



Seattle City Light

## Transportation Electrification

Strategic Investment Plan



## TABLE OF CONTENTS

<b>Executive Summary</b>	<b>1</b>
<b>Context</b>	<b>2</b>
History	3
City Light's Road to Transportation Electrification	3
Citywide Alignment	4
<b>Inputs</b>	<b>6</b>
Technical and Feasibility Analyses	6
Leading with Values	7
<b>Strategic Investments</b>	<b>11</b>
Program Offerings	11
Electrification Enablement	17
Financial Impacts	18
<b>Next Steps</b>	<b>19</b>
Reporting	19
<b>Conclusion</b>	<b>21</b>
<b>List of Figures</b>	
Figure 1. Citywide coordination of Seattle departments	4
Figure 2. Seattle City Light customer service area map	5
Figure 3. Recommended offerings	6
Figure 4. City Light transportation electrification values framework	7
Figure 5. Electrification enablement supports the system needed for transportation electrification	17
Figure 6. Milestones for City Light transportation electrification investments	20
<b>List of Tables</b>	
Table 1. Equity outcomes to guide City Light's strategic investment in transportation electrification	9
Table 2. Transportation electrification investment priorities, potential program offerings, and equity outcomes	13-14



## 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.



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## 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.<sup>1</sup>
- 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



<sup>1</sup>Seattle 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,<sup>2</sup> 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



<sup>2</sup>Hays 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)**

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



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



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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

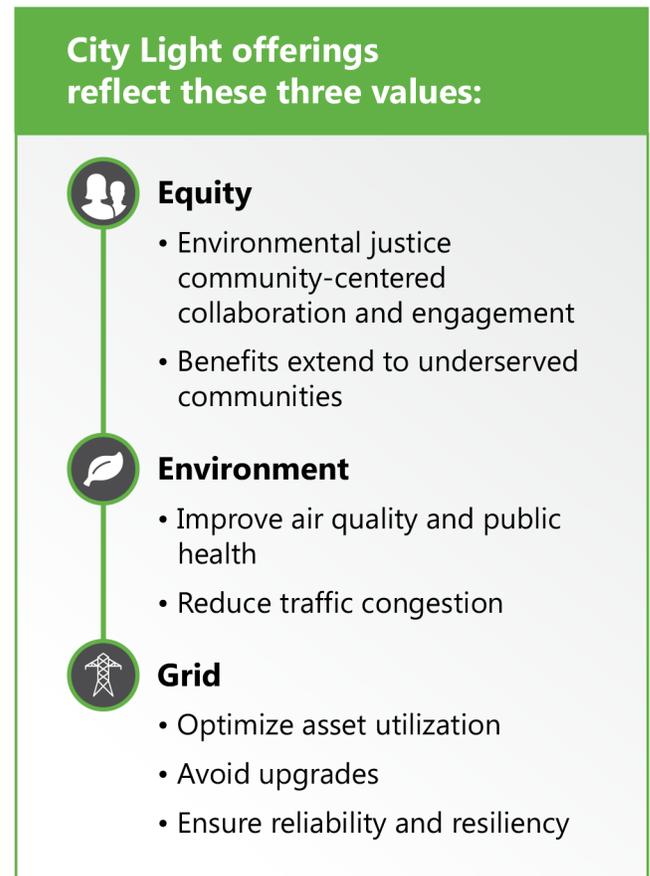
City Light strives to incorporate and elevate the voices of environmental justice communities who have traditionally been excluded in transportation electrification planning and development. By centering people and communities experiencing environmental inequities, community outreach and engagement will 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.<sup>3</sup>
- 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.<sup>4</sup> 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.<sup>5,6</sup> 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.<sup>7,8</sup>

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<sup>3</sup>Environmental Justice Committee. "EJC Feedback Summary on Drive Clean Seattle." July 2017.

<sup>4</sup>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](https://www.kingcounty.gov/~media/elected/executive/equity-social-justice/2015/The_Determinants_of_Equity_Report.ashx)

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

<sup>6</sup>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](https://theicct.org/sites/default/files/publications/EV_Ridehailing_Commitment_20190220.pdf)

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

<sup>8</sup>Lyft. 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).<sup>9,10</sup> 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.

