



**ACCELERATING
TO A**

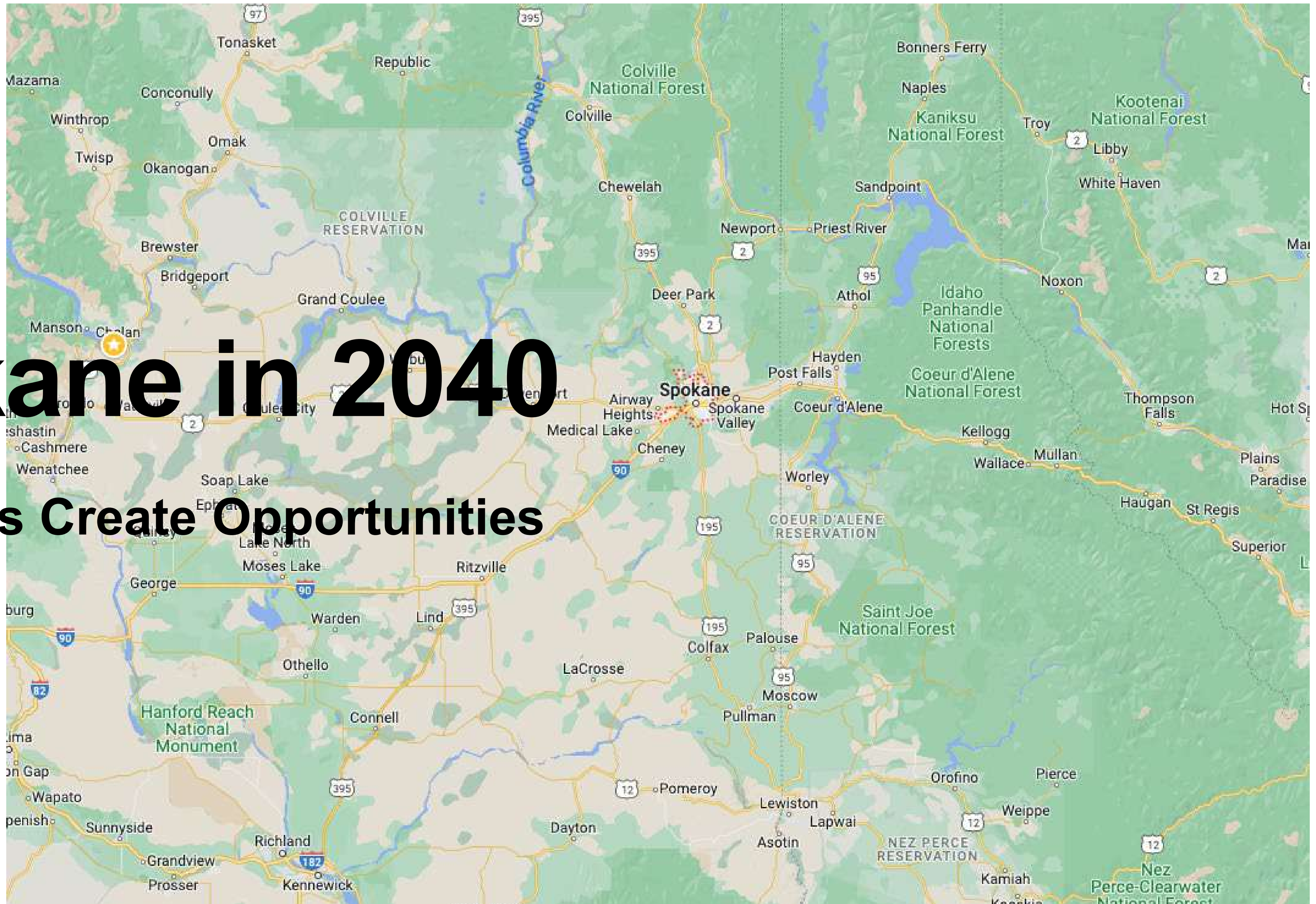
CLEAN FUTURE

THE ROAD TO SUSTAINABLE
TRANSPORTATION

— 2023 Transportation Summit —

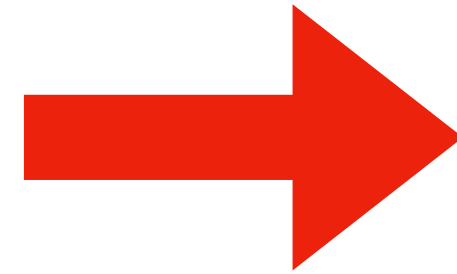
Spokane in 2040

Transitions Create Opportunities

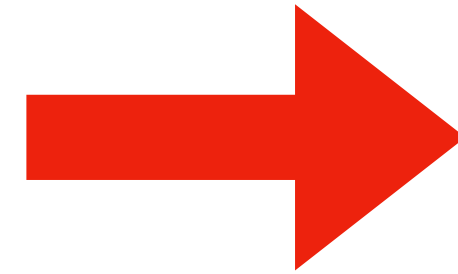




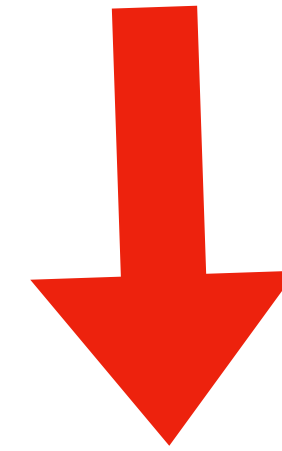
1989



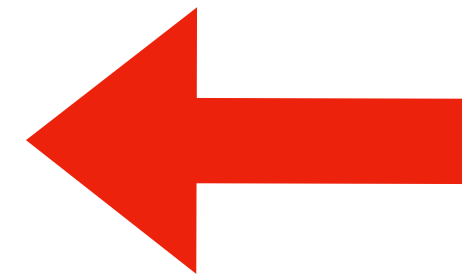
1996



2003



2007



Today

Transitions Under Way

More Choice in Transportation Fuels

- Electric
- H2
- Propane
- Renewable diesel
- RNG

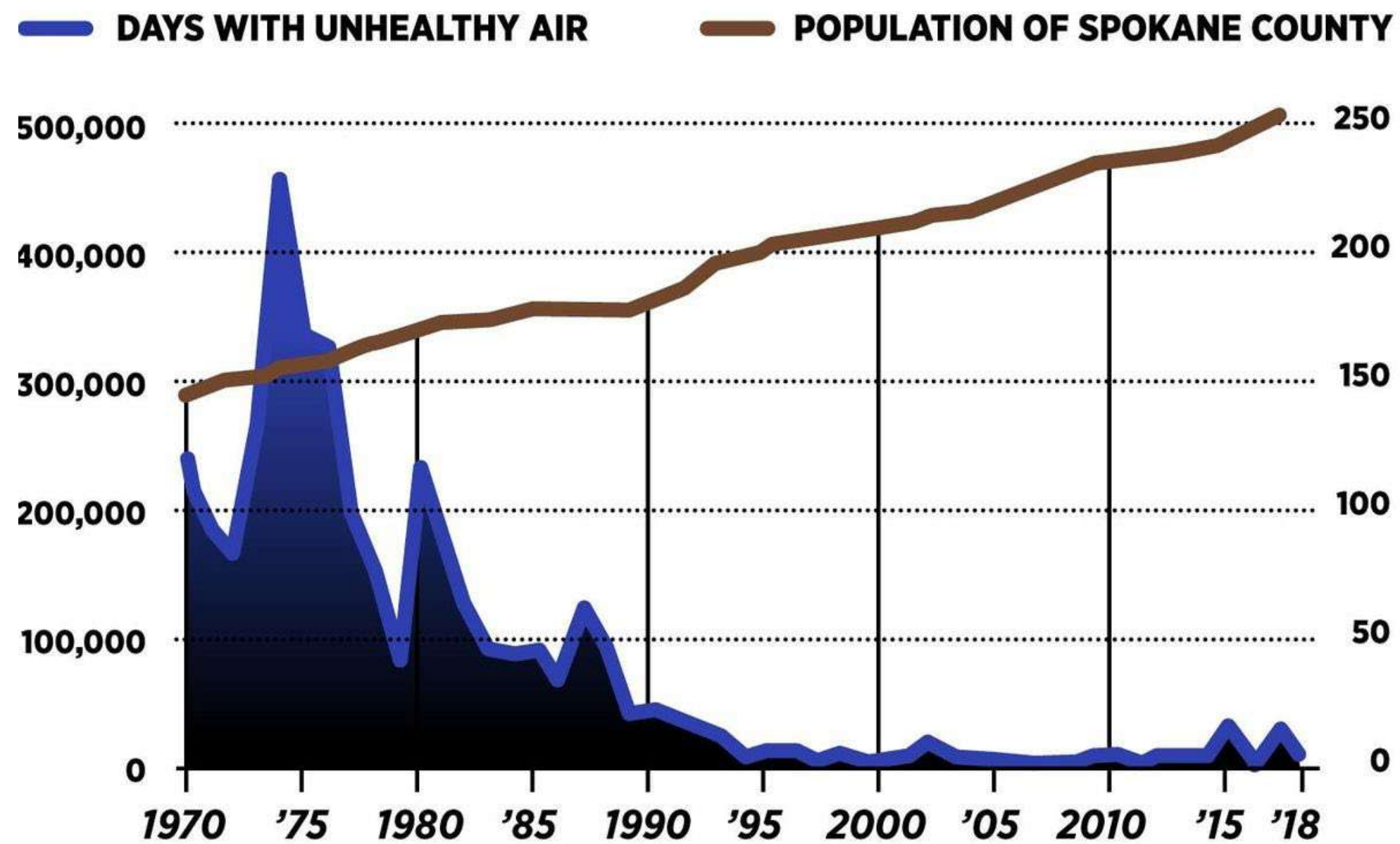
Technology & Lifestyle Choices

- Falling prices, better performance
- Different driving experience
- Higher initial cost, but lower fuel and maintenance costs
- Power available from vehicle
- Refuel overnight
- OTA software updates

