

# Connecting Disadvantaged Communities to Quality Jobs in the Transportation Electrification Sector: An Initial Assessment

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December 2018



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## Executive Summary

The City of Seattle and other local governments and agencies are making substantial investments in transportation electrification. The potential environmental returns on those investments are well documented. Drive Clean Seattle leadership seeks to understand whether and how transportation electrification can yield additional social benefits in the form of quality job creation for marginalized communities.

This research brief provides preliminary answers to the following questions, as well as recommendations for follow up action.

1. What kinds of quality, living wage jobs are created via transportation electrification?
2. Which of those jobs have greatest accessibility for marginalized communities, and thus merit priority focus from the City of Seattle, other public agencies, and private sector partners?
3. What actions can the City of Seattle and other local government agencies take to support job quality, job growth, and job access for marginalized communities in the transportation electrification sector?

## Key findings

1. Significant numbers of local net new jobs are concentrated in two subsectors: Electric Vehicle Service Equipment (EVSE) installation and shared mobility fleet services.
  - Electrical work is high wage and requires significant training. Quality jobs can best be supported with investment in training programs and career pathways, and by linking jobs standards to EVSE permitting and procurement.
  - Fleet services is low wage work, with low barriers to entry. The subcontracting-reliant business model puts fleet services work at risk for precarious employment practices. Quality jobs in this subsector can best supported by creating a level playing field for high road contractors who meet or exceed the requirements of the City's current labor standards ordinances.
2. Local public agencies can support quality job creation in other regions by procuring bus and municipal fleets from manufacturers who have committed to high road job policies. LA Metro's commitment to purchase zero-emissions busses from manufacturers who participate in the US Employment Plan is a good model.
3. Other important auto and transportation-related occupations, like automotive service technicians and dealership salespeople will see transitions in the nature of their work, but will not experience significant new job growth due to transportation electrification.
4. IT, management and sales jobs are growing and relatively high wage in the EV sector, but these jobs are relatively few in absolute numbers, and concentrated in the headquarters cities of EV/EVSE companies.
5. The City of Seattle has existing programs, policies, and practices that could be applied directly or could be adapted to support high road job creation in transportation electrification.

6. Additional data is needed to craft and evaluate policy in this arena. The City should partner with public and private sector actors to improve the collection and centralization of job quantity, quality, and access data.

Transportation electrification is an important new sector that is poised to deliver critical social benefits. To date the policy focus for those benefits has been around large-scale greenhouse gas emissions reductions. Some actors are also increasingly focused on the impacts of transportation electrification at the community health and transportation equity level.<sup>1</sup> Developing an additional focus on how transportation electrification can contribute to solving economic inequality is an important next frontier for policymakers, the private sector, and community advocates. The nascent and emerging nature of the industry, as well as the extraordinary confluence of public and private sector support, creates an important opportunity to combine, rather than juxtapose racial, economic, and environmental justice strategies.

### Purpose, methodology and key definitions

This brief is intended to provide an initial snapshot of the range of work in the transportation electrification (TE) sector, with a focus on quality employment that is accessible to target populations as defined below. The brief sets the stage for further research, dialogue, prioritization, and policy making among key public, private sector, and community-based actors.

The relatively new and very dynamic nature of the TE sector requires a creative approach to assessing job quality and quantity. In order to prepare this brief, I combined an analysis of standard occupational data for the automotive and electrical industries, a review of relevant literature, and anecdotal information from interviews with seventeen key stakeholders in the field. This combination of sources was used to develop an initial map of the key jobs in TE as well as recommendations for where the City and its partners should focus their efforts on creating quality employment for target populations.

Generally, I used sources in the following ways:

- Occupational data from the Bureau of Labor Statistics and Washington State Employment Security Department was used to identify important job categories, define the size of the overall universe for those jobs, and collect wage information.<sup>i</sup>
- The literature review was used to validate job categories and build upon the methodology of previous efforts to quantify transportation electrification related jobs.
- Interviews with key stakeholders were used to understand job requirements, business models, and develop rough “on-the-ground” estimates of the actual amount of labor required to perform key transportation electrification related jobs.

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<sup>i</sup> “Overall universe” includes but is not limited to those jobs within an occupation that are specifically related to transportation electrification

This analysis is delivered with a high confidence level regarding the policy recommendations and major job categories, a medium confidence level regarding wages (as proxy for overall job quality), and a low confidence level regarding actual jobs numbers. This spectrum of confidence levels is a function of the limited data sets available in this emerging economic sector, and the challenges involved in disaggregating transportation electrification-related work from the overall universe of transportation and electrical infrastructure related jobs.

Developing a high confidence assessment of jobs numbers would require a combination of economic modelling and comprehensive on-the-ground surveying designed to disaggregate the portion of work that is TE-specific from broader occupational data in the automotive and electrical contracting sectors. Such work is beyond the scope of this brief. It may be an activity that the City wishes to pursue in the future, although better data collection and reporting practices among public and private sectors actors, as recommended below, would yield the same or better results.

## Definitions

### *Transportation Electrification, Electric Vehicles, Electric Vehicle Service Equipment*

Transportation electrification (TE) refers to a broad set of strategies designed to transition the transportation sector, including passenger cars and trucks, transit, and maritime transportation from fossil fuels to clean, carbon neutral electricity. TE includes individual and fleet vehicle transitions from internal combustion to electric propulsion, the work of building out charging infrastructure and needed upgrades to our utility infrastructure.<sup>2</sup>

This brief focusses on a specific subset of the TE project: the transition to battery electric and plug-in hybrid electric vehicles (EVs) in passenger cars, public fleets, and bus transit, as well as the installation of Level 2 and DC Fast Chargers, sometimes referred to as Electric Vehicle Service Equipment (EVSE).

