Transportation Electrification Working Group
Dec. 9, 2021

AGENDA

1. Introductions
2. Working Group role and expected outcomes
3. Electric vehicle and energy grid overview
4. GHG reduction goals
5. Transportation electrification planning goals
6. Q&A: public and interested parties
7. Next Steps

Credit: NJ Spotlight News

INTRODUCTIONS

PRESENTERS

- Marci Henson, Director of Department of Environment & Sustainability, Clark County
- Marie Steele, Electrification Director, NV Energy
- April Bolduc, President, S Curve Strategies
- Randy Schimka, Transportation Electrification Technical Advisor

Credit: NJ Spotlight News

MEMBERS

- CHISPA
- City of Boulder City
- City of Henderson
- City of Las Vegas
- Clark County
- Clark County School District
- Electrification Coalition
- NAOIP
- NV Energy
- Ovation Development
- Regional Transportation Commission
- Southern NV Water Authority
- Southern NV Home Builders Association
- State of NV – Division of Environmental Protection
- State of NV – NV Climate Initiative/NDEP/GOE/NDOT
- Southwest Energy Efficiency Project
- Western Resources Advocates

INTERESTED PARTIES

1. List your name, title and organization in the chat
2. Post questions in the chat
3. Time reserved for Q&A via the chat at the end

Credit: Jenny Ueberberg

WORKING GROUP ROLE & EXPECTED OUTCOMES

NV EMISSION REDUCTION GOALS

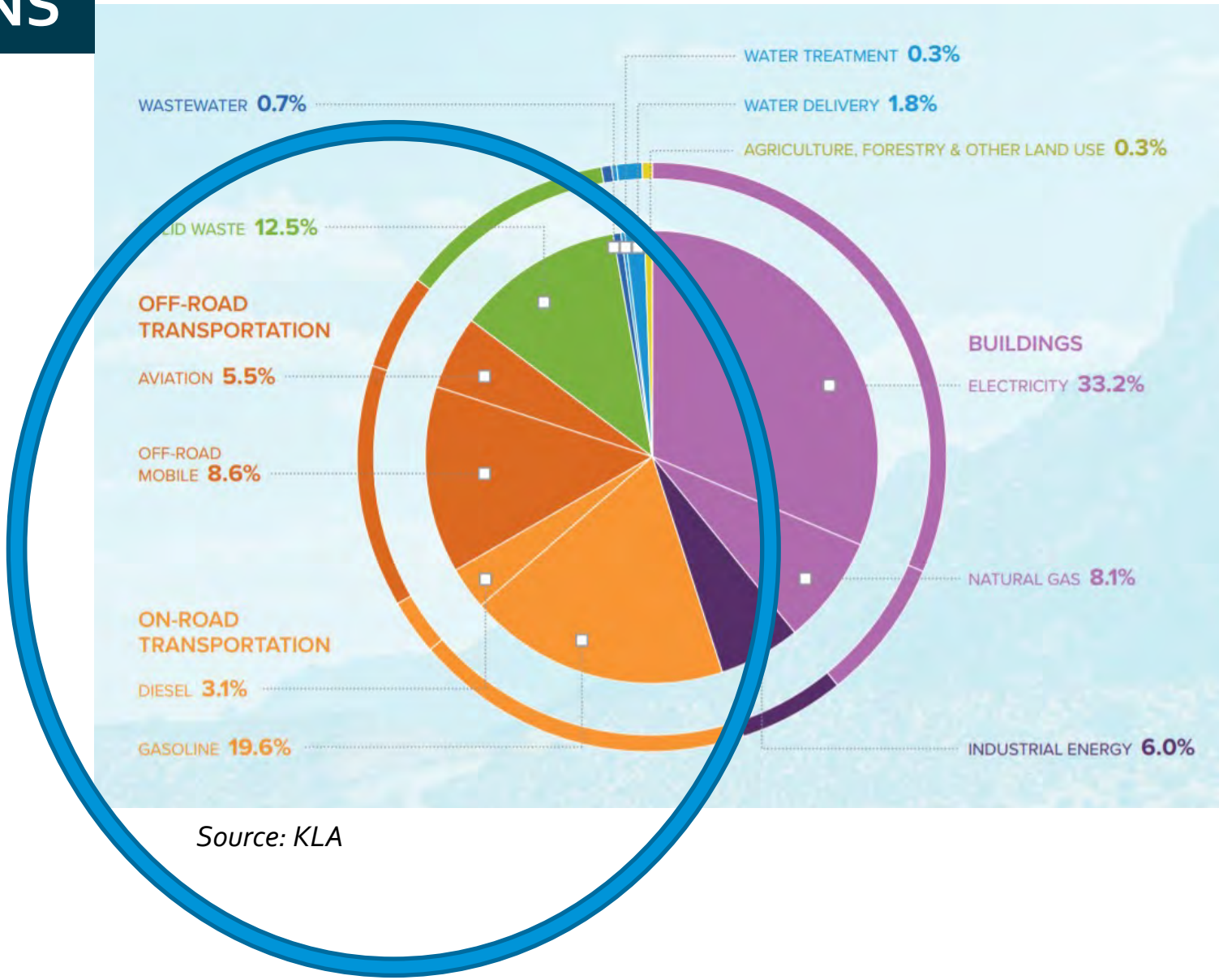
- 28% reduction by 2025
- 45% reduction by 2030
- Net-zero by 2050

Announced yesterday, the federal government will stop buying gasoline vehicles by 2035.

Gov. Sisolak delivers remarks on the need for climate action in front of a public electric bus operated by RTC Washoe. Credit: NRDC

TRANSPORTATION EMISSIONS

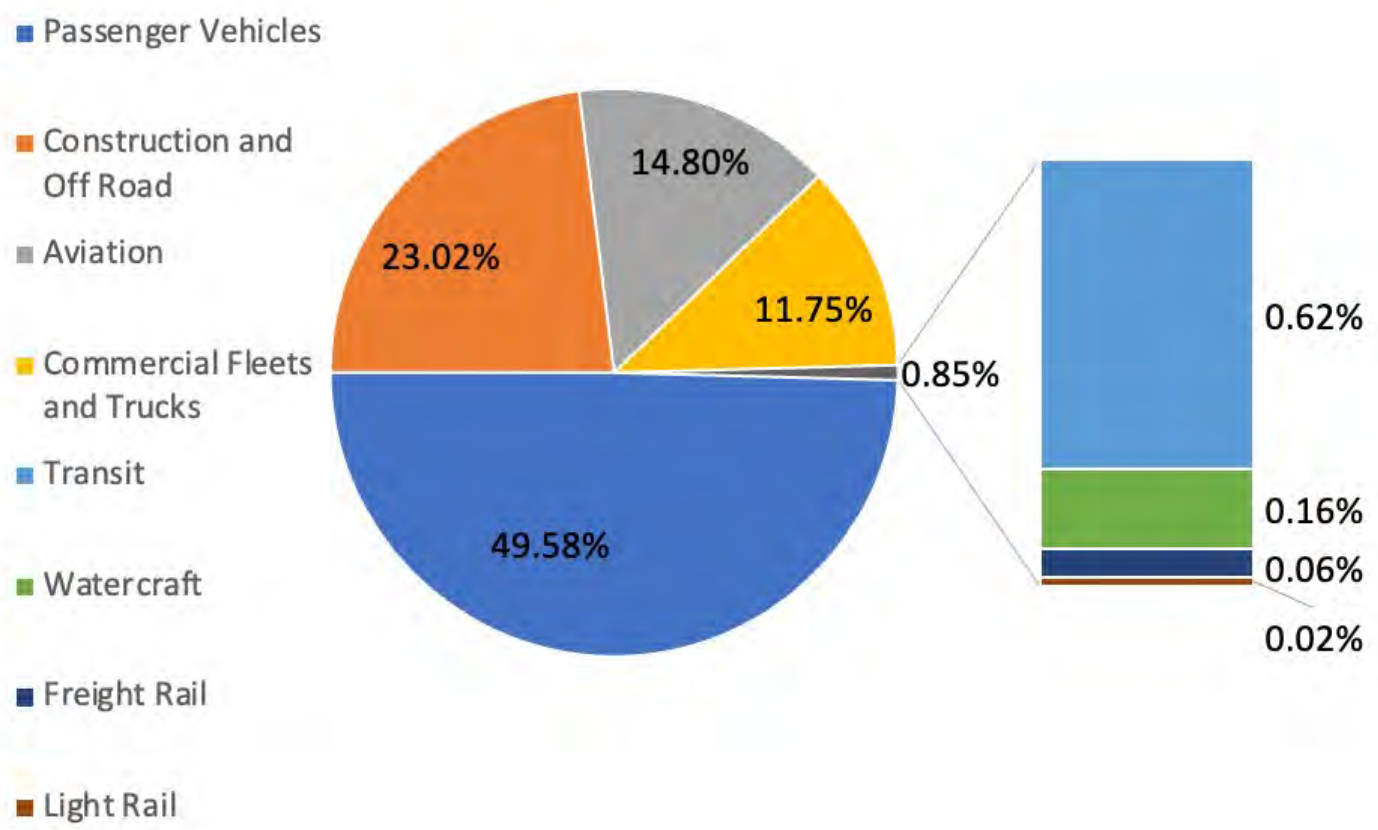
- Of the Clark County region's total GHG emissions, more than one-third comes from transportation -- 36.8%.



