most recent reporting period. For women of color, 41.9% of non-active apprentices in the previous reporting period completed, compared to 24.2% in the recent reporting period. Completion rates declined slightly among men of color between the two periods. As a percentage of apprentices completed in a given period, however, we do see progress among men of color: while in the previous reporting period (2011-13) 12.1% of those completing were men of color, this number increased to 18.8% in the current reporting period (2014-15).

Completing an apprenticeship and becoming a journey worker is an important milestone for apprentices. Survey data suggests white women and men of color who complete their apprenticeships are moving on to become journey workers at similar rates in 2014 and 2016, with additional progress needed to be made to meet the goals set by the Program.

ODOT/BOLI Highway Construction Workforce Development Program - Key Performance Measures					
Policy Goal/Key Performance Measure	Previous Reporting Period	Current Reporting Period	Goal	Goal Met (within 2%)	Progress Made
Diversity of Journey Workforce - Credentialing Diverse Workers who Continue to Work in their Trade					
Six-Year Completion Rates (white women)	44.9%	43.5%	≥ 50%		
Six-Year Completion Rates (men of color)	41.6%	35.6%	≥ 50%		
Six-Year Completion Rates (women of color)	29.8%	30.2%	≥ 50%		
Completion rate among those completed or terminated (white women)	54.7%	36.3%	≥ 50%		
Completion rate among those completed or terminated (men of color)	51.9%	44.9%	≥ 50%		
Completion rate among those completed or terminated (women of color)	41.9%	24.2%	≥ 50%		
Percentage of completed (white women)	4.3%	4.0%	≥ 8.0%		
Percentage of completed (men of color)	12.1%	18.8%	≥ 20.6%		
Percentage of completed (women of color)	1.0%	1.0%	≥ 2.0%		
Percentage of survey repondents who completed their apprenticeship who are currently working in their trade as a journey worker (white women)	66.7%	67.0%	≥ 78%		
Percentage of survey repondents who completed their apprenticeship who are currently working in their trade as a journey worker (men of color)	82.6%	75.8%	≥ 78%		
Percentage of survey repondents who completed their apprenticeship who are currently working in their trade as a journey worker (women of color)	80.0%	No Data	≥ 78%		

Lessons Learned

Career Exploration

Phoenix:

Camper Commitment – the “older” teen camper seems less committed to finishing out the week. We got to know our campers and let them know daily that they are appreciated and worth this commitment. In the end, every camper that started the project, completed. Sometimes we had to be less intense and more relaxed about the project, but in the end it all worked out. Campers were even admitting that they were glad they stayed the entire week to see the progress.

The heat. Intense heat was an issue all throughout the camp week. We provided iced water for the campers to fill their bottles up at will. We also had arranged with the Phoenix tech lab for campers to come in there and work on computer related trades skills when they needed a break from the heat. Daily afternoon hydration stations of fresh water melons, cantaloupes and iced water also helped to relieve the heat burden.

Baker School District:

Baker School District said that their biggest challenge was in keeping to their schedule for tours. They said that they needed to schedule in more buffer time between the tours. Also, the participants suggested that the tours should be shorter so that more time could be allotted for the skill building.

One option would be to include the Oregon Tradeswomen, Inc. in planning and delivering future camps. They expressed the hope to start the experience with the Annual Women in Trades Career Fair in Portland in May and then end it with a weeklong camp that is more hands-on here in our area.

Services to Apprenticeship Seekers/Applicants

Through this important initiative, Oregon Tradeswomen and Constructing Hope have learned that collaboration is key to success. Additionally, it is not enough that organizations like Oregon Tradeswomen work in silos, we must partner with our State Apprenticeship Agency, and state Department of Transportation to leverage the knowledge, expertise, and resources to support industry-wide changes in which women and communities of color have access to high-wage careers and quality training and education. In working collaboratively, we not only change the numbers, we change the industry and we change lives.

Services to Current Apprentices

The child care subsidies were utilized by more apprentices, and the process of checking the registration/certification of child care providers became more onerous on contractors. The Program has opted to change the design in the next biennium to provide subsidies through the state agency that manages the Employment Related Day Care program. The Program anticipates

that this will streamline work with the child care providers and will provide better coordination for those apprentices who qualify for this state administered child care subsidy program.

