The Future of Transportation in the Heartland

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U.S. Light-Duty Vehicle Electrification Policies and the Necessary Conditions to Meet Them

Midwestern Legislative Conference

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Regulatory Environment

California Advanced Clean Cars (ACC I)	U.S. EPA	NHTSA
GHG, 2021-25MY (GHG, Fuel Economy) Adopted 2012	**GHG, 2023-26MY** (GHG, Fuel Economy) Adopted Dec, 2021	**CAFE, 2024-26MY** (Fuel Economy) Adopted Apr 2022
LEV III, 2015-25MY (Criteria Emissions) Adopted 2012	**Tier 3, 2017-25MY** (Criteria Emissions) Adopted 2012	
ZEV, 2015-25 (Criteria Emissions, GHG, Fuel Economy) Adopted 2012		

March 2023 Update

August 2022 Update to ACC 2.0

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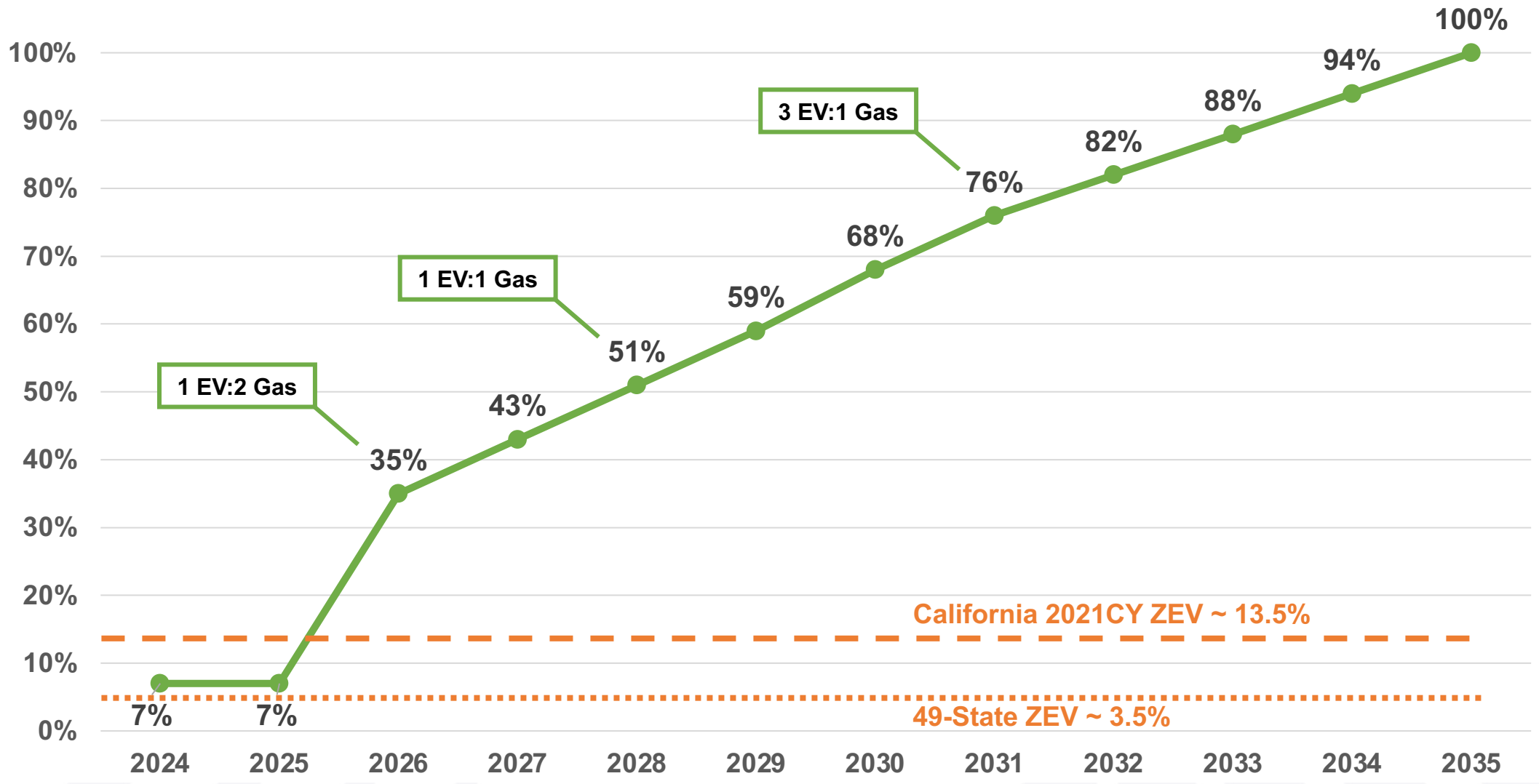
California ACC II – ZEV Mandate