Source: KLA

LIGHT-DUTY EMISSIONS

- Light-duty vehicles make up almost 50% of transportation emissions.
- It is imperative for the region to reduce light-duty GHG emissions in order to meet the state's goals of zero emission by 2050



Source: KLA

LIGHT- DUTY EMISSIONS

- 23% of all GHGs
  - 50% from passenger vehicles
  - 43% from light-duty trucks
  - 6% medium & heavy duty trucks
- 7% of particulate matter 2.5
- 39% of nitrogen oxides
- 21% of volatile organic chemicals

CLARK COUNTY

Goals

- Improve air quality
- Improve public health
- Reduce GHG emissions

Needed Actions

- Reduce car dependency
- Increase mobility options
- Electrify transportation

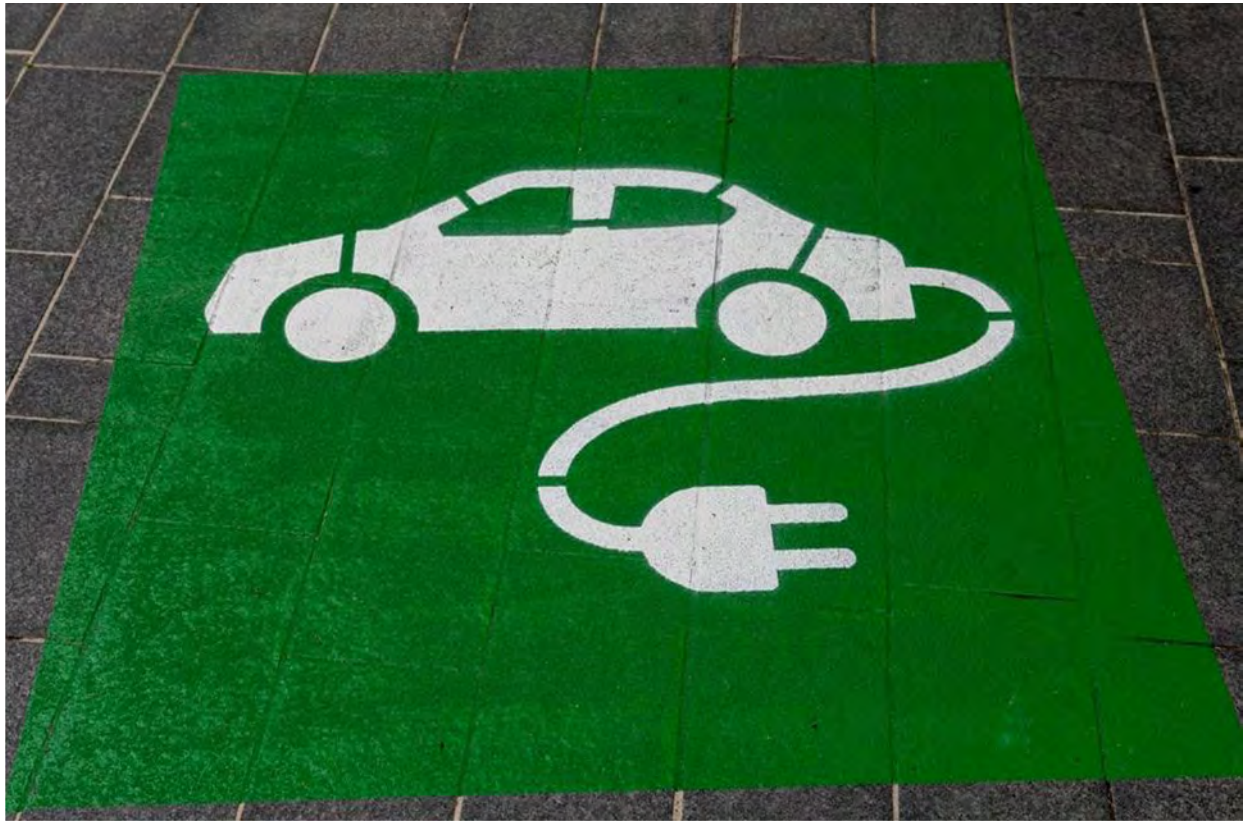
Net-zero by 2050

CLARK COUNTY ACTION ITEMS

- Developed a Communitywide Climate Action Plan to ensure:
  - Clean and Reliable Energy
  - Diverse and Circular Economy
  - Sustainable Water Systems
  - Resilient & Health Community
  - Smart Buildings & Development
  - Connected & Equitable Mobility
- Fleet electrification
- Install EV charging for employees and public
- Prepare residents and businesses for EV adoption
  - Create a Transportation Electrification Working Group
  - Develop a Regional Transportation Electrification Strategy

WORKING GROUP

- Expected Outcome
  - Develop a Regional Transportation Electrification Strategy
    - as part of the All-In Clark County Regional Electrification Strategy December 2022
  - Phase 1 – focus on light-duty vehicles
  - Phase 2 – in 2023, focus on medium- and heavy-duty vehicles



Credit: Michael Marais

MEETING OVERVIEW

- April Bolduc, President
- Randy Schimka, Transportation Electrification Technical Solution Advisor
- Transportation electrification program development
- Utilities, states and municipalities
- Since 2011:
    - Developing EV driver programs and stakeholder engagement efforts
    - Driving electric ourselves

S CURVE
STRATEGIES

WORKING GROUP

- Develop transportation electrification goals
- Discover current transportation electrification efforts
- Uncover barriers
- Provide solutions based on best practices
- Develop a model EV charging infrastructure ordinance
- Develop an equitable strategic plan that will meet goals

Credit: Michael Fousert

EVS & CHARGING

EV TOPICS

- Vehicle Types
- EV Charging Power vs. Energy
- EV Efficiency
- EV Charging Basics
- EV Charging Costs

Credit: Volta

VEHICLE TYPES

Conventional Vehicle

Hybrid Vehicle

Plug-in Hybrid Vehicle **PHEV**

Battery Electric Vehicle **BEV**

Plug-in Electric Vehicles **PEV**

EV POWER vs. ENERGY

- Power (in Watts or Kilowatts) is an instantaneous measurement of Current (Amps) x Voltage (Volts)
  - Key to know for EV charging installations

- Energy (in Kilowatt-hours or kWh) is Power over time
  - 1 kWh = 1,000 watts for 1 hour
    - Key to calculating EV charging costs

- Utilities sell electricity in “Energy” units (kWh)

“My Nissan LEAF has a 40-kWh battery size.
NV Energy charges 5 cents per kWh, so it costs only $2 to fully charge my car.”

