

Tuning Up the Workforce to Decarbonize Buildings – a Seattle Partnership

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ABSTRACT

Successful workforce development requires bringing together policy, education and training, workers, and employers. This paper explores approaches from each of these perspectives through qualitative study.

The City of Seattle's nation-leading Building Tune-Ups ordinance incorporated the foundation for a unique partnership with South Seattle College's (SSC) Sustainable Building Science Technology (SBST) program to create a durable pipeline of opportunities for people entering the green workforce. A traditional community college serving Seattle's historically underrepresented communities, SSC offers a Bachelor of Applied Science (BAS) degree that provides pathways to mid- and high-skill jobs in commercial building energy efficiency and decarbonization.

The central research question is: how can policy and educational programs collaborate to equitably attract and serve diverse workers to succeed in careers in building decarbonization? The focus of this study is on career advancement, as the City of Seattle Office of Sustainability and Environment (OSE) / SSC intern program equips workers for knowledge-based careers in building performance through work-based experience. The inclusion of equity to create pathways for people of color reveals a broader range of support required to overcome seemingly minor and often compounding barriers to knowledge-based careers in building decarbonization.

This paper will outline the OSE / SSC program which has trained, educated, and provided work-based learning for more than four dozen diverse students in the past six years. Next, the perspectives and barriers facing each stakeholder -- policymakers, educators, and workers -- will be evaluated through qualitative analysis. Finally, recommendations for scaling and adapting this program will be provided. Proposed approaches will include planned updates to the OSE/SSC model including redefinition of knowledge, skills, and abilities (KSA) in the BAS program.

Introduction

Operational roles to decarbonize existing buildings require a multi-layered skill set that include technical competency in building science and energy; technological fluency including data analysis and using modern software; and professional skills to effectively collaborate, communicate, plan, and manage projects and people. Effecting built-environment decarbonization will require a diverse set of mid-career and senior professionals who have cross-trained and can steward building systems, operations teams, occupants, and decision makers towards efficient and low / zero carbon pathways.

Local and state building performance standard implementation relies upon qualified professionals that are accredited and/or hold industry recognized certifications for energy management and energy auditing (Washington State Department of Commerce 2024).

Developing a certified and capable workforce is an essential factor for success in meeting GHG

reduction / energy efficiency goals in building performance standard policy implementation. As an established goal of the Seattle Building Tune-Up ordinance, development of the policy sought to enhance the local workforce through green job training and education. Instead of creating a new workforce development program, Seattle sought out alignment with existing Community College training programs to equip mid-career students with necessary skills. The SSC SBST degree has been recognized by the City of Seattle via the inclusion of the BAS credential as qualifying certification to perform Building Tune-Ups (City of Seattle n.d.-a).

There is a growing workforce gap to fill these roles: the number of positions is increasing, needed skills are expanding, existing practitioners are aging, there is more competition for talent, and traditional workforce pipelines are being disrupted. To fill the gap, academia and workforce development programs must innovate. This paper focuses on one often overlooked element: hands-on work-based training.

Specifically, this study examines how an innovative internship program targeted at working adults, instead of traditional 4-year university students, is faring at preparing students for “building professional” careers in energy efficiency and decarbonization. The internship program began as an initial pilot in January 2020, despite immediate improvisation with a shift to remote work, it has run continuously for more than four years. This program has been a partnership between the City of Seattle (CoS) and South Seattle College’s (SSC) Sustainable Building Science Technology (SBST) program which has offered work-based learning opportunities and placements to more than 40 Bachelor of Applied Science (BAS) students. It has enhanced SBST’s curriculum by offering paid internship placements specifically focused on commercial building energy efficiency and decarbonization in government and non-profit organizations.

Internships

Academic studies widely recognize internships as a high impact practice. The American Association of Colleges & Universities (AACU) has internships listed as one of eleven high impact practices “based on evidence of significant educational benefits from students who participate in them- including and especially those from demographic groups historically underserved by higher education” (American Association of Colleges and Universities, n.d.). An analysis of Gallup polling data on internships supports that students with relevant internships are more than twice as likely to land a good job after graduation (Busteed and Auter 2017). The authors also argue that internships should be mandatory.

Other studies show positive results in student’s interpersonal, teamwork, and problem-solving skill development and overall college satisfaction is associated with internship experiences (Wesley Routon and Walker 2019). The 2021 National Survey on College Internships showed that women, black, indigenous, and other people of color (BIPOC), and first-generation college students are underrepresented in internship placements (Hora et al. 2021). Further, the study found that the role of the intern supervisor greatly influences students’ response regarding the quality of their experience (Ibid).

Policy Drivers

Market and policy drivers for building decarbonization are occurring nationwide. The City of Seattle has been a leader in implementing building performance standards (BPS)

beginning with the Building Tune-Ups ordinance in 2016 (City of Seattle n.d.-b). Seattle's Tune-Up law mandates owners of commercial buildings (larger than 50,000 square feet) to take specific operations and maintenance actions to save energy and reduce carbon emissions. Scaling up the local workforce and providing pathways to well-paying energy efficiency jobs is a key equity component of Seattle's policy design and implementation. There are multiple strategies identified to guide policy adoption and implementation in Seattle's Equity and Environmental Agenda, most specifically. "Design City environmental policies / programs to simultaneously address multiple community issues and include economic and cultural benefits for [environmental and equity initiative] populations" (City of Seattle 2017).

