TACOMA POWER
TACOMA PUBLIC UTILITIES

Transportation Electrification Strategic Plan

(Copy of Board Resolution Adopting this Transportation Electrification Strategic Plan)

1. Purpose of this document

This Transportation Electrification Strategic Plan serves several purposes:

Strategic vision

A tool to position the utility to achieve desired success in the achievement of transportation electrification, which provides benefits to customers, ratepayers, and the community. In addition, this plan establishes a goal of having 10 average megawatts (87,600 MWh annually) of electric transportation load in ten years (2030), which is about ten times our current estimated electric vehicle load.

Compliance

Under Senate bill 1512 a governing-board-approved transportation electrification plan is required if the utility wishes to act on its legal authority to promote transportation electrification.

Establish process

This document will describe Public Utility Board governance of transportation electrification activities, and formalize an internal process to ensure programs are designed and executed with adherence to Guiding Principles (Section 4).

Clarity

This strategic plan clearly outlines the role of Tacoma Power in the adoption of transportation electrification and the methodology used to identify and develop related programs.

Consistency

This plan helps new stakeholders understand what is being done and why, and reduces the natural instinct to start fresh in times of change.

A Plan in Two Parts: The Transportation Electrification Strategic Plan and the Transportation Electrification Action Plan

You are reading the *Transportation Electrification Strategic Plan,* a document that establishes the guiding principles for utility action to design and deliver programs to support transportation electrification. It lays out the governance of the Public Utility Board over this Plan and the compliance requirements established in Senate bill 1512. This document intends to be in alignment with the long-term strategic directives of the Public Utility Board now and in the future. While it is expected that the guiding principles outlined in Section 3 will endure for some time, at its option, the Public Utility Board may provide new guidance and direct the utility to update this Transportation Electrification Strategic Plan at any time.

This document does not contain descriptions of specific programs, research, and activities that the utility intends to undertake. Those details are included in the companion report, the *Transportation Electrification Action Plan.*

The *Transportation Electrification Action Plan* is a document produced and provided to the Public Utility Board annually to apprise them of progress from the previous year and to inform them of forthcoming

research and programs. The purpose of setting program specifics in an *Action Plan* separate from a *Strategic Plan* is to ensure that the utility will have the authority and flexibility to navigate this emerging and shifting transportation electrification marketplace and to allow staff to make adjustments to program research, design, and delivery as required. It is impractical in this evolving market to seek direct Public Utility Board approval of program design and delivery. This strategic plan lays out a methodology whereby utility staff may operate according to changing conditions under the strategic direction and with the oversight of the Public Utility Board.

Also included in the Action Plan will be an updated examination of the "five issues" identified in Senate bill 1512 that a governing body may consider as part of their electrification plan (See "Section 3 – Authority" for more information) for projects and programs where it may be applicable.

Public Input

Tacoma Power values input from its customers. In consultation with the Public Utility Board, Tacoma Power staff has conducted a public input process that included meetings with key stakeholders and an opportunity for the public to provide online comment on the draft plan.

Tacoma Power staff will provide written public comments and meeting notes to the Public Utility Board for review and consideration, and a high-level summary of the major themes from the public input process will be contained in section 5.

After an appropriate time in early 2020, Tacoma Power will request formal adoption of the *Transportation Electrification Strategic Plan.* In early 2021, Tacoma Power will provide the first update to the *Transportation Electrification Action Plan*.

2. The value of transportation electrification

Transportation electrification provides many benefits to EV owners, utility customers, and to our communities and environment. Tacoma Power can help achieve these benefits by actively engaging in promoting transportation electrification.

Customers benefit from lower total cost of ownership through reduced fuel expense and lower vehicle maintenance costs. The state of Washington also offers tax incentives to vehicle purchasers who buy electric cars. By helping our customers save money on their transportation costs, Tacoma Power can help promote customer and community value.

Ratepayers of Tacoma Power 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 customers[1]. Tacoma Power has enough surplus generation and infrastructure capacity to serve the additional load that is likely to come from increased electrified transportation[2]. Of course, there may be instances where distribution upgrades may be necessary to accommodate some electrification projects, but our 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 air emissions that cause public health issues and contribute to global climate change[3]. Additionally, electric vehicles are much quieter than conventional vehicles and switching to electric can reduce overall noise pollution. Also, runoff of oil from roadways is one of the largest contributors to contamination of water in the Puget Sound[4] affecting marine flora and fauna. It is also important to note that electricity provided by Tacoma Power 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 group studied several forms of electrified transportation including light-duty passenger vehicles, delivery trucks, transit buses, and industrial forklifts. The potential direct economic costs and benefits of transportation electrification from both a regional perspective and from a utility ratepayer perspective were calculated. Not included in the study were indirect costs and benefits such as human health improvements from particulate matter reduction, energy security, or macroeconomic changes or the effects on certain types of employment.

