Planning for EV Charging in SW Idaho

Whitaker Jamieson, April 12th, 2023
Forth's mission is to electrify transportation by bringing people together to create solutions that reduce pollution and barriers to access.
OUR FOCUS AREAS

Access to Electric Cars
Forth builds programs for drivers who have traditionally faced the most barriers to electrification.

Access to Charging
Forth is working to make it as easy to charge a car as it is to park a car.

Progressive EV Policy
We build influence and knowledge at the national, state and local levels.

Events & Partnerships
Forth convenes diverse stakeholders to collaborate and advance equitable transportation systems.

Access to Emerging Modes
We’re increasing access to micromobility, electrifying farm equipment, school buses, and supporting e-mobility in lower-income countries worldwide.
Agenda

- Basics of EVs (15 min)
- Charging (15 min)
- Q/A (10 min)
- Break (10 min)
- ID NEVI Plan Presentation (15 min)
- Table Breakout: Stakeholders (35 min)
- Break (10 min)
- ID Power presentation (15 min)
- Table breakouts around Specific Locations (30)
- Final Q/A
Electric Vehicle Types

• **Battery Electric Vehicle**
  - 100% electric
  - Plug-in to recharge
  - Ex: Chevy *Bolt*, Ford Mustang Mach-E, all Teslas (pictured)

• **Plug-in Hybrid Vehicle**
  - Both electric and gasoline powered
  - Most have an “Electric only” mode
  - Plug-in to recharge, fill tank when needed
  - Ex: RAV4 Prime (pictured), Kia Niro PHEV, Chevy *Volt*, BMW i3 w/ Range extender
Some More BEVs

2023 Kia EV6

2022 Hyundai Ioniq

2023 Blazer EV

2023 Ford Mustang Mach-E

2023 Nissan Ariya

2024 Polestar 3

Even if the vehicles aren’t particularly easy to find in ID, they will be here sooner than you think
Trucks/SUVs here or coming soon

- Ford 150 Lightning
- 2023-24 Chevrolet Silverado EV
- 2025 RAM 1500 REV
- Rivian R1S SUV
- 2024 GMC Hummer EV SUV
- 2024 Kia EV9
Some Vehicle Cost Trends

1. Small Battery Entry model vs Longer range (Larger pack) models only available in a higher trim. **Don’t trust the “Starting at” phrase**

2. Usually AWD option adds $2500-5000+ and reduces range by 5-10%

3. Range, Size, and AWD basically determine price with few exceptions

4. Demand > Supply for most vehicles models right now

If you have questions about Vehicle cost trends, write them down!
EV tax incentives
Clean Vehicle Credit

- $7,500 non refundable tax credit
  - $3750 domestic battery assembly
  - $3750 domestic critical minerals

- Types of restrictions
  - Income restrictions
    - $150,000 - individual
    - $300,000 - household
  - MSRP caps
    - SUV, pickup truck, van $80k
    - Sedan/Hatchbacks $55k

EV Federal tax credit - for new vehicles
Previously Owned Clean Vehicles

- $4,000 or 30% of the vehicle sale price (whichever is lower)

- Types of restrictions
  - Income restrictions 75k Filing Single | 150k Married
  - Vehicle type
    - 2+ yrs old
    - <14,000 lbs (Class 1-3)
    - <$25,000
    - Not have previously used the credit (check by VIN)
    - Sold by a dealership
  - Credit can be claimed once every 3 yrs
Used BEVs under $30k

- **Chevy Bolt EV**
  - 238 mile range 2017-2019

- **Nissan Leaf**
  - 150 mile range 2018-19

- **Hyundai Kona EV**
  - 258 mile range 2018-19

- **Kia Niro EV**
  - 238 mile range 2018-19

- **Hyundai Ioniq EV**
  - 125 mile range 2018-19
  - 170 miles 2020

- **2019 Tesla Model 3***
  - 240 mile range 2019
Almost 3.5 Million Electric Cars sold since 2010!

PHEVs and BEVs
EVs are fun to drive!

- Instant acceleration and torque
- Lower center of gravity for tight handling
- Quiet
- Regenerative braking
Nothing is Perfect

EVs are still expensive

Public charging experience can be rough
(Especially in Rural locations)

Affordable Long Range AWD vehicles

Weather can dramatically impact range
Trends

- 200-250 miles of range standard for short-range vehicles
- 300+ miles of range standard for longer range
- Towing still a conundrum due to battery size/range/weight/aerodynamics
- Costs of many new vehicles types will remain high for a few more years
- Utilities understanding how EVs integrate into their existing systems
Level Setting for EV Charging

