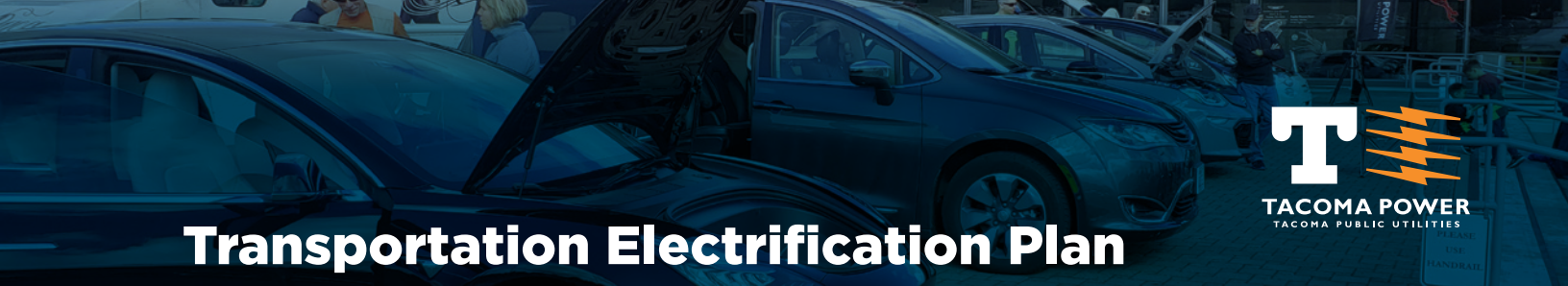


TACOMA POWER

Transportation Electrification Plan and Strategic Guidelines



TACOMA POWER
TACOMA PUBLIC UTILITIES



Transportation Electrification Plan

I. Purpose

This Transportation Electrification Plan (“Plan”) is designed to ensure that Tacoma Power is positioned to effectively promote and achieve transportation electrification for the benefit its customers.

Replacing fossil fuels with clean, renewable, and low-cost hydropower increases revenue and helps the utility keep rates low for our customers while helping the environment. Transportation can provide opportunities for us to optimize use of our power system infrastructure, improve electric load management, and expand retail power sales through new service offerings while providing environmental benefits.

Technology, markets, and opportunities associated with electrification of transportation are emerging, cutting edge, and rapidly evolving. A plan that is static and too prescriptive will be unable to provide the flexibility needed to take advantage of this rapidly evolving field. This Plan provides governance and guidance that allows our staff, with the input of the general public, the flexibility and administrative space to develop programs, activities, and initiatives designed to promote, encourage, and accomplish the increased electrification of transportation within our service territory.

The governance and guidance of this Plan is designed to ensure programs, activities and initiatives are effective, efficient, compliant, cost effective, and appropriate to statutory and Tacoma Public Utility Board (“Board”) authorizations.

II. 2030 Goal

The Plan establishes a goal of 10 average megawatts (87,600 MWh annually) of new electric transportation load in 10 years (2030), which is about 10 times our current (2020) estimated electric vehicle load.

III. The Plan

The Board delegates implementation of the Plan to the Superintendent of Tacoma Power. The Superintendent will be assisted by the cross-functional Energy Research and Development Steering Team, the Power Management Section Manager, and by the Transportation Electrification Strategic Guidelines (“Strategic Guidelines”), which are a part of the Plan. The Board will retain oversight of the Plan through its oversight of amendments to the Strategic Guidelines, its review of the annual Transportation Electrification Action Report, and ultimately its biennial decision on the amount to approve for budget of the Transportation Electrification Plan. Nothing in this Plan or the proposed Strategic Guidelines shall alter the requirement that budget proposals shall proceed through regular Tacoma Power budgeting processes and guidelines that are set forward by the Superintendent and management team.

The Board has reviewed the proposed Plan, including the proposed Strategic Guidelines, and finds that our outreach and investment in the electrification of transportation infrastructure, if done consistent with the Plan, will not increase net costs to customers in excess of one-quarter of one percent should the budget request reach that limit on approved proposals by the Superintendent. Budget development shall adhere to the City of Tacoma purchasing guidelines and budget authority approvals the same as all utility requests.

Transportation Electrification Plan

In developing the Plan, we considered the five categories identified in Senate Bill 1512:

1. *The applicability of multiple options for electrification of transportation across all customer classes.*
2. *The impact of electrification on the utility's load, and whether demand response or other load management opportunities, including direct load control and dynamic pricing, are operationally appropriate.*
3. *System reliability and distribution system efficiencies.*
4. *Interoperability concerns, including the interoperability of hardware and software systems in the electrification of transportation proposals.*
5. *The overall customer experience.*

The Plan will be implemented by the Superintendent with assistance from an Energy Research and Development Steering Team ("Team") overseen by the Superintendent.

A. The Energy Research and Development Steering Team

The purpose of the Energy Research and Development Steering Team is to assist the Superintendent by identifying and providing guidance and resources for partnered energy projects that will benefit Tacoma Power, our customers, and, to the extent appropriate, the larger community. The Superintendent will approve the makeup of the cross-functional Team and the guidelines for its operation.

