



Seattle City Light

Transportation Electrification

Strategic Investment Plan

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Letter from Debra Smith, General Manager and CEO

At Seattle City Light, we are redefining electricity services to meet the evolving demands of our customers and our rapidly growing metropolitan area. City Light envisions a utility of the future that is responsive to the wants and needs of community members most impacted by environmental inequities, operates a modernized grid that enables real-time smart technology interaction and provides economic opportunities through infrastructure investments and upgrades. A modernized electric grid will allow for resource optimization and prepare the region to withstand growing climate impacts.

City Light is seizing transportation electrification as an opportunity to deliver on this vision. With our clean energy, the Pacific Northwest is in a unique position to electrify the transportation sector and deliver a triple win for our customers, the environment and the utility.

City Light leaders and staff bring passion and expertise to facilitate this transformation. Through engagement with community members, technical analysis, collaboration with their City colleagues and partnership with industry leaders, City Light will capitalize on this opportunity for innovation and future investment. Now is the time for re-envisioning energy services that elevate communities throughout our greater Seattle region—especially those that have been historically excluded. We are ready; and our infrastructure, our people, our region and our future stand to benefit. Join us!

Executive Summary

Seattle City Light is embarking on a transformation. For over a century, the utility has provided power to the Puget Sound region while being responsive to customer needs – highlighted by our more than 40 years of energy efficiency offerings and our status as the first electric utility to achieve net-zero greenhouse gas emissions (GHG). Yet, with the intense urgency of eliminating the human causes of climate change and as new technologies evolve, City Light must rise to the occasion to meet customer needs and expectations. For example, a quickly growing electric vehicle (EV) market offers an opportunity for City Light to play an important role in reducing the climate and environmental impacts of our transportation sector, the region’s largest source of hazardous air pollutants. Personal vehicles make up one part of the EV market, but the market includes, and the largest benefits of transportation electrification are expected to accrue from, electrified transit buses, ferries, commercial fleets, medium- and heavy-duty trucks, shared mobility vehicles, and other forms of micro-mobility, including e-bikes and scooters.

Transportation electrification also offers significant opportunities to address the environmental inequities that exist in our region. Neighborhoods where marginalized populations are a relatively large share of residents are more likely to be located near the city’s major transportation routes, especially the city’s high-volume freight routes. This means the city’s Black, Indigenous, and people of color residents are significantly more likely than white residents to be exposed to air pollution that research has shown to cause the development and aggravation of many health conditions, including asthma, heart disease, and cancer. City Light’s Transportation Electrification Strategic Investment Plan is a component of the City’s work to address these inequities and City Light will focus on the wants and needs of environmental justice communities, which includes Black, Indigenous, and people of color as well as immigrants, refugees, persons experiencing low incomes, English

language learners, youth and seniors, in advancing the Plan. The continued focus on equity is central to the utility’s values framework.

This Plan is a result of the Washington state legislature’s 2019 passage of House Bill 1512, which enables electric utilities to incorporate transportation electrification into utility modernization. City Light, along with City of Seattle leadership and departments, has already been moving toward that envisioned future with the Drive Clean Seattle Initiative and the Green New Deal. City Light has conducted in-depth transportation electrification analyses as well as piloting public and residential EV charging, partnering with regional public transit agencies, and launching time-of-day electricity rates to better understand potential impacts of this growing market.

The Plan reflects City Light’s engagements with the cities in our service area, with communities we serve, and with partner agencies to further our modernization and customer-focused missions. New authority resulting from the approval of this Plan will activate even greater progress toward our vision. The Seattle City Council’s approval of this Plan will open the door to committing resources and making investments that will enable the transformation of the Seattle area’s transportation ecosystem, bolster and modernize our electric grid to enable public transit charging, support freight and commercial fleets, and provide flexibility for personal mobility, foster new economic and workforce opportunities, and ensure that investment in transportation infrastructure results in equitable outcomes.

This Seattle City Light Transportation Electrification Strategic Investment Plan describes how the utility is using our strategic investments and building upon previous analyses within our values framework to achieve a vision of the healthy future that our region depends on: equitable, carbon-neutral, modernized, and future-enabled.



Context

It is a time of once-in-a-century transformation in the electric power sector. Technology, regulation, market development and customer demand are changing rapidly. Electric utilities worldwide are responding to the shifting preferences of their customers, testing new business models, launching new services and technologies, and making innovative investments to restructure their grids to make them more resilient, bi-directional and flexible.

The transportation sector is also changing rapidly as buses, ferries, freight trucks, fleets and personal modes of travel are shifting to electricity for fuel rather than relying on gasoline and diesel. Alongside the evolution of the market, policy choices have in many places accompanied technological innovation to support the health and security of residents and the natural and built environments. The City of Seattle has in recent years redoubled its own commitments, from the Drive Clean Seattle Initiative in 2016 to the Green New Deal in 2019. City Light supports the transition to an electrified transportation system by enabling a grid that efficiently meets the demand of our customers today and tomorrow.

The City of Seattle's vision is that in Seattle's future, everything that moves people, goods and services in and around the City is electrified. Seattle will lead the transition to an electrified economy, supplying residents with clean electricity via a reliable, carbon-free electric grid. People will

take electric buses, ferries or light rail to work, shopping and other destinations. A robust bike lane network will make it easy for Seattleites to leave cars behind and use bikes, e-scooters and e-cargo bikes or walk. Ships at port are plugged in, every package delivered to your doorstep comes on an electric van, truck or e-bike. Silent, clean, electric trash and utility trucks will service neighborhoods. While not all of this technology is available today, Seattle City Light and our partners aim to pursue and help accelerate the new technologies necessary to electrify transportation at scale.

Our utility is a publicly owned asset and, as such, the intention of this Transportation Electrification Strategic Investment Plan is to sustain and maximize the value of the utility grid to our customers as we work to achieve a fully electrified transportation future. The processes and offerings to achieve our vision as a utility of the future will require City Council support, utility investments, engagement with communities and customers, and close collaboration with other City departments, as well as partnerships with transportation agencies and other external partners. We have already begun this journey. City Light is actively engaging with communities most impacted by environmental inequities and racial, social and economic burdens; identifying essential investment requirements; conducting pilots and technical analyses; and establishing critical partnerships with transportation providers.

History

City Light has been working in the transportation electrification space over the past five years and has made investments in innovative offerings and partnerships based on technical and feasibility analyses. These have built on City Light's long legacy of innovation and conservation, including the elevation of environmental stewardship and protection as a core operating value. Attention to innovation has also led to investments in service delivery that support customer adoption of new technologies, including transportation electrification.

More recently and alongside other City of Seattle partners, City Light has been engaging communities, implementing new pilot projects and conducting technical and policy analysis throughout 2019 and 2020 to support the development of this Transportation Electrification Strategic Investment Plan. Important transportation electrification milestones are highlighted below.



City Light's Road to Transportation Electrification

City of Seattle and electric utility leaders have been shaping transportation electrification transformation for the past five years.

2015-2016: City Light conducted a technical analysis of the evolving transportation electrification market and potential utility impacts.

2017: Drive Clean Seattle Initiative launched City investments to accelerate transportation electrification, including City Light's public and residential charging pilots.

January 2019: City Light's 6-year Strategic Plan highlighted challenges, opportunities and priorities in meeting future and continuing market, utility and customer demands.

June 2019: City Light released its Transportation Electrification Strategy with a values framework to shape the utility's strategic direction in transportation electrification.



July 2019: The Washington State Legislature passed a law (HB 1512) granting public utilities the authority, already established for investor-owned utilities, to offer incentives and services to their customers to electrify transportation.

December 2019 – Ongoing: City Light has engaged community leaders and stakeholder groups to help inform the utility's strategic investment priorities.

Citywide Alignment

City Light's vision and desired outcomes for a future electrified transportation system are aligned with the City of Seattle's existing and emerging effort to adopt a set of 2030 "North Star" goals driving the transition to an electrified and zero-carbon transportation system. The Citywide Transportation Electrification Plan Framework spans the whole of the City of Seattle government and identifies and integrates priority focus areas to:

- Build partnerships in environmental justice communities.¹
- Install and support transportation electrification infrastructure.
- Create jobs and employ people from environmental justice communities.
- Prioritize mode shift and dismantle policies and regulatory frameworks that incentivize fossil fuel transportation.
- Support the electrification of government and commercial fleets.

Environmental justice communities
refer to communities defined in Seattle's Equity and Environment Agenda and include communities of color, immigrants, refugees, people with low incomes, youth and English language learners. We refer to environmental justice communities throughout this Plan.

- Implement new fee structures that reduce barriers to transportation electrification, including time-of-day rates.

City Light and several other City departments that have a role in transportation electrification are collaborating to support the broader Citywide Transportation Electrification Plan Framework. Each City department contributes critical services to deliver on the goals of the Plan.

Figure 1.
 Citywide coordination
 of Seattle departments



¹Seattle Office of Sustainability and Environment. "Equity and Environment Agenda."
<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

City Light continues to build and implement business-critical strategies to optimize its grid while pursuing equitable and environmentally sound outcomes. The utility supports the City's workforce development efforts, namely Priority Hire, and is coordinating with apprenticeship programs to strengthen pathways to energy industry jobs. In addition, the utility supports the City's efforts to encourage contracting with Women & Minority Business Enterprise (WMBE) firms, thereby assisting WMBE firms in creating generational wealth and advancing equity in our contracting process. According to research conducted for Drive Clean Seattle,² the King County Metro area could support the maximum potential of 14,310 EV and electric vehicle service equipment (EVSE) related jobs, earning an average of \$26.76 per hour, if EV adoption were to reach 100%. At the current EV adoption rate of 3%, we estimate there are 429 jobs supporting this new market.

City Light provides electric power to more than 460,000 customer meters, which translates to more than 906,000 individuals in Seattle and eight adjacent jurisdictions: Burien, Renton, Tukwila, SeaTac, Normandy Park, Shoreline, Lake Forest Park and parts of unincorporated King County in White Center and Bryn Mawr-Skyway. Citywide coordination on transportation electrification is inclusive of our franchise cities. Similar to our alignment with the City of Seattle, City Light will work with our franchise city partners to achieve our shared long-term, regional transportation electrification goals.



Figure 2. Seattle City Light customer service area map



²Hays Witt. "Connecting Disadvantaged Communities to Quality Jobs in the Transportation Electrification Sector: An Initial Assessment." Strategic Action LLC for the Drive Clean Seattle Program. December 2018



Inputs

The key factors informing the Transportation Electrification Strategic Investment Plan—each of which represent a body of work that has been built in recent years and expanded leading up to this Plan—are grouped into two categories. First, the primary technical and feasibility analyses; and second, the values that guide City Light’s buildout of transportation electrification programs and supporting grid investments.

Technical and Feasibility Analyses

City Light’s commitment to transportation electrification has been supported by its analyses of the market potential for electrification of personal vehicles, medium- and heavy-duty trucks and buses and the potential impact of increased transportation electrification on the grid and the utility’s business. Two technical and feasibility analysis reports have laid the foundation to guide City Light’s Transportation Electrification Strategic Investment Plan.

TRANSPORTATION ELECTRIFICATION BENEFIT ANALYSIS (2016)

In 2015 and 2016, City Light worked with Energy and Environmental Economics, Inc. (“E3”) and a consortium of public and investor-owned Northwest energy utilities to understand the environmental, grid and economic benefits of transportation electrification. This analysis concluded that City Light receives a net utility system benefit of

roughly \$1,250 per personal EV over the vehicle’s lifetime and \$120,500 per bus or other heavy-duty EV. While there are system costs associated with increased transportation electrification (e.g., distribution and transmission infrastructure upgrades), with proactive utility planning and intervention, the system benefits (e.g., new revenue) are estimated to outweigh the costs, spreading the economic benefits of transportation electrification to all customers.

Recommended utility offerings from City Light Transportation Electrification Strategy Report (2019)

Invest in charging infrastructure with emphasis on universal access and expanding coverage.



Develop new rates and improve customer service for the transportation market.



Prepare for heavy-duty electrification.



Figure 3. Recommended offerings

TRANSPORTATION ELECTRIFICATION STRATEGY REPORT (2019)

Building on the Benefit Analysis, City Light engaged Rocky Mountain Institute over 2018 and 2019 to co-develop a Transportation Electrification Strategy Report. The report, which included detailed market research and insights, concluded that City Light should play a key enabling role in spurring EV adoption across multiple sectors that includes extensive and proactive planning to optimally accommodate the resulting increased demand for electric power. The strategy report recommends that City Light engage in three key intervention areas (Figure 3) to support transportation electrification adoption across five customer types: personal vehicles, shared mobility and transportation network companies (TNCs), medium-duty vehicles, heavy-duty vehicles and transit. The technical evaluation addressed City Light's system capacity as well as market projections for EV adoption across customer types.

Leading with Values

City Light is centering this future-focused work on three key values: equity, environment and operating the grid as an asset to deliver public good (Figure 4). Initially established in the Strategy Report, City Light has reinforced these values during the development of this Plan—particularly, through engagement with environmental justice communities (see below and the attached Seattle City Light Transportation Electrification Strategic Investment Plan: 2021-2024 – Community and Stakeholder Outreach and Engagement Summary). City Light will focus investments in transportation electrification where there are opportunities to improve the lives of and outcomes in the communities we serve.

EQUITY

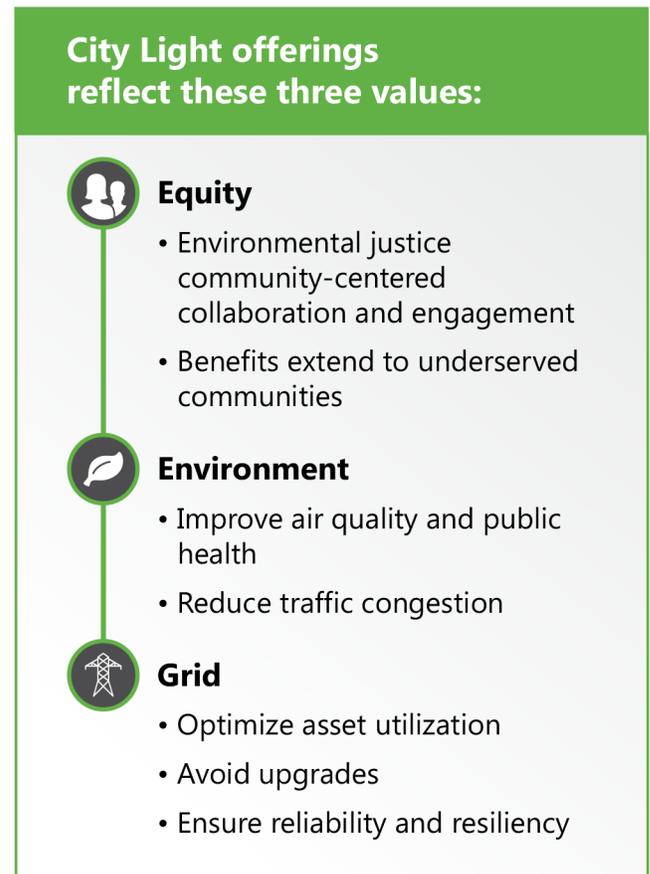
City Light strives to incorporate and elevate the voices of environmental justice communities who have traditionally been excluded in transportation electrification planning and development. By centering people and communities experiencing environmental inequities, community outreach and engagement will result in solutions that meet the needs of all our customers. This is critical to the long-term success of any City infrastructure improvement plan.

To ensure meaningful inclusion across our service area, City Light conducted a transportation electrification racial equity analysis, which included: (1) leveraging the City of Seattle's Race and Social Justice Initiative (RSJI) Racial Equity Toolkit and (2) conducting in-depth outreach and engagement.

RSJI Racial Equity Analysis

City Light conducted a comprehensive analysis of existing information on environmental justice communities' transportation electrification wants and needs. City Light reviewed relevant reports by regional stakeholders and

Figure 4. City Light transportation electrification values framework



community-based organizations as well as feedback from several sources, including the City's Environmental Justice Committee, community-based organizations and stakeholder surveys. See the attached Seattle City Light Transportation Electrification Strategic Investment Plan: 2021-2024 – Racial Equity Analysis Summary for more information.

Community and Stakeholder Outreach and Engagement

Seattle City Light is partnering with the Seattle Department of Neighborhoods to engage environmental justice communities. The input we received has informed the investment priorities included in Table 2 (page 13). The main priorities we have heard from environmental justice community leaders and stakeholder groups include:

- 1 Conduct customer and stakeholder outreach and awareness on transportation electrification:** Many environmental justice community members are unfamiliar with EVs. Communicating in local languages, highlighting communities of color in advertising and focusing on multimodal transportation electrification can help increase equitable access.³
- 2 Prioritize buses for electrification:** This was the number one priority for both community leaders and stakeholders. Low-income communities and communities of color are more likely to depend on buses for most, if not all, of their transportation needs.⁴ Electrifying public transit will benefit communities who most rely on public transit by reducing air and noise pollution where impacts are greatest.
- 3 Electrify commercial and local government fleets that run through the Duwamish Valley:** Environmental justice communities are exposed to—and concerned about—poor air quality and suffer from geographic and social health disparities. Commercial fleet electrification can reduce harmful tailpipe emissions in the Duwamish Valley.
- 4 Expand at-home and near-home charging for multifamily residents:** Currently, there is a lack of access to EV charging for multifamily units. Expanding at-home and near-home charging solutions for multifamily residents in environmental justice communities will increase equitable access to transportation electrification as 52 percent of City Light's customers are renters and a majority live in multifamily properties.
- 5 Electrify high-mileage ride-hailing vehicles:** High-mileage ride-hailing vehicles (e.g., TNCs and shared mobility, such as Lyft, Uber, taxis) drive three to five times more than regular passenger vehicles and electrifying them can have a large impact on tailpipe emissions.^{5,6} In addition, high-mileage ride-hailing vehicles are frequently driven by immigrants and members of communities of color and targeted incentives can increase equitable access to transportation electrification.^{7,8}

³Environmental Justice Committee. "EJC Feedback Summary on Drive Clean Seattle." July 2017.

⁴King County. "The Determinants of Equity: Identifying Indicators to Establish a Baseline of Equity in King County." January 2015. https://www.kingcounty.gov/~media/elected/executive/equity-social-justice/2015/The_Determinants_of_Equity_Report.ashx

⁵Puget Sound Clean Air Agency. "Electrifying Ride-Hailing in Seattle." September 2019. <https://www.pscleanair.gov/DocumentCenter/View/3976/Electrifying-Ride-Hailing-in-Seattle>

⁶Peter Slowik, Lina Fedirko and Nic Lutsey. "Assessing ride-hailing company commitments to electrification." International Council on Clean Transportation. February 2019. https://theicct.org/sites/default/files/publications/EV_Ridehailing_Commitment_20190220.pdf

⁷Puget Sound Clean Air Agency. "Electrifying Ride-Hailing in Seattle." September 2019. <https://www.pscleanair.gov/DocumentCenter/View/3976/Electrifying-Ride-Hailing-in-Seattle>

⁸Lyft. Economic Impact Report 2020. <https://www.lyftimpact.com/impact/drivers/expanded>

Table 1. Equity outcomes to guide City Light's strategic investments in transportation electrification

COMMUNITY COLLABORATION

Environmental justice communities see their wants and needs reflected in City Light transportation electrification programs.

HEALTHY PLANET, HEALTHY LIVES

Reduce tailpipe emissions that impact local air quality and public health where environmental justice communities live, learn, work and play. Reduce carbon emissions that have a disproportionate burden on the most vulnerable populations and communities.

EQUITABLE ACCESS

Environmental justice communities learn about our transportation electrification programs, can readily understand and access materials and resources, see themselves reflected in communications, and participate in and benefit from City Light's transportation electrification programs.

COMMUNITY ASSETS

City Light's programs invest in infrastructure that are community assets so environmental justice communities can enjoy the benefits of transportation electrification in their current neighborhoods.

ECONOMIC OPPORTUNITIES AND YOUTH PATHWAYS

City Light enables environmental justice communities to participate in and benefit from the local transportation electrification economy.

ELECTRICITY AFFORDABILITY

Widespread transportation electrification increases revenue to put downward pressure on electricity prices.

Community leaders and stakeholders have emphasized the importance of community engagement, collaboration and buy-in on public charging station development. Without proper public engagement, a public charging station may create conflicts between use of public space, increase housing costs, exacerbate community displacement or increase the risk of gentrification. Overall, multiple environmental justice groups emphasized the importance of considering and including anti-displacement strategies in infrastructure project designs so that communities can enjoy the benefits of transportation electrification and stay in place.

City Light will work to minimize harm and maximize benefits by engaging communities on public charging infrastructure developments. Through education and engagement, communities have an opportunity to learn about transportation electrification and its benefits. Collaborating with communities on site design, site location and pairing projects with other investments, can help to create infrastructure that is welcomed by the local community as an asset. See the attached Seattle City Light Transportation Electrification Strategic Investment Plan: 2021-2024 – Community and Stakeholder Outreach and Engagement Summary for more information.

Leading with our values and incorporating what we have heard from environmental justice communities and other stakeholders – including learning from the City of Seattle's Equity and Environment Agenda framework and the Duwamish Valley Action Plan – City Light has established six racial equity outcomes to guide its transportation electrification strategic investment priorities (Table 1).^{9,10} These outcomes build upon the values framework and will continue to guide City Light through program development and implementation. On-the-ground engagement and dialogue will be considered alongside in-depth technical analysis.

⁹Seattle Office of Sustainability and Environment. "Equity and Environment Agenda." <https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

¹⁰City of Seattle. "Duwamish Valley Action Plan" June 2018. http://greenspace.seattle.gov/wp-content/uploads/2018/06/DuwamishValleyActionPlan_June2018.pdf

ENVIRONMENT

Transportation accounts for two-thirds of carbon emissions in the greater Seattle area and is also associated with increased air, noise and surface water pollution. Diesel exhaust is often associated with negative health impacts, such as asthma. According to Public Health – Seattle & King County, the highest rates of asthma hospitalization are found in Beacon Hill, Southeast Seattle, Downtown and Central Seattle and some south King County communities, which are predominantly environmental justice communities. A recent study of national data found that long-term exposure to air pollution is associated with higher COVID-19 mortality rates,¹¹ and local data from Public Health – Seattle & King County show that the disease is disproportionately impacting communities of color with higher infection, hospitalization and death rates.¹²

Addressing health disparities and reaching the City's goal of carbon neutrality by 2050 will require City Light's investments to support electrification of all modes of transportation throughout the utility service area. Key partnerships, cost structures and programming are critical for enabling EV charging infrastructure and adoption with public transit agencies, companies managing large commercial fleets, shared mobility companies and drivers and personal vehicle owners.

Several partnerships and pilot efforts to advance transportation electrification are already in place. Utility investments will scale offerings and help the City make progress toward meeting its carbon reduction goals, while also reducing pollution and traffic congestion.

¹¹Xiao Wu, Rachel C. Nethery, Benjamin M. Sabath, Danielle Braun, Francesca Dominici. "Exposure to air pollution and COVID-19 mortality in the United States." April 2020. <https://www.medrxiv.org/content/10.1101/2020.04.05.20054502v2>

¹²Public Health Insider. "New Analysis Shows Pronounced Racial Inequities Among COVID-19 Cases, Hospitalizations and Deaths." Public Health – Seattle & King County. May 2020. <https://publichealthinsider.com/2020/05/01/new-analysis-shows-pronounced-racial-inequities-among-covid-19-cases-hospitalizations-and-deaths>



GRID VALUE

City Light's electric grid is a complex system of power generation, transmission and distribution assets. City Light's industry-leading legacy of conservation means there is sufficient power to meet increasing customer demand, but the infrastructure capacity to transmit, distribute and deliver electricity to meet transportation needs varies throughout the system. City Light seeks to meet the increased transportation load with intentional and directed investments, rather than reacting to market-driven demand that can put unpredictable stresses on the system and require inefficient short-term fixes. In making these investments, the utility must reimagine the very structure and architecture of the grid and its components and seek to use the best available techniques and technologies to optimize system performance and efficiency.

Implementing City Light's Transportation Electrification Strategic Investment Plan will result in greater return on this valuable publicly owned asset and thus drive more affordable electricity rates in the long term as demonstrated in both the Benefit Analysis and Strategy Report. Renewing the ability of the utility to continue to deliver public value over the coming decades depends on City Light making smart investments today that continue the utility's commitment to energy efficiency, integrate strategies for managing customer demand and support the deployment of transportation electrification at scale.

City Light is committed, as it looks to make these needed investments in grid modernization and technological innovation, to analyzing not solely the economic costs and benefits, but also the impacts on communities across its service area. Responsible innovation and modernization are driven by the utility's commitment to equity.



Strategic Investments

To help deliver on the City's goals, City Light has started work, in partnership with regional agencies, communities and private companies, to electrify multimodal transportation. These initial partnerships and programs will require ongoing flexibility to build to the scale required. City Light's pursuit of priorities outlined in this Plan will necessitate a dynamic portfolio of electrification investments. City Light seeks to respond to and build customer demand, continuously explore partnerships throughout our region, learn from and iterate on pilots, and build out grid capabilities. The utility is also focused on creating strategic partnerships to enable access to charging infrastructure and to reduce customer and market barriers to the adoption of electric vehicles across all vehicle types, including micro-mobility options like e-bikes and scooters.

City Light's strategic investments are characterized as: program offerings—including customer-facing incentives, services, education and promotions—and electrification enablement—including the development of future-focused infrastructure needed to support transportation electrification.

Program Offerings

Having identified the core factors influencing transportation electrification investments, City Light will draw on our long history of developing, building and evaluating innovative, public-facing programs. City Light will continue to support transportation electrification through existing, expanded and new offerings that achieve our vision of equitable and electrified transportation to maximize community, environmental and electricity grid benefits. These offerings fall into three categories: incentives, services and education/promotion.

Incentives reduce barriers, encouraging customers to make decisions that support the overall goal of equitably electrifying transportation to benefit the grid. Financial incentives can be in the form of cash, rebates, financing, discounts, in-kind and/or turnkey/ready-made utility



contributions to reduce the cost barrier of customer-owned transportation electrification equipment. For example, incentives could include a cash rebate toward the purchase of a smart, networked Level-2 charging station.

Services are what City Light provides to encourage and enable transportation electrification and can include utility-owned and -operated charging infrastructure, rate design, technical support, priority service queues, interconnection policies, interdepartmental permitting coordination (i.e., with Seattle Department of Construction and Inspections and Seattle Department of Transportation) and information transparency. City Light’s Transportation Electrification Strategy Report identified customer service as a key intervention area to build upon existing services to accelerate transportation electrification.

Education & Promotions strengthen City Light’s—and the broader region’s—transportation electrification objectives through outreach, communication and engagement. Promotions could include advertising for the utility’s services, incentives or rebates. Education raises awareness about the customer, the grid and the community benefits of transportation electrification, such as how managed charging helps keep City Light’s electricity rates low. An example is “ride and drive” events for customers to learn more about electric buses or personal vehicles. Education and promotions are critical components of successful community engagement.

INVESTMENT PRIORITIES

Considering all types of program offerings and based on comprehensive analyses of technical research and community engagement, City Light has developed an initial prioritization of future investments to guide its support of regional transportation electrification. These priorities are directly informed by the Transportation Electrification Strategy Report recommendations (Figure 3, page 6) and have evolved with community input.

Table 2 (next page) outlines the broad areas where City Light will invest to deliver the types of program offerings outlined above—many of them in partnership with other public and private entities. The offerings and outcomes listed are not exhaustive, nor certain; these are examples of offerings and outcomes City Light could provide given regulatory authority. The table includes “equity outcomes” to incorporate accountability to communities. The next phase of community and stakeholder engagement (as described in City Light’s Community and Stakeholder Outreach and Engagement Summary) will continue to refine these priorities and uphold our commitment to community collaboration in program design and delivery.

City Light gathered feedback from community leaders and stakeholders on priorities most important to them for transportation electrification. The order of the priorities identified in Table 2 is a direct result of the feedback City Light received from 25 environmental justice community leaders and over 40 stakeholder groups. The priorities were informed by the racial equity analysis.



TRANSPORTATION USES	INVESTMENT PRIORITIES	EXAMPLE CITY LIGHT OFFERINGS	EQUITY OUTCOMES
 <p>All</p>	<p>Customer and stakeholder outreach and awareness</p>	<ul style="list-style-type: none"> • Information, education, events and resources on the benefits of electric vehicles 	<ul style="list-style-type: none"> • All customers have increased access to City Light’s transportation electrification educational materials and resources • Environmental justice community members see themselves reflected in communications
 <p>Public Transit (Buses, Ferries, Trains, Light Rail)</p>	<p>Electrify buses, ferries and other public transit</p>	<ul style="list-style-type: none"> • Financial incentives and technical assistance with site and design requirements to provide electric charging infrastructure for King County Metro, Washington State Ferries and other public transit • Partnerships with City of Seattle and King County departments to electrify first- and last-mile public transportation options, such as paratransit shuttles and e-mobility hubs 	<ul style="list-style-type: none"> • Transit riders and those who do not own or drive a personal vehicle participate in and benefit from City Light’s transportation electrification offerings
 <p>Commercial, Government & Non-Profit Fleets</p>	<p>Electrify commercial, local government and non-profit fleets</p>	<ul style="list-style-type: none"> • Financial incentives for electric charging infrastructure for companies that transport people, goods and services • Fee-based City Light-owned charging infrastructure for public and private fleet vehicles (such as school buses and solid waste vehicles) • Incentives and turn-key charging infrastructure for electrification of non-profit fleet vehicles 	<ul style="list-style-type: none"> • Communities with higher exposure to air pollution benefit from reduced tailpipe emissions that impact local air quality and public health

Table 2. Transportation electrification investment priorities, potential program offerings and equity outcomes

TRANSPORTATION USES	INVESTMENT PRIORITIES	EXAMPLE CITY LIGHT OFFERINGS	EQUITY OUTCOMES
 <p>Personal Mobility (Cars, Bikes, Scooters, etc.)</p>	Expand at-home and near-home charging	<ul style="list-style-type: none"> • Incentives, qualified installers and special payment terms to help reduce barriers to installing charging stations in multifamily housing • Near-home charging solutions for those with no access to off-street parking 	<ul style="list-style-type: none"> • Multifamily residents and those with no access to off-street parking participate in and benefit from City Light’s transportation electrification offerings
	Electrify high-mileage vehicles	<ul style="list-style-type: none"> • Provide lower costs to charge at different times of day that meet the needs of high-mileage vehicle drivers while benefiting the grid 	<ul style="list-style-type: none"> • High-mileage vehicle drivers, especially drivers in environmental justice communities, participate in and benefit from the local transportation electrification economy
	Accelerate transportation electrification adoption in environmental justice communities	<ul style="list-style-type: none"> • Charging infrastructure for community car share • Provide discounts toward the cost to charge electric vehicles for people with low to moderate incomes 	<ul style="list-style-type: none"> • Environmental justice communities collaborate with City Light and see their wants and needs reflected in City Light’s transportation electrification offerings
	Expand public fast charging	<ul style="list-style-type: none"> • Financial incentives to help reduce the upfront cost of public charging stations • Community collaboration on City Light-owned public charging stations 	<ul style="list-style-type: none"> • Communities collaborate with City Light to ensure that public charging infrastructure serves as a community asset
	Expand workplace charging	<ul style="list-style-type: none"> • Provide EV-ready electricity service to workplaces for future charging infrastructure 	<ul style="list-style-type: none"> • All customers benefit from more affordable electricity rates driven by widespread transportation electrification

Table 2 (continued). Transportation electrification investment priorities, potential program offerings and equity outcomes

PARTNERSHIPS AND PILOTS

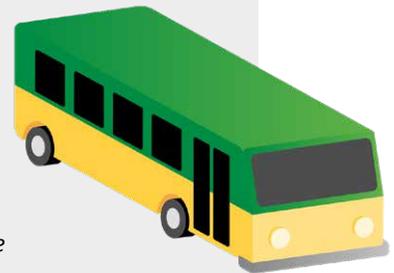
City Light has already established partnerships with other agencies, communities and private companies to implement key projects and innovative pilots in our priority investment areas. City Light will build upon these existing commitments to develop future offerings.

Public Transit: City Light is working with key partners from King County Metro and Washington State Ferries to study, plan for and build the necessary electrical infrastructure to support public transit electrification for buses and ferries as part of our commitment to citywide and regional transportation electrification.

guides the Port's efforts and investments to reduce fossil fuel usage and impacts at its maritime facilities.

Personal Mobility: City Light is expanding EV charging access for individuals' personal use as well as for those who use their personal vehicle as a source of income. City Light is installing more than 20 public fast chargers with the intent of addressing gaps in access and therefore mitigate a known barrier to EV adoption. Public fast charging will allow high-mileage ride-hailing vehicle drivers (e.g., TNCs and shared mobility, such as Lyft, Uber, taxis) to quickly recharge with clean electric power. In the residential space, City Light has a pilot program to install smart, networked Level 2 EV

King County Metro has committed to achieving a zero-emissions fleet by 2040 and has purchased its first round of battery-electric buses to reach this goal. King County Metro is prioritizing electrifying routes originating from its South Base in Tukwila. Critical to this is Metro's ability to charge buses to meet route demands and distances while not adversely impacting or overloading the electrical grid. Metro and City Light have been analyzing feasibility and capacity and requirements to plan for future infrastructure and begun making electrical capacity upgrades to support the South Base station's operations as these initial buses are phased in. Source: King County Metro.



