Sebastopol
Carbon Conversations
Empowering Local Climate Action

Drive Electric

Roadtrips, Vehicles & Infrastructure

March 4th, 2020@ Sebastopol Grange

Sebastopol Carbon Conversations
Empowering Local Climate Action

Teach Climate
SoCo

the Rahus Institute
Solutions for a Sustainable World

Solar Schoolhouse
Education Energized by the Sun

GRANGE

goal: Through exploring Climate Solutions, discover where **we each** can take small to large steps and help shape a better future.

solarschoolhouse.org/sebastopolcarbonconversations/

Sebastopol Climate Action
Local action for a livable climate.
www.SebCA.org

Past Carbon Conversations

Sept 2019: Project Drawdown

Oct. Mary DeMocker “Parents Guide to Climate Revolution”

Nov. Climate Readiness

Nov. Climate Communications.

Jan 2020 – Regenerative Agriculture

Feb 2020 – Carbon Pricing.

Solarschoolhouse.org/sccarchives

Next conversations...

4/1/20 Planting Trees

4/22 Earthday 50th with Mary DeMocker. (Summerfield)

5/6/20 Empowering Women (Women's Earth Alliance)

6/3/20 Climate Readiness Part 2

Signup at solarschoolhouse.org/sebastopolcarbonconversations

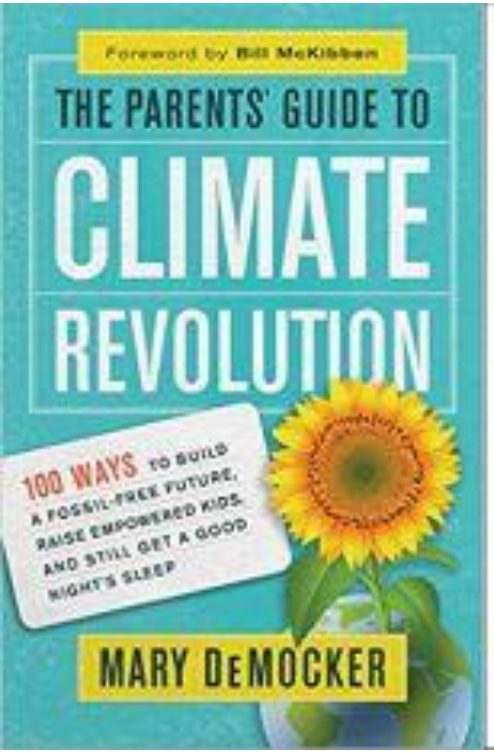
Sebastopol Carbon Conversations
Empowering Local Climate Action

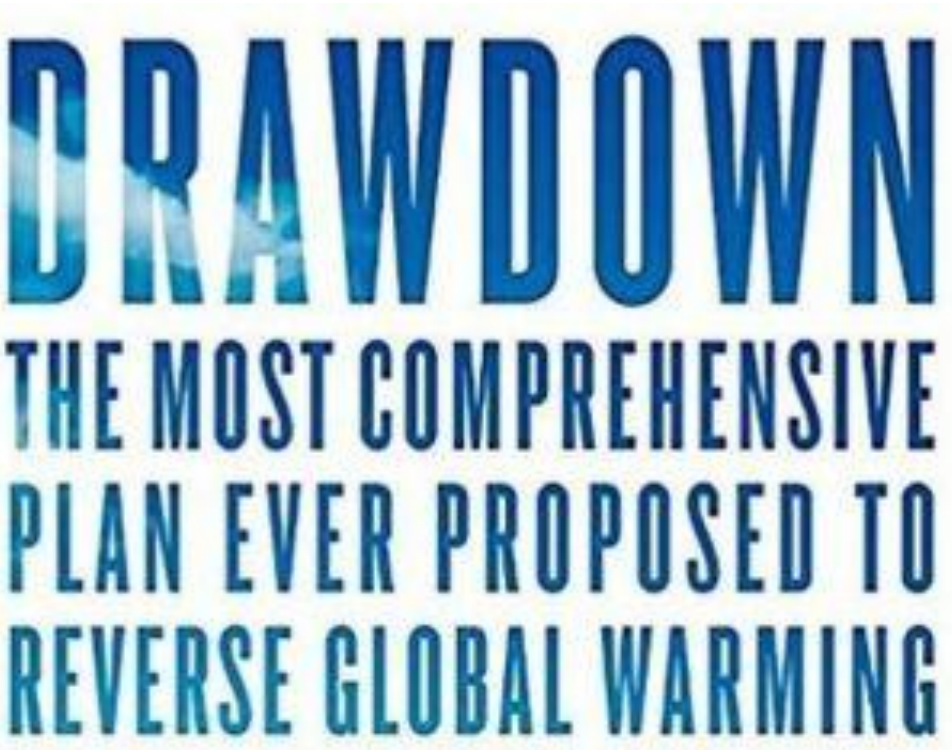
Potential outcome

our conversations & connection help accelerate this practice locally.

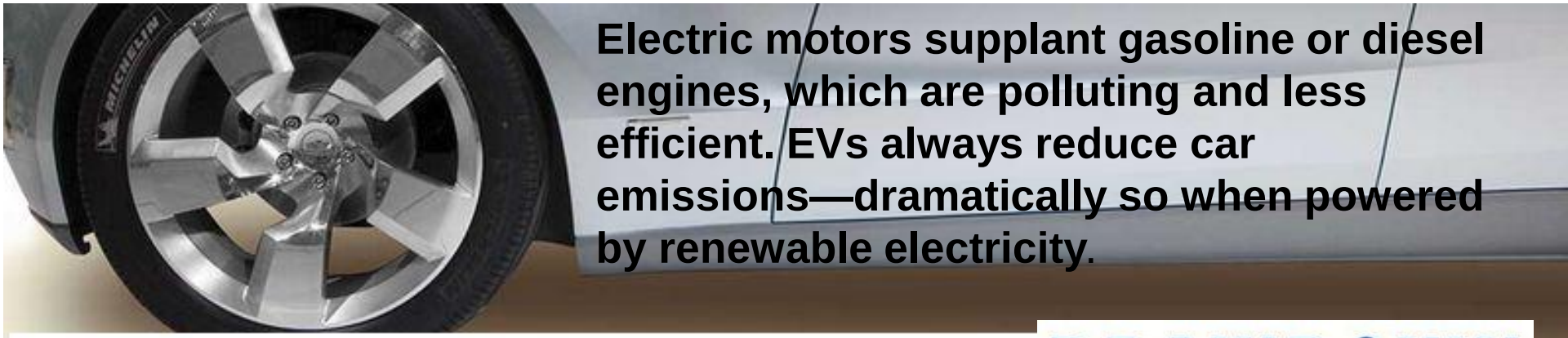
- Helps get more of the community engaged in supporting and adopting larger Climate Actions.
- shapes community level Climate Actions. Example: Sebastopol's new Climate Emergency Resolution (Dec. 2019)

Resources





- Educate yourself AND support Carbon Conversations



Electric motors supplant gasoline or diesel engines, which are polluting and less efficient. EVs always reduce car emissions—dramatically so when powered by renewable electricity.