As some services are used more, there have been concerns about how well the Program screens for need. The vendors do require apprentices to complete some budget worksheets before receiving most services, and the Program has over time implemented some restrictions based on how long apprentices have been in the program to emphasize those in their first year who are believed to be at greater risk of dropping out. As we move the child care subsidies closer to the Employment Related Day Care model based on household income, it seems prudent to also use some measure of household income to determine levels of support for other services.

Respectful Workplaces and Working with Training Agents

While the OTI/GreenDot project has had many successes and has been received with enthusiasm, there is a lot of room for growth. The project has been slower to kick off than initially expected leading to delayed timelines. With potential contractors, it is critical to assure that they know the full scope of work required in piloting a new project specifically around problem solving and program development. Contractors who elect to participate in new initiatives should be rewarded with some kind of incentive and recognized for the work to change the industry. It has also been a challenge to find an appropriate ODOT project to pilot the project on – if there is a way to better align upcoming construction with the release of funds from the Workforce Development Program, it would help to increase the impact. With excitement around the pilot project come many requests to implement other places. It takes a lot of work and time to respond to these requests. As the project takes longer, this initial excitement dwindles and we may be losing potential allies who are asked to wait years before they can participate in a project.

Recommendations for 2017-2019

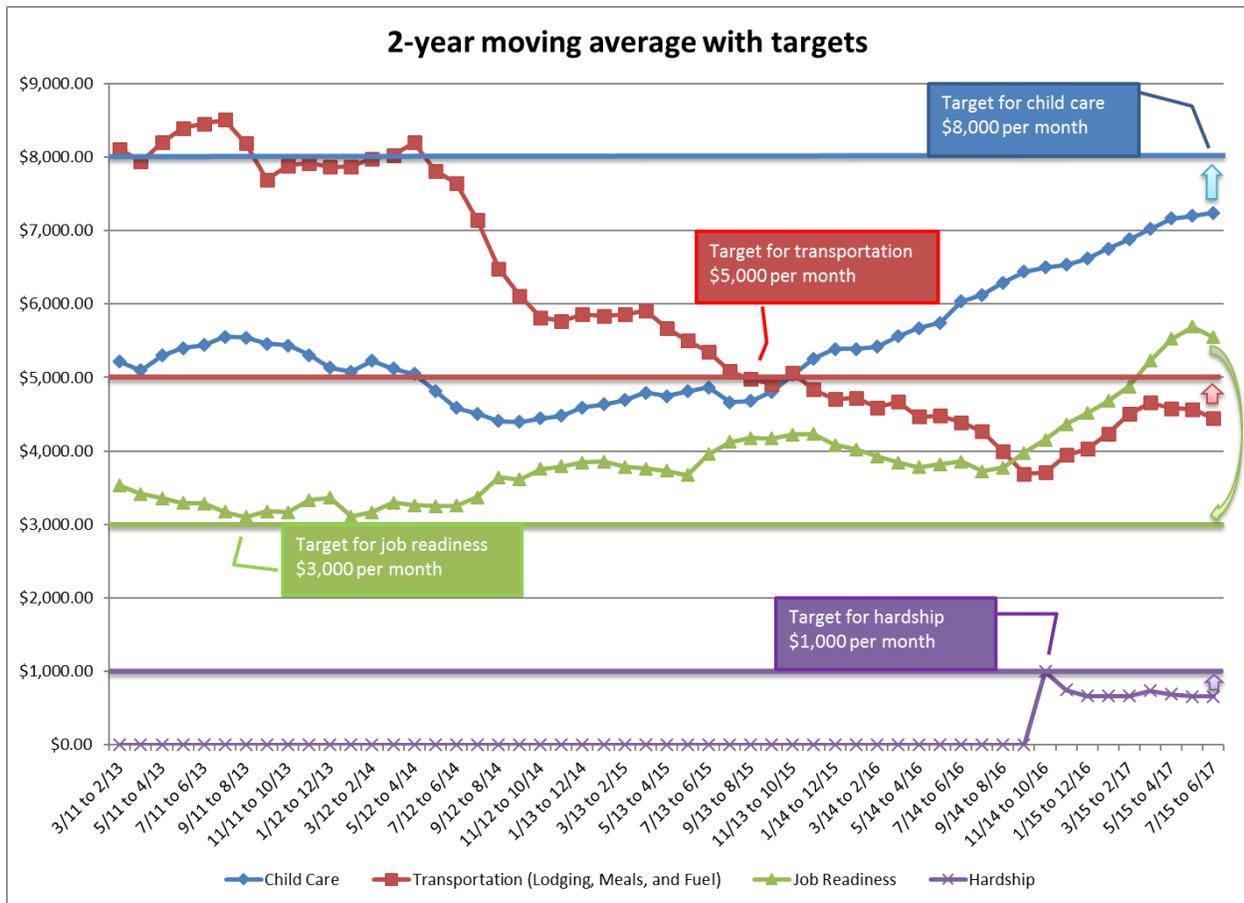
The average monthly amount provided for child care subsidies has increased over time, as more apprentices make use of the service. This is a relatively high cost component of the Program, but it is directly related to the ability of women (in particular) and minority apprentices to progress through their apprenticeship to journey worker status. Consequently, it remains a priority for the program to adequately fund child care subsidies.