Commercial & Government Fleets: City Light is partnering with PACCAR/Kenworth Truck Company to demonstrate the electrification of heavy-duty trucks along the UPS freight corridor between Seattle and Portland. This will reduce noise and improve air quality along high-traffic routes, many of which pass through low-income communities and communities of color. City Light also participated in the West Coast Clean Transit Corridor Initiative, an industry collaborative effort with nine electric utilities and two agencies representing more than two dozen municipal utilities along the West Coast to study the electrification of the I-5 corridor to support electric freight haulers and delivery trucks.

City Light is supporting government organizations such as the City of Seattle and the Port of Seattle to develop approaches for electrifying their large fleets that maximize grid interactivity. Further, City Light is supporting the Port of Seattle's Waterfront Clean Energy Strategic Plan, which

chargers at customers' homes using a lease-to-own model. To further grid stability and efficiency, City Light is gathering usage statistics from the chargers installed under this pilot to learn about the load and demand needs from at-home EV charging. Participants will be candidates for other City Light offerings, such as the rate pilots mentioned below to encourage charging at certain times of the day, resulting in increased efficiency and savings for both the customer and City Light.

Rates: Under the Rate Pilot Programs Ordinance (125957), City Light is conducting rate pilots to test new approaches to rate design that best meet the needs of our customers and provide value to the grid. These include two time-of-day rate pilots that enable transportation electrification by encouraging off-peak vehicle charging for residential and commercial customers. New rate designs will also benefit transit agency partners as they transition to battery electric buses, allowing them to save money on fuel expenses and

avoided maintenance.¹³ These rate pilots will launch in 2020 and will inform future rate design to continue to reduce barriers to transportation electrification, increase grid efficiency and offer cost-saving options to customers.

Technology Demonstration Pilots: City Light is working on a demonstration pilot to install power pedestals to provide electrical power to food trucks to replace their gas generators.

FUTURE OFFERINGS

The partnerships and pilots outlined above will yield both substantial learnings and quantifiable results. However, these activities alone will not be enough to meet existing policy goals or create the lasting structural fixes that will ensure equitable and reliable access to electric transportation and transit for all our customers.

These initial efforts must be augmented and accelerated as City Light learns from and scales pilot projects and technology demonstrations and continues to build partnerships. Specifically, City Light anticipates:

- Developing entirely new program offerings for customers.
- Driving higher customer adoption with incentives, rebates, discounts and through promotion.
- Integrating demand-side management components into new program offerings to avoid or reduce the need for traditional transmission and distribution upgrades and optimize the grid and City Light's resources.

- Exploring opportunities to increase customer access to substantial private capital investments in our region.
- Continuing to expand public charging infrastructure where there are gaps in private market investments to ensure access for all customers.

City Light will follow a metrics-based, stage-gate process to develop and manage customer-facing programs. The process helps determine when a customer-facing program should be explored, launched, modified or ended. To achieve the goals outlined within our values framework, our program and project development process will seek to align with the outcomes and metrics identified in section 5a of this Plan's RSJI Racial Equity Toolkit. These metrics may measure equitable access to transportation electrification, reduced carbon emissions, grid management outcomes, revenue generation, charging infrastructure investments and inclusive contracting outcomes. As we develop the portfolio and future offerings, we will work with stakeholders as feasible to develop metrics that will measure success and accountability.



¹³Horrox, J., and M. Casale. "Electric Buses in America: Lessons from Cities Pioneering Clean Transportation." U.S. PIRG Education Fund. 2019. https://uspirg.org/sites/pirg/files/reports/ElectricBusesInAmerica/US_Electric_bus_scrn.pdf

Electrification Enablement

In addition to the direct program offering investments and strategies outlined above, City Light plans to undertake efforts to reduce the barriers to electric transportation adoption and maximize its value for the grid and its customers. These efforts include a Master Infrastructure Plan and a Grid Modernization Plan.

City Light will develop the Master Infrastructure Plan in conjunction with the Seattle Department of Transportation and the Seattle Office of Planning and Community Development. This plan will seek to streamline the process for installation of EV charging infrastructure, including permitting, easements and an efficient and transparent interconnection and service upgrade process for new and existing customers installing charging infrastructure. These process innovations will enable expedient and safe installations.

Given the pace of customer adoption and the crucial tie to broader climate impacts, City Light is taking steps today to build the platform for fully electrified transportation in the future. In addition to being reliable, resilient, safe and clean, the electric grid needs to be dynamically controllable and offer customers more innovative and efficient energy choices.

In order for the grid to be a true public asset where the value of our investments accrue across the broadest group of customers, City Light must specifically direct investments to uplift and improve the lives of individuals in environmental justice communities.

Toward this end, City Light plans to deliver a Grid Modernization Plan by the end of 2020. This plan will provide the template for next generation grid architecture, outlining the initial investments that establish the foundation for the first "FutureGrid" in the Pacific Northwest.

This work to make the grid more flexible and efficient will be a decades-long effort that will benefit all of City Light's customers by:

- Empowering customers with new sources of information, related to their energy usage and options.
- Enhancing reliability and resiliency through implementation of new grid technologies.
- Identifying and building optimized electrification infrastructure.
- Managing the impacts of electrification infrastructure on the grid via demand-management strategies such as managed charging.
- Improving grid integration and enabling additional adoption of distributed energy resources.
- Building out the necessary, enabling backbone systems.

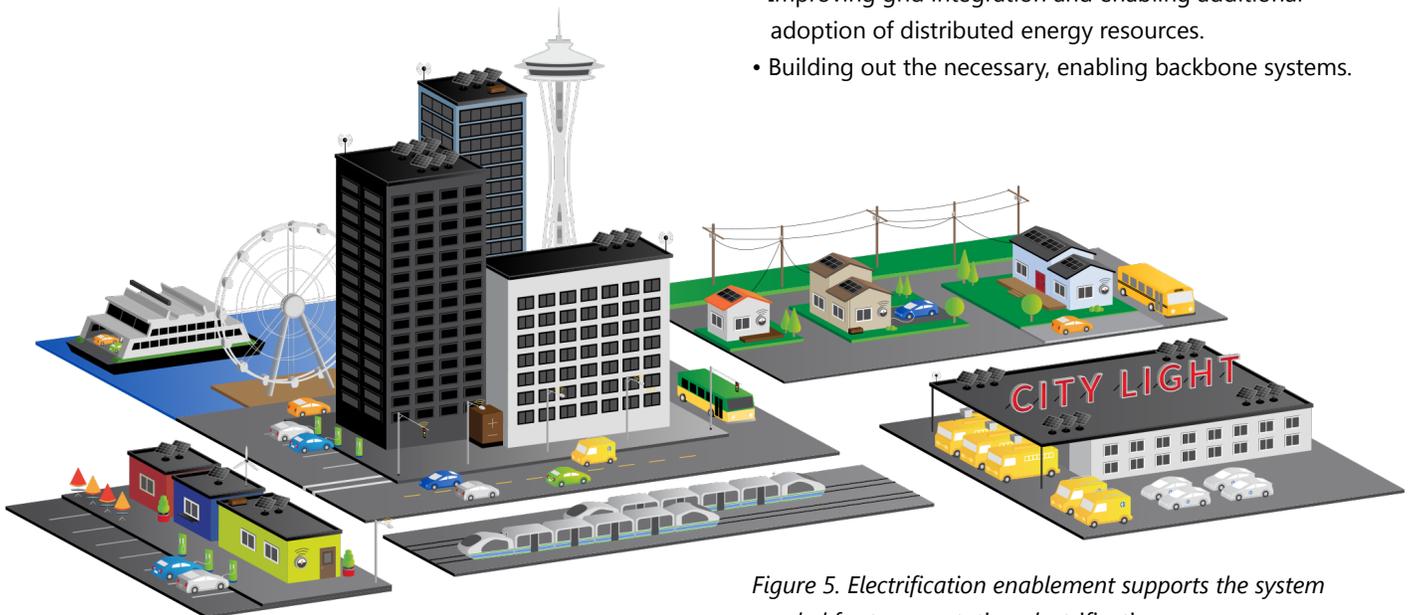


Figure 5. Electrification enablement supports the system needed for transportation electrification

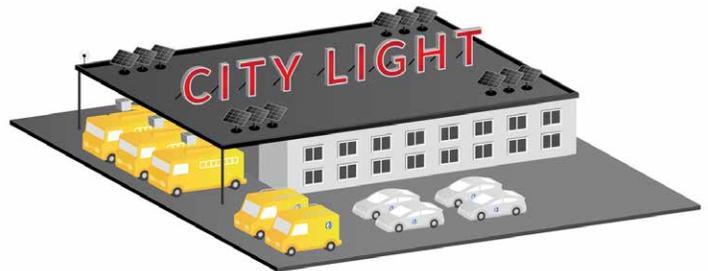
City Light will achieve these objectives by making strategic, phased investments in key areas, such as customer experience and data analytics, transmission and distribution modernization and automation, radio and cellular infrastructure and cybersecurity.

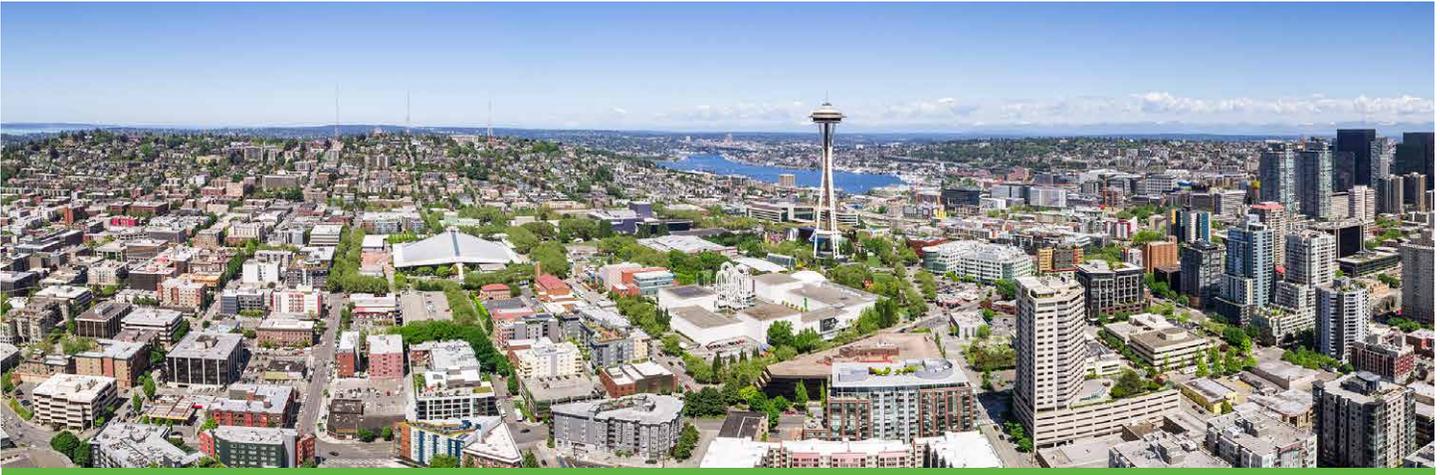
Distributed energy resources are grid-connected devices that generate (e.g., solar photovoltaic, wind), store and/or discharge (e.g., batteries), or otherwise contribute to electric power flows and their regulation. These devices can be owned by the utility, customers or other third parties, and may be utility-grade or comparatively smaller devices located behind-the-electric meter.

City Light seeks to begin this grid modernization effort now to prepare the grid for increased electrification. While doing so, the utility will tap into the innovations being developed around transmission and distribution system architecture, design and planning. The Grid Modernization Plan will allow EVs and other distributed energy resources to become true grid assets that flexibly match supply and demand. These investments are also crucial to maintain and enhance the reliability of the grid in a scenario where transportation needs are served by clean electricity rather than fossil fuels.

Financial Impacts

City Light anticipates both financial cost and benefit from the transition to transportation electrification. As more EVs charge within the service area, the utility sells more electric power. The retail revenue from the new sales are expected to be greater than the costs required to procure and deliver the additional electricity (as demonstrated by our Transportation Electrification Benefit Analysis summarized above in Section 2). This will eventually lower rates and provide overall benefit to customers. In the short term, however, achieving the future vision of innovative, customer-centric service delivery will require investments. Appropriations for any new or expanded capital projects that require additional funding will be approved through City Light’s standard budget process. Throughout the development of program offerings, the utility will ensure that certain transportation electrification offerings—specifically incentives, promotions and some utility services covered under the RCW 35.92.450—do not increase net costs to ratepayers by more than 0.25 percent. Budgetary authority for transportation electrification-related infrastructure investments, incentives or rebates will be included in City Light’s submitted budget(s). Additionally, where possible, City Light will pursue grant funding opportunities to supplement and provide the necessary resources to accelerate investment in electrification enablement.





Next Steps

The long-term effort of transportation electrification requires immediate action. City Light's carbon-neutral electricity is crucial to achieving the City's carbon-neutral goal by 2050. Now is the time to elevate communities and support the transition to a just economy by investing in program offerings and electrification enablement that will both accelerate market adoption and maximize the value that electrification brings to all of City Light's customers.

The timeline (Figure 6 on next page) depicts the transportation electrification milestones that City Light will achieve over the next two years and beyond, including:

- Rapid creation and deployment of new program offerings.
- Enabled electrification infrastructure delivered to our customers.
- Strong partnerships with key customers that expand and redefine the traditional relationship between customer and utility.
- A modernized grid that meets and manages increasing demand and enhanced customer choice.
- Established cross-departmental processes streamlining permitting and treatment of EV infrastructure.

Reporting

Consistent with reporting as part of City Light's Strategic Plan, City Light will track performance and report annually to the Mayor and the City Council on transportation electrification progress. City Light's Transportation Electrification portfolio will be managed to provide clear, quantifiable evidence of our progress as well as inform any needed portfolio adjustments to continue delivering on our commitments as a utility and as part of the City's broader transportation electrification initiative.



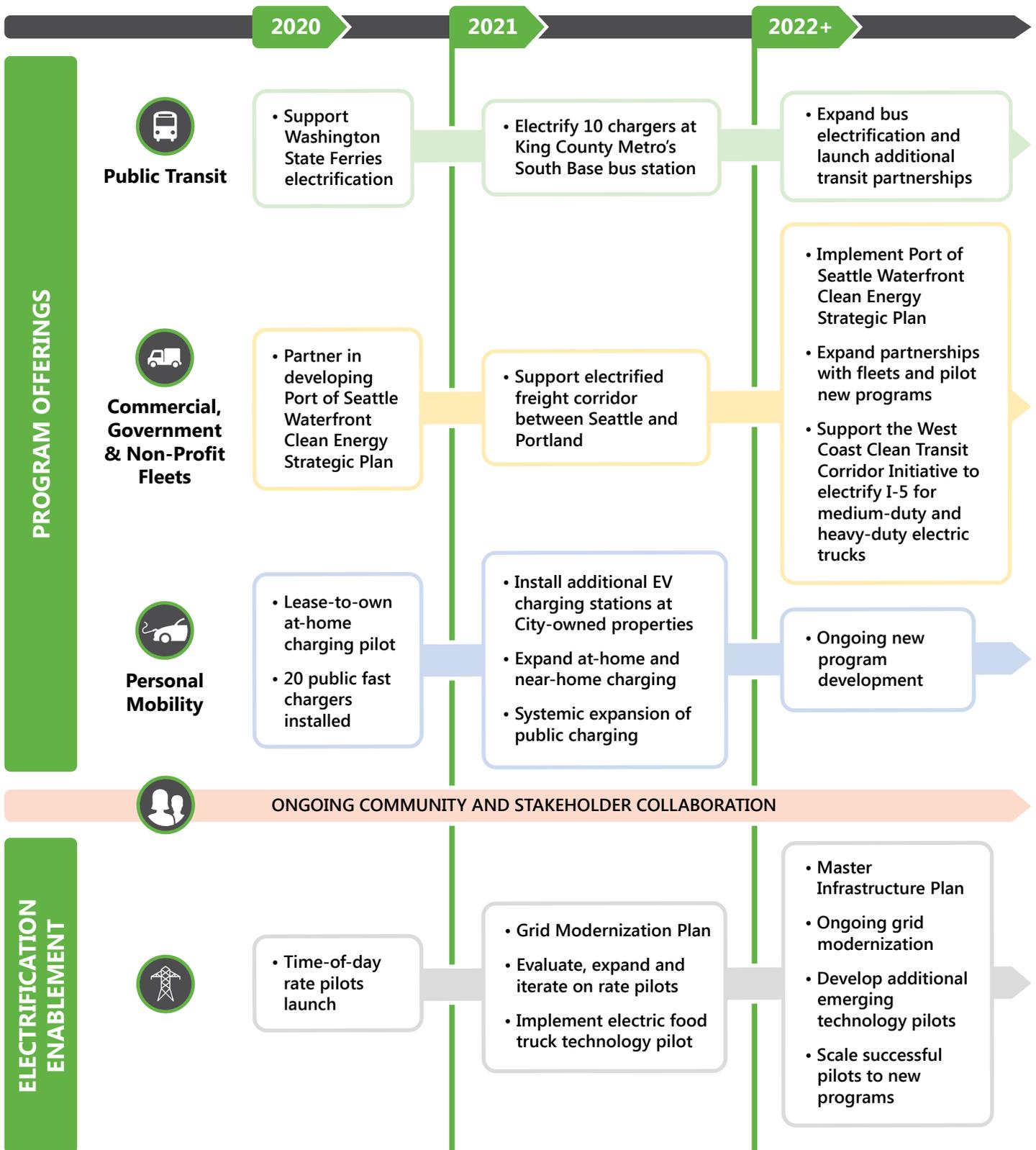


Figure 6. Milestones for City Light transportation electrification investments



Conclusion

City Light has long been committed to enabling customer choices and guaranteeing sustained public value is the utility’s core mission. As an increasing number of City Light customers are making the choice to electrify their fleets and personal vehicles based on a wide variety of factors, City Light has sought to understand and accelerate customer adoption of electric transportation in a manner that equitably and sustainably maximizes grid benefits for our customers since 2015. This Plan outlines the investment priorities City Light will undertake to ensure that the utility can honor its commitment to bringing maximum value and convenience to our customers as we work to enable this transformation. This will be an iterative, ongoing, long-term commitment—one in which City Light, and Seattle, are poised to lead the Pacific Northwest region into a clean, carbon-free energy future.





Seattle City Light

seattle.gov/light





AUGUST 2020

Seattle City Light Transportation Electrification Strategic Investment Plan: 2021-2024 – Community and Stakeholder Outreach and Engagement Summary

EXECUTIVE SUMMARY

Seattle City Light's Transportation Electrification Strategic Investment Plan: 2021-2024 – Community and Stakeholder Outreach and Engagement Summary describes our two-phase approach to community and stakeholder outreach and engagement. This approach was guided by City Light's Race and Social Justice Initiative (RSJI) and Environmental Equity Program. City Light's Transportation Electrification Strategic Investment Plan: 2021-2024 will serve all our customers and will target those with the most significant barriers to accessing the benefits of transportation electrification first. By centering equity in our outreach and engagement, the solutions that will result from the Transportation Electrification Strategic Investment Plan will be positioned to meet the needs of all our customers. The first phase of our outreach and engagement approach leads up to the Plan's review by City Council in Q3 2020. The second phase will follow City Council approval and is a long-term strategy to engage key audiences in the four-year Transportation Electrification Strategic Investment Plan. In this document, we detail our approach for each phase as well as our key findings from Phase 1.

City Light is partnering with the City of Seattle's Department of Neighborhoods to prioritize and engage environmental justice community leaders in Phase 1. Environmental justice communities refer to communities defined in the City of Seattle's Equity and Environment Agenda (EEA) and include communities most impacted by environmental inequities, including communities of color, immigrants,

refugees, people with low incomes, youth and English language learners.¹ The feedback and input we received during this process informed the investment priorities in City Light's Transportation Electrification Strategic Investment Plan: 2021-2024. At a high level, here is what we heard from community leaders and stakeholders:

- 1. Conduct customer and stakeholder outreach and awareness on transportation electrification:** Many environmental justice community members are unfamiliar with electric vehicles (EVs). Furthermore, existing EV advertising leaves out people of color and focuses on white, single-occupancy vehicle owners. Communicating in local languages, highlighting communities of color and their artwork in advertising and focusing on multimodal transportation electrification can increase equitable access.²
- 2. Prioritize buses for electrification:** This was the number one priority for both community leaders and stakeholders. Low-income communities and communities of color are more likely to depend on buses for most, if not all, of their transportation needs.³ Electrifying public transit will benefit communities who most rely on public transit by reducing air and noise pollution where impacts are greatest.
- 3. Electrify commercial and local government fleets that run through the Duwamish Valley:** Environmental justice communities are exposed to—and concerned about—poor air quality and suffer from geographic and social health disparities like increased rates of asthma and shorter life expectancy. Commercial fleet electrification can reduce harmful tailpipe emissions in the Duwamish Valley. In addition, supporting nonprofit/small business fleet electrification is an opportunity to increase equitable access to transportation electrification.
- 4. Expand at-home and near-home charging for multifamily residents:** Currently, there is a lack of access to electric vehicle charging for multifamily units. Expanding at-home and near-home solutions for multifamily residents in environmental justice communities will increase equitable access to transportation electrification as 52 percent of City Light's customers are renters and a majority live in multifamily properties.
- 5. Electrify high-mileage ride-hailing vehicles:** High-mileage ride-hailing vehicles (e.g., Lyft, Uber, taxis) drive three to five times more than regular passenger vehicles and electrifying them

¹ Seattle Office of Sustainability and Environment. "Equity and Environment Agenda."

<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

² Environmental Justice Committee. "EJC Feedback Summary on Drive Clean Seattle." July 2017.

³ King County. "The Determinants of Equity: Identifying Indicators to Establish a Baseline of Equity in King County." January 2015. https://www.kingcounty.gov/~media/elected/executive/equity-social-justice/2015/The_Determinants_of_Equity_Report.ashx

can have a large impact on tailpipe emissions.^{4,5} In addition, high-mileage ride-hailing vehicles are frequently driven by immigrants and members of communities of color and targeted incentives can increase equitable access to transportation electrification.^{6,7}

Community leaders and stakeholders have emphasized the importance of community engagement, collaboration and buy-in on public charging station development. Without proper public engagement, a public charging station may create conflicts between use of public space, increase housing costs, exacerbate community displacement or increase the risk of gentrification. Overall, multiple environmental justice groups emphasized the importance of considering and including anti-displacement strategies in infrastructure project designs so that communities can enjoy the benefits of transportation electrification and stay in place.

City Light will work to minimize harm and maximize benefits by engaging communities on public charging infrastructure developments. Through education and engagement, communities have an opportunity to learn about transportation electrification and its benefits. Collaborating with communities on site design, site location and pairing projects with other investments, can help to create infrastructure that is welcomed by the local community as an asset. In addition, environmental justice community leaders expressed a strong interest in transportation electrification investments that provide economic opportunities for communities of color.

Overall, we learned that customers want us to prioritize investments that maximize equitable access, a healthy planet and healthy lives, economic opportunities and youth pathways, community collaboration, community assets and rate affordability. We are confident that the Transportation Electrification Strategic Investment Plan will help us achieve these outcomes.

BACKGROUND

In July 2019, the Washington State legislature passed House Bill 1512, granting public utilities the authority to offer “incentive programs in the electrification of transportation for its customers, including the promotion of electric vehicle (EV) adoption and advertising programs to promote the utility’s services, incentives or rebates”⁸. The legislation adds a new section to RCW 35.92 which provides that

⁴ Puget Sound Clean Air Agency. “Electrifying Ride-Hailing in Seattle.” September 2019. <https://www.atlasevhub.com/wp-content/uploads/2019/09/Electrifying-Ride-hailing-in-Seattle-WWCC-Report.pdf>

⁵ Peter Slowik, Lina Fedirko and Nic Lutsey. “Assessing ride-hailing company commitments to electrification.” International Council on Clean Transportation. February 2019. https://theicct.org/sites/default/files/publications/EV_Ridehailing_Commitment_20190220.pdf

⁶ Puget Sound Clean Air Agency. “Electrifying Ride-Hailing in Seattle.” September 2019. <https://www.atlasevhub.com/wp-content/uploads/2019/09/Electrifying-Ride-hailing-in-Seattle-WWCC-Report.pdf>

⁷ Lyft. Economic Impact Report 2020. <https://www.lyftimpact.com/impact/drivers/expanded>

⁸ State of Washington. “House Bill 1512, State of Washington, 66th Legislature, 2019 Regular Session.” 2019. <http://lawfilesexternal.wa.gov/biennium/2019-20/Pdf/Bills/House%20Bills/1512.pdf>

the “governing authority of an electric utility formed under this chapter may adopt an electrification of transportation plan.” In response, City Light is developing a Transportation Electrification Strategic Investment Plan: 2021-2024 that details the investments City Light will make to expand equitable access to electric transportation, while reducing carbon emissions and bringing value to the grid and our customers over the next four years.

The Transportation Electrification Strategic Investment Plan, which will be updated every four years, will focus on solutions that align with City Light’s transportation electrification value framework of equity, environment and viewing the grid as an asset to deliver public good. Approval of the Plan will open the door to committing resources and making investments that will bolster and modernize our electric grid and enable public transit charging, support freight and commercial fleets and provide flexibility for personal mobility.

RACIAL EQUITY OUTCOMES

The City of Seattle’s Equity and Environment Agenda identifies communities most impacted by environmental inequities, including communities of color, immigrants, refugees, people with low incomes, youth and English language learners. City Light strives to incorporate and elevate the voices of environmental justice communities who have traditionally been excluded in transportation electrification planning and development. By centering people and communities experiencing environmental inequities, community outreach and engagement will result in solutions that meet the needs of all our customers. This is critical to the long-term success of any City infrastructure improvement plan.

City Light is dedicating space for environmental justice communities to participate in the development of the Transportation Electrification Strategic Investment Plan and transportation electrification programs, including identification of alternatives and preferred solutions.⁹ Collaboration with environmental justice communities will help City Light build infrastructure that is welcomed as a community asset and helps to realize prosperity in place for these communities. Robust and equitable transportation electrification programs can address cumulative impacts of multiple environmental hazards and social, economic and racial burdens; prepare these communities for climate change; and support connections between residents, workers, government agencies and industries.¹⁰

INTRODUCTION TO STAKEHOLDER ENGAGEMENT STRATEGY

To ensure meaningful inclusion across our service area, City Light conducted a transportation electrification racial equity analysis, guided by City Light's RSJI and Environmental Equity Program. This analysis included leveraging the City of Seattle’s RSJI Racial Equity Toolkit and conducting in-depth outreach and engagement. Step 2 of the RSJI Racial Equity Toolkit is to gather information from community members on how an issue benefits or burdens the community in terms of racial equity. City

⁹ International Association for Public Participation. “IAP2 Spectrum of Public Participation.” 2018. https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf

¹⁰ Seattle Office of Sustainability and Environment. “Equity and Environment Agenda.”

<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

Light conducted a comprehensive review of existing information to identify impacted communities, as well as how transportation electrification could benefit or burden environmental justice communities. City Light developed some initial investment priorities and examples of potential program offerings based on this research to share with community leaders and stakeholders through in-depth outreach and engagement. This document outlines our community and stakeholder outreach and engagement strategy in two phases:

- **Phase 1:** City Light engaged key audiences for their initial feedback and input for the Transportation Electrification Strategic Investment Plan: 2021-2024. Specifically, City Light asked community leaders and stakeholders to weigh in on what potential program offerings and racial equity outcomes should be prioritized for investment and implementation. Table 1 in the Transportation Electrification Strategic Investment Plan shows the outcomes that will guide City Light’s strategic investments in transportation electrification. Table 2 in the Plan shows City Light’s investment priorities, potential program offerings and equity outcomes. City Light met with community leaders and stakeholders starting in the fall of 2019 and we will continue to meet with community-based organizations and stakeholder groups leading up to the delivery of the Transportation Electrification Strategic Investment Plan: 2021-2024 to City Council.
- **Phase 2:** Community outreach and engagement efforts in Phase 2 will be focused on more deep and meaningful engagement with community members. This will start with education about transportation electrification and building customer and stakeholder awareness about the benefits of electric transportation. City Light will engage communities through a collaborative process, with an emphasis on input and feedback for program design, development and implementation. Phase 2 will start once the Transportation Electrification Strategic Investment Plan has been approved by City Council and we will move forward with collaborating with community members.

METHODOLOGY

Key Audiences

City Light identified key audiences for outreach and engagement. Key audiences for the Community and Stakeholder Outreach and Engagement Strategy includes customers who:

- experience high barriers to accessing electric transportation
- represent environmental justice communities and those who have been historically excluded
- can help expand the market of potential electric vehicle owners
- can partner with City Light to manage grid impacts
- have a vested interest in furthering environmental sustainability through a lens of race and social justice

Engagement Approach

Each phase of engagement is grounded in an audience-centered approach. This approach is important to fostering an equitable process for inclusion and toward achieving meaningful, transformative action. This section outlines the approach used for each phase of outreach and engagement.

Phase 1

In Phase 1, City Light's Community and Stakeholder Outreach and Engagement Strategy was focused on in-person, in-depth small group or one-on-one conversations with key audiences. City Light planned, initiated and implemented an engagement strategy that successfully elicited key audience input from environmental justice community leaders and stakeholder organizations, including public and private entities, franchise cities, labor unions, advocacy groups, service providers and neighborhood associations. Representatives from over 50 groups were engaged in conversations centered on identifying transportation electrification investment priorities as well as stakeholder engagement considerations in the development of the Plan.

The discussions generated wide-reaching input from community leaders, concerned residents, business owners and neighborhood advocates that extended beyond the target topic of transportation electrification and prioritizing strategies. The findings from the Phase 1 Community and Stakeholder Outreach and Engagement Strategy are presented on page 15.

Environmental Justice Community Leaders

In Phase 1, City Light partnered with the Seattle Department of Neighborhoods to reach over 22 environmental justice community leaders at 16 different groups. This outreach was focused on leaders in the following neighborhoods: Beacon Hill, Central Area, Chinatown-International District, Delridge, Duwamish Valley/South Park, Lake City, Rainier Beach and Rainier Valley. City Light prioritized these meetings in our outreach and engagement efforts. We met with individuals at their offices or preferred location and during their preferred times. We asked community leaders how they would like to be engaged or participate in the process moving forward. The slide deck used for community leader meetings is available in Appendix A – Environmental Justice Community Leader Transportation Electrification Presentation.

Our strategy for meetings with community leaders adhered to the framework and utilized many of the best practices for community engagement as outlined in the Statement of Principles to Engage Environmental Justice Communities on Transportation Electrification, signed by the Seattle Office of Sustainability & Environment, Seattle City Light, Department of Transportation and Department of Neighborhoods on January 10, 2020.

For each meeting, City Light began engagement efforts by:

- Defining community goals and determining if the outreach effort was informing or engaging.
- Understanding and communicating what is already known and established (this included climate and transportation electrification project background for context).
- Being transparent about constraints that are not shapeable by communities.

- Being clear about what is being asked of communities, specifically the question(s) they are being asked in the context of what is open for communities to shape.
- Ensuring leadership was on board prior to conducting outreach.

City Light will continue to use this approach for Phase 2 meetings with environmental justice community members.

In parallel with City Light’s Phase 1 community engagement effort, the Seattle Office of Sustainability and Environment (OSE) partnered with the Environmental Coalition of South Seattle (ECOSS), a local community-based organization (CBO), to conduct interviews with a sample of environmental justice community leaders on communication and engagement preferences for transportation electrification projects, programs and policies in support of the 2019 Equity Plan for Drive Clean Seattle.

OSE and ECOSS found that environmental justice community leaders preferred communication about services, changes to policy and partnership opportunities via the following methods¹¹:

- Hire community liaisons to facilitate engagement by communicating in the primary languages of the communities
- In-person conversations
- Social Media
- Ads on buses

In addition, OSE and ECOSS found that these community leaders preferred to be involved in projects, plans and policies via the following formats⁸:

- Small working groups that meet regularly
- Work with organizations they are already involved with and trust to gather input
- Focus groups
- Gather input at a meeting the City already attends

City Light plans to leverage and build upon these approaches in its Phase 2 communication and engagement strategy.

Key Audience Stakeholders

City Light also conducted outreach to stakeholders in key audience groups. City Light focused on engaging multiple stakeholders from key audience groups for a diversity of perspectives. As part of our Phase 1 engagement efforts, City Light met with over 35 stakeholder groups. A sample slide deck used at a stakeholder meeting is available in Appendix B – Stakeholder Transportation Electrification Presentation.