Research on jobs in other TE subsectors like maritime transportation, light rail, and utility grid upgrades is outside the scope of this brief. However, for purposes of brevity, this brief at times refers to the deployment of electric vehicles and electric vehicle service equipment as “transportation electrification.”

### *Target communities*

For purposes of this analysis, I’ve defined “target communities” as people or communities with the greatest barriers to employment, and/or the greatest need for quality employment. These individuals and communities include the following.

- Residents of Economically Distressed Zip Codes, as defined in the City of Seattle’s Priority Hire Ordinance. This definition is based on three indicators: the number of people living below 200% of the Federal Poverty Line, high unemployment rates, and high rates of individuals over 25 without a college degree.<sup>3</sup>

- People of color and/or women who face racial and/or gender discrimination in hiring practices or on the job.
- The formerly incarcerated.

### *Quality employment*

At various points in the brief, I refer to “quality employment” or “quality jobs.” Generally, this refers to jobs that:

- pay a living wage, which may be higher than minimum wage;
- include a minimum package of benefits;
- have career paths that support workers income and personal growth;
- are accessible to target communities via either low barriers to entry, or comprehensive and targeted job recruitment and training programs;
- have opportunities for workers to exercise their individual and collective voice, including through union membership.

As a potential next step, the City may wish to collaborate with community, workforce development, labor and private sector stakeholders to develop a definition of “quality jobs” that is tailored for the TE sector.

### *Major categories of transportation electrification-related jobs*

The following two charts illustrate major components of the EV and EVSE supply chains along with related occupational categories. These models are derived from and expand upon Bureau of Labor Statistics analysis and analysis conducted by UCLA’s Luskin Center for Innovation.<sup>4 5</sup> In an effort at simplification, and because they’re less relevant for this brief’s purpose, R&D and disposal related activities are omitted. Jobs listed in each supply chain stage are discussed in the remainder of this brief.

Figure 1 – EV supply chain with related occupations

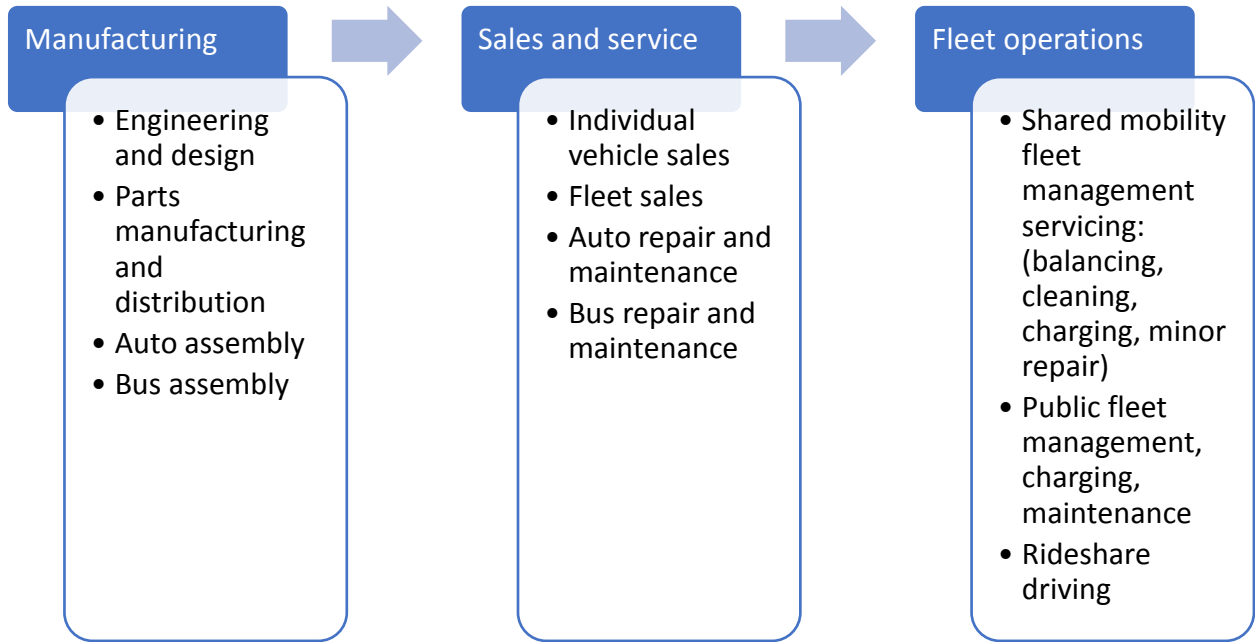
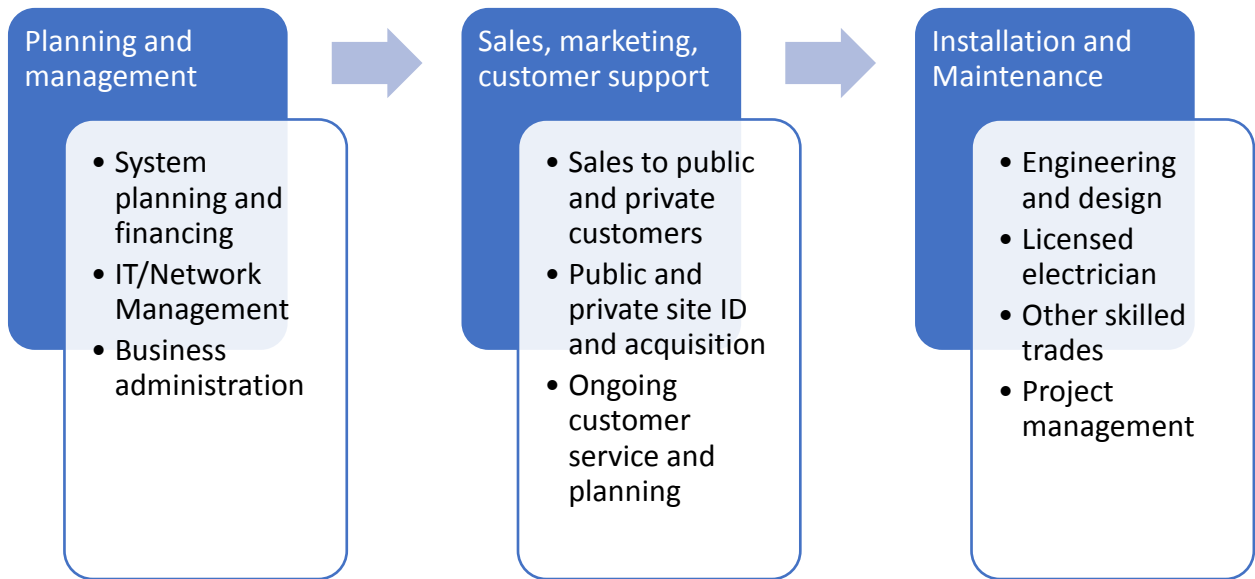