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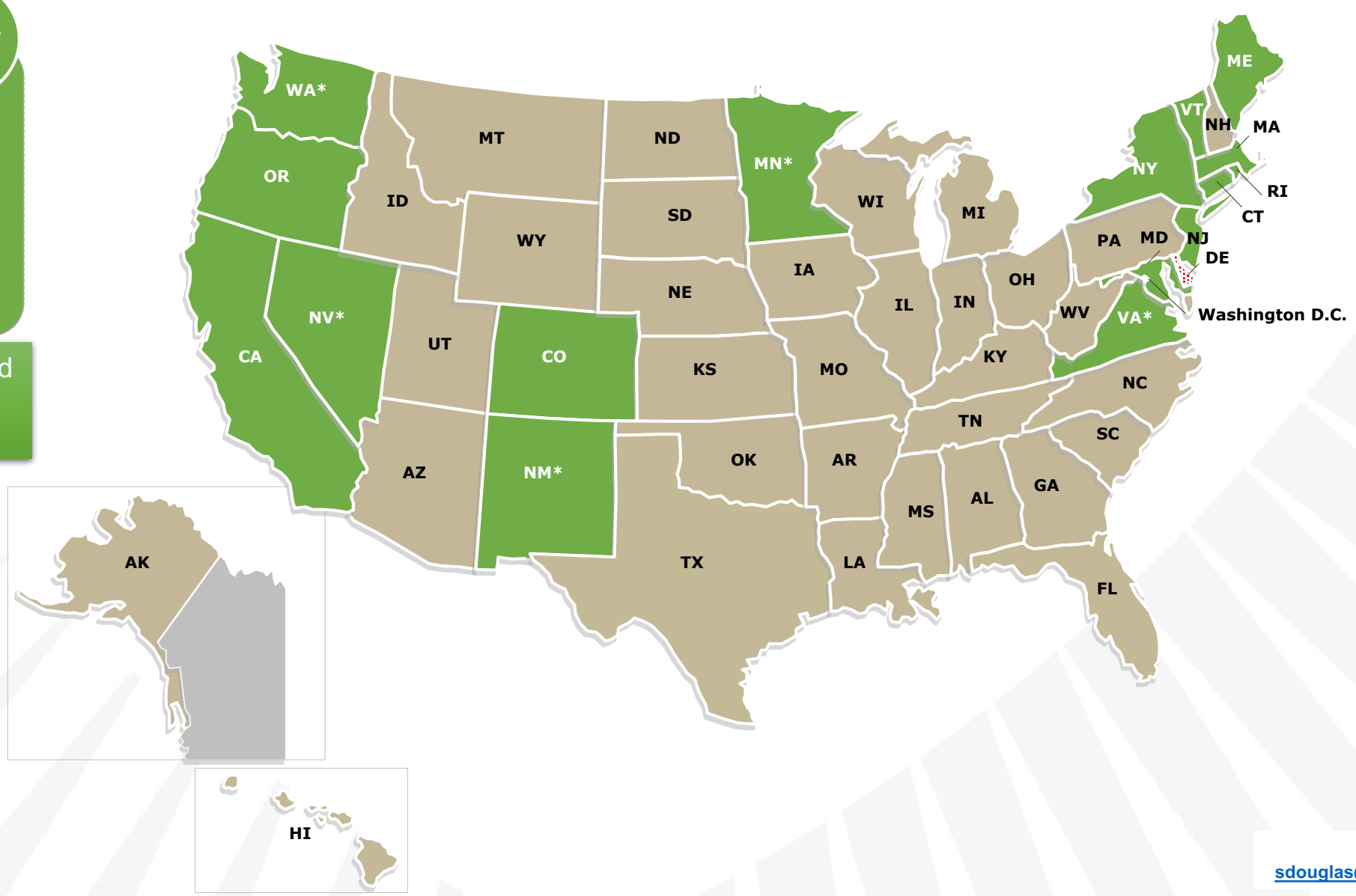
* See, https://mediaroom.kbb.com/2022-06-09-New-Vehicle-Prices-Flirt-with-Record-High-in-May,-According-to-Kelley-Blue-Book,-as-Luxury-Share-Remains-Strong