In 2015, as Seattle considered its next generation of energy efficiency policy which ultimately became the Tune-Up requirement, Seattle launched its first Equity and Environment Initiative. As an output of the initiative, Seattle's Equity and Environment Agenda (City of Seattle 2017), established strategies to advance racial equity developed through conversations with communities centered on those most-affected by environmental inequities. To advance environmental justice across the Seattle region, four key goal areas were identified, among them a goal area titled Jobs, Local Economies and Youth Pathways. Engaged communities expressed a desire for mentorship across all career levels to provide hands-on learning opportunities in the workplace. Seattle staff strive to use environmental programs and policies to counteract racial inequities. Cultivating clean energy career growth to support the transition to a carbon neutral Seattle has been a foundation for policy development which includes a goal to achieve a workforce that is inclusive of BIPOC and other marginalized or underrepresented groups.

Since 2016, additional building performance standards have been passed by Washington State and the City of Seattle. A series of legislation, and subsequent rulemaking, in Washington State has established energy efficiency-based building performance standards for all commercial and multi-family residential buildings larger than 20,000 square feet with compliance beginning in 2026. The City of Seattle has passed a greenhouse gas (GHG) based Building Emission Performance Standard (Seattle BEPS) with reporting beginning in 2027 and target compliance beginning in 2031 (Craighead 2023).

Progressive energy policies like Seattle's will spur stronger demand for workers to provide the professional and technical skills needed to upgrade our buildings. Seattle BEPS is estimated to create 150-270 new jobs annually within commercial building decarbonization, increasing demand for energy efficiency consultants, building operators, electricians, and HVAC-refrigerant workers. The BEPS is specific to the Seattle urban boundary, population 735,000 per the 2020 Census. These jobs provide the opportunity to expand career paths for women, BIPOC, and Women- and Minority-Owned Businesses (WMBE).

Career Qualifications

To comply with Seattle's tune-up requirement, building owners must employ someone qualified to conduct a tune-up assessment, identify deficiencies, and verify that required corrective actions were completed and implemented correctly. During policy creation, the OSE designated qualifications that a Building Tune-Up Specialist must possess and maintain to be an approved provider. Either qualified operations / facility personnel or external contractors can perform the work and serve as the qualified Tune-Up specialist. Tune-Up Specialists must have a minimum of seven years of experience, consisting of educational or professional experience with

commercial building operations and/or building energy management. To qualify they must hold one of seven certifications ranging from a Professional Engineer (PE) in mechanical or architectural engineering to professional certifications in commissioning or energy management to the SBST BAS Degree.

The inclusion of the SBST program in the Tune-Up requirement was an intentional alignment with local workforce development programs serving mid-career individuals looking to transition into sustainable building careers while completing their undergraduate degree. In addition to certification/registration, following the completion of the first cycle of required tune-ups and the Department of Energy's funded Tune-Up Accelerator program, Seattle has added an online training program and quiz that qualified providers are required to complete to attain or maintain a registration as a qualified Tune-Up Specialist (City of Seattle n.d.-b).

Based upon the initial classification for qualified providers developed from the Seattle Building Tune-Ups program, the Washington State Clean Building Performance Standard (CBPS) has established two designations that are essential for compliance with statewide building performance standards. Those designations are "Qualified Person" and "Qualified Energy Auditor". Each designation has a different set of qualifications (Washington State Department of Commerce 2024). The experience requirements are less stringent than the Seattle Tune-Ups program's requirements, and additional professional certifications have been added through initial and subsequent rulemaking.

For both the Tune-Up and CBPS programs, the qualified person incurs professional responsibility to certify that the building performs in compliance with the standard. The policy program designs are largely reliant on the certified professional's veracity in submissions as extensive technical audits are not conducted by the regulatory authorities. The career qualifications established by regulators for compliance with building performance standards set the minimum bar for technical certification for individuals with signatory responsibility for building energy efficiency and decarbonization in Washington State. These standards, like building code minimums, cannot drive the quality of projects nor create incentives for successful projects which are incumbent on the people involved in the project. Aligning and training the local workforce is an essential component of overall policy implementation success.

The "Building Professional"

The career roles that will lead the decarbonization of our existing commercial and multifamily building stock are the focus of this study require definition. The SBST program has used "building professional" as a blanket term to define graduates who have a technical, technological, and professional skill set to lead sustainability-focused change in building operations.