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

<sup>10</sup>City of Seattle. "Duwamish Valley Action Plan" June 2018. [http://greenspace.seattle.gov/wp-content/uploads/2018/06/DuwamishValleyActionPlan\\_June2018.pdf](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,<sup>11</sup> 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.<sup>12</sup>

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.

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<sup>11</sup>Xiao 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>

<sup>12</sup>Public 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.

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## 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><b>All</b></p>	<p>Customer and stakeholder outreach and awareness</p>	<ul style="list-style-type: none"> <li>• Information, education, events and resources on the benefits of electric vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• All customers have increased access to City Light’s transportation electrification educational materials and resources</li> <li>• Environmental justice community members see themselves reflected in communications</li> </ul>
 <p><b>Public Transit</b> (Buses, Ferries, Trains, Light Rail)</p>	<p>Electrify buses, ferries and other public transit</p>	<ul style="list-style-type: none"> <li>• 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</li> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• Transit riders and those who do not own or drive a personal vehicle participate in and benefit from City Light’s transportation electrification offerings</li> </ul>
 <p><b>Commercial, Government &amp; Non-Profit Fleets</b></p>	<p>Electrify commercial, local government and non-profit fleets</p>	<ul style="list-style-type: none"> <li>• Financial incentives for electric charging infrastructure for companies that transport people, goods and services</li> <li>• Fee-based City Light-owned charging infrastructure for public and private fleet vehicles (such as school buses and solid waste vehicles)</li> <li>• Incentives and turn-key charging infrastructure for electrification of non-profit fleet vehicles</li> </ul>	<ul style="list-style-type: none"> <li>• Communities with higher exposure to air pollution benefit from reduced tailpipe emissions that impact local air quality and public health</li> </ul>

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

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

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

## PARTNERSHIPS AND PILOTS

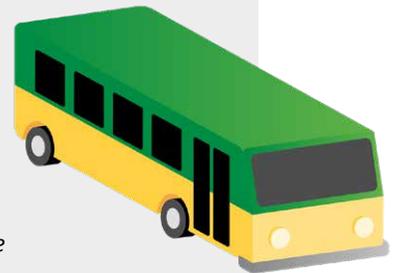
City Light has already established partnerships with other agencies, communities and private companies to implement key projects and innovative pilots in our priority investment areas. City Light will build upon these existing commitments to develop future offerings.

**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.<sup>13</sup> 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.

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## FUTURE OFFERINGS

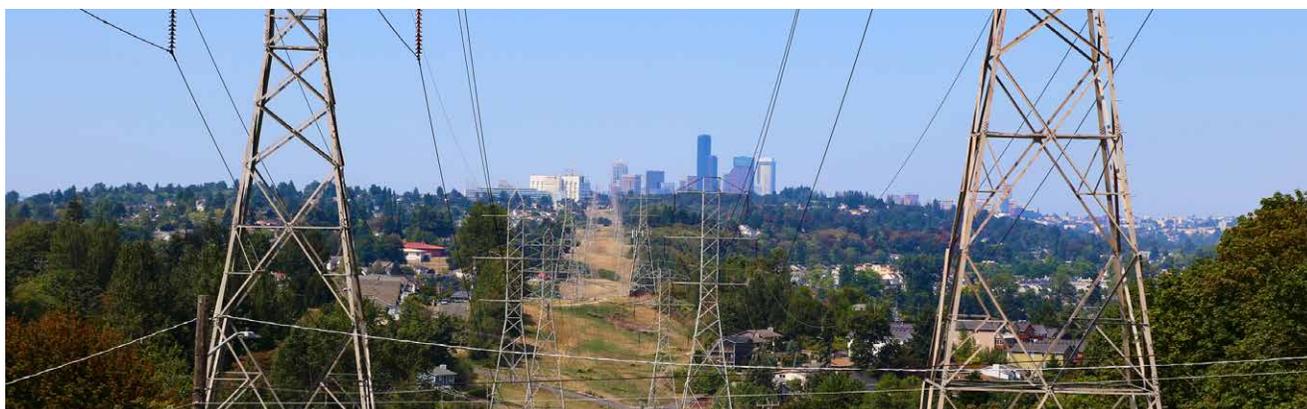
The partnerships and pilots outlined above will yield both substantial learnings and quantifiable results. However, these activities alone will not be enough to meet existing policy goals or create the lasting structural fixes that will ensure equitable and reliable access to electric transportation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



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<sup>13</sup>Horrox, 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](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.