EV EFFICIENCY

- Key to calculating EV battery range
- The average EV will travel ~3 miles using 1 kWh of energy
- Smaller, more efficient EVs can get as much as 4 miles per kWh
- Larger, heavier cars get 2.5 - 3 miles per kWh
- “Lead foot” behavior reduces efficiency

“My Tesla Model 3 has an 82 kWh battery.
At 4 miles per kWh, I can drive up to 328 miles on a full charge.”

EV CHARGING BASICS

- Level 1 charger adds 4-5 miles per hour of charging:
    - Cord set comes with all cars
    - Plugs into standard 120-volt outlet
    - No EV charging installation needed

Cord set that comes with all cars.

"I plug my EV into a standard outlet to charge overnight.
I wake up with 40 miles of charge -- plenty to commute to work and back."

EV CHARGING BASICS

- Level 2 charger adds ~25 miles per hour:
  - Much faster than Level 1
  - 240 Volts
  - Requires EV charging installation by a certified electrician

Level 2 charger.

"My Level 2 charger allows me to do multiple trips in one day and accommodates my longer commute."

POWER LEVELS

Level 1
EV Charging
1.4 kW

1.5 kW

Hair Dryer

2.5 kW

Oven

4.0 kW

Home AC

5.0 kW

Electric Dryer

3-19 kW

Level 2
EV Charging

1.0-1.2 kW

Microwave

0.75 - 1.0 kW

Disposal

- Level 1 charging is like a hair dryer, but for longer durations
- Level 2 charging can be the highest power consuming device in your home

EV CHARGING BASICS

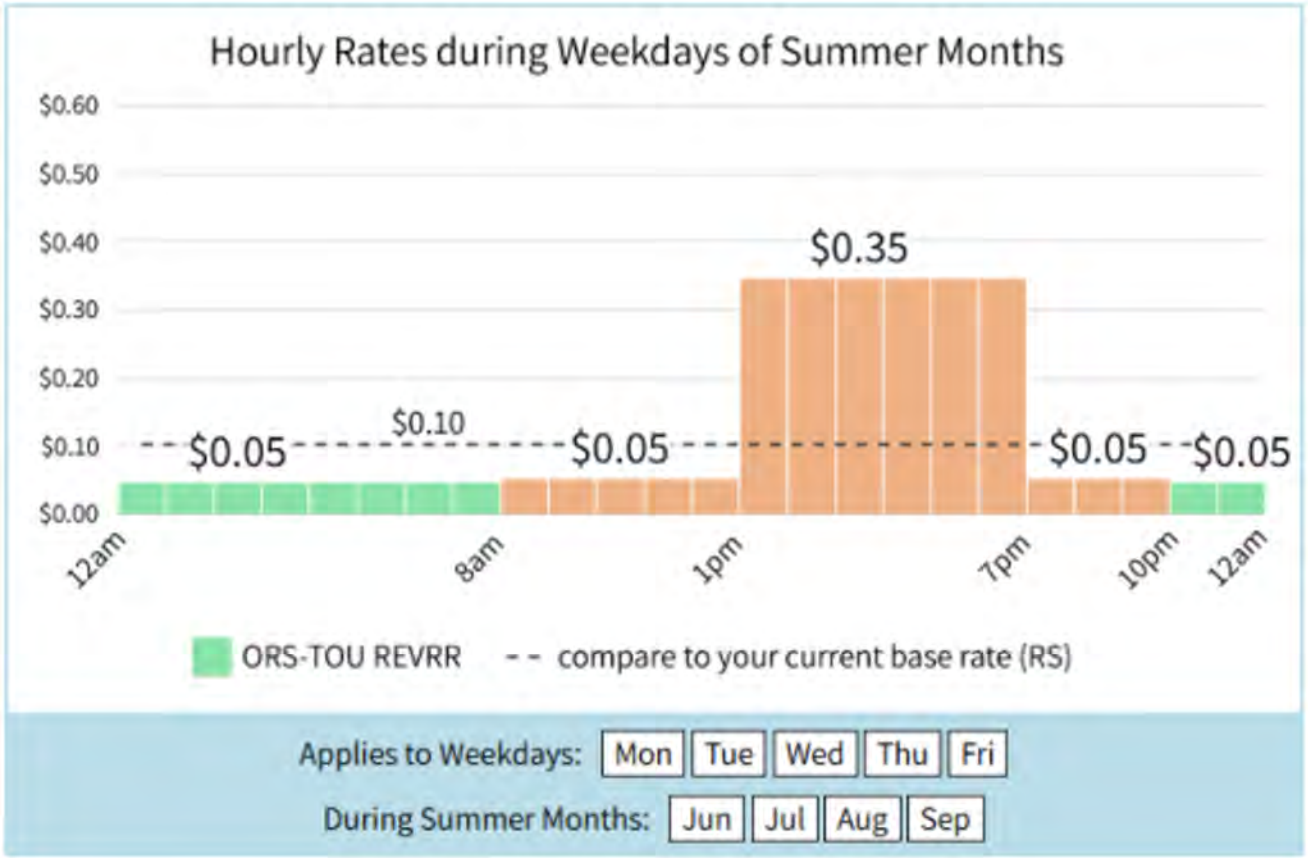
- DC Fast Charger can add up to 200 miles in 30 minutes:
  - Public or fleet charging only
  - Car has to have DC Fast Charging port to use
  - 3 different charging port types:
    - Tesla, Chademo, and SAE CCS
  - Sites bill per kWh or per minute
  - Charging speed is faster at low battery level, as battery fills charging speed tapers off

Three types of DC fast charger ports.

"Using DC Fast Chargers, I've traveled twice across the country in my EV. Apps on my phone and car show me where the closest chargers are located."

EV CHARGING COSTS

Optional Residential Single-Family EV Time-of-Use Rate
Southern Nevada



Source: NV Energy website

EV CHARGING COSTS

- Sample Calculation Assumptions:
  - 9,000 miles per year, 3 miles per kWh EV, 25 mpg gas car, 5 cents per kWh, $3.50 per gallon

  - **EV:** 9,000 / 3 = 3,000 kWh x 5 cents = **$150 annual fuel cost**
    - Cents per mile (EV) = $150 / 9,000 = **1.6 cents per mile**

  - **Gas:** 9,000 / 25 = 360 gallons x $3.50 = **$1,260 annual fuel cost**
    - Cents per mile (Gas) = $1,260 / 9,000 = **14 cents per mile**

"I save more than $1,100 in fuel costs with my EV.
Plus, no more annual smog checks or quarterly oil changes."