At the same time, the average monthly amount provided for transportation supports (fuel, lodging, and per diem for meals and incidentals) has declined over time. This is probably a consequence of the Program emphasizing support for apprentices during the first year of their apprenticeship. With some changes to emphasize family income instead, it is anticipated that this type of supportive service may increase slightly in the future.

It is also anticipated that hardship assistance may need to increase slightly in the future to meet demand.

In order to accommodate the services that are anticipated to increase in average monthly cost, BOLI recommends that future contracts put a cap on the amount spent for job readiness supplies that have increased from roughly \$3,500 per month in the 2011-2013 biennium to more than \$5,000 per month in the most recent biennium, as large numbers of carpenter and laborer apprentices make use of this type of supportive service.

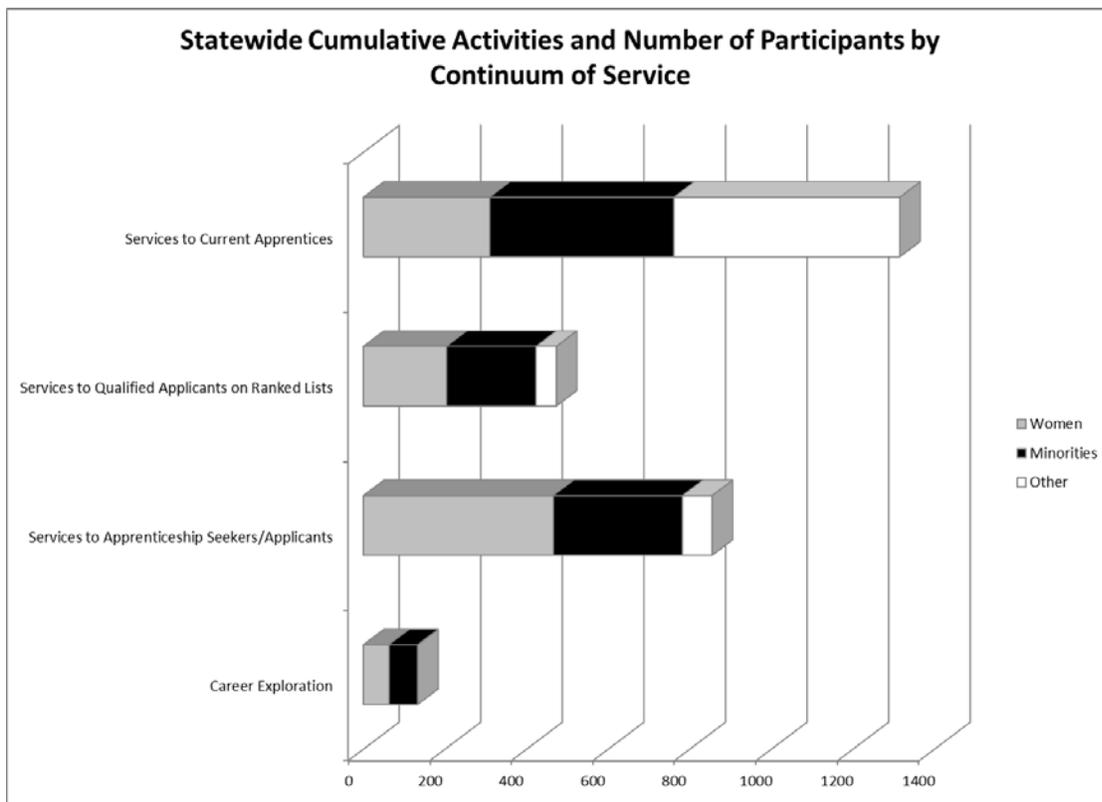
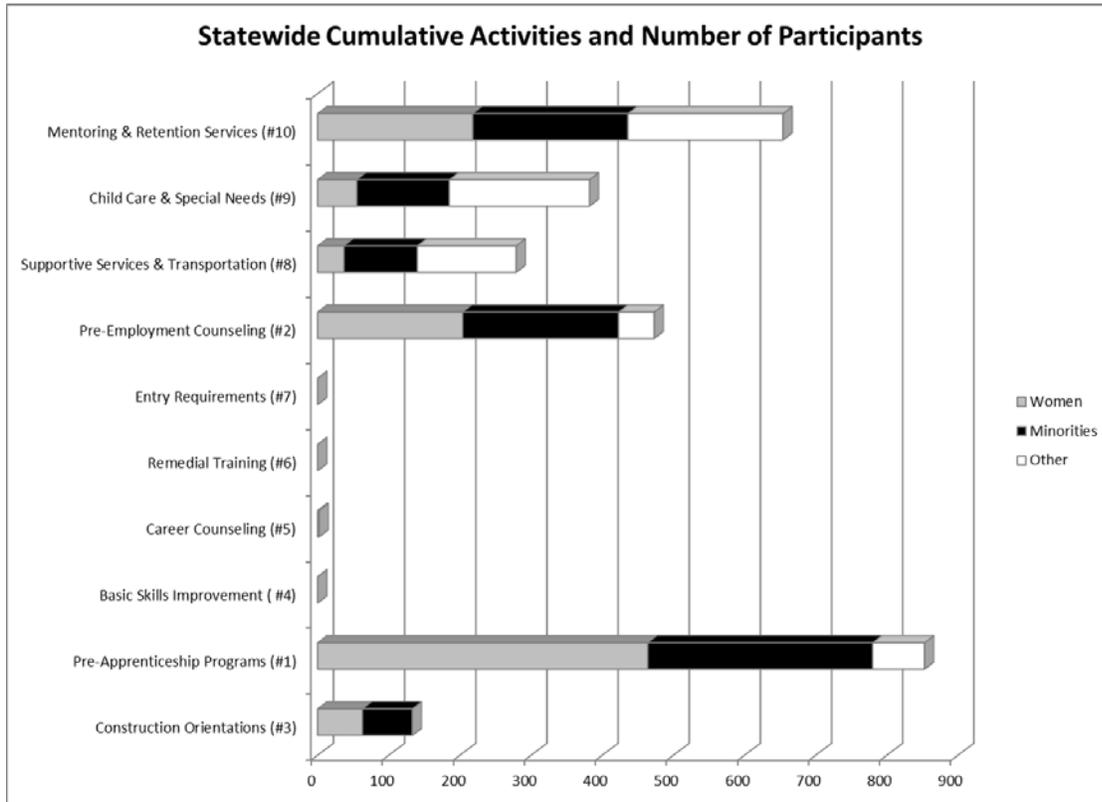
The following chart shows the trends for each of these services and the recommended targets for the next biennium:



