



# Transportation Electrification Plan

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# Transportation Electrification Plan

2020



- Vision
- Technology and Market Landscape
- Strategic Objectives
- Programs and Activities
  - Charging Infrastructure
  - Education and Outreach
  - Community and Low-Income Support
  - Commercial and Public Fleets
  - Planning, Load Management and Grid Integration
  - Technology and Market Awareness
  - Rate Design
  - Internal Activities
- Costs and Benefits
- Analysis and Reporting

# Our vision: better energy for life!

## Imagine an electrifying future . . .

By the year 2045, renewable and clean energy sources power the electric grid and a vibrant modern economy, including the transportation sector. Whether moving people or goods on the road, off the road, by rail, in the air, or over water, clean electricity makes it happen. The majority of transportation is electrified and the use of fossil fuels is no longer dominant. Customers have new and exciting transportation choices. Major economic benefits of over \$1 billion per year in fuel and maintenance cost savings are realized in the local economies served by Avista. This is accomplished while eliminating more than 80% of harmful air pollution and greenhouse gas emissions from transportation—formerly the largest source of emissions in the region.



Avista's Noxon Rapids Hydroelectric Generation Plant  
— 562 MW of Clean Hydropower —

In this exciting future, transportation accounts for over 20% of utility electric load and revenue, helping to pay for fixed grid costs and keeping rates low for all customers. A combination of cost-effective load management and transfer technologies, energy storage, and price signals act to optimally integrate flexible transportation loads with



EVs Fueling Up with Clean Energy — The Future is Electric !

the grid—including a wide array of new distributed energy resources. This reduces peak loads on the system, provides for better grid resiliency, and maximizes the use of renewable energy sources.

Autonomous electric transportation has also revolutionized the way we move people and goods, dramatically increasing vehicle and equipment utilization, driving down transportation costs, freeing up people's time, and saving thousands of human lives and serious injuries every year.

The vehicles themselves are integral parts of a new age in communications and connection, opening the door to a wide variety of new products and services that improve people's lives.

In just 25 years, an amazing transformation has occurred—the transportation sector has converged with the energy and information technology sectors—fundamentally changing the way we live our lives and making the world a better place. Avista has played a key role in this transformation, working over several decades with industry partners, policymakers and regulators, community leaders, and customers to innovate and create a better energy future for all.