As part of its work, the Team will identify, oversee the development of, and recommend plans, programs, activities, budget proposals and initiatives that (1) promote and achieve transportation electrification (2) work collectively to achieve the Goal(s) stated above, and (3) do not risk unnecessary or imprudent use of customer funds.

The Team will review all proposed plans, programs, activities, budget requests, and initiatives associated with transportation electrification. Upon recommendation by the Team, any such plans, programs, activities, and/or initiatives will be provided to the Superintendent for review and approval. Any recommendations that exceed the budget authority of the Superintendent will require Director review and approval before proceeding to the Board, should that recommendation reach that City of Tacoma budgetary threshold. Expenditures over \$500,000 must have Board approval. Contracts and related expenditures must be procured and approved pursuant to the City of Tacoma procurement policies and the municipal code.

B. Strategic Vision and Guiding Principles

The Team and the Superintendent will be guided in their work, considerations, and approvals associated with transportation electrification by the strategic vision and guiding principles set forth in the Strategic Guidelines.

The Strategic Guidelines will help ensure that programs align with long term strategic directives of the Board now and in the future.

The Strategic Guidelines are attached to this Plan. The Superintendent is delegated the authority to update the Strategic Guidelines. The Board will be apprised of any material changes to the Strategic Guidelines as a part of the annual Report as detailed below.

Transportation Electrification Plan

C. Public Input and Outreach

The Team and Superintendent will ensure that programs, activities, and initiatives benefit from adequate and representative public input or outreach by providing for public outreach or market

research as set forth in the Strategic Guidelines. The annual Report to the Board will include a description of the public input process and/or research findings applied during the previous year.

D. Budget

Expenditures will be consistent with the City of Tacoma Purchasing Policies and Tacoma Power budget development process outlined by the Strategic Guidelines.

The biennial budget may include a line item for electrification of transportation depending on the outcome of the Tacoma Power budget request and Superintendent approval process. The manager

of Rates Planning and Analysis will certify that the proposed budget amount for electrification of transportation supports the Board's finding that the said amount does not exceed or increase net costs to customers in excess of one-quarter of one percent. We anticipate that the budget request will differ annually depending upon project requests or proposed investments.

E. Annual Report

Descriptions of specific programs, research, outreach, and other activities that the utility undertakes and plans to undertake will be detailed in an annual report titled, "Transportation Electrification Action Report" ("Action Report") as described in the Strategic Guidelines.

Further, any material changes to the Strategic Guidelines approved by the Superintendent will be reported to the Board as a part of the Action Report.



Transportation Electrification Strategic Guidelines

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Purpose of This Document



Transportation Electrification Strategic Guidelines serve several purposes:

Strategic Vision

These Strategic Guidelines will help position Tacoma Power to achieve benefits for our customers and the community.

Principles

These Strategic Guidelines provide the principles we will adhere to in our transportation electrification activities. The Energy Research and Development Steering Team (“Team”), under the direction of the Superintendent, will ensure we design and execute programs that adhere to the Guiding Principles outlined in this document.

Clarity

These Strategic Guidelines outline the methodology we will use in the development and adoption of transportation electrification programs, activities, and initiatives.

Consistency

These Strategic Guidelines help new stakeholders understand ongoing actions and decisions, and reduce the instinct to start fresh during staff turnover or change.

This document aims to align with the long-term strategic directives of the Board now and in the future. The Board may, at its option, provide new guidance and direct the utility to update the Strategic Guidelines at any time.

This document doesn’t contain descriptions of specific programs, research, and activities that the utility intends to undertake. We share those details in the Action Report.

The Action Report is a document produced and provided to the Board annually to apprise them of progress from the previous year and inform them of future research and programs. We will provide our first annual update to the Action Report in 2021.

Public Input

We value input from our customers. In consultation with the Board, we conducted a public input process that included meetings with key stakeholders and an opportunity for the public to provide online comments about the draft Plan.



The Value of Transportation Electrification

Transportation electrification benefits EV owners, utility customers, our communities, and the environment. We can help achieve these benefits by actively engaging in promoting transportation electrification.

Consumers benefit from a lower total cost of ownership through reduced fuel expense and lower vehicle maintenance costs. The State of Washington offers tax incentives to electric car buyers. By helping our customers save money on their transportation costs, we can help promote customer and community value.

Customers of Tacoma Power can benefit from transportation electrification through lower retail rates. As the number of electric vehicles increases, electricity sales increase, and the contributions of new retail revenue to existing fixed costs effectively reduces cost pressure to customers¹. Our utility has enough surplus generation and infrastructure capacity to serve the additional load that is likely to come from increased electrified transportation². Instances may occur where distribution upgrades may be necessary to accommodate some electrification projects, but overall, our system is ready for the challenge.