ELECTRIC CARS

REDUCE SOURCES › ■ Transportation › *Electrify Vehicles*

DRAWDOWN
THE MOST COMPREHENSIVE PLAN EVER PROPOSED TO REVERSE GLOBAL WARMING

11.87–15.68
GIGATONS
CO_2 EQUIVALENT REDUCED / SEQUESTERED (2020–2050)

$4.48–5.79
TRILLION $US
NET FIRST COST (TO IMPLEMENT SOLUTION)

$15.30–21.82
TRILLION $US
LIFETIME NET OPERATIONAL SAVINGS

DRAWDOWN REVIEW 2020

*Our latest publication is the **first major update to our research and analysis of climate solutions** and includes **10 KEY INSIGHTS** for possibility and action across sectors.*

- FREE online at www.drawdown.org

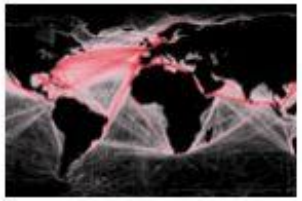
RELATED SOLUTIONS

BICYCLE INFRASTRUCTURE

CARPOOLING

EFFICIENT AVIATION

EFFICIENT OCEAN SHIPPING



EFFICIENT TRUCKS

ELECTRIC BICYCLES

ELECTRIC TRAINS

HIGH-SPEED RAIL

HYBRID CARS

PUBLIC TRANSIT

TELEPRESENCE

WALKABLE CITIES

DRAWDOWN

THE MOST COMPREHENSIVE PLAN EVER PROPOSED TO REVERSE GLOBAL WARMING

Goals today

- Share EV driving experience…it's an everyday car. Range anxiety cured.
- Vehicles – what's available at what cost.
- Infrastructure – Chargers at home, in town, on the road. Building a network.
- Vehicle to Home. Powering your home with your car during outages
- Innovative EV programs.
- What can we do here in Sebastopol?

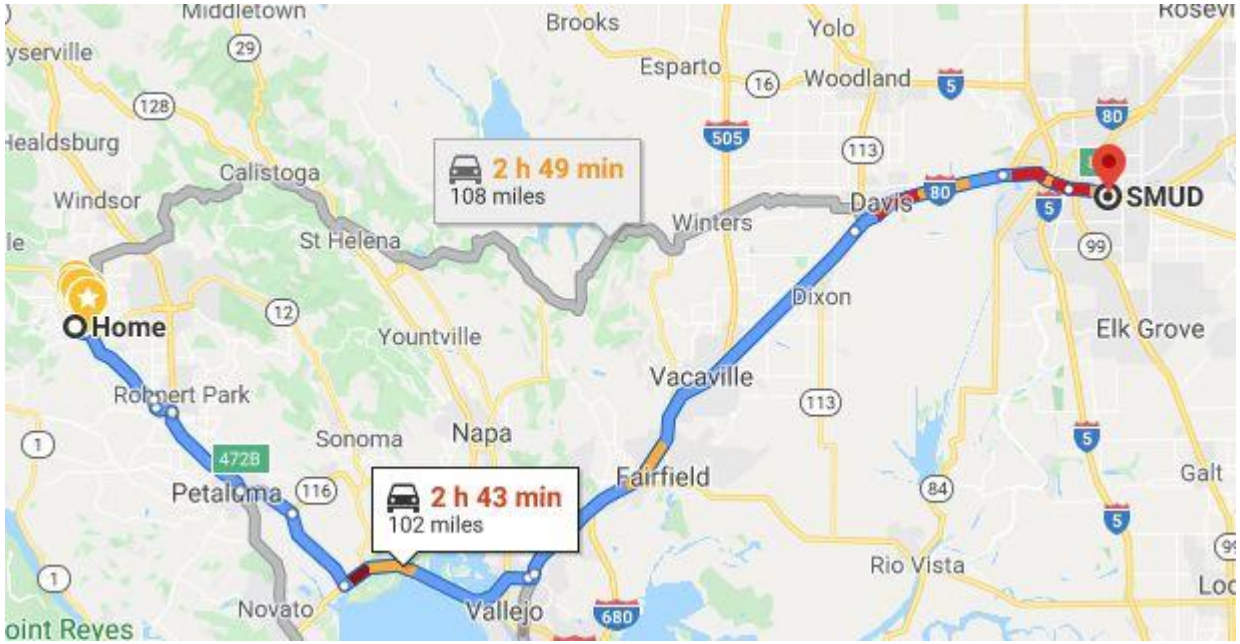
Road tripping in a BoltEV

Our learning curve with EV

- 1st car was Ford CMAX Energi, plugin hybrid, 20miE, + gas engine. Leased. Utilized excess solar credits from home. Charging on road trips not critical.
- Saw Alan Soule's presentation Around the World in 80 days – eased my range anxiety.
- Turned in CMAX and picked up BOLT in 2017.
- Installed Level2 charger at home (SCP incentive)
- Road trip adventures begin.