There is a gap in the workforce literature and labor taxonomy for mid-level leadership roles in energy efficiency/sustainability/decarbonization, particularly within existing commercial and multifamily buildings. An exhaustive review is beyond the scope of this study, however the job categories in decarbonization do not line up perfectly with traditional Bureau of Labor Statistics categories that permit analysis of market demand. One of the best taxonomic resources is the Green Buildings Career Map developed by U.S. Department of Energy and the Interstate Renewable Energy Council (IREC) (US Department of Energy and Interstate Renewable Energy Council n.d.).

Building performance standard policies are driving the need for certified and experienced people to transition into knowledge-based green jobs. The LinkedIn 2023 Global Green Skills

Report summarized that having prior experience in a green job provides an advantage for incumbent workers.

“In 81% of transitions into green jobs — jobs that have sustainability at their core — workers already have green skills or prior green job experience. Certain green jobs are more likely to be available to workers without prior green job experience. These include relatively new and quickly growing roles like sustainability manager and energy auditor” (LinkedIn Economic Graph 2023).

Beyond developing green skills, a focus on greening existing building infrastructure is a niche often not considered throughout labor studies. Traditional design roles in architecture and engineering provide a basis for understanding building performance, but evaluation of building operations is not prominent in design disciplines. The majority of jobs categorized under construction trade employment do not serve operational decarbonization in existing buildings but rather new construction or major renovations. Studies that look at the growth in construction activity for building retrofits or green building projects often fail to consider the management and leadership roles critical to project success. Skilled electrical, HVAC (particularly controls and system testing, adjusting, and balancing or TAB), refrigeration, and plumbing / pipefitting that focus on servicing existing buildings provide essential technical elements for energy efficiency and decarbonization work.

For those that may have applied technical expertise related to clean energy buildings, the professional roles necessary to guide existing buildings through decarbonization also require traditional skills such as project management, people management, problem solving, fiscal analysis, project pitching and financing, etc. Furthermore, there is often an intersection with the use of technology. For instance, many trades professionals are not acculturated to office systems when it comes to email, calendar software, task management, or office applications. Even with relative software fluency gained from classroom or online instruction, the unspoken “norms” common for many traditional knowledge professionals serve as a barrier to making a mid-career transition. Similar challenges abound for career-switchers who may have office / knowledge experience but find culture in facility management and building operations a difficult technical gap to bridge.

Sustainable Building Science Technology Program

The Sustainable Building Science Technology (SBST) program was developed in the post-American Recovery and Reinvestment Act era with the focus of training building professionals to fill roles within the high-performance building sector. The program’s first cohort of students entered the program in 2014.

South Seattle College (SSC) is a historical community college that serves Seattle’s diverse neighborhoods. SSC developed the SBST program with the support of regional industry to offer adult learners Bachelor of Applied Science (BAS) degrees. Co-located on a satellite campus with the state’s largest apprentice training center, the degree was designed to offer pathways for journey-level tradespeople, career switchers, and incumbent workers to earn four-year degrees. SBST is one of nearly one-hundred Bachelor of Applied Science (BAS) degrees offered in the State of Washington to provide opportunity and educate the workforce for in-demand occupations. The two- to three-year program has 60 core credits that include building science, energy auditing, building and energy codes, fiscal and facility management, energy policy, and utility rates and regulations.

Students are also required to complete 950 hours of work-based learning designed to focus on professional development or prototype a new career path. This requirement, now referred to as the “Career Academy”, was part of the genesis for the OSE / SSC partnership. Market demand for personnel that can serve as qualified Tune-Up Specialists or can support teams performing building tune-ups increased because of the City of Seattle ordinance. In addition, some building owners were unable to pay market rates for consulting engineering firms to complete tune-up services.

The design focus for the SBST program and its “Career Academy” strives to address industry workforce development gaps through hands-on professional project-based learning. The community college and local government partnership has specifically provided paid internships to SBST students with three distinct placement opportunities:

- Municipal building decarbonization and regulatory compliance: Working directly for City of Seattle departments on projects in energy efficiency and decarbonization. This includes projects such as energy analysis for WA State Clean Building Performance Standard compliance, building energy auditing, tune-up and benchmarking compliance outreach, and special projects connecting with trade ally networks.
- Community-based property owner energy and emissions performance projects: Working with non-profit organizations to support energy efficiency and decarbonization. This has included projects such as energy analysis for private building owners, event support and organization, supporting building operator curriculum development, and aggregating energy reporting.
- Regulatory compliance for small business owners and nonprofits: Leading energy efficiency assessments to help underserved building owners complete mandated tune-up assessments. Students have performed building operations and maintenance assessments to identify voluntary and required corrective actions under the supervision of faculty that are qualified Tune-Up Specialist providers at five buildings including a hotel impacted by COVID-19, a BIPOC owned retail location, a homeless shelter, a union trades building, and a community college building.

Internships included weekly faculty oversight and direct work oversight or interaction with city personnel, non-profit staff members, or client interaction in the case of energy efficiency assessments. This design is intended for the faculty member to provide career and technical coaching and the non-academic supervisor or contact to provide “real world” communication, feedback, and expectation setting. It is also designed to minimize the time commitment for external sponsors and provide a communication conduit between faculty and external sponsors to facilitate conflict resolution, if necessary.