¹¹ Drive Clean Seattle. “Equity Outreach.” Office of Sustainability and Environment. 2019.

Phase 2

The focus in Phase 2 will be on more deep and meaningful engagement with community members to develop program offerings. Continuing the community outreach and engagement efforts started in Phase 1 will be essential to educating and engaging customers, informing them of planned improvements and getting their buy-in and future participation in program offerings.

The collaborative approach we are envisioning will require a high level of interaction, in accordance with guidance from public health authorities (Public Health - Seattle and King County, Washington State Department of Health and the Centers for Disease Control and Prevention) regarding COVID-19, between City Light, community representatives and other City departments to fulfill the Transportation Electrification Strategic Investment Plan's outcomes. With this approach, City Light will work with community members to identify community concerns and collaborate on solutions. City Light will benefit from community input as well as increased knowledge of the Transportation Electrification Strategic Investment Plan's desired outcomes within local communities.

Our Phase 2 approach will continue efforts to reach out to and connect with a range of audiences. Collaboration time will be expanded and extended to achieve the desired outcomes and to nurture meaningful conversations. City Light will take this approach to achieve innovative, transformative action on behalf of the communities we serve.

This approach will generate a substantial amount of qualitative data from environmental justice community members and stakeholder groups. City Light will need to invest time to review, codify and analyze the growing body of qualitative input from community discussions and other data collection methods. The analysis is an iterative process to extract common themes as well as unique perspectives and outlier perceptions. Analysis of the qualitative data will help City Light understand community concerns and contribute to endorsement of the Transportation Electrification Strategic Investment Plan and to ensuring success of its implementation among diverse groups of customers.

Environmental Justice Communities

In Phase 2, engagement efforts to contact and connect with environmental justice community members will be two-fold:

- Expand the connections to additional groups that were not engaged in Phase 1 community conversations, especially in franchise cities and unincorporated King County.
- Extend the reach into key communities by reconnecting with environmental justice group representatives who offered initial input in Phase 1 discussions.

This is an essential component to establishing a collaborative exchange of information and to generating an effective alliance of engaged community partner organizations in developing City Light's offerings.

For each meeting, City Light will continue to use the best practices highlighted in the Statement of Principles to Engage Environmental Justice Communities on Transportation Electrification. The agreement states that City departments should:

- Prioritize equity in all actions.
- Focus on meeting communities where they are, in the languages they speak.
- Translate materials and offer interpretation services for community meetings in neighborhoods with large non-primary English-speaking populations.
- Build authentic relationships, form convening groups, partner with local community-based organizations and/or Department of Neighborhoods.
- Ask communities how they want to be engaged and adapt strategy as needed.
- Ensure project budget and scope supports equity including providing childcare, food, interpretation, stipends, etc., within legal guidelines.
- Coordinate with other City departments on opportunities for engagement on the topic of transportation electrification more broadly.

Key Audience Stakeholders

In Phase 2, City Light will identify additional stakeholder groups from across the transportation sector to engage with that will contribute varying perspectives on future program offerings. City Light will collect data through focused discussions with the additional stakeholders that have been identified.

City Light will establish a means to loop back with the stakeholder organizations in order to share information and build a working relationship. This will allow City Light to collect stakeholder feedback on an ongoing basis and contribute to overall awareness and understanding of the Transportation Electrification Strategic Investment Plan's desired outcomes while also promoting positive customer relationships.

Level of Engagement

When engaging key audiences, City Light used the Public Participation Spectrum as outlined by the International Association for Public Participation (IAP2) as a tool to aid in selecting the appropriate level of participation and defining the public's role in the process. As you move from left to right, the public has an increasing impact on the decision. In Phase 1, City Light focused on involving community leaders and stakeholders. For Phase 2, City Light will involve and collaborate with community members and stakeholders on what is shapeable within our program offerings.

IAP2's Public Participation Spectrum¹²

Increasing Impact on the Decision 					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
Public Participation Goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
Promise to the Public	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

¹² IAP2 International Federation. "IAP2 Spectrum of Public Participation 20181112_v1". 2018. https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf

TRANSPORTATION ELECTRIFICATION STRATEGIC INVESTMENT PLAN STAKEHOLDER ENGAGEMENT STRATEGY: KEY AUDIENCES

This section outlines the key audiences that City Light has identified for community and stakeholder outreach and engagement.

KEY AUDIENCES	AUDIENCE DEFINITION	REASON FOR SELECTION	EXAMPLES OF AUDIENCE MEMBERS
Environmental Justice Communities	Environmental justice communities are made up of community members most impacted by environmental inequities including communities of color, immigrants and refugees, people with low incomes, youth and English language learners.	Environmental justice communities experience high barriers to accessing clean, electric transportation and have been traditionally excluded in the decision-making process when it comes to receiving the benefits of investment(s) in transportation electrification.	<p>Residents in the following neighborhoods represent many of the environmental justice communities in the City of Seattle:</p> <ul style="list-style-type: none"> • Central Area • Beacon Hill • Rainier Beach • Rainier Valley • South Park • Duwamish Valley • Lake City • Chinatown-International District • Delridge • University District • Haller Lake • Bitter Lake <p>The following cities and areas represent environmental justice communities in City Light’s service territory outside of the City of Seattle:</p> <ul style="list-style-type: none"> • SeaTac • Tukwila • Renton • Burien • Shoreline • White Center • Bryn Mawr-Skyway

Environmental Justice Organizations	Environmental justice organizations work towards climate justice by organizing people and centering on racial justice and equity to make deep system changes and foster resilient and empowered communities.	Environmental justice organizations have established relationships with environmental justice communities and have conducted community-based participatory research on environmental justice communities' wants and needs.	Local environmental justice organizations include: <ul style="list-style-type: none"> • Puget Sound Sage • Transportation Choices Coalition • 350 Seattle • Got Green • Front and Centered • Duwamish River Cleanup Coalition
Labor Unions/ Organized Labor/Labor Councils	Labor unions bargain collectively with employers over wages, benefits and rights.	Labor unions represent industries that may be impacted by City Light's investments in transportation electrification including electrical workers.	Impacted labor unions and labor councils that represent the interests of organized labor include: <ul style="list-style-type: none"> • International Brotherhood of Electric Workers (IBEW) Local 46 • IBEW Local 77 • Laborers Local 1239 • Martin Luther King County Labor Council • Electrical Industry Group Northwest
Environmental Advocacy Organizations	Environmental advocacy organizations are nonprofit groups that work to influence policies and systems to accelerate clean energy solutions that reduce contribution to climate change.	Environmental advocacy organizations can influence if policies and programs are accepted by City Council.	Local environmental advocacy organizations include: <ul style="list-style-type: none"> • Northwest Energy Coalition (NVEC) • Puget Sound Clean Air Agency • Climate Solutions • Emerald Cities • Rainier Valley Greenways

<p>Shared Mobility Companies & Transportation Network Companies (TNCs)</p>	<p>Shared Mobility Companies and TNCs use smart phone applications to link individual drivers with individuals who need transportation. They provide navigation, payment and other services.</p>	<p>TNCs contract many environmental justice community members including people of color and immigrants as drivers.^{13,14}</p>	<p>The following TNCs are present in Seattle:</p> <ul style="list-style-type: none"> • Lyft • Uber
<p>Taxi Companies</p>	<p>Taxi companies provide dispatch services to individual drivers for individuals who need transportation.</p>	<p>Taxi companies contract many environmental justice community members including people of color and immigrants as drivers.^{15,16}</p>	<p>The following taxi companies are present in Seattle:</p> <ul style="list-style-type: none"> • Orange Taxi Company • Seattle Yellow Cab
<p>Electric Vehicle Supply Equipment (EVSE) Companies and Electric Vehicle Service Providers (EVSPs)</p>	<p>EVSE companies manufacture electric vehicle charging stations for light-, medium- and heavy-duty charging. EVSPs develop software that sits on-top of the charging station, enabling end-users to use, pay for and track charging services.</p>	<p>EVSE companies and EVSPs will provide the equipment and software services for transportation electrification programs and services. City Light currently partners with two of these organizations.</p>	<p>The major EVSE companies are:</p> <ul style="list-style-type: none"> • Greenlots • ChargePoint • eMotorWerks/EnelX <p>The major EVSP companies are:</p> <ul style="list-style-type: none"> • Electrify America • EVGo • Tesla

¹³ Puget Sound Clean Air Agency. "Electrifying Ride-Hailing in Seattle." September 2019. <https://www.atlasevhub.com/wp-content/uploads/2019/09/Electrifying-Ride-hailing-in-Seattle-WWCC-Report.pdf>

¹⁴ Lyft. Economic Impact Report 2020. <https://www.lyftimpact.com/impact/drivers/expanded>

¹⁵ Interview with Seattle Yellow Cab on 2/4/2020.

¹⁶ Interview with Orange Taxi Company on 1/23/2020.

Commercial, Local Government and Non-Profit Fleets	Commercial, local government and non-profit fleets are a collection of vehicles owned or leased by an individual or organization that support the business by transporting people, goods and services.	Several commercial, local government and non-profit fleets in City Light’s service territory are actively or planning to electrify their fleets. These fleets may create large local electrical loads.	Commercial, local government and non-profit fleets planning on electrifying include: <ul style="list-style-type: none"> • King County Metro • UPS/PACCAR • Recology • Zipcar • Amazon • City of Seattle • University of Washington • UW Urban Freight Lab
City Light Franchise Cities and Unincorporated King County	City Light franchise cities are cities within City Light’s service territory outside of the City of Seattle. Unincorporated King County is made up of census-designated places in King County that do not belong to a city.	Due to the cost of living in Seattle, some City Light customers have relocated and live in franchise cities and unincorporated King County. It is important to hear from all of City Light’s customers across our entire service territory.	Franchise cities include: <ul style="list-style-type: none"> • Shoreline • Lake Forest Park • Burien • Renton • Tukwila • SeaTac • Normandy Park • Unincorporated King County: <ul style="list-style-type: none"> ○ White Center ○ Bryn Mawr-Skyway
Public Agencies	Public agencies are agencies within the Pacific Northwest that play different roles in electrifying transportation regionally.	Regional alignment is critical to widespread transportation electrification.	Some of the public agencies that City Light is currently coordinating with or plans to coordinate with in the future include: <ul style="list-style-type: none"> • King County • Washington State Ferries • Port of Seattle • State of Washington Department of Commerce • State of Washington Department of Ecology • Sound Transit

Seattle City Light Customers	City Light customers covers all City Light customers.	The Transportation Electrification Strategic Investment Plan impacts all customer groups. City Light's plan will serve all our customers and will target those with the most significant barriers to accessing the benefits of transportation electrification first. By centering equity in our outreach and engagement, the solutions that will result from the Transportation Electrification Strategic Investment Plan will be positioned to meet the needs of all our customers.	Seattle City Light customers include the following and those groups that speak on behalf of or serve our customers: <ul style="list-style-type: none"> • Residential • Business/Commercial/ Industrial • Owners/Property Managers • Affordable Housing Providers • Community Associations • Neighborhood Associations • Advocacy Groups • Low-Income Service Providers
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TRANSPORTATION ELECTRIFICATION STRATEGIC INVESTMENT PLAN STAKEHOLDER ENGAGEMENT KEY FINDINGS: PHASE 1

The first phase of the Stakeholder Engagement Strategy was focused on engaging the selected key audiences for the Transportation Electrification Strategic Investment Plan leading up to the delivery of the Strategic Investment Plan to City Council. The complete list of meetings is in Appendix C.

This section outlines feedback, input and priorities for the Plan from the community leaders and stakeholders City Light met with during Phase 1 outreach and engagement.

KEY FINDINGS

City Light conducted outreach to environmental justice communities along with other stakeholders to gather feedback on their priorities for City Light's Transportation Electrification Strategic Investment Plan. The following are key findings from our community and stakeholder outreach and engagement efforts in Phase 1. The priorities City Light heard are reflected in the Transportation Electrification Strategic Investment Plan's investment priorities framework.

Environmental Justice Community Leaders

Program Offerings

- **Electrify buses:** Electrify buses was the number one priority for environmental justice community leaders. Community leaders expressed a desire for improved and electrified public transit as community members primarily rely on public transit for getting around. One community group was supportive of transportation mode-shifting to reduce the overall number of vehicles on the road.
- **Customer and stakeholder outreach and awareness:** Increasing customer and stakeholder outreach and awareness was the second priority. They recommended integrating education in public school systems; exploring partnerships with car dealerships, electric vehicle service equipment (EVSE) suppliers and City departments; and hosting networking events, info sessions and ride and drive events. As an outreach approach, they recommended using storytelling, multi-media and demographic-specific tactics. Multiple community leaders emphasized the importance of involving community members and community-based organizations to be successful. One organization suggested training youth ambassadors on electric vehicle education.
- **Electrify commercial, local government and non-profit fleets:** As a third priority, community leaders identified commercial and local government fleet electrification as an opportunity to reduce tailpipe emissions in the Duwamish Valley. Multiple community leaders also identified nonprofit/small business fleet electrification as an opportunity to increase equitable access to transportation electrification. One leader supported electrifying school buses that park in the Duwamish Valley.
- **Accelerate transportation electrification adoption in environmental justice communities:** As a fourth priority, community leaders spoke to accelerating transportation electrification adoption in their communities to ensure that we include individuals who have been traditionally left out. One group mentioned that a lower rate for electric vehicle charging for low-income families could help achieve this. Another group was interested in Women Minority Business Enterprise (WMBE) ownership models for public charging stations.
- **Electric Vehicle Rate:** Community leaders also prioritized reducing the cost of charging and incentivizing the transition to electric vehicles through affordable rate structures.
- **Additional Commentary:**
 - Electrify King County Metro's Via to Transit, a pilot program that addresses the first- and last-mile to Link Light Rail in southeast Seattle.
 - Electrify drayage trucks¹⁷ driven by independent contractors that serve the Port of Seattle.
 - Provide financing for multifamily property owners to install electric vehicle charging stations.
 - Provide incentives to TNC drivers to adopt electric vehicles.
 - Provide support and incentives for public charging stations at community centers.

¹⁷ Drayage trucks are Class 8 heavy duty trucks that do local and regional shipping runs, usually in and out of ports.

- Provide more support for property owners to negotiate the City of Seattle’s system for installing charging stations.

Racial Equity Outcomes

- **Equitable Access:** Community leaders recommended City Light conduct in-language, inclusive, community- and generation-specific advertising, communications and engagement. In addition, leaders suggested we communicate through multi-media channels (e.g., Instagram, videos). One group emphasized the importance of connecting with community members in franchise cities in Phase 2 outreach and engagement.
- **Healthy Planet, Healthy Lives:** Community leaders requested that City Light prioritize communities most impacted by poor air quality first for investment and that we act quickly to address the climate crisis.
- **Economic Opportunities and Youth Pathways:** Community leaders prioritized providing investment, economic and job opportunities for environmental justice communities including apprenticeships and internships. One group spoke to City Light about supporting a ‘just transition’ to transportation electrification jobs for folks currently dependent on carbon-based infrastructure economic systems. Another recommendation was that we set supportive policies and reduce barriers in City Light contract procurement processes.
- **Community Collaboration/Community Assets:** Community leaders encouraged City Light to collaborate with community members on public charging infrastructure. Many requested we identify off-street parking lot/private property solutions rather than locating stations in the public right-of-way. One group requested we pair public charging investments with additional community investments, to help create infrastructure improvements that would feel like an asset to communities.

Environmental Justice Organizations

Program Offerings

- **Electrify buses:** The number one priority for environmental justice organizations was to improve, increase and electrify public transit options. Overall, environmental justice organizations expressed the need to invest in public transit over personal vehicles to increase equitable access to transportation electrification and reduce carbon emissions. In addition, one group wanted to see electrified buses with longer ranges that serve communities further out in King County. One organization identified that local environmental justice community members want local government to prioritize reduced public transit fares.¹⁸
- **Additional Commentary:**
 - Electrify services that provide first- and last-mile transit services to public transit like King County Metro’s Via to Transit and electric bus service to and from ferry terminals.
 - Invest in infrastructure to support electric foot ferries, such as the route of the Kitsap Fast Ferry.

¹⁸ Puget Sound Sage. “Powering the Transition.” 2020. https://www.pugetsoundsage.org/wp-content/uploads/2020/06/PugetSoundSage_PoweringTransition_June2020-1.pdf

- Electrify government and commercial car fleets. Provide charging infrastructure for vehicles that are co-located and/or in predictable locations.
- Electrify taxis and high-mileage rideshare vehicles as these vehicles have the highest city vehicle miles driven. Electrify drayage trucks driven by independent contractors that serve the Port of Seattle.
- Electrify school buses that park in the Duwamish Valley.
- Work with Seattle Parks and Recreation Department to replace mowers and blowers with electric or human-powered equivalents to reduce climate pollution and air pollution (particularly to benefit the health of the workers).¹⁹

Racial Equity Outcomes

- **Healthy Planet, Healthy Lives:** All environmental justice groups we met with emphasized the importance of improving air quality as environmental justice communities are disproportionately impacted by air pollution. Several environmental justice groups requested that City Light prioritize communities most impacted by poor air quality first for investment.
- **Economic Opportunities and Youth Pathways:** Multiple groups prioritized economic opportunities and youth pathways in the transition to electrified transportation. Environmental justice groups spoke to providing youth, apprenticeship and job pathways with good labor standards and livable wages to environmental justice communities.
- **Equitable Access:** Environmental justice organizations emphasized the importance of equitable access in offerings and Phase 2 outreach and engagement efforts:
 - When completing Phase 2 outreach and engagement, they recommended City Light identify the specific languages spoken in that community and ensure we have translated materials and language interpretation services available. One group shared there is an opportunity to connect with youth through video or other phone connections. In addition, one group communicated the importance of connecting with community-based organizations and community members in franchise cities.
 - Target drivers who have inadequate access to public transit and are reliant on cars because they have been displaced further out from their place of work and other services due to affordability.
- **Community Collaboration/Community Assets:** Multiple environmental justice groups emphasized the importance of pairing infrastructure investments with anti-displacement strategies so that communities can enjoy the benefits of transportation electrification and stay in place. One environmental justice group requested we pair public charging investments with additional investments, to help create infrastructure improvements that would feel like an asset to the local community.
- **Rate Affordability:** One environmental justice organization identified rate affordability as an important racial equity outcome. If their community member's energy bills increase by \$50 a

¹⁹ Letter from 350 Seattle on 2/13/2020.

month, community members will start to cut basic services like groceries, medicine, childcare, eldercare or rent/mortgage payments.²⁰

Labor Unions

Racial Equity Outcomes

- **Economic Opportunities and Youth Pathways:** The number one racial equity outcome for labor unions was Local Economies and Youth Pathways. Unions expressed concerns about job loss, re-training and workforce development in the shift to electric transportation. One union was interested in the development of apprentice programs for utility construction workers involved in the build-out of charging infrastructure. Another union recommended City Light include apprenticeship utilization requirements in bid specifications for our offerings. In addition, they recommended we target environmental justice community members for contracts and implementing youth pathways.
- **Additional Commentary:**
 - City Light should plan for how expanding transportation electrification will impact grid infrastructure and future transmission and distribution (T&D) investments
 - Stressed the need for an ongoing focus on safety for both customers and field crews as new energized services come online.

Environmental Advocacy Groups

Program Offerings

- **Electrify buses:** The number one priority for environmental advocacy groups was to electrify and expand public transit. One group voiced support for transportation mode-shifting to reduce the overall number of vehicles on the road.
- **Customer and stakeholder outreach and awareness:** Multiple groups recommended City Light focus on education and outreach to increase awareness and excitement around transportation electrification.
- **Electrify high-mileage vehicles:** Groups emphasized that TNC drivers drive three to five times more than regular passenger vehicles and electrifying these vehicles can have a large impact on tailpipe emissions. In addition, these vehicles are frequently driven by communities of color and targeted incentives can increase equitable access to transportation electrification. For electrifying high-mileage vehicles, organizations recommended providing at-home and near-home level 2 charging at residential charging rates or specific rates for TNC drivers. They also recommended adding public fast charging stations near pick up and drop off locations for TNC drivers, dedicated for their use, if possible. Multiple groups also recommended electrifying drayage trucks driven by independent contractors that serve the Port of Seattle.

²⁰ Puget Sound Sage. "Powering the Transition." 2020. https://www.pugetsoundsage.org/wp-content/uploads/2020/06/PugetSoundSage_PoweringTransition_June2020-1.pdf

- **Electrify commercial, local government and non-profit fleets:** Multiple environmental advocacy groups emphasized the importance of electrifying large and heavy-duty commercial and government fleets.
- **Expand at-home and near-home charging:** Multiple groups recommended that City Light include dedicated transportation electrification services to renters (specifically multifamily residents) as they make up 52% of the customers in our service territory. One encouraged City Light to invest in charging infrastructure on utility poles at at-home charging rates.
- **Electric Vehicle Rate:** Multiple groups spoke to the importance of electric vehicle charging rates. One group recommended City Light provide affordable electric vehicle charging. Another encouraged City Light to incentivize transportation electrification through rate structures.
- **Additional Commentary:**
 - Electrify King County Metro’s Via to Transit, a pilot program that addresses the first- and last-mile to Link Light Rail in southeast Seattle.
 - Focus on large capital projects that create jobs and support companies/groups with the biggest barriers to electrification.
 - Pair targeted electric vehicle education and community collaboration on public charging stations with an avenue for electric vehicle adoption in the communities, such as community carshare.

Racial Equity Outcomes

- One group recommended City Light collaborate with high-mileage vehicle drivers on public charging and right-size investments with their need for charging. Another group emphasized the importance of overall rate affordability.

Transportation Network Companies (TNCs)

Program Offerings

- **Public Charging:** One organization emphasized the importance of public fast charging (i.e., above 50 kWh). Drivers need to spend as little time charging as possible in order to reduce downtime and maximize money earned.

Taxi Companies

Program Offerings

- **Electrify high-mileage vehicles:** According to taxi companies, the most important aspect of electrifying high-mileage vehicles is making the transition cost effective. One organization expressed that at-home and near-home charging is the most important solution because drivers want to start their morning with a full tank and do not want to have to think about refueling downtown. Installing fleet fast chargers at taxi company headquarters might also be an effective solution for drivers to refuel but requires more investigation.

Electric Vehicle Supply Equipment (EVSE) Companies and Electric Vehicle Service Providers (EVSPs)

Program Offerings

- **Electric Vehicle Rate:** EVSE companies and EVSPs encouraged City Light to explore creative rate solutions that help make the business case for public charging stations.
- **Transportation Electrification Customer Service:** EVSE companies and EVSPs expressed concern around permitting and interconnection. They shared that City Light’s timeframe for interconnection can be too long and the lack of transparency around costs can slow down organizational infrastructure plans. One group requested standardized interconnection standards and rules for charging stations across utilities. A desire for a central point of contact or group focused on EVs at Seattle City Light was also expressed.
- **Additional Commentary:**
 - Partner with major corporations on education and outreach (specifically in workplaces).
 - Support infrastructure for buses, multifamily, high-mileage, workplace, public and fleet charging.

Commercial, Local Government and Non-Profit Fleets

Program Offerings

- **Electrify commercial, local government and non-profit fleets:** Fleets prioritized incentives for charging infrastructure. In addition, one group requested fast induction charging options for heavy-duty vehicles.
- **Electric Vehicle Rate:** Fleets expressed interest in incentives for charging, cheaper rates for overnight slow charging, demand charge holidays and electric vehicle-specific rates.
- **Transportation Electrification Customer Service:** Fleets prioritized improving the electrical permitting process for installing charging stations including reducing the number of steps it takes to obtain a permit, the time it takes to obtain a permit and the amount it costs. One group shared that City Light’s timeframe for interconnection can be too long and can slow down organizational infrastructure plans. They also shared that government facilities are often old and do not have sufficient power capacity to meet their electrification outcomes. They voiced that solutions are needed to help solve for this problem.
- **Additional Commentary:**
 - Increase access to charging stations throughout the service area so that government fleets have access to charging stations beyond a centralized hub to mitigate range anxiety and support government vehicles that do not return to base. Opportunity to site public charging stations at Seattle Public Utility pumping stations.
 - Support solutions for at-home charging for government issued vehicles. Currently, gift of public funds regulations prevents departments from investing in at-home charging solutions for take-home fleets, resulting in the need for internal combustion engine fleet vehicles.

Seattle City Light Franchise Cities

Program Offerings

- **Customer and stakeholder education and outreach:** Franchise cities were very supportive of education and outreach. Multiple cities identified events for City Light to attend and present at including Touch-a-Truck events, Green/Sustainability events, Resource Environmental Fairs and a Permit 'How To' Fair.
- **Expand public fast charging:** Franchise cities emphasized the importance of public charging for their residents. They recommended installing public chargers at city centers, community centers and in private parking lots.
- **Expand workplace charging:** Franchise cities also identified workplace charging as a priority. SeaTac specifically spoke to providing charging at the Seattle Tacoma International Airport's north employee parking lot, located within City Light's service territory.
- **Electrify buses:** Franchise cities supported electrifying buses that pass through their cities.
- **Electrify commercial, local government and non-profit fleets:** Franchise cities identified opportunities to electrify their city fleets. Specifically, they requested case studies and lessons learned from the City of Seattle's fleet electrification process including technical, operational and institutional support.
- **Additional Commentary:**
 - Electrify last mile to transit services including King County Metro's Via to Transit and TNCs.
 - Support at-home and near-home charging for multifamily residences by working with multifamily private property developers.

Public Agencies

Program Offerings

- **Electrify buses:** King County requested that City Light support them in meeting their bus electrification target.
- **Customer and stakeholder outreach and awareness:** One public agency recommended City Light emphasize education and outreach as a discrete investment.

Racial Equity Outcomes

- **Community Collaboration:** One agency recommended City Light focus on education and awareness before collaborating with communities on offerings to ensure community members are aware of transportation electrification and feel confident in their participation.

Seattle City Light Customers

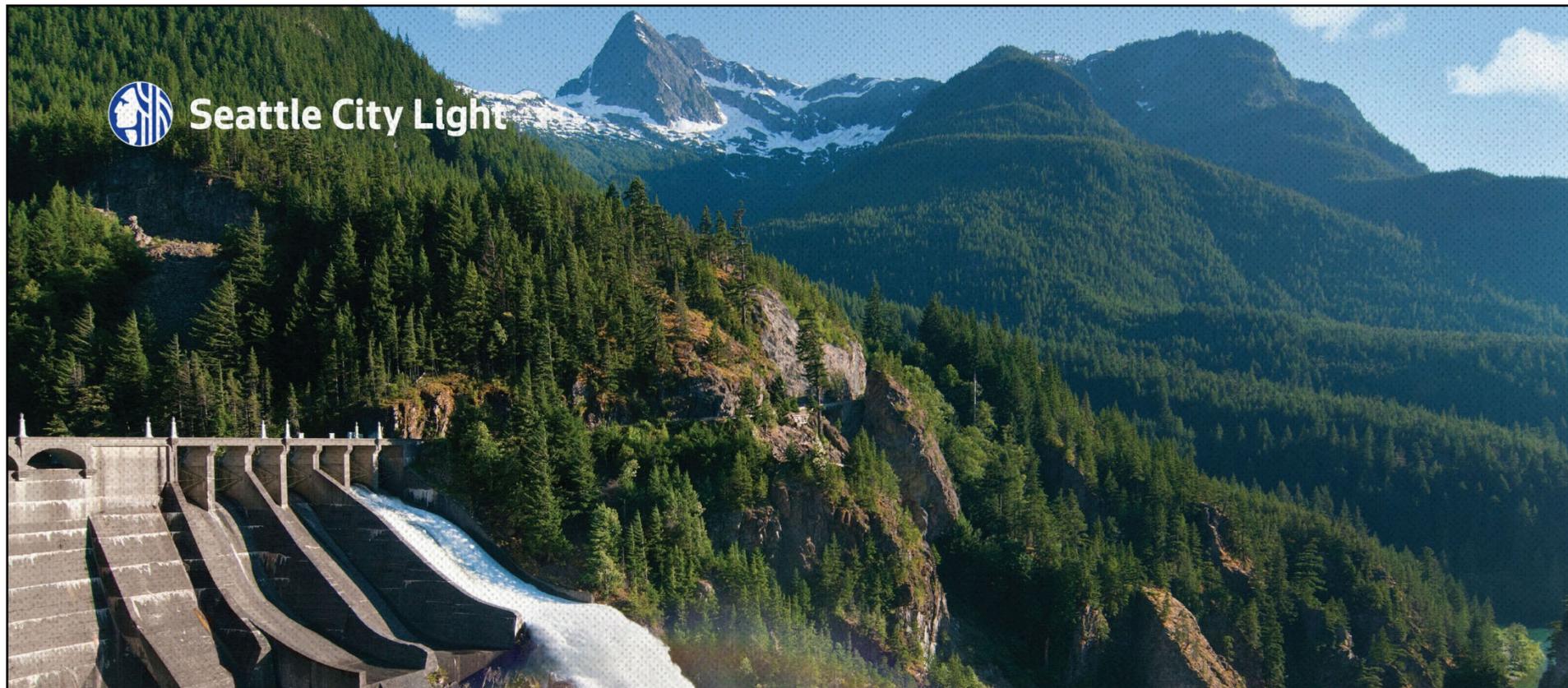
Program Offerings

- **Electrify buses, ferries and other public transit:** Multiple groups supported electrifying transit including buses and ferries.
- **Additional Commentary:**
 - Offer time-of-day rates that are lower for off-peak electric vehicle charging.
 - Provide education about transportation electrification.
 - Support access to charging stations for individuals without garages and TNC drivers.

- Collaborate with affordable housing on access to charging for residents.
- Provide workplace charging.
- Support charging options for electric bikes in public settings and at workplaces.

Racial Equity Outcomes

- **Community Collaboration:** Many customer groups requested that City Light locate public charging stations away from arterials, pedestrian, cycling and transit paths. One group recommended that City Light refrain from using right-of-way locations in areas of high population density and identify parking lot sites. They thought right-of-way locations would be less problematic in areas of lower population density. One group requested that City Light collaborate with communities of color and other environmental justice communities on public charging site locations and design.
- **Equitable Access:** One group recommended that City Light work with affordable housing to ensure affordability and equitable access to transportation electrification solutions.



TRANSPORTATION ELECTRIFICATION STRATEGIC INVESTMENT PLAN

Presentation for Community Leaders

Seattle City Light

SEATTLE CITY LIGHT QUICK FACTS

Service Area Population	906,595
Service Area Size	131 sq. mi.
Customers Served	460,609
Employees	1,770
Generation – City Light Dams	7

CUSTOMER SERVICE AREA MAP



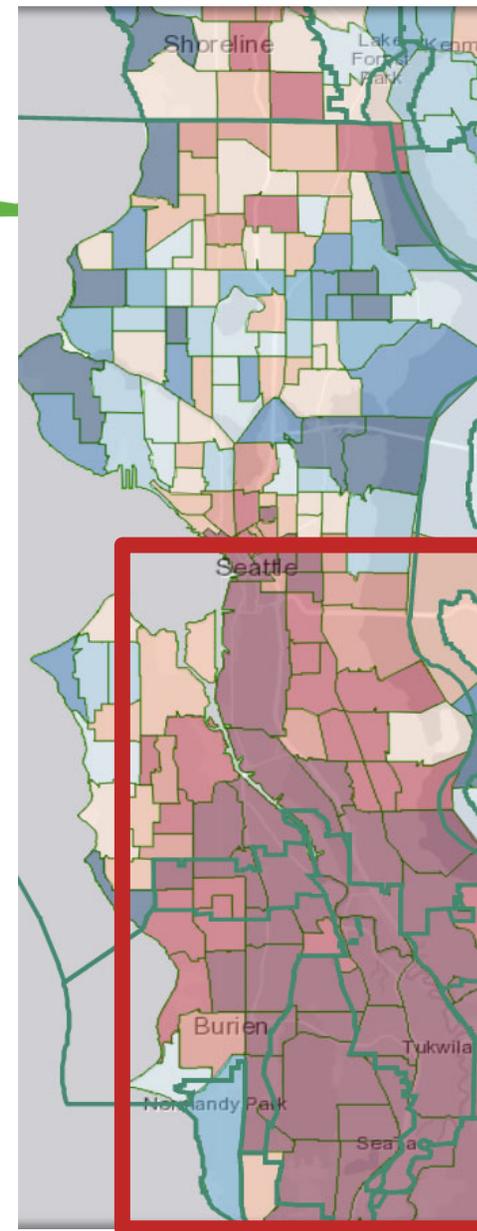
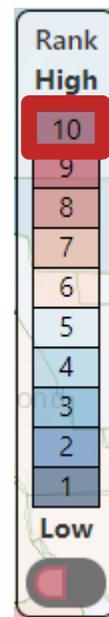
WHAT IS TRANSPORTATION ELECTRIFICATION?

- Moving people, goods, and services around the greater Seattle area using Seattle City Light's clean electricity
- Electrifying Seattle's entire transportation system
 - buses
 - personal vehicles
 - rideshare
 - ferries
 - heavy-duty vehicles
 - goods delivery
 - local government and commercial fleets

BREATHE EASIER

DIESEL POLLUTION

No dirty soot comes out of tailpipes of electric buses or cars.

