Colorado ZEV Scaling

How do we get more ZEVs on the Road?

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To Grow From 1.5mil EVs to 50M EVs by 2030, How Might EVs Be Distributed?

And what could this mean for required DC Fast-Chargers (DCFC)?

Near-term action is critical as States will be very challenged to support this scale of EV and EV Charging Infrastructure growth if we delay (CO: 400/yr = 8/wk)

Sources: FHWA 2017 Vehicle Registration Data; NREL (88% home charging) and EEI (78% home charging) Infrastructure Analysis, with RMI scaling
1. Battery and EV Cost/Affordability
   • #1 automaker priority is to get cost out of these technologies
     - EVs (and EVSE) are generally unprofitable today

2. Lack of Charging Infrastructure
   • Address both the “Perception” (public charging) and the “Reality” (home and workplace charging)

3. Build EV Demand
   • Drive Consumer and Fleet Demand through Infrastructure, Awareness and Policy

Despite significant (85%) battery price reductions since 2010, additional cost improvements are needed to achieve parity with conventional vehicles.
In fact, Crossovers (CUVs) and SUVs make up the majority of new car sales in most states, creating a challenge for EV Manufacturers: larger batteries vs. consumer cost sensitivity.

US Average: Cars = 28%; CUV = 37%; SUV 9%, Pickup 21%; Van 5%
EV Model Availability in North America: 2008-2019

2019
83 Models
- 44 BEVs
- 35 PHEVs
- 4 FCEVs

Segment Breakdown
- Cars = ~50
- CUV/SUV = ~20
- Pickups = 0
- Van = 1

Source: Bloomberg NEF (2020) in partnership with the Business Council for Sustainable Energy

A broader selection of EV body styles will help drive EV adoption.

Vast majority “Cars”

Broader selection of body styles, including CUVs and SUVs

BEV = Battery Electric Vehicle
PHEV = Plug-in Hybrid Electric Vehicle
FCEV = Fuel Cell Electric Vehicle
SUV = Sport Utility Vehicle
CUV = Crossover Utility Vehicle (or Compact SUV)
Good progress has been made in building EV charging station infrastructure, but it is nowhere near sufficient to actually drive EV adoption (to achieve the EV scale required by 2030)

DC = Direct Current; SAE = Society of Automotive Engineers (ie. Industry standard-setting body)

https://afdc.energy.gov/stations/#/analyze
3 Areas of Key Infrastructure Investment

**Electrify America**
(VW Settlement)
- Compelling “storytelling”
- Part of a planned $2Bil investment (420 sites operating; 100 pending)

**State App. D Funds**
(VW Settlement)
- 47 States to invest in EV charging
- $316 mil investment

**Utility Investment**
- Utility engagement is key
- $1.5B approved; $1.4B pending
  (2,500 DC + 50,000 L2)

Only 13% of investment to date has come from the private sector

Source: Atlas Policy Data; RMI Analysis
Why Electrify?

Vehicle Benefits

- Better driving experience (acceleration, handling)
- Quiet, less stress (engine vibration)
- Safe and convenient home "fueling" (~ a cell phone)
- Fuel savings ($12k/EV over 14 yr life)
- Electricity price stability
- Clean

Beyond-Vehicle Benefits

- US competitiveness and jobs
- Electricity price stability (fleet operators)
- State economic growth: >90% of electricity sales revenue stays in the state ($7,000/EV over 14 yrs)
- Grid Efficiency: new loads (and fixed transmission costs) benefit all ratepayers ($3,500/EV over 14 yrs)
- Increased use of grid renewables
- Clean air and health
- Carbon reduction and climate

EVs benefit not only EV drivers, but also all ratepayers, power generators, charging providers, and the states themselves
What It Will Take to Achieve 50M EVs by 2030?

- **Acknowledge the full value of transportation electrification**
  - Benefits to ratepayers, states, US competitiveness, a cleaner/resilient grid, and societal goals (health, air quality, equity and climate impact)

- **More EV charging infrastructure!**
  - National EV strategy with aligned infrastructure plans for home, work, public charging
  - Utility-investment and engagement (all 3,200 utilities)
  - Ensure that installed EV chargers maximize the public benefits (e.g. renewables, off-peak charging)

- **Drive demand certainty and EV awareness**
  - Government, corporate, and commercial fleet commitments
  - Sustained financial and non-financial incentives and perks
What It Will Take to Achieve 50M EVs by 2030?

“Just” 1 in 5 of us need to switch to an EV within the next 10 years:

• The average transaction price for a new vehicle in 2019 was $38,948
• 60% of Americans live in single-family homes
• 66% have more than 2 vehicles in the household
• 80% of Americans commute less than 40 miles/day to and from work

This is Doable!