The E3 study based its analysis on several important determining factors, including electric vehicle adoption rates, wholesale electric prices, fuel prices, generation capacity prices, distribution system costs, and electric vehicle and charger costs. Because many of these factors are evolving quickly and in ways not easy to predict, 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. Therefore, the study results are illustrative

[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 (https://ecology.wa.gov/Air-Climate/Climate-change/Greenhouse-gases/Reducing-greenhouse-gases).
[4] https://ecology.wa.gov/Water-Shorelines/Puget-Sound/Issues-problems/Toxic-chemicals

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.

High Level Themes of the E3 Study:

Utility Costs and Benefits

Utility benefits of electrifying transportation were positive in nearly all utility case studies, 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 is applied to all costs borne by all customers. This is how adoption of electric vehicles by some can provide financial benefits to everyone.

The study also noted that the estimated amount of utility benefit benefits to individual customers and society was larger than the financial benefit that was received by utilities. Reduced fuel costs and maintenance savings are benefits gained by drivers, while utility-specific results depend on the assumed value of generation capacity, wholesale energy prices, utility resource mix, rate structure, and expected retail loads. Because the societal benefits of transportation electrification were generally larger and there is a strong case that societal in general should make investments in transportation electrification through federal and state grants and incentives to increase adoption. Utilities have a role to inform and educate customers that transportation electrification can provide significant benefits and engage customers who are curious about transportation electrification to get comfortable with technology.

Utility System Impacts

Generally, the energy delivery systems of the participating utilities can accommodate current 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 largely 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 is 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 circumstances. As such, each utility should define their own role for transportation electrification that is appropriate to its service territory and its customer base.

Environmental Benefits

The environmental benefits from switching to electric transportation methods is significant. To understand the possible environmental benefits, the study looked at a range of future vehicle and utility emission rates and attempted to put the carbon costs into a financial value. In general, there is a very significant overall net reduction in CO_2 emissions from electrifying transportation in the Pacific Northwest region, 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, however, only assessed the monetized value of carbon emissions. The impact of more localized emissions including NOx, SOx, and particulate matter were not recognized as costs but it should be recognized that societal benefits from addressing these

emissions are important to improve the health of communities that are often located near transportation corridors. Disproportionately, the greatest effects of transportation emissions 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 based electrification of transportation is likely to provide tremendous benefit to disadvantaged communities along transportation corridors.

Understanding Uncertainty

The electric vehicle industry is in the early stages of development and assumptions about future factors such as fuel costs, electric vehicle costs, and adoption rates are uncertain. While the study used the best data available, there is significant uncertainty regarding the future. The study used scenarios to identify the potential ranges of direct costs and benefits based on potential future values for these factors. Utilities may need to reassess the factors that underpin this study and re-evaluate costs and benefits as the future unfolds.

3. Legal Authority

Tacoma Power has broad legal authority to act as the exclusive vendor of electricity and power services to customers in the City of Tacoma and surrounding areas and possesses the authority to contract with suppliers, energy providers, and contractors to further these services.

WA State Senate bill 1512 clarified the authority of customer owned utilities to create their own *Transportation Electrification Strategic Plan* and, with adoption of 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)

Senate bill 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 certain types of program spending. The legislation achieves this by including two constraints on utility program spending for transportation electrification.

Prohibition against "gift of public funds"

The constitution of the State of Washington explicitly restricts public utilities from "gifts of public funds". This is a standard restriction on utility spending that extends to all forms of utility spending and protects the public from misuse of public funds. In short, the utility is prohibited from spending money on projects or programs that provide benefit to participants that exceed the benefit that the utility will get in return. By contrast, city and county governments are not restricted in this manner. The application of this restriction has been tested and clarified in the courts through several legal cases to form a precedent against programs that are donative in intent.

Early versions of Senate bill 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. Even though there is no language in the final bill mandating an industry standard test to prove compliance with "gifts of public funds" prohibitions, Tacoma Power intends to use a *Ratepayer Impact Measurement test* to ensure that program spending adheres with the State Constitution.