ENERGY GRID OVERVIEW

Marie Steele
Electrification Director
NV Energy

Clark County All-In Transportation Electrification Working Group

December 9, 2021

NVEnergy

Agenda

- Current Electric Vehicle Programs
- Nevada Market Research
- Electric Vehicle Planning
- Senate Bill 448 (2021) Transportation Electrification Plans

NV Energy
Current Electric Vehicle Program

Current Electric Vehicle Offerings

- Electric Vehicle rates
  - Time of use rates (residential, multi-family, commercial)
  - Commercial charging rider for DC fast chargers
- Education & Outreach/Services
  - EV Calculator
  - Dealership Partner Program
  - Technical Advisory Services
  - Education Events
- Infrastructure and vehicle incentives
  - Lower income electric vehicle incentive January 2022
  - Residential & Multifamily
  - Lower income multi-family – GOE Partnership
  - Fleet, Public, Workplace
  - Governmental – GOE Partnership
  - Electric School Bus (infrastructure and vehicle)
  - Nevada Electric Highway – GOE Partnership

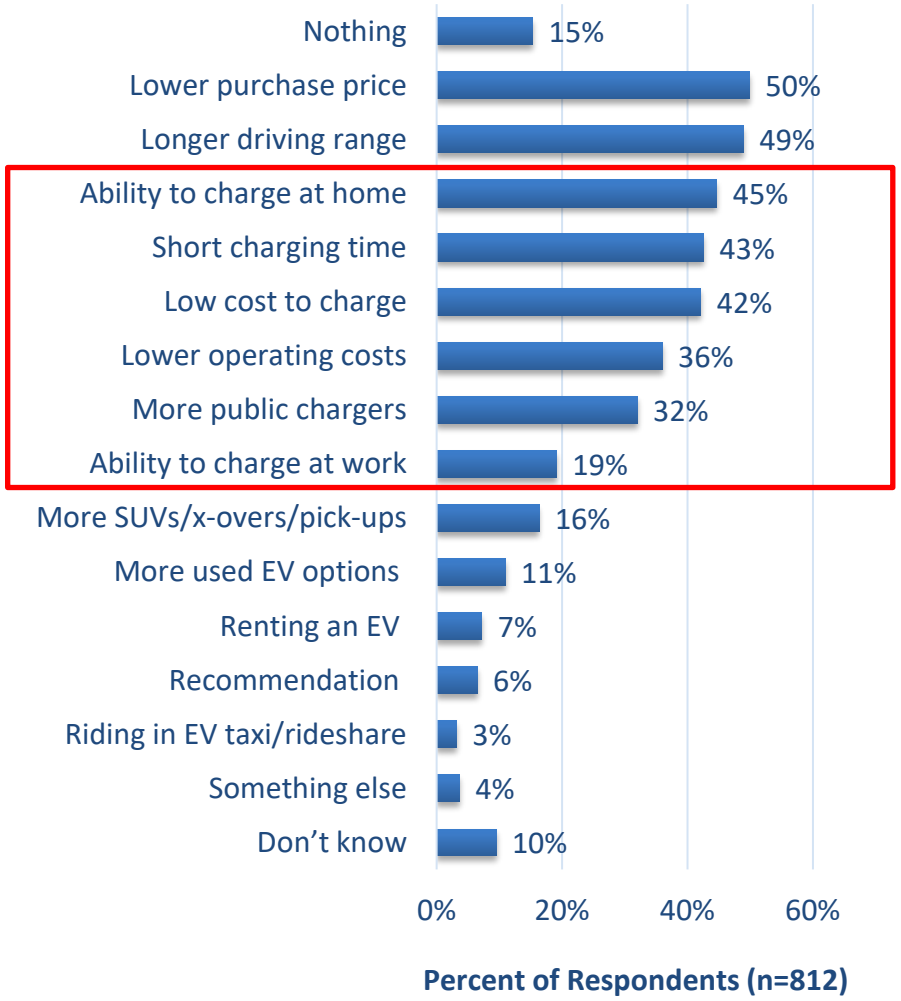
NV Energy EV Program Evolution

- **2013 –** Charging Station Shared Investment Program – Complete
- **2015 –** Nevada Electric Highway Partnership with Governors Office Of Energy – Phase I complete, Phase II to be complete 2021
- **2017 – SB145**, Electric Vehicle Infrastructure Demonstration Program - Active
- **2019 – SB299**, Electric School Bus Program – Active
- **2021 – SB448:**
  - Economic Recovery Transportation Electrification Plan – Approved, within the reconsideration/clarification period.
  - Transportation Electrification Plan to be filed on or before, September 1, 2021

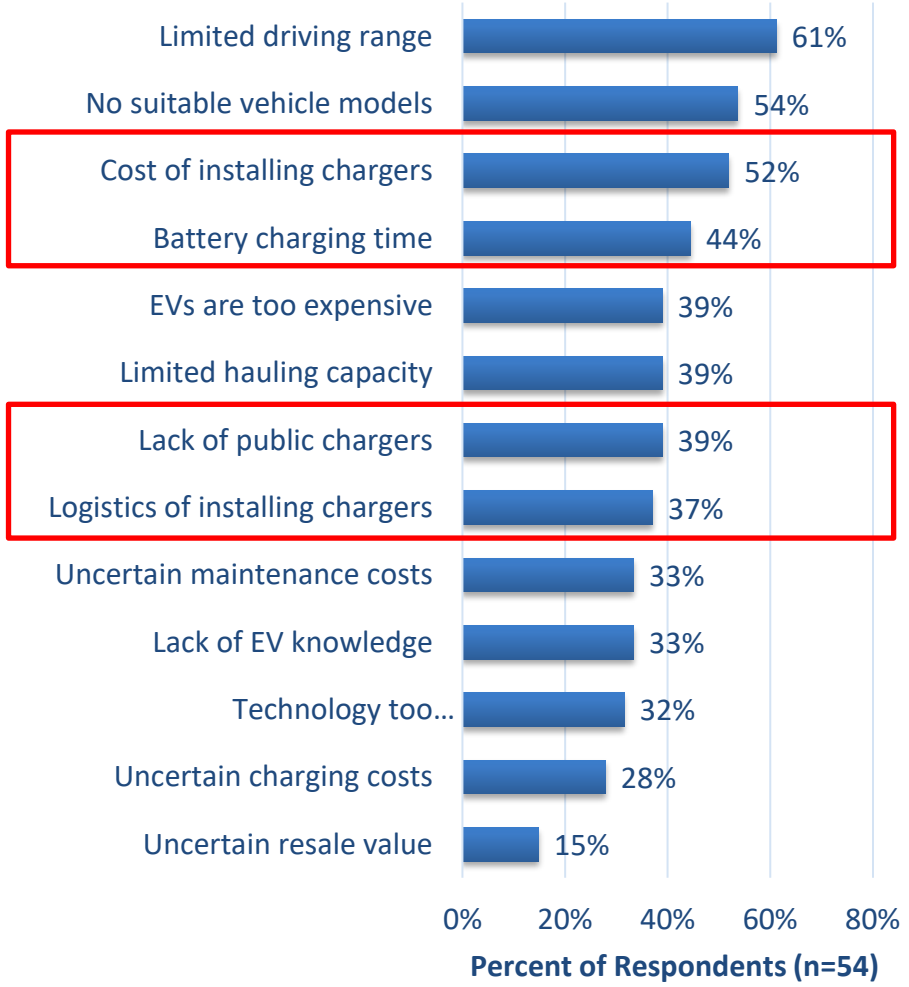
2020 Nevada Market Research & Electric Vehicle Load Planning