Future Research

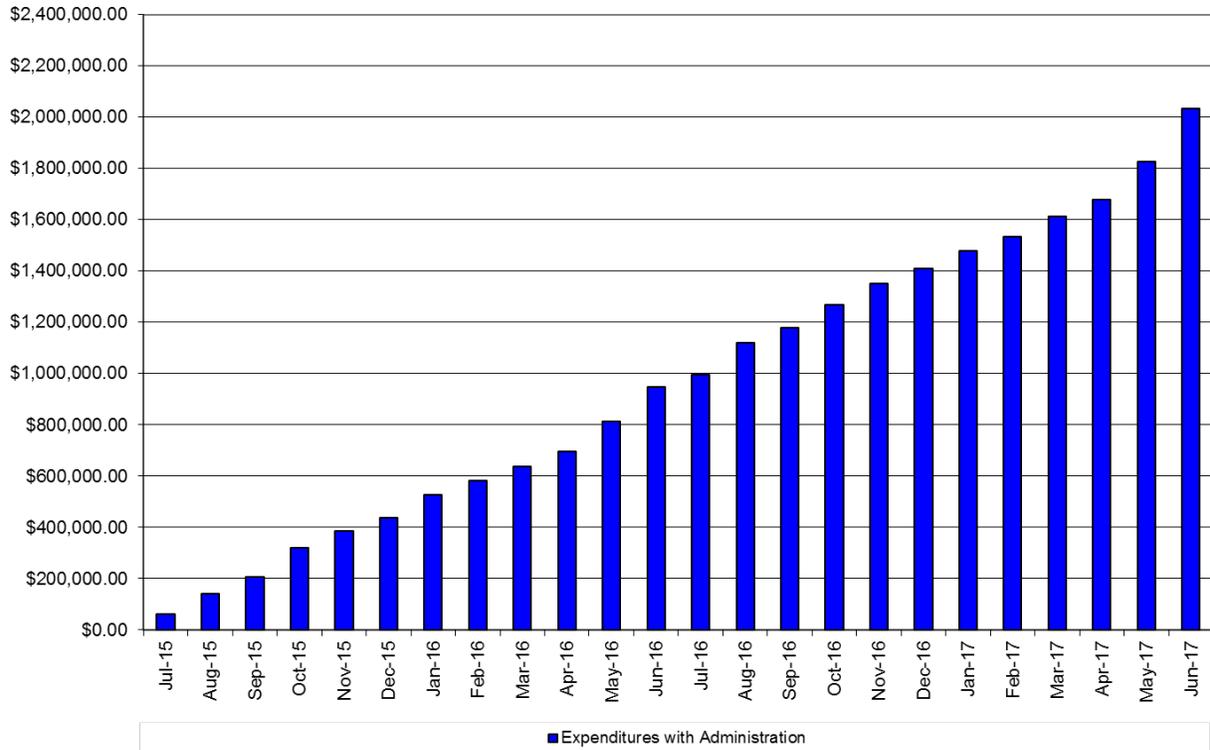
The Program is in the process of changing how child care subsidies will be provided from a system based on how long an apprentice has been in their program to one that will be based on household income. The Program would like to evaluate the impacts of this change as the transition occurs.