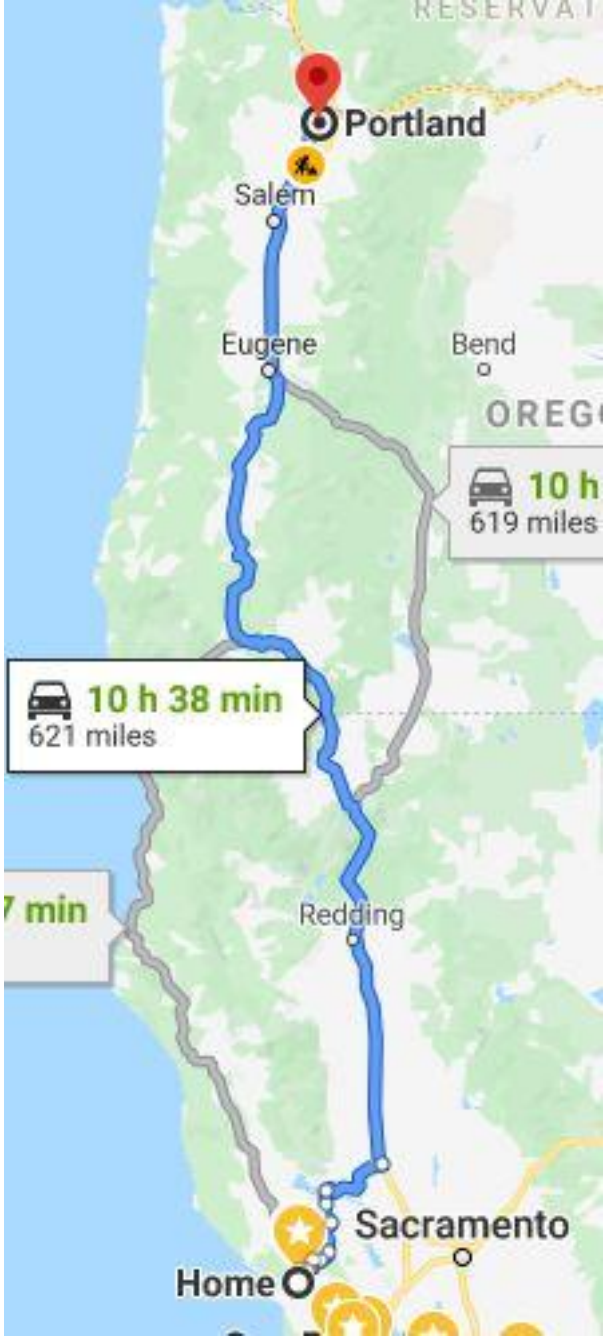
1st road trip in Bolt

Sebastopol to Sacramento and back. No Charge up in Sacto. 200+ miles. Drove cautiously to stretch the range. Success.



Bolting to Portland

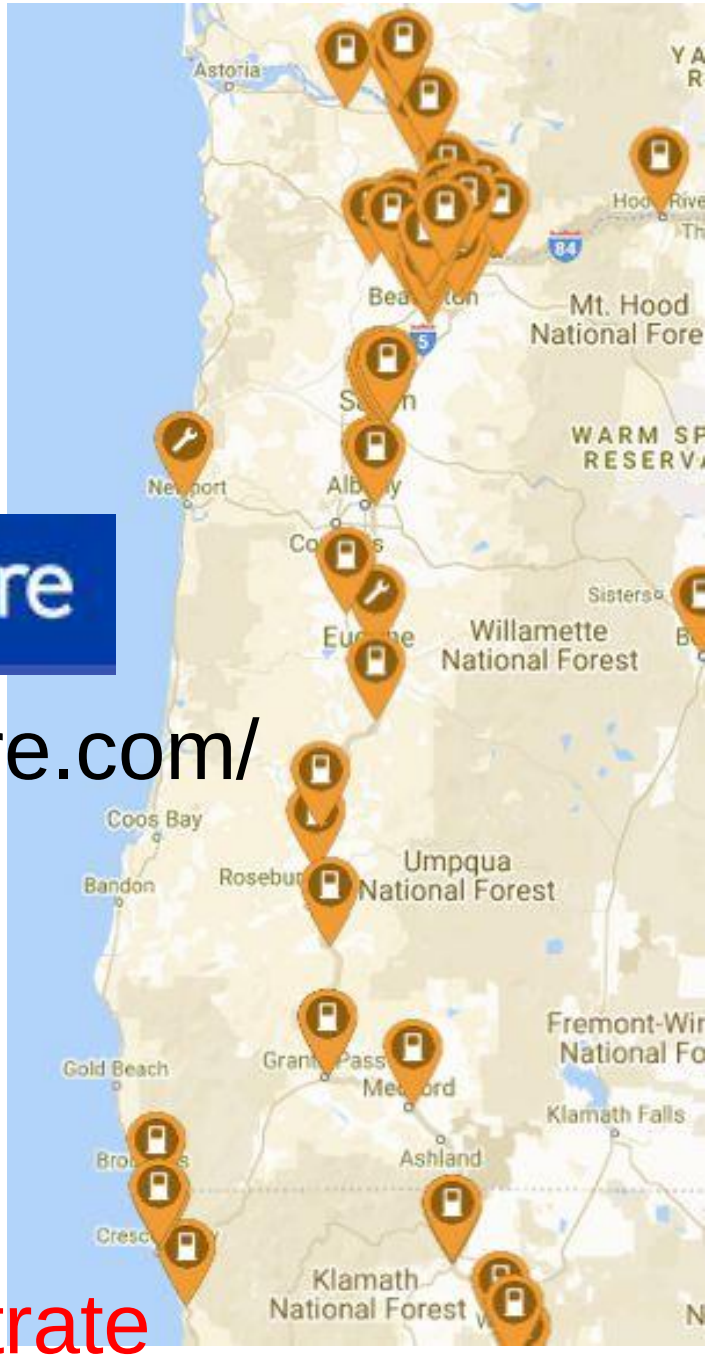
- We've taken 6 trips in the Bolt to Portland. Typically a 2 day trip each way. +1 trip to LA.
- Charging options have improved in just the past 2.5 years since we took the first trip.
- It's been an 'adventure'