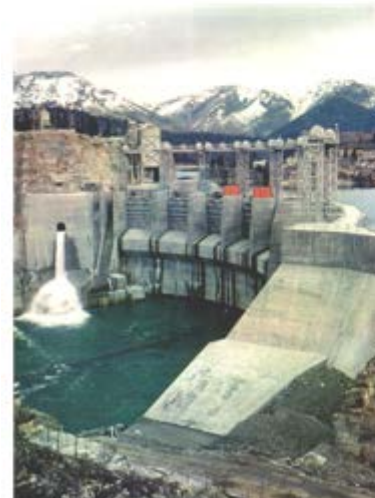


# Transportation Electrification

A Better Energy Future for All



**\$2,808**  
annual gasoline  
transportation  
fuel expense  
per household  
@ \$3 /gal



**\$550**  
annual electric  
transportation  
fuel expense  
per household  
@ 10¢ /kWh

# Beneficial Electric Load Growth

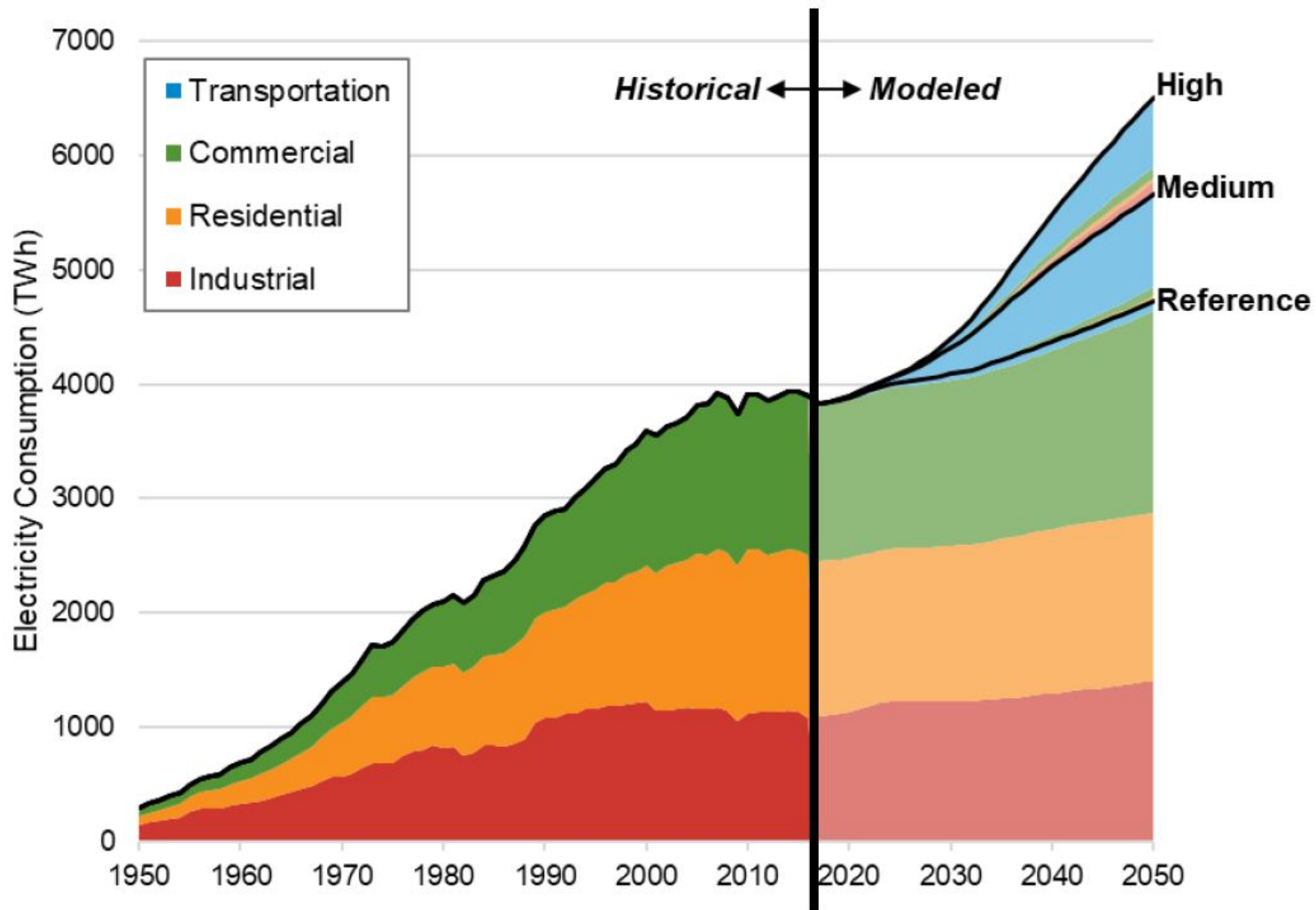
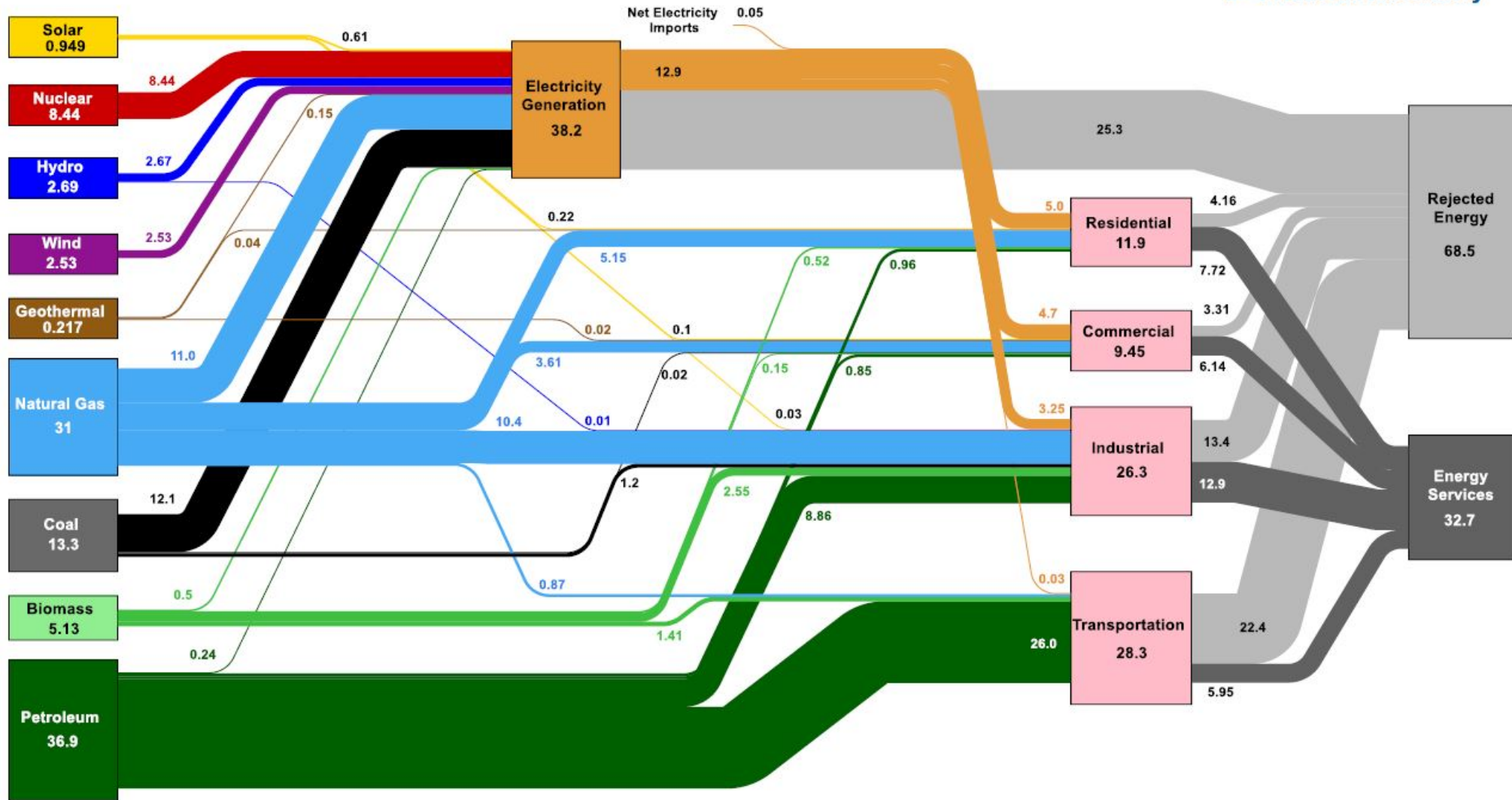