The Ratepayer Impact Measurement (RIM) test assesses if a product or program is a good utility investment. It compares the net present value of lifetime utility benefits, including new retail revenue, to the net present value of product or program cost, including incentives, marketing, staff labor, and wholesale electricity costs.

This test can be described by the following:

$$NPV\left[\sum utility\ benefits\right] - NPV\left[\sum utility\ costs\right] > 0$$

We express the RIM as a benefit-to-cost ratio, known as the RIM B/C ratio. Products of programs with a RIM B/C ratio greater than 1 are deemed "cost-effective" and considered to have no direct rate impact to customers[5].

"Increase in net costs to ratepayers" – the cost cap constraint

Senate bill 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 describe how revenues and expenses related to transportation electrification should be treated. Utilities that wish to comply with the legislation have open questions about standardization of program costing, compliance measurement, and the consequences of non-compliance. Here is how Tacoma Power has interpreted the bill language and how it plans to comply with Bill 1512:

- The cost cap applies to the portfolio, or aggregation of individual projects and programs plus any spending on general expenses that are 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 deal with transportation electrification in a tangential way will not be counted against the cost cap.
- One time general expenses that deal with transportation electrification but are of *de minimus* value (less than $1,000) will not be counted against the cost cap.
- An *"increase (in) net costs to ratepayers"* is interpreted to mean an explicit rate increase, which traditionally happens once per biennium, except under certain emergency situations when a surcharge is required to fund operations.
- Utility rates are adjusted 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 nonretail revenue.
- Currently, Tacoma Power does not include an explicit projection of increased retail sales from transportation electrification programs in its calculation of projected revenues. For the purposes of complying with the cost cap, Tacoma Power 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 $775 million, the maximum allowable budgeted expenditure (net of projected additional retail revenue from programs) on transportation electrification projects equals $1.94 million.

[5] 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

- Senate bill 1512 refers to "net costs" meaning that the reasonably-expected revenues from transportation electrification must be netted against the program costs. It is unclear what the consequences of non-compliance with the cost cap or how the utility should react to a situation where the cost cap is violated due to unanticipated program cost increases or unrealized retail revenue.
- 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. Tacoma Power may consider investments in transportation electrification that have large upfront costs but a long stream of future benefits. In such cases, Tacoma Power may issue debt or bonds to finance the investments. In these cases, the cost cap would apply to debt service payments net of the present value of projected retail revenue and not to the total investment cost.

Specific Topics Listed in Senate bill 1512

Senate bill 1512 also identifies five categories of issues that a governing board may (at their own discretion), consider in a transportation electrification strategic plan. Hereafter, an update of the consideration of these five issues will be made in the annual *Transportation Electrification Action Plan* for consideration of the Public Utility Board. 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 companion document to this *Transportation Electrification Strategic Plan* is titled *Transportation Electrification Action Plan* and it describes general categories of projects and programs that the utility will consider to promote the adoption of electrified transportation. It is important to the utility to uphold values of equity and non-discrimination 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 Tacoma Power distribution upgrades on a feeder-by-feeder basis. These estimated costs were based on forecast assumptions consistent with State of Washington electric vehicle adoption goals, recent industry data, and Tacoma Power distribution system data. The conclusion of the study was that even under aggressive adoption scenarios, estimated distribution upgrade costs for the next ten years are very low. The study 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;*

   Tacoma Power is currently researching the application of vehicle-to-grid technologies to prepare for a future of increased grid connectedness. Heavy-duty vehicles with very large battery electric

systems may be well suited to participate in a partnership program with Tacoma Power to increase grid stability. Through the use of 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.

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

As is typical in technology-driven market transformation, after a period of significant adoption, a challenger technology will begin to standardize product offerings and the overall business model. Tacoma Power supports the establishment of standards to improve the overall customer experience with electrified transport and to reduce infrastructure deployment costs. Tacoma Power, through both its purchasing and investment choices and its participation in legislative and regional policy, will seek to promote interoperability of hardware and software systems.

5. *The overall customer experience.*

Tacoma Power is a utility focused on positive community and customer value. Electric vehicle market research suggests that one of the most persuasive factors in achieving adoption is when current EV owners share their positive experiences with potential EV buyers (UC Davis). Therefore, ensuring that our customers have a positive experience is crucial to reaching new EV adopters and meeting our transportation electrification goals.

Tacoma Power 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 secure financing from available sources to reduce the overall costs and distribute the remaining costs fairly. We will provide access to EV information sources, and we will be responsive to questions. We will include programs in our portfolio that delight our customers. Tacoma Power will promote transportation electrification in a way that improves customer's lives and makes them feel good about their choices.