DCFC CCS in Norcal/Oregon

PlugShare

www.plugshare.com/



Demonstrate

Electric Avenue in PDX

$5 flat rate fee, DCFC

Eugene Oregon

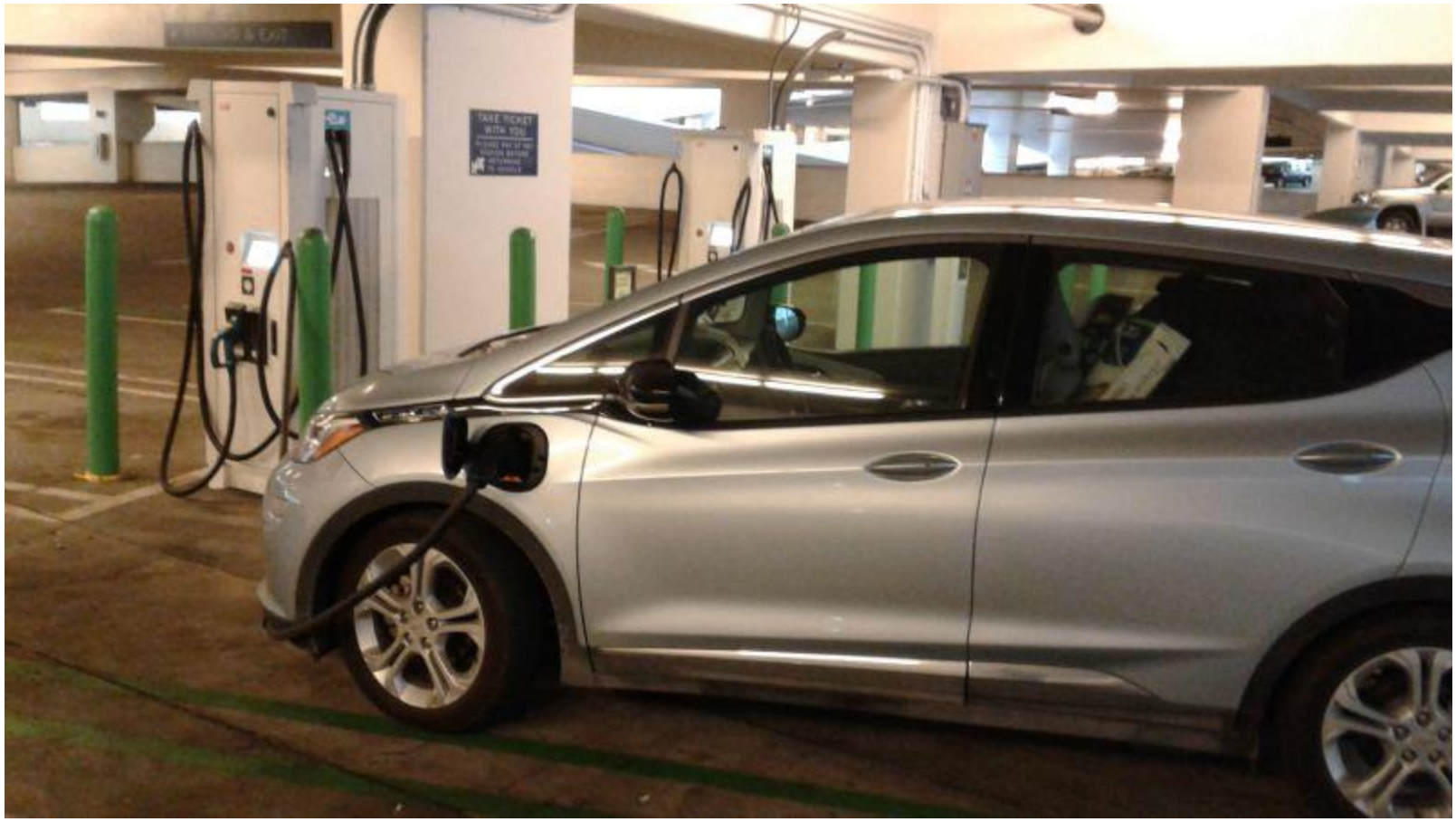
Tech Talk with Electrify America Albany, Oregon

EA has preventative maintenance contract. This is important.

Many Bolts at the DCFC

San Luis Obispo

Glendale



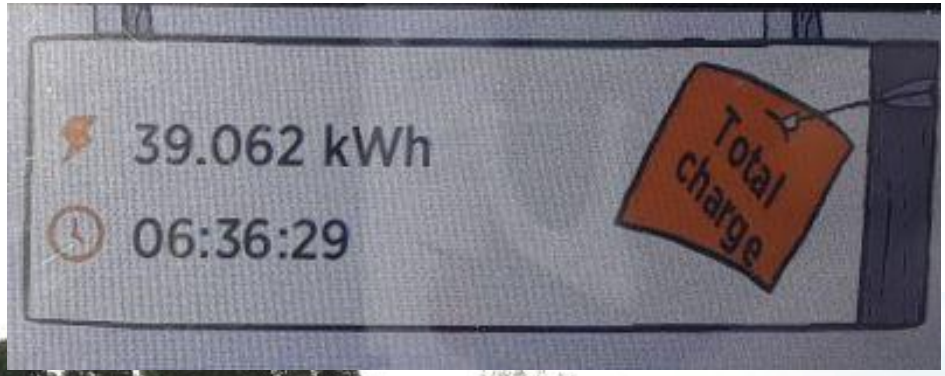
Charge up while having breakfast.

Camping in RV site - Crescent City

Plan B Anderson. Motel 6

- On this trip, the DCFCs from Oregon border to Davis were offline. So Plan B was explored. Overnight at a Motel 6 in Anderson using a level 2 charger, to get us home.
- But….

Plan C – overnight at the ER



30 minutes in Calistoga

Receipt info varies by company. This one is from Chargepoint

Lessons learned

- Test out local DCFast Charger first.
- Download apps for Evgo, Chargepoint, Electrify America. Request cards.
- Plan for a charge at 75-80%SOC.
- Try to pick a location that has 2 DCFC options nearby.
- If stopping for several hours use a Level2 charger.
- Electric Charging rates vary. But PDX –Seb trip costs ~ half of what gas would have cost.

