

WestSmart EV: Overview

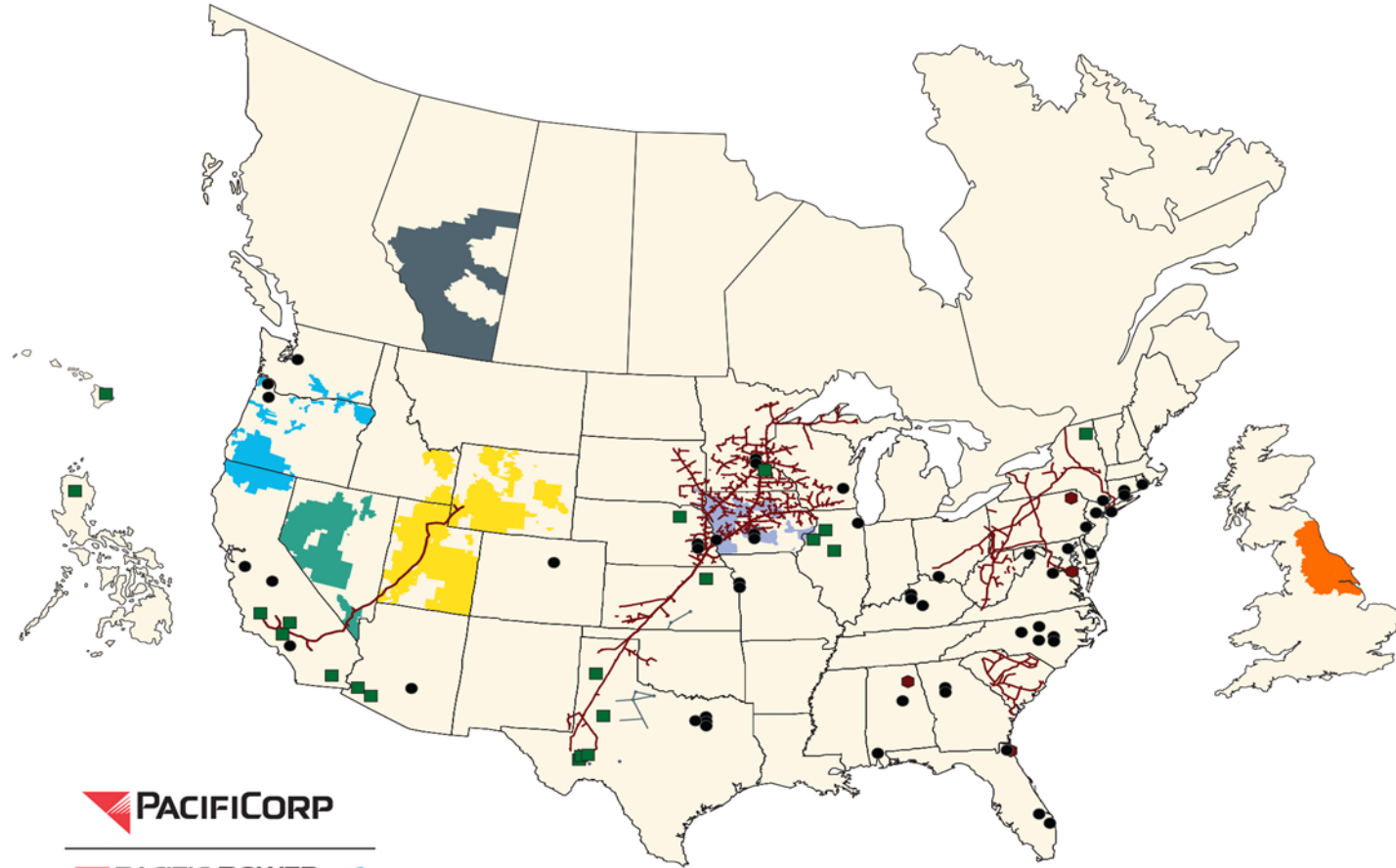
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Director of Innovation and Sustainability Policy

April 7, 2022



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Who are we?