The Role of the Public Utility Board

Senate bill 1512 requires that the governing board of the utility adopt the *Transportation Electrification Strategic Plan* as a necessary condition before expenditures can be made.

Tacoma Power requests that the Public Utility Board provide the necessary approval for the strategic direction of transportation electrification by officially adopting this plan and by having a continuous role in directing overall strategy by reviewing future updates to the *Transportation Electrification Action Plan* on an annual basis. In this Action Plan, Tacoma Power will on an annual basis report on the success of current programs and describe future efforts to promote transportation electrification. The Action Plan will also contain an update to the "five areas of interest" for current conditions for the edification and consideration of the Public Utility Board.

As with other emerging technologies, conditions in the market including technology, market participants, customer preferences, policy, and funding opportunities are constantly shifting and changing. For this reason, specific project and program design, implementation, and decision-making for transportation electrification programs consistent with this Plan will be the responsibility of the utility.

The Public Utility Board will retain governance consistent with current practice – and will approve budget requests for transportation electrification funding, will preside over the approval of contracts and purchasing requests consistent with current policy, and will approve any proposed changes in rate design to support transportation electrification.

Section 5 of this Plan describes the utility's internal governance and oversight process for project and program development for transportation electrification initiatives. The utility intends to maintain a high level of internal oversight for developing transportation electrification programs to give the Public Utility Board confidence that customers are in good hands.

Other sources of authority

Tacoma Power refers also to Tacoma City Council Resolution 40016 as a source of municipally-supplied authority to engage in activities related to transportation electrification. The resolution broadly supports transportation electrification efforts and draws alignment 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:

- creation of a transportation electrification plan;
- development of a residential-charger incentive pilot program;
- increased commercial charging infrastructure;
- working with electric vehicle equipment suppliers;
- support for maritime electrification;
- aligning government-relations advocacy;
- requiring EV charging infrastructure for residential new construction (code changes);
- solutions for residential on-street charging;
- encouragement of City and Tacoma Public Utility fleet purchases;
- and electrification of charging in City-owned parking garages.

Hydrogen and other non-carbon fuels made with renewable electricity

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

Tacoma Power sees 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 the production of 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. Tacoma Power is seeking to expand the definition of renewable hydrogen fuel to include other forms of non-carbon related fuels that could expand the benefits of transportation electrification to new horizons.

4. Guiding Principles

Tacoma Power is a utility with responsibilities to its customers and a role to play in the promotion of transportation electrification. The utility must consider two important questions: "What business should Tacoma Power be in?" and "What is needed by customers in this market?" This section describes answers to those questions and provides high-level guiding principles in the development and delivery of transportation electrification programs.

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

Customers are looking 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, Tacoma Power staff must maintain a strong understanding of industry and technology developments.

Technology

Transportation electrification technology will progress and transform the transportation industry over time. Tacoma Power may identify opportunities to participate with research institutes, private industry, national labs, or other parties for the purposes of testing and piloting prototypes. Tacoma Power will engage with the goal of maintaining customer and community welfare first, keeping the customer experience in mind, protecting utility finances, and managing operational and financial risk.

Market Research

Currently the market is in the early-adopter phase and may evolve into a mainstream-market phase in the next five years. Tacoma Power must be aware of the pace of market development to make the necessary adjustments in service offerings to meet the emerging needs of our customers.

Sometimes innovation is implementing ideas that come from others. Tacoma Power 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, Tacoma Power will integrate new techniques into program design and delivery, and engage in customer research to ensure programs are providing 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% could not name a single manufacturer or model of plug-in electric vehicle. To address this fact, the legislature has tapped power utilities to leverage their role as trusted energy advisors and to make them aware of the benefits of transportation electrification. Tacoma Power will raise awareness and answer questions by providing accurate information across all communication channels at its disposal. Actions may include:

- Maintain an up-to-date utility website with useful information that engages the customer while providing information on the benefits of transportation electrification
- Provide customers with direct access to transportation electrification experts at special events (*i.e.* EV 101 classes)
- Increase customer awareness by hosting and attending public demonstrations (GTSE, Efficiency Exchange, Ride and Drive Events)

- Train utility customer representatives to provide detailed answers to transportation-electrification-related questions and to give them access to additional information (hardcopy and electronic)
- Use advertising and social media to inform the public of programs and benefits

