"Green Your Ride": Clean Vehicle Trends

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Clean Cities

- **U. S. Department of Energy Clean Cities Program**

- **Mission -** To advance the energy, economic, and environmental security of the U.S. by supporting local decisions to reduce petroleum use in transportation.

The San Diego Regional Clean Cities Coalition was established in 1996 to:

- Build partnerships to support clean vehicle deployment
- Promote alternative fuels including: Electricity, propane, natural gas, biodiesel and ethanol
- Help fleets and consumers make informed decisions about fuel technologies

Board of Directors

Increasing Use of Alternative Fuels

- Greater availability of vehicles
- Rising price of gasoline and diesel
- Growing concern about the environment & new regs
- More infrastructure to support fleets & consumers

Alternative Fuels Options

- Biodiesel
- Ethanol
- Natural Gas
- Propane
- Electric/Plug-in Hybrid
- Hybrid

Considerations:

- Cost/availability of vehicles
- Lifetime fuel cost
- Availability of infrastructure
- Cost to install infrastructure
- Lifetime emissions

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Biodiesel

- Locally produced from used cooking oil
- Price competitive with traditional diesel
- 18% lower GHG emissions (B20)
- Future Renewable Diesel
- 3 biodiesel stations in region

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Ethanol

- Made from starch and sugars
- Reduces GHG emissions by 20-50% compared to gasoline vehicles
  - Cellulosic ethanol: up to 86% GHG reduction
- 7 ethanol stations in region

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Hydrogen

- This fuel is produced from an energy source, such as natural gas or water
- Produces zero tailpipe emissions
- One upcoming station (2015/16)

Natural Gas

- Clean-burning and domestically produced
- Approx. $1.50-$2.75/GGE
- 20-25% lower GHG emissions than gasoline vehicle
  - Renewable natural gas has 80% lower GHG emissions
- 9 natural gas stations in region

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Natural Gas

- Metropolitan Transit System
  - 450+ CNG buses
  - 100% natural gas fleet by 2015
- North County Transit District
  - 120 CNG busses, (70%) of fleet
  - 2 fueling stations
- Benefits
  - Cost per mile –CNG $0.38 diesel $1.23
  - 2.7 MPGe CNG, 2.5 MPG Diesel
  - 80% less NOx 99% less PM, 100% less hydrocarbon

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Natural Gas

- Refuse collection
  - Waste Management LNG/CNG
    - Currently moving from original LNG trucks to CNG at all locations.
  - Allied Waste Chula Vista, 43 CNG
  - EDCO- station open in San Marcos, under construction La Mesa
  - City of San Diego
    - In procrument

Propane

- Domestically produced
- 15-20% lower GHG emissions than gasoline vehicle
- Approx. $1.99-$2.99/GGE
- 15 propane stations in region