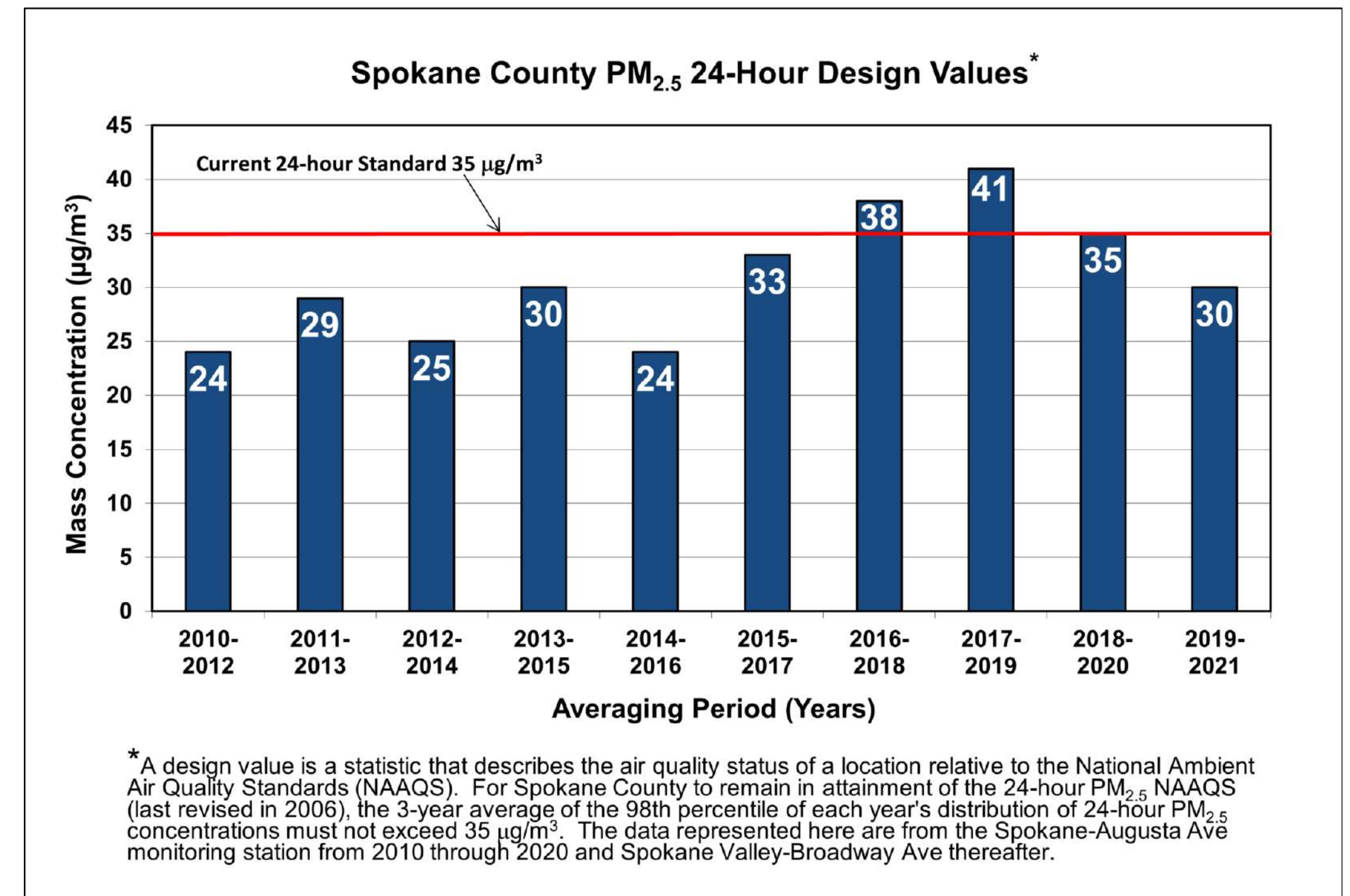
Policy Sentiments

- Reduce Emissions where Vehicles Move/Idle
- Disadvantaged Community Needs
 - Improved Health
 - Equity
- Supply Chain and “Made in USA”

Great Progress, Spokane!



The Spokesman-Review



Spokane Regional Clean Air Agency



Ford F-150 Lightning Powers Your Home

- Full-home power for up to 3 days on a fully charged battery (at 30 kWh use/day)
- Combine with 80-amp Ford Charge Station Pro
- Requires home transfer switch
- Siemens offers wall box at 19.2kW as bidirectional-ready charging solution

Photo Courtesy: Ford



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©CharlieAllcockConsultingLLC

More EV Trucks





GM Brightdrop



Rivian EDV





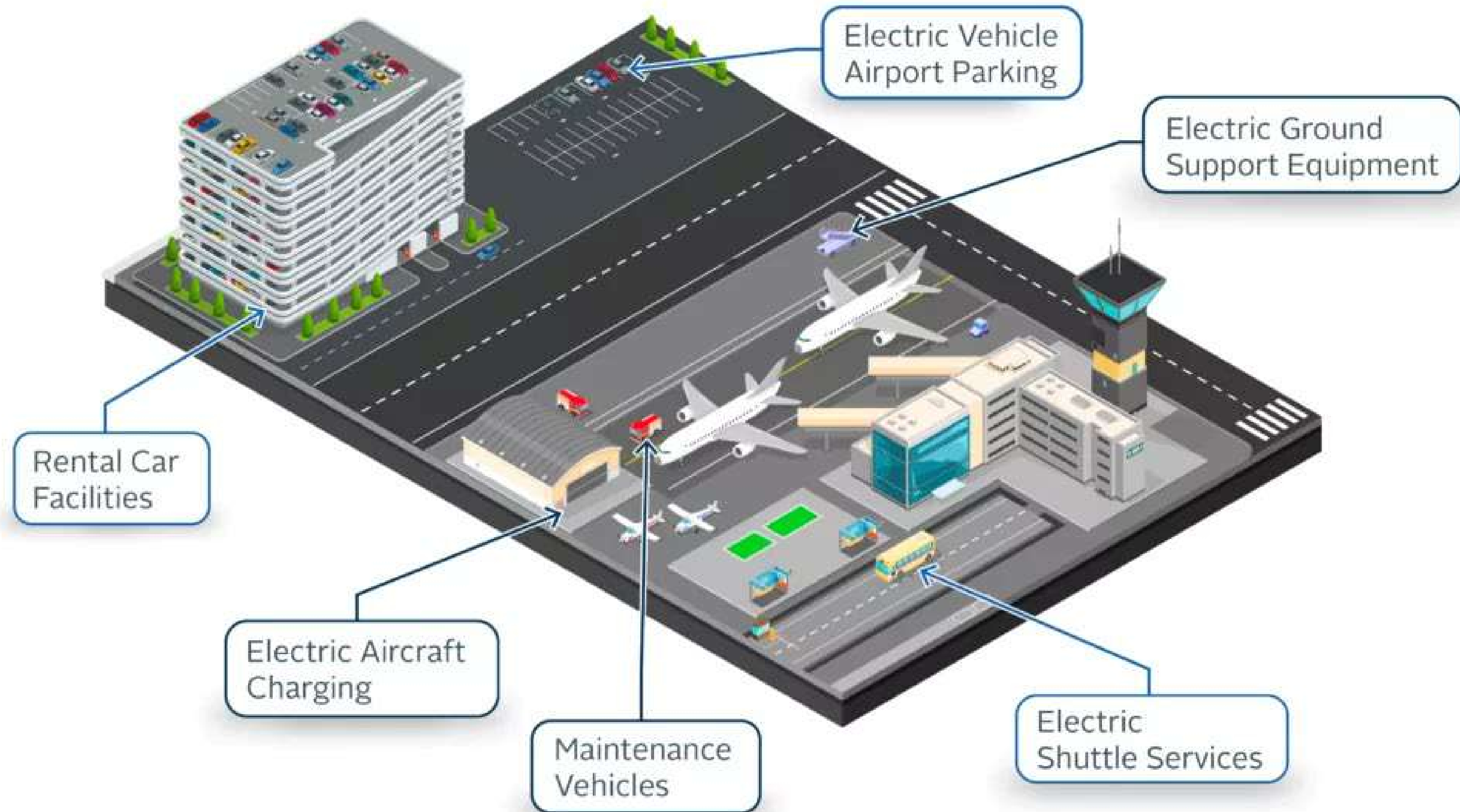
Photos courtesy: Avista, Xcel Energy, JETSI, City of Boise, Idaho

How is industry changing?