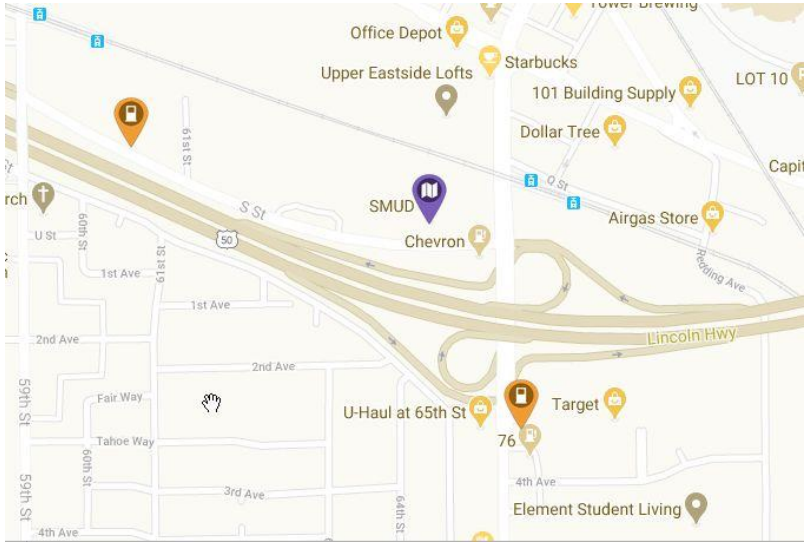
Lessons learned

- Need a smartphone
- Plugshare invaluable
- Get Apps and/or cards for various charging networks beforehand (Evgo, Chargepoint, Electrify America, etc.)
- Don’t think that you can go the full range before needing another charge.
- Our EV is our trip vehicle now.
- There is always an outlet somewhere.

Sebastopol to Sacramento

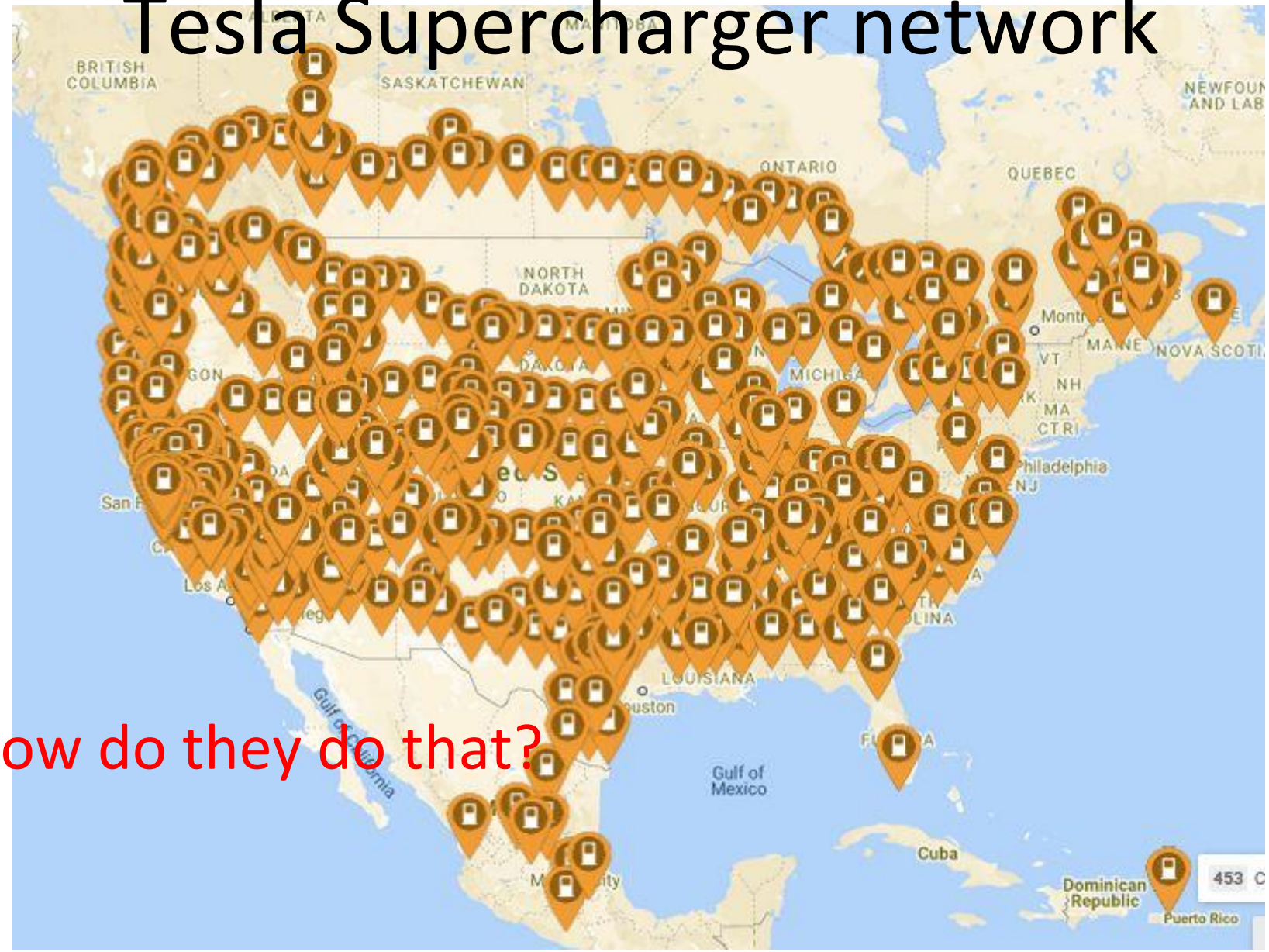
Plan for a level2 if going to be there a few hours, using the time that you're doing something else anyway.

but look for DCFC as backup, nearby or on the way home.



If taking a trip where you'll need a little charging to get back home.

Tesla Supercharger network



How do they do that?

Tesla

Sebastopol?