 **PACIFICORP**

 **PACIFIC POWER**

 **ROCKY MOUNTAIN POWER**

 **MIDAMERICAN ENERGY COMPANY**

 **HOMESERVICES OF AMERICA**
A Berkshire Hathaway Affiliate

 **NV Energy**

 **NORTHERN POWERGRID**

 **BHE PIPELINE GROUP**

 **ALTALINK**

 **BHE U.S. TRANSMISSION**

 **BHE RENEWABLES**

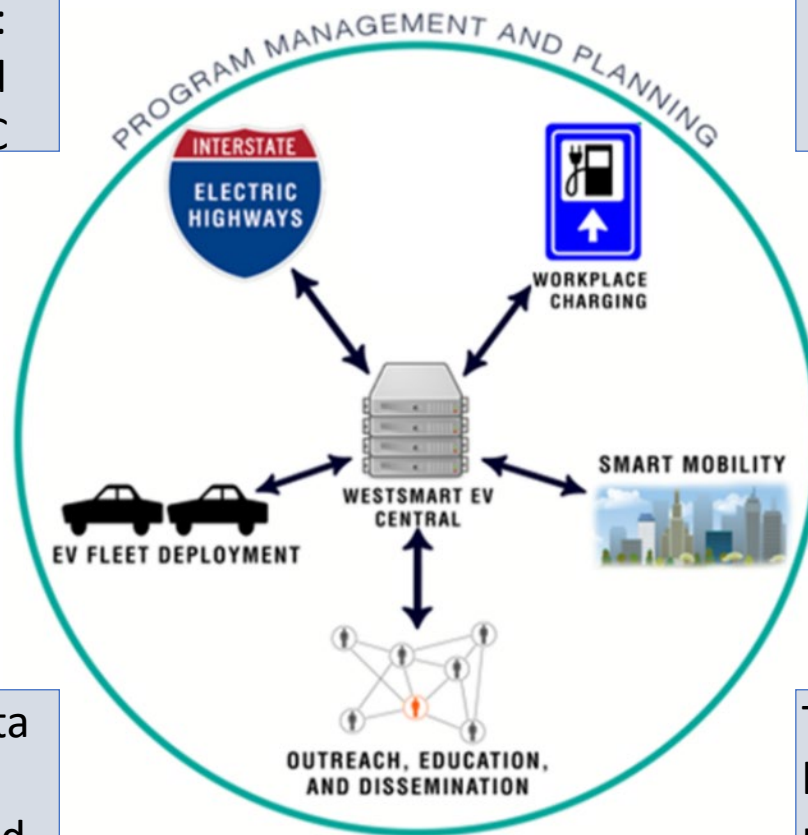
WestSmartEV (WSEV) Project Approach

DOE FY16 \$3.5M Award; 2017-2020 Period of Performance

Task 1 Electric Highways:
1,500 miles of electrified interstate with 65+ DCFC

Task 3 EV Adoption Pilots:
Incentives for 200+ EV purchases

Task 5 WSEV Central: Data collection, analysis, modeling, lessons learned



Task 2 Workplace Charging: Workshops and 600+ L2 at work locations

Task 4 Smart Mobility:
All electric solutions in urban areas

Task 6 Outreach: Lessons learned, dissemination, materials, workshops



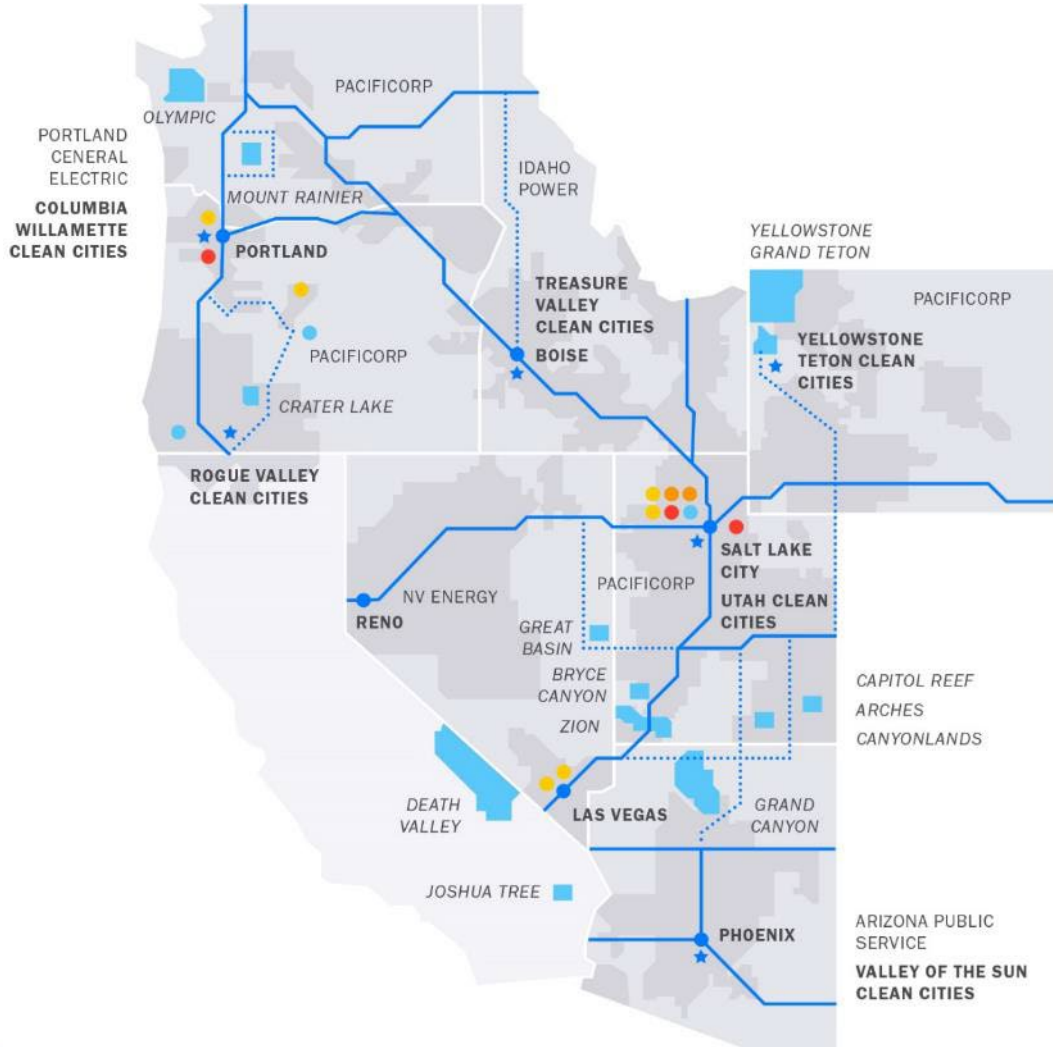
Partners



Notable Equity Considerations