Overcoming Workforce Program Barriers

Traditional workforce program design focuses on producing more skilled workers where there are labor gaps. More recently, program designs focus on providing services to help students/trainees overcome barriers to create pathways to higher wage jobs. The SBST program was built to address the labor gap in sustainable building operations. Reinforcing curriculum via project-based learning is a feature of SBST. The partnership with OSE was designed to provide higher quality workplace-based learning to students. Independent of being implemented through the COVID pandemic’s disruption to the workplace, the OSE / SSC partnership had to address challenges with funding/contracting, concerns about the quality of student work, conflicts

between academic schedules and project timelines, and limited time of intern sponsors. Training for sustainability, energy efficiency, and decarbonization in the building design and construction sector has historically come from integration into university curriculum and from professional certification, which has left a gap in pathways focused on building operations.

Establishing workforce programs relies upon demonstrating a gap in labor, typically through labor data. While studies continue to indicate ongoing shortages for key job categories in decarbonization (Eoldie Marlet and Carson 2021; US Department of Energy 2023; Elodie Marlet, Carson, and Calderon 2022). There are some clear challenges with labor category analysis for jobs that support decarbonization. Foremost, there is no effective categorization for “Building Professionals” in the current labor taxonomy. Because training for sustainability, energy efficiency, and decarbonization in the building design and construction sector has historically come from integration into university curriculum or relied upon professional certification predicated traditional design degrees, there has been gap in pathways from building operations to decarbonization. The lack of clear job categories in state and local labor data presents a challenge to establishing programs, because independent analysis needs to be done to secure support or funding for program development.

Training for sustainability, energy efficiency, and decarbonization in the building design and construction sector has historically come from integration into university curriculum and from professional certification. This has left a gap in pathways focused on building operations. OSE recognized that SSC’s SBST program was directly aligned to energy efficiency and building operation education, geared to support workforce development goals and often enrolled women and BIPOC communities. By contracting with the college for work to be performed under a qualified Tune-Up Specialist instructor, OSE removed the traditional internship model barrier and provided paid internships that directly modeled industry jobs. The following table highlights the barriers and solutions that the OSE / SSC partnership has encountered and surmounted.

Table 1. Identified SBST internship barriers and proposed solutions

| | Barrier | Program solution |
|--------------------------------|---|--|
| Paid internships | Mid-career students may not qualify for traditional work study, many are working another part- or full-time job. Unpaid internships face legal question and are inequitable. Ongoing funding is needed to pay interns, but hiring at city or non-profits taxes HR and has uncertain timing. | Provide funding to college partner. College hires students – HR team is setup for student hiring. Interns are paid directly, and college supervisor oversees hours work for payment and academic compliance. |
| Funding / Contracting | Traditional direct hire internship program only runs once annually and was targeted at 4-year students. No established pathway to contract to have college pay interns directly. College does not contract as consultant. | Seattle contracted with Seattle Colleges Foundation, which is a traditional method for philanthropic and grant funding. Foundation can be more flexible with contracting and is able to invoice and reimburse the college for wages. |
| Quality of student work | Some building owners lack comfort working with students, concerned the work would not be up to professional | Work is overseen by SSC faculty who are qualified Tune-Up Specialists and often alongside a facility manager or contractor. |

| | | |
|-----------------------------|---|---|
| | standards. Belief that a mechanical engineer is needed to do an energy audit. Concern that students will negatively impact building operations and tenant satisfaction. | SBST degree qualifies students to serve as Tune-Up Specialists (with experience). Interacting with students with experience differentiates from expectations of 18 to 22 year-old college students. |
| Mismatched timelines | Quarter academic and student schedules do not always align well to policy deadlines or government work schedules. | Building an ongoing program allows lead time for placements and collaborative definition. Longer timeframe allows for better onboarding and training, and technology logistics. |
| Intern sponsor time | Limited time for intern sponsors challenges interaction with intern. Intern sponsors are more likely to select “someone like them” which limits diversity. | Establish a central coordinator to act as advocate and assist with scope development and intern placements. Faculty sponsor can serve as interface and guide intern if sponsors have limited capacity. Establish work or staff workforce development goals so hosting an intern is a valued part of your job not an add on. |

Internship Program Demographics

Increasing racial and gender diversity in building decarbonization is a focus of the OSE / SSC internship partnership. Multiple studies have shown that the energy workforce is predominantly white and male (US Department of Energy 2023) and as the figure below illustrates, that the Seattle area is diversifying faster than the energy efficiency workforce (Eoldie Marlet and Carson 2021).