ZEV States (~ 35% of U.S. Market)

16 Existing ZEV States*

- CA
- CO
- CT
- MA
- MD
- ME
- MN*
- NJ
- NM*
- NY
- NV*
- OR
- RI
- VA*
- VT
- WA*

Most of these states will need to officially adopt ACC II or revert to Federal standards.



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Backdrop for U.S. GHG and Fuel Economy Post-2026

California Air Resources Board (CARB) Advanced Clean Cars Rule

- Target almost 70% EV sales in over 35% of U.S. market by 2030
- 100% EV sales by 2035*

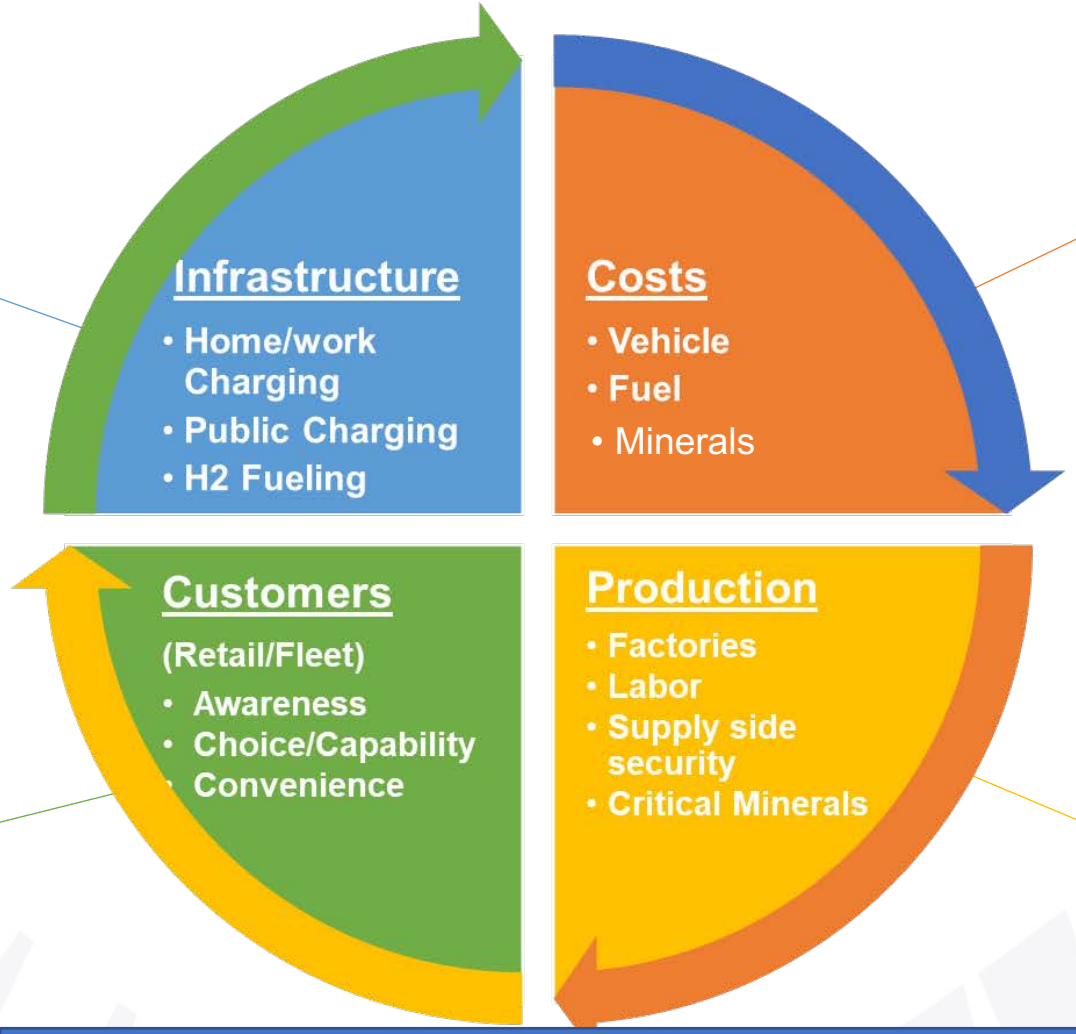
U.S. Federal Administration expected to propose and finalize rules through at least 2030