(Pun intended)
Electric vehicle charging - Level 1

- Cable almost always included w/ car even used
- 2-5 miles gained per hour of charge (light-duty vehicles)
- Best for
  - Plug-in hybrids
  - Short commutes
  - People that don’t drive every day
- Nationally Recognized Testing Laboratory Listed (Intertek or UL Listed)
- Costs $0 unless you need to buy a cord or run a dedicated outlet to where your car parks
Electric vehicle charging - Level 2

- 12-40 miles gained per hour of charge
- Ideal for installation in homes, apartments, or workplace
- Home chargers to install usually cost between $500-$5000
- Public chargers cost $2000-$20,000+ per charger installed

240 Volt Outlet or Hardwired

Standard Port
DC Fast charging (Level 3)

10->80% in 15-60 minutes depending on

- Charger’s Max charging speed
- Vehicles Max charging speed
- Battery management System factors
  - Temperature of battery
  - Ambient Temperature
- State of charge start/stop
- Costs >$100,000 per charger

CCS
Basically the standard

CHAd EM O
No new US models use this

Tesla
<table>
<thead>
<tr>
<th>Level</th>
<th>Level 1</th>
<th>Level 2</th>
<th>DC Fast Charging</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case</strong></td>
<td>Home</td>
<td>Home/Work/Public</td>
<td>Public</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>&lt;2 kW (Usually 1.2 kW)</td>
<td>2.4 - 19.2 kW (Usually 6.7 kW)</td>
<td>25 - 350 kW (Usually 150, 50, or 250 kW respectively)</td>
</tr>
<tr>
<td><strong>Plug Shape (Into Vehicle)</strong></td>
<td>J1772</td>
<td>J1772</td>
<td>CCS, CHAdeMO, Tesla</td>
</tr>
<tr>
<td><strong>Outlet Shape</strong></td>
<td>120 V</td>
<td>240 V</td>
<td>Electric Vehicle Supply Equipment (EVSE)</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>$</td>
<td>$$</td>
<td>$$$$$</td>
</tr>
</tbody>
</table>
For Individuals:

- Beginning January 1, 2023
- Purchase qualified equipment may receive a tax credit of up to $1,000
- Non refundable
- You must file your taxes to claim the credit

Talk with a Tax expert to learn more
Alt Fuel Refueling Property Credit—Businesses (+ other orgs)

- Beginning January 1, 2023
- Nonrefundable
- Non taxable entities ($ delivery method unconfirmed)
- Eligible for a tax credit
  - 6% or up to $100,000 per port so long as:
    - Property subject to depreciation
  - 30% (or up to $100,000) if:
    - Prevailing Wages
    - % of work done by apprentices
    - Location specific
      - Not an urban area
      - Poverty rate is at least 20%
      - Median family income is less than 80% of the state median family income level

Talk with a Tax expert to learn more
How to Find and Use EV chargers!
Find Public Charging Stations

Public EV Charging Companies have **phone apps** that can be used to find chargers and start charging sessions.

- **Chargeway** (App only)
- **PlugShare (Website & App)**
- **ChargeHub** (Website & App)
Travel longer distances

Apps like **A Better Route Planner** or **Chargeway**

- Plan longer trips and see charging times
- How long to expect to be charging
1. Read instructions at site

2. Using Phone apps
   a. Download app
   b. create an account and card details

3. When in doubt, plug in charger and start the charge through the phone app

4. Swipe/tap credit card should also be available at DC chargers

5. Check that you’re starting the charge on the right charger (find charger ID to help with this)

6. Sometimes chargers will need rebooting, in which case a phone call may be required
   a. Check charger for phone number
Plug and Charge Protocols
(Like what Tesla already has)

Simply plug in and charging will start quickly and account associated with the car will be billed
Charging Use Cases
Charging use cases put simply

Single Family Homes-L1/L2
Multi-Family Homes- L2 but it can depend on electrical configuration
Public charging-L2/DC
Destination- L2
Workplace- L1/L2 (very unusual cases DC)
Corridor charging-DC
Fleet (depends on fleet vehicles/use profile)

It is all about how long the car is parked for
Light/Medium Duty VS Heavy Duty Charging

Key differences are

- More space needed
- Turning Radiiuses
- Charging speeds
- Utility infrastructure
- Battery storage
- Faster Charging speeds (MegaWatt Charging Standard-MCS)
Multi-Family Charging

- Many barriers such as:
  - Parking constraints
  - Electrical access
  - Electrical Capacity
  - Internet signal
  - Billing
  - Appropriately allocating costs
  - HOAs, where applicable

- Hard to want to buy an EV if you don’t know where you’re going to charge it

- People want to charge where they park
Workplace Charging

- Workplace charging implementation
  - Employee amenity
  - Can double for Fleet charging when not used by employees
  - Customers
  - ROI possible