Communities and the environment are better off with electrified transportation. Displacing fossil fuels with clean, renewable hydropower significantly reduces harmful emissions into the air that cause public health issues and contribute to global climate change³. Electric vehicles are much quieter than conventional vehicles. Switching to electric vehicles can reduce overall noise pollution. Runoff of oil from roadways is one of the most significant contributors to contamination of water in Puget Sound⁴, affecting marine flora and fauna. The electricity we provide is a locally sourced fuel that does not contribute to global security concerns or encourage global conflict.

Quantifying the value of transportation electrification

In 2016, Tacoma Power and several other Northwest power utilities contracted with Energy and Environmental Economics Consulting (E3, Inc.) to identify and quantify the benefits and costs associated with transportation electrification.

The firm studied several forms of electrified transportation, including light-duty passenger vehicles, delivery trucks, transit buses, and industrial forklifts. The firm calculated the potential direct economic costs and benefits of transportation electrification from both a regional perspective and from a utility ratepayer perspective. The firm didn't include indirect costs and benefits in the study, such as human health improvements from particulate matter reduction,

energy security, or macroeconomic changes, nor the effects on certain types of employment.

E3 based their analysis on several critical determining factors, including electric vehicle adoption rates, wholesale electric prices, fuel prices, generation capacity prices, distribution system costs, and electric vehicle and charger costs. Many of these factors evolve quickly, and less predictably, therefore the study looked at high and low ranges of each of these factors to see how each one could affect the overall direct costs and benefits. Thus, the study results are illustrative and not necessarily predictive. This study is an important and meaningful first step of an ongoing learning process to inform utility preparation for transportation electrification.

¹ Assuming the current trend of a positive difference between retail revenue and wholesale revenue persists.

² E3 Study

³ Emissions from transportation are the single largest source of greenhouse gases in the State of Washington (Ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/Reducing-greenhouse-gases).

⁴ Ecology.wa.gov/Water-Shorelines/Puget-Sound/Issues-problems/Toxic-chemicals

Themes of the E3 Study

Utility Costs and Benefits

Utility benefits of electrifying transportation were positive in nearly all economic cases evaluated, indicating utilities would likely see a total benefit from increased retail sales net of the sum of projected costs. For customer-owned utilities like Tacoma Power, the total net benefit from increased retail sales for electric vehicles applies to all costs borne by all customers. The adoption of electric vehicles by some can provide financial benefits to everyone.

The study also noted that the estimated benefits to individual customers and society were more significant than the financial benefit to the utilities. Reduced fuel costs and maintenance savings benefit drivers. At the same time, utility-specific results depend on the assumed value of generation capacity, wholesale energy prices, utility resource mix, rate structure, and expected retail loads. Therefore, a strong case exists for society, in general, to invest in the electrification of transportation through federal and state grants and other incentives to increase adoption. As a trusted advisor, utilities have a role in providing reliable and impartial information to help customers understand the technology and see the benefits of transportation electrification.

Utility System Impacts

The energy delivery systems of the participating utilities can generally accommodate near-term forecasts of incremental load likely to come from transportation electrification. With increasing adoption, distribution system improvements may be necessary at specific locations. The study also determined that it is possible to manage capacity upgrades with programs that effectively delay charging away from peak demand periods into periods where system demand is lower.

Regional Costs and Benefits

There are likely to be significant benefits for customers, utility ratepayers, and the environment from transportation electrification. Utility impacts were generally positive, but the degree varied depending on each utility's specific circumstance. As such, each utility should define its role for transportation electrification appropriate to its service territory and customer base.

Environmental Benefits

The study looked at a range of future vehicle and utility emission rates to understand the possible environmental benefits and attempted to put the carbon costs into a financial value. Electrifying transportation in the Pacific Northwest region will yield a significant overall net reduction in CO₂ emissions due to the relatively clean nature of power supply.

There are many other environmental benefits from electric vehicle adoption, aside from improved air quality, improved public health, reduced water, and noise pollution. This study only assessed the monetized value of carbon emissions. The impact of more localized emissions, including NO_x, SO_x, and particulate matter, weren't recognized as costs. Still, we should know them as significant societal outcomes that improve the health of the communities, often located near transportation corridors.

The most significant effects of transportation emissions disproportionately fall to communities that have the least resources to deal with the issue, and these effects often compound with other challenges. From an environmental justice standpoint, broad electrification of transportation is likely to provide tremendous benefit to disadvantaged communities, usually located along major transportation corridors.

⁵ Most notably the difference between retail and wholesale revenues and the assumed value of flexible generating capacity determines incremental utility value.

⁶ All utilities assumed the global Social Cost of Carbon (Interagency Working Group, 3% discount rate assumed).