- Biden EO 14037: Goal of 50% EV sales by 2030; expectation of 60% reduction in new vehicle GHG relative to 2020
- EPA expects to issue a proposed rule by Q1 2023 and a final rule by Q1 2024
- NHTSA mandate to set maximum feasible fuel economy standards

*The draft regulations allow up to 20% plug-in hybrids

Keys to Expanded Electric Vehicle Expansion

- Convenient, easy to use, everywhere
- Top reason to reject an EV "Nowhere to Charge"



- EVs still more expensive than gas - Incentives help bridge the gap
- Fuel must be cheaper than gas

- Buy-in from all new vehicle purchasers

- Automakers investing $330 billion by 2025 (starting line)
- Building a new global supply chain from scratch, hundreds of factories.

Many challenges remain

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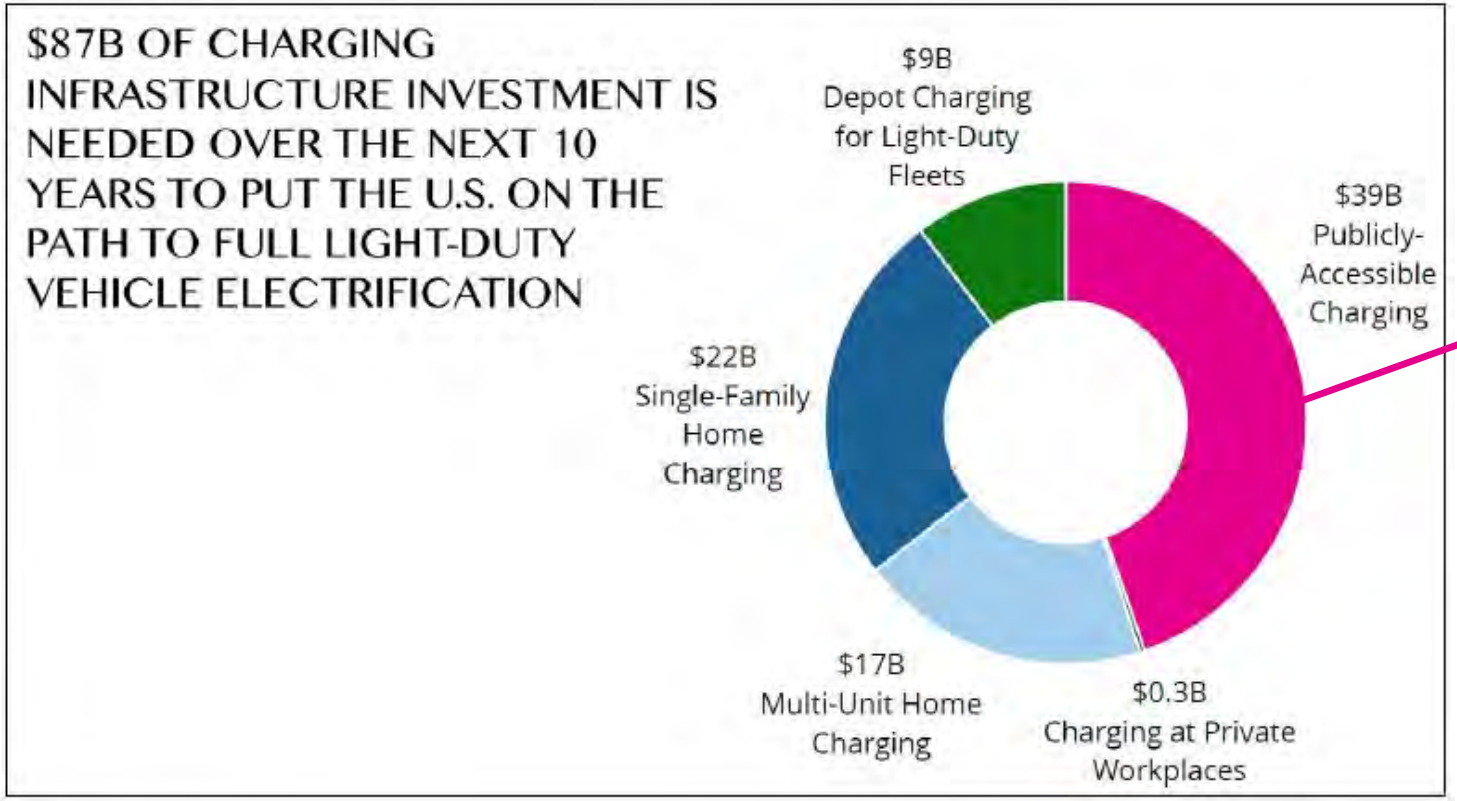
EV Charging Infrastructure Gap

Currently Available	Total Ports	Non-Proprietary
Level 2	96,261	84,489
DC Fast Chargers	24,407	10,148



To reach 100% EV sales by 2035, **$39B required for publicly-available charging by 2030**

(Analysis assumes all DCFCs are 350kW. If chargers are 150kW, cost increases to $52B)