Figure 2 - EVSE supply chain with related occupations



How big is the possible universe of TE-related jobs in the Seattle region?

Table 1 below describes the maximum potential universe of EV/EVSE related jobs in the Seattle King County Metro area in a scenario where EV adoption is at 100%, and all electricians work on EVSE only. Wages are included in the table to give a sense of relative job quality. The total number of TE related jobs using these assumptions is 14,310.

Obviously, 100% EV adoption and 100% EV-related electrical work are not realistic scenarios, and these numbers are very much a high-side estimate. They may be off by as many as two orders of magnitude. Nevertheless, they're useful for understanding the maximum potential universe, the relative numbers of jobs within specific occupations, and relative wages.

A more realistic, if still very rough, jobs number can be derived by using the current estimated 2% uptake of EVs in the city as the factor to determine the TE-related share of jobs.<sup>6</sup> Under this assumption, the jobs number is 286.

As an additional reference point to triangulate around, researchers at Portland State University's Northwest Economic Research Center conducted a statewide study of EV-related jobs. Using a combination of modeling and surveys, they found that there were 411 jobs directly in the EV sector, and 1169 jobs created indirectly via EV-related economic activity, in 2013.<sup>7</sup>

*Table 1 - Maximum Universe of EV/EVSE-related jobs in the Seattle-King County Metro Division*

Occupational Title	Industry Name	Estimated employment 2017Q2	Average Wages
Automotive Service Technicians and Mechanics	Automobile dealers	1,863	
Automotive Service Technicians and Mechanics	Automotive repair and maintenance	1,279	
Total Automotive Service Technicians and Mechanics		3,142	\$24.32
Retail Salespersons	Automobile dealers	1,680	\$17.86
Cleaners of Vehicles and Equipment	Automobile dealers	736	
Cleaners of Vehicles and Equipment	Automotive equipment rental and leasing	243	
Total Cleaners of Vehicles and Equipment		1,760	\$15.77
Assemblers and Fabricators, All Other	Motor vehicle manufacturing	502	
Assemblers and Fabricators, All Other	Motor vehicle parts manufacturing	144	



Total Assemblers and Fabricators		646	\$18.79
Customer Service Representatives	Automotive equipment rental and leasing	224	
Customer Service Representatives	Automobile dealers	184	
Customer Service Representatives	Automotive repair and maintenance	27	
Total Customer Service Representatives		435	\$20.46
Electricians	Building equipment contractors	6,124	\$34.01
Electrical and Electronics Installers and Repairers, Transportation Equipment	Local government other	198	
Electrical and Electronics Repairers, Commercial and Industrial Equipment	Professional and commercial equipment and supplies merchant wholesalers	74	
Total Electrician and Electronics Installers and Repairers		272	\$32.07
Electrical Power-Line Installers and Repairers	Local government other	251	\$40.47
<b>Total potential universe of EV-related jobs</b>		<b>14,310</b>	

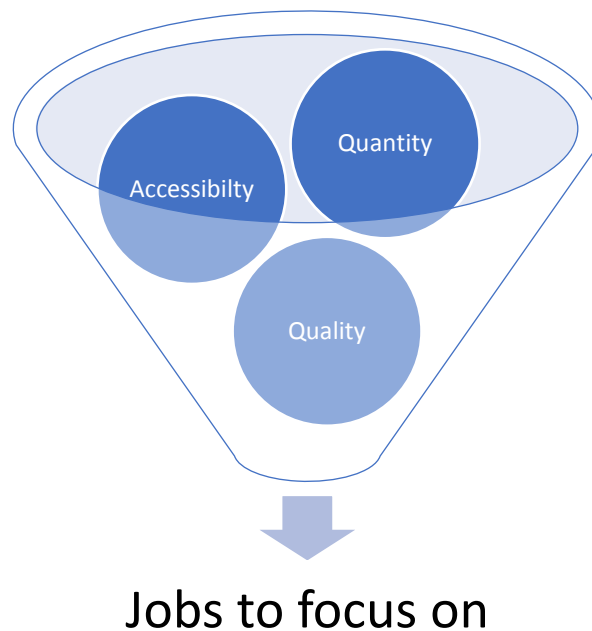
### Significant opportunity exists to create meaningful career pathways and support high quality jobs in the EV/EVSE sector