Senate Bill 1512 – Authorizations and Limitations

SB 1512⁷ provides that customer-owned utilities can create their own Transportation Electrification Plan and, with the adoption by their governing body, promote transportation electrification through programs, advertising, and direct incentives. The language states:

“The Legislature finds that legislative clarity is important for utilities to offer programs and services, including incentives, in the electrification of transportation for their customers...The governing authority of an electric utility formed under this chapter may adopt an electrification of transportation plan that, at a minimum, establishes a finding that utility outreach and investment in the electrification of transportation infrastructure does not increase net costs to ratepayers in excess of one-quarter of one percent.” (RCW 35.92.450)

SB 1512 was a compromise of perspectives that allows utilities to promote electric vehicle adoption but seeks to uphold traditional utility principles that protect customers from program-related spending that could lead to significant rate increases. The restriction on use of utility funds in SB 1512 is consistent with other state laws intended to protect the public from the misuse of public funds⁸.

We intend to use a Ratepayer Impact Measurement (RIM) test to ensure that program spending adheres with state laws governing the use of utility funds⁹. This test assesses whether a program is a useful utility investment. It divides the net present value of lifetime utility benefits, including new retail revenue, by the net present value of the program cost, including incentives, marketing, staff labor, and wholesale electricity costs.

The following describes this test:

NPV [\sum utility benefits] / NPV [\sum utility costs] > 1

We express the RIM as a benefit-to-cost ratio, known as the RIM B/C ratio. Products or programs with a RIM B/C ratio greater than one are deemed “cost-effective” and considered to have no direct rate impact to customers¹. We intend to apply a RIM test to each project or program individually and not to our broad portfolio of transportation electrification initiatives. The test is consistent with the methodology we use to evaluate our energy efficiency programs, provides an objective assessment of cost-effectiveness, and reduces opportunities for program cross-subsidization. The utility may substitute the RIM test for another future test that adequately protects against cross-subsidization and otherwise maintains compliance with applicable law.



⁷ Codified at RCW 35.92.450.

⁸ See Washington State Constitution VIII Section 7. There is an exception for programs providing assistance for the “necessary support of the poor and infirm.” Further, there is an exception to the gifts of public funds prohibitions in the Washington state constitution for energy conservation programs, which does not apply to transportation electrification.

⁹ Early versions of SB 1512 proposed that utilities identify an industry-standard test that will ensure compliance with gift-of-public-funds prohibitions, but this language was left out of the final bill as passed.

¹⁰ In an emerging market like electrified transport where technology is still developing and competition is fierce, the utility is required to make predictions about future electric vehicle adoption and program outcomes. For the purposes of calculating the Ratepayer Impact Measure to decide on a programs adherence to gift of public funds prohibitions, the RIM B/C ratio calculates “deemed” or estimated benefits and costs using the best data and most reasonable estimates available. Actual results may vary from these estimated benefits and costs and should not be used to retroactively charge the utility for acting beyond its authority. It is advisable that utility staff document and keep all program assumptions in the event that future courts may need to be convinced that the utility utilized prudent assumptions and estimation techniques in program design to meet a “reasonable” test.

“Increase in Net Costs to Ratepayers” – The Cost Cap Constraint

SB 1512 requires that spending on transportation electrification “does not increase net costs to ratepayers in excess of one-quarter of one percent” but does not clarify how revenues and expenses related to transportation electrification should be treated.

In addition to the Budget guidelines we outline in the Plan and as otherwise established by practice and procedure, we will adhere to the following guidelines to ensure we comply with the SB 1512 cost cap:

- We will apply the cost cap to the portfolio of individual projects and programs plus any spending on general expenses explicitly used to support transportation electrification programs. In this way, Tacoma Power seeks to be consistent with other types of customer programs, namely energy efficiency programs.
- General expenses that tangentially deal with transportation electrification won’t count against the cost cap.
- One-time general expenses that deal with transportation electrification but are of de minimus value (less than \$1,000) also won’t count against the cost cap.
- We will measure an “increase (in) net costs to ratepayers” to determine whether our spending on transportation of electrification causes an explicit rate increase, which traditionally happens once per biennium, except under specific emergencies when a surcharge is required to fund unforeseen operational expenses.
- Utility rate adjustments occur once per biennium based on the biennial projected revenue requirement. In Tacoma Power’s case, the retail revenue requirement is the retail revenue the utility must collect to meet its policymaker-approved financial targets given projected expenses and non-retail revenue.
- We do not include an explicit projection of increased retail sales from transportation electrification programs in our calculation of projected revenues. To comply with the cost cap, we will include the present value of projected retail sales in the calculation of net benefit for transportation electrification program spending.
 - » For example: If the 2020-2021 biennial projected retail revenue requirement was \$930 million, the maximum allowable budgeted expenditure (net of projected additional retail revenue from programs) on transportation electrification projects equals \$2.32 million.
- SB 1512 refers to “net costs,” meaning that the reasonably expected revenues from transportation electrification must net against program costs. Grant funding we secure and apply to program costs will also reduce total “net costs.”
- As with most technology or market transformations, upfront capital costs are likely to be significant barriers to investment, even if the long-term financial benefits are positive and compelling. We will conduct a RIM test that is greater than 1.0 on a project as a way to provide a simple proof that a specific program does not increase rates.