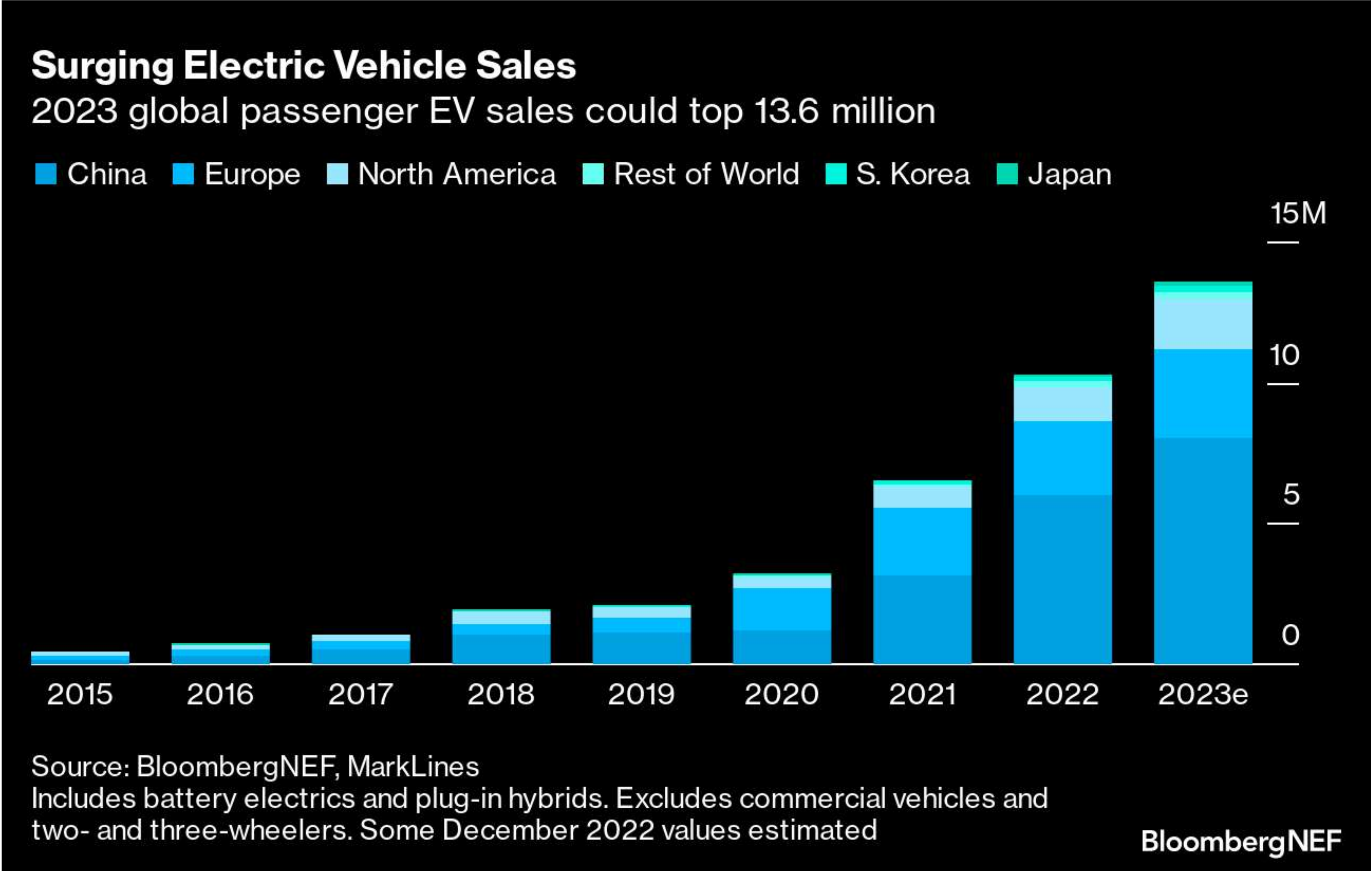


June 2023

Airport Electrification

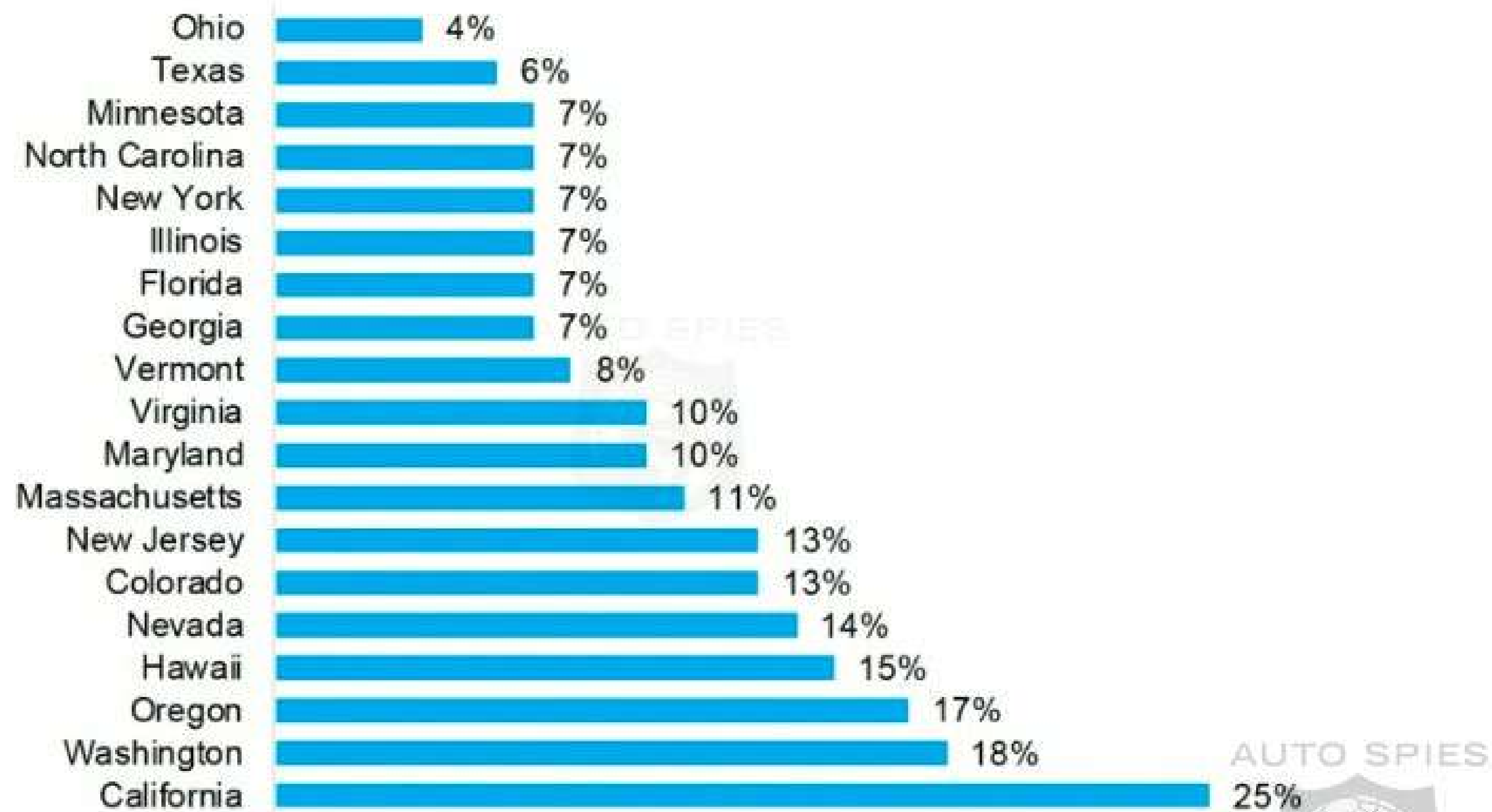


Global Market, not just North America



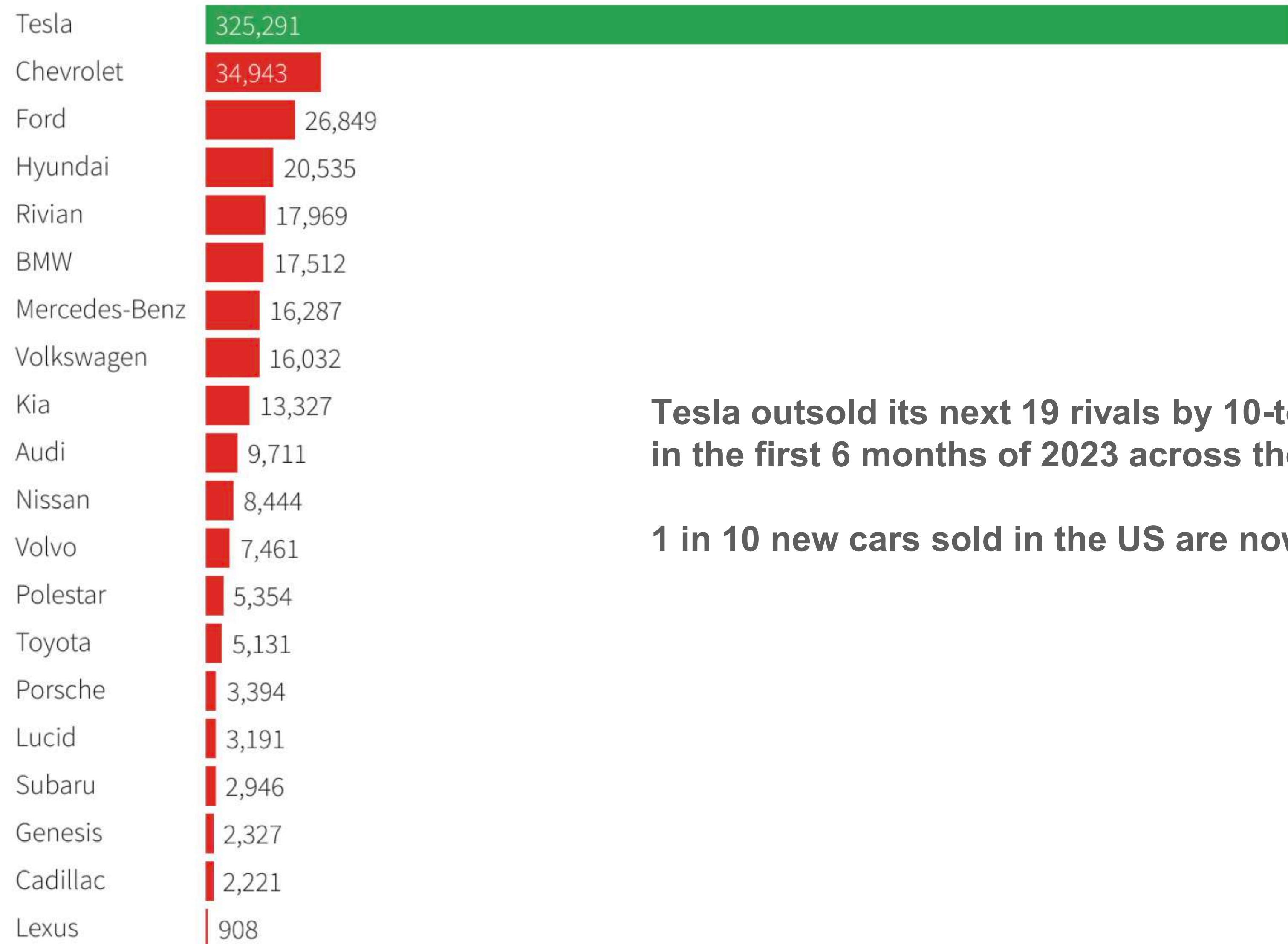
EV Share of New Passenger Car Sales

Figure 4: 1H 2023 EV share of new passenger car sales in select states



Source: Experian Automotive, BloombergNEF, California New Car Dealers Association. Note: values rounded to nearest percent.

Tesla Sales Dominate



Tesla outsold its next 19 rivals by 10-to-one or more in the first 6 months of 2023 across the US