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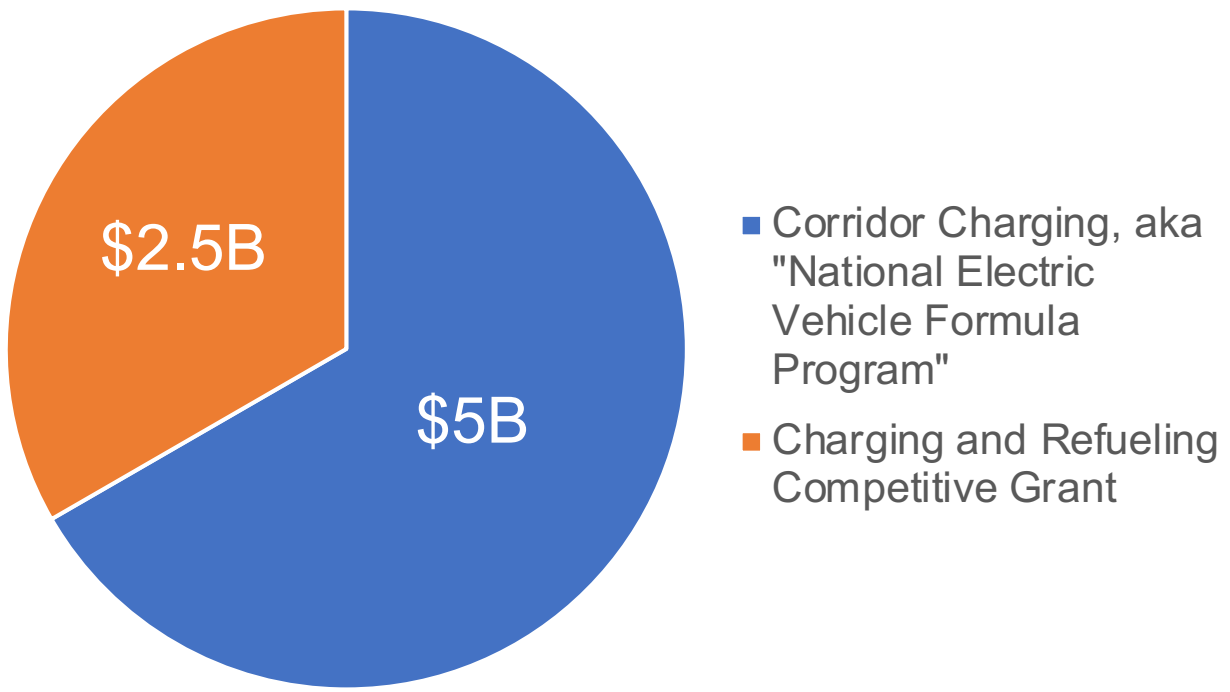
Sources:
EV charging figures as of June 22, 2022: https://afdc.energy.gov/stations/#/analyze?country=US&fuel=ELEC&ev_levels=dc_fast
EV charging infrastructure investment analysis: Atlas Public Policy, *U.S. Passenger Vehicle Electrification Assessment* (April 2021)