WestSmartEV@Scale

DOE FY20 \$6M Award; 2021-2023 Period of Performance



WSEV@SCALE FOCUS AREAS

Sub-Projects

Destination Highways

- NATIONAL PARK AND RECREATION ELECTRIFICATION

Underserved Regions

- EV TRAINING FOR RURAL WORKFORCE
- RURAL E-BUS TRANSIT HUB
- eCAR SHARE @ AFFORDABLE HOUSING

Urban Mobility

- TNC EV STUDY
- ZERO EMITTING TAXI FLEET
- INTERMODAL HUB

Freight & Port Electrification

- SALT LAKE CITY INTERNATIONAL AIRPORT ELECTRIFICATION
- UTAH INLAND PORT HEAVY DUTY ELECTRIFICATION

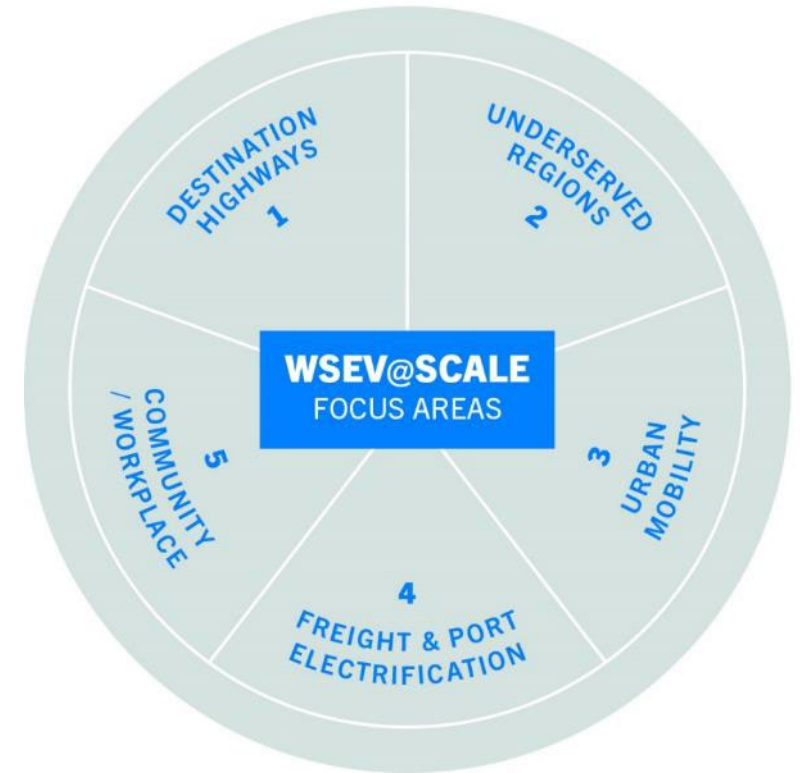
Community / Workplace

- eMOBILITY CENTER
- PARK CITY ARTS AND CULTURE DISTRICT
- PACKSIZE WORKPLACE CHARGING CASE STUDY

- CLEAN CITIES



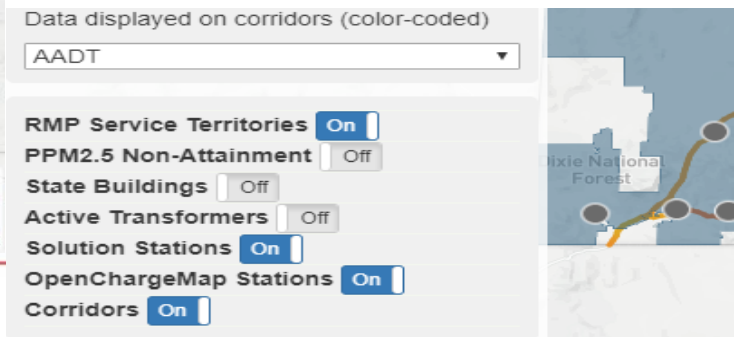
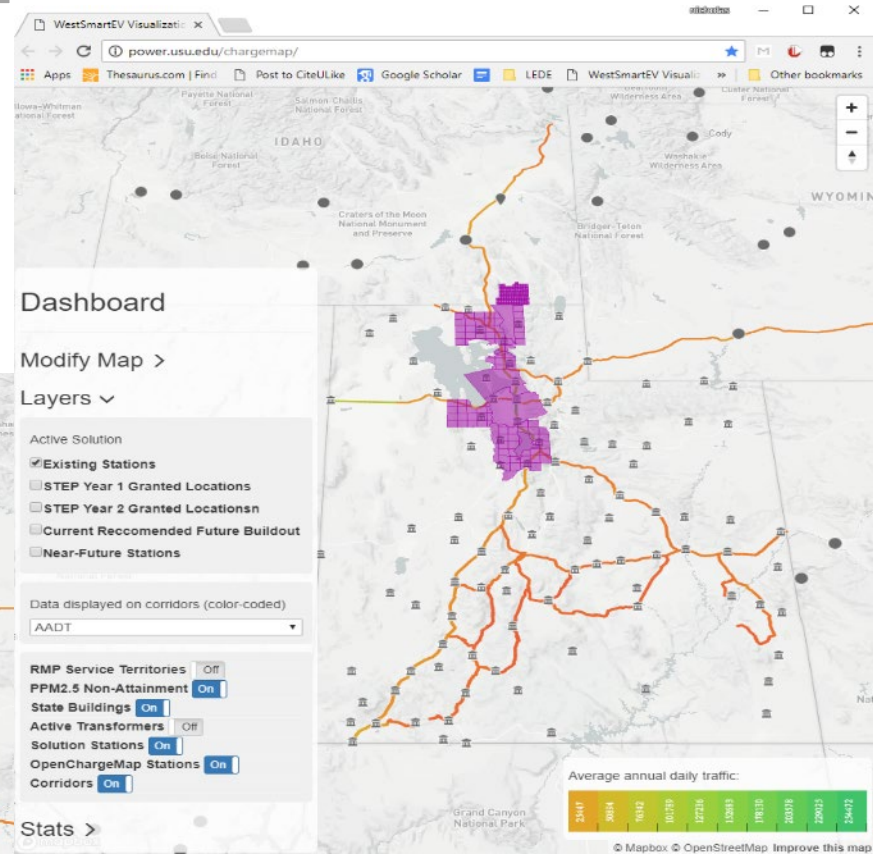
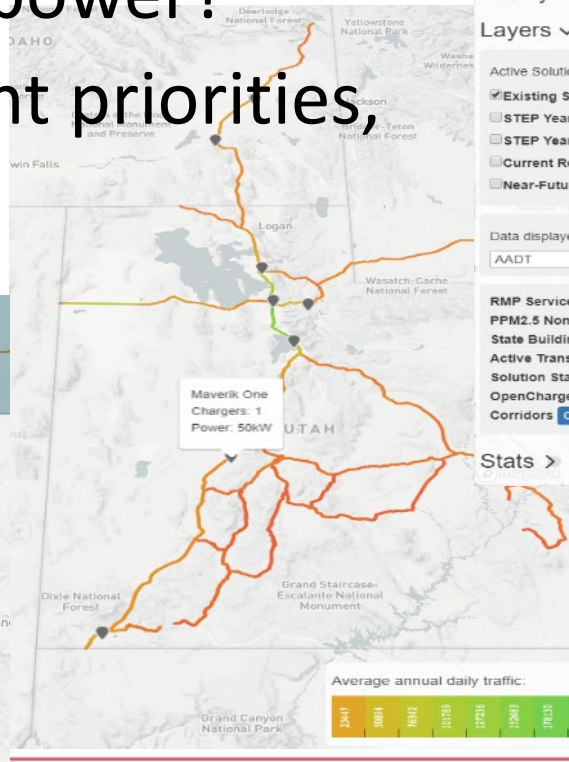
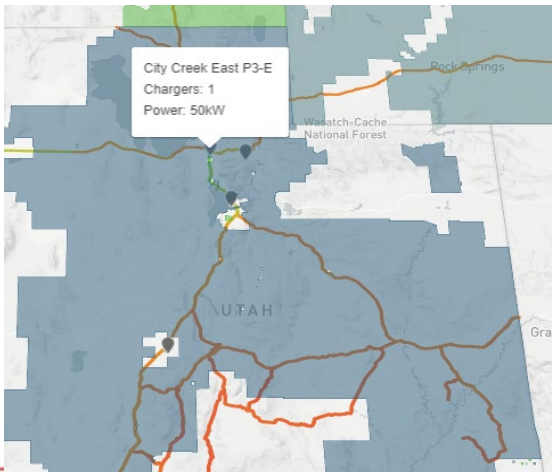
Working with local Clean Cities Coalitions critical!