An underlying premise of the OSE / SSC partnership is that underserved communities often face difficulty securing paid internships designed to expand their skillset. Traditional internship programs at large organizations are built around the assumptions that students are enrolled at 4-year universities and can work full-time during summer break. Small and medium size non-profit organizations or companies can offer the flexibility sought by non-traditional students in terms of location, flexible hours, and accommodating cultures. These organizations often directly serve frontline communities, making them more attractive to mission-driven students. Historically, these organizations offer students unpaid placements, meaning students

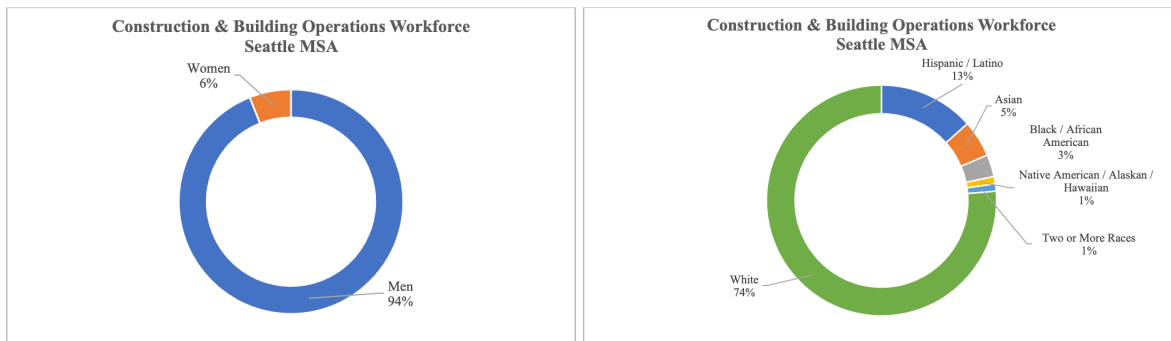


Figure 1. Gender and racial demographics of construction and building operations workforce in Seattle metropolitan statistical area. Data from (Eoldie Marlet and Carson 2021)

must choose between paid work and skill development through internships. Other studies have called out systemic issues with unpaid internships (Hora et al. 2023).

For these reasons, the OSE / SSC partnership has intentionally created opportunities for traditionally underserved students. It designed more flexible internship placements within government and non-profits working to serve frontline communities. The internships are offered year-round and designed so students can complete them while working another job and attending school. The demographics of the SBST program show more diversity than the building energy workforce at large in the Seattle metropolitan statistical area. As the figures below demonstrate, the SBST program has significantly more people of color and women than the building and operations workforce in Seattle. The OSE / SSC intern partnership has stronger female and BIPOC representation.

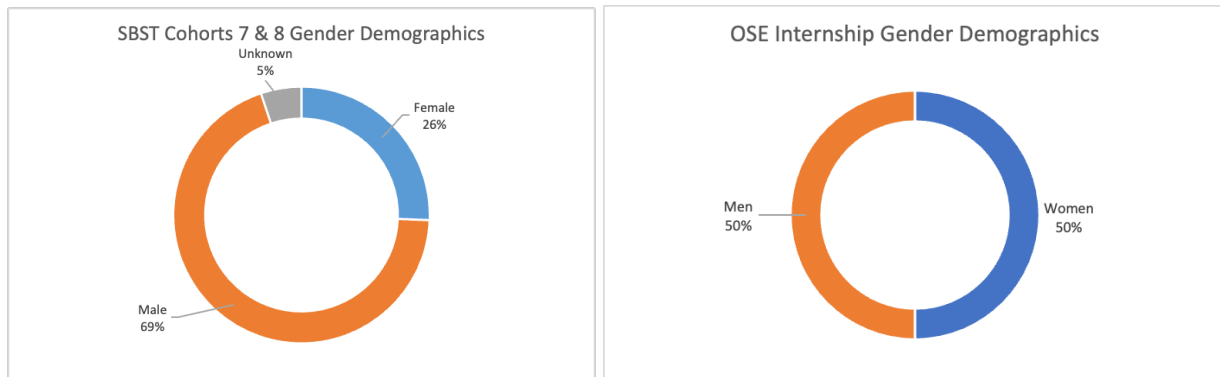


Figure 2. Gender Demographics of the SBST Program and OSE Internship Program.

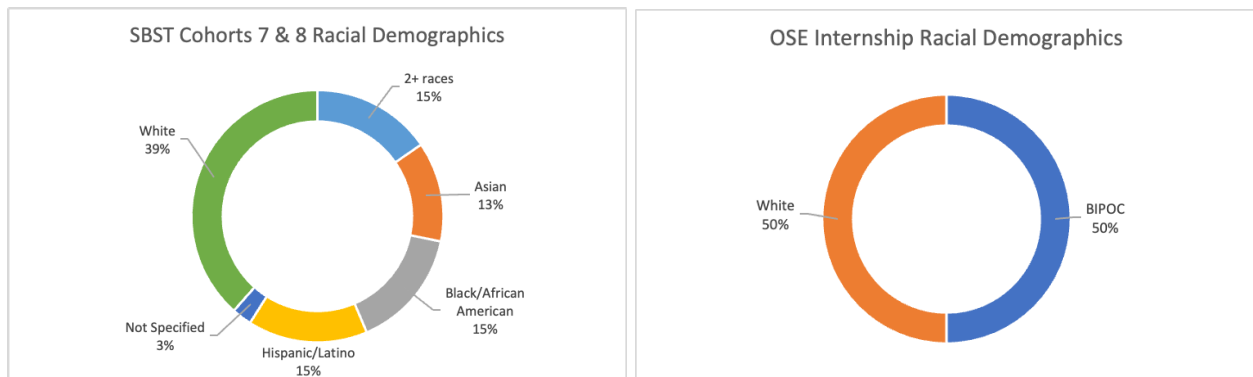


Figure 3. Racial Demographics of the SBST Program and OSE Internship Program.