Barriers to Electric Vehicle Adoption

Residential

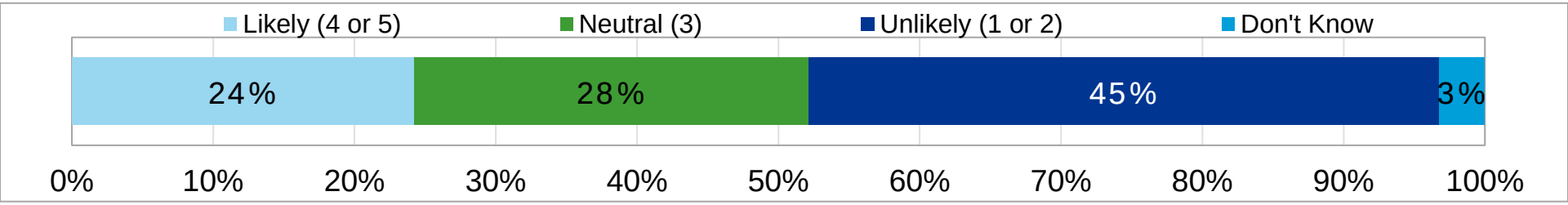


Commercial

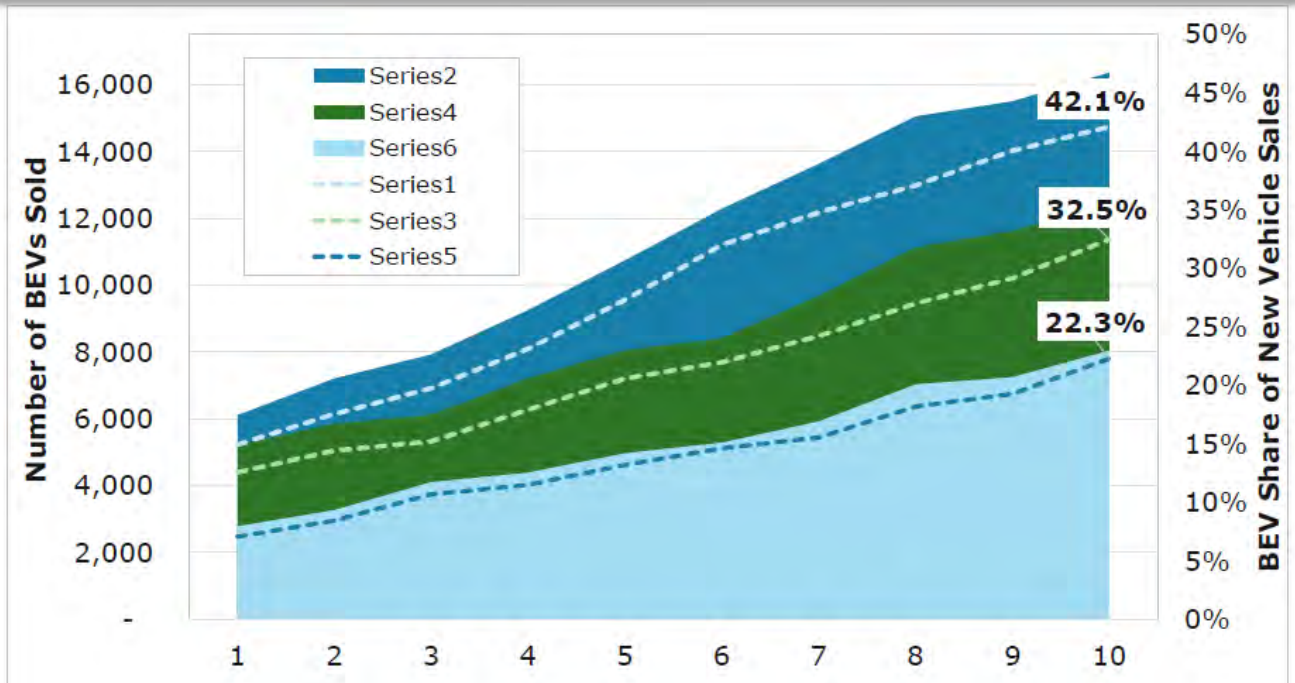


EV Forecast Study

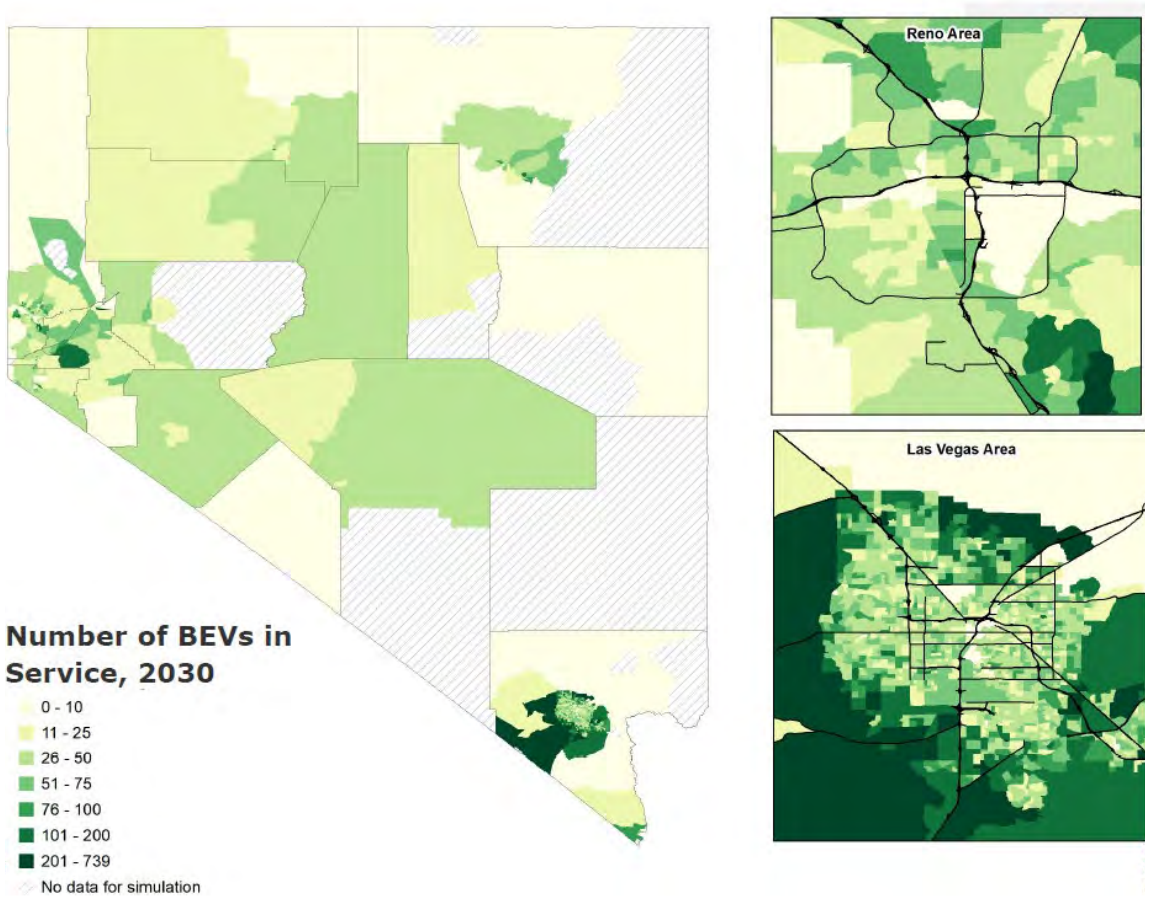
When you get your next passenger vehicle, how likely are you to buy or lease an electric vehicle?