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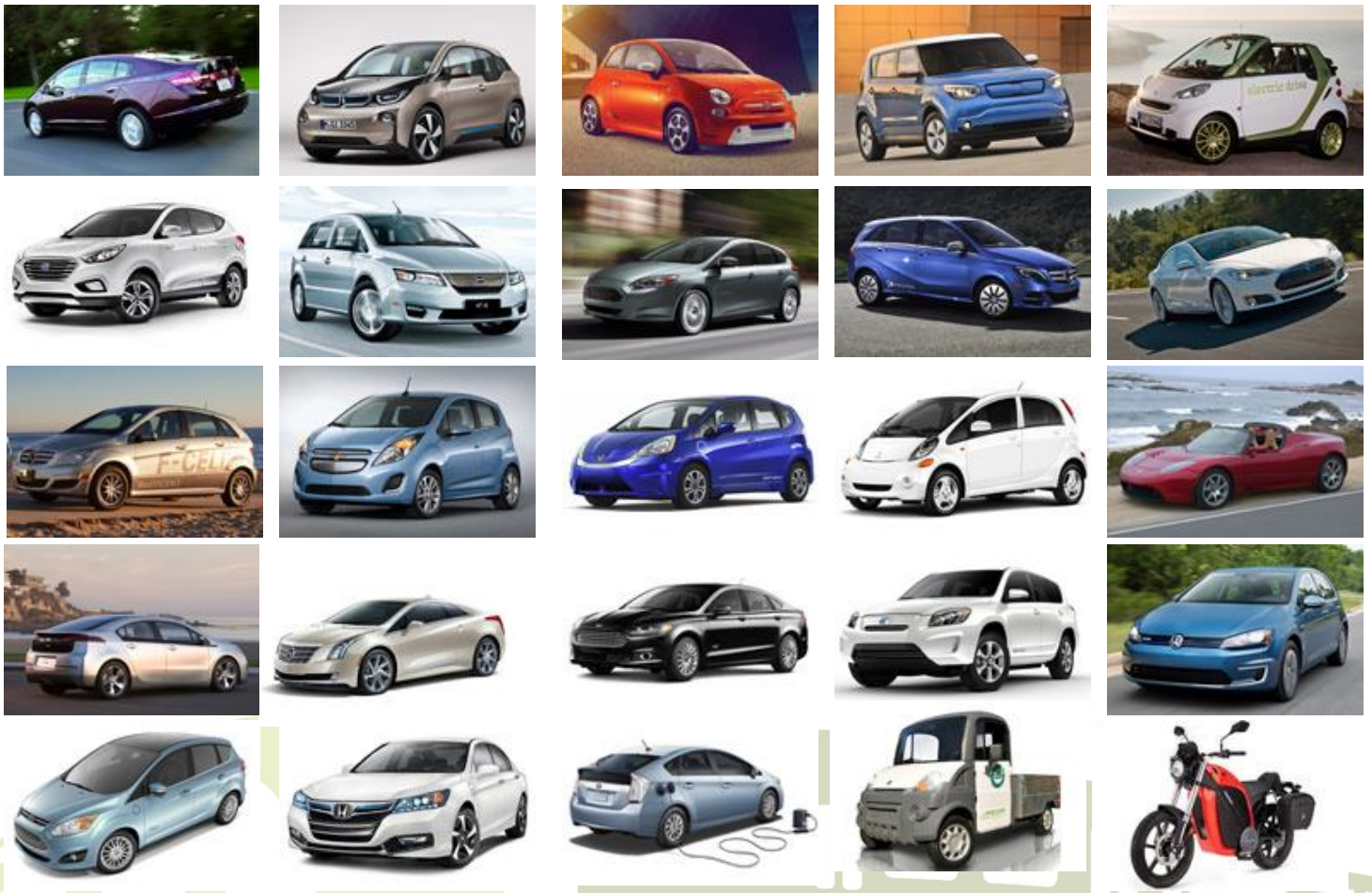
Electricity

- This fuel comes from the electricity grid or a distributed energy source. It powers battery electric vehicles and plug-in hybrid electric vehicles.
- Can produce zero tailpipe emissions
- Over 500 charging stations in region

Sample of Electric Vehicles



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CVRP Rebates for light-duty electric vehicles (EVs) bought or leased statewide:

$5,000 for fuel-cell EVs
$2,500 for all-battery EVs
$1,500 for plug-in-hybrid EVs
$900 for motorcycle & neighborhood EVs

Go to energycenter.org/CVRP to apply
More than $45 million remaining for FY2014-2015