Senate Bill 1512 – Authorizations and Limitations

Five Categories for Consideration Under Seanate Bill 1512

SB 1512 identifies five categories that a governing board may (at their discretion) consider in a transportation electrification plan. We will update our annual Action Report to consider these five issues for Board review.

The five sections are included below with responses appropriate for current conditions:

1. The applicability of multiple options for electrification of transportation across all customer classes

The Action Report describes categories of projects and programs that the utility will consider to promote the adoption of electrified transportation that serves multiple customer classes. It's essential to the utility and its Board to uphold values of equity and inclusion and to find opportunities that effectively increase electrification for the benefit of all communities, classes, and categories of customers.

2. The impact of electrification on the utility's load, and whether demand response or other load management opportunities, including direct load control and dynamic pricing, are operationally appropriate

The 2016 Transportation Electrification Study estimated the cost of our distribution upgrades on a feeder-by-feeder basis. The estimate bases forecast assumptions consistent with the State of Washington electric vehicle adoption goals, recent industry data, and our distribution system data.

The study concluded that even under aggressive adoption scenarios, estimated distribution upgrade costs for the next ten years are low. The research also suggests that utilities are likely to benefit significantly by offering customer programs that include managed charging and time-of-use rates. Encouraging customers to delay charging to avoid periods of peak demand will reduce generation and distribution costs.

3. System reliability and distribution system efficiencies

We are currently researching the application of vehicle-to-grid and stationary battery technologies to prepare for a future of increased grid connectedness. Heavy-duty vehicles with large battery-electric systems may be well suited to participate in a partnership program with us to improve grid stability. With bi-directional charging equipment, enhanced load-control software, and a contractual arrangement that outlines the conditions of service and compensation to the vehicle owner, both partners may see mutual benefit. Specific sites for planned EV charging infrastructure may lend themselves well to the application of this type of technology. We will continue to seek opportunities to research and deploy it.

4. Interoperability concerns, including the interoperability of hardware and software systems in the electrification of transportation proposals

As is typical in technology-driven market transformations, after a period of significant adoption, a challenger technology will begin to standardize product offerings and the overall business model. We support establishing standards when appropriate to improve the overall customer experience with electrified transport and to reduce infrastructure deployment costs. Through our purchasing and investment choices and participation in legislative and regional policy, we will promote the interoperability of hardware and software systems.

Senate Bill 1512 – Authorizations and Limitations

5. The overall customer experience

We are a customer-focused organization concerned with helping people. Promoting transportation electrification is primarily concerned with educating customers about the benefits that can be gained by adopting this new technology and assisting them in this transition. We will only be successful in our objectives by providing customers with the best overall experience possible.

We will achieve positive customer experiences by approaching our customers with thoughtful, professional, factual messages that appeal to their values. We will keep our information up-to-date, clear, and accessible. We will highlight the benefits of electrified transport while making sure we accurately inform our customers about costs and risks. We will seek to access funding from grants and partnerships to reduce the overall costs and to distribute the remaining costs equitably. We will provide access to EV information sources, and we will be responsive to customers' questions, suggestions, and concerns. We will include programs in our portfolio that delight our customers. We will promote transportation electrification in a way that improves customers' lives and makes them feel good about their choices.



The Transportation Electrification Action Report

SB 1512 specifies that the governing board of the utility adopt the Plan.

The Board provides strategic direction of transportation electrification by adopting the Plan, by adopting the initial Guidance document, by reviewing changes to the Guidance document, and by having a continuous role in directing overall strategy by reviewing future annual updates to the Action Report. In the Action Report, we will report on the success of current programs and future efforts to promote transportation electrification and will provide an update to the five areas of interest, which will include current conditions for consideration of the Board.

As with other new and emerging technologies, conditions are changing. Technology, market participants, customer preferences, policy, and funding opportunities continually shift. For these reasons, specific project and program

design, implementation, and decision-making for transportation electrification programs consistent with these Strategic Guidelines will remain the operational responsibility of the utility.

The Board will approve budget requests to fund transportation electrification. Certain contracts and purchasing requests concerning transportation electrification projects will also come before the Board. The Board will also consider proposals to promote transportation electrification through changes in rate design.

The Guiding Principles describes the utility's process for project and program development for transportation electrification initiatives. We intend to maintain a high level of internal oversight for developing transportation electrification programs to give the Board confidence that our customers are in good hands.

Senate Bill 1512 – Authorizations and Limitations

City Council Resolution 40016

The Tacoma City Council Resolution 40016 is a directive by our municipal authority to engage in activities related to transportation electrification. The resolution broadly supports transportation electrification efforts and aligns with other strategic planning documents that the City has adopted in recent years, including the Environmental Action Plan and the Tacoma 2025 Strategic Plan. In its declarations, the resolution refers to several specific actions supported by Tacoma City Council including:

- Creating of a transportation electrification plan;
- Developing of a residential-charger incentive pilot program;
- Increasing commercial charging infrastructure;
- Working with electric vehicle equipment suppliers;
- Supporting maritime electrification;
- Aligning government-relations advocacy related to transportation electrification;
- Requiring EV charging infrastructure for residential new construction (code changes);
- Providing solutions for residential on-street charging;
- Encouraging City and Tacoma Public Utility fleet purchases to be battery or hybrid electric, and
- Electrification of charging in City-owned parking garages.