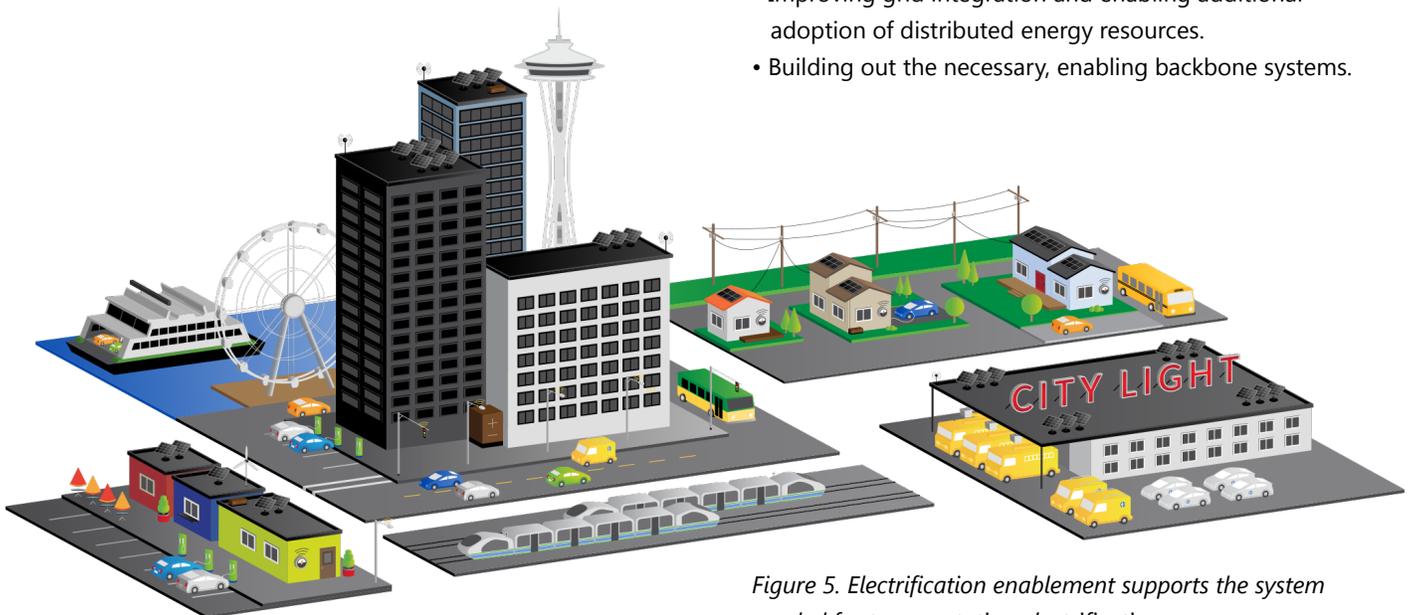


Figure 5. Electrification enablement supports the system needed for transportation electrification

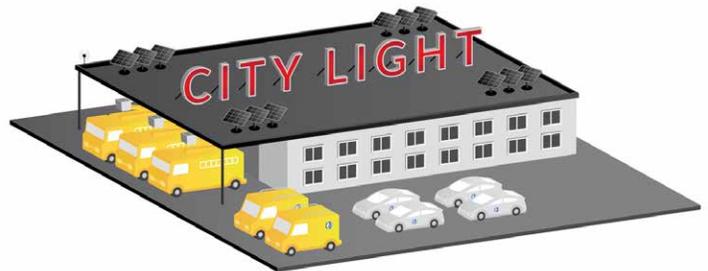
City Light will achieve these objectives by making strategic, phased investments in key areas, such as customer experience and data analytics, transmission and distribution modernization and automation, radio and cellular infrastructure and cybersecurity.