1 in 10 new cars sold in the US are now BEV

Vehicles in Spokane County

Today

- 600k total registered vehicles
 - 110k Trucks
 - 350k Passenger Vehicles
- Vehicle turnover
 - 3000 new registrations/month
 - 3% of new passenger car sales are BEV (80-100 cars/mo)
- How many vehicles just travel through the region?

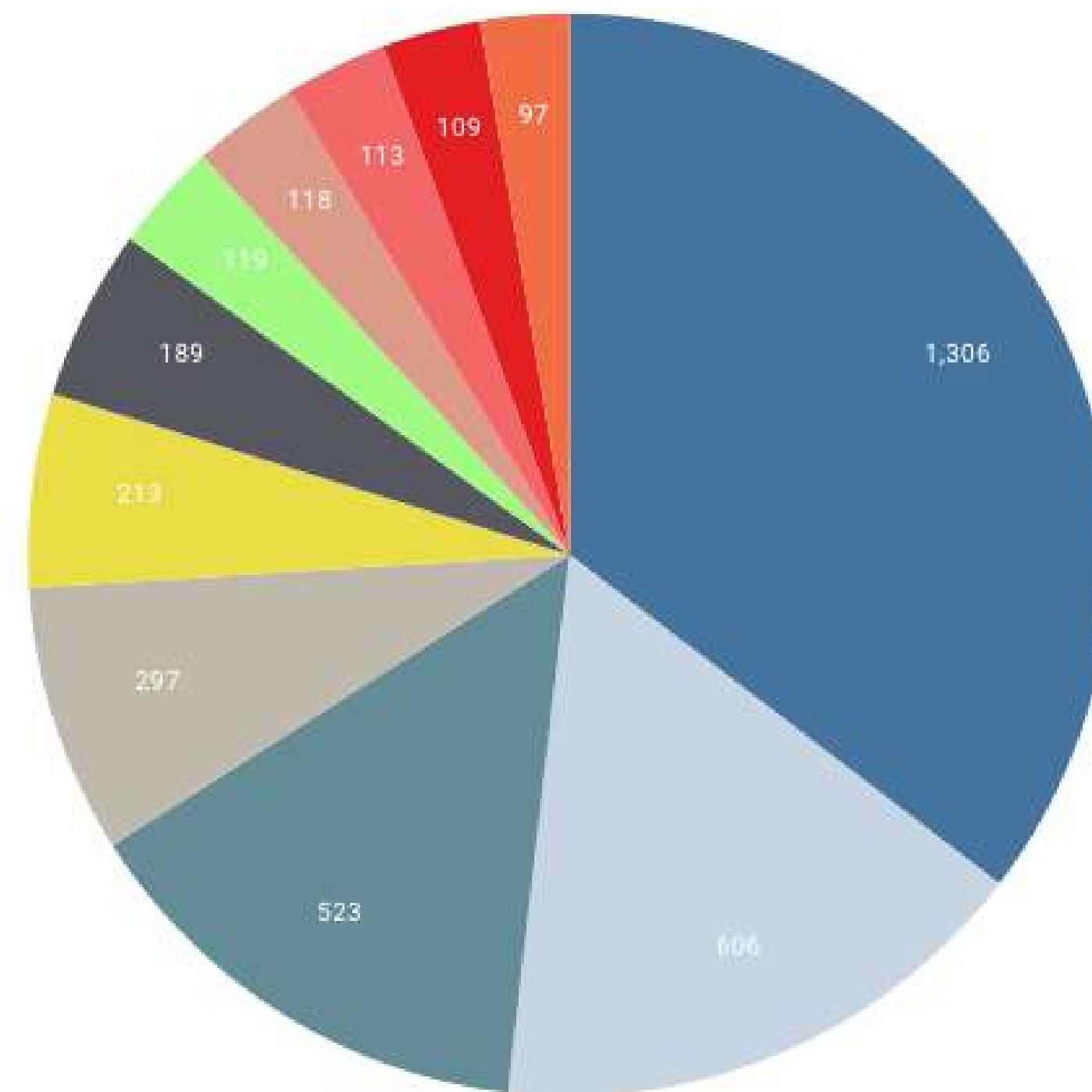
Top 10 Electric Vehicle Models

Spokane County

Top 10 Electric Vehicle Models

This chart shows the 10 most common electric vehicles currently registered, grouped by model.