Figure ES-3. Historical and projected annual electricity consumption

# Transportation must be decarbonized

Estimated U.S. Energy Consumption in 2018: 101.2 Quads



# Guiding Principles

- Flexible, adaptive approach to changing market conditions and different market segments
- Early utility role supports healthy market growth and grid integration, ensuring net benefits for all utility customers over the long term
- Plan and programs align with legislative and regulatory policy
- Program focus areas: EVSE infrastructure, customer education and outreach, community and low-income support, fleet support, and grid integration/load management
- Utility programs support healthy market competition, innovation and interoperable industry standards
- Customer-centric, high-satisfaction program results; provide objective information and choices that enable informed customer decisions
- Cost-effective, integrated management across all programs and activities
- Regular updates to load profiles and forecasts for utility Systems Planning and the Integrated Resource Plan (IRP)
- “Walk the talk” with effective utility fleet electrification, facility EVSE and employee engagement programs
- Partner and collaborate with key stakeholders



# Strategic Objectives & Goals

## 1. Achieve sustained entry in the mass market for light-duty EVs

- > 15% of annual vehicle sales by 2030 or earlier
- Install EVSE needed by 2025 for rapid market growth, owned and maintained by Avista and third parties
- Maintain EVSE uptime > 99%
- By 2025, raise positive awareness of EVs by 500%

## 2. Support electrification of commercial and public fleets

- Implement a commercial EV time-of-use (TOU) rate starting in 2021
- Invest in “make-ready” utility upgrades
- Deploy and expand fleet support programs, starting with lift trucks and light-duty passenger vehicles in 2021

## 3. Meet aspirational goal of 30% overall spending on programs benefiting disadvantaged communities and low-income customers

## 4. By 2025, achieve net benefits from load management and EV TOU rates with > 50% reduction of EV peak load

## 5. Monitor new technologies and markets; implement pilot projects starting with mass transit and school buses in 2022-2023

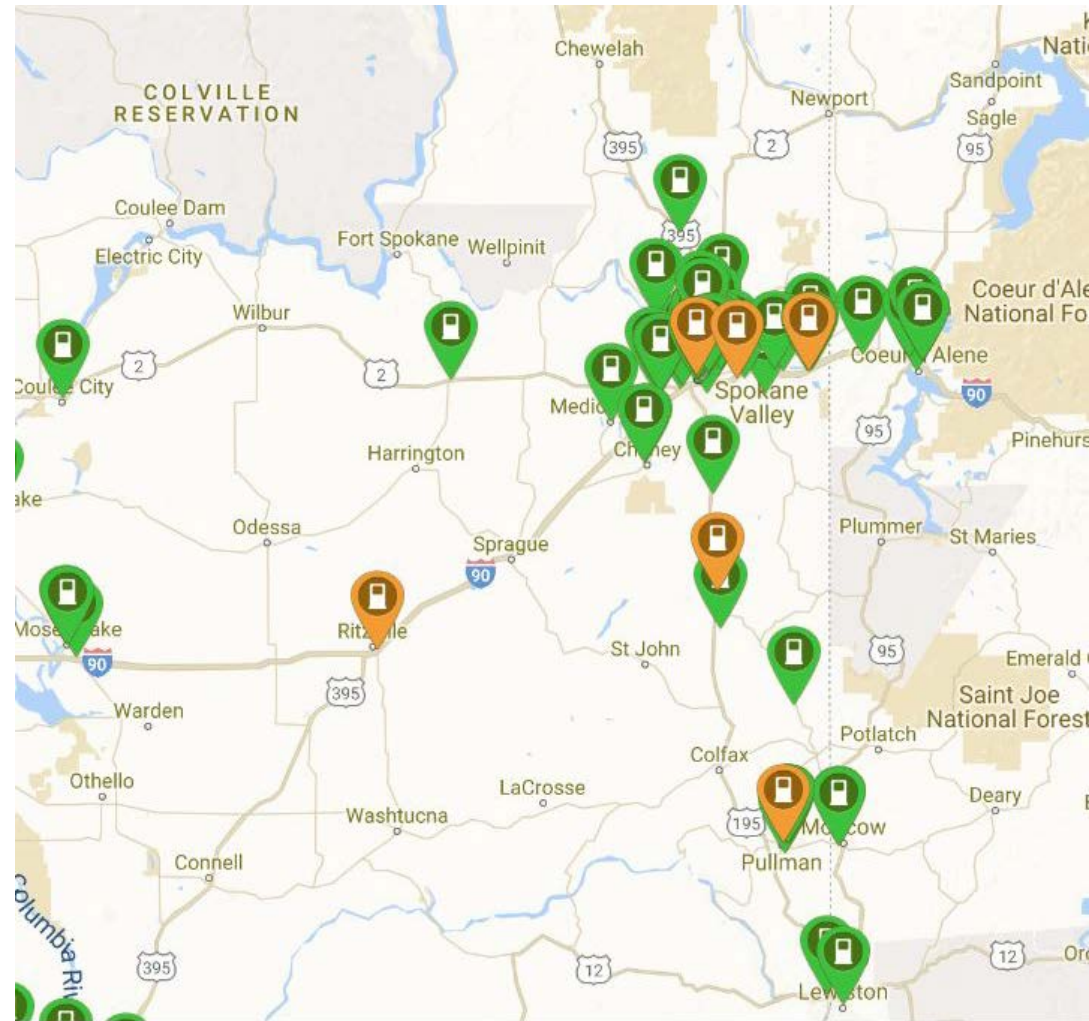
## 6. Expand utility fleet electrification with 5% or more of annual fleet budgets, install EVSE at Avista facilities and by 2025 raise employee EV adoption 300%