Despite the current uncertainty regarding the total number of jobs in the local TE industry, interviews with TE experts in the private sector, public agencies, and community-based organizations revealed important opportunities to create career pathways and support quality job creation in the EV/EVSE sector. In fact, policymakers and key stakeholders can lay an important foundation for delivering equity outcomes via TE by focusing on certain strategic

occupational categories rather than on overall jobs numbers. This approach will ensure that as the industry grows, quality jobs will grow with it.

This brief uses the following criteria to determine which jobs the City and its partners should focus on first.

1. Number - High number of jobs in absolute terms, and/or high growth potential in the Seattle region.
2. Access - Low barriers to entry for target populations and/or entry is supported by strong career pathways and training programs.
3. Quality - Living wages, stable employment, voice on the job and/or pathways to secure these qualities exist within policy or business model.



When filtered through the criteria described above, two occupations rise to the top as potential areas for public action to support quality jobs for target communities:

- Electricians, who perform the core work of installing and maintaining EVSE
- Fleet services workers, who clean, service, and balance fleets of shared electric vehicles.

Each of these occupations are discussed in greater detail below.

### Focal point #1 - Electricians - EVSE Installation and Maintenance

Electrical work is one of the two job categories with the greatest potential for local net job growth resulting from TE. Electricians perform the core work needed to install new EVSE. As EVSE needs grow, so will demand for electricians to install them.

Electricians earn relatively high wages, and training programs exist to support career pathways from target communities.

Table 2 provides a snapshot of average wages and overall employment numbers for electricians in the Seattle region, as well as anecdotal information on electrician utilization for EVSE installation.

*Table 2 - Electrician Landscape at a Glance*

Average Wage	ESD employment numbers (all electricians, not just EVSE)	Electrician utilization in EVSE sub-sector (anecdotal)
\$34.01	6132	<p><b>For Level 2 Chargers</b>            “2-4 hours to install a level 2 charger, 6 chargers at a site might take two guys a day”<sup>8</sup></p> <p>“Often done by property owner’s electrician.”<sup>9</sup></p> <p><b>For DC Fast Chargers</b>            “Each site with two DC fast chargers takes about a week to two weeks of each of three trades’ work. Two electricians, two to four civil construction (operating engineers/laborers backhoe, concrete), and carpenters build to build forms. It’s about a 10 person team.”<sup>10</sup></p>

DC fast charger installation is more complex and labor intensive than Level 2 chargers – focus here for job creation

The complexity of the electrical work required for EVSE installation varies with the type of charger being installed.

Level 2 chargers can be installed by any licensed electrician. One EVSE company representative described the work as similar to installing a large household appliance.<sup>11</sup>

DC fast chargers require a more complex installation as well as significant site acquisition, design, and engineering work. Multiple skilled trades are involved in installation, including carpenters, laborers, and operating engineers. Electricians installing DC fast chargers need to be able to read engineering plans and have familiarity with installing 3-way, 480 volt power.<sup>12</sup>

EVSE has low maintenance requirements, thus maintenance is not a major job generator  
 Both Level 2 chargers and DC fast chargers are designed for low maintenance, requiring relatively little labor.

- Much routine maintenance work, including diagnostics and resetting equipment is performed remotely.<sup>13</sup>
- One Level 2 charging company simply replaces chargers that need maintenance, performing refurbishment at a plant in California.<sup>14</sup>
- A DC fast charging company reported that their chargers receive a monthly on-site inspection and maintenance, a service that is contracted out to an engineering and construction firm.<sup>15</sup>
- Seattle City Light reported that one technician services charging stations quarterly to clean charging stations. He checks electric connections, cleans station, tightens lugs on wires, runs diagnostics on chargers.<sup>16</sup>

#### EV-specific career pathways for electricians

Training programs for electricians are supported by the private sector and labor unions. EVSE specific classes are available to journeymen electricians via the Puget Sound Electrical Joint Apprenticeship Training Committee (PSEJATC).<sup>17</sup>

The Electric Vehicle Infrastructure Training Program (EV ITP) reportedly certifies electricians in all aspects of EVSE installation and maintenance.<sup>18</sup> The latest iterations of the program also include more complex issues of site assessment and planning.<sup>19</sup> The current status of the EV ITP in the Seattle region is unclear at the time of this writing and merits further investigation.

#### Policy recommendations

DC fast charger installation is relatively labor intensive, and requires substantial planning, permitting, and coordination with utilities. As a result of these characteristics, DC fast charger installation is an important sub-sector to test and pilot the linkages to quality job creation.

Public agencies, private sector leaders in the EVSE and electrical contracting fields, minority and women owned businesses, and certified training and apprenticeship programs could collaborate to build and support a cohort of electricians and contractors who are highly skilled in EVSE installation, commit to high road job standards, and meet minority and women workforce utilization targets.

The City could support this effort through a combination of permitting incentives and requirements and through its procurement processes.