Battery Electric Vehicle Share of New Vehicle Sales



EV Forecast per Census Tract

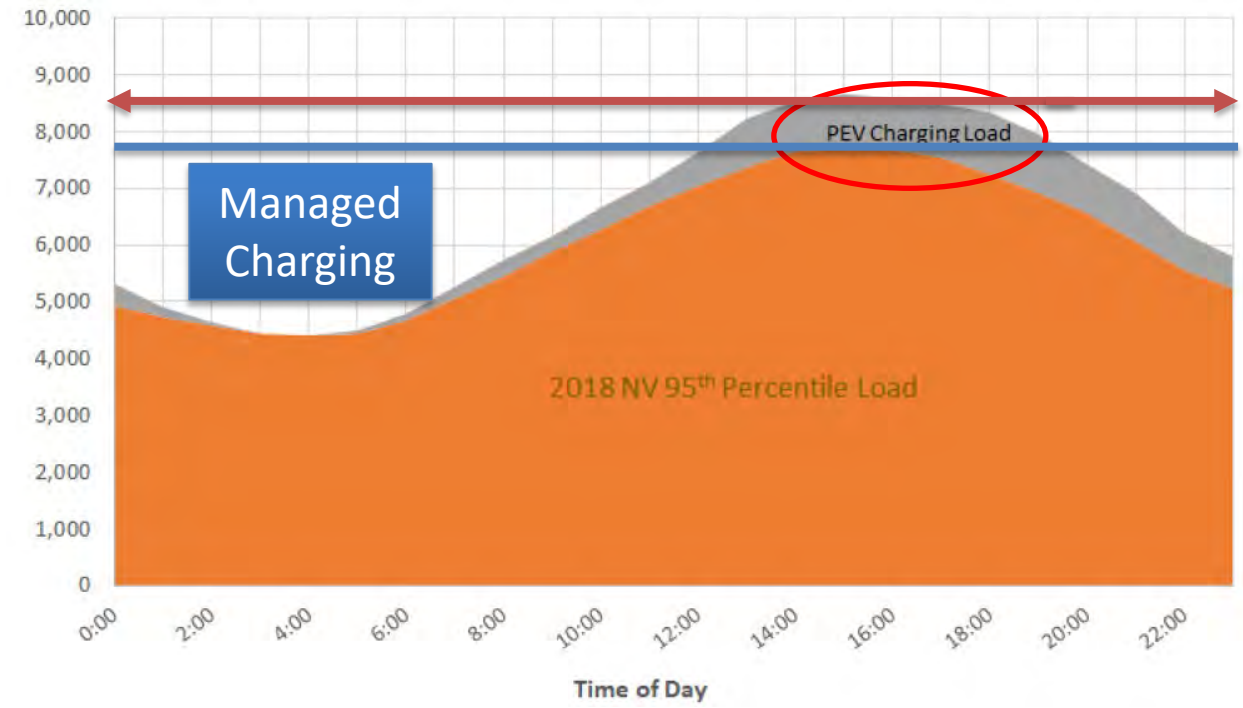


NV Energy plans for transportation electrification within the:

- Integrated Resource Plan for overall electric load
- Distributed Resource Plan to understand locational growth on the distribution system

Unmanaged Electric Vehicle Load

2040 Projected Nevada PEV Charging Load,
Baseline Charging MW (State GHG Goal Scenario)



Source: Plug-in Electric Vehicle Cost Benefit Analysis: Nevada
Author: MJ Bradley & Associates

Transportation electrification load that is "managed" and strategically integrated can be to the benefit of all customers.

This can be done through:

- Education and behavioral change
- Tariff design
- Control technology

Senate Bill 448

SB448 – Transportation Electrification Plans Timeline

Electric Vehicle Infrastructure Demonstration Program ("EVID")

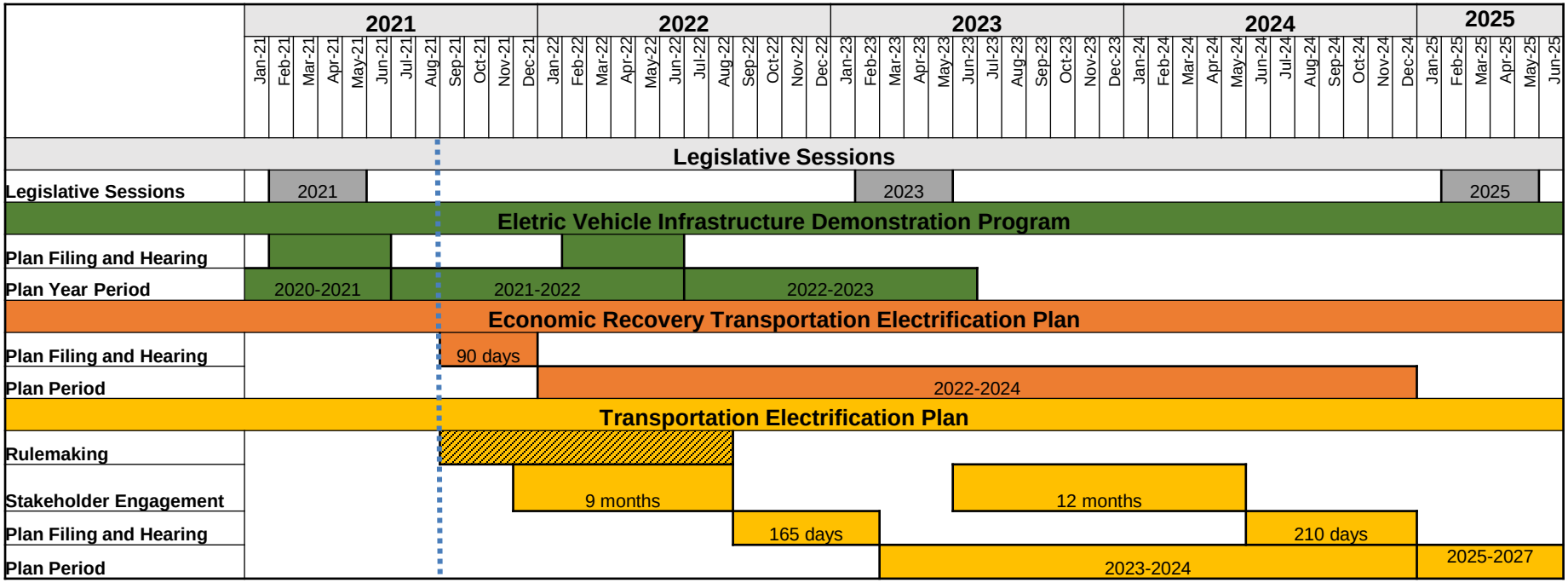
- Repeal annual plan filing requirement after February 1, 2022. Final year of program will be July 2022 – June 2023

Economic Recovery Plan

- File on September 1, 2021. Work to begin in 2022

Transportation Electrification Plan

- File with Distributed Resource Plan update, on or before September 2022



SB448 - Economic Recovery Transportation Electrification Plan (Sec. 49)

Accelerate Transportation Electrification	Economic Recovery & Job Creation Benefits	Prioritize Historically Underserved Communities

Programs:

Interstate Corridor Charging	Increase the availability of public electric vehicle *charging infrastructure along Nevada's highways* in the service territory of the electric utility and to *support electric vehicle tourism traffic to Las Vegas, the Reno-Tahoe area and across the State*.
Urban Charging	Increase access to public electric vehicle charging infrastructure in metropolitan areas of this State, *particularly for customers who are unable to charge vehicles at their home or business*. Must also be designed to address the needs of tourists, delivery services and businesses that require access to public charging for fleet electrification.
Public Agency Electric Vehicle Charging	To *serve the public, workplace and fleet electric charging needs of federal, state and local governmental agencies*
Transit, School Bus & Transportation Electrification	To serve the electric vehicle charging infrastructure, energy supply and energy storage needs of *transit agencies, metropolitan planning organizations, the Department of Transportation, public school districts and nongovernmental commercial customers*
Outdoor Recreation and Tourism	To serve the electric vehicle charging *infrastructure, energy supply and energy storage needs of the tourism and outdoor recreation economy*