California Environmental Protection Agency
Air Resources Board

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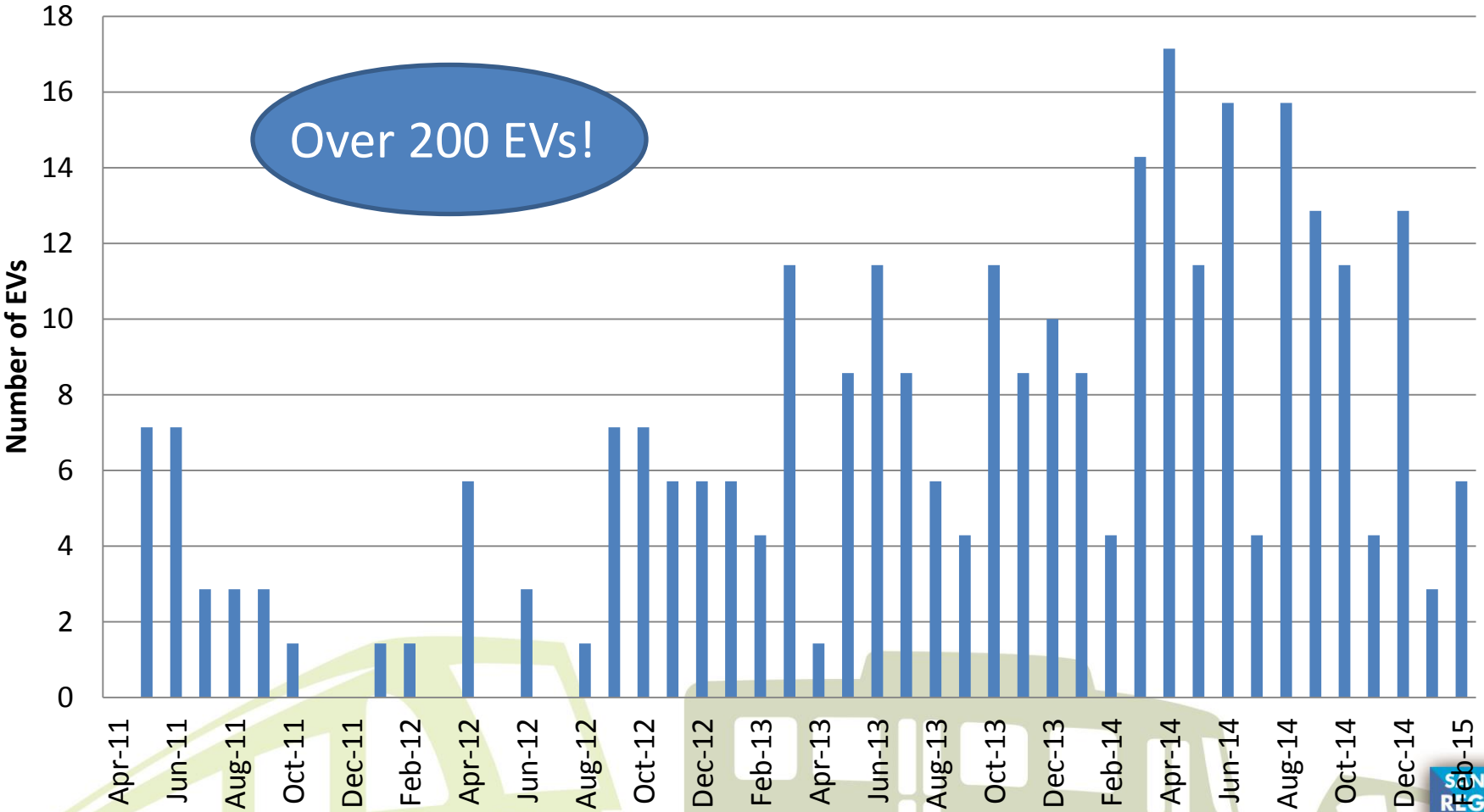
Scripps Ranch EVs



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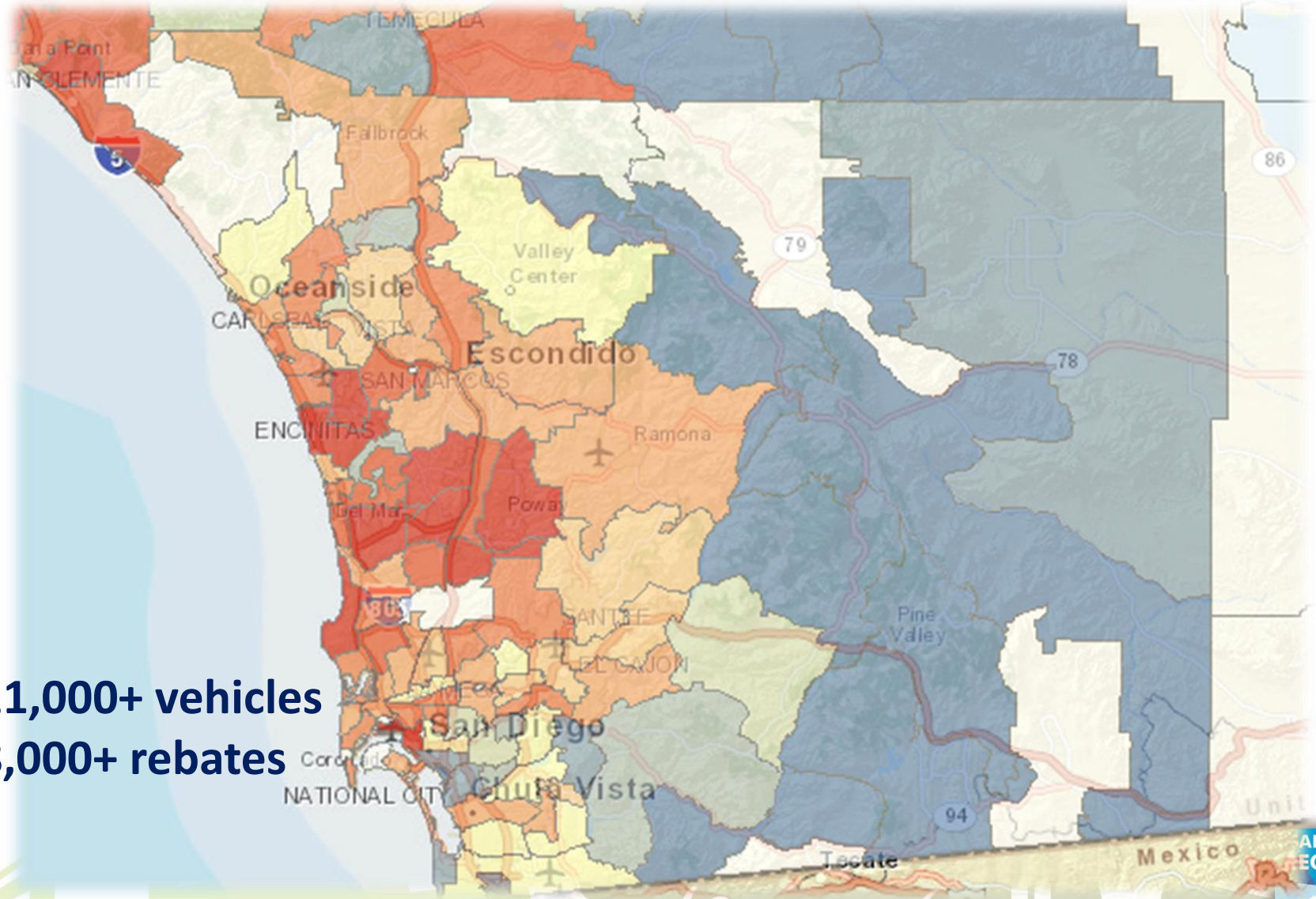
Number of Vehicles and Rebates