Hydrogen and Other Non-Carbon Fuels Made with Renewable Electricity

Washington State Senate Bill 5588 (2019) permits Public Utility Districts to produce, distribute, and sell renewable hydrogen fuel. Renewable hydrogen is an electrofuel created with renewable, zero-carbon electricity instead of fossil fuels. Vehicles, industrial processes, and power generation using 100% renewable hydrogen result in zero carbon emissions. This legislation is pertinent to transportation electrification because hydrogen fuel used by a fuel cell results in electricity commonly used in transportation applications.

We see opportunities to improve utility revenues and reduce rate pressures by providing electricity to customers who may engage in the production of non-carbon fuels while reducing harmful air emissions in our communities. Another potential benefit to producing non-carbon fuels is in its production flexibility because it lends itself to interruptions of its operations.

These fuel-producing facilities could be significant participants in demand-response programs that improve grid flexibility and renewable power generation integration from wind and solar generators. We are researching renewable hydrogen fuels, including other forms of synthetic non-carbon related fuels that could broaden the scope of transportation electrification, and expand to more heavy-duty applications.





Guiding Principles

I. Seek to understand the technology and the state of the industry.

Customers look to Tacoma Power to be their trusted energy advisor – to provide unbiased information about electric vehicles, charging technology, environmental and financial benefits, and rate impacts. To do this competently, we must maintain a strong understanding of industry and technology developments.

Technology

Transportation electrification technology will progress and transform the transportation industry over time. We may identify opportunities to participate with research institutes, private industry, national labs, or other parties for testing and piloting prototypes. We will engage with the goal of customers and community welfare first, keeping the customer experience in mind, protecting utility finances, and managing operational and financial risk. By maintaining a high degree of awareness over the state of technology, we can avoid situations where it is out of step with current trends and possible misinvestment of public funds.

Market Research

Currently, transportation is undergoing a technological transformation. In essence, the market is in the early-adopter phase and may evolve into a mainstream-market phase (>15% of new vehicle sales) in the next five years. We must be aware of the position and pace of market development to make the necessary adjustments in service offerings to meet the emerging needs of our customers.

Sometimes innovation comes from implementing ideas that come from others. We will maintain awareness of other utility programs promoting transportation electrification, learn from their experiences, and share our experiences with them. Through a process of continuous improvement, we will integrate new techniques into program design and delivery, and engage in direct customer research to ensure our programs provide the desired results.

II. Help inform the public through education and outreach.

A recent survey of Americans in the market for a new vehicle revealed that nearly 50% couldn't name a single manufacturer or model of a plug-in electric vehicle. The legislature has tapped power utilities to leverage their role as trusted energy advisors to address this fact and to make customers aware of the benefits of transportation electrification. We will raise awareness and answer questions by providing accurate information across all communication channels at its disposal. Actions may include:

- Maintaining an up-to-date utility website with useful information that engages the customer while providing information on the benefits of transportation electrification.
- Providing customers with direct access to transportation electrification experts at special events (i.e., EV 101 classes).
- Increasing customer awareness by hosting and attending public events (GTSE, Efficiency Exchange, Ride, and Drive Events).
- Training utility customer representatives to provide detailed answers to transportation-electrification-related questions and to give them access to additional information (hardcopy and electronic).
- Using advertising and social media to inform the public of programs and benefits.

III. Be responsible with utility finances and assets.

We take our responsibility to safeguard public trust seriously. Management of finances and assets is at the core of its mission.

Financial guidelines for program design and delivery include:

1. Maintain a portfolio of programs where each program has a Ratepayer Impact Measure test of 1.0 or greater. The exception to this is that spending for administrative and general expenses and general education and outreach spending not related to a specific program won't be subject to the RIM test. It will be applied directly against the cost cap.
2. Limit explicit spending¹¹ on transportation electrification programs to 0.25% of the biennial retail revenue requirement.
3. Seek external funding where possible to reduce program costs on customers. Potential sources include government and private foundation grants, partner contributions, and monetized carbon credits or offsets.
4. Control utility costs and risks by:
 - » Mitigating distribution system costs with managed charging or load management.
 - » Supporting efforts to install charging infrastructure during construction.
 - » Assessing and testing new technology before adoption.
 - » Avoiding risky investments in developing technologies.
 - » Seeking opportunities to share costs and expand benefits by including project partners such as other utilities and local governments.

¹¹ Cumulative NPV of net benefit (i.e. sum of revenues – sum of costs) plus educational and administrative and general expenses explicitly associated with transportation electrification programs.



Guiding Principles

IV. Help Customers Achieve the Benefits of Transportation Electrification

We will assist all customer classes and communities in achieving the benefits of transportation electrification to the extent possible.