Notable Equity Considerations

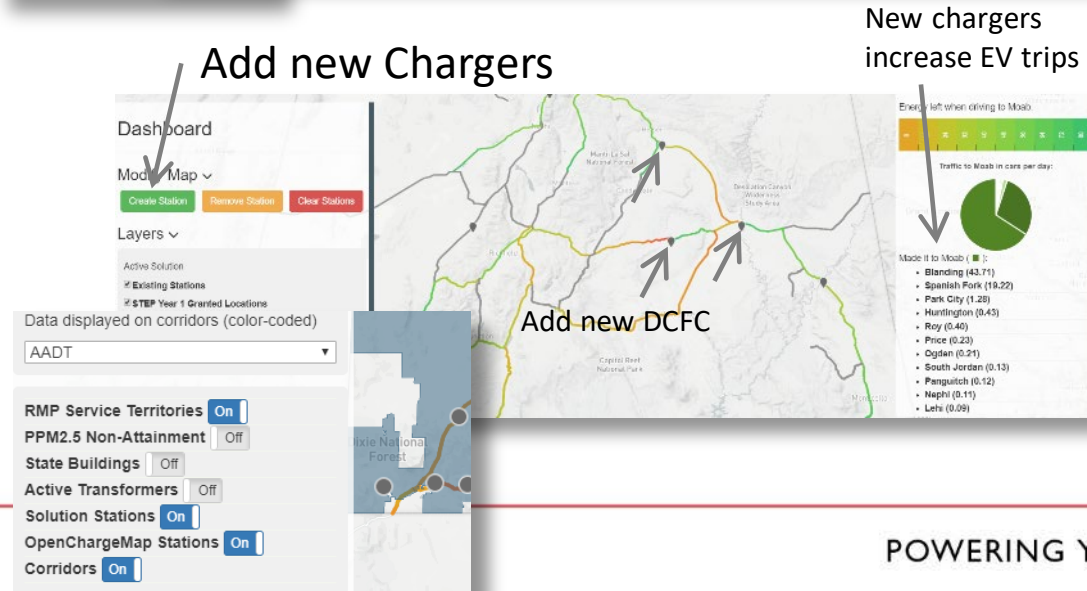
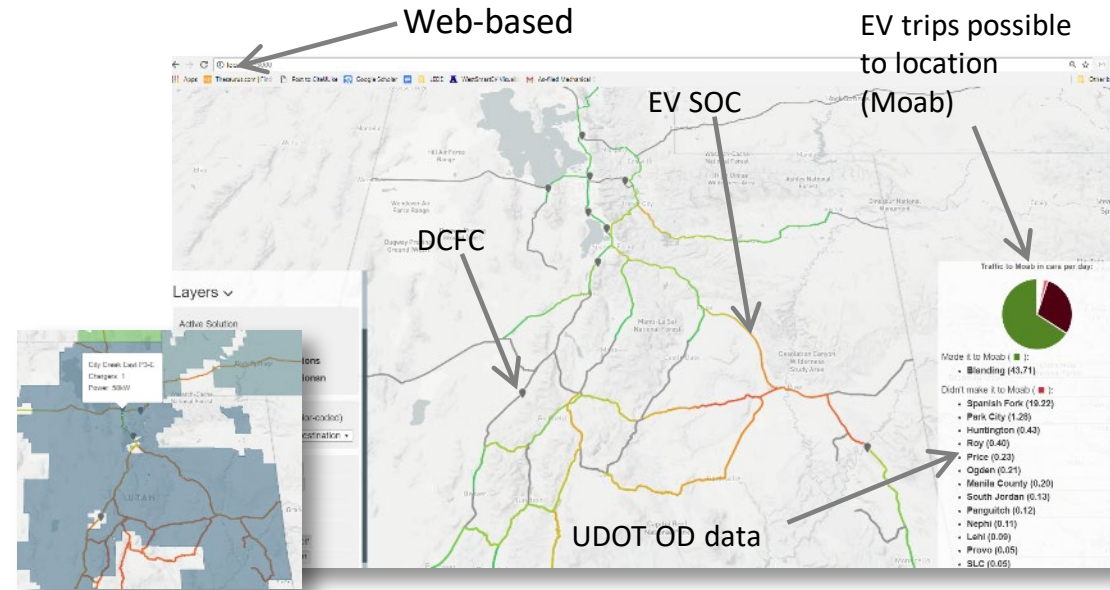
Identify EV Charging Corridors

- **Where:** Which specific locations along corridors?
- **How:** Grid connections, how many, how much power?
- **When:** Deployment priorities, timing?