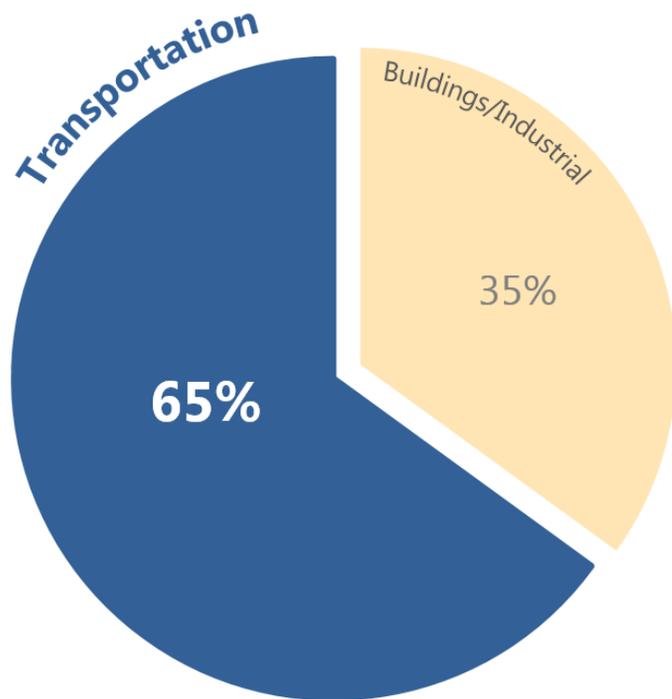


REDUCE IMPACT

GREENHOUSE GAS EMISSIONS



SEATTLE

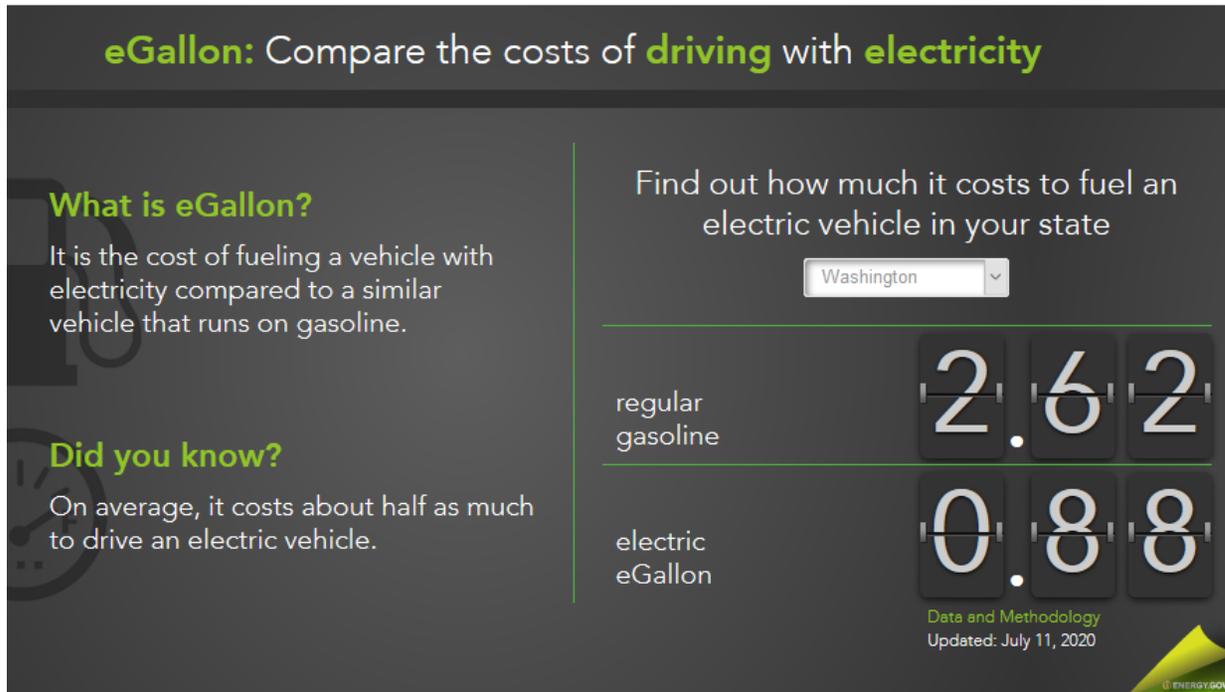


Vehicles powered by our clean electricity have **zero carbon emissions** and **do not contribute to our climate pollution.**



SAVE MONEY

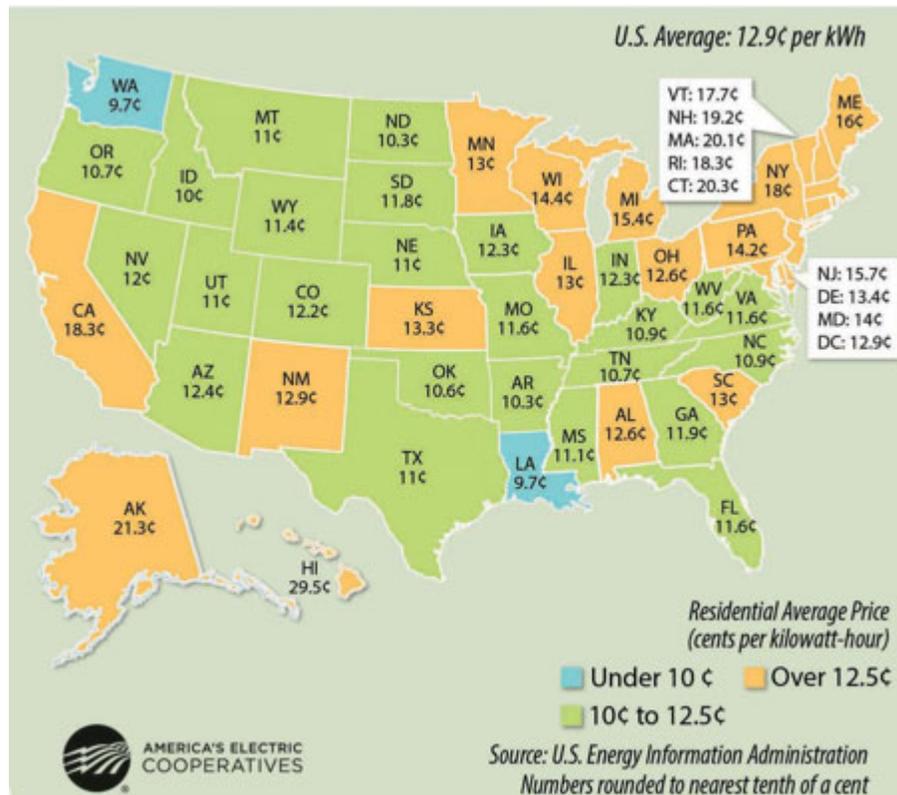
ELECTRIC VEHICLE FUELING PRICES



Electric vehicles have 50% average annual operating savings over gas-powered vehicles.

SAVE MONEY

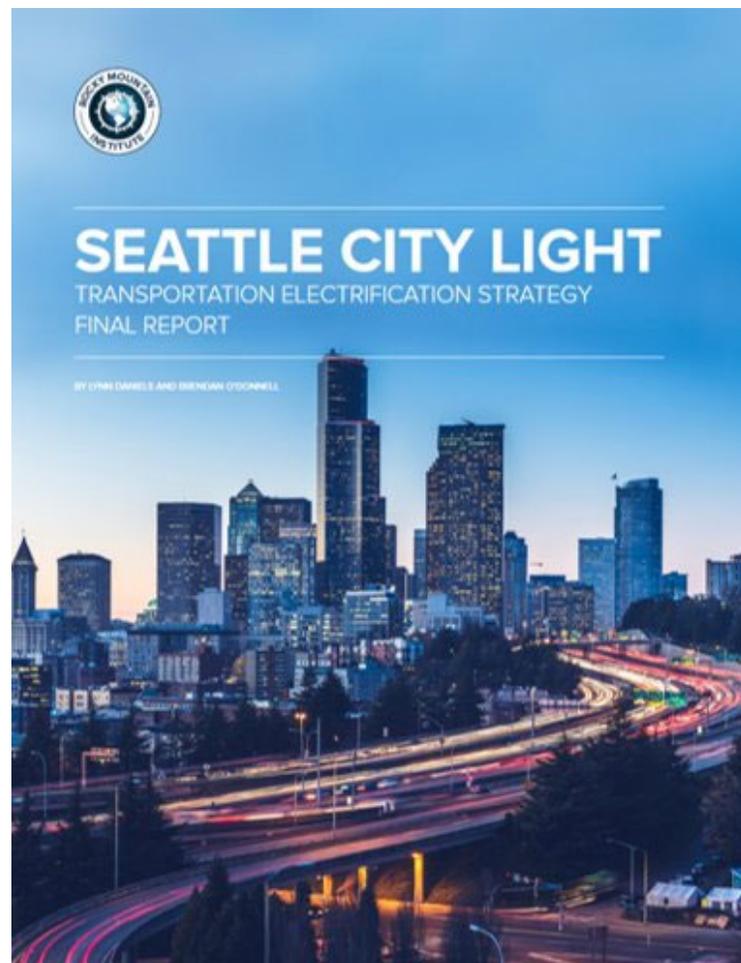
RESIDENTIAL ELECTRICAL PRICES



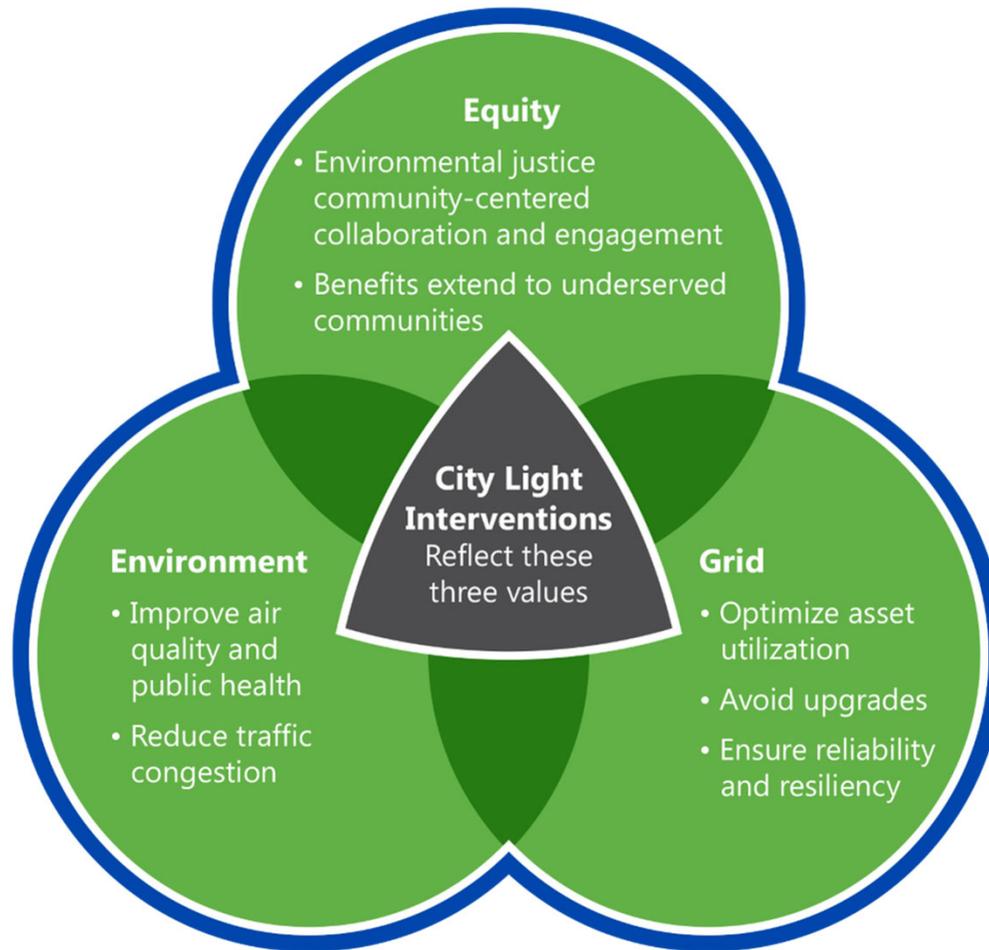
Mass adoption of electric vehicles can help **keep electricity prices low for all.**

CITY LIGHT'S ROLE

- Developing programs to enable and promote bus, car and truck electrification
- Reliable and affordable charging



CITY LIGHT'S VALUES FRAMEWORK



HOW CITY LIGHT IS EMBEDDING EQUITY



We are here!



WHAT WE'VE HEARD SO FAR

What We've Heard from Community	Potential Solutions from Community
Communities of color suffer from poor air quality and health disparities	Prioritize these areas for investments
Need increased/improved public transit	Provide charging infrastructure for buses
Most people are unfamiliar with EVs	Support community-based education
Many community members cannot afford cars	Provide charging infrastructure for community carsharing
Provide economic opportunities for communities of color	Support economic opportunities related to transportation electrification
Lack of access to charging for multifamily units	Provide at-home and near-home affordable charging solutions
Without proper planning, public charging may contribute to increased housing costs, exacerbate community displacement, and increase the risk of gentrification	Utilize community-based decision making for public charging infrastructure to design and locate stations with community input

RACIAL EQUITY GOALS

	Community Assets	City Light's programs invest in infrastructure that are community assets so Environmental Justice Communities can enjoy the benefits of transportation electrification in their current neighborhoods.
	Community Collaboration	Environmental Justice Communities see their wants and needs reflected in City Light transportation electrification programs.
	Healthy Planet, Healthy Lives	Reduce tailpipe emissions that impact local air quality and public health where Environmental Justice Communities live, learn, work and play. Reduce CO ₂ emissions that have a disproportionate burden on the most vulnerable populations and communities.
	Equitable Access	Environmental Justice Communities learn about our transportation electrification programs, can readily understand and access materials and resources, see themselves reflected in communications, and participate in and benefit from City Light programs.
	Economic Opportunities and Youth Pathways	City Light enables Environmental Justice Communities to participate in and benefit from the local transportation electrification economy.
	Electricity Affordability	Widespread transportation electrification increases revenue to put downward pressure on electricity prices.

 **Transportation Electrification**



TRANSPORTATION USES	INVESTMENT PRIORITIES	EXAMPLE CITY LIGHT OFFERINGS
 All	Customer and stakeholder outreach and awareness	<ul style="list-style-type: none"> • Information, education, events and resources on the benefits of electric vehicles
 Public Transit (Buses, Ferries, Trains, Light Rail)	Electrify buses, ferries and other public transit	<ul style="list-style-type: none"> • Financial incentives and technical assistance with site and design requirements to provide electric charging infrastructure for King County Metro, Washington State Ferries and other public transit • Partnerships with City of Seattle and King County departments to electrify first- and last-mile public transportation options such as paratransit shuttles and e-mobility hubs
 Commercial, Government & Non-Profit Fleets	Electrify commercial, local government and non-profit fleets	<ul style="list-style-type: none"> • Financial incentives for electric charging infrastructure for companies that transport people, goods and services • Fee-based City Light-owned charging infrastructure for public and private fleet vehicles (such as school buses and solid waste vehicles) • Incentives and turn-key charging infrastructure for electrification of non-profit fleet vehicles
 Personal Mobility (Cars, Bikes, Scooters, etc.)	Expand at-home and near-home charging	<ul style="list-style-type: none"> • Incentives, qualified installers and special payment terms to help reduce barriers to installing charging stations in multifamily housing • Near-home charging solutions for those with no access to off-street parking
	Electrify high-mileage vehicles	<ul style="list-style-type: none"> • Provide lower costs to charge at different times of day that meet the needs of high-mileage vehicle drivers while benefiting the grid
	Accelerate transportation electrification adoption in environmental justice communities	<ul style="list-style-type: none"> • Charging infrastructure for community car share • Provide discounts toward the cost to charge electric vehicles for people with low to moderate incomes
	Expand public fast charging	<ul style="list-style-type: none"> • Financial incentives to help reduce the upfront cost of public charging stations • Community collaboration on City Light-owned public charging stations
	Expand workplace charging	<ul style="list-style-type: none"> • Provide EV-ready electricity service to workplaces for future charging infrastructure

QUESTIONS FOR YOU

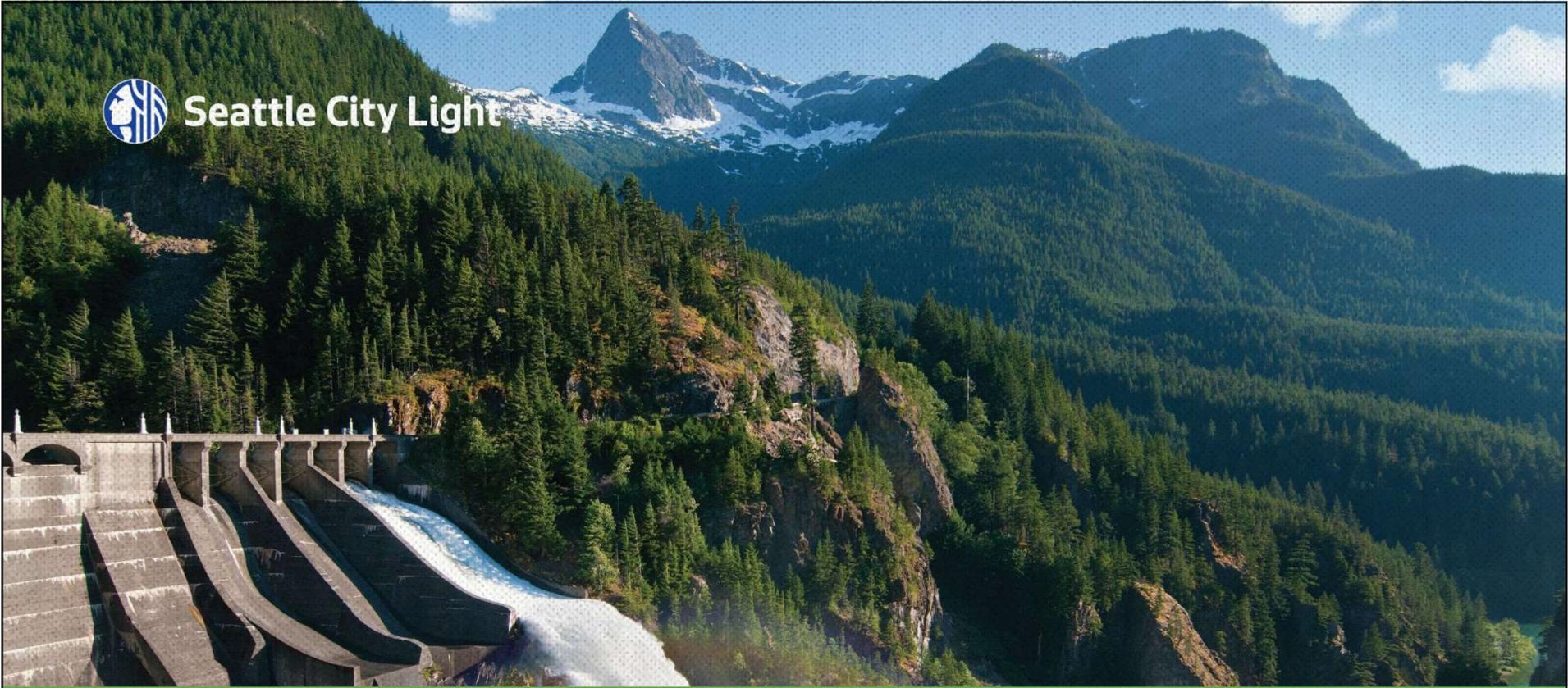
- What is #1 for you? What should we make sure to include in the plan?
- Based on the options listed, how should we prioritize them? What is missing?
- How does this work fit in with other priorities for your organization or in your neighborhood?

NEXT STEPS

- When we get this approved, how would you like to be involved?
- Do you have suggestions for other organizations that we should plan to engage with?



Seattle City Light



TRANSPORTATION ELECTRIFICATION STRATEGIC INVESTMENT PLAN

Presentation for Stakeholders

Seattle City Light

WHAT IS TRANSPORTATION ELECTRIFICATION?

- Moving people, goods, and services around the greater Seattle area using Seattle City Light's clean electricity
- Electrifying Seattle's entire transportation system
 - buses
 - personal vehicles
 - rideshare
 - ferries
 - heavy-duty vehicles
 - goods delivery
 - local government and commercial fleets

CITYWIDE COORDINATION ON TRANSPORTATION ELECTRIFICATION



BENEFITS



No dirty soot comes out of tailpipes of electric buses or cars.

Vehicles powered by our clean electricity have **zero carbon emissions** and **do not contribute to our climate pollution.**



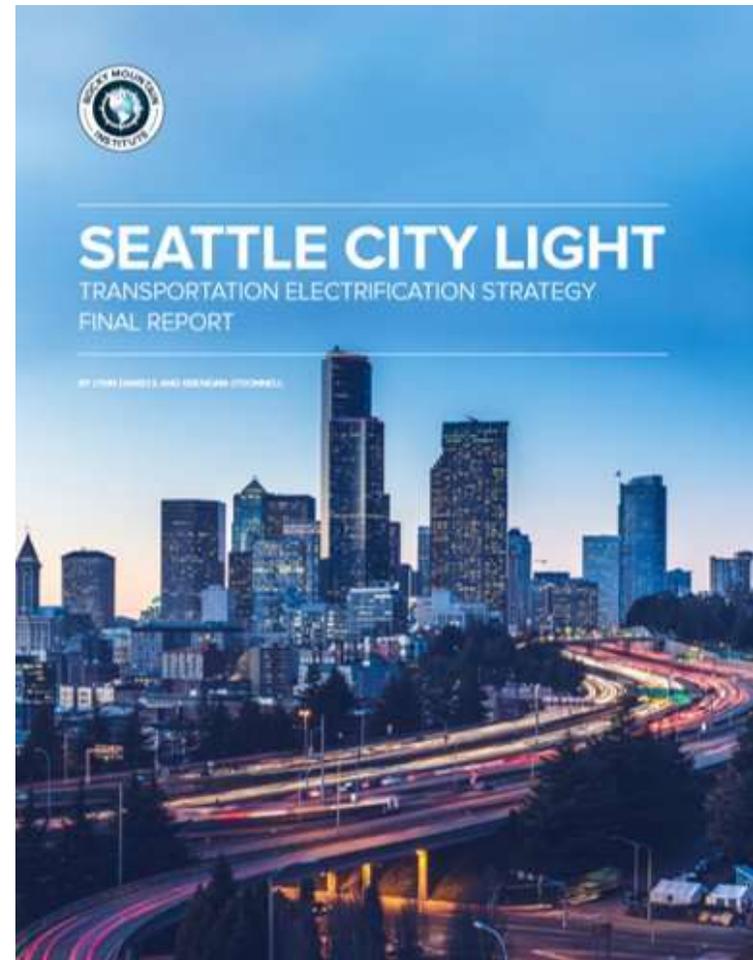
Average of **50% savings** in annual operating costs for electric vehicles over gas-powered vehicles.

Mass adoption of electric vehicles can help **keep electricity prices low for all.**

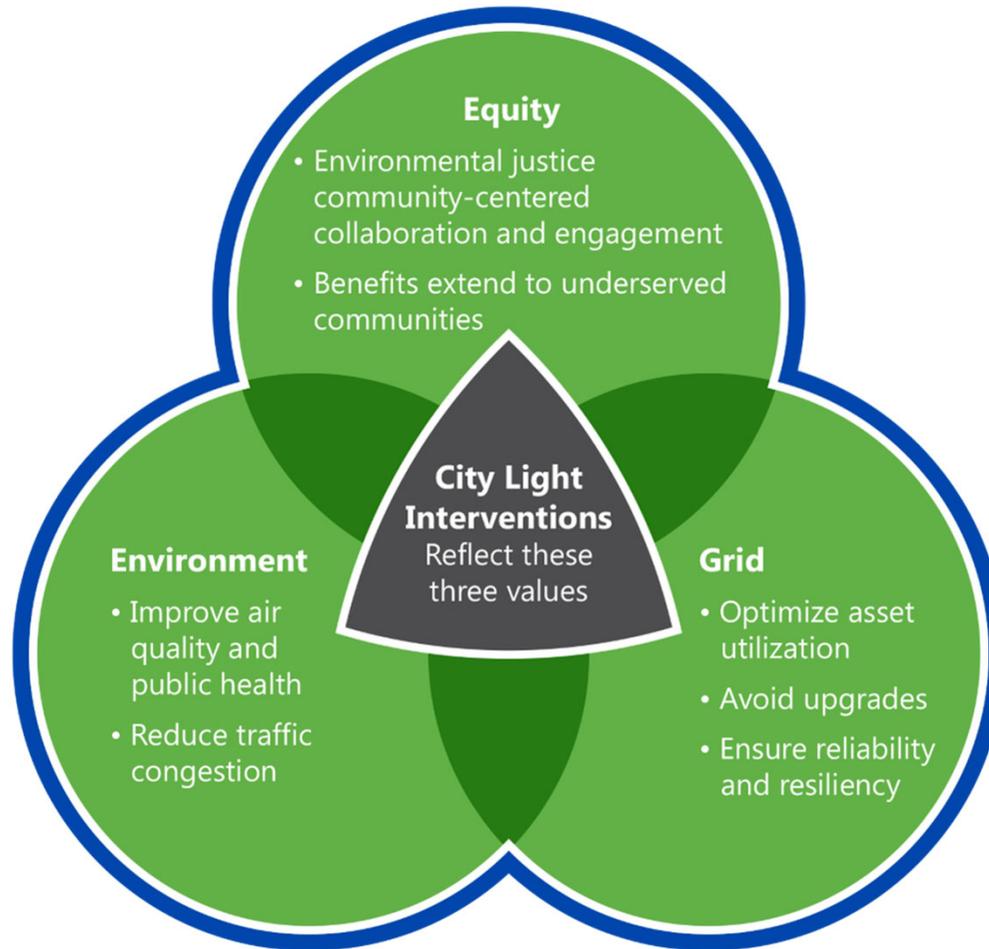


CITY LIGHT'S ROLE

- Developing programs to enable and promote bus, car and truck electrification
- Reliable and affordable charging
- Act on HB 1512's clear authority



CITY LIGHT'S VALUES FRAMEWORK



STRATEGIC UTILITY INTERVENTION AREAS



Invest in charging infrastructure with emphasis on universal **access** and expanding **coverage**



Develop new **rates** and improve customer **service** for the transportation market



Prepare for **medium & heavy-duty commercial fleet** electrification

EQUITY IN ENGAGEMENT



We are here!

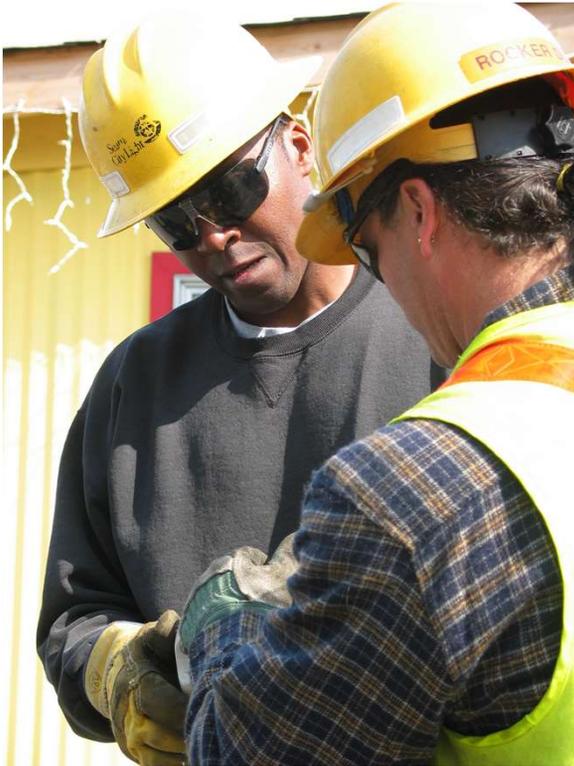
WHAT WE'VE HEARD SO FAR

What We've Heard from Communities	Potential Solutions from Communities
Communities of color suffer from poor air quality and health disparities	Prioritize these areas for investments
Need increased/improved public transit	Provide charging infrastructure for buses
Most people are unfamiliar with EVs	Support community-based education
Many community members cannot afford cars	Provide charging infrastructure for community carsharing
Provide economic opportunities for communities of color	Support economic opportunities related to transportation electrification
Lack of access to charging for multifamily units	Provide at-home and near-home affordable charging solutions
Without proper planning, public charging may contribute to increased housing costs, exacerbate community displacement, and increase the risk of gentrification	Utilize community-based decision making for public charging infrastructure to design and locate stations with community input

RACIAL EQUITY GOALS

	Community Assets	City Light's programs invest in infrastructure that are community assets so Environmental Justice Communities can enjoy the benefits of transportation electrification in their current neighborhoods.
	Community Collaboration	Environmental Justice Communities see their wants and needs reflected in City Light transportation electrification programs.
	Healthy Planet, Healthy Lives	Reduce tailpipe emissions that impact local air quality and public health where Environmental Justice Communities live, learn, work and play. Reduce CO ₂ emissions that have a disproportionate burden on the most vulnerable populations and communities.
	Equitable Access	Environmental Justice Communities learn about our transportation electrification programs, can readily understand and access materials and resources, see themselves reflected in communications, and participate in and benefit from City Light programs.
	Economic Opportunities and Youth Pathways	City Light enables Environmental Justice Communities to participate in and benefit from the local transportation electrification economy.
	Electricity Affordability	Widespread transportation electrification increases revenue to put downward pressure on electricity prices.

FUTURE OF WORK & WORKFORCE DEVELOPMENT



- **Guiding goal:** ensure utility workforce is well prepared to adapt to the changing energy landscape
 - Focus on infrastructure
 - Stay ahead of new and changing information and operational technologies
 - Collaborate and partner with labor unions on job training
 - Find ways to uplift communities through our efforts

 **Transportation Electrification**

TRANSPORTATION USES	INVESTMENT PRIORITIES	EXAMPLE CITY LIGHT OFFERINGS
 All	Customer and stakeholder outreach and awareness	<ul style="list-style-type: none"> • Information, education, events and resources on the benefits of electric vehicles
 Public Transit (Buses, Ferries, Trains, Light Rail)	Electrify buses, ferries and other public transit	<ul style="list-style-type: none"> • Financial incentives and technical assistance with site and design requirements to provide electric charging infrastructure for King County Metro, Washington State Ferries and other public transit • Partnerships with City of Seattle and King County departments to electrify first- and last-mile public transportation options such as paratransit shuttles and e-mobility hubs
 Commercial, Government & Non-Profit Fleets	Electrify commercial, local government and non-profit fleets	<ul style="list-style-type: none"> • Financial incentives for electric charging infrastructure for companies that transport people, goods and services • Fee-based City Light-owned charging infrastructure for public and private fleet vehicles (such as school buses and solid waste vehicles) • Incentives and turn-key charging infrastructure for electrification of non-profit fleet vehicles
 Personal Mobility (Cars, Bikes, Scooters, etc.)	Expand at-home and near-home charging	<ul style="list-style-type: none"> • Incentives, qualified installers and special payment terms to help reduce barriers to installing charging stations in multifamily housing • Near-home charging solutions for those with no access to off-street parking
	Electrify high-mileage vehicles	<ul style="list-style-type: none"> • Provide lower costs to charge at different times of day that meet the needs of high-mileage vehicle drivers while benefiting the grid
	Accelerate transportation electrification adoption in environmental justice communities	<ul style="list-style-type: none"> • Charging infrastructure for community car share • Provide discounts toward the cost to charge electric vehicles for people with low to moderate incomes
	Expand public fast charging	<ul style="list-style-type: none"> • Financial incentives to help reduce the upfront cost of public charging stations • Community collaboration on City Light-owned public charging stations
	Expand workplace charging	<ul style="list-style-type: none"> • Provide EV-ready electricity service to workplaces for future charging infrastructure

WHAT IS CITY LIGHT DOING NOW?



Heavy Duty Pilots

King County Metro Transit & Kenworth/UPS



Residential Charging Pilot

Full-service program for equipment & install



Public Charging Pilot

Install 20 public DC fast charging stations

QUESTIONS FOR YOU

- What is #1 for you? What would your members want us to include in the plan?
- Based on the options listed, how should we prioritize them? What is missing?
- How does this work fit in with other priorities for your organizations and communities?

THANK YOU!



APPENDIX C: LIST OF COMMUNITY LEADER AND STAKEHOLDER MEETINGS

This appendix shows the meetings conducted in Phase 1 of our community outreach and engagement efforts by key audience.