# Programs and Activities to meet Objectives

## Programs and Activities with Budget Targets

45%	EVSE Installations and Maintenance
30%	Community and Low-Income
10%	Education and Outreach
5%	Commercial and Public Fleets
5%	Load Management, Planning and Grid Integration
3%	Market and Technology Monitoring & Testing
2%	Data Management, Analysis and Reporting



# Mass market sentiment in the light-duty passenger segment

“I’d like to get an EV if it will save me money and will be a better overall experience than a gas vehicle . . . also I’d like an SUV or truck”



- expecting a tipping point in 2023





# Medium- and heavy-duty markets

- Interest and demand increasing
- Short on supply
- Potential for rapid adoption
- Disproportionate grid impacts



Amazon orders 100,000 electric delivery vans from Rivian

Posted September 19, 2019 by [Charles Morris](#) & filed under [Newswire](#), [The Vehicles](#).





# Emerging Technology & Markets



Figure 6: Integrated EVSE network design for the EVSE pilot (2016—2019)

# Charging Infrastructure

- Residential
- Commercial
  - Workplace
  - Fleet
  - Multiple-Unit Dwelling (MUD)
  - Public
- DC fast



- Customer choice, “make ready” & TOU rate support 3<sup>rd</sup> party ownership
- Load management requirements
- May consider future rebate and/or lease program
- DC fast chargers owned by Avista and 3<sup>rd</sup> parties, 50/50 approach
- High reliability and cost controls are essential
- Commercial EV TOU rate available in 2021, residential TOU rate in 2023

# Education & Outreach

- Online information & tools
- Dealer outreach, training and referrals
- Educational campaigns
- Social media
- EV Experience Center



**Where can you buy fuel for \$1 a gallon?**

At your local electric utility company when you drive electric.

At your local electricity rate, you can go **30 miles** for about a **buck's worth** of power. That saves you hundreds to thousands of dollars per year depending on how much you drive.

- EV inventory and availability in the region must be improved -





# Commercial and Public Fleet Support



- Online info & tools
- Consultation support
- EVSE install & maintenance program
- Vehicle Purchase Incentives (lift trucks)
- Load Management
- Commercial EV TOU rate



# Planning, Load Management and Grid Integration

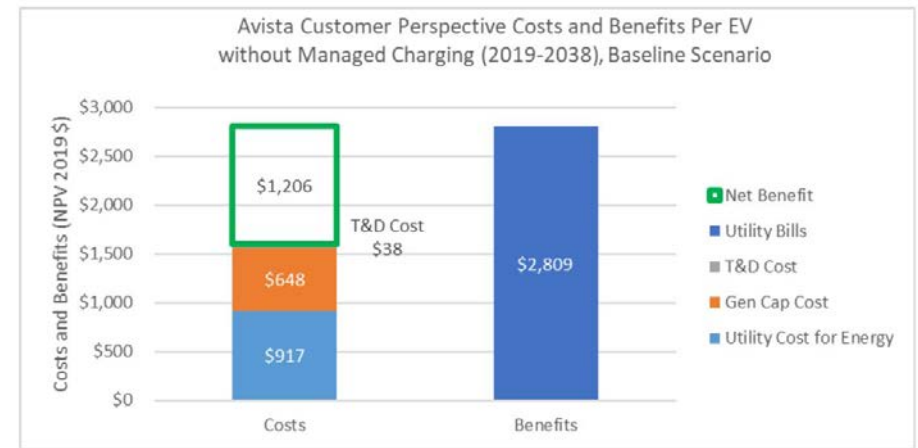


Figure 21: Utility customer perspective costs and benefits per EV without managed charging 2019-2038