***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.



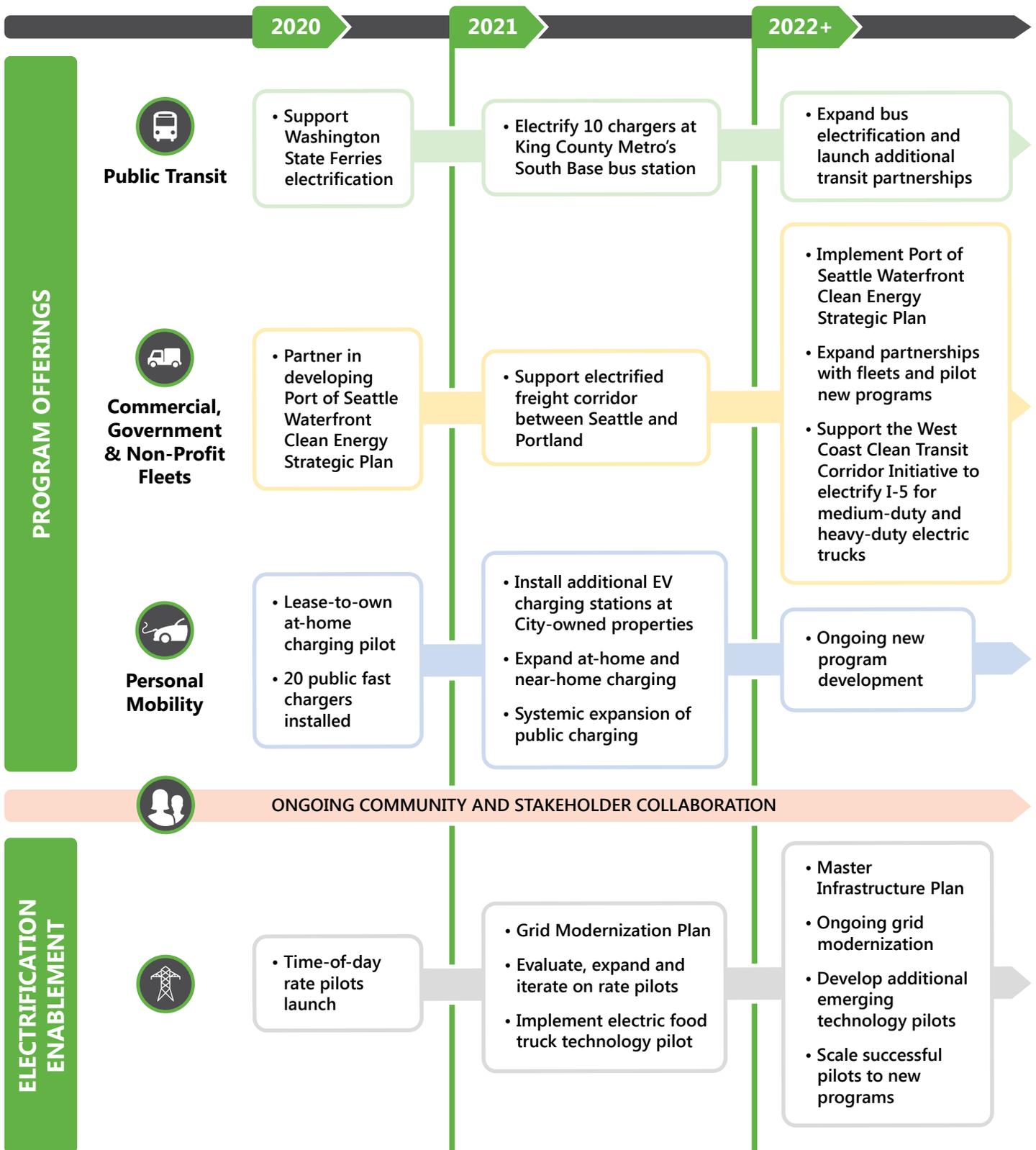


Figure 6. Milestones for City Light transportation electrification investments



# 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

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