Plan Allocations:

- ***40%*** **dedicated to** ***historically underserved communities***
- ***20%*** **dedicated to investments in the** ***Outdoor Recreation and Tourism*** **Program**
- ***20%*** **dedicated to incentives for** ***behind-the-meter investments*** **in electric vehicle charging infrastructure or stations**

Timeframe: January 1, 2022 – December 31, 2024

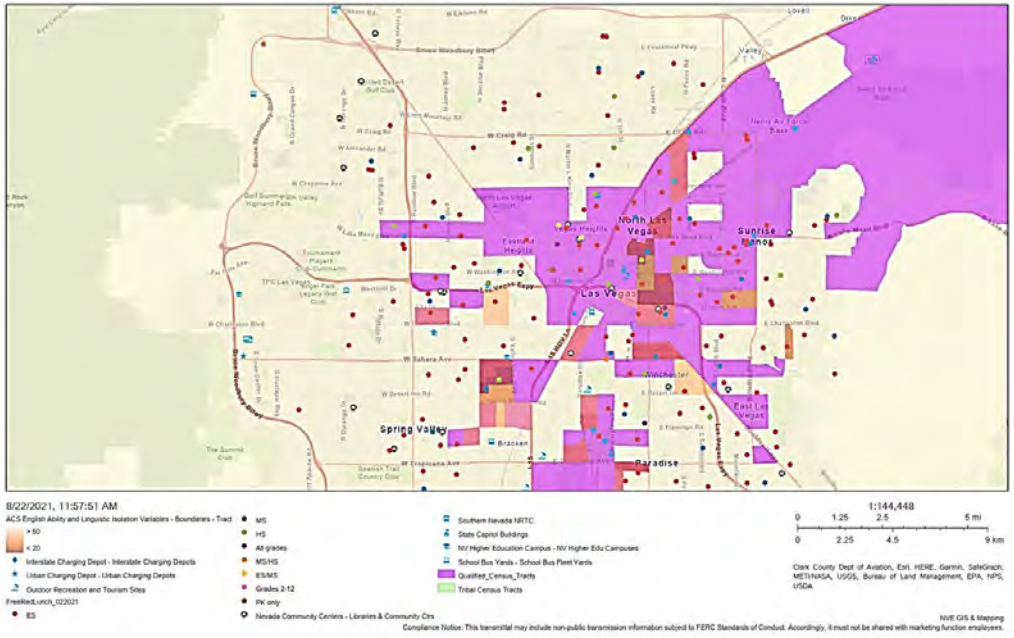
Investment: Not to exceed $100 million

Program Design & Site Selection Process

Plan Design

As part of program design, NV Energy overlaid the possible sites prescribed by statute, such as school buses depots and transit agency depots, to identify locations in historically underserved communities, which also includes public schools, as defined above.

The possible sites for discretionary program design were then overlaid, such as community centers, colleges and universities, state capital buildings, and outdoor recreation and tourism sites.



Historically Underserved Communities

- To increase access to the clean energy economy and meet the needs of historically underserved communities, NV Energy designed programs to prioritize investments in these communities as defined by statute.
- As designed, the Economic Recovery Transportation Electrification Plan will spend **at least 51 percent** of program spend in historically underserved communities, surpassing the 40 percent requirement

Transportation Electrification Plan

- **Investments or Incentives to:**
  - facilitate the deployment of charging infrastructure and associated electrical equipment which supports transportation electrification **across all customer classes including, without limitation, investments or incentives for residential charging infrastructure at single-family homes and multi-unit dwellings** for both shared and assigned parking spaces;
  - facilitate the electrification of **public transit and publicly owned vehicle fleets**;
  - increase access to the use of electricity as a transportation fuel in **historically underserved communities;**

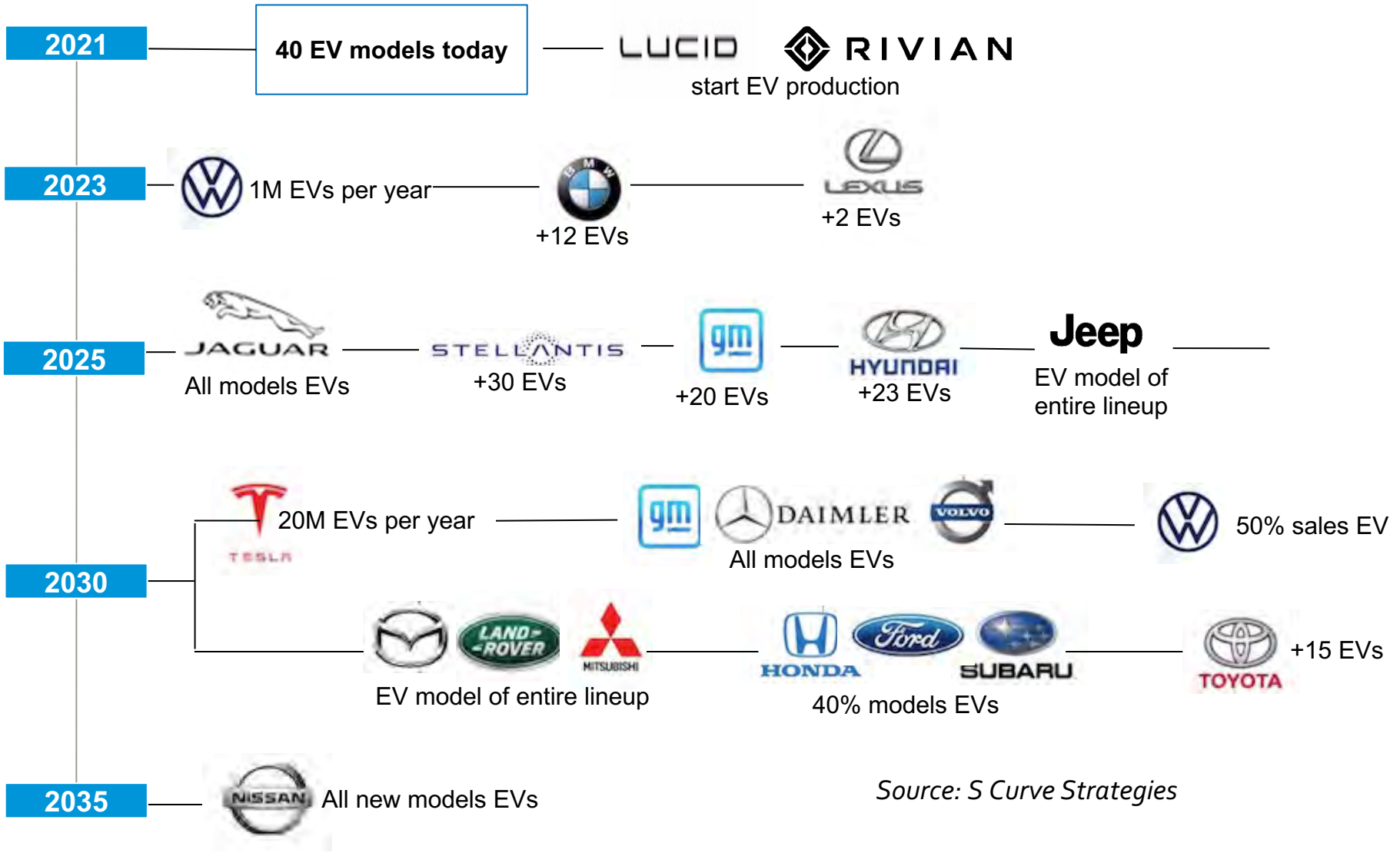
- **Key Dates**
  - Review of draft regulations due December 23
    - Docket No. 21-06036
  - File plan on or before September 1, 2021