Environmental Justice Community Leaders

Neighborhood	Organization	Meeting Status	Date
Central Area	Central Area Collaborative	Complete	9/20/2019
Central Area	New Hope Missionary Baptist Church	Complete	1/7/2020
Central Area	Northwest African American Museum	Complete	1/7/2020
Central Area	First African Methodist Episcopal Church	Complete	1/14/2020
Central Area	Byrd Barr Place	Complete	1/24/2020
Central Area	Historic Central Area Arts and Cultural District	Complete	2/10/2020
Beacon Hill	Greater Beacon Hill Council of Seattle	Complete	12/3/2019
Beacon Hill	Beacon Business Alliance	Complete	1/15/2020
Rainier Beach	Rainier Beach Action Coalition	Complete	2/25/2020
Rainier Valley	Rainier Valley Greenways	Complete	1/22/2020
Duwamish Valley	Duwamish River Cleanup Coalition	Complete	1/16/2020
Duwamish Valley	Green-Duwamish Watershed Symposium	Complete	2/24/2020
Lake City	Lake City Collective	Complete	12/18/2019
Chinatown- International District	Seattle Chinatown International District Preservation and Development Authority	Complete	1/22/2020
Chinatown- International District	InterIm Community Development Association	Complete	2/7/2020
Chinatown- International District	Chong Wa Benevolent Association	Complete	2/24/2020
Delridge/West Seattle	District 1 Community Network	Complete	1/8/2020

Environmental Justice Organizations

Organization	Meeting Status	Date
Puget Sound Sage	Complete	12/19/2019 1/29/2020
Transportation Choices Coalition	Complete	12/19/2019 1/29/2020
Duwamish River Cleanup Coalition	Complete	1/16/2020
350 Seattle	Complete	2/13/2020

Labor Unions and Labor Councils

Organization	Meeting Status	Date
IBEW Electricians Local 46	Complete	1/8/2020
Electrical Industry Group Northwest	Complete	1/8/2020
Martin Luther King County Labor Council	Complete	1/24/2020 2/19/2020
IBEW Local 77	Complete	2/10/2020
Laborers Local 1239	Complete	2/10/2020

Environmental Advocacy Groups

Organization	Meeting Status	Date
Northwest Energy Coalition (NWECC)	Complete	10/18/2019 12/12/2019
Puget Sound Clean Air Agency	Complete	1/13/2020
Climate Solutions	Complete	1/17/2020
Rainier Valley Greenways	Complete	1/22/2020

Transportation Network Companies (TNCs)

Organization	Meeting Status	Date
Lyft	Complete	11/12/2019

Taxi Companies

Organization	Meeting Status	Date
Orange Cab Company	Complete	1/23/2020
Seattle Yellow Cab	Complete	2/4/2020

Electric Vehicle Supply Equipment (EVSE) Companies and Electric Vehicle Service Providers (EVSPs)

Organization	Meeting Status	Date
EVGo	Complete	5/30/2019
ChargePoint	Complete	12/12/2019
Electrify America	Complete	12/3/2019
Greenlots	Complete	1/31/2020
eMotorWerks/EnelX	Complete	12/16/2019
Tesla	Complete	2/20/2020

Commercial, Local Government and Non-Profit Fleets

Organization	Meeting Status	Date
UW Urban Freight Lab	Complete	11/7/2019
UPS/PACCAR	Complete	8/13/2019 1/17/2020
Recology	Complete	1/16/2020
Waste Management	Complete	1/23/2020
Zipcar	Complete	1/23/2020
City of Seattle Fleet	Complete	12/2/2019
City Light Fleet	Complete	12/19/2019
Seattle Public Utilities Fleet	Complete	2/11/2020

Seattle City Light Franchise Cities

Organization	Meeting Status	Date
City of Lake Forest Park	Complete	12/6/2019
City of SeaTac	Complete	1/29/2020
City of Shoreline	Complete	1/31/2020

Public Agencies

Organization	Meeting Status	Date
King County	Complete	12/9/2019
State of Washington Department of Commerce	Complete	1/2/2020

Seattle City Light Customers

Organization	Meeting Status	Date
Jones Lang LaSalle (JLL)	Complete	1/7/2020
Seattle 2030 District	Complete	1/29/2020
District 1 Community Network	Complete	1/8/2020
Central Seattle Greenways	Complete	2/5/2020
Cascade Bicycle Club	Complete	2/7/2020
Phinney Ridge Community Council	Complete	7/23/2020
Greenwood Community Council	Complete	7/23/2020
Fremont Neighborhood Council	Complete	7/27/2020
43rd District Environmental Caucus	Complete	8/10/2020
Ballard District Council	Complete	8/12/2020
Laurelhurst Community Club	Scheduled	9/14/2020



JULY 2020

Seattle City Light Transportation Electrification Strategic Investment Plan: 2021-2024 – Racial Equity Analysis Summary

EXECUTIVE SUMMARY

Seattle City Light's Transportation Electrification Strategic Investment Plan: 2021-2024 – Racial Equity Analysis Summary provides an overview of City Light's research to understand and document the impacts of transportation electrification investments on environmental justice communities. Environmental justice communities refer to communities defined in the City of Seattle's Equity and Environment Agenda (EEA) and include communities most impacted by environmental inequities, including communities of color, immigrants, refugees, people with low incomes, youth and English language learners.¹ This analysis process was guided by City Light's Race and Social Justice Initiative (RSJI) and Environmental Equity Program. City Light's Transportation Electrification Strategic Investment Plan: 2021-2024 will serve all our customers and will target those with the most significant barriers to accessing the benefits of transportation electrification first. By centering equity in our outreach and engagement, the solutions that will result from the Transportation Electrification Strategic Investment Plan will be positioned to meet the needs of all our customers. In this document, we detail our key findings to support the development of City Light's Transportation Electrification Strategic Investment Plan.

¹ Seattle Office of Sustainability and Environment. "Equity and Environment Agenda."

<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

City Light gathered and analyzed data from City of Seattle departments, regional published reports and communities on the benefits and burdens of transportation electrification on environmental justice communities. Leading with our values of equity, environment and grid as an asset to deliver public good and incorporating what we have heard from environmental justice communities and other stakeholders – including learning from the City of Seattle’s Equity and Environment Agenda framework and the Duwamish Valley Action Plan – City Light has established six racial equity outcomes to guide transportation electrification strategic investment priorities.^{2,3} Our outcomes are:

1. **Community Collaboration**

Environmental justice communities see their wants and needs reflected in City Light transportation electrification programs.

2. **Healthy Planet, Healthy Lives**

Reduce tailpipe emissions that impact local air quality and public health where environmental justice communities live, learn, work and play. Reduce carbon emissions that have a disproportionate burden on the most vulnerable populations and communities.

3. **Equitable Access**

Environmental justice communities learn about our transportation electrification programs, can readily understand and access materials and resources, see themselves reflected in communication and participate in and benefit from City Light’s transportation electrification programs.

4. **Community Assets**

City Light’s programs invest in infrastructure that are community assets so environmental justice communities can enjoy the benefits of transportation electrification in their current neighborhoods.

5. **Economic Opportunities and Youth Pathways**

City Light enables environmental justice communities to participate in and benefit from the local transportation electrification economy by providing youth, apprenticeship and job pathways with good labor standards and livable wages.

6. **Electricity Affordability**

Widespread transportation electrification increases revenue to put downward pressure on electricity prices.

² Seattle Office of Sustainability and Environment. “Equity and Environment Agenda.”

<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

³ City of Seattle. “Duwamish Valley Action Plan” June 2018. http://greenspace.seattle.gov/wp-content/uploads/2018/06/DuwamishValleyActionPlan_June2018.pdf

The concerns and potential solutions offered by communities will be used to prioritize future transportation electrification investments and collaborate on strategies that increase opportunity and minimize harm to communities that have been most impacted by environmental inequities.

BACKGROUND

In July 2019, the Washington State legislature passed House Bill 1512, granting public utilities the authority to offer “incentive programs in the electrification of transportation for its customers, including the promotion of electric vehicle (EV) adoption and advertising programs to promote the utility’s services, incentives or rebates”⁴. The legislation adds a new section to RCW 35.92 which provides that the “governing authority of an electric utility formed under this chapter may adopt an electrification of transportation plan.” In response, City Light is developing a Transportation Electrification Strategic Investment Plan: 2021-2024 that details the investments City Light will make to expand equitable access to electric transportation, while reducing carbon emissions and bringing value to the grid and our customers over the next four years.

The Transportation Electrification Strategic Investment Plan, which will be updated every four years, will focus on solutions that align with City Light’s transportation electrification value framework of equity, environment and operating the grid as an asset to deliver public good. Approval of the Plan will open the door to committing resources and making investments that will bolster and modernize our electric grid and enable public transit charging, support freight and commercial fleets and provide flexibility for personal mobility.

RACIAL EQUITY OUTCOMES

Environmental justice communities refer to communities defined in the City of Seattle’s Equity and Environment Agenda (EEA) and include communities most impacted by environmental inequities, including communities of color, immigrants, refugees, people with low incomes, youth and English language learners.⁵ City Light strives to incorporate and elevate the voices of environmental justice communities who have traditionally been excluded in transportation electrification planning and development. By centering people and communities experiencing environmental inequities, community outreach and engagement will result in solutions that meet the needs of all our customers. This is critical to the long-term success of any City infrastructure improvement plan.

City Light is dedicating space for environmental justice communities to participate in the development of the Transportation Electrification Strategic Investment Plan and transportation electrification

⁴ State of Washington. “House Bill 1512, State of Washington, 66th Legislature, 2019 Regular Session.” 2019. <http://lawfilesexternal.wa.gov/biennium/2019-20/Pdf/Bills/House%20Bills/1512.pdf>

⁵ Seattle Office of Sustainability and Environment. “Equity and Environment Agenda.” <https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

programs, including identification of alternatives and preferred solutions.⁶ Collaboration with environmental justice communities will help City Light build infrastructure that is welcomed as a community asset and helps to realize prosperity in place for these communities. Robust and equitable transportation electrification programs can address cumulative impacts of multiple environmental hazards and social, economic and racial burdens; prepare these communities for climate change; and support connections between residents, workers, government agencies and industries.⁷

INTRODUCTION TO RACIAL EQUITY ANALYSIS

To ensure meaningful inclusion across our service area, City Light conducted a transportation electrification racial equity analysis, guided by City Light's RSJI and Environmental Equity Program. This analysis included: (1) leveraging the City of Seattle's Racial Equity Toolkit and (2) conducting in-depth outreach and engagement.

City Light used the City of Seattle's RSJI Racial Equity Toolkit to systematically understand the potential impacts of transportation electrification investments on racial equity and guide Plan development and implementation. City Light followed the steps below as part of the RSJI Racial Equity Toolkit.

- **Step 1: Set Outcomes**
- **Step 2: Involve Stakeholders + Analyze Data**
- **Step 3: Determine Benefit and/or Burden**
- **Step 4: Advance Opportunity or Minimize Harm**
- **Step 5: Evaluate**
- **Step 6: Report Back**

In the following sections, City Light outlines descriptions of and findings from each step.

STEP 1: SET OUTCOMES

In the first step of the RSJI Racial Equity Toolkit process, leadership communicates key community outcomes for racial equity to guide analysis. City Light's framework for racial equity outcomes is anchored in the City of Seattle's Equity and Environment Agenda framework and the Duwamish Valley

⁶ International Association for Public Participation. "IAP2 Spectrum of Public Participation." 2018.
https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf

⁷ Seattle Office of Sustainability and Environment. "Equity and Environment Agenda."
<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

Action Plan.^{8,9} City Light developed the following six racial equity outcomes to guide analysis and Plan development:

1. **Community Collaboration**
Environmental justice communities see their wants and needs reflected in City Light transportation electrification programs.
2. **Healthy Planet, Healthy Lives**
Reduce tailpipe emissions that impact local air quality and public health where environmental justice communities live, learn, work and play. Reduce carbon emissions that have a disproportionate burden on the most vulnerable populations and communities.
3. **Equitable Access**
Environmental justice communities learn about our transportation electrification programs, can readily understand and access materials and resources, see themselves reflected in communication and participate in and benefit from City Light's transportation electrification programs.
4. **Community Assets**
City Light's programs invest in infrastructure that are community assets so environmental justice communities can enjoy the benefits of transportation electrification in their current neighborhoods.
5. **Economic Opportunities and Youth Pathways**
City Light enables environmental justice communities to participate in and benefit from the local transportation electrification economy by providing youth, apprenticeship and job pathways with good labor standards and livable wages.
6. **Electricity Affordability**
Widespread transportation electrification increases revenue to put downward pressure on electricity prices.

STEP 2: INVOLVE STAKEHOLDERS + ANALYZE DATA

Step 2 of the RSJI Racial Equity Toolkit requires gathering information from communities and City Light staff on how the issue benefits or burdens communities in terms of racial equity. City Light conducted a comprehensive review of existing information to identify impacted communities, as well as how transportation electrification could benefit or burden environmental justice communities.

Environmental Justice Communities

⁸ Seattle Office of Sustainability and Environment. "Equity and Environment Agenda."

<https://www.seattle.gov/Documents/Departments/Environment/EnvironmentalEquity/SeattleEquityAgenda.pdf>

⁹ City of Seattle. "Duwamish Valley Action Plan" June 2018. http://greenspace.seattle.gov/wp-content/uploads/2018/06/DuwamishValleyActionPlan_June2018.pdf

City Light began with a demographic and geographic analysis and identified the following specific environmental justice communities in neighborhoods that could be impacted by transportation electrification investments within City Light’s service area:

- Beacon Hill
- Bitter Lake
- Bryn Mawr-Skyway
- Burien
- Central Area
- Chinatown-International District
- Delridge
- Haller Lake
- Lake City
- Rainier Beach
- Rainier Valley
- Renton
- SeaTac
- Shoreline
- South Park
- Tukwila
- University District
- White Center

Community and Stakeholder Involvement

City Light then reviewed relevant reports by regional stakeholders and community-based organizations related to transportation electrification, including:

- The **2018 Puget Sound Clean Air Agency Feasibility Study** identifying opportunities and barriers for low-income residents to purchasing EVs and designing a pilot to address them.
- The **2019 Puget Sound Clean Air Agency Electrifying Ride-Hailing in Seattle Report** examining the existing state of ride-hailing services electrification, including efforts by Uber and Lyft, along with local government and utility policies and incentives to encourage ride-hailing electrification.
- The 2020 Puget Sound Sage **Powering the Transition** report summarizing data and highlighting findings from listening sessions with community-based organizations, community surveys, and interviews with community leaders, union leaders and government partners about climate change, energy injustice and other systemic inequity.

To ensure community concerns and expertise were also part of the analysis, City Light reviewed reports and feedback from the following stakeholders, partners and community members:

- **Environmental Justice Committee (EJC).** In November 2016, March 2017 and May 2018, the EJC reviewed the work of the City of Seattle’s broader Drive Clean Seattle Initiative. In March 2017 specifically, the EJC brainstormed several program improvements, worked in groups to propose high-level recommendations and voted to prioritize the recommendations. These results were shared with stakeholders, including City Light’s EV charging pilot program teams.
- **Other City departments** engaging with communities on transportation electrification.
 - In 2019, City Light, the Office of Sustainability & Environment (OSE), Seattle Department of Transportation (SDOT) and the Department of Neighborhoods (DON) developed an

- Engagement Principles Agreement* to engage communities on transportation electrification in a consistent manner following a mutually agreed upon framework and best practices.
- Seattle City Light participated in the development of SDOT’s 2018 *EVSE Roadmap for Shared Mobility Hubs*, which gathered input from communities on equitable deployment of EV charging stations in low-income communities and communities of color.
 - City Light reviewed other RSJI Racial Equity Toolkit analyses conducted for City Light’s Public and Residential EV Charging pilots, the City of Seattle’s Drive Clean Seattle Initiative and SDOT’s Electric Vehicle Charging in the Right-of-Way (EV CROW) program.
 - **Other government partners** conducting equitable outreach, engagement and program development.
 - City Light consulted the *2016 King County Metro Guide to Creating Inclusive Campaigns*, which provides guidance to run a successful, inclusive marketing campaign in conjunction with the guidelines outlined in King County’s Equity and Social Justice (ESJ) Strategic Plan.
 - City Light consulted King County’s 2015 report on *The Determinants of Equity: Identifying Indicators to Establish a Baseline of Equity in King County* which provides data on low-income and community of color household transportation access and usage.
 - **Community partner organizations:** City Light reviewed information and learnings from The Drive Clean Seattle-funded *Seattle Electric Vehicle Outreach and Education Campaign*. This campaign, led by ECOSS and Forth in 2018, focused on underserved communities in the greater Seattle area and engaged a wide spectrum of communities to educate them about EV benefits and gather information about their transportation situations.

City Light conducted direct outreach to communities about public charging, including community surveys, presentations and listening sessions at community events and meetings. City Light also reviewed community input gathered by the Seattle Office of Sustainability and Environment (OSE) during outreach events focused on the Drive Clean Seattle Initiative. These engagement opportunities are listed below.

Events & Meetings

- SEA-MAR; Fiestas Patrias South Park (2019 – OSE)
- The Coalition of Immigrants Refugees & Communities of Color (CIRCC); Eritrean Community Center (2019 - OSE)
- Hội Thánh Tin Lành Hy Vọng; Vietnamese Church (2019 - OSE)
- Magnuson Park Advisory Committee meeting (2018)
- Magnuson Park Open House (2019)
- Burien Open House (2019)
- West Seattle Transportation Coalition meeting (2019)
- Central Area Collaborative monthly meeting (2019)

- South Park Information and Resource Center (SPIARC) presentation (2019)
- SPIARC technology and education workshop (2018)
- Othello Station Community Action Team meeting (2018)
- Capitol Hill Community Council meeting (2018)
- Pike/Pine Urban Neighborhood Council meeting (2018)
- Capitol Hill Open House (2019)
- Big Day of Play (2018)
- Wallingford Community Council meeting (2018)
- Fremont Community Council meeting (2018)
- Gas Works Park Open House (2019)
- Central Area Collaborative discussion (2019)

Surveys

- West Seattle survey (2019)
- Madison-Miller neighborhood survey (2019)

Existing Racial Inequities

Through its analysis and outreach to understand transportation electrification impacts on environmental justice communities, City Light heard several concerns and observations as well as potential solutions offered by communities to mitigate for negative impacts and/or unintended consequences. These issues and solutions are summarized in the table below. City Light will be using this information and continuing to actively engage with communities as we begin to develop transportation electrification offerings and make infrastructure investments.

What We've Heard from Community	Potential Solutions from Community
<p>Low-income communities and communities of color are more likely to depend on buses for most, if not all, of their transportation needs.¹⁰</p>	<p>City Light should prioritize supporting charging infrastructure to electrify existing and expanded public transit including King County Metro buses, transit shuttles, Bus Rapid Transit routes, transit hubs, school buses, etc.^{13,14}</p>

¹⁰ King County. "The Determinants of Equity: Identifying Indicators to Establish a Baseline of Equity in King County." January 2015. https://www.kingcounty.gov/~media/elected/executive/equity-social-justice/2015/The_Determinants_of_Equity_Report.ashx

¹³ Puget Sound Sage. "Powering the Transition." 2020. https://www.pugetsoundsage.org/wp-content/uploads/2020/06/PugetSoundSage_PoweringTransition_June2020-1.pdf

¹⁴ Environmental Justice Committee. "EJC Feedback Summary on Drive Clean Seattle." July 2017.

What We've Heard from Community	Potential Solutions from Community
<p>People of color—especially African Americans and Native peoples—are much less likely to own vehicles than white households.¹¹</p> <p>Environmental justice communities want local governments to prioritize increasing public transit, reducing transit fares and electrifying public transit.¹²</p>	<p>Electrifying public transit would benefit communities who most rely on public transit by reducing air and noise pollution where impacts are greatest.</p>
<p>Many environmental justice community members are unfamiliar with electric vehicles.¹⁵</p> <p>EV advertising leaves out people of color.¹⁶</p> <p>Environmental justice community leaders feel very strongly about needing “education around electrification of transportation in their communities.”¹⁷</p>	<p>City Light should support targeted community-based education and outreach.¹⁸</p> <p>City Light should communicate in local languages and highlight communities of color, people and artwork in advertising.¹⁹</p> <p>EV education should include the importance of EVs, how to plan for charging an EV, what the costs will be of owning an EV and EV job opportunities.²⁰</p>

¹¹ King County. “The Determinants of Equity: Identifying Indicators to Establish a Baseline of Equity in King County.” January 2015. https://www.kingcounty.gov/~media/elected/executive/equity-social-justice/2015/The_Determinants_of_Equity_Report.ashx

¹² Puget Sound Sage. “Powering the Transition.” 2020. https://www.pugetsoundsage.org/wp-content/uploads/2020/06/PugetSoundSage_PoweringTransition_June2020-1.pdf

¹⁵ ECOSS, Forth and Drive Clean Seattle. “Seattle Electric Vehicle Outreach and Engagement Campaign.” 2018. <https://forthmobility.org/storage/app/media/Documents/seattleevoutreachecossfinalreport-1.pdf>

¹⁶ Environmental Justice Committee. “EJC Feedback Summary on Drive Clean Seattle.” July 2017.

¹⁷ Drive Clean. “Equity Outreach.” Office of Sustainability and Environment. 2019.

¹⁸ Puget Sound Clean Air Agency. “Facilitating Low Income Utilization of Electric Vehicles: A Feasibility Study.” December 2018. <https://www.pscleanair.org/DocumentCenter/View/3650/Community-Electric-Car-Sharing----Full-Report?bidId=>

¹⁹ Environmental Justice Committee. “EJC Feedback Summary on Drive Clean Seattle.” July 2017.

²⁰ Drive Clean. “Equity Outreach.” Office of Sustainability and Environment. 2019.

What We've Heard from Community	Potential Solutions from Community
Environmental justice communities are exposed to—and concerned about—poor air quality and suffer from geographic and social health disparities like increased rates of asthma and shorter life expectancy. ^{21,22}	City Light should prioritize environmental justice communities with poor air quality for investments. ²³
There is a lack of access to electric vehicle charging for multifamily units. ²⁴	City Light should provide at-home and near-home affordable charging solutions for multifamily residences.
Ride-hailing vehicles drive three to five times more distance than regular passenger vehicles and therefore electrifying them can have a large impact on tailpipe emissions. In addition, these vehicles are frequently driven by members of communities of color and targeted incentives can increase equitable access to transportation electrification. ^{25,26}	City Light should support charging infrastructure and fees specific to ride-hailing vehicles. ²⁷
Many environmental justice community members cannot afford (or have lending barriers) to purchase EVs, which are typically more expensive up front. ²⁸	Environmental justice communities support carsharing in areas not well served by

²¹ King County. "Current asthma among children King County, 2009-2013 average." King County Hospitals for a Healthier Community. January 2015. <http://www.kingcounty.gov/healthservices/health/data/~media/health/publichealth/documents/indicators/ChronicIllness/CurrentAsthmaAmongChildren.ashx>

²² King County. "Life expectancy at birth King County, 2008-2012 average." King County Hospitals for a Healthier Community. January 2015. <http://www.kingcounty.gov/healthservices/health/data/~media/health/publichealth/documents/indicators/LifeExpectancy/LifeExpectancy.ashx>

²³ Environmental Justice Committee. "EJC Feedback Summary on Drive Clean Seattle." July 2017.

²⁴ Office of Sustainability and Environment. "Racial Equity Toolkit." Drive Clean Seattle.

²⁵ PSCAA. "Electrifying Ride-Hailing in Seattle." September 2019. <https://www.atlasevhub.com/wp-content/uploads/2019/09/Electrifying-Ride-hailing-in-Seattle-WWCC-Report.pdf>

²⁶ Peter Slowik, Lina Fedirko, and Nic Lutsey, "Assessing ride-hailing company commitments to electrification," ICCT: February 2019, https://theicct.org/sites/default/files/publications/EV_Ridehailing_Commitment_20190220.pdf

²⁷ PSCAA. "Electrifying Ride-Hailing in Seattle." September 2019. <https://www.atlasevhub.com/wp-content/uploads/2019/09/Electrifying-Ride-hailing-in-Seattle-WWCC-Report.pdf>

²⁸ OSE. "Racial Equity Toolkit." Drive Clean Seattle.

What We've Heard from Community	Potential Solutions from Community
	public transit or for communities that cannot afford car ownership. ²⁹
Drivers for shared mobility companies, transportation network companies (TNCs) and truck drivers tend to be people of color, immigrants and refugees and could be negatively impacted by the transition from gasoline and diesel to electrified transportation. Internal combustion engine service jobs will also be reduced by transportation electrification. ^{30,31,32}	City Light should support transportation electrification job opportunities with good labor standards and livable wages for environmental justice communities, including hiring locally for charging infrastructure installation and maintenance, working with the Port, trucking and service industries on electrification initiatives and connecting environmental justice communities with training programs and opportunities. ^{33,34}
Without proper planning, a public charging station may contribute to increased housing costs, exacerbate community displacement and increase the risk of gentrification. ³⁵	City Light should utilize community-based decision making for public charging infrastructure to design and locate stations with community input that feel like assets. ³⁶

²⁹ Puget Sound Clean Air Agency. "Facilitating Low Income Utilization of Electric Vehicles: A Feasibility Study." December 2018. <https://www.pscleanair.org/DocumentCenter/View/3650/Community-Electric-Car-Sharing---Full-Report?bidId=>

³⁰ ECOSS, Forth and Drive Clean Seattle. "Seattle Electric Vehicle Outreach and Engagement Campaign." 2018. <https://forthmobility.org/storage/app/media/Documents/seattleevoutreachecossfinalreport-1.pdf>

³¹ Puget Sound Clean Air Agency. "Electrifying Ride-Hailing in Seattle." September 2019. <https://www.atlasevhub.com/wp-content/uploads/2019/09/Electrifying-Ride-hailing-in-Seattle-WWCC-Report.pdf>

³² Lyft. Economic Impact Report 2020. <https://www.lyftimpact.com/impact/drivers/expanded>

³³ ECOSS, Forth and Drive Clean Seattle. "Seattle Electric Vehicle Outreach and Engagement Campaign." 2018. <https://forthmobility.org/storage/app/media/Documents/seattleevoutreachecossfinalreport-1.pdf>

³⁴ Puget Sound Sage. "Powering the Transition." 2019. https://www.pugetsoundsage.org/wp-content/uploads/2020/06/PugetSoundSage_PoweringTransition_June2020-1.pdf

³⁵ Seattle Office of Sustainability and Environment. "2017 Drive Clean Seattle Implementation Strategy." June 2017.

³⁶ Seattle Department of Transportation. "EVSE Roadmap for Shared Mobility Hubs." November 2018. http://evsharedmobility.org/wp-content/uploads/2018/12/SDOT_EVSE_Roadmap_for_Shared_Mobility_Hubs.pdf

STEP 3: DETERMINE BENEFIT AND/OR BURDEN

Step 3 of the RSJI Racial Equity Toolkit involves analyzing how the policy, initiative, program, or budget issue will impact racial equity. City Light evaluated potential benefits as well as unintended consequences of transportation electrification investments and whether they aligned with the racial equity outcomes defined in Step 1.

Community Collaboration: City Light's Transportation Electrification Strategic Investment Plan will shape transportation electrification work for the next four years. There is an opportunity to intentionally include environmental justice communities in program collaboration to ensure that communities can shape this work and help City Light maximize benefits for and minimize harm to environmental justice communities. A benefit of this approach is "greater power and ownership in the environmental and climate movement by people of color."²⁷

Healthy Planet, Healthy Lives: Transportation electrification enables zero carbon emissions by using City Light's carbon-neutral electricity. While this has global benefits in terms of preventing the existential threat of climate change, it has local benefits to environmental justice communities within City Light service area that are disproportionately vulnerable to climate change impacts such as flooding and heat waves. In addition, it enables zero tailpipe emissions, which improves local air quality.

Equitable Access: Seattle City Light's Transportation Electrification Strategic Investment Plan is not just about developing solutions for passenger cars. It is a broad approach to supporting the electrification of transit, freight and other medium- and heavy-duty vehicles for people, goods and services. Program offerings, initiatives and education will support multimodal transportation options that impact (via air quality) or are used by environmental justice communities. A benefit of this approach is "the dissolution of the idea that electric vehicles are only for rich white people."³⁷ It is important to note, however, that "an important unintended consequence of transportation electrification without good public policy is that the benefits accrue primarily to wealthy white people."²⁷

Community Assets: Without proper planning, public charging installations may lead to gentrification and displacement of environmental justice communities through higher property values. With intentional planning, investments in transportation electrification can help uplift environmental justice communities by providing community assets that are designed by communities to drive economic development, education and clean air.

Economic Opportunities and Youth Pathways: City Light's transportation electrification programs will invest in charging equipment that will require electricians for installation and maintenance. City Light will look for opportunities to hire Women & Minority Business Enterprise (WMBE) contractors for this

³⁷ Office of Sustainability and Environment. "Racial Equity Toolkit." Drive Clean Seattle.

work. Another benefit of transportation electrification investment is “more money circulating in local economies as fuel dollars are kept at home rather than being sent to out-of-state oil companies.”²⁷ In a conversation with stakeholders, OSE found that, “one unintended consequence [of these programs is] the eventual decrease in the number of jobs which service internal combustion engine vehicles. Electric vehicles require much less maintenance than a gasoline or diesel vehicle.”²⁷

STEP 4: ADVANCE OPPORTUNITY OR MINIMIZE HARM

Step 4 of the Racial Equity Toolkit includes developing strategies to advance racial equity and/or minimize unintended consequences. To ensure that we deliver on our racial equity outcomes, City Light has identified strategies specific to transportation electrification investment for each outcome. They include:

Community Collaboration: City Light will include community voices in future program design and implementation processes through intentional and targeted stakeholder engagement. City Light will look to communities to identify additional transportation electrification portfolio offerings and prioritize them, ensuring we most effectively address environmental justice communities’ needs. City Light will also work with these communities to collaboratively design programs that impact their communities and develop solutions that better support them.

Healthy Planet, Healthy Lives: City Light will explore opportunities to create stronger partnerships and align equity initiatives across regional organizations that provide services to environmental justice communities to uplift race and social justice transportation electrification initiatives and improve public health.

Equitable Access: City Light “will seek to understand the general transportation needs of all community members.”³⁸ This will include discussions around which transportation electrification-related investments within City Light’s sphere of influence could best improve overall access and mobility. City Light will also explore opportunities to connect transportation electrification programs to environmental justice communities.

Community Assets: City Light will design programs with displacement risk in mind by connecting with community stakeholders early to consult on displacement concerns prior to site selection and exploring program design elements to limit displacement.

Economic Opportunities and Youth Pathways: City Light will engage environmental justice communities in transportation electrification and support them through the market transformation

³⁸ Seattle Department of Transportation. “EVSE Roadmap for Shared Mobility Hubs.” November 2018. http://evsharedmobility.org/wp-content/uploads/2018/12/SDOT_EVSE_Roadmap_for_Shared_Mobility_Hubs.pdf

process. This may include hiring locally from these communities and partnering with industries that heavily employ environmental justice community members on transportation electrification initiatives.

STEP 5 & 6: EVALUATE AND REPORT BACK

The final steps of the RSJI Racial Equity Toolkit include tracking and evaluating impacts on communities of color over time and reporting back on progress and lessons learned. City Light will be sharing information learned from this analysis and any unresolved issues with leadership and will continue to communicate with and involve stakeholders, documenting any unresolved issues.

City Light recognizes that authentic and successful community engagement and ability to make meaningful progress toward racial equity outcomes will be contingent on dedicating the time and resources needed for long-term relationship building. This will require buy-in from the highest levels of leadership both within City Light and on the City Council, adequate time and funding for engagement, as well as direction to move forward on policy and process changes that enable equitable transportation electrification investments.

Seattle City Light will develop program- and investment-specific metrics to evaluate progress on each of its racial equity outcomes, gathering stakeholder input first about what meaningful and appropriate metrics should be. City Light will also share lessons learned from community outreach efforts and ongoing inequities related to transportation electrification with other City departments and external partners.



SEATTLE CITY LIGHT

TRANSPORTATION ELECTRIFICATION STRATEGY

BY LYNN DANIELS AND BRENDAN O'DONNELL





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ABOUT ROCKY MOUNTAIN INSTITUTE

Rocky Mountain Institute (RMI)—an independent nonprofit founded in 1982—transforms global energy use to create a clean, prosperous, and secure low-carbon future. It engages businesses, communities, institutions, and entrepreneurs to accelerate the adoption of market-based solutions that cost-effectively shift from fossil fuels to efficiency and renewables. RMI has offices in Basalt and Boulder, Colorado; New York City; the San Francisco Bay Area; Washington, D.C.; and Beijing.

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EXECUTIVE SUMMARY

The market and policy landscape for transportation electrification is changing rapidly. Every month, automakers are announcing new electric models. Private developers are investing heavily in charging stations. In the heavy-duty sector, improving technologies and government targets are accelerating the electrification of buses, ferries, freight, and fleets. With such rapid change in this space, Seattle City Light seeks to refresh its approach with a clearer understanding of how best to play an enabling role and respond to opportunities as they emerge, while simultaneously aligning with organizational priorities and the broader mobility goals of the City of Seattle.