Infrastructure Investment & Jobs Act EV Charging Infrastructure



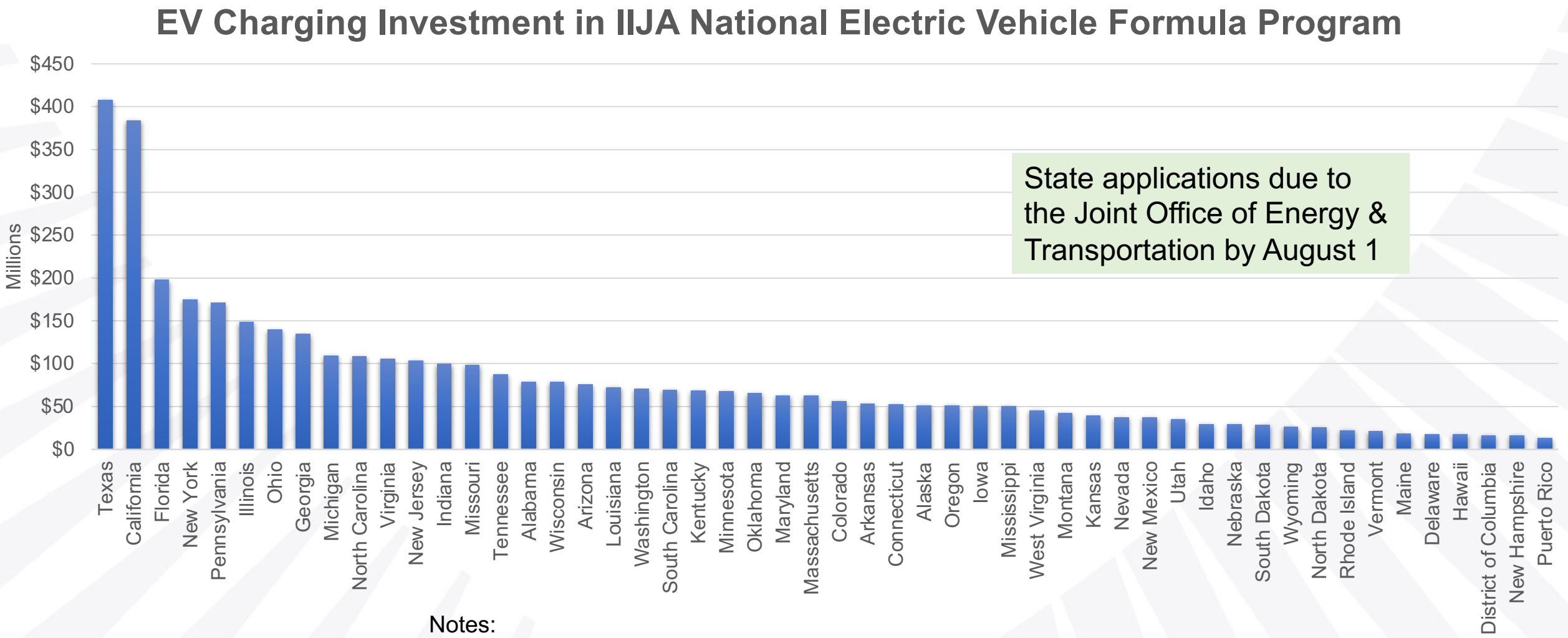
National EV Formula Program

- FY22 – FY26; Federal share = 80%
- Funds allocated to states using formula (23 U.S. Code § 104 subsection (c))
- To be used for EV charging on alternative fuel corridors
  - If alt. fuel corridors fully built out, funding may be used for publicly available chargers
- States must submit plans to DOT on intended funding usage
- DOT and DOE must provide guidance to states to prioritize investments, i.e.:
  - "current and anticipated market demands for [EV] charging infrastructure, including with regard to power levels and charging speed, and minimizing the time to charge current and anticipated vehicles"

Charging and Refueling Infrastructure Grants

- FY22 – FY26; Federal share up to 80%
- Charging *and* hydrogen, propane, and natural gas fueling
- 50% along FHWA-designated Alt. Fuel Corridors & 50% "Community Grants"
- Publicly accessible projects outside of Alt. Fuel Corridors given priority for rural, low income and underserved communities, and multi-unit dwellings

State EV Charging Funding through National Electric Vehicle Formula Program



State applications due to the Joint Office of Energy & Transportation by August 1

Notes:

- Values rounded to the nearest $million.
- Does not take into account $2.5B for competitive grants.
- Source - White House Fact Sheets