- **Stakeholder Engagement**
  - Plan to use CCTEWG as a stakeholder engagement opportunity
  - Further opportunities will be communicated

Questions

TRANSPORTATION ELECTRIFICATION PLANNING GOALS

ALL AUTOMAKERS ELECTRIFYING

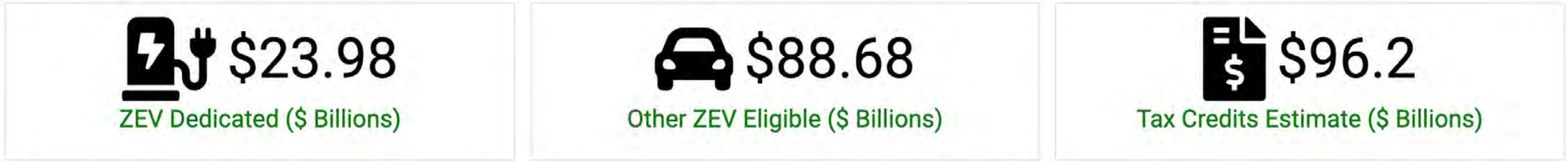


Source: S Curve Strategies

FEDERAL EV FUNDING

INVEST in America Act: Public Law 11/15/21

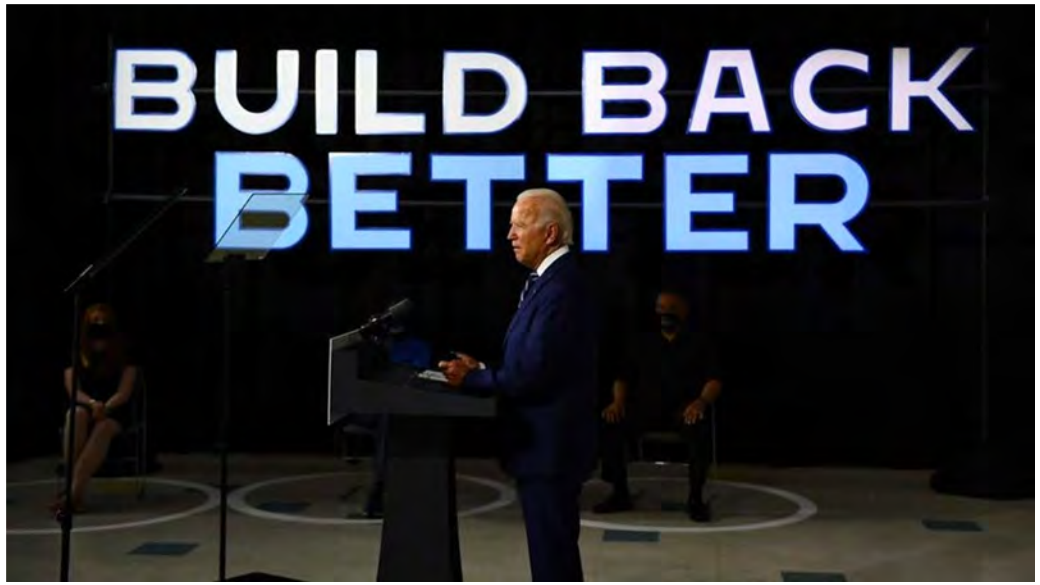
Build Back Better Act: Passed House in 11/19/21, now to Senate



Source: Atlas EV Hub

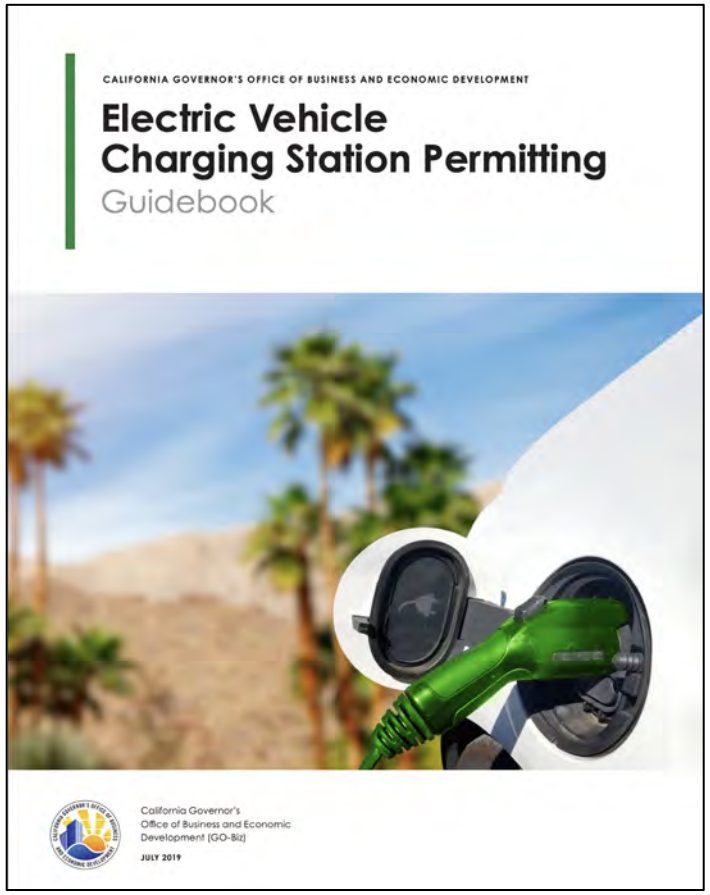
REGIONAL FUNDING NEEDED

- Demonstrate transportation electrification strategic planning to best position the region for funding
- Scalable projects also best position region
- Could be federal, state or regional funding



PERMITTING CONSIDERATIONS

- Consistency among local governments that require EV charging infrastructure permits
  - Streamline permitting process
  - Standardize permitting fees
  - Single family homes, multifamily and commercial



STRATEGY INCLUSIONS

Current and projected EV demand

Projected charging demand for public charging, multi-family, single family, workplace, and historically-underserved communities

Existing EV infrastructure and recommendations on regional EV infrastructure development needs

Recommendations on regional EV charging infrastructure installation planning – focused first on light-duty vehicles

Recommendations on a model EV charging infrastructure ordinance

STRATEGY INCLUSIONS CONT'D

- Information on costs of the model ordinance and how those costs are distributed
- Recommendations on input to the Nevada Public Utilities Commission
- Recommendations on strategies for funding
- Information on economic and workforce development opportunities
- Determine where EV goals will be housed by government collaborators and transformed into actionable policies and programs

Q&A: PUBLIC & INTERESTED PARTIES

NEXT STEPS

ACTION ITEMS

- Survey to Working Group and Interested Parties:
  - What transportation electrification efforts are you currently working on?
  - What transportation electrification efforts do you expect to be working on in the future?
  - Who in your organization is tasked with this as well as EV charging infrastructure?
- 2022 Meeting Schedule
  - January 6
  - February 7
  - March 10 (in person)
  - April 7
  - May 5
  - June 2 (in person)
  - July 7
  - August 4
  - September 8
  - October 6 (in person)
  - November 9
  - December 1
- In person meetings will be held at the Clark County offices.

Thank You!

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