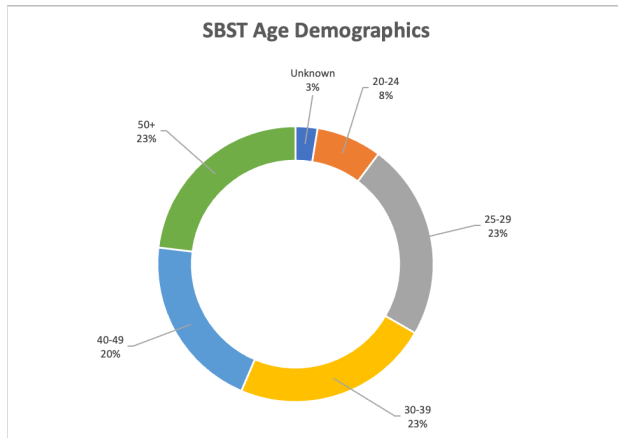


Figure 4. Age demographics of the South Seattle College SBST Program.

Marlet and Carson note that job sectors within the clean energy workforce that are attracting younger workers are diversifying faster than industries with older workers (2021). By serving mid-career workers, the SBST Program is providing opportunities and pathways to clean energy jobs for older workers. The figure below shows most students are older than 25 with significant participation from those in their 30's, 40's and 50's or older.

Survey Methodology

The design of internships, the nature of tasks, and the role of supervision and mentorship are key determinants of reported satisfaction with work-based learning experiences (Hora et al. 2023). Since the OSE / SSC internship program is designed to diversify the clean energy workforce, this study investigated intern and sponsor sentiments of quality.

Anonymous surveys were distributed electronically using an online survey instrument. Respondents completed questions with demographic, Likert scale, and open-ended questions. Quotes included in the paper were provided anonymously via open ended questions. Survey respondents were representative of student and intern demographics. A total of 26 interns and sponsors answered some survey questions (56% of the identified population of interns / sponsors). 10% of intern respondents and 26% of intern sponsors that began the survey did not complete all questions. Note, many interns and sponsors completed multiple internships, the number of respondents does not represent the total number of intern placements completed.

The intent of the study is to inform the evolution of the OSE / SSC internship structure by expanding beyond anecdotal information provided by interns and sponsors in quarter-end debriefs to allow a qualitative analysis of outcomes. Lessons learned can inform other internship programs trying to grow a national decarbonization workforce. The study design uses two paired survey instruments: one for interns, the other for intern sponsors. Most questions in the SBST intern survey were based on applicable questions from the National Survey of College Internships. To some degree, findings from that 2021 survey serve as a baseline for high impact practices. Results from the intern survey met or exceeded the baseline in terms of satisfaction and outcomes, demonstrating that the OSE / SSC partnership can serve as a model for replication elsewhere. Our survey found that two-thirds of SBST interns were very or extremely satisfied with their internships. The following tables summarize key survey findings from the perspective of the intern and the sponsor.

Intern Responses

Table 2. South Seattle College SBST internship survey outcomes

| Intern reported results | |
|----------------------------------|---|
| Professional networks | Interns reported expanded professional networks in sustainable buildings / energy efficiency |
| Internship value | Improvement in career-related skills was rated as highest internship value followed by increased confidence to pursue future opportunities |
| Clarifying career goals | Interns did not report significant value in the internships helping clarify career goals |
| Skills development | Communication, problem solving, energy analysis, energy policy, energy auditing, and greenhouse gas reduction |
| Skills development | Interns reported less skill development with teamwork and leadership |
| Feedback and sponsor involvement | Interns indicated they received significant feedback on their job performance. However, encouragement to try new ways of performing, suggesting specific strategies for achieving career goals, and assistance with finishing tasks or meeting deadlines that were difficult were deficiencies in supervisor attention. |

Internship value was rated highly by all respondents, particularly expanding professional networks (8 out of 9), enhancing academic learning (7 of 9 said Quite a bit) and improving career-related skills (majority said Quite a bit). Interns reported clarity of their academic study focus as a result of their internship placement (7 of 9 reporting Quite a bit). All interns reported some or quite a bit of increased confidence in their ability to pursue future career opportunities post internship placement.

Investigating the role of the sponsor in the internship experience supported how important the intern supervisor role is. Interns reported high degrees of respect, freedom, and flexibility. Interns also reported that intern supervisors appreciated the amount of effort they made. Lower satisfaction scores were reported about intern supervisors caring about their satisfaction with one-third of interns reporting unsatisfactory results.