Home and Workplace Charging

Market research shows that EV drivers do most of their charging at home or work. Whether our customers are single-family residential, multi-family residential, small commercial customers interested in customer or employee charging, or companies interested in electrifying their commercial fleets — We are interested in finding ways to help select and install the right chargers.

We will research alternative program designs to inform customers about their charging options and may pilot a program to assist with charger selection and installation. Increasing the network of charging available to the public is a priority for us, as it reduces customer range anxiety. We will seek opportunities to incentivize customers to make their private charging infrastructure available for public use through technologies that provide compensation to the charger provider.

Commercial and Off-Road Fleets

Heavy-duty vehicles are responsible for a large portion of petroleum use and harmful air emissions. Electric battery technology is just beginning to reach the point where it can meet the operational requirements of most heavy-duty vehicles. Utility engagement can be crucial in helping customers assess and prepare for their initial efforts to electrify their fleets.

We seek to engage with customers that have considerable commercial fleets and are interested in electrification, including transit, school districts, city, county and utility fleets, package-delivery services, cargo handling equipment, short-haul and long-haul trucking, railyard equipment, and marine transport. The predictability of their duty cycles, the size of the retail load, and the benefit of reducing emissions make commercial fleet electrification an excellent opportunity for partnership. We will continue to seek opportunities to electrify ships in the Port of Tacoma as an alternative to ships' self-supplying with diesel or marine gas oil generators.

Underserved Communities

Everyone can enjoy the direct and indirect benefits of transportation electrification, not just those who can afford to invest in new cars. We will attempt to identify and collaborate on projects that bring direct transportation electrification benefits to underserved communities. Collaboration can include the electrification of fleets that operate within or are adjacent to underserved communities. We could consider fleets such as transit, school buses, city and utility fleets, public charging along Interstate 5, and electrification of the Port of Tacoma.

The indirect benefits of transportation electrification for underserved communities might be difficult to observe at first, but over time may be significant:

1. While the initial cost of electric vehicle technology may be prohibitive for lower-income customers, as electric-vehicle adoption increases, production costs will decrease, resulting in lower prices for future buyers.
2. As electric vehicle adoption increases, air quality will improve. If the focus of adoption efforts are in heavy traffic corridors, like Interstate 5 (which bisects our service territory), the most significant improvement in air quality will be along corridors near disadvantaged communities.

Interoperability

Electric vehicles must be easy to use to meet the needs of potential electric vehicle adopters in the mainstream market. Helping the industry standardize charging hardware and its process will reduce customer confusion and improve the overall experience. We will encourage interoperability and standardization through purchasing and investment choices.

Guiding Principles

Openness to Non-Traditional Rate Design

We are a utility with an obligation to recover costs through non-discriminatory rate design to ensure stable financing for utility operations. In some cases, traditional rate design structures can be a challenge for providers of electric vehicle charging. We will be open to researching and implementing non-traditional rate design to address these challenges to the extent possible. Rate concepts to consider include:

- Time-of-use rates to encourage managed charging which may reduce electrical infrastructure and distribution system costs.
- Reducing or eliminating demand charges while maintaining cost recovery to improve the economics of charger investments during the initial periods of deployment.
- On-bill financing to overcome initially high capital investment costs by spreading those costs over future periods where customers are enjoying maintenance and fuel cost benefits.
- A vehicle-to-grid tariff that compensates vehicle owners for providing grid stability services and defers costly capital additions.
- Permitting public-charging equipment providers to bill by the kilowatt-hour to deliver fairness in public EV charging business models.

V. Maintain Good Governance and Reasonable Process to Reduce Risk and Cost

Since 2016, we have been successful in delivering transportation electrification benefits to our customers through a myriad of innovative projects. To build on this string of successes, and to assist the Board in continuing to feel confident in our efforts, we will abide by the following internal processes:

1. Update the Public Utility Board annually, review the progress of the previous year, and preview planned programs for the upcoming year.
2. Maintain strategic alignment with the City of Tacoma and provide the City with support in matters related to transportation electrification (Tacoma 2025, City of Tacoma Environmental Action Plan, etc.).
3. Help our customers gain the benefits of transportation electrification through the development of program pilots based on market and customer research that will meet the demands of customers.
4. Activate contributions from across the utility through cross-functional teams, under the management and support of the Energy Research and Development (ER&D) team and with the internal oversight of the ER&D Steering Committee.
5. Calculate pilot program benefit and cost estimates with objectivity and precision. Re-evaluate pilot benefits, and costs are at the end of the pilot period to inform the ER&D Steering Committee decision on promoting the pilot to a full project.
6. Collaborate with the City of Tacoma on related efforts to promote transportation electrification.



Public Input

With the adoption of these Strategic Guidelines by the Board, we will design and launch projects of limited duration and on-going programs within its authority designed to benefit customers. We sought the public's perspective and input in developing these Strategic Guidelines to ensure that perspective is well understood.