- Resources on planning, organizing, and executing successful and educational workplace charging events in the Clean Cities Workplace Charging Toolkit.
Public Charging Overview

- **Level 2 or DC fast charging**
  - Should be deployed based on community needs
  - At destinations like business or neighborhood parks
  - Along highway corridors or at urban charging hubs

- Builds range security (as opposed to range anxiety)

- Destination charging can sometimes be public charging
Corridor Charging

Primarily DC chargers

Best for:

- Long distance trips
- Regular mid-distance trips
- If you live nearby, backup for a lack of access to chargers at SF or MF homes
EV Range and EV charging planning

Reason for deviation from Rated Range

- Speed
- Use of A/C or heater
- Steep terrain
- Outside temperature

Plan Smarter

- Chargers may need to be closer together in hilly areas
- Amenities, especially somewhere temperature controlled becomes critical in rural areas
- Winter vs. Summer Travel patterns

Multi-Model Study on EV Range done by GeoTab
Ownership Models
Public EV Charger Ownership Models

Primary Stakeholders:
1. Charging service provider
2. Host site
3. Funder, if applicable

Two Primary methods of Charger ownership:
1. Host site owned/maintained with charging service provider agreement/contract
2. Charging service provider owned/maintained with host site agreement/contract
1. Host site owned with charging service provider agreement
   a. Host site controls cost to charge, accessibility, pays CSP for features like notifications/reservation systems, internet connectivity, and financial transaction fees
   b. Sometimes revenue sharing agreements

2. Charging service provider owned with host site agreement
   a. CSP controls cost to charge
   b. Revenue sharing agreement
   c. Specific timeframe for services offered
Questions on EVs and EV Charging?
Q/A + Mini Break

Up Next: Presentation on Idaho’s NEVI Plan from Emily with ID OEMR
BACKGROUND

NEVI PROGRAM AND EVS IN IDAHO
The National Electric Vehicle Infrastructure (NEVI) Formula Program was established through the Bipartisan Infrastructure Law passed in 2021.

Funds electric vehicle (EV) charging infrastructure in each state.

In 2022, ITD, OEMR and DEQ collected feedback from stakeholders across the state.

This feedback was used to develop Idaho's NEVI Plan.

Idaho’s plan was approved by the FHWA in September 2022.
NEVI CHARGING STATION REQUIREMENTS

Locations for DCFC NEVI charging stations will need to meet the following requirements:

• 50 miles apart and less than 1 mile from an EV Alternative Fuel Corridor
• Power grid capacity
• Provide public restrooms, lighting, shelter and ADA access
• Available on rural corridors and to underserved communities
• Assure long-term operation and maintenance
• Foster public-private investment in EV infrastructure
Between 2020-2022, Idaho saw a **270% increase** in EV and Hybrid ownership.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ELECTRIC</th>
<th>HYBRID PLUGIN</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>1871</td>
<td>137</td>
<td>2,008</td>
</tr>
<tr>
<td>2021</td>
<td>3250</td>
<td>1014</td>
<td>4,264</td>
</tr>
<tr>
<td>2022</td>
<td>5,394</td>
<td>2,031</td>
<td>7,426</td>
</tr>
</tbody>
</table>
PHASE I PUBLIC OUTREACH

ITD, OEMR, and DEQ coordinated through an interagency partnership to gather feedback from representative groups to ensure equity in planning efforts. These groups included:

- Minority / Underrepresented Groups
- Industry & Industry Associations
  - Chambers of Commerce
  - Large employers
  - Trucking
  - Vehicle Manufacturing
  - Auto dealers
  - Utilities
  - Labor
  - Economic Development
- Education
- Environmental Groups
- Municipalities
- Government Agencies
The areas of concentration on the map shows potential locations of Level III charging stations along Alternative Fuel Corridors based on feedback from stakeholders from specific industries and the public at-large.

Some common areas of focus were along the following highways:

- SH 55
- US 95
- I 90
- I 84
- I 86
- I 15
IDAHO’S APPROVED PLAN

After compiling feedback through public involvement efforts, ITD, OEMR and DEQ submitted their plan to the FHWA in August 2022. FHWA sent their approval of the plan in September 2022.
PHASE II: SITING, FEASIBILITY & ACCESS STUDY

The Siting, Access, and Feasibility Study will help prioritize EV charging station locations by considering:

- Greatest number of drivers served
- Greatest need (considerations related to rural areas, and FHWA rule exceptions related to distance between stations)
- Greatest economic benefit to host and/ or community
- Physical attributes of potential EV charging station locations
- Future growth/continuity
- Equity of potential/proposed site locations and features, specifically as they pertain to Idaho’s tribal and minority populations
- Terrain, weather and access to potential locations
PHASE II: SITING, FEASIBILITY & ACCESS STUDY