Where students identified gaps in supervision oversight, their narrative comments in the survey are helpful in providing context for their overall learning. One respondent stated, “Having insufficient oversight was not necessarily a bad thing because it forced me to figure things out on my own, and it also mimicked the real world.” Another had a shared experience commenting, “It was good, I learned that we have a lot to learn to make a difference as we are all figuring this out together.” Another respondent suggested, “I would have liked more accountability, outlined scope of work, and guidance throughout the process.”

Interns did make several recommendations for program improvement including, “I would have liked to be engaged in more useful activities rather than just sitting in on meetings and trainings most of the time. I had very little interaction with the... person who was supposedly overseeing my internship. My site supervisors were not always sure what to do with me, so I did a lot of learning and only produced something useful for them when I proposed it to them

myself--at which point they were very appreciative.” Another intern shared, “After my internship, I enrolled in a professional communication class where I learned how to push back or decline unnecessary meetings. I wish I had taken this course earlier; with that knowledge, I could have requested fewer weekly meetings for straightforward tasks, improving time efficiency and reducing stress.”

Intern Sponsor Responses

Table 3. South Seattle College SBST internship sponsor survey outcomes

| Intern sponsor results | |
|---------------------------|--|
| Likelihood to host | Majority are very likely to host another intern |
| Satisfaction | Somewhat to very satisfied with internship |
| Intern match | Felt the internship matched quite a bit to what was represented to the sponsor |
| Sponsor skill development | The internships helped build internal supervisory skills |
| Satisfaction | Somewhat to very satisfied with internship |
| Organizational goals | All respondents feel the internships were related to their organization’s goals |
| Career preparation | All respondents feel their intern is better prepared for employment beyond graduation post internship. |

Survey outcomes indicate eight out of ten sponsors will host another intern. Many sponsors have been hosting SSC interns for multiple years and four sponsors have placed four or more interns since 2020. A summative comment from one intern sponsor indicates their impression of program outcomes for interns, “Yes- I feel the internships and projects created through the SBST partnership are more akin to a college co-op, experiential learning course, or capstone project than a traditional internship. Overall, these forms of education and learning environments prepare students better post-graduation.”

The study, due to its design, is not conclusive regarding differences in age, race, culture, between intern sponsors and interns. Most sponsors attended 4-year universities or earned graduate degrees, with less than 20% having attended a community college or technical college. Comments from sponsors and interns indicate misalignment in office culture norms ranging from preferred communication media, calendar use, and expectations of response timeliness. We hypothesize that increased awareness regarding cultural norms and learning styles will improve reported experience for interns and sponsors. We believe that these can be addressed through required training for both parties.

Sponsors commented on the value derived from the internships and the positive aspects of the intern experience they observed from the program with comments including: “Hearing positive feedback from the hosting departments, getting work done that was otherwise being put

off or on the wayside, helping the interns make connections within the City.”, “We felt that the experience and exposure we gave the intern was meaningful.”, and “Seeing students getting familiar with the building tune-ups ordinance as it (and other similar energy efficiency related mandates) will increase in the future.”

Sponsors had limited experience with hosting interns in general with half of the ten responding sponsors being new to hosting interns. Less than 10% of intern sponsors had previously hosted a community or technical college student prior to participating in this internship program. Therefore, engaging in this type of workforce development program highlighted several challenges. Sponsors highlighting these challenges included comments:

- “I hadn't previously worked with an intern with these sorts of challenges. It was helpful context from the perspective of understanding workforce development issues.”
- “It's great to have a fresh perspective on the performance of our buildings and to be reminded of the improvements that could be made to our facilities.”
- “Scaling up students’ hands on experience, giving them government work exposure, helping them build their resume and hone in on what they want to do post-graduation. Students have helped owners tackle expensive tune-ups that they were struggling to afford. Students helped us accomplish project work that we didn’t have capacity for.”
- “Working with students who wanted to learn new things and are willing to ask the right questions in order to be the most effective member of our team. Truly great students who are a pleasure to work with.”

Sponsors also reported that internships delivered value to their organizations. Organizations with workforce development and equity goals have hosted multiple interns. Value was often derived from students completing work that would otherwise be contracted out or delayed such as implementing operational fixes such as exhaust fan balancing or performing night-walks to identify system scheduling issues.

- “The internships were valuable to our organization by increasing capacity to advance our service equity outreach goals for OSE’s building energy programs, and by creating an evolving workforce development model/partnership that provides experience and prepares students to enter the green jobs industry.”
- “By helping us with important items that might not have been significant enough to have been getting as much attention as it deserves.”
- “The exhaust fan analysis was something had wanted to do for a while, but we couldn't find time to conduct the study. The intern allowed us to do that.”
- “Experience managing a student, help with completing tasks, learning how to relay and oversee tasks”

Conclusion and Recommendations

This study has confirmed that the innovation deployed to create a durable city government and community college workforce partnership is yielding positive results for interns and intern sponsors in Seattle. It validates the positive impact that participation has for SBST students and the opportunity to sustain and expand the program to serve students and organizations.