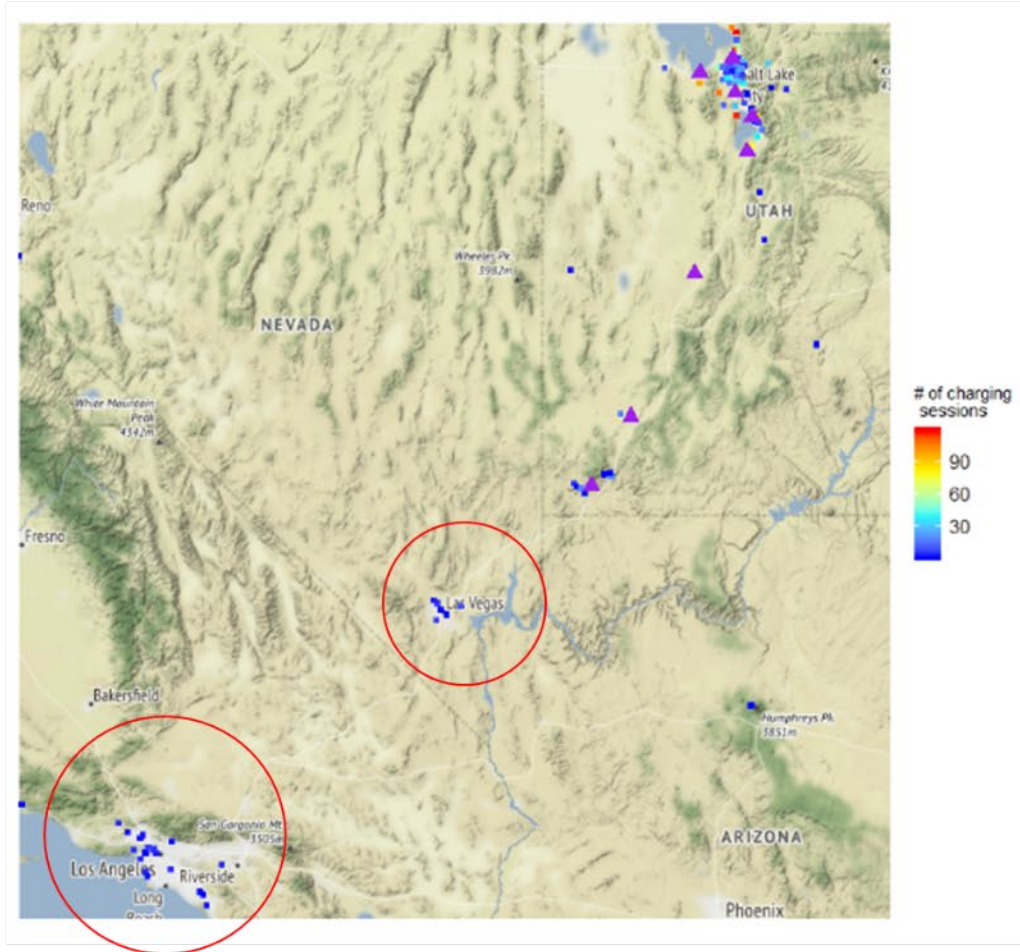


DC Fast Charger Location Analysis

- Developed power and energy demand models along the corridors
 - Dynamic vehicle models
 - All corridors, each direction, including elevation
 - State DOT volume and origin-destination traffic data
- Developed dynamic analysis tool of EV trips supported by DCFC
 - Energy consumption model
 - EV trips possible through the network
 - Online visualization tools



Utah I-15 Corridor Overview

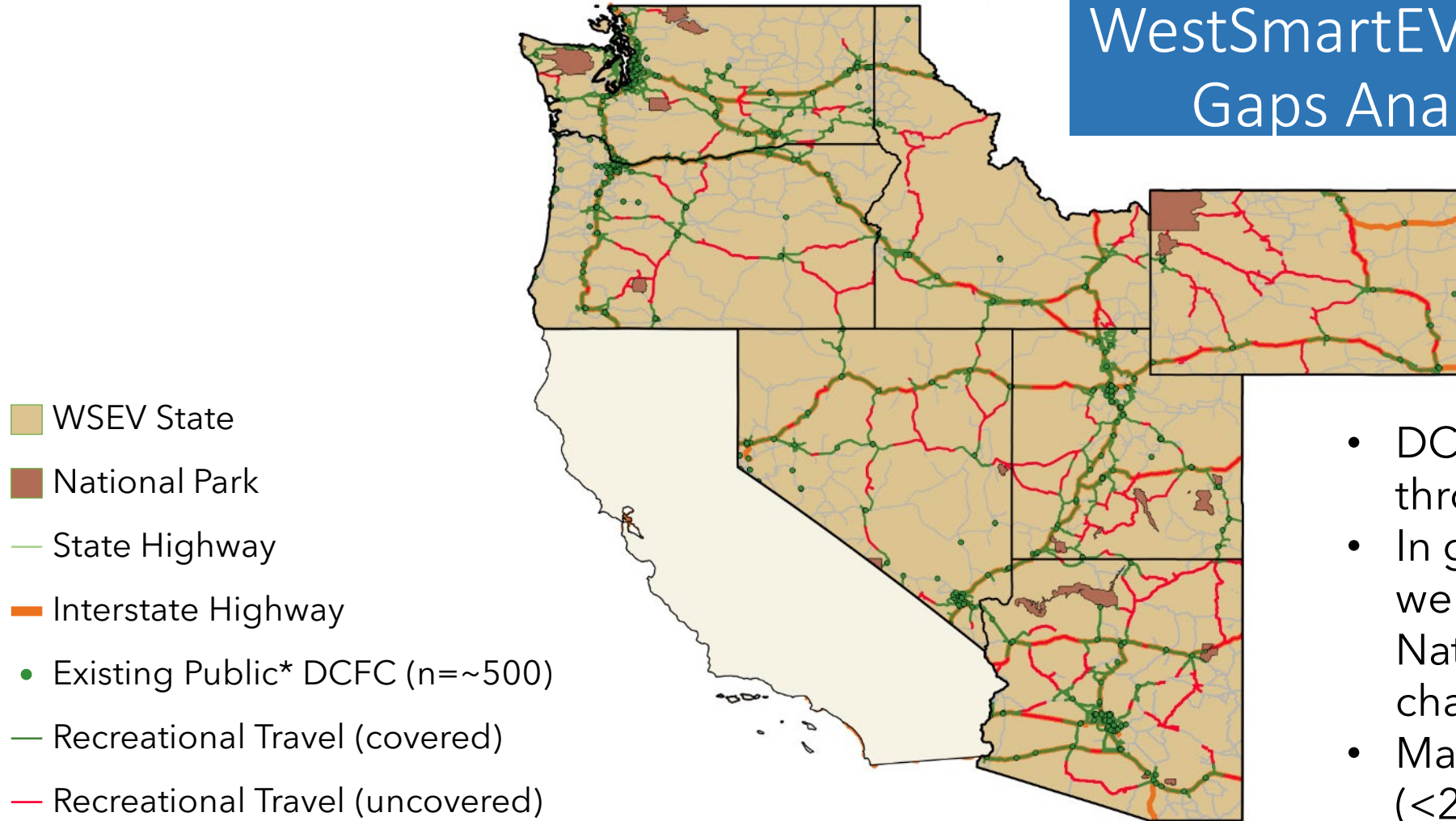


Analysis:

Based on user zip codes, DCFC deployed along I-15 by WSEV have **successfully enabled EV travels from Los Angeles through the State of Utah.**

A high number of drivers from Las Vegas and Los Angeles are using the corridor's DCFC.