III. Be responsible with utility finances and assets

Tacoma Power takes its responsibility to safeguard public trust very seriously. The management of its finances and assets are at the core of its mission. Senate bill 1512's spending limits on programs to promote transportation electrification protect non-participants against arbitrary and capricious spending. Financial guidelines for program design and delivery include:

1. Maintain a portfolio of programs that have a *ratepayer impact measure benefit-cost ratio* of 1.0 or greater
2. Limit explicit spending[6] on transportation electrification programs to 0.25% of the biennial retail revenue requirement
3. Reduce the impact of program cost on ratepayers by seeking external funding where possible; potential sources include grants, and monetized carbon credits or carbon offsets
4. Mitigate utility costs and risks, now and in the future, by:
    - Mitigating distribution system costs with managed charging or load management,
    - Supporting efforts to install charging infrastructure during construction,
    - Carefully assessing and testing new technology before adoption. Acting without sufficient research and analysis could harm customers or utility operations and finances. Making risky investments in developing technologies could result in stranded or underperforming assets.
    - Seeking opportunities to share costs and expand benefits by including project partners such as other utilities and local governments.

IV. Help customers achieve the benefits of transportation electrification

Tacoma Power 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 at 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—Tacoma Power is interested in finding ways to help select and install the right chargers .

Tacoma Power 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 Tacoma Power, as it reduces customer range anxiety. Tacoma Power 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.

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

Commercial Fleets

Heavy-duty vehicles are responsible for a large proportion 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 electrifying their fleets. Tacoma Power seeks to engage with customers with large commercial fleets who 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 makes commercial fleet a great opportunity for partnership. Tacoma Power will continue to seek opportunities to electrify ships at berth in the Port of Tacoma as an alternative to ships' self-supplying with generators using diesel or marine gas oil.

Underserved communities

The direct and indirect benefits of transportation electrification can be enjoyed by everyone, not just those who can afford to invest in new cars. Tacoma Power will attempt to identify and collaborate on projects that bring direct transportation electrification benefits to underserved communities. This can include the electrification of fleets that operate within or are adjacent to underserved communities (transit, schoolbuses, city and utility fleets, Interstate 5, Port of Tacoma). As mentioned previously, the Washington State Constitution prohibits utility spending that is donative in intent (i.e. "gift of public funds") except in instances when the recipient is "poor or infirm". Tacoma Power may judiciously use this exemption in order to fund a higher proportion of projects that demonstrate benefits to low-income customers.

The indirect benefits might be difficult to observe at first, but overtime they will 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 Tacoma Power's service territory), the greatest improvement in air quality will be along those corridors – which are where most disadvantaged communities are located.
3. More electric vehicles will reduce global demand for petroleum, which is likely to lead to an oversupply on world oil markets and reduce the cost of gasoline for lower-income customers, putting less pressure on budgets.

Interoperability

In order to meet the needs of potential electric vehicle adopters in the mainstream market, electric vehicles can't just be environmentally friendly and fun to drive – they will have to be easy to use. Helping the industry standardize hardware and processes will improve the overall customer experience. Tacoma Power will encourage interoperability and standardization through its purchasing and investment choices.

Openness to non-traditional rate design

Tacoma Power is 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. Tacoma Power will be open to researching and implementing non-traditional rate design to address these challenges to the extent possible. Rate concepts to under consideration include:

- Time-of-use rates to encourage managed charging
- Reducing or eliminating demand charges while maintaining cost recovery
- On-bill financing to overcome initially high capital investment costs
- Vehicle-to-grid tariff that compensates vehicle owners for grid stability services
- Permitting public-charging equipment providers to bill by the kilowatt-hour

V. Maintain good governance and process to reduce risk and cost

Tacoma Power is asking the Public Utility Board to provide its approval to engage in the promotion of transportation electrification. Hopefully, the Board recognizes and takes confidence from the achievements made through our limited engagement since 2016. To build on this, Tacoma Power proposes the following guiding principles:

1. Provide the Public Utility Board with annual updates that review the progress of the previous year and preview planned programs for the upcoming year,
2. Abide by all necessary purchasing, contracting, budgeting, and financial policies,
3. 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.),
4. Help our customers gain the benefits of transportation electrification through development of program pilots based on market and customer research that will meet the demands of customers,
5. Activate contributions from across the utility through the use of 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,
6. 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.
7. Collaborate with the City of Tacoma on related efforts to promote transportation electrification

5. Summary of Public Input

To be written

6.Conclusions

To be written after first draft review.