For example, the City could make participation in the EV Charging in the Public Right of Way (EVCROW) program contingent on charging companies demonstrating that their labor force has been certified by the EVITP, PSEJATC or other appropriate training center, on meeting specified standards for minority and women participation in skilled trades work, and on specified levels MBE/WBE participation at the contractor level. Such an initiative would be in keeping with City's expressed desire to plan for racial equity benefits in the program.<sup>20</sup>

One major EVSE provider noted that they have experience complying with prevailing wage, MBE/WBE, and other highroad contracting requirements in jurisdictions where they're required.<sup>21</sup>

The City could also use public sector pilot programs to set and test job quality and access standards in the EVSE installation subsector. Seattle City Light is putting in 20 DC fast chargers around the City of Seattle in the next year. Assuming 1-2 weeks of work per site, a 10-person dedicated crew could have five to ten months of solid work focused on charger installation, providing an opportunity to test and refine key skills needed. Seattle City Light could also use its public contracting process as a lever to raise standards and support electrical contractors who meet them.

The City's priority hire ordinance and related programs could provide a model for how to structure policy and requirements for support and permitting for EVSE installation.<sup>22</sup>

*Note: according to community advocates interviewed for this brief, low income and people of color communities in South Seattle and Beacon Hill are concerned that DC fast charger siting will exacerbate the forces of gentrification. While the emissions benefits of TE are welcome in communities disproportionately impacted by air pollution, DC fast chargers are perceived as serving a wealthier, out-of-the-area constituency, at the expense of investment in shared, public electric transit that would benefit current residents.<sup>23</sup> Furthermore, community advocates have documented the ways that gentrification-induced displacement leads to low-income residents commuting further, from areas that have less public transit, leading to increased VMTs and GHG emissions.<sup>24</sup> Leveraging strong career pathways into quality electrician jobs installing EVSE and DC fast chargers, as well as investing in electrified public transit ensures that TE benefits accrue to target communities.*

## Focal point #2 - Fleet service and maintenance – private sector shared mobility fleets

Shared mobility fleet maintenance and servicing is another area of expected EV related job growth. In contrast to electrician's work, this body of work has low barriers to entry and training requirements. However, compensation is generally minimum wage or close to it. And, the business model for fleet maintenance and servicing relies on subcontracting, creating additional challenges for maintaining workforce standards.

Shared mobility and TE are rapidly converging:

- The City of Seattle's New Mobility Playbook Strategy 5.3 sets out to "promote the shift toward electric shared mobility services."<sup>25</sup>
- ReachNow offers electric vehicles. Ten percent of its fleet was electric as of mid 2017.<sup>26</sup>
- LimePod's new carsharing service director recently said: "The goal is to quickly swap out the conventional Fiats with this electric vehicle,"<sup>27</sup>

- Envoy, an on-demand vehicle provider not yet operating in Seattle exclusively operates electric vehicles, and advertises a turnkey product, including chargers to property owners.<sup>28</sup>

Shared mobility fleets require significant labor to operate

Fleet servicing workers perform a range of functions to keep shared mobility fleets moving, including: charging, maintenance, technical troubleshooting, vacuuming, assessing damage and taking cars to the body shop and balancing fleets.<sup>29</sup>

This work is similar to the “Vehicle Cleaners” occupation, a relatively large occupation within the automotive sector.

Table 3 summarizes average wages and the total universe of vehicle cleaners, as well as provides anecdotal information on worker utilization for EV shared mobility fleets from employer interviews.

*Table 3 - Shared Mobility Fleet Services Work at a Glance*

Average Wage	Total regional employment in the “Vehicle Cleaners” occupation	Anecdotal worker utilization information
\$15.77  *One leading provider reports paying wages \$1-\$2 over minimum wage	1792	One major cleaning/servicing company uses 20-30 FTEs for the entire Seattle fleet of a major carshare company. As a rule of thumb, each 50 cars = 1 FTE <sup>30</sup>  “We’re still learning about the worker to vehicle ratio for EVs. 1 person per 25 cars at the onset is a guess. Two people facilitate the first 50 cars. Then you ramp up to 1 per 25-50 additional cars.” <sup>31</sup>

#### Career paths

Vehicle cleaning and servicing work is entry level, requiring a clean driving record and background check. One cleaning company does more specialized training work in house. There are some opportunities to move up to various levels of supervisory roles, but a lean management structure means that advancement is not a viable path to higher wages for most cleaners.<sup>32</sup>

### Policy recommendations

On the one hand, the low barriers to entry for vehicle cleaners make the jobs relatively accessible to target populations who may face challenges finding employment elsewhere. On the other hand, the low pay and sub-contracted business model in the industry means that the City and high road private partners will need to apply a suite of policy supports to enhance these jobs, and ensure that high road companies are not undercut by low-bidders who squeeze labor.

No evidence of current problems in the EV fleet servicing industry were found while researching this brief. However, the fundamental business model of contracting out for fleet servicing work makes fleet servicing workers vulnerable to the same challenges in ensuring employer accountability that workers in other subcontracted industries face.<sup>ii</sup>

The City of Seattle has numerous existing ordinances and policy guidelines that could support this work. Chief among them are the package of ordinances administered by the Office of Labor Standards, including the Paid Sick and Safe Time, Minimum Wage, and Wage Theft ordinances.<sup>33</sup>

The City and high road employers may also wish to review current hiring practices around criminal background checks in order to ensure compliance with the spirit and the letter of the Fair Chance Employment ordinance, while protecting business owner's legitimate interests in safety.