Attachment A – Participant Counts for Interagency Agreement 30668

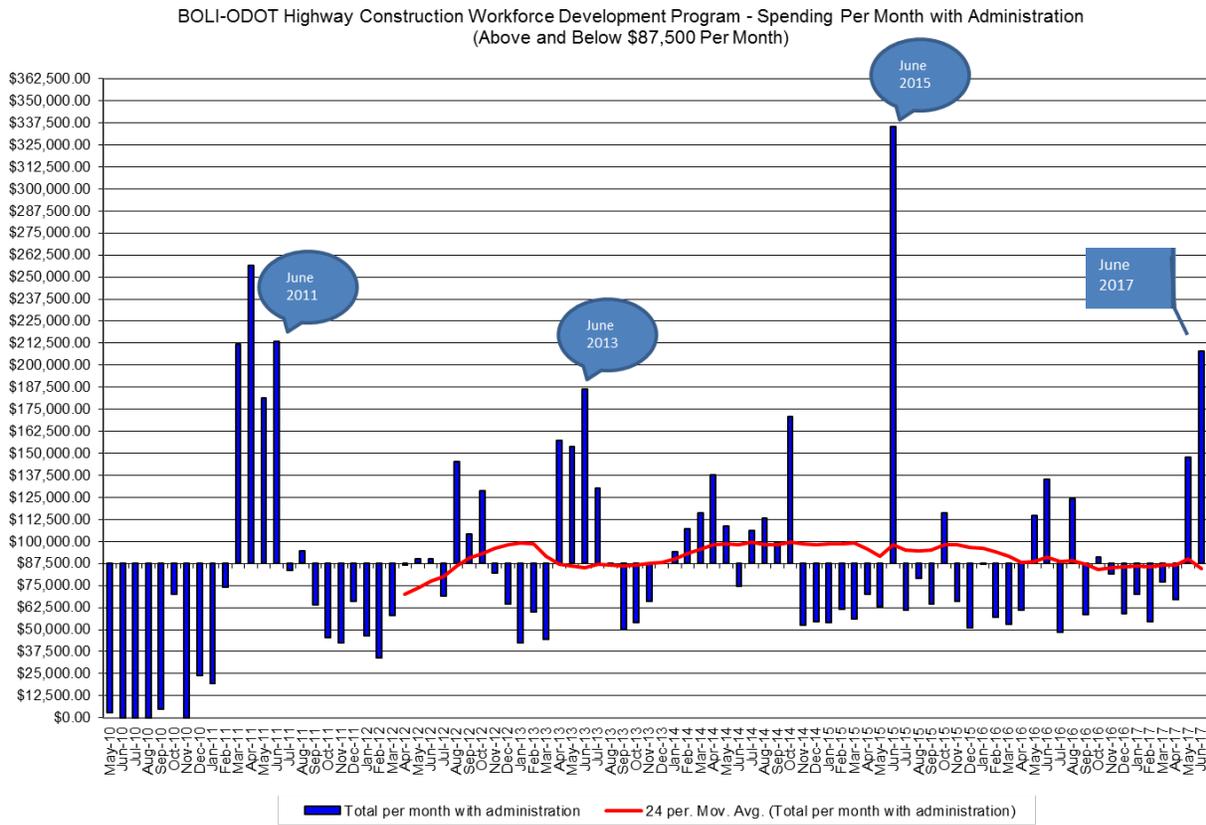


Attachment B – Expenditures for Interagency Agreement 30668

Statewide Cumulative Expenditures by Month, including BOLI Administration Costs



Attachment C – Expenditures over life of Program



Appendix D – Registrations in Union Programs

These tables provide comparisons of the 10-year average registration rates with the rates during the report period (July 2015-June 2017) for the following union committees: MA 1013 (ironworker), MA 1015 (cement mason), MA 1024 (painter), MA 1041 (operating engineer), MA 1057 (carpenter), and MA 1058 (laborer).

<i>JATC</i>	<i>January 2001 to December 2010</i>			<i>July 2015 to June 2017</i>		
	<i>Female #</i>	<i>Total #</i>	<i>Female %</i>	<i>Female #</i>	<i>Total #</i>	<i>Female %</i>
<i>MA 1013</i>	15	743	2.0%	10	147	6.8%
<i>MA 1015</i>	18	178	10.1%	5	78	6.4%
<i>MA 1024</i>	62	362	17.1%	9	66	13.6%
<i>MA 1041</i>	37	226	16.4%	2	31	6.5%
<i>MA 1057</i>	187	2851	6.6%	123	1243	9.9%
<i>MA 1058</i>	91	664	13.7%	25	185	13.5%
<i>Total</i>	410	5024	8.2%	174	1750	9.9%

<i>JATC</i>	<i>January 2001 to December 2010</i>			<i>July 2015 to June 2017</i>		
	<i>Minority #</i>	<i>Total #</i>	<i>Minority %</i>	<i>Minority #</i>	<i>Total #</i>	<i>Minority %</i>
<i>MA 1013</i>	196	743	26.4%	35	147	23.8%
<i>MA 1015</i>	45	178	25.3%	19	78	24.4%
<i>MA 1024</i>	82	362	22.7%	28	66	42.4%
<i>MA 1041</i>	37	226	16.4%	1	31	3.2%
<i>MA 1057</i>	642	2851	22.5%	435	1243	35.0%
<i>MA 1058</i>	231	664	34.8%	69	185	38.9%
<i>Total</i>	1233	5024	24.5%	587	1750	33.5%

Appendix 1 - List of Contracts and Agreements for 2015-2017 Biennium

Survey and Progress toward Goals

The Program has an intergovernmental agreement (BOLI-ODOT 2015-101 for \$100,960) with Portland State University for a follow-up survey and tracking progress on performance measures. The Principal Investigator for this research is Professor Maura Kelly:

- Provides for a phone survey of apprentices and analysis of progress toward goals established on various performance measures.
- Provides quantitative analysis of data from BOLI records of apprenticeship progress
- Provides a report by the end of September 2015 to inform BOLI's legislative report to ODOT.