This work builds on City Light's initial efforts. In 2015, the utility completed a study with E3 Consulting to understand the effects of electric transportation. The study found that there is a net benefit for transportation electrification and that City Light's distribution system can largely handle the increase in projected transportation load. Based on these results, the utility has invested in two pilot programs for residential and public charging.

However, as adoption scales, so too must City Light's market presence and strategic vision. To address this need, this paper examines four primary issues: (1) values framework—the core priorities for City Light that will guide its investments; (2) market intelligence—the state of the electric mobility market; (3) impact to the business—the nuanced impacts of new transportation loads; and (4) recommendations—the interventions that City Light should pursue.

To identify core values, Rocky Mountain Institute (RMI) facilitated a workshop and focused working groups with City Light staff, resulting in three core values—grid, environment, and equity. City Light's goal is to have a portfolio of programs that reflects balance: some may combine all three values while some will be more targeted.

The market intelligence focused on understanding five electric mobility segments: personally owned vehicles, medium-duty trucks, heavy-duty trucks, buses, and shared mobility. Across all segments, battery price is the primary driver of initial cost. Vehicle costs are soon to reach a tipping point as batteries reach \$150/kWh in 2019 and manufacturers produce a growing number of vehicle models. Similarly, total cost of ownership will be heavily sensitive to fuel price.

The business impact analysis addressed how scale in these market segments will impact City Light's system. This study updated projections and reconfirmed that personal electric vehicle adoption and distributed fast charging are not anticipated to pose much risk for City Light to accommodate given its current grid capacity. However, spot loads associated with electrified buses or medium- and heavy-duty trucks have the very real potential to overwhelm available capacity and require grid upgrades. As electric bus and truck technologies rapidly improve, these segments are likely to electrify quickly because they are responsive to the favorable economics of electricity as fuel.

Given this state of the mobility market and City Light's core values, we provide the following recommended interventions for City Light to pursue.

EXHIBIT 1

Key Strategies for the Electric Transportation Market

<p>Invest in charging infrastructure with emphasis on universal access and expanding coverage</p> 	<p>Continue to drive the robust development of public charging.</p> <ul style="list-style-type: none"> • Deploy City Light-owned direct current fast chargers (DCFCs). • Explore make-ready investments or equipment incentives to support private DCFC deployment. <p>Support expanded residential and workplace charging with an emphasis on multiunit dwellings and underserved communities.</p> <ul style="list-style-type: none"> • Target customers for which cost and feasibility of charging are significant barriers. • Provide incentives and technical expertise for residential and workplace charger installation. <p>Support or invest in charging infrastructure for high-mileage applications, including carsharing and ridehailing.</p>
<p>Develop new rates and improve customer service for the transportation market</p> 	<p>Pursue rates that meet the needs of electric transportation customers.</p> <ul style="list-style-type: none"> • Explore and pilot transportation-specific rate designs. • Understand the impact of demand charges on large customers and DCFC operators. <p>Improve core City Light business processes for customers investing in charging.</p> <ul style="list-style-type: none"> • Create a streamlined and transparent interconnection and service upgrade process. • Consider new queues for electric vehicle customers. • Develop digital content to help customers make informed decisions. <p>Investigate the viability of managed charging.</p> <ul style="list-style-type: none"> • Establish standards for residential smart charging. • Explore demand-response programs.
<p>Prepare for heavy-duty electrification</p> 	<p>Support the aggressive electrification commitments of partner agencies and large customers.</p> <ul style="list-style-type: none"> • Partner directly with King County Metro, the Port of Seattle, and Washington State Ferries. • Develop a deep expertise of customer needs and respond with a broad suite of solutions—responsive rates, incentives, grid infrastructure, technology demonstrations, and siting analysis. • Proactively plan for large loads. <p>Anticipate how access to charging will influence urban freight and fleet markets.</p> <ul style="list-style-type: none"> • Monitor key market tipping point metrics and engage with local fleets. • Develop packaged charging solutions, including financing, make-ready investments, smart charging, and charging depots.

SEATTLE TRANSPORTATION ELECTRIFICATION—BACKGROUND



SEATTLE TRANSPORTATION ELECTRIFICATION—BACKGROUND

Seattle is experiencing the first wave of an electric transportation awakening. It is among the top metro areas outside of California with more than 8,000 registered electric vehicles (EVs),¹ representing 5% of new vehicle sales. Moreover, policy and environmental goals have moved government agencies and businesses to consider electrification of heavy-duty vehicles, such as buses, freight, and ferries.

Seattle City Light has a vested interest in understanding this market opportunity, thereby leveraging its abundant carbon-neutral electricity. In 2015, City Light completed a study in partnership with E3 Consulting that addressed the role of utilities in accelerating this market and the potential costs and benefits to City Light's system.² The study's three primary findings were:

1. There is a net benefit to the utility system of roughly \$1,250 per passenger EV over its lifetime. There is also a positive benefit from buses and other modes of heavy-duty transportation.
2. City Light's distribution network can largely accommodate the increase in load from considerable adoption of passenger EVs, although extremely large spot loads like bus-charging bases will remain highly site specific.
3. There is very strong customer demand, particularly for electrification of the shared transportation sector.

Based on this work, City Light's initial role has been to increase access to its carbon-neutral electricity through enabling charging infrastructure, including a commitment to two early market pilot programs: installing and owning 20 DC fast-charging stations and a residential pilot leveraging a lease model to install 200 home charging stations.

Since this initial study, the market and policy landscape has changed quickly, requiring City Light to broaden its approach. The following examples illustrate the pace of change in Seattle's electric transportation market:

- Washington state's passenger vehicle market continues to see strong growth, with 2016–2017 year-over-year market share increasing 31%.³ To support this, private charging developers, with support from the Washington State Department of Transportation (WSDOT) and the Seattle Department of Transportation (SDOT),⁴ are investing heavily in EV charging stations.
- Seattle's major public transit agency, King County Metro (Metro), has established a goal to fully electrify its fleet of more than 1,400 buses by 2040.⁵ To date, Metro operates 11 all-electric buses and has plans to procure 120 more by 2020.
- In 2017, the Port of Seattle established a strategic objective to be the greenest, most efficient port in North America, including carbon neutrality by 2050 on both direct and indirect sources of greenhouse gas emissions (GHGs).⁶ Supporting this effort, the Port has implemented a Clean Truck program, as a partner in the Northwest Seaport Alliance.⁷
- The City of Seattle has set an ambitious target of 30% EV adoption, along with a commitment to a fossil-fuel-free municipal fleet, both by 2030.⁸
- State legislation, specifically HB 1512 and potential future fuel standards, creates significant financial mechanisms for clean transportation investment from the utility sector.
- The city has committed to environmental equity through its Race and Social Justice Initiative,⁹ including a particular focus on transportation equity.¹⁰ As a city department, City Light has deepened its focus on historically marginalized communities and racial equity in its decision-making process.

In addition to changes in the market, City Light has been tasked by Seattle City Council to rethink its rate design and revenue requirement, to be completed by April 2019.¹¹ Key to this effort will be identifying

both new revenue opportunities and cost-reduction opportunities for upgrades to City Light’s system.

Therefore, City Light needs a clear vision for how the utility can play an enabling role that is aligned closely with the broader mobility goals of a rapidly developing city. City Light has partnered with Rocky Mountain Institute to investigate the changing transportation electrification landscape and identify a strategic vision. This effort includes team members from across the City Light organization as well as members from the Seattle Office of Sustainability & Environment (OSE) SDOT. This report identifies a set of interventions to best position City Light to take advantage of the opportunity that transportation electrification represents while minimizing risks of under or overinvesting.

OBJECTIVES OF THIS REPORT

- Establish a values framework to guide City Light strategy.
- Assess the electrified transportation market and policy landscape.
- Identify how transportation electrification will impact City Light.
- Recommend high-impact interventions for City Light to pursue.



2

VALUES FRAMEWORK



VALUES FRAMEWORK

Electric transportation has a sweeping set of potential benefits.¹² For City Light, designing and implementing programs, partnerships, and policies requires determining which are most important. In this section, we establish a values framework to ensure that market interventions are aligned to these values on behalf of City Light's customers.

We have identified three core values for City Light—grid, environment, and equity. We define each below and highlight how they can be measured. Recognizing that not all value can be quantified, we highlight possible metrics below to consider and identify data needed to assess impacts.

The goal for City Light is to have a portfolio that reflects balance. Many programs will combine all three values, but some will be targeted. Certain programs might heavily prioritize equity, while some might focus on value to the utility system. However, each value is important and should be reflected in a portfolio approach.

1. GRID

Electric transportation at scale has the potential to bring great value to the electric grid. Vehicle charging can be a highly flexible and shiftable load. As such, it can make better use of the distribution system and integrate more variable renewable generation by matching supply with demand. However, without direction from City Light, these potential sources of value could become risks that ultimately require higher levels of infrastructure investment.

A City Light intervention that demonstrates grid benefit will:

- Ensure that transportation load is flexible and well aligned to the operation of the power system
- Avoid, defer, or minimize infrastructure upgrade costs
- Improve reliability and resiliency
- Deliver revenue sufficient to cover costs to serve transportation customers

Possible metrics to ensure benefits to City Light's grid and ratepayers include:

- Electricity demand and load from electrified transportation
- Available distribution capacity at each feeder
- Utilization of available distribution capacity
- Cost recovery/return on City Light investment

2. ENVIRONMENT

The City has established a goal to be carbon-neutral by 2050. Because transportation emissions account for two-thirds of GHG emissions, the transportation sector must be heavily electrified to meet this commitment. This will require a broad focus on electrifying many modes of transport—fleets, freight and goods movement, personal and shared mobility, marine—to replace petroleum with City Light's carbon-neutral electricity. In addition to carbon and other greenhouse gases, City Light should emphasize pollution from particulates.

A City Light intervention that is beneficial to the local environment will:

- Deliver the largest potential GHG savings benefit
- Prioritize high-usage vehicles and high-capacity modes to increase overall transportation system efficiency
- Positively impact areas with poor air quality or a history of significant environmental impacts

Possible metrics to evaluate and track to ensure benefits to the local environment include:

- GHG emissions reductions
- Electric passenger and freight vehicle miles traveled
- Air quality measures (e.g., particulate matter, ozone), including long-term and immediate exposure to emissions
- Adoption of electric vehicles in fleet and commercial applications

3. EQUITY

Though the City of Seattle has made great strides to be green, it faces the same challenge as the broader US environmental movement: structural and institutional racism continue to keep environmental benefits from reaching all people. It is primarily white, upper-income communities that shape and benefit from environmental policies, programs, and projects; and, it is disproportionately communities of color that are impacted by environmental hazards such as poor air quality and increased climate pollution. Electrified transportation has the potential to enable less costly transportation options and provide economic benefits to marginalized communities. As part of Seattle's commitment to eliminate racial disparities and achieve racial equity, the City launched the Race and Social Justice Initiative (RSJI) in 2004. City Light has additionally committed to advance racial and social justice through its Environmental Equity program.

Social justice is both process and outcome. To that end, an equitable City Light intervention will:

- Expand opportunity and access for underserved communities so that all people benefit from clean transportation
- Promote racially inclusive collaboration, ensuring that all communities are engaged in and have opportunities to lead the decision-making process to set environmental priorities
- Affect systemic change through institutional reform and changes to policies and practices
- Assess community conditions and the desired community impact using citywide tools such as the Racial Equity Toolkit

Possible metrics to evaluate and track to ensure equitable outcomes in underserved and marginalized communities include:

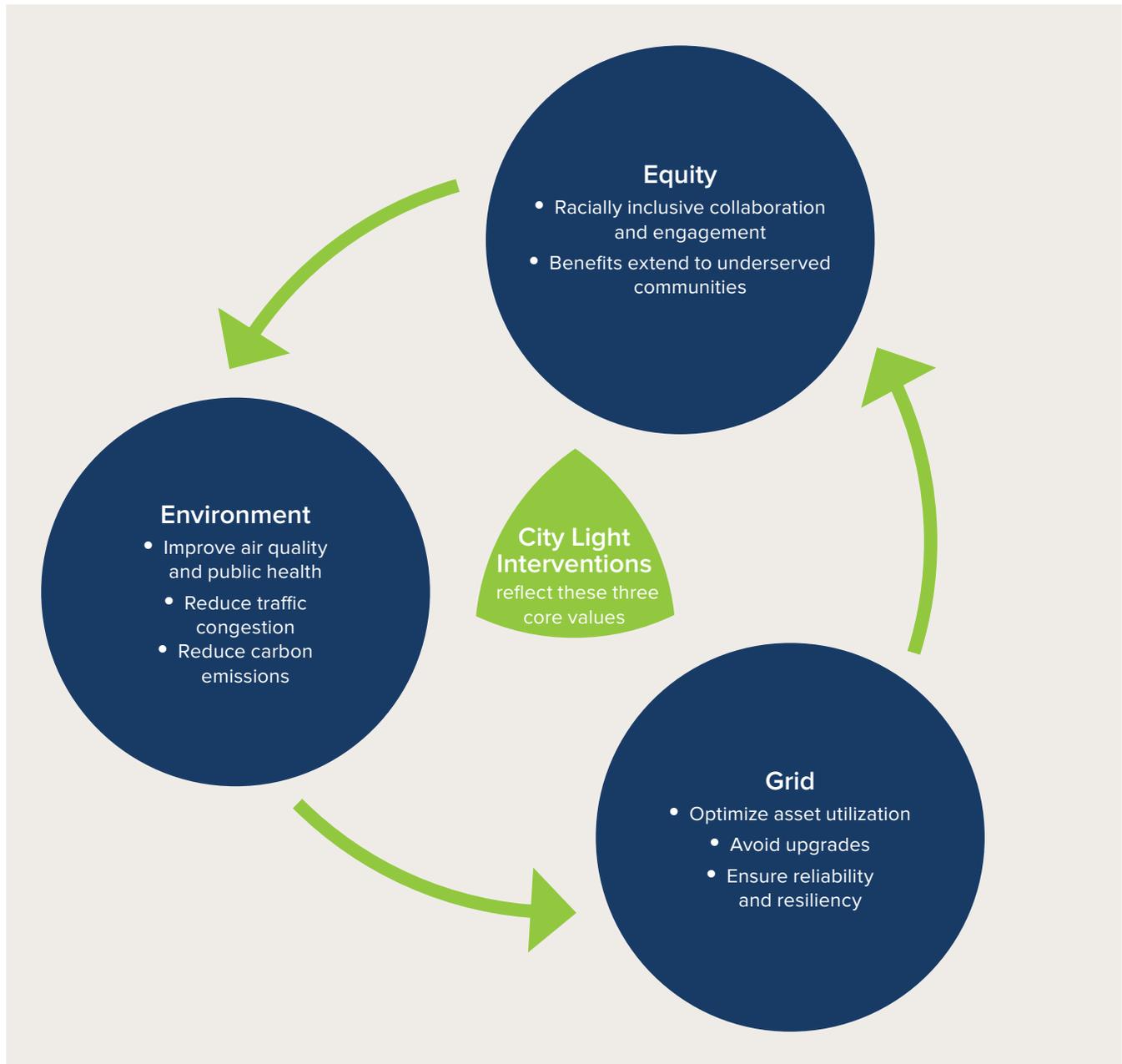
- Air quality measures in environmental justice communities
- Access to electrified transportation modes and charging infrastructure, for example number of residents within a certain distance of public charging
- Number of EV owners in environmental justice communities

BENEFITS TO THE CITY OF SEATTLE

In addition to these three core values, Seattle seeks to maintain its leadership in transportation electrification, ensuring that its clean hydropower is an accessible benefit to all citizens. Positioned to be the largest carbon-neutral transportation fuel provider in the state, City Light can be a catalyst for change for other communities and utilities. Through well-designed, equitable interventions that benefit its grid, ratepayers, and the local environment, City Light can transform the transportation sector through leadership and demonstration.

EXHIBIT 2

City Light's Core Values



3

MARKET INTELLIGENCE



MARKET INTELLIGENCE

In this section, we examine the electric transportation market in 2018 with projections to 2030 in order to identify:

- City Light partnership opportunities
- Interventions where City Light’s investment is essential and can be leveraged to have maximum impact
- Interventions where City Light’s investment is not needed or duplicative
- Ways City Light can improve EV charging network interoperability—the ability for City Light-owned charging stations to be used by any electric vehicle—and the customer experience

This section will look at trends and forecasts for adoption in five key market segments:

1. Personally owned passenger electric vehicles
2. Medium-duty electric trucks
3. Heavy-duty electric trucks
4. Electric buses
5. Electric, driverless mobility services

EXHIBIT 3

The Five Key Market Segments Examined



PERSONALLY OWNED CARS

The market for personally owned light-duty electric cars is approaching a tipping point where adoption could begin to increase rapidly: 2017 marked the first year with more than 1 million new EV sales globally, with 66% of those being battery electric.¹³ EV sales growth in the United States increased in 2018 with a compound annual growth rate of 81% despite domestic fuel prices remaining low and changes to the policy environment.¹⁴

The global battery-electric vehicle market is likely to continue its growth as automakers respond to more aggressive emissions targets and diesel bans in Europe and China, with global sales forecasts ranging from 5.7 million to 30 million units sold annually by 2030.¹⁵ Several market factors are shaping US demand for electric cars:

- **Electric vehicle model availability.** In the United States, the vast majority of available EVs—and thus sales—are small or midsize models (Tesla Model 3, Tesla Model S, Chevrolet Bolt, and Nissan Leaf are the highest sellers) with very few SUV or crossover options. In contrast, 45% of overall car sales in the United States are crossovers and SUVs. This is important because buyers will likely consider an EV purchase only if the vehicle fits their preferences and lifestyle. As a result, automakers have committed to electrify up to 289 vehicle models¹⁶ (including many crossover and SUV models) and invest at least \$90 billion in EV technologies over the next several years.¹
- **Upfront cost.** Lithium-ion battery pack costs continue to drop, averaging \$176/kWh in 2018 and projected to reach \$150/kWh or less in 2019,¹⁷ resulting in the upfront costs of EVs reaching parity with internal combustion engine vehicles on an unsubsidized basis by 2024.¹⁸ That being said,

parity in cost is insufficient to motivate customers to change technologies and incentives will continue to be an important policy lever.

- **Charging infrastructure.** Availability of public charging infrastructure could become a bottleneck that stalls market growth. Fortunately, the range of new EV models is typically greater than 200 miles per full charge, helping to eliminate range anxiety as a barrier to adoption; and roughly 60% of US households are detached single-family homes where home charging will be the most economical charging option.¹⁹ However, public charging will be driven by several needs: long-distance trips that exceed a vehicle's range; dense urban centers with limited parking space; and multiunit dwellings, where home charging is typically unavailable even with parking.

Because personally owned vehicles (POVs) are most likely to see strong adoption in the near term, the question of *how* they are charged—Level 2 versus direct current fast chargers (DCFCs)—will be of paramount interest for City Light and other utilities. In terms of charging speed, Level 2 charging will likely meet many EV owners' charging needs at home or workplace in the near term and the majority of chargers deployed to date have been Level 2. Moving forward, significant effort is focused on DCFCs, which have much higher installation and operating costs. Tesla, in particular, has built a nationwide network of fast charging stations for its customers, and EVgo recently installed its 1,000th fast charger. However, the national network of public chargers has large gaps.²⁰

Two important trends point to a greater need for both public and fast charging options: (1) to support

¹ Mercedes-Benz AWD electric SUV EQC will be available in the United States in 2020; Jaguar's i-Pace SUV in 2019; Tesla is shipping its Model X 75D; Audi is taking reservations for its electric E-Tron SUV; BMW announced its all-electric iX3 SUV for 2020. All models are expected to have more than 200 miles of range, charge up to 150 kW, and be priced in the \$70K–\$80K range.

new EV models with larger batteries and range, many drivers will demand a charging experience similar to refueling at a gas station (especially for cross-country travel where rapid recharging will be necessary); and (2) to enable EV adoption at scale for multiunit dwellings, the need for publicly available infrastructure will be all the more essential, since these households are less likely to have access to garage or off-street parking.ⁱⁱ

In addition to third-party charging infrastructure operators—such as ChargePoint, EVgo, Blink, Tesla, Greenlots, and SemaConnect—more utilities are beginning to invest in public charging infrastructure. California’s three largest investor-owned utilities (SDG&E, SCE, and PG&E) have submitted plans to support 60,000 Level 2 chargers and 234 DCFCs.²¹ Significant additional investment is needed over the next decade in public charging to meet demand, upward of 20 million chargers at a cost of \$10 billion, with about one-third being public.²²

- **Policy.** Policies can significantly impact the adoption of EVs in the United States, particularly by reducing the purchase costs for consumers, requiring public agency fleets to buy EVs, setting state targets for EV adoption, and encouraging and/or requiring automakers to manufacture more zero-emission vehicles. In the near term though, the US Environmental Protection Agency is likely to relax its vehicle emission standards; several states, including Washington, have joined California’s

lawsuit to preserve their right to set higher emissions standards.²³ The US federal government offers a tax credit up to \$7,500 for an EV purchase, but the three automakers representing the majority of US sales (Tesla, GM, and Nissan) are reaching the number of vehicles eligible for the full tax credit.²⁴ Additionally, many states have tax credits or rebates available, including Washington’s sales tax exemption reauthorized in 2019 by SHB 2042.²⁵

As these factors shape the US market, individual states are taking the lead in accelerating EV adoption. Washington state has the third-highest total annual sales and share of new vehicle sales that are electric with 7,068 EVs sold in 2017. With the majority of these sales in Seattle, the city is in a leadership position for car electrification. Further, Seattle’s electricity–gasoline price differential is more favorable to EVs: Seattle has one of the lowest electricity rates in the nation (~\$0.111/kWh) and the third-highest gasoline prices in the nation (\$3/gallon in January 2019);²⁶ this improves operational cost savings for EV owners, resulting in average annual savings of \$1,250 per vehicle.ⁱⁱⁱ Washington state ranks fourth in absolute terms of public charging availability with 1,861 chargers, 9% of which are DCFCs.²⁷

Using several years of EV registration data from Washington’s Department of Licensing, City Light has developed a methodology to create business-as-usual (BAU), aggressive, and conservative forecasts for the adoption of personally owned all-electric vehicles in Seattle.^{iv} As a standard approach for modeling

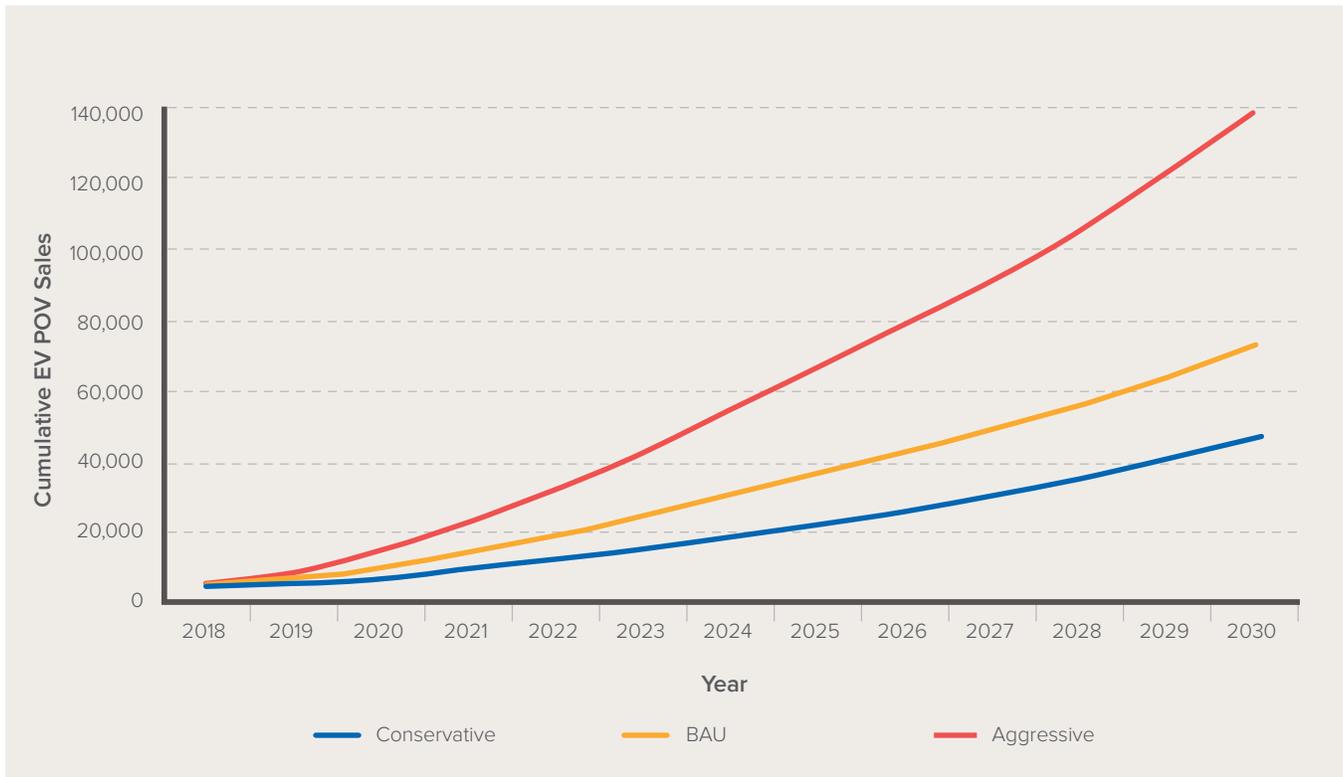
ⁱⁱ Unlike single-family homes, multiunit dwellings have a split incentive since a property manager would likely need to install, own, and operate on-site charging infrastructure. Property managers are unlikely to invest unless it puts them at a competitive advantage. This chicken-and-egg problem will perpetuate the demographic disparity in EV ownership as lower-income individuals live disproportionately in multiunit dwellings.

ⁱⁱⁱ Assumes 3.5 miles/kWh for EV and 25 miles/gal for gasoline vehicle, for 12,000 miles traveled.

^{iv} We explore only battery-electric vehicles as these will have a more significant impact on City Light’s grid than plug-in hybrids. Recent announcements by GM and other market trends also indicate that, as more EV models are produced, consumers will shift away from hybrids (<https://www.greentechmedia.com/articles/read/why-general-motors-is-ditching-the-chevy-volt#gs.9=31pWo>).

EXHIBIT 4

EV POV Forecasts for Seattle City Light Service Territory



the adoption of new technology, City Light uses a generalized Bass diffusion model based on historic adoption rates of comparable technologies.^v The resulting forecasts are shown in Exhibit 4. With the most conservative set of assumptions, City Light will see a nearly 10-times increase in the number of POVs charging within its service territory, to 50,000 vehicles

by 2030. Using more aggressive assumptions, adoption may reach 140,000 vehicles by 2030. With that number of vehicles representing new annual load ranging from 117,000 MWh to 344,000 MWh, the charging behavior of the owners (e.g., off-peak at-home charging versus fast charging during peak hours) will be critically important.

^v For the conservative case, City Light uses the historic Seattle EV market growth rate of 1.7%; for the aggressive forecast, the adoption rate of diesel cars in Europe; and the BAU forecast uses parameters averaged across the historical EV, hybrid, and European diesel car adoption. Another key input is price elasticity: City Light assumes a 4% increase in adoption for every 1% decrease in EV price.

MEDIUM- AND HEAVY-DUTY TRUCKS

Battery-electric medium- and heavy-duty trucks (MDT and HDT)^{vi} are either on the road or nearing production today and are increasingly viable as a replacement for diesel commercial vehicles. Compared to electric cars, these vehicles have larger batteries and will likely charge in more concentrated geographical locations, resulting in higher potential impact on City Light's distribution grid. But, adoption of electric trucks is at a very early stage and will vary greatly depending on the specific use case for each vehicle. We have identified several important market factors that will influence truck electrification:

- **Total cost of ownership.** Fleet purchasing decisions, in contrast to personal vehicles, place greater weight on economics; in particular, whether the total cost of ownership (TCO) for an electric truck is less than that of a diesel. TCO is a function of many variables, including:
 - battery cost, density, and durability
 - production scale of electric trucks, since truck initial costs will fall as production scales up
 - the differential between electricity and diesel costs
 - use case (for example, short-haul or long-haul routes)
 - charging needs (for example, whether or not fleets can manage charging to minimize electricity costs)
 - costs to upgrade grid infrastructure borne by fleet operators
- **Charging infrastructure.** The availability of charging infrastructure will constrain which use cases are economically viable. For example, long-haul applications where daily miles traveled exceed battery capacity mean that trucks must fast charge on-route. To be viable, long-haul applications require a network of truck “mega-chargers”²⁸—a technology still in development—to enable these use cases. By contrast, short-haul trucks where battery size is

matched to daily miles traveled can return to a centralized depot for overnight charging.

- **Policy and regulatory environment.** Policies such as diesel bans and fuel economy mandates can drive adoption if they are well designed. As a cautionary tale, the Port of Seattle adopted emissions standards in 2008 that would require all drayage trucks to have a model year 2007 or later engine by 2018.²⁹ Currently, this emissions standard requirement is at 53% compliance, in large part because independent truck operators cannot afford new trucks (whereas large fleet operators have already upgraded their trucks). It is important that policies designed to support truck electrification take into consideration the actual use cases and ownership models to ensure greater compliance and success.
- **Fleet risk tolerance.** Larger fleets may adopt electric truck technologies more quickly because owners may have greater capital availability than smaller fleets and independent operators. However, the industry is generally conservative when adopting new technologies, often requiring established credibility through demonstrations. As such, truck electrification is likely to begin with small-scale production and pilots.
- **Model availability and manufacturer response.** Many electric trucks today are being produced on a small scale by start-ups whereas fleets may prefer that traditional manufacturers produce the vehicles.³⁰ As such, model availability will likely constrain adoption in the near term even if total cost of ownership reaches parity with diesel trucks for many use cases. Many traditional manufacturers are focusing on electric light-duty trucks due to the similarity of technology to passenger vehicles though many have announced plans to produce medium- and heavy-duty electric trucks.

^{vi} For this report, medium-duty trucks are considered Class 3–7 vehicles, with a gross vehicle weight rating from 10,001–33,000 pounds. Heavy-duty is considered Class 8 with gross vehicle weight rating of greater than 33,000 pounds.

What these factors point to is that electric trucks will be viable for certain use cases earlier than others. In particular, MDTs and HDTs with short-haul local and regional routes represent the best early adopter business case to electrify: they carry predictable weights over shorter, local routes; they return to the same distribution center at the end of the day where they can be charged overnight; and battery size can be matched to typical route length to minimize upfront costs. Long-haul routes, especially those served by HDTs, may be the last segment to electrify due to weight and range constraints. Trucks on typical long-haul diesel routes drive 200–500 miles a day, requiring on-route mega-chargers along major freight corridors.

Seattle is in a unique position to lead on truck electrification. In general, US diesel cost is low, meaning TCO parity is more difficult to obtain for electric trucks.³¹ Seattle’s comparatively low electricity prices, however, shift the electricity-diesel cost differential in favor of electric trucks and may drive greater local adoption compared to the rest of the United States.

Forecasts for the adoption of electric MDTs and HDTs are fairly speculative today and serve primarily to highlight a range of possible outcomes for which Seattle City Light should be prepared. Our approach estimates business-as-usual (BAU), aggressive, and conservative scenarios for the percentage of MDT and HDT truck sales that will be electric by 2030 based on the following:

- NACFE and McKinsey estimate a range of dates when TCO parity with diesel will be reached.³² We use this range as the starting point for when sales begin, with BAU adoption beginning at the middle of the range.
- We estimate a range of 10%–20% of MDT sales and 0%–2% of HDT sales in 2030 will be all-electric, based on the highest and lowest sales projections from several sources.³³
- We assume linear growth in sales.

PORT AND FERRY ELECTRIFICATION

The Northwest Seaport Alliance (NWSA)—comprised of the Ports of Seattle and Tacoma—established a goal to reduce diesel particulate matter by 80% by 2020 and greenhouse gas emissions by 15% by 2020. With more than 4,400 trucks representing 28% of GHG emissions at the Ports, cleaner trucks and cargo-handling equipment are a core component of that strategy. As of 2016, 40% of trucks were model year 2007 or newer, meeting emissions standards.³⁴ Although currently there are no explicit goals for truck electrification, City Light should stand ready to lead or support any NWSA programs to electrify vehicles at the Port of Seattle.