- Grid impact and cost evaluations for DCFC siting designs
- Ongoing load profile data, modeling and analysis of grid and economic impacts
- Developing load management capabilities



# Walking the Talk – Utility Electrification



- Fleet electrification
  - 25% of light-duty trucks electric by 2030
  - continue
- Facility charging infrastructure
  - EVSE at every facility
  - adequately support workplace and fleet charging, available to the public
- Employee engagement
  - increase employee EV adoption 300% by 2025



Edison Electric  
INSTITUTE

AVISTA

# Costs and Benefits – Light-duty EVs

Table 8: High EV adoption— annual costs and benefits for Avista Washington customers

Year	# EVs (WA)	Utility Billing Revenue	kWh	Coincident kW (January 6pm)	Utility Generation and Delivery Cost	Net Revenue Offsetting Benefit	Avoided CO <sub>2</sub> Emissions (Tons)	Customer Transportation Fuel and Maintenance Savings
2021	1,678	\$510,178	5,291,422	1,309	\$104,097	\$406,081	6,713	\$2,488,798
2022	2,311	\$702,678	7,287,975	1,803	\$145,615	\$557,063	9,246	\$3,427,868
2023	3,115	\$946,884	9,820,809	2,430	\$200,738	\$746,146	12,459	\$4,619,175
2024	4,262	\$1,295,610	13,437,696	3,324	\$290,353	\$1,005,257	17,048	\$6,320,363
2025	5,958	\$1,811,376	18,787,072	4,648	\$427,589	\$1,383,788	23,834	\$8,836,419
2026	8,468	\$2,574,194	26,698,798	6,605	\$1,359,597	\$1,214,597	33,871	\$12,557,665
2027	12,179	\$3,702,402	38,400,242	9,500	\$1,948,744	\$1,753,658	48,716	\$18,061,389
2028	17,857	\$5,428,560	56,303,451	13,929	\$2,969,483	\$2,459,077	71,428	\$26,482,086
2029	26,545	\$8,069,581	83,695,360	20,705	\$4,535,926	\$3,533,655	106,179	\$39,365,753
2030	40,454	\$12,298,165	127,553,008	31,555	\$7,087,290	\$5,210,875	161,818	\$59,994,009

- Additional benefits beyond light-duty shown above:
  - Monetized environmental benefits could become available
  - Load management
  - Medium- and heavy-duty, other market segments

# Costs and Benefits – Light-duty EVs

Table 9: Net revenue requirement from capital investments in transportation electrification compared to the 0.25% annual limit

Year	Capital Investments	TE RevReq without Offsetting Benefits	Offsetting Utility Customer Benefits	TE RevReq after Offsetting Benefits	TE Incremental % RevReq with Offsetting Benefits	0.25% WA Electric Revenue Requirement Limit
2021	\$2,250,000	\$482,400	\$388,281	\$94,119	0.02%	\$1,373,963
2022	\$2,887,500	\$839,940	\$507,000	\$332,940	0.06%	\$1,422,051
2023	\$3,620,625	\$1,256,019	\$655,613	\$600,406	0.10%	\$1,471,823
2024	\$4,163,719	\$1,671,826	\$927,677	\$744,149	0.12%	\$1,523,337
2025	\$4,788,277	\$2,118,920	\$1,250,584	\$868,336	0.14%	\$1,576,654
2026	\$5,506,518	\$2,706,442	\$1,214,597	\$1,491,845	0.23%	\$1,631,836
2027	\$6,332,496	\$3,455,457	\$1,753,658	\$1,701,799	0.25%	\$1,688,951
2028	\$6,332,496	\$4,186,535	\$2,459,077	\$1,727,458	0.25%	\$1,748,064
2029	\$7,282,370	\$5,190,333	\$3,533,655	\$1,656,678	0.23%	\$1,809,246
2030	\$8,374,726	\$6,407,705	\$5,210,875	\$1,196,830	0.16%	\$1,872,570

