

### Planning for Electric Vehicle Charging Stations in Missouri July 20, 2022



### Today's Agenda

Electric Vehicle (EV) and EV Infrastructure Fast Facts

**EV Sales and Registration Trends** 

**NEVI** Overview

**Federal Funding** 

**Alternative Fuel Corridors** 

Minimum Standards and Requirements

**EV Infrastructure Deployment Plan** 

**Questions and Discussion** 

# Electric Vehicle (EV) Types



**Battery Electric Vehicle (BEV)** 

- Battery Power Only
- Typical Battery Range 150-400 miles



#### Plug-In Hybrid Electric Vehicle (PHEV)

- Battery Power and Internal Combustion Engine (ICE)
- Typical Battery Range 20-40 miles



#### Hybrid Electric Vehicle (HEV)

- Internal Combustion Engine (ICE) Only
- Battery Charges by Regenerative Braking or Using Engine as a Generator
- Battery Allows for Smaller Engine, Powers Auxiliary Loads, and Reduces idling

### Battery Electric Vehicles (BEV)

- Must Charge to Operate
- Most models: \$20,000 to >\$70,000
- Example operating cost:
  - EV Bolt \$0.21/mi; Trailblazer \$0.31/mi
- Typical Battery Range: 150-400 miles



### **BEV Benefits**

- Improved air quality, no tailpipe emissions
- Vehicle efficiency, lower fuel costs
- Fewer moving parts = less maintenance
- Reduction in noise pollution
- Energy diversity; use of renewables



# **EV Charging Stations**



- Standard Outlet
- Slowest Charging
- 250 miles in 48-72 hours (~5 miles/hour of charge)

- "Dryer Outlet"
- Slow Charging
- 250 miles in 10 hours

- Direct Current Fast Charging (DCFC)
- Fastest Charging
- 250 miles in 30 minutes

# How many EV are there?

#### Nationally

- Nationally EV is less than 1% of all vehicles on the road
- Nationally EV makes up 3.4% of new vehicle sales
- Some forecast put EV to be 50% of new sales by 2030

#### Missouri

- Missouri has 6,740 registered EV or about 0.60%
- Missouri EV sales are 0.66% of market share

#### Projected Registered Vehicle Type in Missouri



Percent of Non-Electric Registered Vehicles in Missouri

Percent of Electric Vehicle Share of Registered Vehicles in Missouri

National Electric Vehicle Infrastructure - NEVI

#### Bipartisan Infrastructure Law (BIL) established \$7.5B NEVI funding

• Formula funding to states \$5B

• Discretionary Grants \$2.5B

Newly created Joint Office of Energy and Transporation

Dedicated formula funding to States to deploy EV charging infrastructure on the Alternative Fuels Corridor – particularly the Interstate system

For Fiscal years 2022-2026, Missouri will receive \$98.9M to fund EV charging infrastructure

NEVI will cover 80% of eligible project costs

Federal Fiscal Year	Forecasted NEVI Funds	Local Match Funds	Total Funds
FY 2022	\$ 14,647,722	\$ 2,929,544	\$ 17,577,266
FY 2023	\$ 21,078,366	\$ 4,215,673	\$ 25,294,039
FY 2024	\$ 21,078,366	\$ 4,215,673	\$ 25,294,039
FY 2025	\$ 21,078,366	\$ 4,215,673	\$ 25,294,039
FY 2026	\$ 21,078,366	\$ 4,215,673	\$ 25,294,039
TOTAL	\$ 98,961,186	\$ 19,792,237	\$ 118,753,423





### Program Requirements

500,000 DC fast chargers installed across the US AFC network

#### Charging stations shall be:

• Every 50 miles within 1 mile of AFC

#### Stations shall be minimum:

- DC Fast Chargers
- Provide at least 4 Combined Charging System (CCS) ports capable of simultaneously charging 4 EVs
- Station power capability should be no less than 600kW
- Supporting at least 150kW per port simultaneously across four ports
- Design and construction should allow for 350kW > future upgrades

#### Must meet Justice40 guidance

• Explore the map - Climate & Economic Justice Screening Tool (geoplatform.gov)

# State EV Plan Requirements

USDOT guidance addresses:

- Federal share and match requirements
- Funding requirements
- Project eligibility
- Deployment / Siting Considerations

## State EV Plan Requirements

#### USDOT Guidance addresses

• Federal share and match requirements

80% is the maximum Federal share

Private funds can be used as match

# State EV Plan Requirements

USDOT Guidance addresses

- Federal share and match requirements
- Funding Requirements
- Along Alternative Fuel Corridors
- Maximum 50 mile spacing
- Maximum 1 mile from corridor
- Min 4-150 kW DC Fast Charging ports
- Locations open to general public
- Contracting with private entities is allowed

# State EV Plan Requirements

USDOT Guidance addresses

- Federal share and match requirements
- Funding Requirements
- Project eligibility

- Acquisition and installation
- Upgrades, on-site power storage
- Operating and maintenance (up to 5 years)
- Development phase activities
- Signage and traffic control
- Several other related and support items

# State EV Plan Requirements

USDOT Guidance addresses

- Federal share and match requirements
- Funding Requirements
- Project eligibility
- Deployment / Siting Considerations

- Distance between chargers (50 mi, 1 mi)
- Connections to electric grid
- Proximity of existing businesses/services
- Needs in rural and disadvantaged areas
- Fostering private investment
- Meeting market demands

#### State EV Plan Requirements

Missouri has asked the Joint Office for clarification on several topics..

### Example Question:

If the utility serving a proposed station location has to make upgrades to the site and distribution circuit or substation to accommodate the installation, is that an eligible expense? What limitations are there on those expenses?

### Plan Elements

#### **1.** Communications

- Agency Coordination
- Stakeholder Meetings / Public Outreach
- Website Development and Surveys

#### 2. EV and EV Charging Infrastructure Analysis

- Existing and Future EV Market
- EV Charging Infrastructure (current stations)
- EV Charging Demand / Needs
- General locations for new charging infrastructure

#### **3. Policy and Implementation**

- Vision and Goals
- Deployment Implementation
- Contracting Methods
- Civil Rights / Equity Considerations
- Cybersecurity
- Program Evaluation

### Next Steps



Continued coordination with Utility Providers



Incorporate guidance from the EV Task Force



Continued discussion and coordination with neighbor states Plan is Due to the Joint Office August 1, 2022



FHWA will approve State plans by September 30, 2022

# Questions and Discussion