11,000+ vehicles

8,000+ rebates

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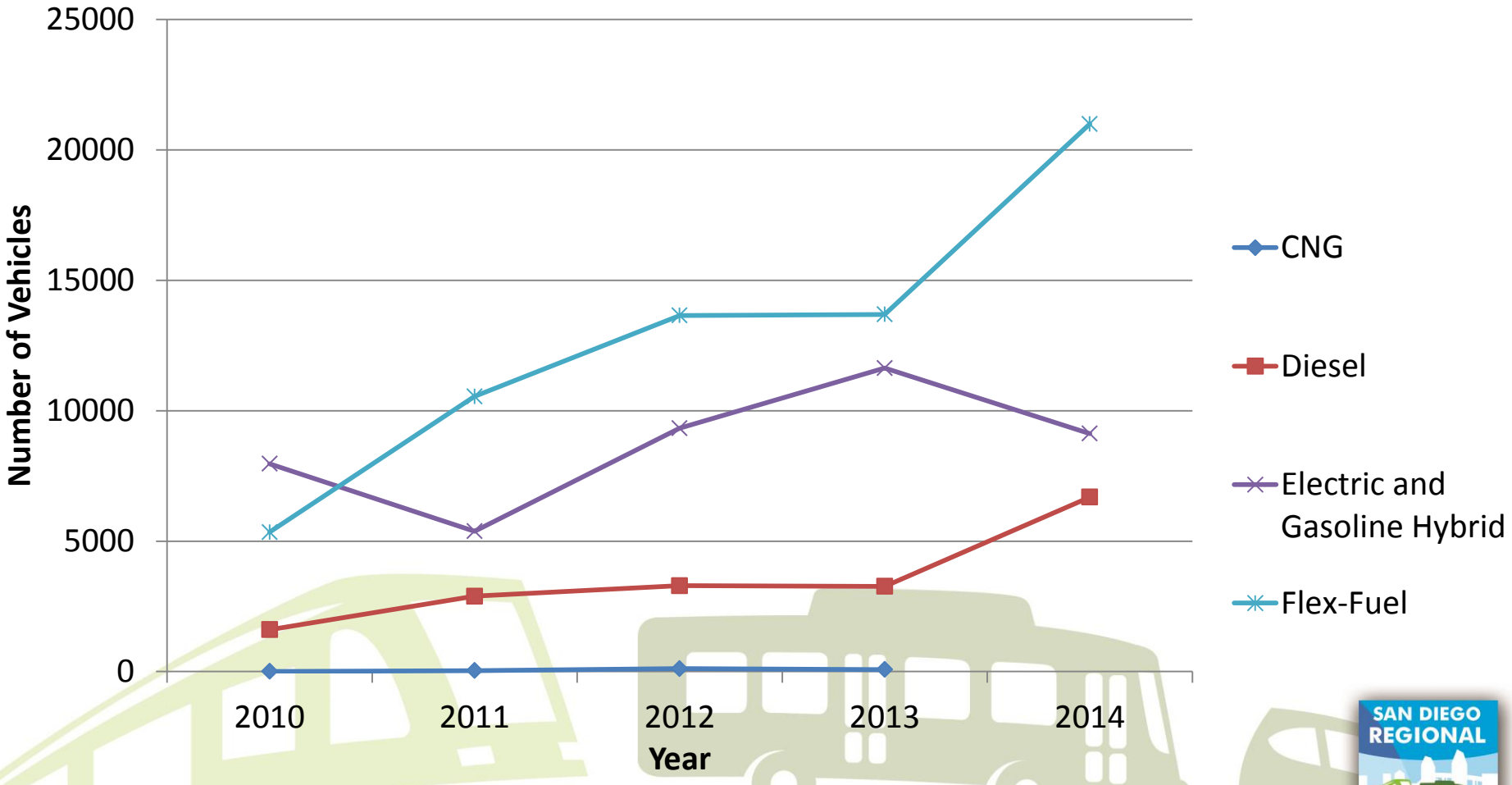
New Alternative Fuel Light-Duty Vehicle Sales San Diego County, 2010-2014