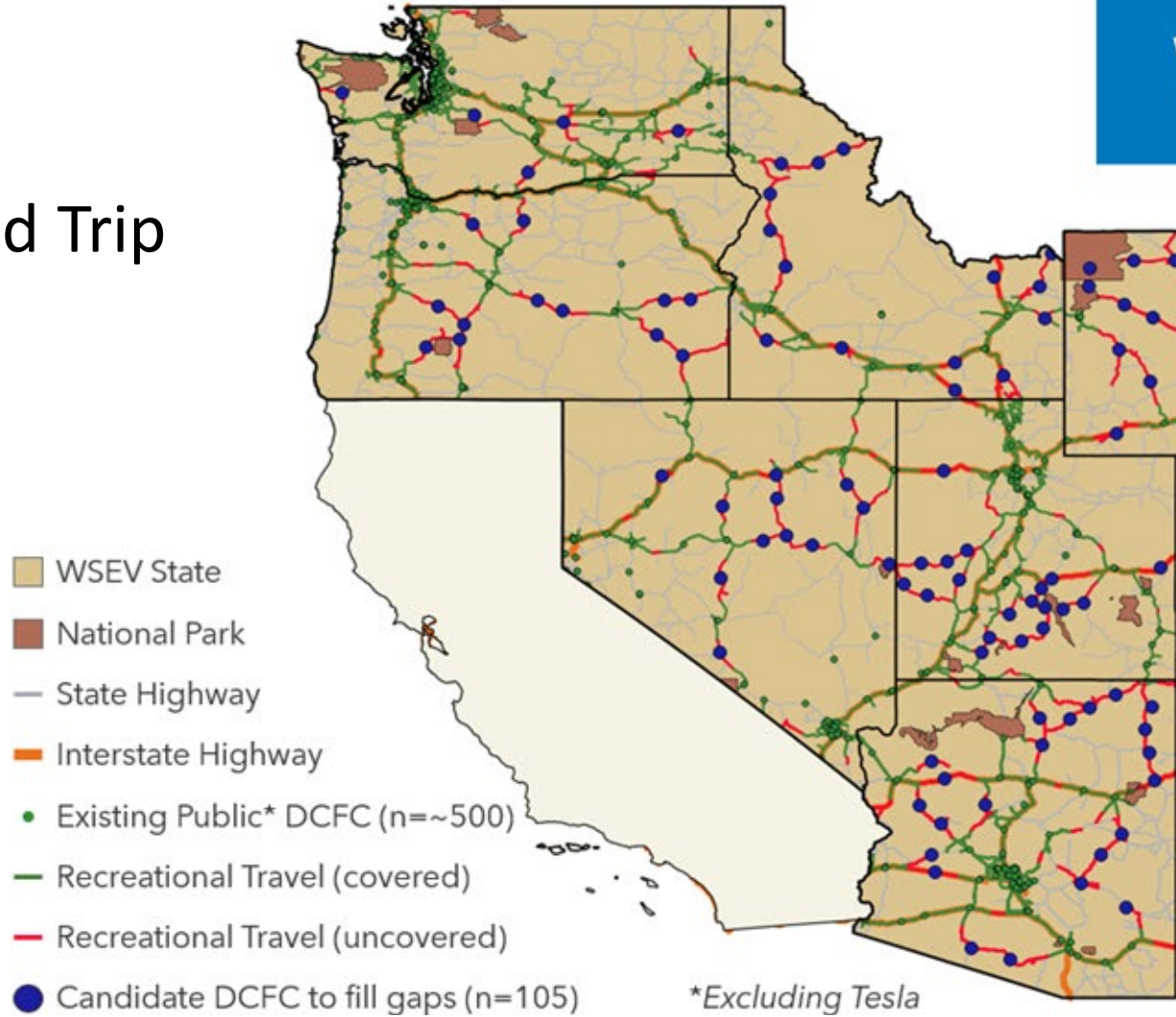
WestSmartEV@Scale Gaps Analysis



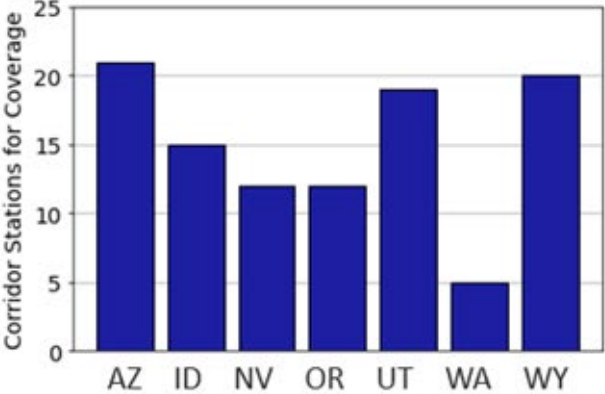
- DCFC access varies throughout the WSEV region
- In general, interstates are well-covered but access to National Parks can be challenging
- Many roads poorly covered (<25mi to DCFC)

NREL EVI Road Trip

WSEV Gaps Analysis



- Candidate locations sited to fill gaps in roadways relevant to recreational travel
- 105 stations needed (+20% existing network)



EV Charging Corridor Key Takeaways

Supply Chain Matters

- Even in 2018 an issue
- Includes support chain (electricians, contractors, etc)

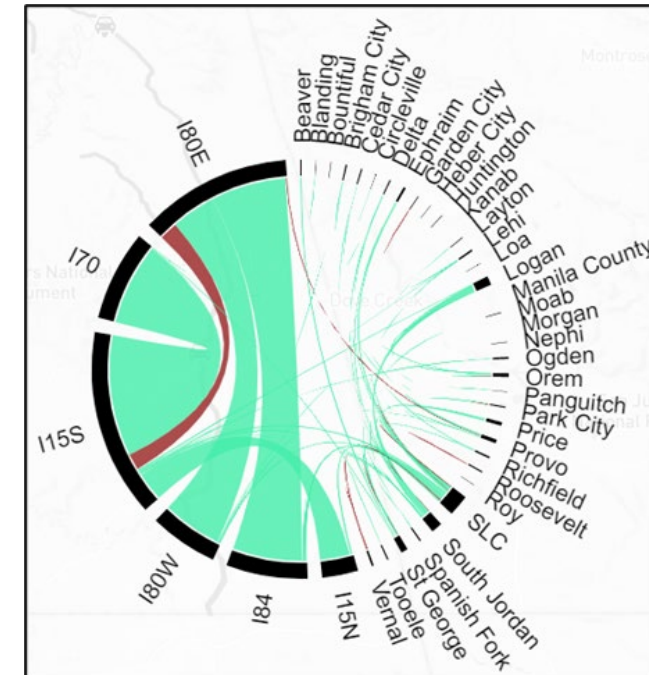
Different ownership models

- Utility/Government
- 3rd party operator
- Independent Property

Lessons Learned

- Select locations where consumers want to go
- Work with your utility early
- Demand chargers are issue for low utilization

Analysis of consumer access



Trips possible following WSEV DCFC deployments.