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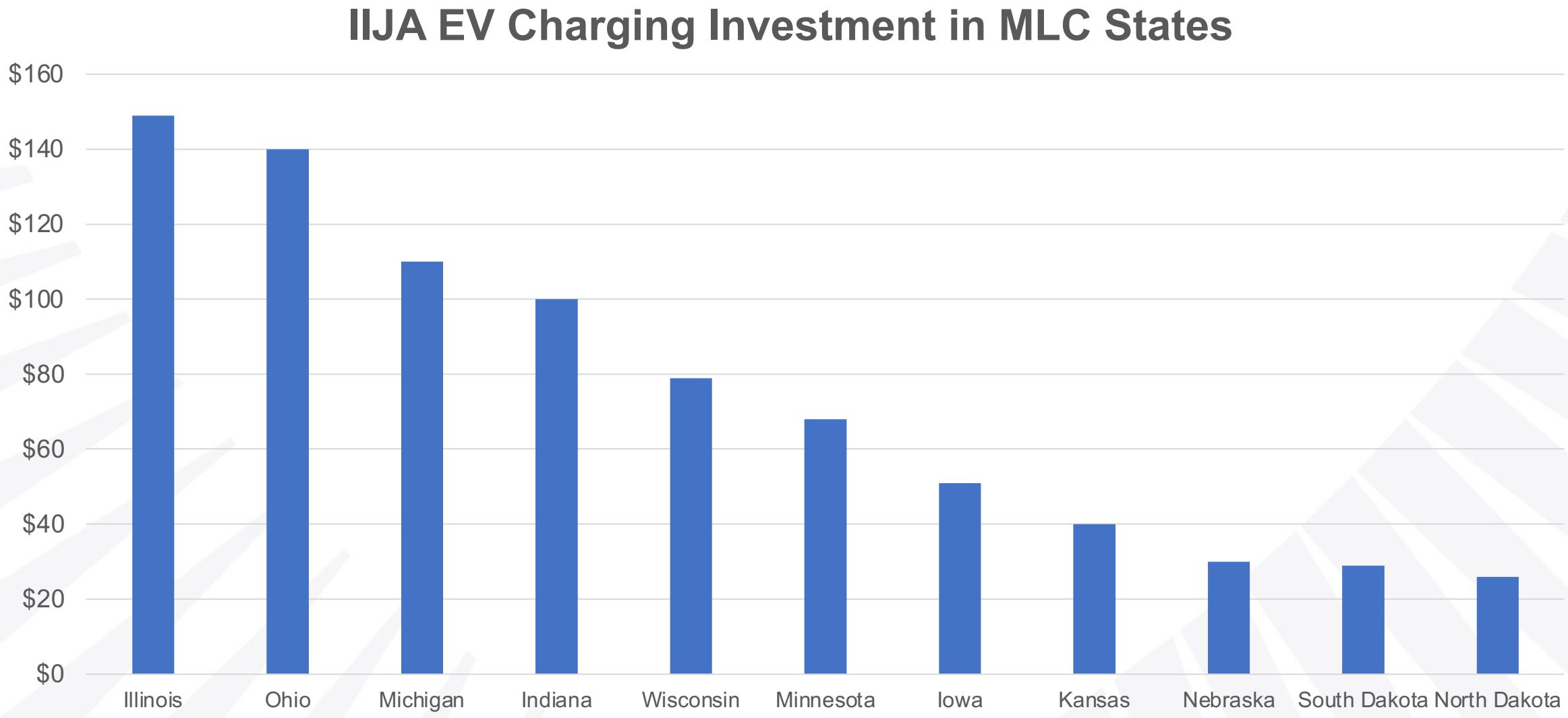
MLC State EV Charging Funding through National Electric Vehicle Formula Program



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EV Charging Infrastructure Summary

- Significant gap in pending funding and charging needs to support electrification goals
  - Additional public and private investment is necessary
- $39B to $52B investment estimated needed in publicly-available charging by 2030
  - Investment range depends on power level of DC Fast Chargers (350 kW versus 150 kW)
- $7.5 billion in Infrastructure Investment & Jobs Act is a good down payment
  - Begins to address corridor charging, but charging at other locations is still needed

Automaker Announcements, Goals, and Aspirations

2020 to 2024

- $250+ billion invested globally
- Ford doubles $11B to $22B investment
- Multiple new 100% EV brands
- Volkswagen and Audi: no new ICE designs
- BMW 90% of market categories BEV available

2025 to 2029

- Ford $29 billion investment by 2025
- Mini all new models EV
- GM $27 billion investment by 2025 & 40% of models EV; 20 EVs in N.A.
- Cadillac 100% EV available
- Jaguar 100% EV
- Bentley 100% plug-in
- Jeep 100% plug-in available
- Chrysler 100% by 2028
- Toyota 60 new hybrid/electric/fuel cell vehicles
- Volvo 50% of global sales EVs
- Stellantis 40% EV in U.S. market by 2030
- Mercedes-Benz all electric by 2303, where conditions allow; only EV for new architectures starting 2025

2030 to 2034

- Ford 100% passenger car BEV (Europe)
- Cadillac potential 100% BEV
- JLR electric available on all
- Mazda some level of electric on all models
- Bentley 100% BEV
- Volvo 100% BEV
- Kia EVs 40% of production
- Subaru hybrid/electric available across models
- Stellantis 30% electrified (70% in EU)

2035 to 2039

- GM 100% BEV

2040 to 2044

- Volvo carbon neutral
- Daimler carbon neutral
- Honda 100% EV/FCV

2050

Carbon neutral / near- or net-zero: Ford, Nissan, VW, Honda, Mazda, Toyota, Mitsubishi

Source: Compilation of public announcements, media articles, etc.

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Transforming Personal Mobility

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