Total - 3690
BEVs - 2512
PHEVs - 1178

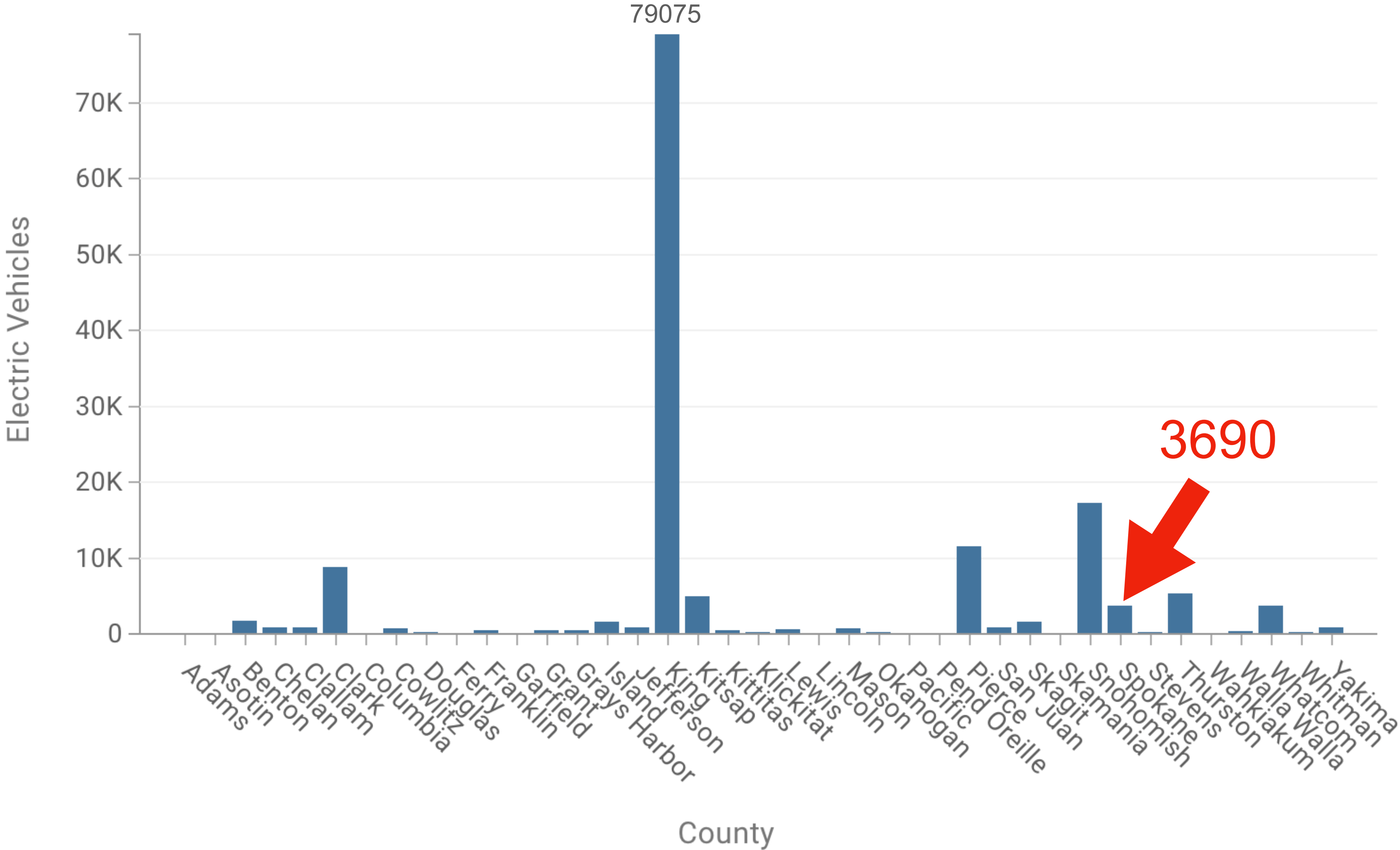


- (Other)
- MODEL Y
- MODEL 3
- LEAF
- VOLT
- MODEL S
- BOLT EV
- PACIFICA
- MODEL X
- WRANGLER
- FUSION

Electric Vehicle Population County Comparison



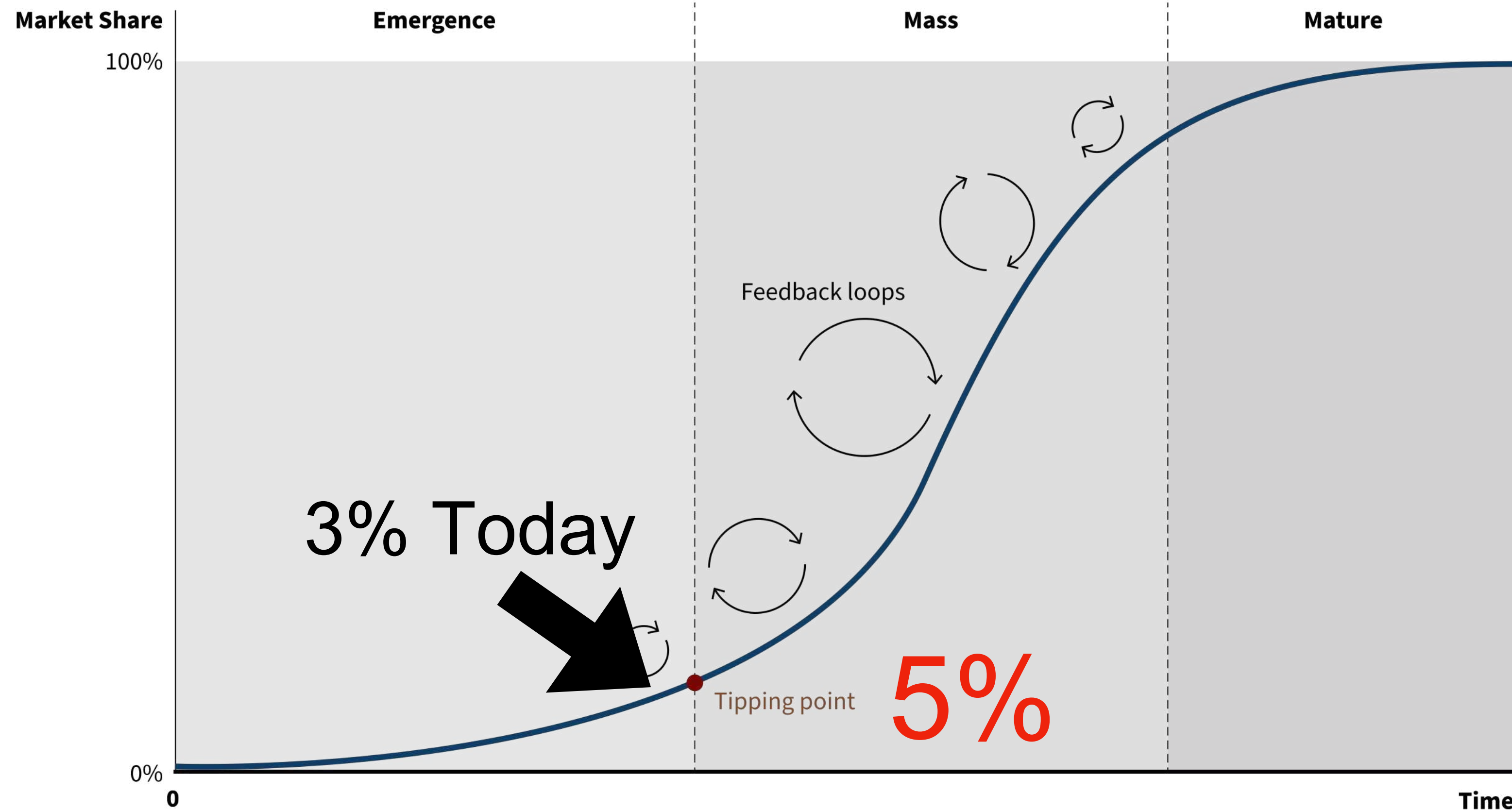
This chart shows the number of electric vehicles in each selected county.