The Portland State University survey lab completed the phone surveys by March 11, 2016 with a final sample of 523 respondents, and the final report was delivered to the Program in September 2016.

Career Exploration

Career Fairs

The Program will provide funding to a variety of career fairs around the state, including Women in Trades (in 2016 and 2017), the National Association of Women in Construction (NAWIC) Construction Career Day (in 2016 and 2017), Region 5 Construction and Utility Career Day (2017 only), Urban League Job Fair (2016 only), and the OTI Diversity Workforce Summit (2016 only).

Summer Construction Career Camps

In the summer of 2015, Oregon Tradeswomen provided a career camp for girls and Constructing Hope (in collaboration with Northwest College of Construction) provided a career camp targeting students of color.

In the June 2017, the Program sponsored career camps at Phoenix Charter School in ODOT Region 3 and at the Baker School District in ODOT Region 5. There were 13 campers (14-18 years of age) who participated in camp activities.

Trade Specific Pre-Apprenticeship and Apprentice Retention

The Program had one contractor delivering services for Trade Specific Pre-Apprenticeship and Apprentice Retention. One of these contracts was extended from the 2013-2015 biennium.

1. Akana (Cooper Zietz Engineers) with subcontractors Pacific Northwest Carpenters, Oregon Tradeswomen, and Constructing Hope (Contract #107-3237-13, as amended, for \$247,000, effective August 12, 2013; **extended until January 1, 2018**) provides:
 - assessments of interest and aptitude, education about pathways, guidance in development of career plans, and training in the application process for potential applicants to Pacific Northwest Carpenters apprenticeship programs;
 - financial support to pre-apprenticeship programs to prepare and refer graduates to Pacific Northwest Carpenters pre-apprenticeship training programs;
 - two carpenter intensive training classes for pre-apprentice graduates and one carpenter intensive training class for veterans and Native Americans in the Albany area; and
 - pre-employment counseling and financial assistance to pre-apprentice graduates approved for direct entry.

Population Specific Pre-Apprenticeship and Apprentice Retention

The Program had one contractor delivering services for Population Specific Pre-Apprenticeship and Apprentice Retention for the entire biennium. This contract was extended from the 2013-2015 biennium.

1. Oregon Tradeswomen Inc. with subcontractor Constructing Hope (Contract #107-1436-13 for \$200,000, effective January 10, 2014; **contract expired**) provides:
 - at least two construction career camps for approximately 20 high school students;
 - services for Workforce Sources, such as school counselors and Work Systems' staff;
 - services to applicants to and participants in Contractor's pre-apprenticeship programs, including targeted outreach to African Americans and to those who are incarcerated or were formerly incarcerated;
 - financial support for OSATC-approved pre-apprenticeship training through Oregon Tradeswomen, Inc. and Constructing Hope;
 - pre-apprenticeship scholarships to sixteen individuals, including African Americans and to formerly incarcerated individuals, who need such assistance to complete the pre-apprenticeship training;
 - additional services that are target to pre-apprentices who are single parents and/or parents of one or more pre-school children;
 - services to pre-apprentice graduates who have applied to enter or have been registered to a Local Joint Committee in a highway trade; and
 - targeted retention services with an emphasis on women, African Americans, and Disadvantaged Individuals (and with an emphasis on parents of one or more children who are 5 years of age or younger) who are apprentices in a highway construction trade.

In addition, the Program had a small contract with Portland Youthbuilders for the final two months of the biennium.

Pre-Apprenticeship and Retention Services for Disadvantaged Apprentices

The Program had one new contract for pre-apprenticeship and retention services for disadvantaged apprentices. This contract incorporates a formal evaluation study to assess the effectiveness of the services.