- Intention to stay under 0.25% annual Revenue Requirement
- Regular adjustments to plan based on changing market conditions
- Approach transitions to more enabling as adoption takes permanent hold and accelerates in the mass-market

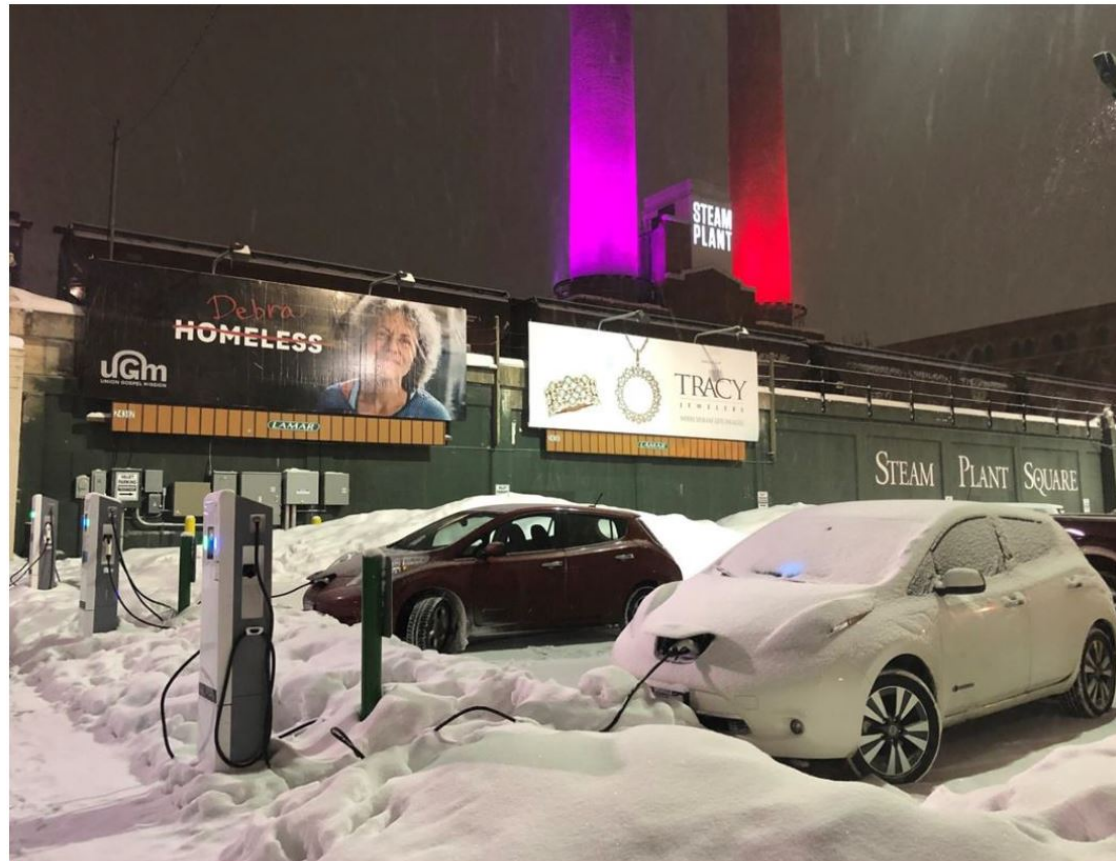


# Analysis and Reporting

- Summary year-end updates
  - Expenses & revenues
  - High-level program results & adjustments to plan
- Comprehensive mid-period report
  - Adoption & forecasts
  - Detailed program activity & results
  - Lessons learned
  - Adjustments
- 5-year TEP revisions
- Key metrics
  - Customer satisfaction
  - Adoption
  - EVSE performance
  - Costs and benefits
  - Engagement, effectiveness of low-income and community support programs



# Thank you!



Public AC Level 2 EVSE at Steam Plant Square in downtown Spokane (2018)