Spokane is Approaching the Tipping Point

Adoption Rate of Innovations & New Technologies

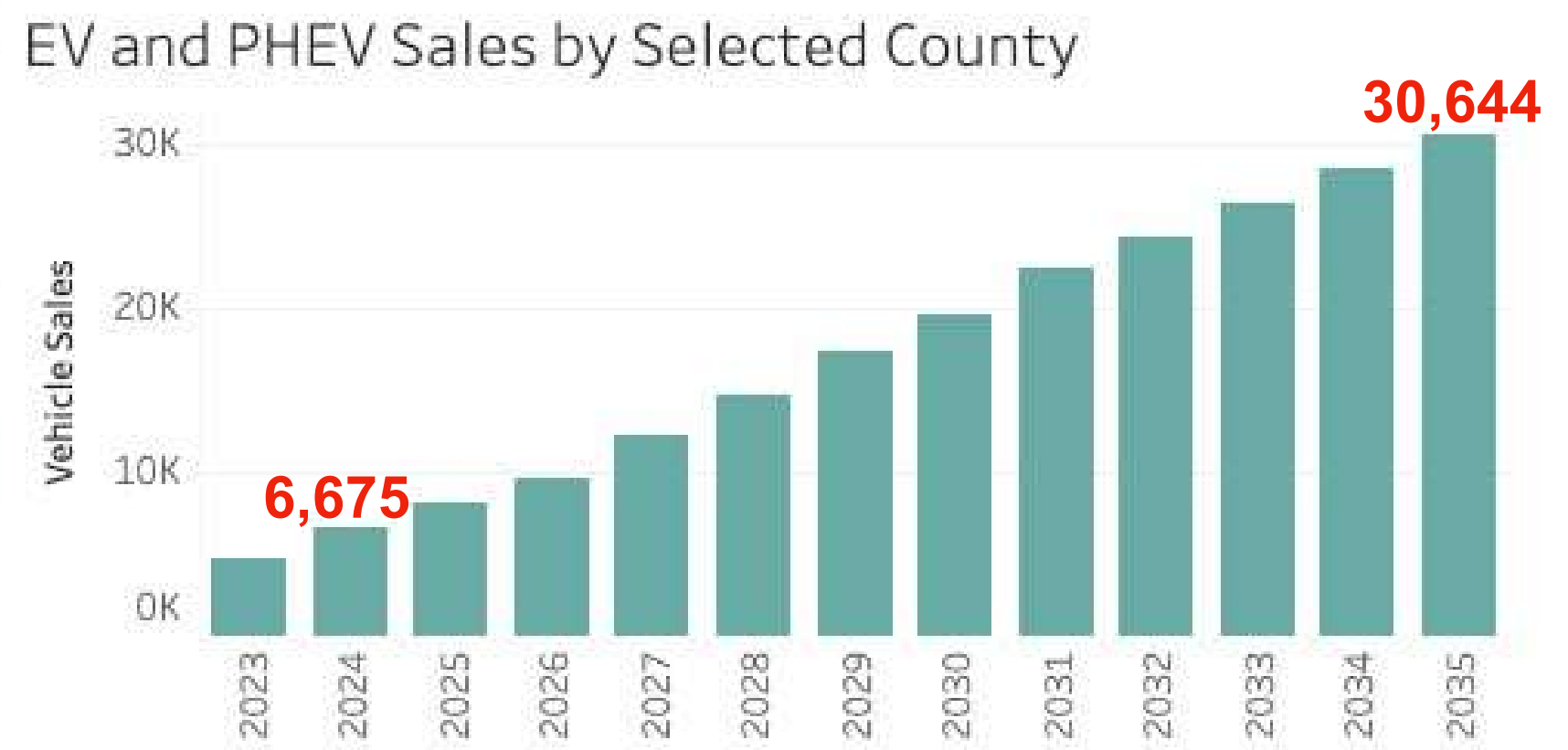
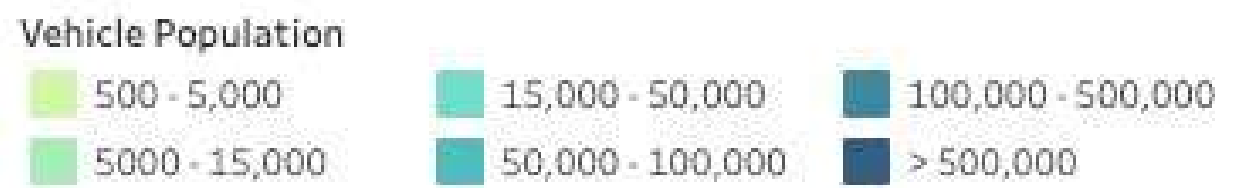
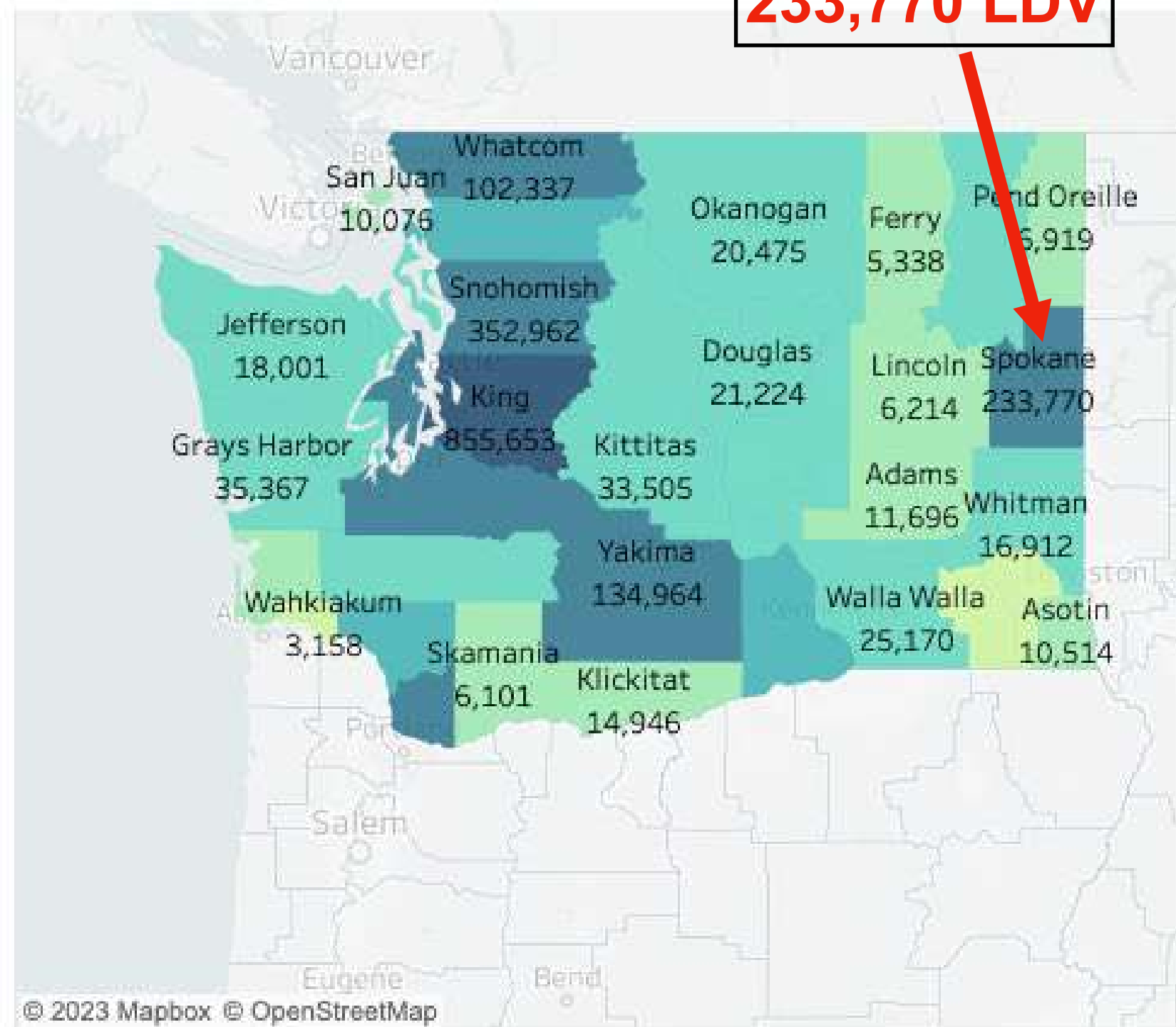
Exhibit 1: How S-curves work



2035 Forecast for Spokane County

Washington State Transportation Electrification Strategy

Location	Scenarios & Sensitivities	Summary of Results	Results by County	LDV EVSE Results by Census Block Group	Results by Scenario	Emissions
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Transitions are Messy