Source: National Renewable Energy Laboratory analysis, R.L. Polk, POLK_VIO_DETAIL_2014, January 2015.

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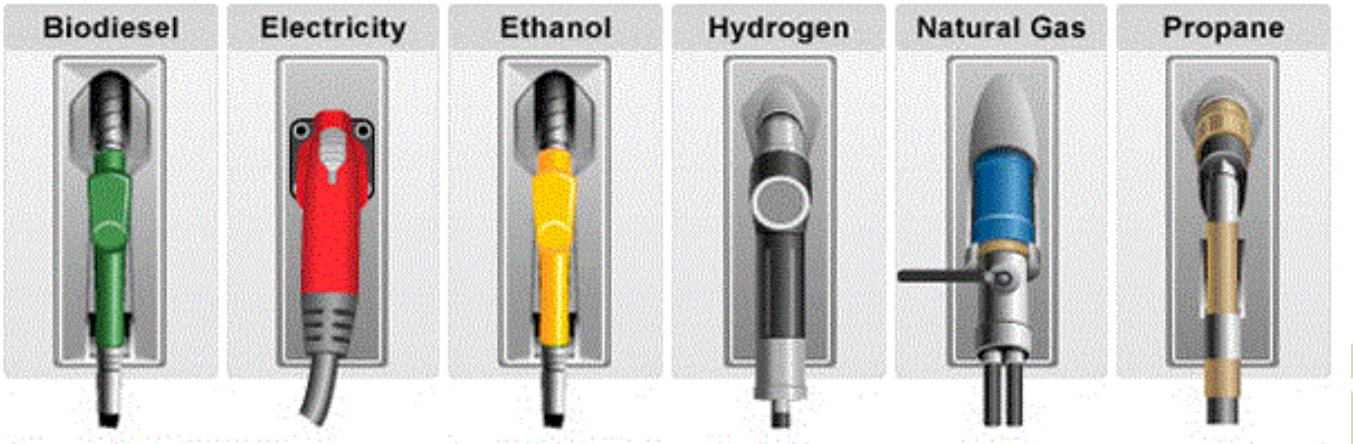
Importance of Infrastructure

- Determines alternative fuel market and vehicle adoption rates for fleets and consumers
- Prevents range anxiety