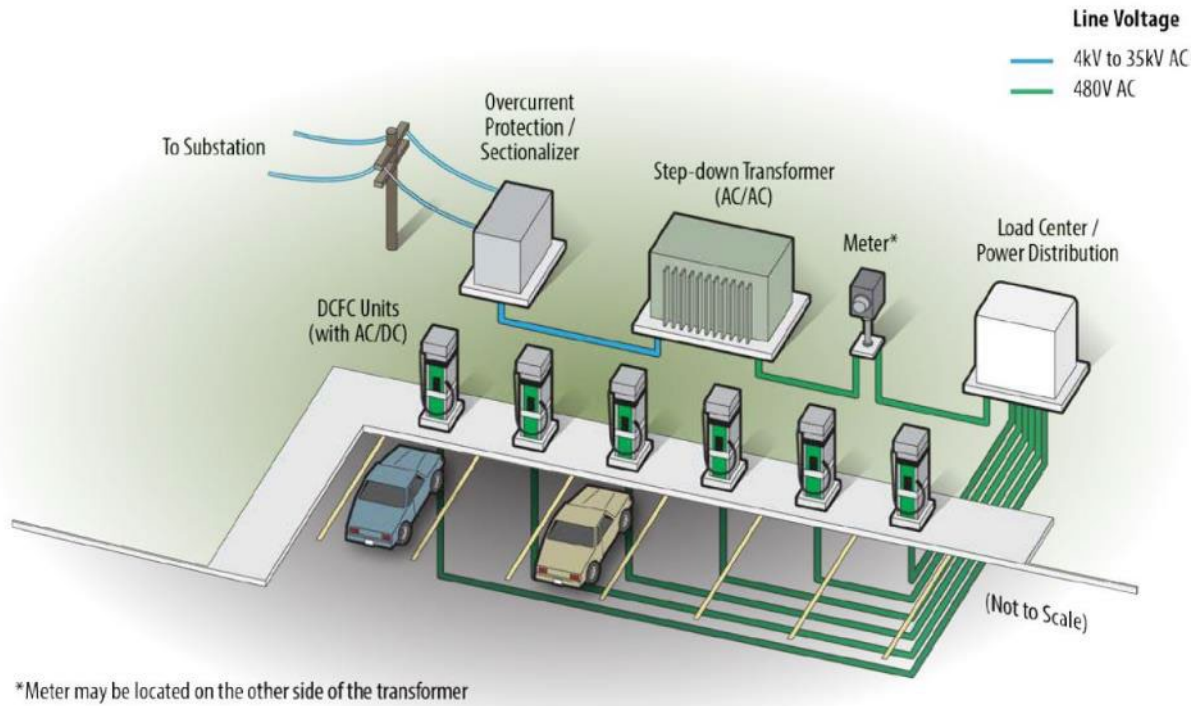
Park City Mobility hub

- Electric buses
- Electric bikes
- Public DC Fast Charger

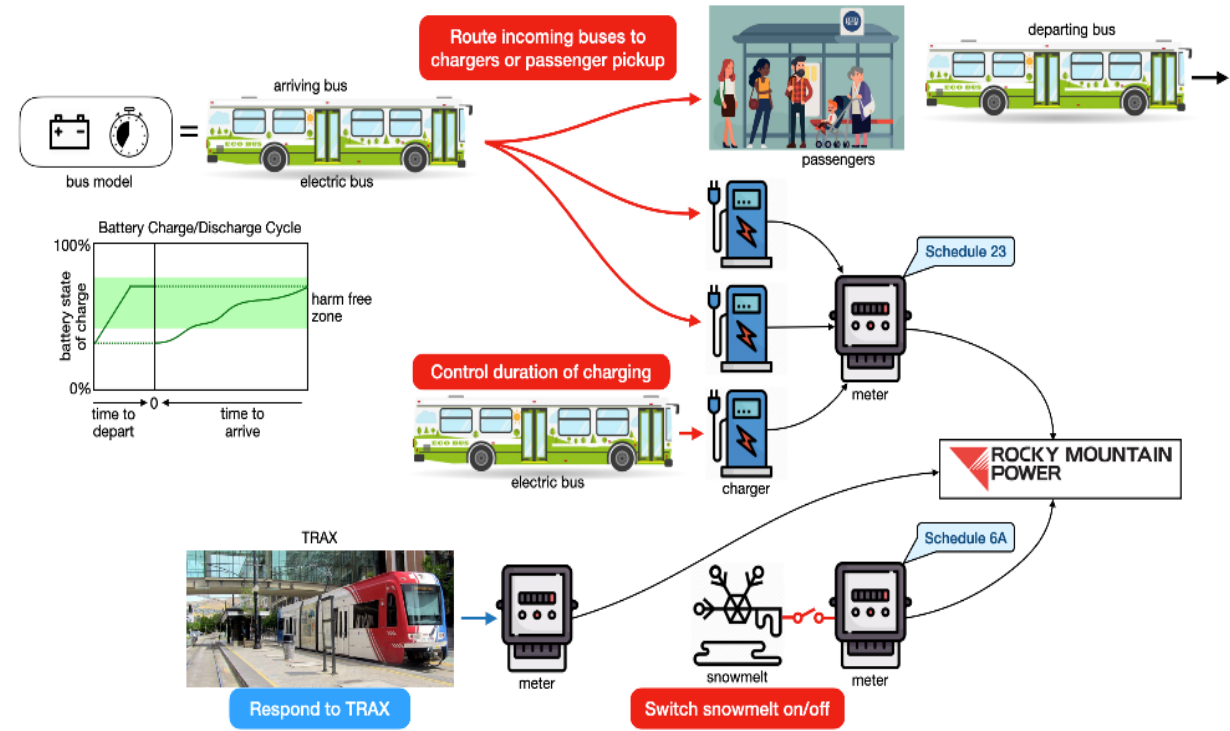


Co-Location Multi-Mobility Charging

Notable Equity Considerations



Electric bus hub within 1 mile of designated EV corridor



Stacking of loads “worst case” particularly for low utilization

Charging infrastructure co-location can reduce costs

Launched LYFT electric program

- Incentivized drivers to participate
- Train drivers to be EV ambassadors
- Provide access to multiple strategically located fast charging stations
- Collect energy and trip data