Vehicle options. LOAN
all electric. 250+ mi range

Chevrolet Bolt

$3,960
Due at Signing

est. **$660** /month
Loan Payment

259 miles
electric

0 100 200

MORE

Hyundai Kona Electric

$4,000
Due at Signing

est. **$666** /month
Loan Payment

258 miles
electric

0 100 200

MORE

Tesla Model 3 Standard Range Plus

$4,324
Due at Signing

est. **$720** /month
Loan Payment

250 miles
electric

0 100 200

MORE

Ford Mustang Mach E California Rt. 1

$4,882
Due at Signing

est. $489 /month
Lease Payment

300 miles
electric

0 100 200

Chevrolet Bolt

$3,687
Due at Signing

est. $394 /month
Lease Payment

259 miles
electric

0 100 200

Hyundai Kona Electric

$3,575
Due at Signing

est. $311 /month
Lease Payment

258 miles
electric

0 100 200

MORE

Tesla Model 3 Standard Range Plus

$3,957
Due at Signing

est. $463 /month
Lease Payment

250 miles
electric

0 100 200

MORE

Kia Niro EV

$3,699
Due at Signing

est. $329 /month
Lease Payment

239 miles
electric

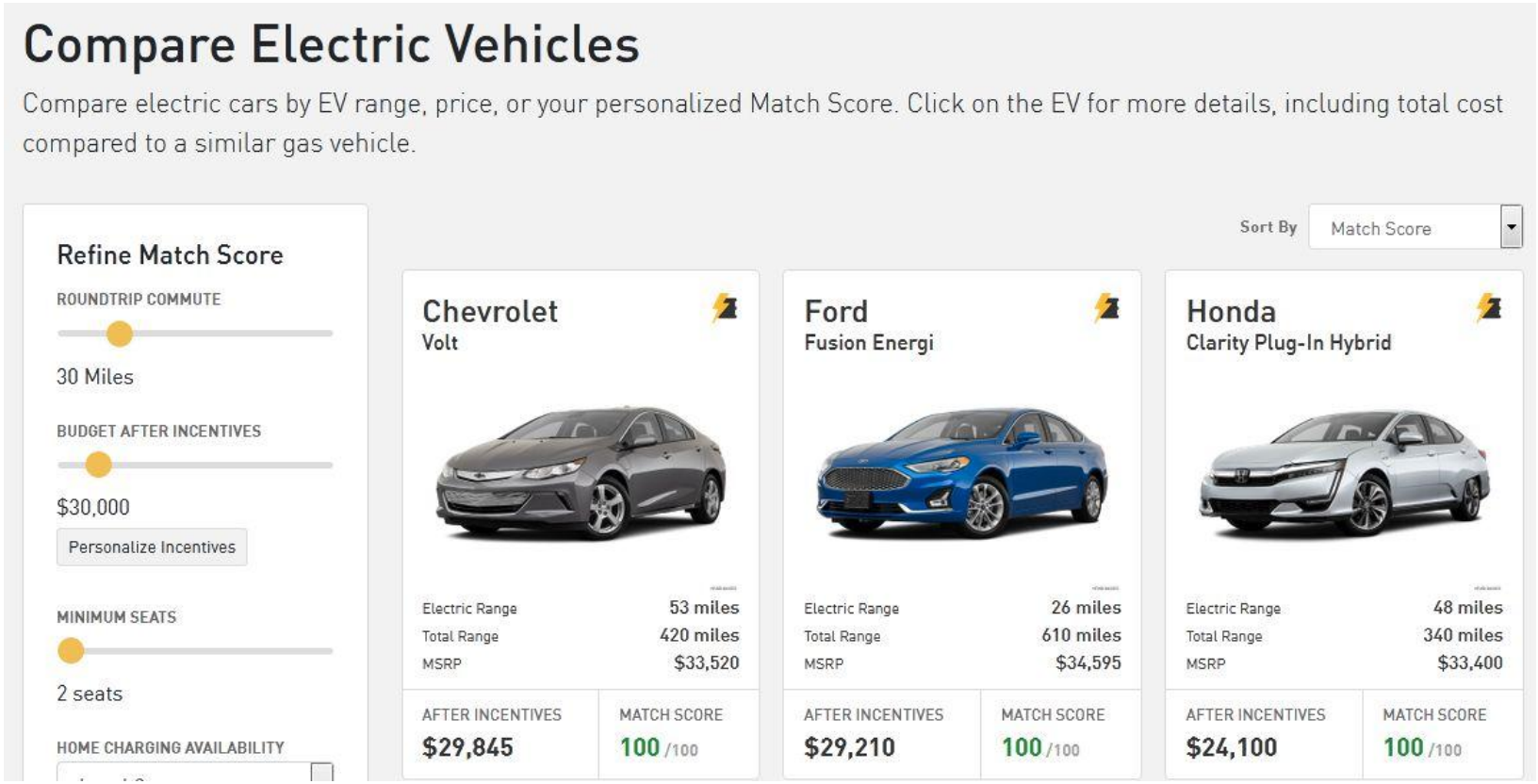
0 100 200

MORE

Lease options.
All electric. 200+ mi range.
Plugstar.com

EV Cost Calculator

- https://ev.pge.com/vehicles/



Power outage (PSPS)

No lineups at the gas station

1 minute to plug in at home to charge before the outage

Bring your 110v charger during evacuation – to charge at the climate refugee center. (ie. My sister's place).

Vehicle to Home (V2H)

~ 5000 homes in Japan currently V2H with Nissan Leaf

Can power home when the grid is out and recharge if rooftop solar is present

https://www.nissan-global.com/EN/TECHNOLOGY/OVERVIEW/vehicle_to_home.html

Coming to California 2020

OSSIACO

Why dcbel™

01 **Solar charging**

No separate solar inverter needed.
Integrates with any solar panel setup.

02 **Blackout power**

Always prepared for blackouts with two way power flow.

03 **EV supercharging**

The world's only home EV supercharger.

Which vehicles can do this?

https://www.ossiaco.com/

SoCo solution?

- Instead of generators, provide incentive for V2H solutions.
- Bonus is more EVs on the road AND PV on the roof.

Pilot test in SoCo in 2020

A single dcbel replaces the following equipment:

- Level 2 electric vehicle charger
- Fast DC bi-directional electric vehicle charger
- Solar inverter
- Electric vehicle inverter
- Stationary battery charger / inverter