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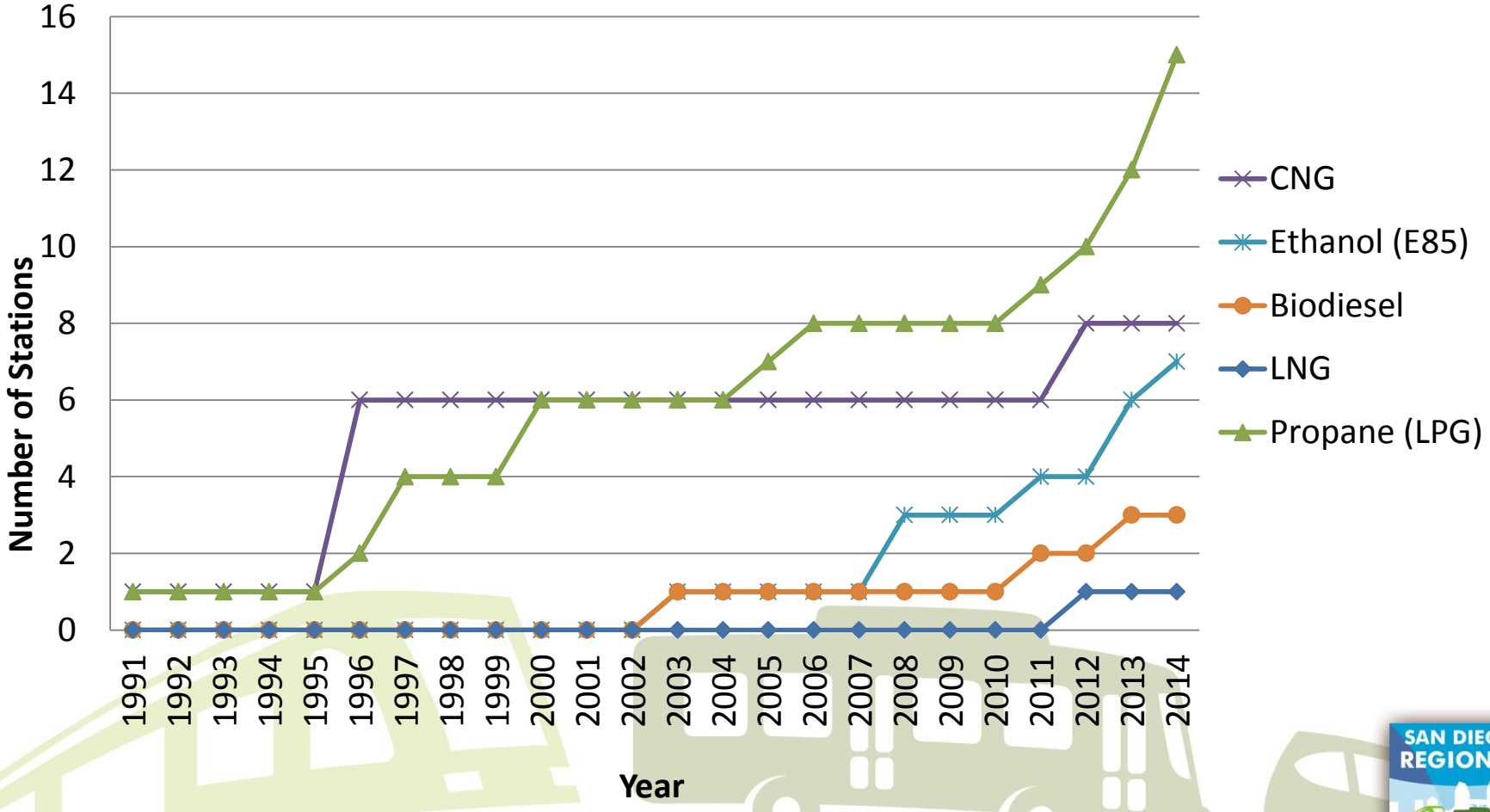
Public Alternative Fuel Infrastructure: San Diego County, 1991-2014