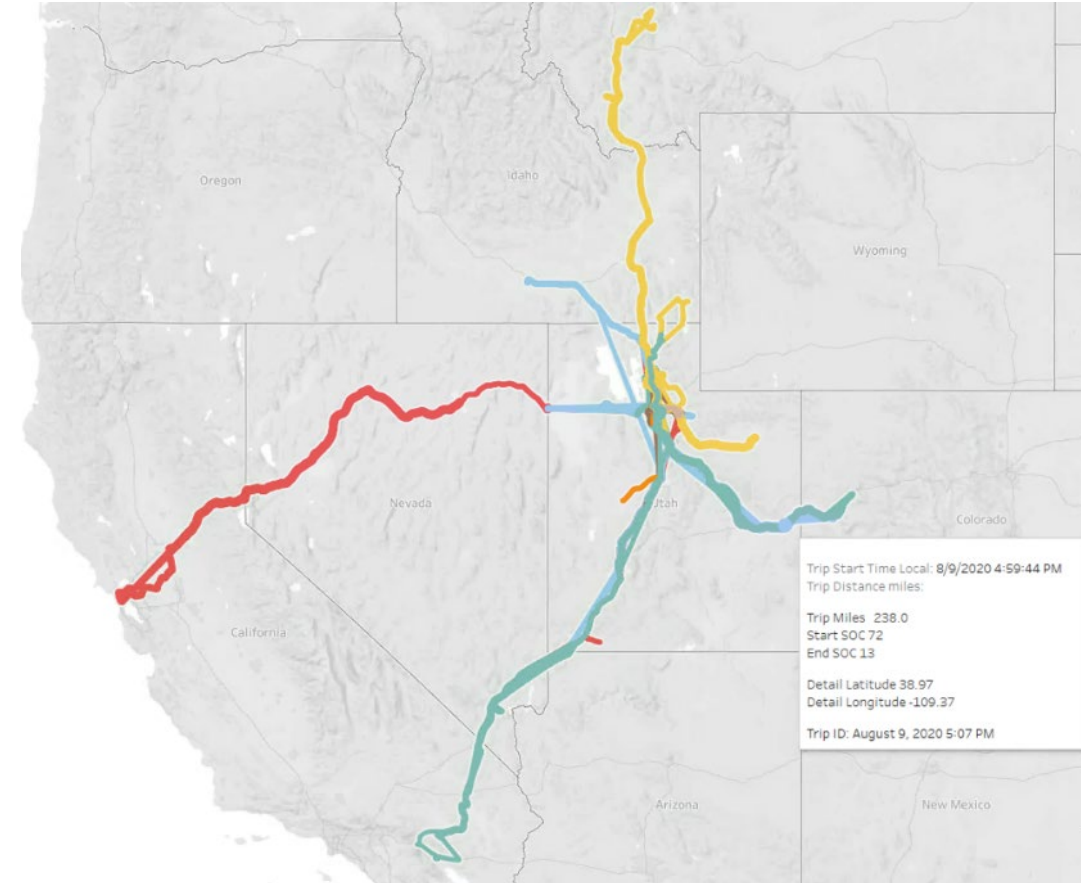
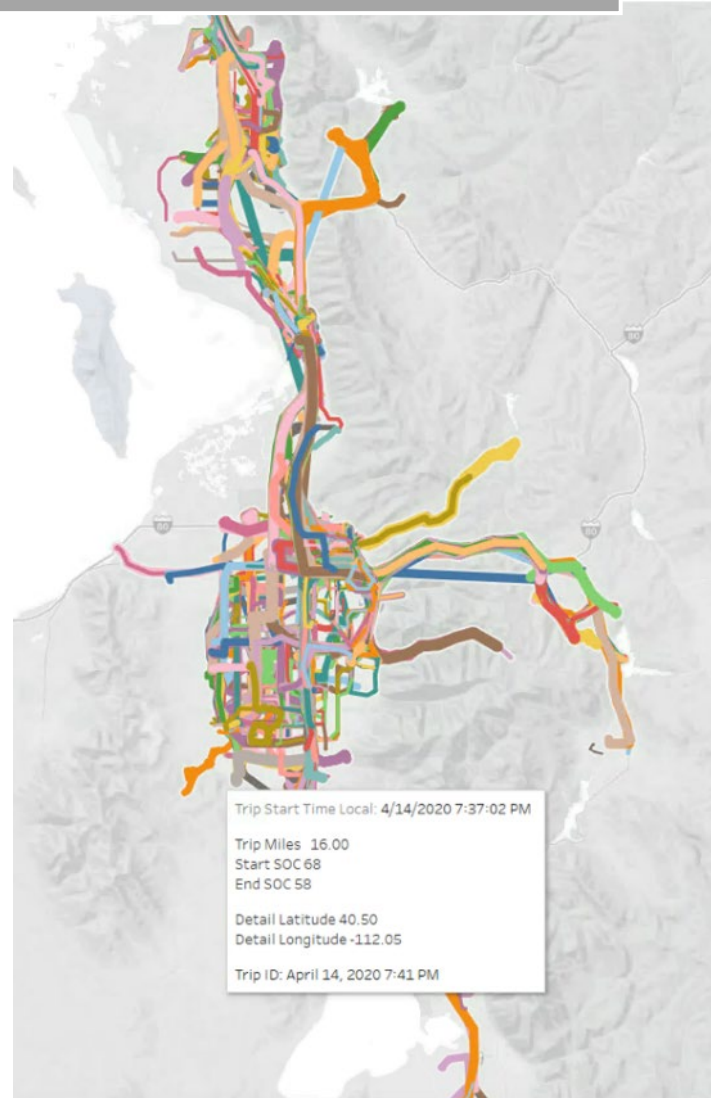
Mobility Data Collected

Miles: 100,785

Leafs do not provide mileage data

Trips: 9,298

**Energy added:
57,272 kWh**



Launched electric car share program in underserved community

Car share for residents primarily for short range EV trips

Users included market rates, student, low-income housing

Multiple Level 2 chargers on site

Location within 1 mile of designated EV corridor



After stakeholder interviews, best practice research, literature reviews, meeting with similar groups, and coordination meetings, some themes emerged:

Planning gaps can be risky & expensive

Management partners need thoughtfully coordinated product and service integration

Vehicle experience is important

Not much user love for 2013-2014 Nissan Leafs, especially the range

Free use isn't adequate incentive

Factors related to time, safety, reliability, ease of use, familiarity, and user risk impact carshare use

Attorneys come in handy

Complex partnerships and business structures require detailed risk and liability management



How might we improve user experience with car share vehicle and management technology?

Higher range & quality

Chevy Bolt Premier 2019

- Best cost/range/quality combination
- Safety + interior specs ideal for shared mobility

Improve app reliability

Coordinate with App developer

- Add software capacity for subsidized carshares
- Solve software/hardware integration issues

Fast charging access

- To expand to include TNC



Final Takeaways

Think of the consumer

Take an integrated approach

Investments in underserved communities can drive adoption

Equity components can lead to bigger impact, reduce costs, and increase utilization

Coordinate with your utility early

Anticipate technology changes

Chargers may change but infrastructure will last!

Questions

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