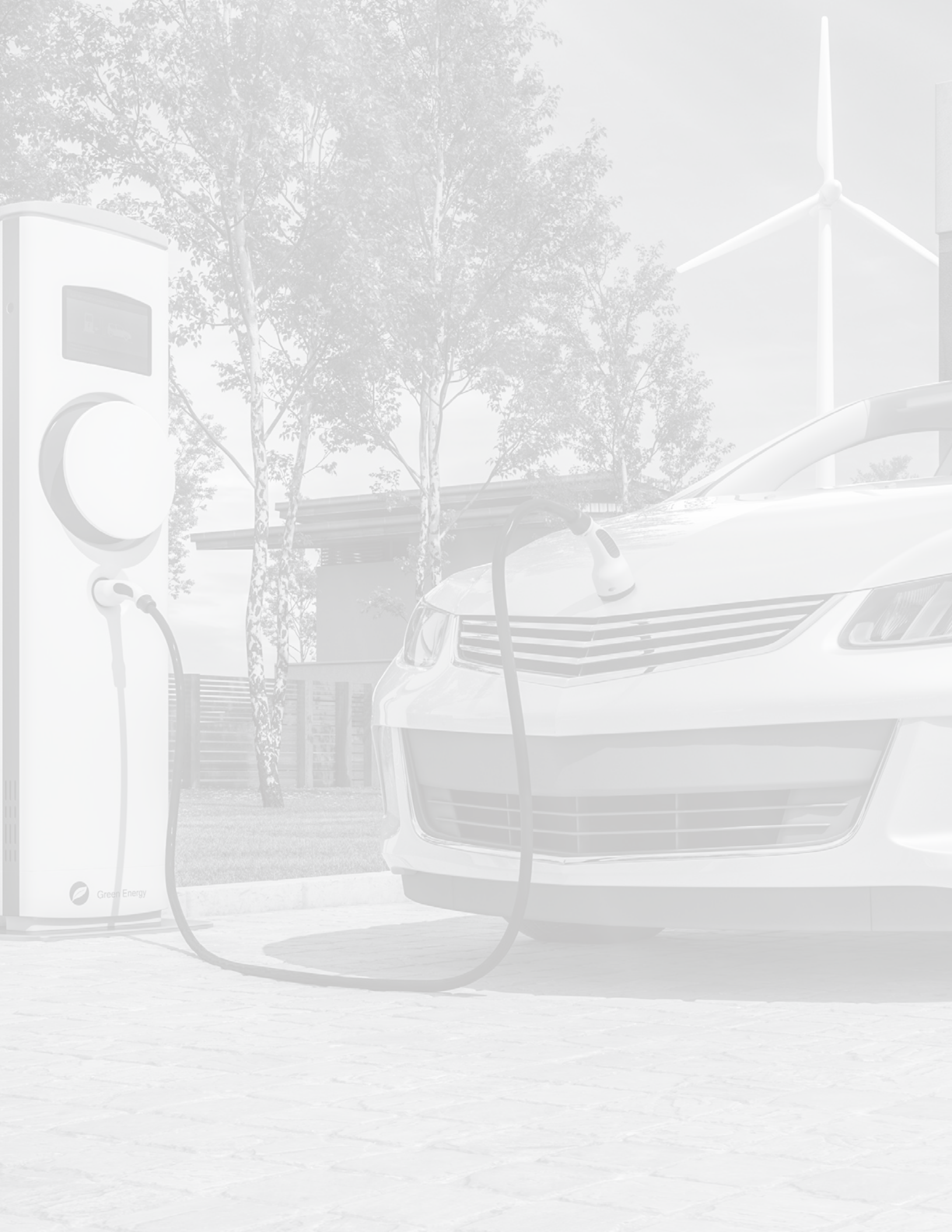
The public input process consisted of two parts, both are necessary to have a completely outside perspective on our efforts;

- i. An online public input process for customers and other members of the general public to provide their questions and comments on the Plan. A webpage on MyTPU.org explained the purpose of the public input process and contained copies of the Strategic Guidelines and the Action Report along with online comment boxes to provide feedback.
- ii. A stakeholder process solicited input from relevant organizations who are natural partners for future transportation electrification projects. Stakeholders include local and state government, customer advocacy organizations, transportation electrification experts, port and utility representatives, and others. We invited stakeholder representatives to a special meeting where we gave presentations describing the Strategic Guidelines and the Action Report. We facilitated discussions between participants designed to address crucial issues around transportation electrification strategy and planning during the meeting. A variety of perspectives surfaced during the talks for us to hear.

We compiled a summary of the online public comments and the discussion points made during the Stakeholder meeting. We will provide it as an appendix to the initial Action Report for the Board to review. We made several changes to the Strategic Plan and the Action Report based on comments and questions provided during the public input process.

Version Date Change Summary

0.0 - 06/29/20 Initial Strategic Guidelines Document
1.0 - TBD Adopted by the Public Utility Board



Transportation Electrification Plan