- GIS mapping of network data and electrical supply
- Prioritization process, propose NEVI compliant station locations
- Economic cost modeling
- Exception documentation
- Policy and research
- Design and access recommendations
- Site construction
- Resilience, emergency evacuation, seasonal needs
- Procurement, evaluation and contracting
- Operations and maintenance
- Equity and workforce development considerations
ITD, OEMR, and DEQ will also be providing opportunities for the public to review the current plan, ask questions and provide feedback. These will include:

- Public meetings hosted across the state
- Utilize expertise from advisory groups
- Online survey
- Email updates from project team
FUNDING FOR SITES

20%
Site Host

80%
NEVI Funds
An outcome of Phase II will be to launch two beta charging station locations.

If you are interested in being considered as one of those potential beta locations, you can contact the project team at info@evidaho.com.

Additional grants and opportunities for DCFC stations will be available after the study is complete and site criteria has been determined.
OTHER GRANT PROGRAMS

FUNDING FOR EV INFRASTRUCTURE FOR COUNTIES AND MUNICIPALITIES
GRANTS FOR CITIES & COUNTIES

NEVI funding is only available to areas along Alternative Fuel Corridors.

Other federal grants are available to cities and counties interested in building EV charging stations.

These additional charging stations will be vital in bringing tourism and economic development to rural communities across Idaho.
Counties and municipalities can apply for grants to support the building of EV charging infrastructure in areas that don’t qualify for NEVI funding.

To find out if your community qualifies and to apply for a grant, scan the QR code.
THANK YOU
CONTACT US
info@evidaho.com
Up Next: Table Breakouts on Stakeholders
What are the city’s goals?

How do we plan for these goals?

Keep these questions in mind
Table Breakout around Stakeholders

Get into groups of 4, ideally with at least one representative from a City in each group

If you do not have a City representative in your group, please raise your hand

Note take will be needed for each group

Map of Canyon County Idaho
Table Breakout around Stakeholders

Prompt #1: Make a Stakeholder List

- Who are the stakeholders in transportation issues?
- Who might we be missing?
- What motivates each group of stakeholders?

What you should do!

- Write down Stakeholders
- Write down questions you have

Map of Ada County Idaho
First: Let’s make a list & check it twice (5 min)

Table 1 states their stakeholder groups

Table 2 states any stakeholders that Table 1 didn’t have

Table 3 states any stakeholders that Table 1 and 2 don’t have… Until there are no more stakeholders on anyone’s pages
Take two minutes and write down 1 question and 2 thoughts

Compile group’s questions into a list

Large Group share out
5 Minute Break (10 min)
Up Next: Idaho Power Presentation with Patti Best
EVs and the Grid

Patti Best
Senior Program Specialist-Transportation Electrification
Electric Vehicles
Typical System Load
Best Practices

- Right size
- Managed charging
- Get with utility early!
Services and Site Design

• General Education/Participate in Stakeholder Groups

• Site Evaluations
  • Estimates: Assess capacity at a high level and needed upgrades.
    • Free but not binding
  • Formal Cost Quotes
    • Good for 60 days
    • May require engineering fees paid upfront

• Billing Evaluations

• Letters of Support
In 2020, we re-affirmed our commitment to continue electrifying our fleet by setting the following 2030 goals:

- **75%** Passenger Cars
  - 75% electric and 100% of new purchases will be electric

- **35%** Other Vehicles
  - Including SUVs under 8,600 pounds: 35% will be electric

- **75%** Forklifts
  - 75% electric and 100% of new purchases will be electric
Questions?

idahopower.com/ev
Up next: Breakout on Specific Cities
But First: Oregon for Example

- Currently 80-90% of charging takes place at home.
- Moving to an all-electric future requires convenient and accessible charging for all – especially those who face the most barriers
  - Drivers in apartment complexes
  - Low-income drivers
  - Predominantly BIPOC communities
Let’s discuss specific locations!

What types of destinations are in your city?

Where do people travel? Where do they park?

Which stakeholders are involved in different places people park?
What do you need to justify charging in a location?

Do you have good data?

What data would be useful?

How are communities involved? EV owners? Underserved communities?

How often do we need to reevaluate?
Take two minutes and write down 2 questions and 1 thought

Compile group’s questions into a list
ENABLING COMMUNITY ACCESS TO CHARGING FUNDS

- Forth workshop to help communities win federal TE funding May 15: https://www.roadmapforth.org/rm23/workshop
- Make sure the money is spent efficiently and in ways that center equity
- Matchmaking partners and funding sources
- Educating local governments excited about applying
- If the groups with the most barriers receive public investments, everyone benefits
QUESTIONS?

WhitakerJ@ForthMobility.org
THANK YOU