1. Oregon Tradeswomen with subcontractors Constructing Hope and Portland State University (Contract #DASPS-2533-15, as amended, for \$181,000, effective December 11, 2015; **extended until January 1, 2018**) provides:
 - funding for pre-apprenticeship slots for at least twenty (20) Disadvantaged Individuals;
 - one or more trade specific classes to improve the likelihood that Disadvantaged Individuals will be registered and employed as an apprentice in a Carpenter, Cement Mason, Ironworker, Laborer, Operating Engineer, or Painter apprenticeship program;
 - one or more peer networks for Disadvantaged Journey Workers and Disadvantaged Apprentices in Highway Construction Trades to share keys to success and provide mutual support;
 - assistance to Disadvantaged Apprentices in Highway Construction Trades designed to increase retention in and completion of the apprenticeship program; and
 - a three wave phone survey of individuals receiving pre-apprenticeship and retention services to analyze the impact of contract deliverables.

Current Apprentice Services

The Program had two statewide contracts to provide supportive services to current apprentices. Both contracts have been extended through the 2013-2015 biennium.

1. Akana (Cooper Zietz Engineers, Inc.) with subcontractors Oregon Tradeswomen, Inc. and Constructing Hope (Contract #102-1937-11, as amended, for \$650,000; **extended until January 1, 2018**) provides:
 - transportation and child care services to current apprentices in the carpenter, cement mason, ironworker, non-union laborer, operating engineer and painter programs (with certain conditions and up to certain limits);
 - transportation services to current apprentices in other trades while they are working on ODOT jobs (with certain conditions and up to certain limits);
 - child care subsidies to current apprentices in the carpenter, cement mason, ironworker, non-union laborer, union laborer (effective May 1, 2016), operating engineer, and painter programs (with certain conditions and up to certain limits);
 - job readiness funds for current apprentices in the carpenter, cement mason, ironworker, non-union laborer, operating engineer, and painter programs (with certain conditions and up to certain limits); and

- information and referral services.
2. Laborers Training Trust (Contract #102-1940-11, as amended, for \$215,000; **contract expired**) provides:
 - transportation services (fuel assistance and lodging/per diem for work/class more than 60 miles from home) to current apprentices in the union laborer program;
 - child care subsidies for current apprentices in the union laborer program (through April 2016);
 - job readiness funds for current apprentices in the union laborer program; and
 - information and referral and other non-financial support services for current apprentices in the union laborer program.

Respectful Workplaces

The Program had two contracts to develop strategies to promote respectful workplaces in highway construction. Both contracts were new for this biennium.

1. Oregon Tradeswomen with subcontractors Constructing Hope, Green Dot, Hamilton Construction and Portland State University (Contract #DASPS-2580-16, as amended, for \$95,000, effective April 14, 2016; **extended until January 1, 2019**) provides:
 - analysis of current workplace conditions with one or more Contractors in the Highway Construction Trades, including Hamilton Construction;
 - promotion of worksite awareness of the prevalence and harms of disrespectful behavior on the job site;
 - worker education and organizational training;
 - bystander training;
 - opportunities for normally marginalized workers' voices to be heard; and
 - evidence based research to analyze the impact of contract deliverables on the frequency of disrespectful behaviors on the highway construction job site.
2. University of North Carolina (Intergovernmental Agreement #BOLI-ODOT 2016-102 for \$40,000; **agreement expired**) provides:
 - needs assessment with highway contractors;
 - review of Portland State University research report;
 - design training program for supervisors;
 - pilot study with one or two identified ODOT contractors for implementation of the training program; and
 - evaluation of results and final report.

Nutrition Training

The program had one intergovernmental agreement to implement the web-based nutrition training that was developed in the 2013-2015 biennium.

1. University of Iowa (Intergovernmental Agreement #BOLI-ODOT 2016-103 for \$34,251; **extended until July 1, 2019**) provides:
 - finalize training and questionnaires;
 - disseminate training and questionnaires;
 - research study to evaluate online training; and
 - data analysis and reporting.

Hardship Assistance

The Program had one small contract to provide hardship assistance in emergency situations, mostly in the form of assistance with rent. This contract was new for this biennium.

1. Labor's Community Services Agency (Small Contract #BOLI-ODOT 2016-101; **extended until January 1, 2018**) provides:
 - Hardship Assistance (up to \$500 per apprentice served with one-time assistance).