CAL eVIP

Implemented by CSE for the California Energy Commission

Get Started Resources Help

calevip.org/

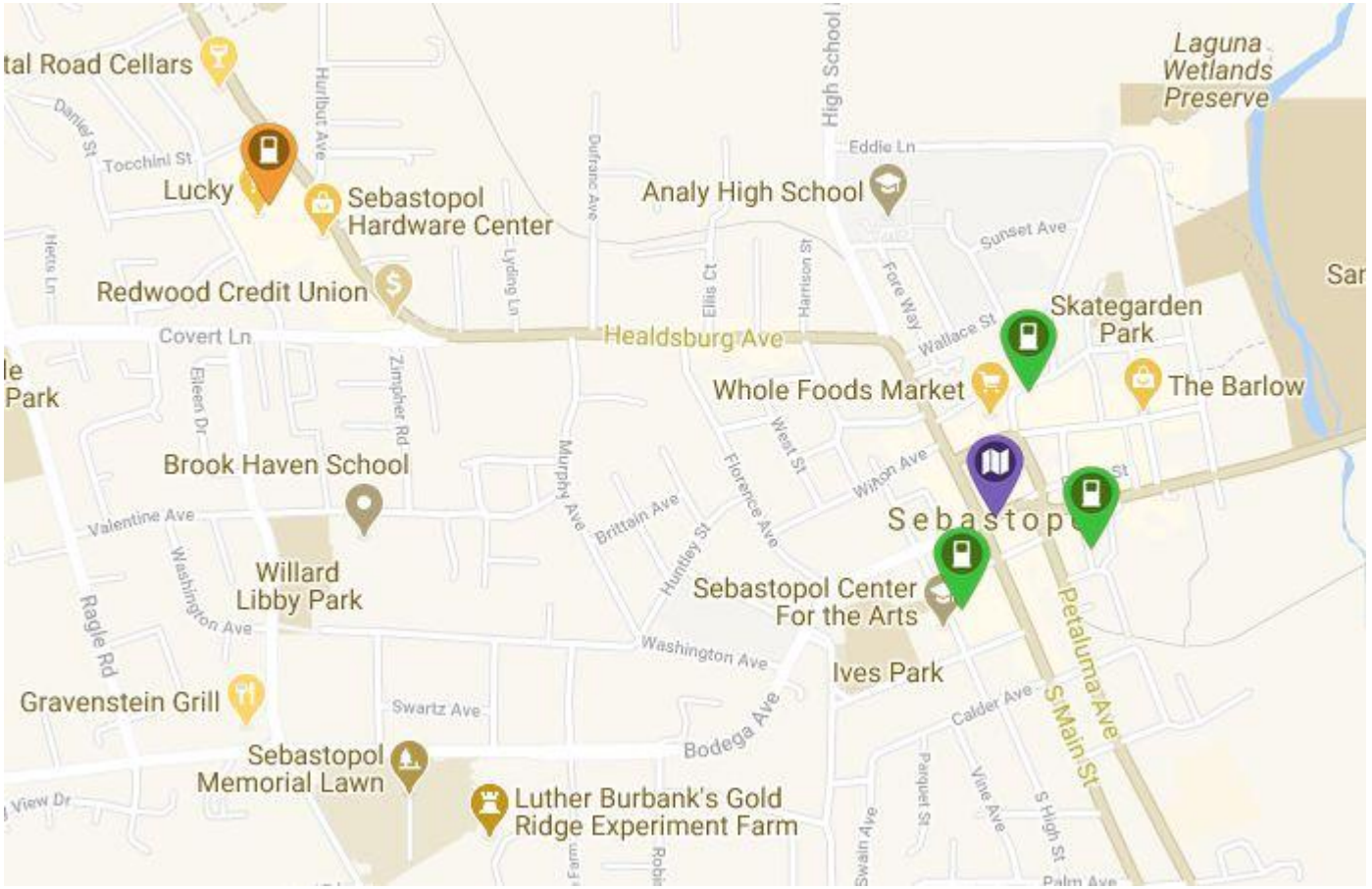
Building EV Infrastructure

The California Electric Vehicle Infrastructure Project (CALeVIP) offers incentives for the purchase and installation of electric vehicle charging infrastructure at publicly accessible sites throughout California.