The City's New Mobility Playbook provides additional aspirational direction in this area. The Playbook declares that "new mobility models should also promote clean transportation and roll back systemic racial and social injustices borne by the transportation system." And the Playbooks' appendices specifically endorse policy goals including:

- "Ensure a living wage for those employed in the shared mobility industry... The shared mobility labor force should not need to work unsafe amounts of hours to make enough money to live in the Seattle region."
- "Develop a shared mobility ladders of opportunity roadmap for communities of color, women, and all other protected classes,"
- "Partner with workforce development groups to establish a job training program to prepare shared mobility workers for an electric and automated mobility future."<sup>34</sup>

In addition to considering specific ordinances raising standards in the EV workforce, the City could consider using its procurement, permitting, and coordination powers to incentivize responsible EV employers to raise standards in low wage segments of the industry like fleet services. Tools like those described below may be especially powerful because they ask fleet providers (ReachNow, etc) who have greater economic power than their subcontractors to take responsibility for working conditions.

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<sup>ii</sup> See the National Employment Law Center's report "[Temped Out – How the Domestic Outsourcing of Blue Collar Jobs Harms America's Workers](#)" for further discussion of these challenges

Access to charging infrastructure is a key requirement for EV fleet growth. The City could make access to public charging infrastructure, or private infrastructure in the public right of way contingent on a fleet owner demonstrating high standards in its maintenance and service workforce.

Taking the idea a step further, demonstrated compliance with workforce goals could become a requirement of the carsharing permitting process. Approaches like these have been proven to work in other sectors like waste management and airport transportation.

## Additional important job categories in the EV and EVSE sectors

### Manufacturing

Seattle and the state are not major auto manufacturing centers. However, the city and other local partners can support quality job creation for target communities in other jurisdictions through careful deployment of its procurement policy when considering municipal fleet, and transit fleet purchases.

King County Metro and other agencies could choose to emulate Los Angeles Metro Transit Authority's commitment to purchase Zero Emissions Busses from a manufacturer that has committed to meeting high job quality and access standards via participation in the US Employment Plan.

The US Employment Plan, developed by experts at the Brookings Institution, University of Southern California, and Jobs to Move America, provides transit agencies with tools at the proposal, evaluation, compliance and implementation stages of the procurement process that give bidders extra credit for the creation of high quality jobs for workers facing barriers to employment.<sup>35</sup>

### Fleet service and maintenance – public fleets

Public agency motor pool and public transit fleets both contain large numbers of vehicles, and require significant maintenance. And, public sector employment tends to pay higher wages and provide meaningful benefits.<sup>36</sup>

Interviews with fleet managers at the City of Seattle and King County Metro revealed that they do not anticipate reductions in mechanic workload as a result of EV adoption, as all the other systems on the vehicle (beyond propulsion) still require regular maintenance.<sup>37 38</sup>

King County Metro reported that they have an in-house training program that helps current diesel mechanics transition their skills into the electromechanical arena.<sup>39</sup> The City of Seattle reported that maintaining electric vehicles is a standard part of a mechanics work.<sup>40</sup>

The City's Fleet Management Workforce Development Manager noted that EV manufacturers current practice of closely holding proprietary diagnostic and repair software and equipment



means that EV specific repairs must happen at the dealership, incurring significant downtime and additional labor costs. The City could potentially maintain or expand public sector automotive repair positions by negotiating with manufacturers to make sharing maintenance software and technology a condition of procurement contracts.<sup>41</sup>

### Private sector auto repair

Automotive service techs are a relatively large and relatively high paying occupation within the automotive sector, and thus important to pay attention to. Interviews with service managers at two auto dealerships that sell electric vehicles suggest that automotive service technician jobs are not likely to grow with EV adoption.<sup>42</sup> However, the managers that I interviewed did not forecast a reduction in work related to lower maintenance requirements. Brakes, tires, and other routine maintenance is still necessary.

One important note in this occupational sector is that the ability to diagnose and repair more complex issues with EVs depends on access to proprietary technology and software. This is true across the auto industry, but even more the case with EVs. To the extent that only the dealers have access to that technology, mom and pops or independent repair shops will lose business on certain kinds of repairs.

Shoreline Community College has a partnership with Tesla that trains students to maintain Tesla vehicles. This partnership may be a model for job training and career pathway programming in the EV sector. However, the Shoreline instructor reported that he's not authorized by Tesla to speak about the program, and the Tesla representative that he directed me to did not respond to my inquiries in time to include information about the program in this brief. Further investigation about this program is warranted.

### Dealership Sales

Retail sales people is another relatively large occupation in the auto sector. However, significant job growth should not be expected here. Interviews with two national dealerships indicated that regular salespeople are expected to also sell electric vehicles, and that they don't anticipate adding positions specific to EVs.<sup>43</sup>

### Chargers and fleets - site design, community outreach and education

There is a niche occupation focused on identifying potential sites for charging infrastructure, negotiating with property owners, and generating traffic to those chargers.<sup>44</sup> Some fleet providers also report hiring staff to conduct community outreach and education.<sup>45</sup> These jobs account for a small number of positions, but are important to train on equity issues and recruit community representatives for, given the concerns of community organizations about the relationship between EVSE installation, EV availability and gentrification.

## Planning, corporate HQ, IT

EVSE companies employ modest numbers of managerial, administrative, and IT staff.<sup>iii</sup> This work primarily is located at company headquarters, and is not a significant job creator in the Seattle area. However, the city could ask companies that it does business with or partners with to supply diversity, equity and inclusion data.