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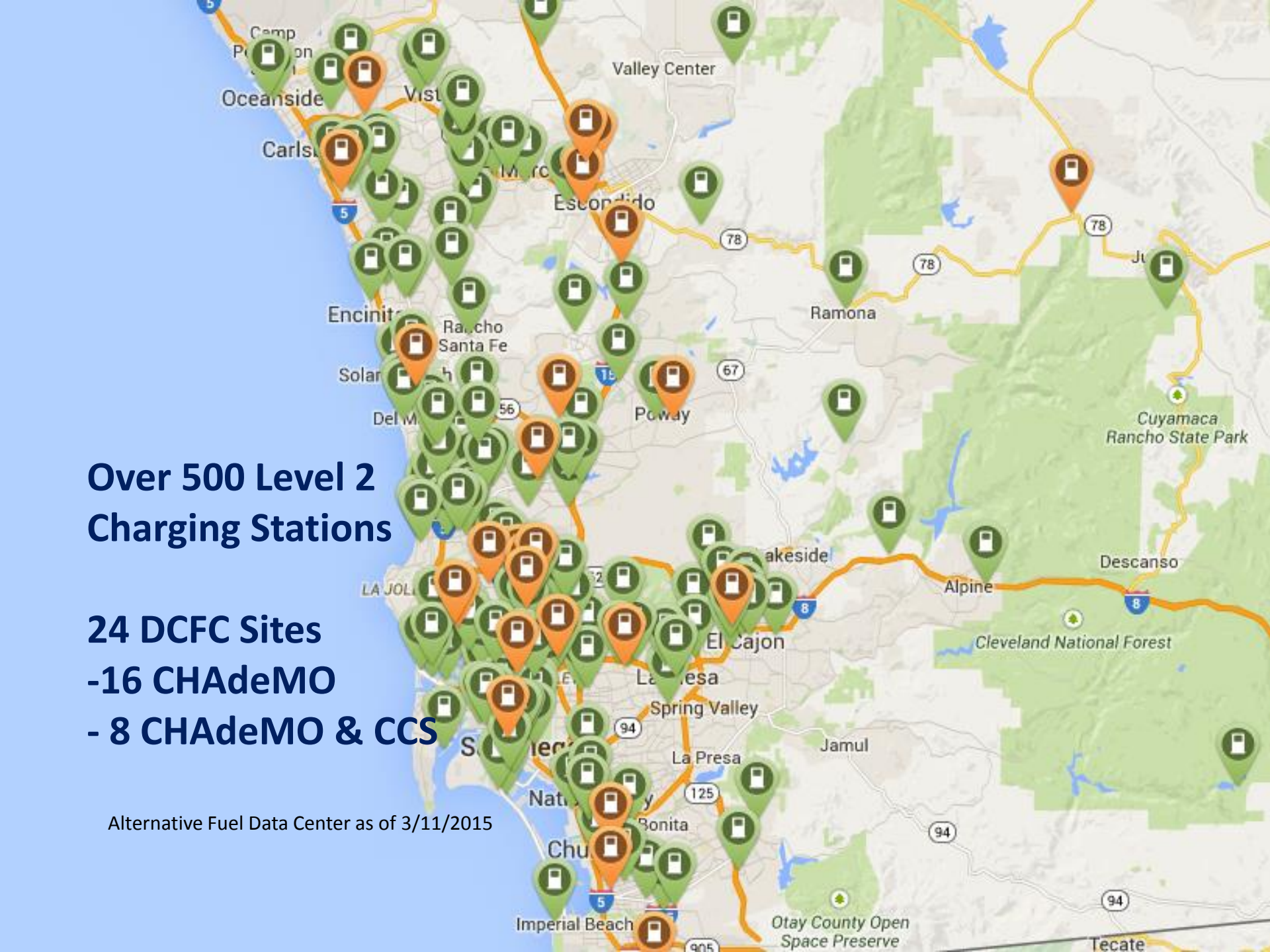
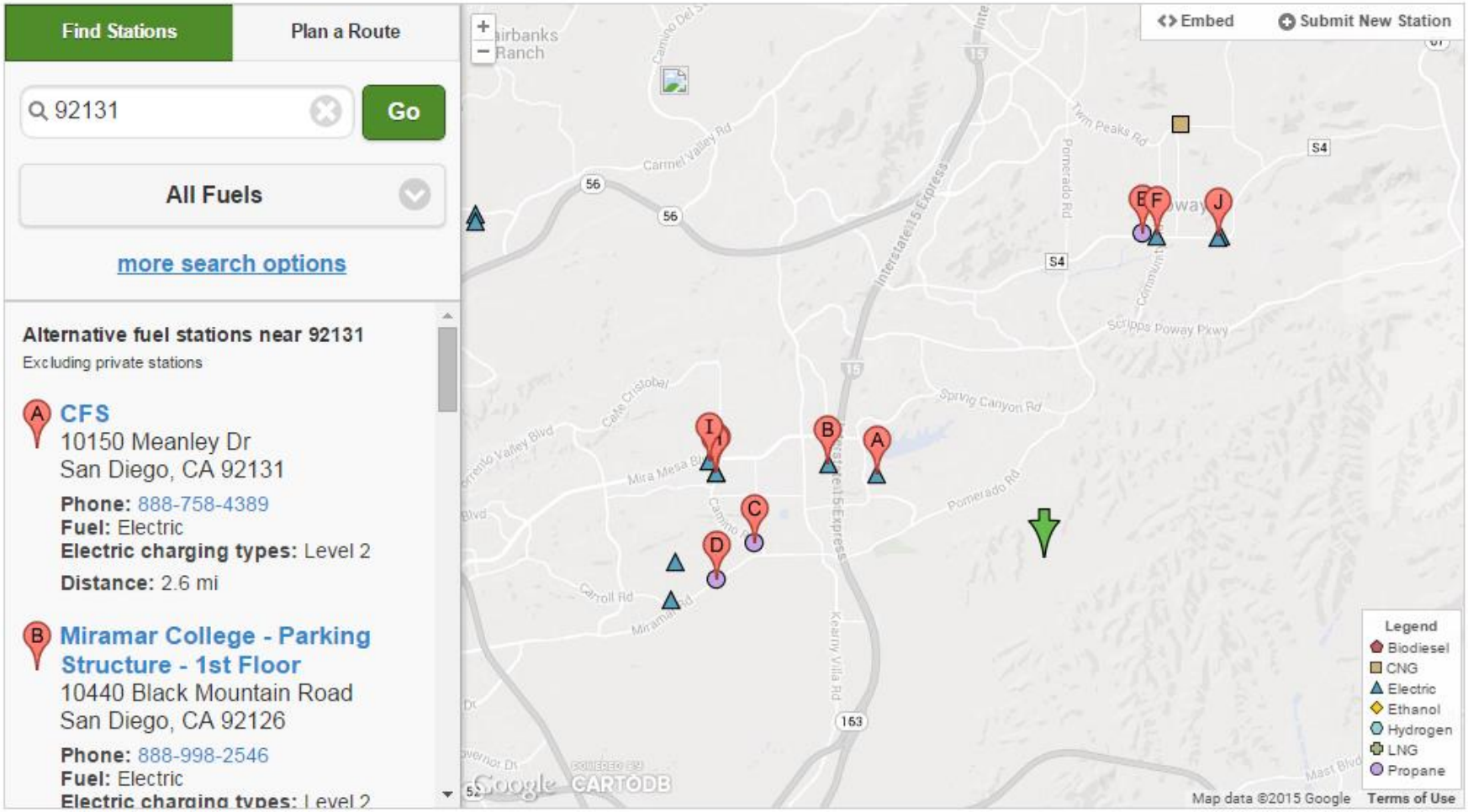