Find a Project

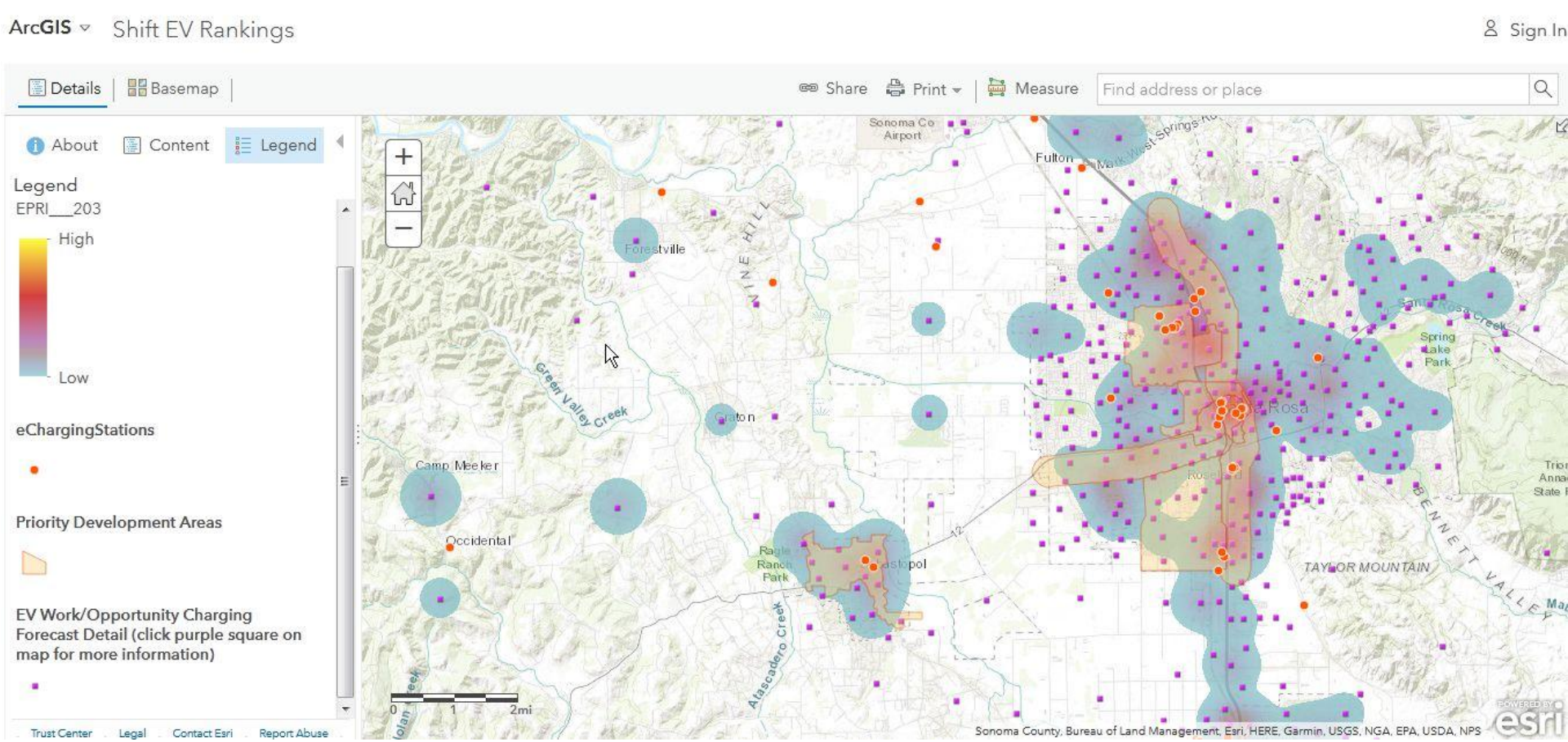
About CALeVIP

Ev Chargers in Sebastopol



Room for more.

EV Charging Infrastructure Siting Framework. Shift Sonoma (RCPA et al)
http://arcg.is/28opDxG



EV Charging Infrastructure Siting Framework.

Shift Sonoma (RCPA et al)

http://arcg.is/28opDxG

eV fleet

Whether your company is considering making the move to an electric fleet or you're an original equipment manufacturer (OEM) who is representing a fleet customer, PG&E is here to help.

Our EV Fleet Program offers dedicated electrical infrastructure design and construction services, significant cost offsets and additional EV charger rebates for eligible equipment.

pge.com/evfleetprogram/

MF carport Chargers – Sebastopol

The Two Acre Wood co-housing community in Sebastopol completed (June 2019) a major EV charging installation for all of their 13 parking spaces, with PG&E covering all of the costs aside from attaching the chargers.

Marty Robers at Two Acre Wood – Sebastopol CA

PG&E charger install incentive

The program is full. Sign up to be alerted if it reopens.

NOTE: This program is fully subscribed and we are currently not accepting any new participants.

PG&E's EV charge Network program is accelerating California's transition to a clean transportation future. For a limited time, take advantage of this incentive-backed program to install electric vehicle chargers in your parking lot.

Pge.com/evcharge

Sonoma Clean Power

Innovation. Grown Locally.

Electric Vehicle Charging Equipment

Power up your ride with a **FREE** smart electric vehicle charger for your home. You pay upfront for 50% of the charger cost, sales tax and a $50 shipping and handling fee. After your charger is installed and activated, SCP reimburses the amount you paid when you placed your order. Costs related to installation are not covered by this offer.

All chargers are Level 2 (32-40 amp) smart, internet-connected, devices that are eligible to participate in SCP's GridSavvy Community! By connecting your charger and using it periodically, you can qualify to earn the GridSavvy $5 monthly bill credit.

Sonomacleanpower.com

VW's Electrify America Plans Sacramento Electric Car-Sharing Services

clude:

- **CAR SHARING** – Electrify America has invested in two ZEV car share services within the City of Sacramento which complement each other with different service areas while providing the same easy access:
  - **GIG Car Share – Free Float Car Sharing:** GIG Car Share, which is managed by AAA Northern California, Nevada, and Utah, offers free float car share service in Sacramento.
  - **Envoy – Round Trip Car Sharing:** Electrify America also invested in a program with Envoy Technologies, a community-based EV car-share service based at residential buildings as an amenity. Vehicles can be reserved, picked up and returned to the same location.

- **ZEV BUS/SHUTTLE SERVICES** – Electrify America invested in a ZEV bus service and an on-demand micro-shuttle service. To support powering the fleets, Electrify America is installing charging stations with ultra-fast chargers to power each service.
    - **Electric Bus Service – Causeway Connection:** Electrify America's investment enhances bus service between Sacramento and the City of Davis with 12 new electric buses that will run from the main campus to the UC Davis Health campus in Sacramento. The shuttle will be co-run by Sacramento Regional Transit (SacRT) and the Yolo County Transportation District.
    - **On-Demand Electric Shuttle Service – Franklin Region:** Electrify America has provided the funding for battery electric shuttles to replace the existing internal combustion engine shuttles that currently operate on this SmaRT Ride service operated by Sacramento Regional Transit.

Policy potential

Reduced tolls for EVs (eg. Oslo)

Carpool incentives can be pooled (eg. JPL)

How can small towns incentivize EV carpooling?

Here in Sebastopol

- Help advise new EV drivers. Aka Electric Concierge
- Advise where to put the DCFC – Tesla and others
- Drive Electric Event – Earth Day or thereafter. (ref. PluginAmerica)
- Poll EV drivers.
- Stories of EV Driving.

Host an EV Event

PluginAmerica provides free resources for the event.

Plug In America
WE DRIVE ELECTRIC. YOU CAN TOO.

SIERRA CLUB

Electric Auto Association

driveelectricearthday.org/resources

EV Concierge

Need EV Advice? Introducing EV Concierge Service

If you want to "go EV" but need additional information or support, sign up for a free EV consultation with our new EV Concierge, David Page. David and his wife Stephanie have decreased their family's carbon emissions by "going EV," installing solar, and electrifying space and water heating in their home. Ready to embark on the high-impact climate solution of purchasing/leasing an electric car? David will provide a free one-on-one consultation on your path to EV adoption, including guidance through the purchase process.

Acterra ACTION FOR A HEALTHY PLANET

Rt 24 Sebastopol

SOLECTRAC

eUtility CET eFarmer Join Us Order Now More

Climate-Smart Electric Tractors

Simple, Clean, Quiet Power

5 Times More Efficient

8 Times Less Operating Cost

2000 Times Quieter

Solectrac Electric Tractors are a clean, quiet, zero-emission alternative to diesel tractors. Our Electric Tractors can be charged by renewable energy, like wind and solar, and provide all the power of a comparable diesel tractor.

Questions remain.
Work to be done

How many EVs in Sebastopol? (Data from Ctr for Sustainable Energy, DMV).

Can we use universal payment method to charge at various networks?

Used car availability and cost?

Nurture an EV Carshare option.

Thanks!

Tor Allen, Rahus Institute.
707-829-3154 tor@rahus.org