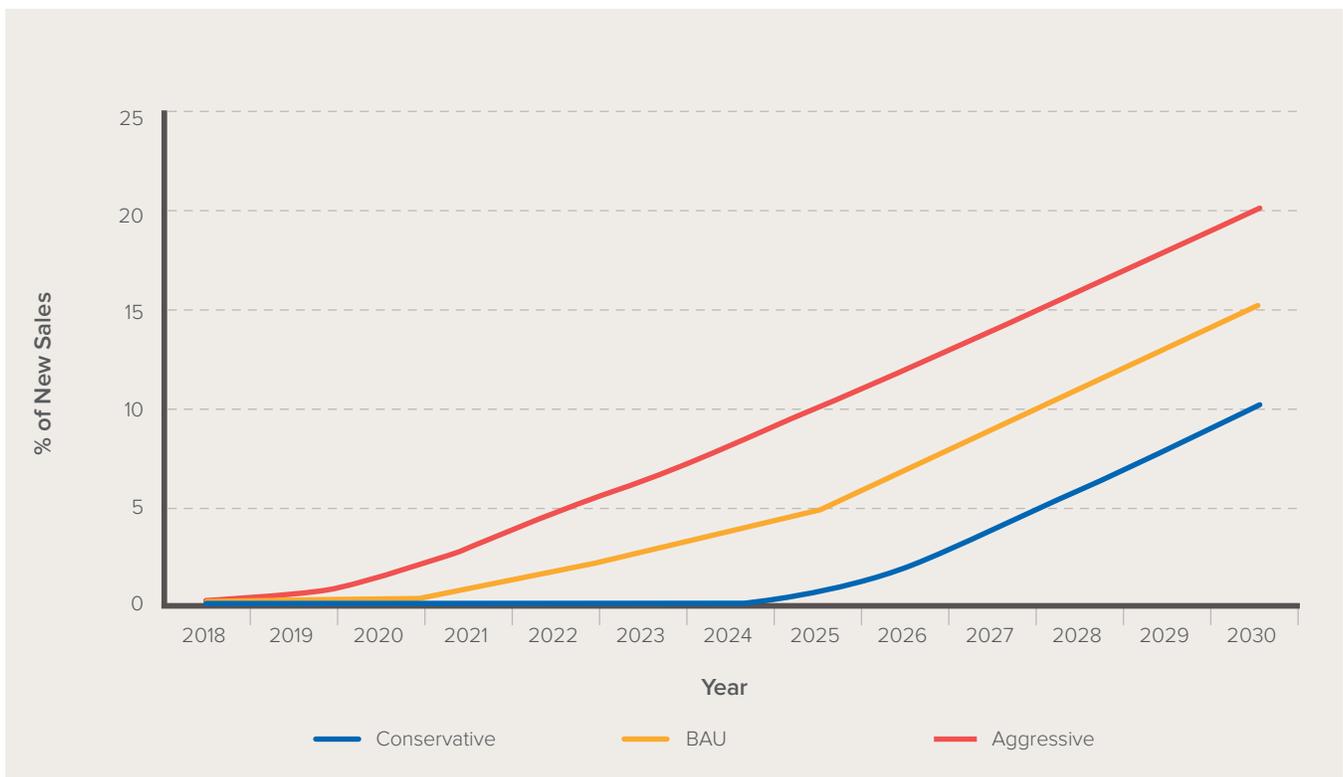
Ferry electrification is poised to move forward in 2019. The Washington State Department of Transportation ferry system is the largest in the nation and represents more than 50% of air pollution from harbor vessels. In parallel with the installation of charging infrastructure, a phased approach will enable all ferries to run fully on electric power by 2023. The power and energy requirements for these vehicles—an electric ferry launched in Norway was equipped with a 1 MWh battery with 1.2 MW fast charging—will require close partnership with City Light to ensure a successful fleet transition.

The most aggressive assumptions for medium-duty trucks, based on Washington State Department of Licensing data for new commercial vehicle registrations,^{vii} suggest 1,300 electric medium-duty trucks operating by 2025 with more than 4,000 in operation by 2030. The most conservative set of

assumptions results in negligible adoption through 2025 growing to 1,100 medium-duty electric trucks operating by 2030. For heavy-duty trucks, all forecasts project a negligible number of operating vehicles through 2030.

EXHIBIT 5

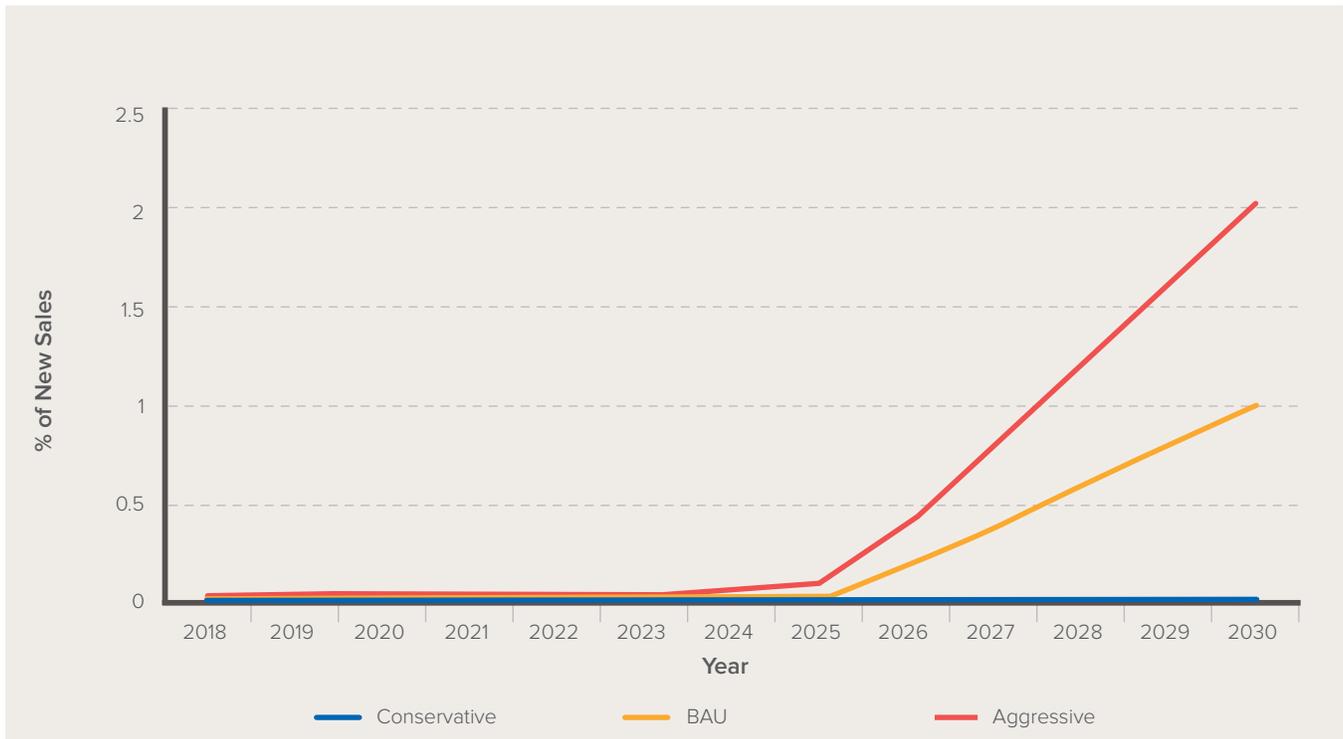
Forecasts for the Adoption of Medium-Duty Trucks in the Seattle City Light Service Territory



^{vii} Washington State Department of Licensing data does not report truck class, so we assume that Class-8 trucks represent approximately 7.5% of annual sales of all commercial trucks.

EXHIBIT 6

Forecasts for the Adoption of Heavy-Duty Trucks in the Seattle City Light Service Territory



ELECTRIC BUSES

Bus electrification is driven by similar market factors as for MDTs and HDTs, with several key differences:

- The higher upfront cost of electric buses—\$750,000 compared with a diesel bus at \$435,000³⁵—can potentially be offset by lower fuel and maintenance costs. However, the structure of electricity tariffs, in particular demand charges, strongly influences total cost of ownership for electric buses and, in some cases, can make them more expensive than diesel.
- Bus adoption may be driven by policy as cities could accept these higher upfront costs in favor of meeting environmental goals. In fact, many cities and transit agencies are announcing aggressive bus electrification goals (though actual procurement has been cautious with less than 1% of the total US bus fleet all-electric³⁶).

- There are some examples of technological or operational challenges, with electric buses unable to meet advertised range in certain climates and weather conditions or utilized on a route for which they are poorly suited. These may be isolated incidents, though, as transit agencies overcome the learning curve of adopting a new technology.
- Currently, 14 manufacturers are making electric bus models, including shuttle buses, double-decker buses, and articulated buses, indicating that the technology is available for increased adoption.³⁷

Despite these challenges, buses represent an ideal use case for electrification, similar to short-haul MDT applications. The average city bus travels 140 miles per day on a fixed route and returns to a centralized

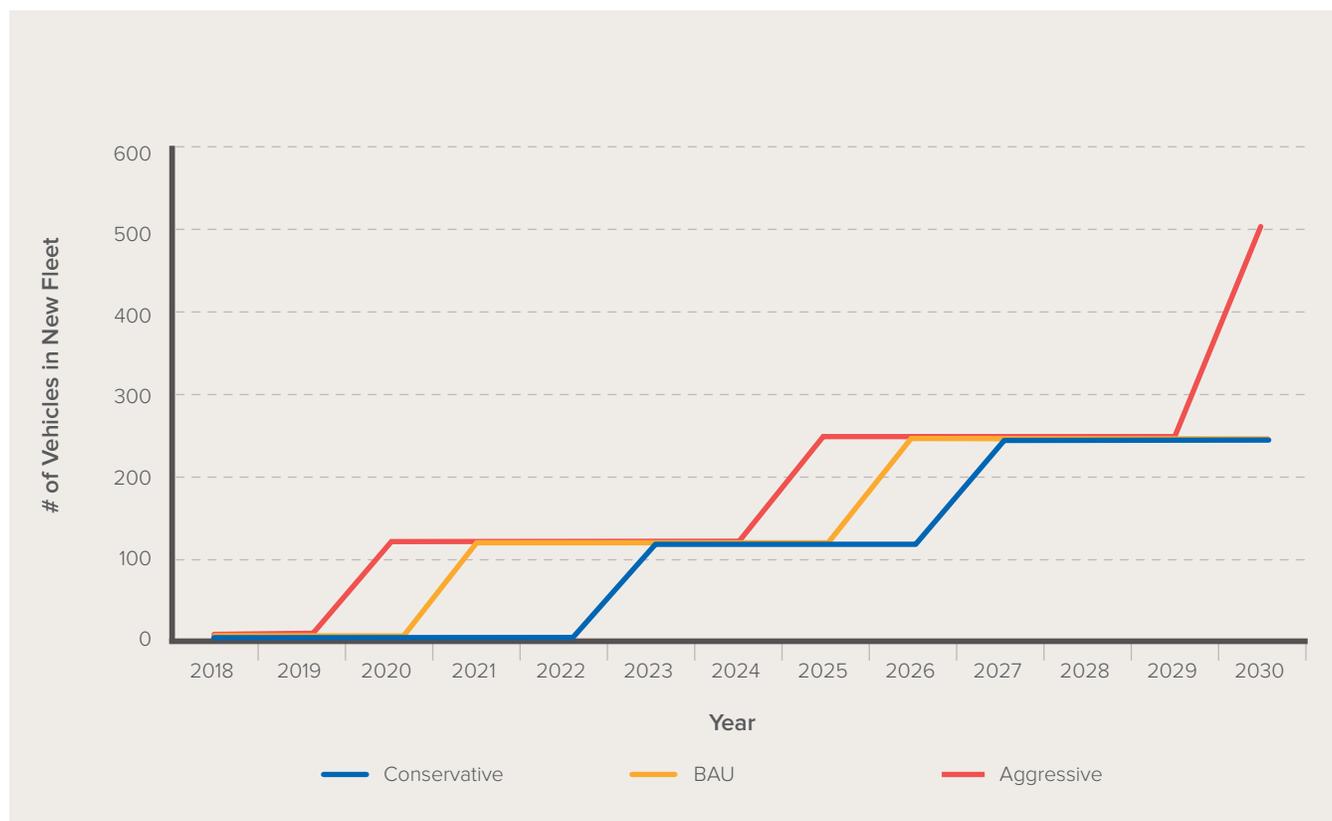
depot for overnight charging, so battery size can be matched to daily needs.

Seattle’s public transit agency, King County Metro (Metro), is a national leader in reducing emissions from its fleet and has a goal of full fleet electrification by 2040.³⁸ Metro has operated at least three electric buses since 2016 and will pilot an additional nine in

2019, with a commitment to purchase 120 by 2020. To project the adoption of electric buses in Seattle, we developed BAU, aggressive, and conservative forecasts based on these commitments as well as proposed interim goals.^{viii} In particular, the BAU case assumes the electrification goal is met by 2040, the aggressive case by 2034, and conservative case by 2045.

EXHIBIT 7

Forecast for Number of Electric Buses in Seattle City Light’s Service Territory to 2030



^{viii} Conversation with Danny Ilioiu. Proposed interim goals for KCM fleet electrification include: one bus base with 250 all-electric buses by 2025, and a second bus base with 250 additional buses by 2030.

DISRUPTION—SERVICE-BASED DRIVERLESS MOBILITY SERVICES

The possibility of fully autonomous vehicles has been receiving a significant amount of news coverage in the past few years, especially as mobility services such as Uber, Lyft, Car2Go, Zipcar, and others have been rapidly growing. Prognosticators in this space foresee a wide range of possible outcomes,³⁹ from vehicle ownership being replaced by driverless robotaxi services to meet all personal mobility needs, to a suite of mobility options (scooters, bikes, cars) that complement public transit and provide first- and last-mile options, to some coexistence of ownership- and service-based mobility paradigms.

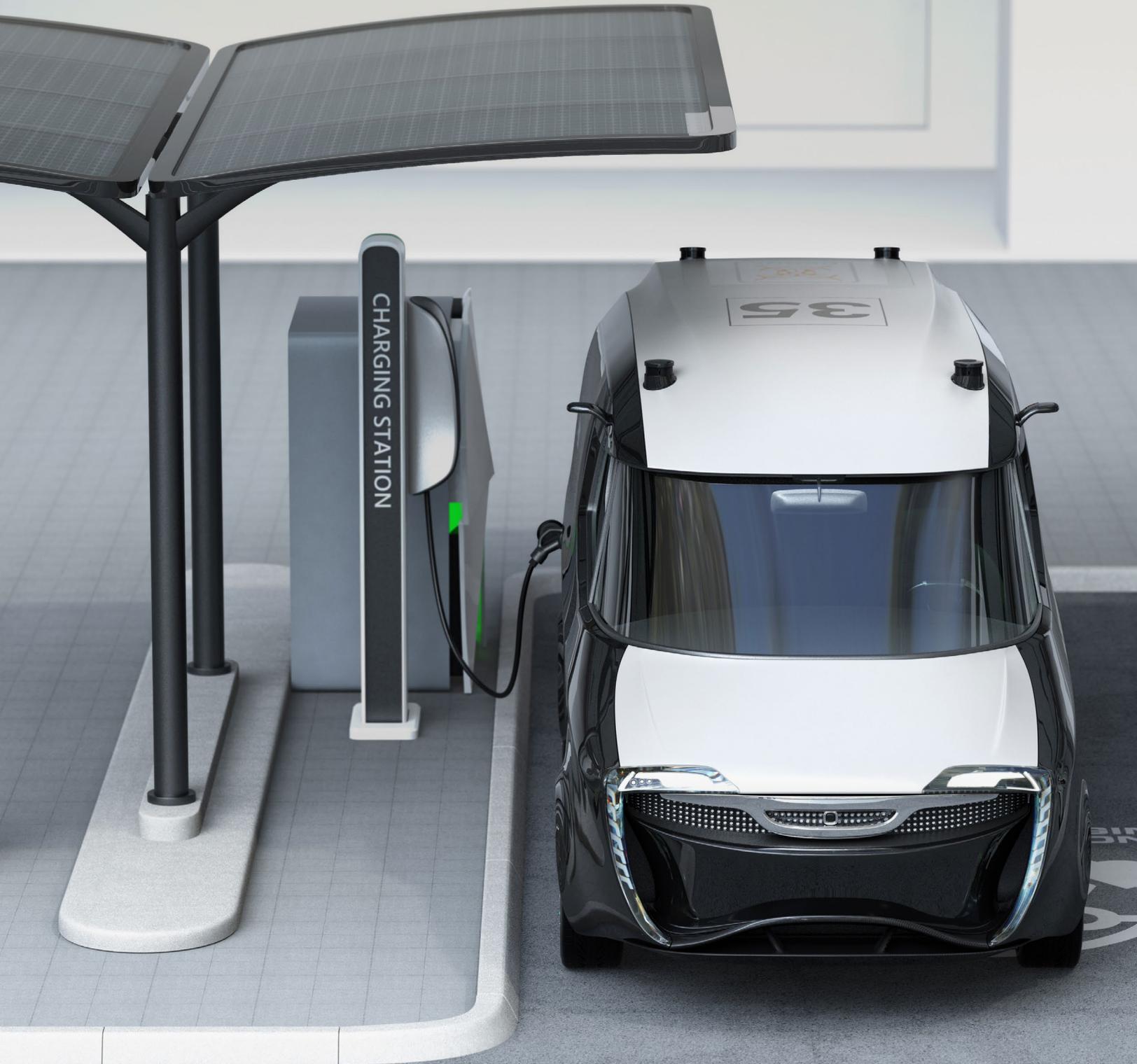
Autonomous, electric mobility-as-a-service has the opportunity to reduce personal mobility costs while creating trillions of dollars in new business opportunities and consumer savings. And this concept of an always-available fleet of robotaxis will result in higher utilization of the vehicles themselves (more miles traveled), while potentially requiring far fewer vehicles to serve a population's mobility needs (though this may depend on a user's willingness to share rides).⁴⁰ With these business models built around a centralized fleet operator, financial considerations will be key to decision-making and there will be a strong incentive for fleet operators to own all-electric fleets: operating expenses are the most important cost with high utilization vehicles, as operating costs can be significantly reduced.⁴¹

City Light has an opportunity to support electric, autonomous mobility services as new, predictable revenue streams where charging load can be managed

and optimized directly through relationships with fleet operators. Further, because many of these fleets will be light-duty vehicles, the per-vehicle grid impact is much less than that of electric trucks and buses.

Forecasts range widely on how this future plays out—from 95% of passenger miles service-based by 2030 to similar outcomes not being realized until the late 2030s (or later).⁴² At this time, it's unclear how the load of robotaxis might affect City Light's grid. What is clear is that Seattle-specific data shows consistent growth in ridehailing usage and associated vehicle miles traveled. Combined trips using Uber and Lyft have more than doubled between 2016 and 2018, topping 7 million trips during the first quarter of 2018. More data and pilots will be required with EV fleets in the future to understand how to optimize charging times while ensuring accessible vehicles for all trips on ridehailing services.

Given the early stage of this market segment, the results of pilots and success of new companies in this space has been mixed. For example, despite significant growth, Uber and Lyft are not yet profitable and have had several regulatory battles with cities in the US;⁴³ pilots with microtransit start-ups have had low ridership;⁴⁴ and a high-profile death caused by a driverless vehicle has called into question the readiness of autonomous technology for on-road pilot programs.⁴⁵ Despite these hurdles, there is significant global interest in the autonomous mobility future and its potential benefits. City Light should pay close attention to how this segment evolves over time to take advantage of opportunities to electrify these services.



IMPACTS TO SEATTLE CITY LIGHT

We examine how electrification will affect City Light so that we can understand how to address the associated risks, as a continuation of E3 Consulting’s cost-effectiveness study completed in 2015. We emphasize three types of impact:

1. Impact of transportation electrification loads on City Light’s grid
2. Financial impacts, especially limiting the need for system upgrades
3. Customer service impacts, including changes to City Light operations

IMPACTS OF POV ELECTRIFICATION

To estimate the impacts of increased adoption of electric POVs, we extend the hosting capacity analysis from City Light’s prior study with E3. Using EV registration data for each zip code in City Light’s service territory, we assume that the number of EVs registered in each zip code, as a percentage of EVs in City Light’s service territory, stays constant through 2030.^{ix} Using our electric POV adoption forecasts, we estimate how many EVs will be sold in City Light’s service territory each year then allocate these new EVs by zip code accordingly, out to 2030.

We base our analysis here on City Light’s current distribution planning. This assumes a managed charging load profile, such that the vast majority of new EV load growth occurs during off-peak hours. Most charging is via Level 2 chargers and assumes a demand of 6 kW per vehicle. We note that this represents an optimal set of assumptions as new Level 2 chargers allow for 21 kW charging and we cannot know how customers will actually charge their vehicles. However, City Light’s prior study with E3

examined in detail the revenue and cost difference between managed and unmanaged POV charging, and even unmanaged charging resulted in a net benefit to City Light.

The results of this analysis suggest that, for residential charging based on these assumptions, there will be minimal impact to City Light—in fact, there will be a net benefit, based even on our most aggressive POV adoption forecasts. There is, however, great uncertainty with this conclusion, and City Light will need to continually reexamine this result and proactively facilitate managed charging behavior. First, charging patterns and behaviors may change over time resulting in more charging events during peak hours or more drivers may prefer DCFCs. As electric vehicle supply equipment (EVSE) networks are built, the relative utilization of DCFCs versus Level 2 chargers will be an important metric to track. Second, some neighborhoods could see much greater adoption than anticipated, leading to a geographic concentration of charging loads.

With more and more City Light customers owning electric vehicles, the experience City Light offers for these customers will be an important consideration. This could include tailored customer service options such as EV-owner customer connection queues as well as new revenue opportunities through specific EV rates or packages for EV owners that might include support for on-site solar and/or storage.^x These service offerings will have to be balanced with the potential need for additional customer support staff and associated costs to serve this new customer base.

There are significant positive impacts to City Light as well. Given City Light’s ongoing rate redesign and

^{ix} We recognize the deficiencies of this assumption as it does not take into account population growth/shifts or that as EV costs go down, lower-income communities may increase adoption relative to today. And of course, City Light programs can explicitly target Seattle neighborhoods with lagging EV purchases to accelerate adoption.

^x Seattle City Light has designated queues for customer types (i.e., residential or commercial) with the potential to add new queues for new customer types.

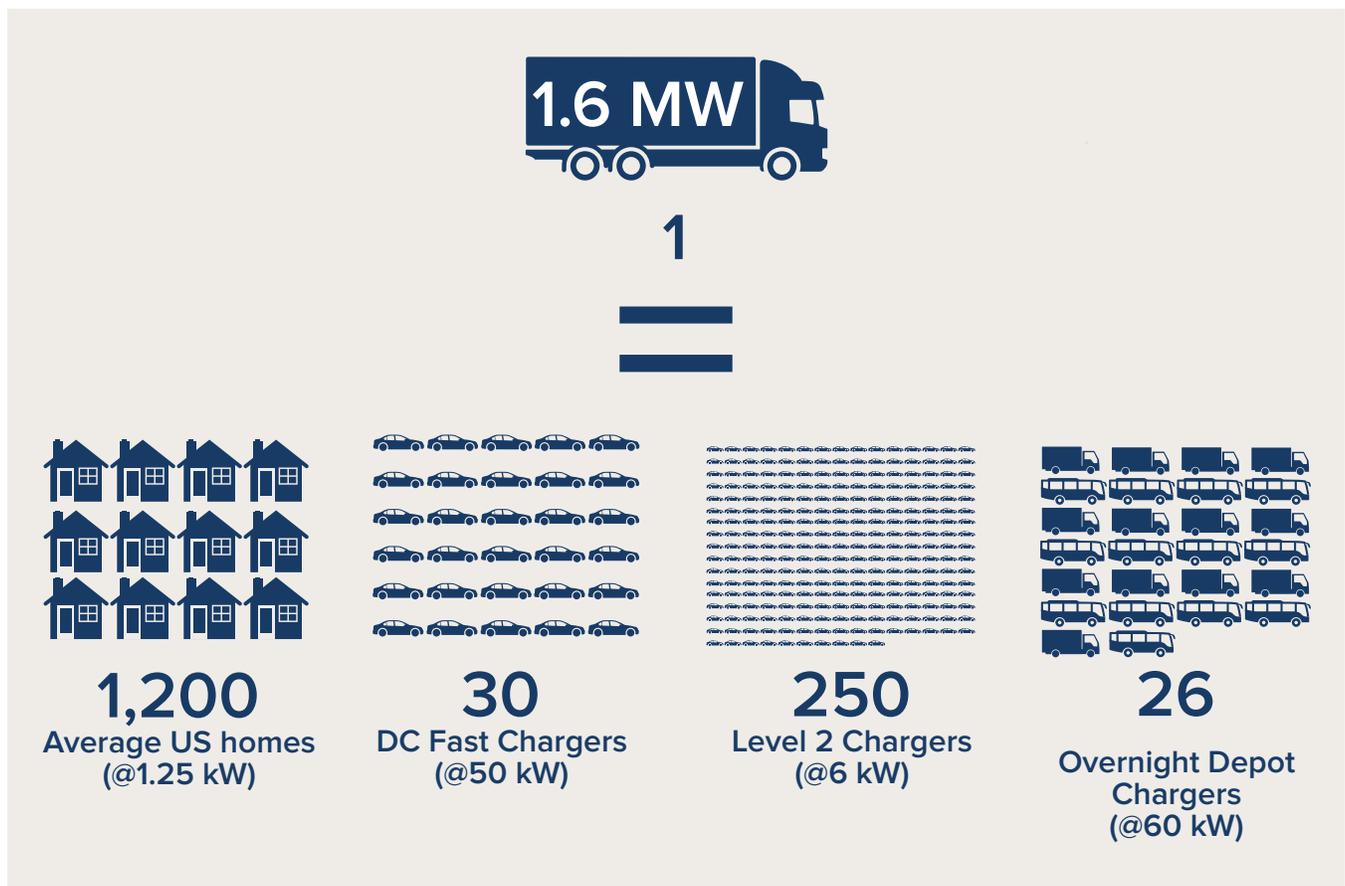
imperative to decrease rates, new revenue streams are needed to create downward rate pressure. In theory, EVs can put downward pressure on rates because of increased utilization of utility assets, with revenue from load growth exceeding costs. And since City Light’s generation mix is predominantly hydropower, the emissions profile of EVs charged on City Light’s grid has lower carbon and other greenhouse gas emissions compared with grids in other cities and states.

IMPACTS OF MEDIUM- AND HEAVY-DUTY TRUCK ELECTRIFICATION

Although trucks nationally represent only 4% of registered vehicles,⁴⁶ the impact of truck electrification to City Light may be significant. We demonstrate this in Exhibit 8, which shows the electricity demand for a single HDT mega-charging event compared with that of other appliances or vehicles.

EXHIBIT 8

Power Requirements (kW) of One Class-8 Truck “Mega-charging” Event (1,600 kW) Compared With Power Requirements of Other Vehicles and Homes



Electric trucks offer a double-edged sword in terms of their impact to the grid: they are likely to concentrate in industrial areas of cities making load planning simpler, but they draw significantly more power per charging event than POVs, potentially straining distribution grid capacity at those locations. If planned well, electric buses can improve grid asset utilization and present a new source of predictable revenue.

As noted above, fleet managers respond well to price signals that impact the total cost of ownership of their fleets. Many electric truck fleets will require their own infrastructure, which may make upfront costs prohibitively costly and require new financing mechanisms that reduce these costs for fleets. These costs and financing challenges may emerge as bottlenecks that slow overall truck electrification.

Utilities have a suite of tools that can be deployed to help accelerate and appropriately plan for truck electrification (in particular by influencing total electricity costs that can make or break the total cost of ownership for electric trucks). These include demand-charge relief, time-of-use rates, or other price signals to maximize off-peak charging, and innovative financing for on-site solar and/or storage at fleet charging depots. It is, however, uncertain how effective these approaches will be because, unlike POVs, electric trucks must charge according to vehicle operation schedules and electricity price signals may not be able to shift charging to off-peak hours. And, pairing electric truck charging depots with on-site solar and/or storage or smart charging systems will significantly increase upfront capital costs for fleet operators.

Because of the early stage of this market, it is difficult to estimate specific truck and ferry electrification impacts on City Light. Instead, we use the following approach:

For short-haul routes (primarily MDTs^{x1}):

1. Assume trucks with 100 kWh batteries charging at a 20–60 kW charge overnight at a centralized distribution center, for a typical 100-mile daily route.
2. Identify the location of most distribution centers and warehouses in Seattle (as a proxy for where charging will occur overnight) and identify distribution grid feeders assigned to these geographies. As shown in Exhibit 9, MDT charging will likely occur in Seattle's two large manufacturing and industrial centers (MICs): Ballard/Interbay Northend and Greater Duwamish (which includes the Port of Seattle).

As shown in Exhibit 10, we identified 61 feeders assigned to either the Duwamish or Ballard/Interbay MICs, 15 of which are at or above 90% loading. Based on the above assumptions, a large fleet of 200 medium-duty trucks charging overnight at a single depot will draw 4–12 MW. Since feeders and substations can be reconfigured to balance loads, fleets requiring 4 MW for overnight charging are likely to have minimal impact on City Light's grid. We note that capacity is only one indicator of impact on City Light's system, and other upgrades may be required even if there is available capacity. For example, at 4 MW for a single installation, there may be need to reconductor a lateral with an estimated cost of \$1,000/foot of overhead installation or \$1,500/foot for underground installation. However, for fleets on the higher end of the range (above 10 MW), system impact studies will be required as this size load may require a dedicated feeder.

^{x1} We note that HDTs are used for short-haul routes as well; however, depending on the route, fleet operators will be able to optimize battery size, so charging patterns and power demand will likely be comparable to MDTs.