## Recommendations and Next Steps

- 1. Inventory existing City of Seattle policies and create a matrix of applicability to the EV sector**
  - The City of Seattle has existing policies related to quality job creation for target communities that could either be directly applied, or adapted and updated for application to, EV/EVSE jobs. These policies include at a minimum the Priority Hire ordinance, and the suite of labor standards ordinances administered by the Office of Labor Standards. King Country Metro and other local agencies may have similar policies.
  - Staff should gather these policies and assess their legal and operational suitability for application to targeted jobs in the EV/EVSE sector.
- 2. Seek opportunities to maximize public control through planning, investment, permitting choices**
  - Staff should work with agency and community-based partners to clearly identify each point of public subsidy, permitting, regulation, incentive, and other support for the EV/EVSE sector.
  - These “points of intervention” should then be evaluated for their potential to be linked to job quality and access requirements.
- 3. Inventory public sector jobs and identify potential partnerships with community-based workforce development organizations to recruit targeted communities into those jobs.**
- 4. Engage private sector partners in finding new opportunities to prioritize quality job creation along with environmental benefits of EV/EVSE deployment.**
  - The EV/EVSE sector’s success is critical to reaching municipal climate goals.
  - Individuals and companies interviewed for this report indicated a high degree of social consciousness and desire to leverage EV growth to yield important social benefits.
  - Program staff should continue to engage private sector partners in seeking “win-win” policy and operational frameworks that avoid the trap of pitting sustainability goals against economic justice and racial equality goals.
- 5. Engage community-based partners in priority setting and policymaking**
  - Community based partners have the best on the ground information about their constituents hopes and dreams in finding quality employment, as well as identifying the challenges the face.

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<sup>iii</sup> Electrify America reports 52 headquarters employees

## 6. Normalize data collection and reporting

- In the absence of federal or state EV-specific data collection, the City and its local public partners can improve the current data picture by requiring permittees, partners, vendors, and regulated companies to supply detailed job creation information, including FTE's, demographic, pay, and subcontracting information.

## Acknowledgements

Andrea Pratt, Climate & Transportation Policy Advisor at the City of Seattle's Office of Sustainability and the Environment commissioned this research and provided key strategic direction.

The following individuals generously and openly shared information and insight via phone interviews and email.

Marcy Bauer, EVGO; Danny Illoiu, King County Metro; Sean Bagsby, IBEW; Robet Deprez, Paramount Motors; Ward Fleischman, Everett Chevy; Rodney Moore, Bellevue Nissan; Shawn Weeks, City of Seattle; Samson Mui, EcoGroup; Phillip Saunders, City of Seattle; Erika Thi Patterson, Jobs to Move America; Amy Hillman, Blink; Howard Greenwhich, Katrina Peterson, Puget Sound Sage; John Owen, Seattle City Light; Chris Wiley, City of Seattle; Alan Bates, Envoy; Jeff Allen, Forth; Eric Smith, Sema Connect; Anneliese Vance-Sherman, Washington State Employment Security Department.

## Additional notes on methodology and sources

### Methodology to establish maximum universe of EV/EVSE-related jobs

- 1) The BLS report "Careers in Electric Vehicles" was used to create a baseline list of occupations in the transportation electrification industry.<sup>46</sup>
- 2) The BLS occupations were then matched to occupations in the Washington State Employment Security Department's (WA ESD) Occupations-Industry Matrices.<sup>47</sup>
- 3) A Seattle/King County Metropolitan District filter was applied to focus the geographic scope.
- 4) There is no credible way to link some occupations, like "software engineer" or "materials scientist," to EVSE or automotive industries. Thus, these occupations were set aside for purposes of this analysis.
- 5) The employment numbers from the remaining occupations (those that could be tied to electrical infrastructure, electrical work, or the automotive sector) were reported in *Table 1 – Maximum Universe of EV/EVSE-related jobs* above.
- 6) Wage data for the reported occupations was sourced from WA ESD's Occupational Employment and Wage Estimates and included in *Table 1 – Maximum Universe of EV/EVSE-related jobs*.<sup>48</sup>

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## Endnotes

- <sup>1</sup> Katrina Peterson, Howard Greenwhich (Puget Sound Sage), interview with the author, December 2018
- <sup>2</sup> Drive Clean Seattle – FAQs, *Seattle Office of Sustainability and Environment*, accessed December 14, 2018, [https://www.seattle.gov/Documents/Departments/OSE/DCS\\_FAQ\\_Final.pdf](https://www.seattle.gov/Documents/Departments/OSE/DCS_FAQ_Final.pdf)
- <sup>3</sup> Priority Hire, *City Purchasing and Contracting*, accessed December 14, 2018, <https://www.seattle.gov/city-purchasing-and-contracting/priority-hire>
- <sup>4</sup> James Hamilton, “Careers in Electric Vehicles,” *Green Jobs*, accessed December 14, 2018, [https://www.bls.gov/green/electric\\_vehicles/](https://www.bls.gov/green/electric_vehicles/)
- <sup>5</sup> Brett Williams, JR DeShazo, Alan Kerbel Shein, Tongxin Xu, “Transportation Electrification Curriculum Development”, UCLA Luskin Center for Innovation, January 2015. [http://innovation.luskin.ucla.edu/sites/default/files/TECD\\_Report%20%20Web\\_0.pdf](http://innovation.luskin.ucla.edu/sites/default/files/TECD_Report%20%20Web_0.pdf)
- <sup>6</sup> Peter Slowik, Nic Lustey, “The Continued Transition to Electric Vehicles in U.S. Cities,” The International Council on Clean Transportation, July 2018. [https://www.theicct.org/sites/default/files/publications/Transition\\_EV\\_US\\_Cities\\_20180724.pdf](https://www.theicct.org/sites/default/files/publications/Transition_EV_US_Cities_20180724.pdf)
- <sup>7</sup> Jenny H. Liu, Jeff Renfro, “Oregon’s Electric Vehicle Industry,” Northwest Economic Research Center, January 2013. <https://www.pdx.edu/nerc/sites/www.pdx.edu.nerc/files/NERC%20EV%20Industry%20Final%20Report%202013.pdf>
- <sup>8</sup> Amy Hillman, (Client Relations Manager, Blink), interview with the author, December 2018
- <sup>9</sup> Eric Smith, (NW, Hawaii, and BC Regional Manager), interview with the author, December 2018
- <sup>10</sup> John Owen, (Supervisor, Emerging Technology Engineering, Seattle City Light), interview with the author, December 2018
- <sup>11</sup> Eric Smith
- <sup>12</sup> Marcy Bauer, (Director of Operations, EVgo), interview with the author, December 2018
- <sup>13</sup> Eric Smith, Amy Hillman, Marcy Bauer
- <sup>14</sup> Eric Smith
- <sup>15</sup> Marcy Bauer
- <sup>16</sup> John Owen
- <sup>17</sup> Sean Bagsby, (International Brotherhood of Electrical Workers), interview with the author, December 2018