Public Policy Targets are Being Set

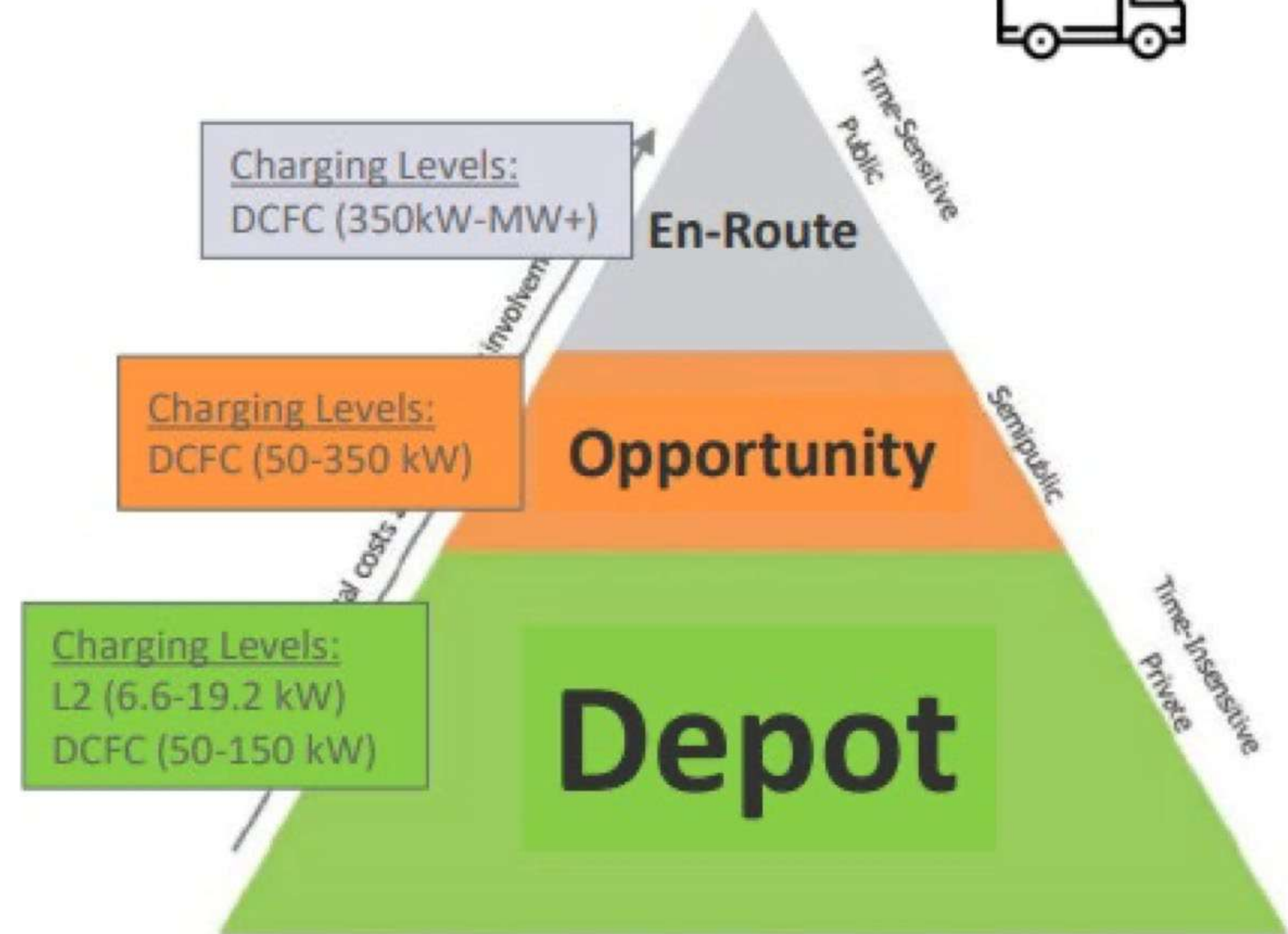
- Federal (aspirational) goal - 50% of new car sales are ZEV by 2030
- ACC-II Rule (100% of new car sales are ZEV by 2030)
- Advanced Clean Truck (ACT) Rule
 - 2035 - 55% of Class 2b–3 truck sales, 75% of Class 4–8 straight truck sales, and 40% of truck tractor sales need to be ZEV
- Advanced Clean Fleet (ACF) Rules
 - 2035 - 100% of new drayage trucks, last mile delivery and government fleets are ZEV
 - 2040 - refuse trucks, local buses & utility fleets are all ZEV

Charging Infrastructure Needs

LDV Paradigm



MHDV Paradigm:



Passenger Cars

Comparing Annual Fuel Costs between Gasoline and Electric

Gasoline Version		Electric Version	
Average Miles per Gallon	33	Miles per kWh	4
Price Per Gallon of Gasoline	\$5.10	Price of Electricity per kWh	\$0.09
Distance Driven/Year	12000	Distance Driven/Year	12000
Gallons per Mile	0.03	Electricity Consumed per Mile (kWh/mi)	0.25
Gallons Used per Year	364	Electricity Consumed per Year (kWh)	3000
Estimated Annual Fuel Cost	\$1,855	Estimated Annual Electricity Cost	\$276
Approximate Annual Fuel Savings	\$1,579		

Average cost of new passenger vehicle
 Gasoline \$48,334
 Electric \$53,469

Some Vehicles & Use Cases are “in the Money”



Ford Transit Cargo Van

Vans Fuel Cost Comparison

Gasoline Version		Electric Version	
Average Miles per Gallon	15	Miles per kWh	1.85
Price Per Gallon of Gasoline	\$5.25	Price of Electricity per kWh	\$0.08
Daily Range	100	Daily Range	100
Operational Days	250	Operational Days	250
Gallons Burned per Mile	0.07	Electricity Consumed per Mile (kWh/mi)	0.54
Gallons Burned per Day	6.7	Electricity Consumed in a Day (kWh)	54.1
Cost of Fuel per Day	\$35	Cost of Electricity per Day	\$4
Estimated Annual Fuel Cost	\$8,750	Estimated Annual Electricity Cost	\$1,081
Approximate Annual Fuel Savings	\$7,669		
2023 Ford eTransit-350 Base MSRP (without incentives)	\$57,000	Tax credit is \$3,750.	
2023 Ford Transit Cargo Van MSRP	\$46,000		
Initial Cost Difference	\$11,000		

Run on Less - Electric DEPOT 2023

5 more EV OEMs

- Ford
- BrightDrop
- Navistar
- Nikola
- Tesla
- Each location has at least 15 EV trucks
- Many have more



RUN ON LESS

ELECTRIC DEPOT

Showcasing Fleets Electrifying their Operations

DATA FOR TESLA 3



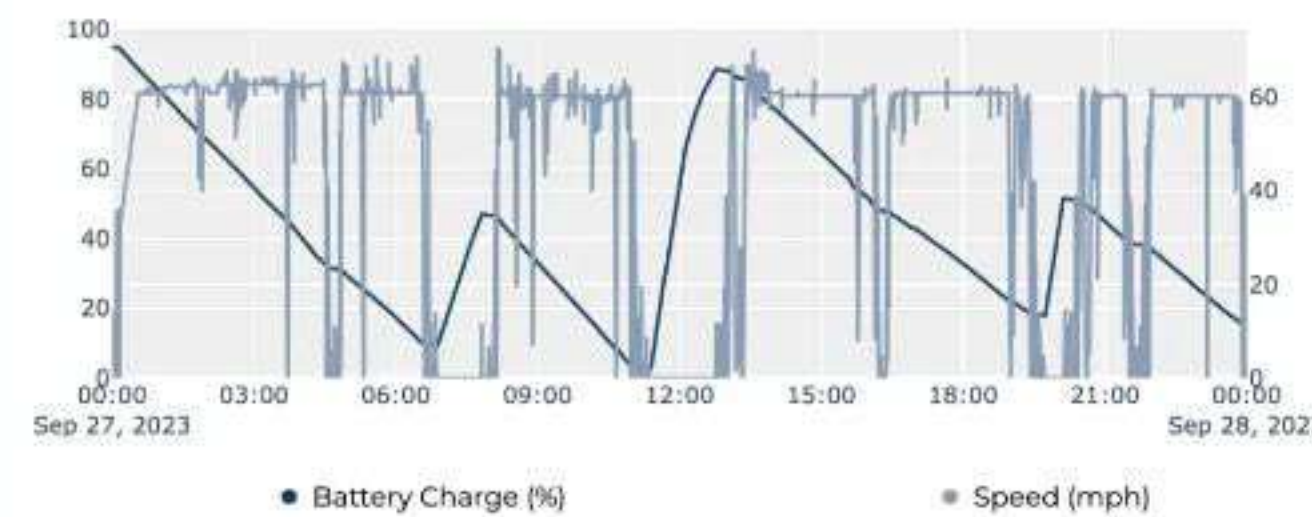
Total Miles **1076**

Average Miles/Day **1076**

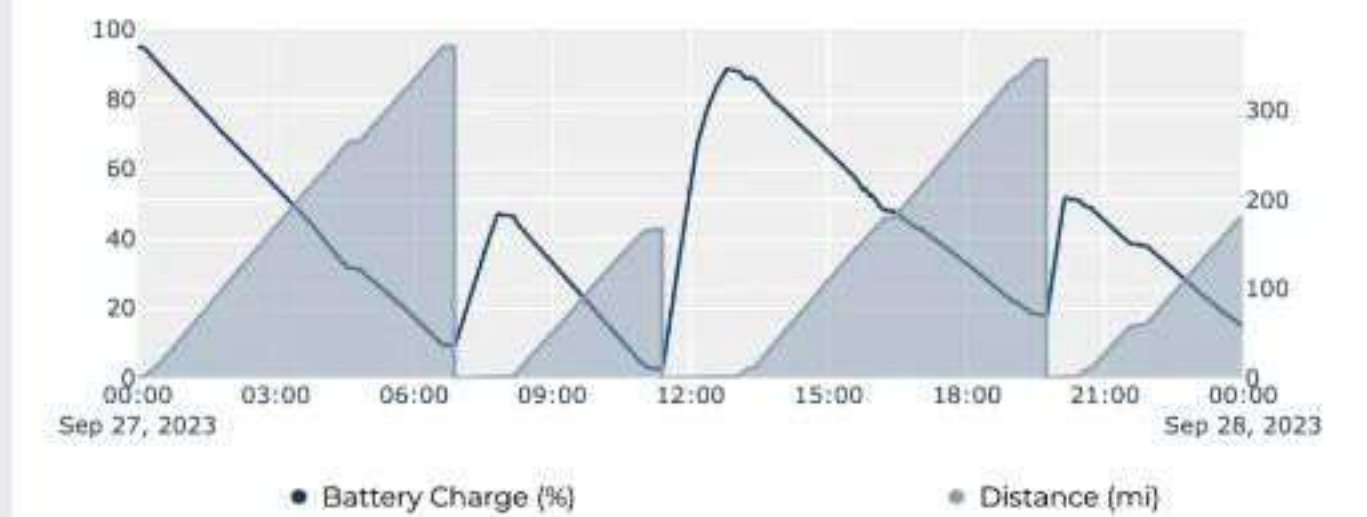
Estimated Deliveries **1**

Average Deliveries/Day **1**

Battery Charge (%) & Speed (mph)