Over 500 Level 2
Charging Stations
24 DCFC Sites
-16 CHAdeMO
- 8 CHAdeMO & CCS
Alternative Fuel Data Center as of 3/11/2015
Oceanside
Valley Center
Escondido
Ramona
Encinitas
Rancho Santa Fe
Poway
Cuyamaca Rancho State Park
Descanso
Alpine
Cleveland National Forest
El Cajon
La Mesa
Spring Valley
Jamul
La Presa
Bonita
Imperial Beach
Otay County Open Space Preserve
Tecate
78
67
56
94
125
5
8

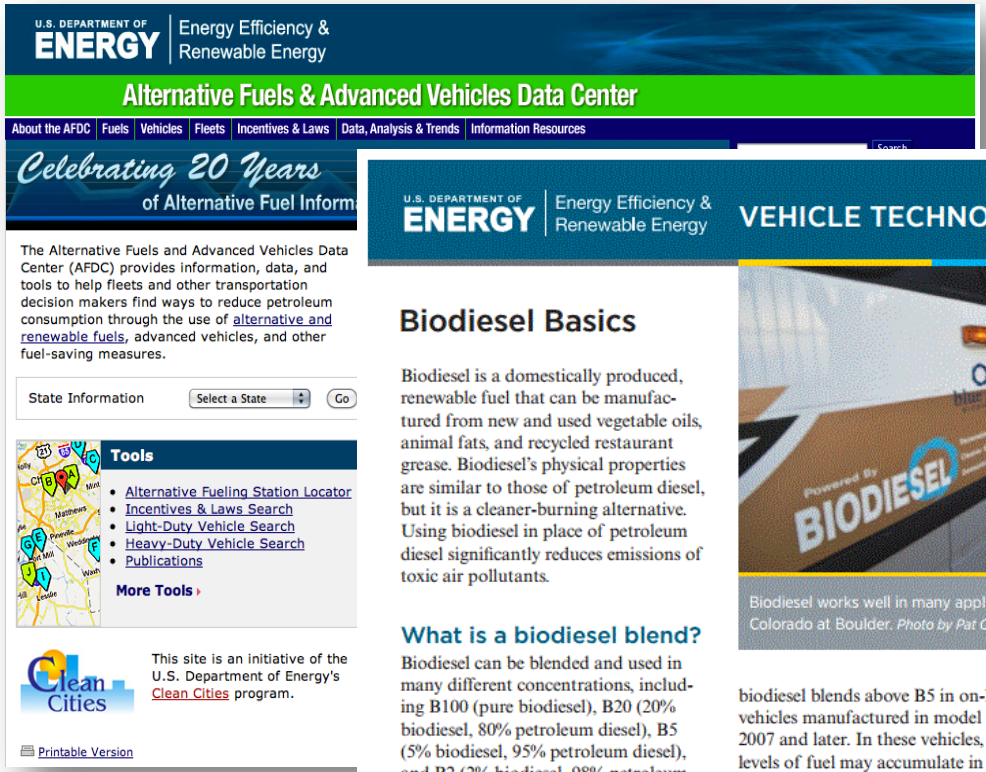
Clean Cities Resources

Alternative Fueling Station Locator

Find alternative fueling stations near an address or ZIP code or along a route in the United States. Enter a state to see a station count.



Clean Cities Resources



U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Clean Cities

2014 Vehicle Buyer's Guide

- Natural Gas
- Propane
- Biodiesel
- Electric
- Hybrid
- Ethanol Flex-Fuel

Clean Cities
U.S. Department of Energy

Clean Mobility

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