The OSE / SSC program’s focus on training building professionals is important for jurisdictions facing a workforce gap when considering or implementing building performance

standards. Other programs designed to train for job categories where existing subject matter expertise or transferrable skills are important to fill knowledge-based green jobs can find guidance from this study.

Critical success factors in the OSE / SSC program include having an existing degree program that can be recognized as a credential for decarbonization work, incorporating work-based learning in the training program, intention in serving underrepresented populations, establishing durable funding for paid internships, and establishing a process for developing internship scopes and matching interns. Areas where this program can focus improvement include developing training for intern sponsors, formalizing the scope and duties for interns as they begin their work, and finding additional opportunities for students to develop knowledge, skills and abilities such as teamwork and leadership skills.

This internship program was first piloted on a small scale and grew incrementally until it could operate at scale. Establishing and maintaining trust between participants has been essential to success because constant problem solving has been required to overcome bureaucratic barriers working across two public sector organizations. While the mission alignment of the program has never been in doubt, the potential risks taken in the partnership can't be overstated. Early pilots required investments in coordination, communicating success, and establishing feedback. Without ongoing adaptive management afforded through this process, it is unlikely that the program could have persisted. The dedication required and renewed support throughout the partners organizations, even for a program of moderate scale, is significant. Like many programs, up-front investment in design and constant tweaks have allowed a more streamlined ongoing implementation

Overall, the OSE / SSC program has delivered value for interns and sponsors. The non-traditional design based loosely on a consulting model where tasks are designed and student resources lined up with client sponsors has built flexibility into the program to overcome fundamental barriers to developing this kind of program. This model also allowed public sector contracting and invoicing to fiscally support the program. This creates accountability, transparency, sustainability and can supplement an initial infusion of funding from WIOA, DOE, EPA etc. For organizations that are seeking funding for green jobs coming from the Inflation Reduction Act or Bipartisan Infrastructure Law, consider planning for a minimum 5-year time horizon to launch a quality decarbonization workforce development program, especially if a major program overhaul or new program development is required. Adaptive management is essential, and if results and reporting need to be developed without a pilot or shakeout phase, there is significant implementation risk. It is also important to build in survey methodology from the start of an internship partnership to capture feedback in a structured way at the close of an internship placement to enable real time enhancements to the experience.

To continue to scale up and adapt the internship program, we are further aligning the program to mirror how many professional service firms and consultancies operate. This will establish faculty leads as “principals in charge” with accountability for the program, sponsor relationships, overall quality, and managing escalations. We anticipate this will continue to support diverse student experiences while addressing some of the key areas for improvement in the program. The opportunity for the SBST program to negotiate project scopes and schedules with sponsors in advance and assign one or multiple interns to accomplish deliverables helps overcome challenges with academic schedules. A comment from an intern sponsor underscores this point, “Structuring the internship as an independent project not dependent on our internal

deadlines with the city, letting the intern have ownership rather than responding ad hoc to requests, which did not allow them to see the full arc of any project.”

It also addresses sponsor comments regarding student availability, particularly if unexpected circumstances arise and another student needs to step in to complete work for a sponsor. One lesson from early pilots is that training one or two students as trainers or quality control leads has benefits in teamwork and leadership skill development. In this way, SSC’s program expands beyond industry technical knowledge to the skills and abilities that employers seek in successful applicants.

Comments from intern sponsors indicate that additional engagement and training will benefit intern sponsors: “(It is) difficult sometimes finding scopes that were the correct fit for an intern and staff time to give them direction and guidance.” and “Our organization does not have a culture of formal training or internships and this made it hard to be a good host. We continue to struggle with providing training, mentorship and growth opportunity even internally, so I don’t see us as a good potential host at this time.”

The OSE / SSC program will plan to standardize intern and sponsor on-boarding via recorded / asynchronous training in direct response to comments garnered from the survey. Instead of an “apprentice” model where there is a direct supervisor to intern relationship, the new structure will create a “matrix” relationship with other students, SBST faculty, and intern sponsors. Care and coaching is needed to ensure students maintain regular contact with their sponsors by modeling strong communication skills. Through training and focused discussions with sponsors, the program intends to improve suggestions on strategies for achieving career goals, encouraging new ways of performing on the job, and help to finish difficult tasks or meet deadlines. More formalized training and definition of the organizational structure is also intended to develop professional skills including interacting with project scopes and schedules, task management, resource planning, and interacting with quality reviewers.

Students also reported value from increased interaction within the Office of Sustainability and Environment. Exposure to policy development and program implementation provided students with municipal government experience, learning first-hand about challenges and implications of local laws. Opportunities to attend team meetings and present findings were lauded by interns, and the opportunity for City of Seattle staff to see students present project outcomes can bring additional professional networking and increase support for the program.

Finally, this program has offered opportunities to students within government and non-profits. The next opportunity for expansion is to cultivate partnerships with private sector firms to align with workforce development goals. The adoption of consultant style internships will align with traditional industry private sector contracting and delivery models helping reduce risk and training overhead.

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