EXHIBIT 9

Map of City Light Territory Depicting Manufacturing and Industrial Centers

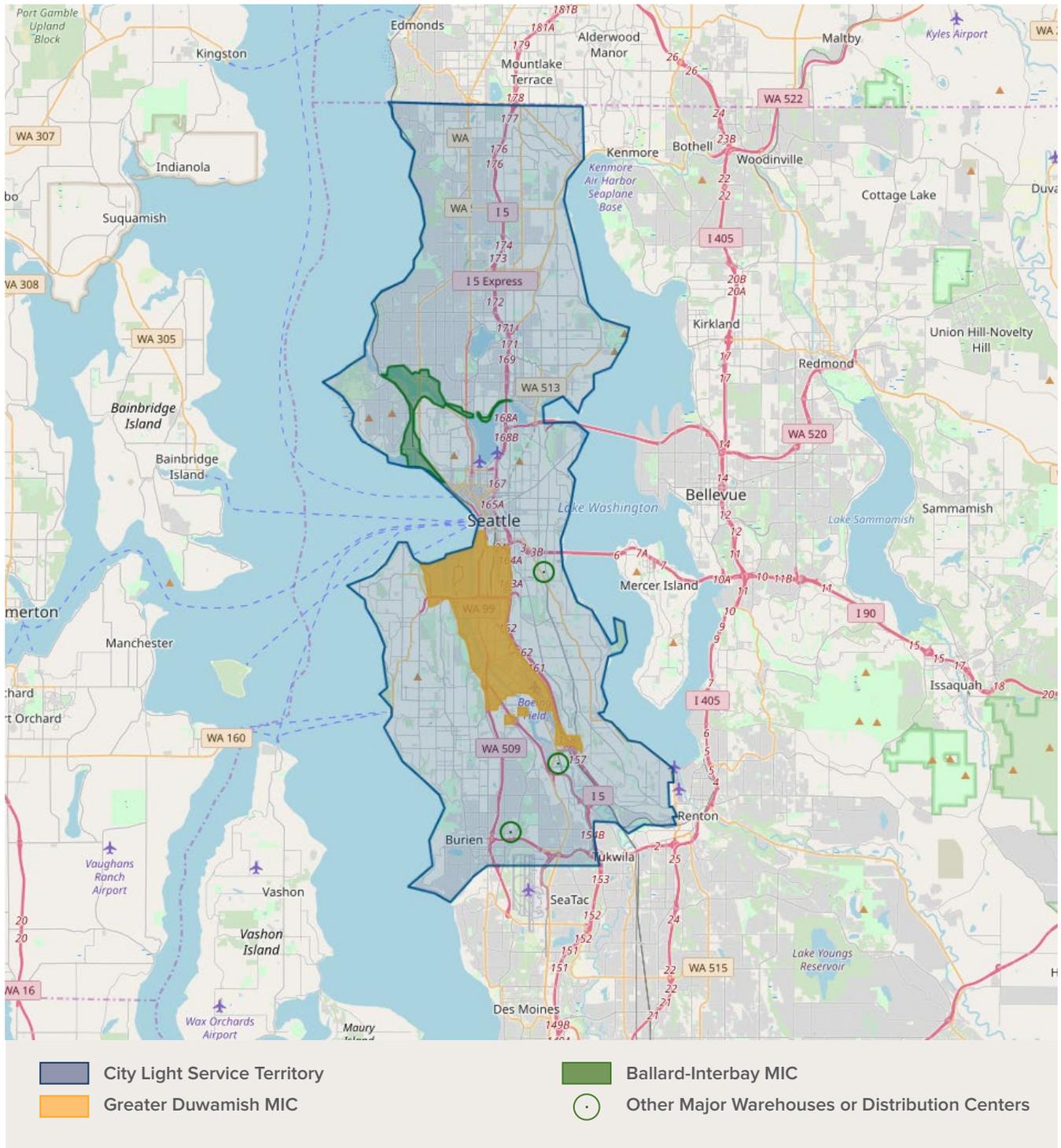
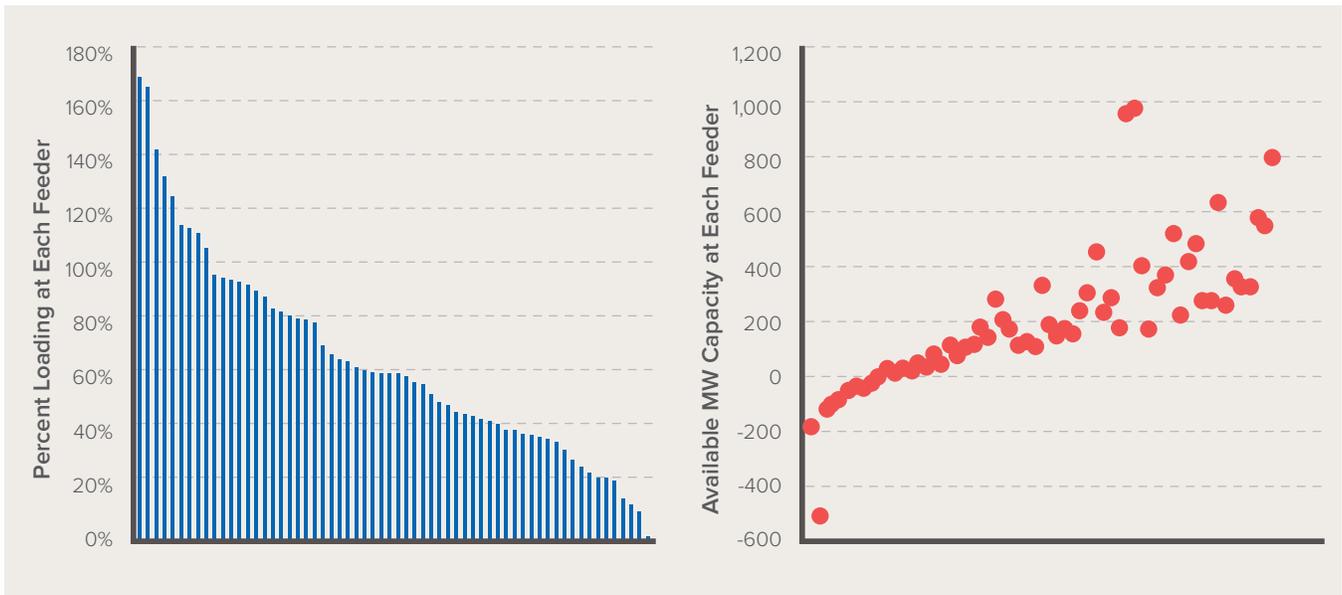


EXHIBIT 10

Percent Loading and Available Capacity (MW) at All Feeders Assigned to Either the Duwamish or Ballard/Interbay MICs. The X-Axis Represents Unique Feeder ID



For long-haul routes (primarily HDTs):

1. Assume that many trucks serving long-haul routes will mega-charge their 300–1,000 kWh batteries along major freight corridors, for a typical 200–500-mile daily route. Tesla has proposed a mega-charger providing 400 miles of range in 30 minutes, roughly a 1.6 MW load per charging event.
2. Identify the location of most freight traffic volumes in Seattle (as proxy for where mega-chargers may be located) and identify distribution grid feeders assigned to these geographies. As shown in Exhibit 11, the greatest freight traffic volumes projected to 2035 will be found in the two MICs and along WA State Route 99 north of downtown Seattle.⁴⁷

Of 24 feeders assigned along WA State Route 99 north of downtown Seattle, eight are at or above 90% loading. For fast charging of long-haul heavy-duty trucks, one truck charging could draw up to 2 MW of power over 30 minutes, so clustering these types of chargers could

have significant impact on City Light’s grid. With even a 10 MW load from five trucks charging simultaneously at a single location, there could be a need to reductor the feeder backbone.

These larger installations have the potential to significantly impact City Light’s system. However, fast charging for long-haul heavy-duty trucks is not expected until the late 2020s at earliest. Exhibit 12 demonstrates that there are some areas of constraint on City Light’s grid, but, overall, there is plenty of available capacity to handle these types of installations (notwithstanding some upgrades such as reductoring laterals or feeder backbones). Therefore, City Light must be proactive in supporting both location and operation of charging to minimize these impacts. This points to a clear impact on City Light’s customer service and the potential need for managers dedicated to fleets of trucks and buses, or a notification process so that City Light can be adequately informed and involved in fleet electrification planning.

EXHIBIT 11

Map of City Light Territory Depicting Regions and Corridors With Significant Freight Volume

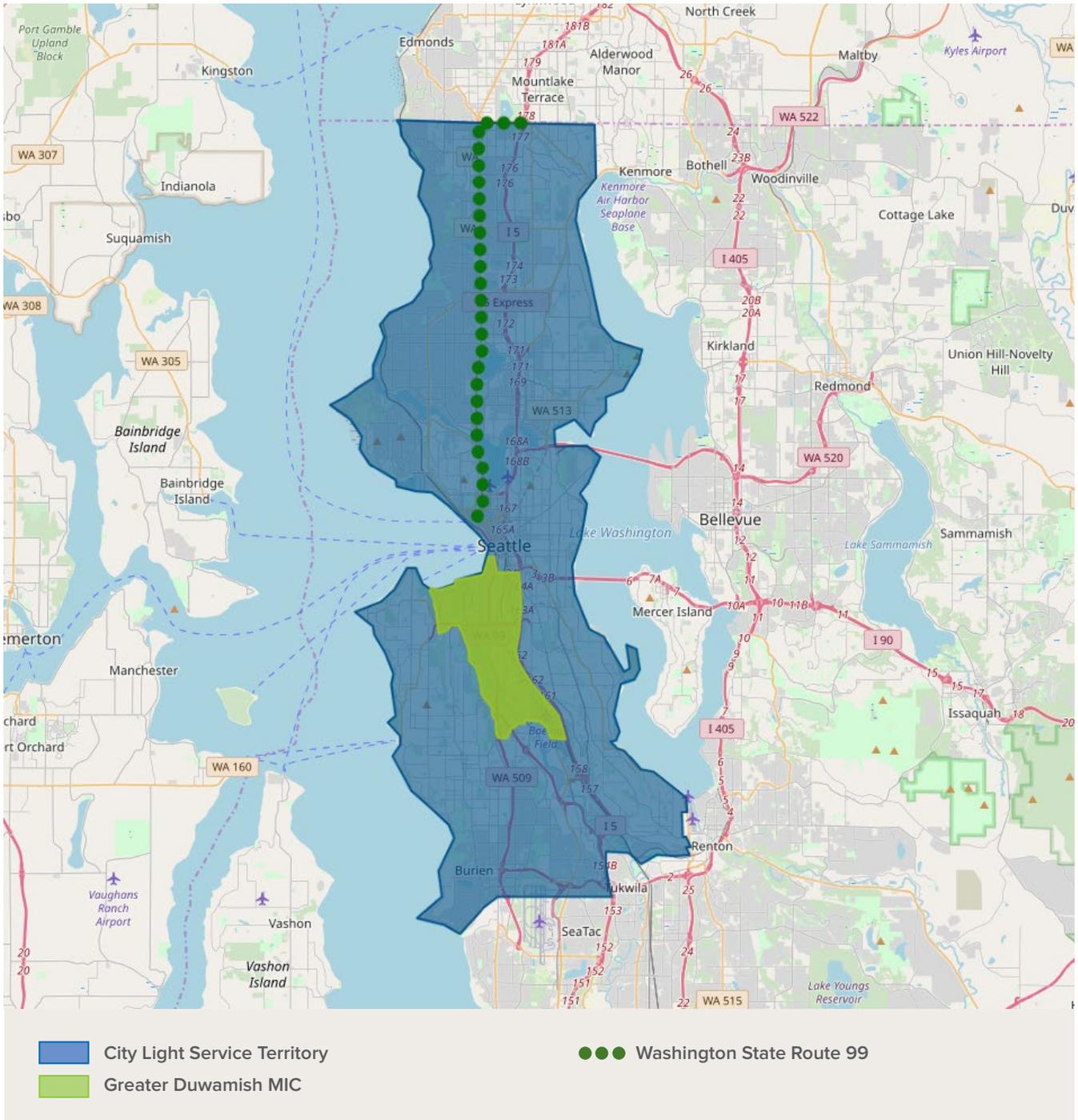
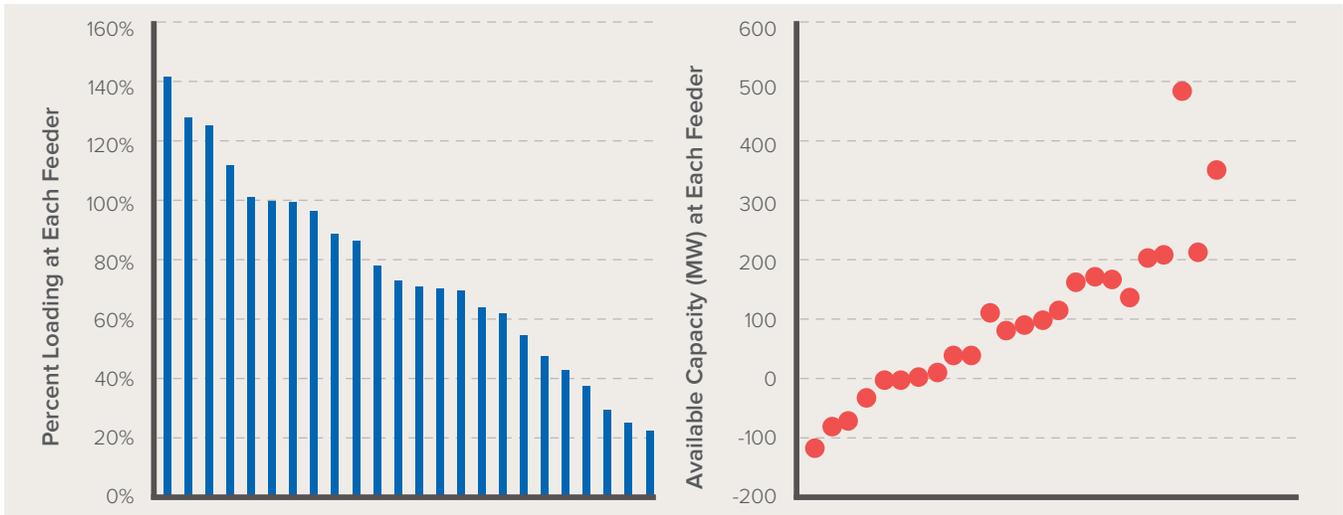


EXHIBIT 12

Percent Loading and Available Capacity (MW) at All Feeders Assigned to WA State Route 99 North of Downtown Seattle, Projected to Have the Greatest Freight Volume in City Light’s Territory by 2035. The X-Axis Represents Unique Feeder ID



IMPACTS OF BUS ELECTRIFICATION

The impacts to City Light from bus electrification are quite similar to those for medium- and heavy-duty trucks detailed above. However, the approach we follow to understand bus electrification impacts is based on Metro goals and anticipated charging behavior, based on its experience with electric buses since 2016. In particular:

1. Assume buses will primarily charge overnight at centralized bus bases. Most buses will travel a daily route of 100–140 miles with a battery size of 300–450 kWh. Overnight bus charging will occur at existing Metro bus bases. Metro will also install “opportunity chargers” for short, on-route charging events located at transit hubs, major transfer points, and the ends of major routes.
2. Identify grid distribution feeders assigned to Metro bus bases, as shown in Exhibit 13.

In Exhibit 14, of the 20 feeders identified that serve Metro bus bases and transit centers, five of the feeders are at or above 90% capacity. Although this appears to show constrained capacity to serve new electric bus load, even a bus base of 250 electric buses charging simultaneously overnight would peak between 10 and 30 MW;^{xii} all but two feeders have this much capacity available. However, any installation of this size will require a system impact study to determine if a dedicated feeder or other upgrades are required. For example, a recently completed impact study for an interim bus base for Metro estimated that upgrade costs (to replace existing overhead conductors and install regulator or capacitor banks) would be approximately \$2.2 million.

^{xii} Assuming 40–120 kW charge rate overnight.

EXHIBIT 13

Map of City Light Service Territory Depicting Bus Base Locations and Opportunity Charging Locations at Transit Centers

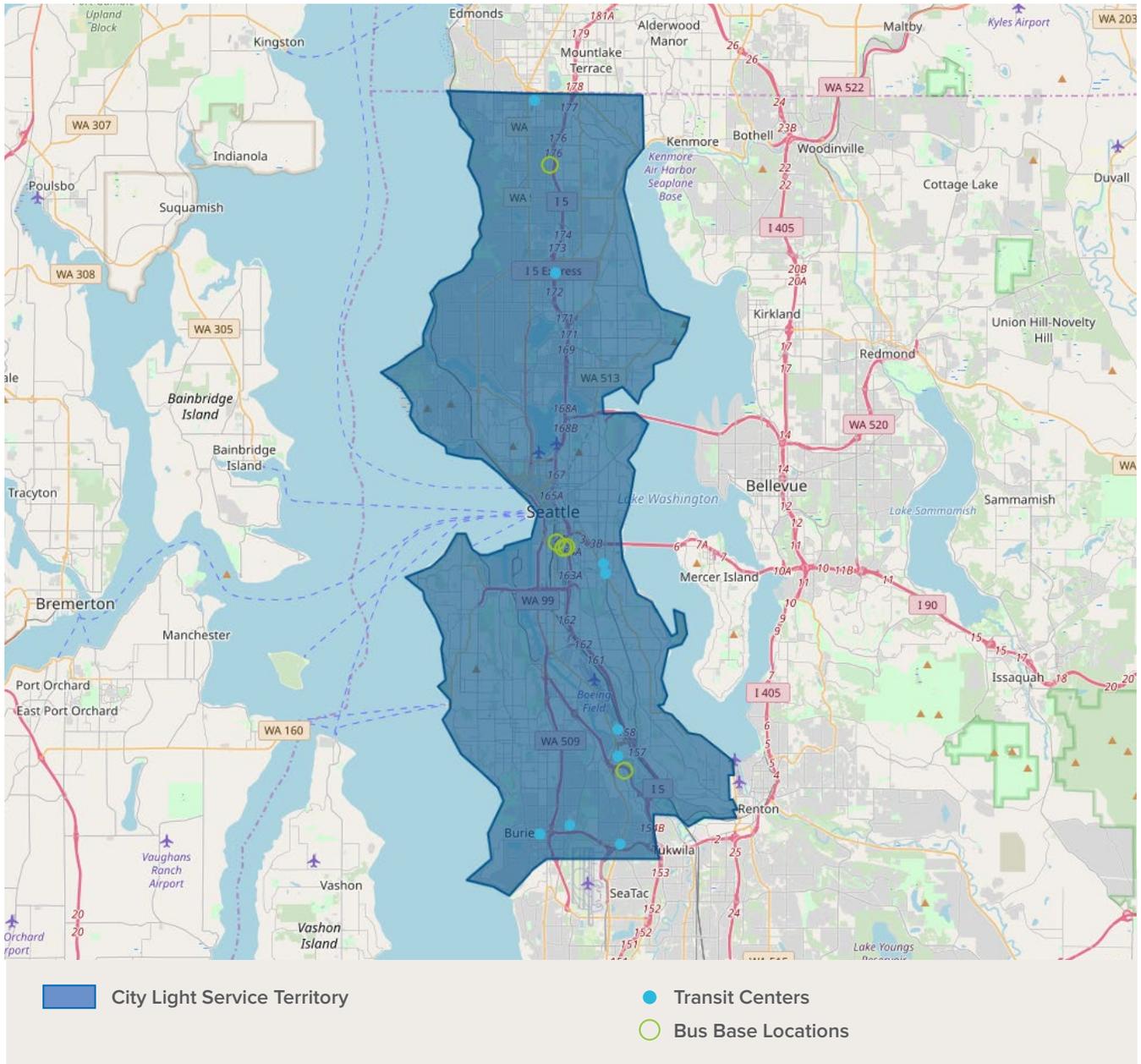
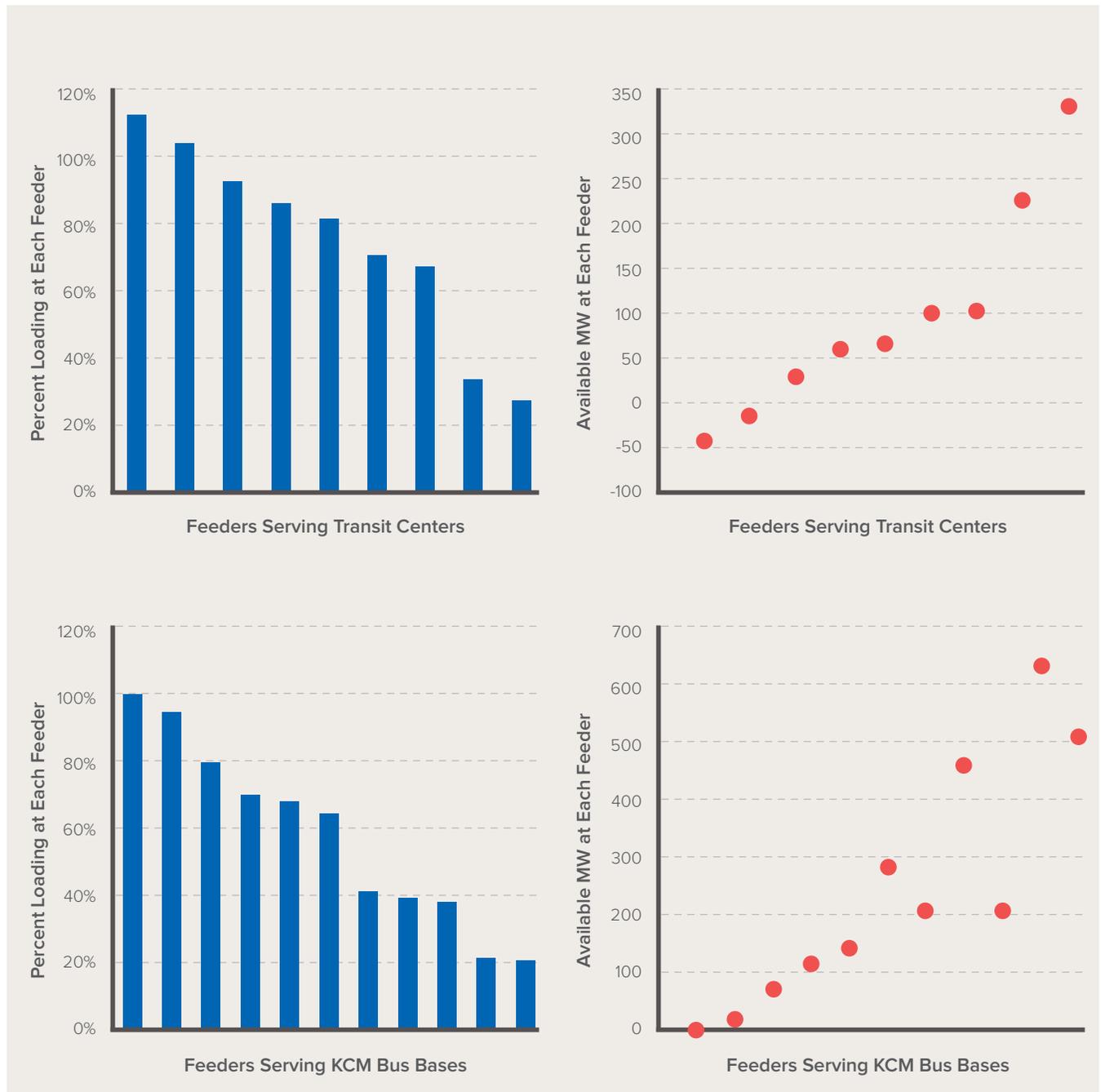


EXHIBIT 14

Feeders Assigned to Metro Bus Bases and Transit Centers and the Percent Loading and Available Capacity on Each. The X-Axis Represents Unique Feeder ID



SEATTLE CITY LIGHT INTERVENTIONS



SEATTLE CITY LIGHT INTERVENTIONS

City Light has many options available to it to accelerate the electric transportation market. Given limited resources and the need to maximize impact, this section identifies interventions that City Light should prioritize.

CRITICAL MARKET INDICATORS

Potential interventions are tightly linked to market evolution. We have identified three critical indicators to inform which forecast (BAU, aggressive, conservative) is aligned with actual adoption. Based on market research and expert interviews, we have identified three key market indicators to watch for as leading signs of accelerating electric transportation adoption.

EXHIBIT 15

Critical Market indicators

INDICATOR	IMPORTANCE	KEY METRIC, TODAY	TIPPING POINT
BATTERY COST	Batteries are 30%–40% of vehicle upfront cost and the primary driver of TCO.	\$176/kWh for the battery pack.	For both cars and trucks, \$150/kWh for the battery pack. ⁴⁸
MODEL AVAILABILITY	28% of light-duty vehicles sold annually are small or midsize cars, 10% are SUVs, and 35% are crossovers. ⁴⁹ Many gasoline car drivers won't purchase an EV unless it suits their needs and lifestyle. For trucks, few commercial models are available today.	50% of electric POV sales from January to July 2018 were for five models available from three manufacturers. ⁵⁰ These are Tesla's Model 3, Model S, and Model X, Chevrolet Bolt, and Nissan Leaf.	One electric SUV and one electric crossover model available from the majority of automakers, priced consistently within their category. ⁵¹ For trucks and buses, look for case studies that validate TCO savings for electric trucks and buses, especially as new models become available.
FUEL PRICE	For POVs, higher gasoline prices may lead to greater sensitivity to fuel economy and increase purchases of more fuel-efficient vehicles. The diesel-electricity price differential directly impacts value proposition for truck and bus fleet operators.	Seattle 2018 gasoline price ranged from \$3.00 to \$3.50. Seattle 2018 diesel price ranged from \$3.00 to \$3.20.	At roughly \$5/gallon gasoline or diesel, individuals and fleet operators begin to more heavily weigh fuel efficiency measures. This can be heavily driven by both market forces and policy.

IMPORTANT MARKET ENABLERS

In addition to the critical indicators, many other changes in the market will be important as enablers of transportation electrification. City Light should monitor these in addition to the critical indicators in order to have a more complete sense of where the market is going.

EXHIBIT 16

Important Market Enablers

MARKET ENABLER	IMPORTANCE	METRIC TO WATCH
ADVERTISING SPEND ON EV MODELS BY AUTOMAKERS	Proxy for competition for sales. ⁵²	Amount spent as a percentage of gasoline-vehicle advertising.
MULTIUNIT HOUSING EV-CHARGING BUSINESS MODELS	In Seattle, 34% of all housing is multiunit apartments, ⁵³ representing an opportunity to vastly expand the POV market.	Percentage of multiunit housing with on-site charging planned, under construction, or available.
PRODUCTION SCALE OF ELECTRIC TRUCKS	Production scale reduces upfront costs.	Percentage of trucks manufactured annually that are all-electric.
AUTONOMOUS VEHICLE PILOT PROGRAMS	Highly utilized driverless vehicles, for example those used for mobility services such as Uber and Lyft, are most cost-effective when electric. Autonomous technology can greatly accelerate the growth of EV miles traveled.	Autonomous vehicle programs that scale beyond pilots.
COSTS FOR EV CHARGING INFRASTRUCTURE, INCLUDING DC FAST CHARGING	Impacts TCO for POV owners where charging is primarily done at home and truck/bus fleets charged at fleet-owned depots.	Cost of infrastructure and installation.
PUBLIC CHARGING AVAILABILITY	Important for POV adoption to reduce range anxiety. Mega-charging may be critical for long-haul trucking applications.	Number of public Level 2 chargers and DCFCs. Announced plans to install mega-chargers on major freight corridors.
POLICY (STATE AND MUNICIPAL)	Policy incentives and mandates can alter the value proposition across markets.	State targets for EVs on the road, tax incentives, low-carbon fuel standard.

INTERVENTIONS

Market trends point to an increasingly electrified transportation future. Even in our most conservative forecast, the number of POVs in Seattle doubles by 2021 and the market share of electric trucks and buses could be even larger given their greater sensitivity to price and policy signals. Building on the work of other utilities grappling with this market transformation,^{xiii} we identify a set of interventions that City Light should pursue to prepare for even the most conservative

forecasts, while positioning City Light to take advantage of more aggressive adoption. These interventions are designed to align to City Light’s core values and positioning in the market:

- A.** Invest in charging infrastructure with emphasis on universal access and expanding coverage
- B.** Develop new rates and improve customer service for the transportation market
- C.** Prepare for heavy-duty electrification

EXHIBIT 17

INVEST IN CHARGING INFRASTRUCTURE WITH EMPHASIS ON UNIVERSAL ACCESS AND EXPANDING COVERAGE

1. Continue to drive the robust development of public charging.



Business Reason:

Electric utility investment is necessary to complement the private market in creating a robust and accessible network of DCFC stations. Consumer desire for fast charging and its currently limited availability is a bottleneck to greater adoption of EVs, a barrier that City Light can directly influence across market segments.

Connection to Values Framework:

Addressing gaps in the EVSE network increases adoption and creates downward rate pressures for all customers.

City Light Actions:

- Based on gap analysis and stakeholder engagement,^{xiv} deploy City Light-owned DCFCs to satisfy underserved or undercapitalized markets where private network operators are less likely to invest.
- Explore make-ready investments in grid infrastructure or equipment incentives to support private DCFC deployment that aligns with City Light’s core values.

^{xiii} Other sources for utility best practices include: https://www.betterenergy.org/wp-content/uploads/2018/04/MTEC_White_Paper_April_2018-1-1.pdf; <https://www.raponline.org/wp-content/uploads/2017/06/RAP-regulatory-considerations-transportation-electrification-2017-may.pdf>; https://www.swenergy.org/data/sites/1/media/documents/publications/documents/How_Leading_Utillities_Are_Embracing_EVs_Feb-2016.pdf; and https://www.theicct.org/sites/default/files/publications/Power-utility-best-practices-EVs_white-paper_14022017_vF.pdf.

^{xiv} Specifically, an EVSE infrastructure gap analysis to identify future DCFC and Level 2 charging needs by matching the anticipated number of on-road vehicles to the number of charging stations needed to meet that load, assuming one or more ratios for Level 2 versus DCFC in future years. Gaps are indicated where there is need for charging infrastructure in City Light territory but private network operators are not planning to build.

EXHIBIT 17 (CONTINUED)

INVEST IN CHARGING INFRASTRUCTURE WITH EMPHASIS ON UNIVERSAL ACCESS AND EXPANDING COVERAGE

2. Support expanded residential and workplace charging with an emphasis on multiunit dwellings and underserved communities.

**Business Reason:**

City Light can expand who can benefit from electric transportation by targeting customers for which cost and feasibility are significant barriers. This is particularly true in multiunit dwellings and for residents without access to low-cost charging solutions where they live or work.

Connection to Values Framework:

Creating benefits to the environment by reducing barriers to EV ownership and expanding the market of potential EV owners. This enables greater access to City Light's clean electricity for transportation applications and reduces emissions, especially in communities with poor air quality.

City Light Actions:

- Provide incentives for residential installations, focusing on multiunit dwellings and considering higher levels of support in target markets.
- Develop creative solutions for customers without dedicated off-street parking.
- Provide incentives and technical expertise for commercial or industrial customers to install workplace chargers.
- Participate in current efforts by City of Seattle to revise building codes and EVSE standards. Potentially provide technical assistance or financing to support compliance with updated codes.

3. Invest in charging infrastructure for high-mileage applications.

**Business Reason:**

Market trends point to rapid change over the next decade in personal mobility with a potential shift away from vehicle ownership. City Light should position itself to accelerate electrification of these new business models as they emerge and encourage scale.

Connection to Values Framework:

Electric mobility services have the potential to provide a lower-cost mobility option for Seattle residents for whom vehicle ownership is prohibitively expensive or transit coverage is poor. More affordable mobility expands access and opportunities for residents of lower-income communities.

City Light Actions:

- Support shared (eventually driverless) mobility electrification. This could include charging infrastructure installed at designated Uber/Lyft pick-up and drop-off points or new rates specifically designed for shared mobility.
- Support charging for carsharing or other equity-focused programs, such as EV community carsharing. For example, rebates or incentives for charging infrastructure installation located at carshare parking spaces.

EXHIBIT 18

DEVELOP NEW RATES AND IMPROVE CUSTOMER SERVICE FOR THE TRANSPORTATION MARKET

1. Pursue rates that meet the needs of electric transportation customers.



Business Reason:

To accelerate transportation electrification, City Light should strive to make the cost of charging highly competitive with gasoline. With significant EV adoption (especially for trucks and buses), unmanaged charging poses risks to City Light’s grid in terms of capacity and stability during peak hours—risks that City Light can directly mitigate with rate design.

Connection to Values Framework:

Creates benefits to the environment by supporting increased adoption of EVs (and associated reductions in emissions) by improving total cost of ownership for EVs. Creates grid benefits by mitigating impacts from peak-hour charging, minimizing need for upgrades. Better use of grid assets can lower utility and ratepayer costs.

City Light Actions:

- Explore and pilot time-of-use or other creative transportation-specific rate designs across all EV market segments.
- Understand the impact of demand charges on large customers (e.g., transit providers) and DCFC operators and explore options for relief to ensure fast charging network profitability.

2. Improve core City Light business processes for customers investing in charging.



Business Reason:

City Light needs to ensure a seamless customer experience for easy access to electricity as fuel. This builds on its existing expertise as a trusted advisor and leverages the utility’s investments in customer service systems.

Connection to Values Framework:

For EV owners, the utility is their fuel provider. Interactions with the utility can make or break the user experience. Positive customer experience leads to positive word of mouth which can boost EV adoption and allow earlier realization of environmental benefits.

City Light Actions:

- Create a streamlined and transparent interconnection and service upgrade process for new and existing customers to install charging infrastructure.
- Consider new queues for EV customers, in addition to City Light’s existing queues for residential, commercial, and industrial customers requesting service.
- Develop digital content that helps customers make informed decisions about their investment in electric transportation.

EXHIBIT 18 (CONTINUED)

DEVELOP NEW RATES AND IMPROVE CUSTOMER SERVICE FOR THE TRANSPORTATION MARKET

3. Investigate the viability of managed charging.

**Business Reason:**

While City Light's system can largely accommodate the increase in load from considerable adoption of EVs, large spot loads could pose a challenge. It is necessary to understand how to manage this challenge at scale.

Connection to Values Framework:

Ensures equity by allowing City Light to experiment with optimal means to mitigate grid and ratepayer impacts. In particular, to ensure EV owners pay their fair share of costs and are not subsidized by non-EV owning ratepayers.

City Light Actions:

- In collaboration with industry partners, establish standards for residential smart charging.
- Explore demand-response programs. Especially if City Light anticipates increased solar or wind generation, consider use of the EV load as a distributed energy resource to improve grid flexibility and determine how to compensate EV owners for this value.

EXHIBIT 19

PREPARE FOR HEAVY-DUTY ELECTRIFICATION

1. Support the aggressive electrification commitments of partner agencies and large customers.

**Business Reason:**

While these customers have set bold targets to electrify, many aspects of implementing nascent technology at scale remain a challenge. City Light is well positioned to offer technical assistance and a broad range of support for charging infrastructure.

Connection to Values Framework:

Electrification of institution customers leads to substantial emissions reductions, especially to historically impacted neighborhoods. Transit, in particular, is an ideal way to ensure all customers benefit from electric transportation.

City Light Actions:

- Partner directly with King County Metro, the Port of Seattle, and Washington State Ferries to enable their transition to electricity.
- Develop a deep expertise of customer needs and respond with a broad suite of solutions, including responsive rates, incentives, grid infrastructure, technology demonstrations, and siting analysis.
- Proactively plan for these large loads and minimize costs and potential constraints on City Light's grid.

EXHIBIT 19 (CONTINUED)
PREPARE FOR HEAVY-DUTY ELECTRIFICATION

2. Anticipate how access to charging will influence urban freight and fleet markets.



Business Reason:

As an emerging market segment, there is a great deal of uncertainty around the scale and speed of electrification. City Light can lead by exploring novel solutions that address the barriers to charging in this market.

Connection to Values Framework:

Diesel trucks have outsized emissions relative to the percentage of vehicles they represent on the road. Electric trucks can immediately improve air quality and benefit the environment, especially in industrial zones and residential communities near them.

City Light Actions:

- Monitor tipping point metrics, particularly model availability for delivery and truck applications, and engage with local fleets.
- Similar to the approach for transit agencies, devote resources to better understand the use cases for charging in the freight/heavy-duty industry.
- Get creative with packaged charging solutions, including financing, make-ready investments, smart charging, and incentives.

ENDNOTES



INTERSTATE 5 SOUTH
Tacoma
Portland
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To INTERSTATE 90 EAST
Bellevue
Spokane
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ENDNOTES

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