Battery Charge (%) & Distance (mi)



Fleet Electrification at Scale

- Timeline for Load Additions is Short
- High Loads Density (Depots, Truck Stops)
- Quickly Becomes a Large Load - easily a 5-10MW Customer
- Concentration of these MW+ Facilities, especially in already urbanized areas





Photos Courtesy: WattEV, Terawatt, Daimler Truck North America

Electric Island, Portland, OR



Refueling with Electricity in Long-Haul Freight Corridors

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- Nine West Coast Utilities completed West Coast Clean Transit Corridor Initiative (WCCTCI) Study in June 2020
 - Based on traffic counts
 - General areas for public charging hubs identified at 50-mile intervals
- Fall 2021 - Over 20 utilities conducted grid readiness assessments at existing truck stop sites near identified areas
 - San Diego, CA to Vancouver, BC
- More info at www.westcoastcleantransit.com

Timelines Don't Align

Infrastructure takes Longer

- 6-9 months to get an electric truck (Class 6-8), from order to delivery
- New utility grid infrastructure takes time
 - 2 years (feeders)
 - 5 years (new substations)
 - 8-10 years (transmission lines)

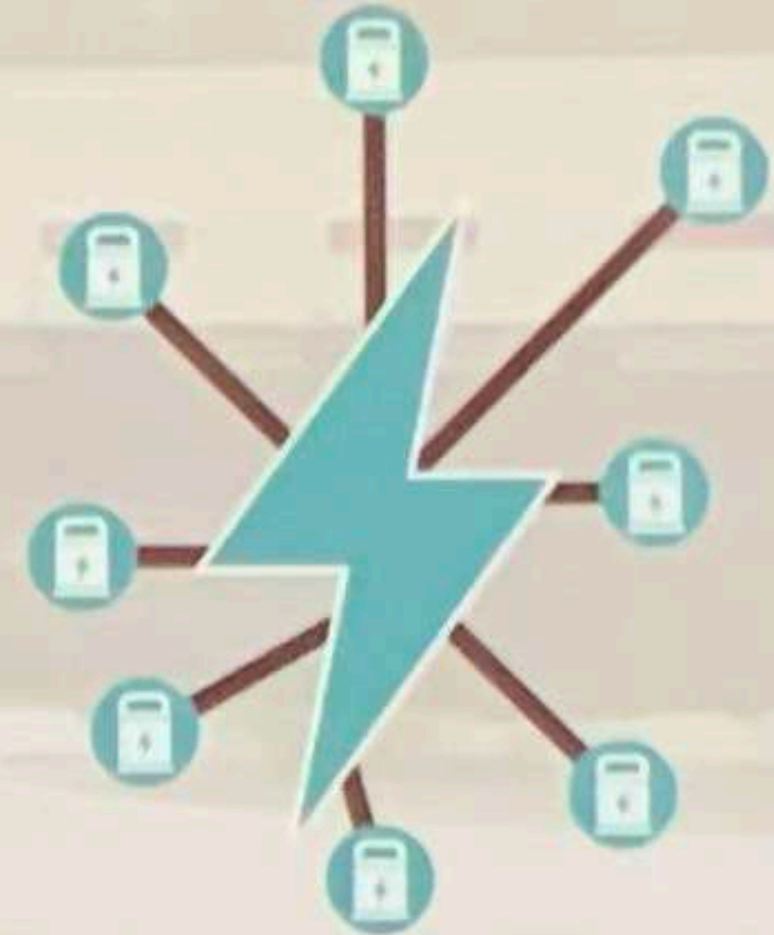
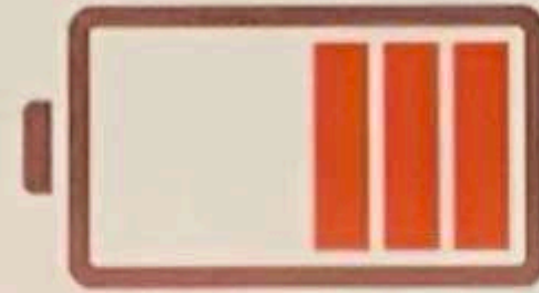
FORMULA FOR SUCCESS



VIABLE PRODUCT SOLUTIONS



TOTAL COST OF OWNERSHIP PARITY

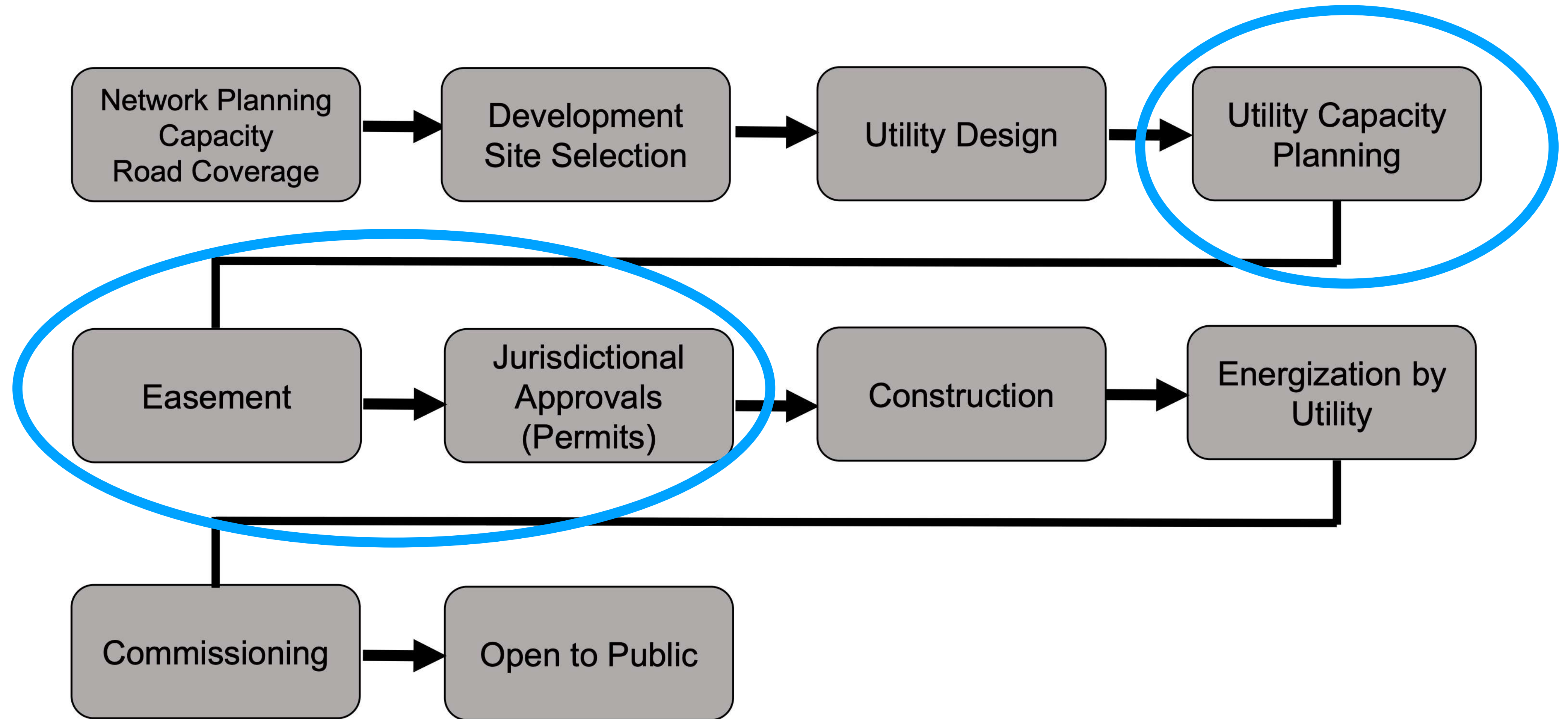


DEPENDABLE CHARGING INFRASTRUCTURE



Scaling EV Charging Infrastructure

Development Process



Role of the MPO



- Envision a Zero-Emission Mobility Future
 - Collaboration
 - Many More & Different Stakeholders
 - Transportation Infrastructure definition is much broader
- Translate vehicles movement data into “usable info” for decisions
- Lower Barriers, Reduce Costs - Streamline local AHJ plan reviews, permits and inspections, including ROW permitting
- Shape Community Goals, Track Progress, Celebrate Success

What Businesses Can Do

- TCO vs MSRP - Understand the economics
- Vehicles are tools - match vehicle capabilities with business needs
- Experience driving vehicles
- Consider other benefits (driver retention, business reputation, etc)
- Work on future plans - “touch concrete” once
- Engage early with your local electric utility
- Share learnings & best practices with each other