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<sup>18</sup> Electric Vehicle Infrastructure Training Program, accessed at <https://evitp.org>, on December 14, 2018

<sup>19</sup> Sean Bagsby

<sup>20</sup> Electric Vehicle Charging in the Public Right of Way (EVCROW) Program, SDOT Pilot Permit Program Requirements, *Seattle Department of Transportation*, accessed at [https://www.seattle.gov/Documents/Departments/SDOT/NewMobilityProgram/EVCROW\\_Program.pdf](https://www.seattle.gov/Documents/Departments/SDOT/NewMobilityProgram/EVCROW_Program.pdf), on December 14, 2018

<sup>21</sup> Marcy Bauer

<sup>22</sup> Priority Hire, *City Purchasing and Contracting*, accessed December 14, 2018, <https://www.seattle.gov/city-purchasing-and-contracting/priority-hire>

<sup>23</sup> Howard Greenwich and Katrina Peterson

<sup>24</sup> Transit Oriented Development That's Healthy, Green and Just, Puget Sound Sage, May 2012

<sup>25</sup> New Mobility Playbook, *Seattle Department of Transportation*, accessed December 14, 2018, [https://www.seattle.gov/Documents/Departments/SDOT/NewMobilityProgram/NewMobility\\_Playbook\\_9.2017.pdf](https://www.seattle.gov/Documents/Departments/SDOT/NewMobilityProgram/NewMobility_Playbook_9.2017.pdf)

<sup>26</sup> "Reach Now Building 20 Public EV Charging Stations in Seattle," *Reach Now*, accessed December 14, 2018, <https://reachnow.com/en/newsroom/lightandcharge/>

<sup>27</sup> "LimePod test drive: Lime's new carshare product for Seattle," MyNorthwest, accessed December 14, 2018, <http://mynorthwest.com/1201784/limepod-launches-in-seattle/>

<sup>28</sup> "On Demand Electric Vehicles," Envoy, accessed December 14, 2018, <https://www.envoythere.com>

<sup>29</sup> Samson Mui, (Co-founder and President, Ecoservice Group), interview with the author, December 2018

<sup>30</sup> Samson Mui

<sup>31</sup> Alan Bates, (General Manager, Pacific Northwest, Envoy), interview with the author, December 2018

<sup>32</sup> Samson Mui

<sup>33</sup> Labor Standards Ordinances, *Office of Labor Standards*, accessed December 14, 2018, <https://www.seattle.gov/laborstandards/ordinances>

<sup>34</sup> New Mobility Playbook

<sup>35</sup> U.S. Employment Plan Resources, *Jobs to Move America*, accessed December 14, 2018, <https://jobstomoveamerica.org/resources/us-employment-plan-resources-2/>

<sup>36</sup> Class Specifications, Auto Mechanic, *City of Seattle*, accessed December 14, 2018, <https://www.governmentjobs.com/careers/seattle/classspecs/755037?keywords=mechanic&agetype=classSpecifications>

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<sup>37</sup> Shawn Weeks, (Workforce Development Manager, Fleet Management Division, City of Seattle), interview with the author, December 2018

<sup>38</sup> Danny Illiou, (Strategic Planning Manager, King County Metro Transit), interview with the author, December 2018

<sup>39</sup> Danny Illiou

<sup>40</sup> Shawn Weeks

<sup>41</sup> Shawn Weeks

<sup>42</sup> Ward Fleischman (Everett Chevy), interview with the author, December 2018 and Rodney Moore (Bellevue Nissan), interview with the author, December 2018

<sup>43</sup> Ward Fleischman and Rodney Moore

<sup>44</sup> John Owen

<sup>45</sup> Alan Bates

<sup>46</sup> James Hamilton

<sup>47</sup> Washington State Employment Security Department, Occupations-Industry Matrices, accessed December 4, 2018, <https://esd.wa.gov/labormarketinfo/projections>

<sup>48</sup> Washington State Employment Security Department, 2018 Occupational Employment and Wage Estimates, accessed December 4, 2018, <https://esd.wa.gov/labormarketinfo/occupations>