

"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



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



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



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



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



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 procurement



Propane

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

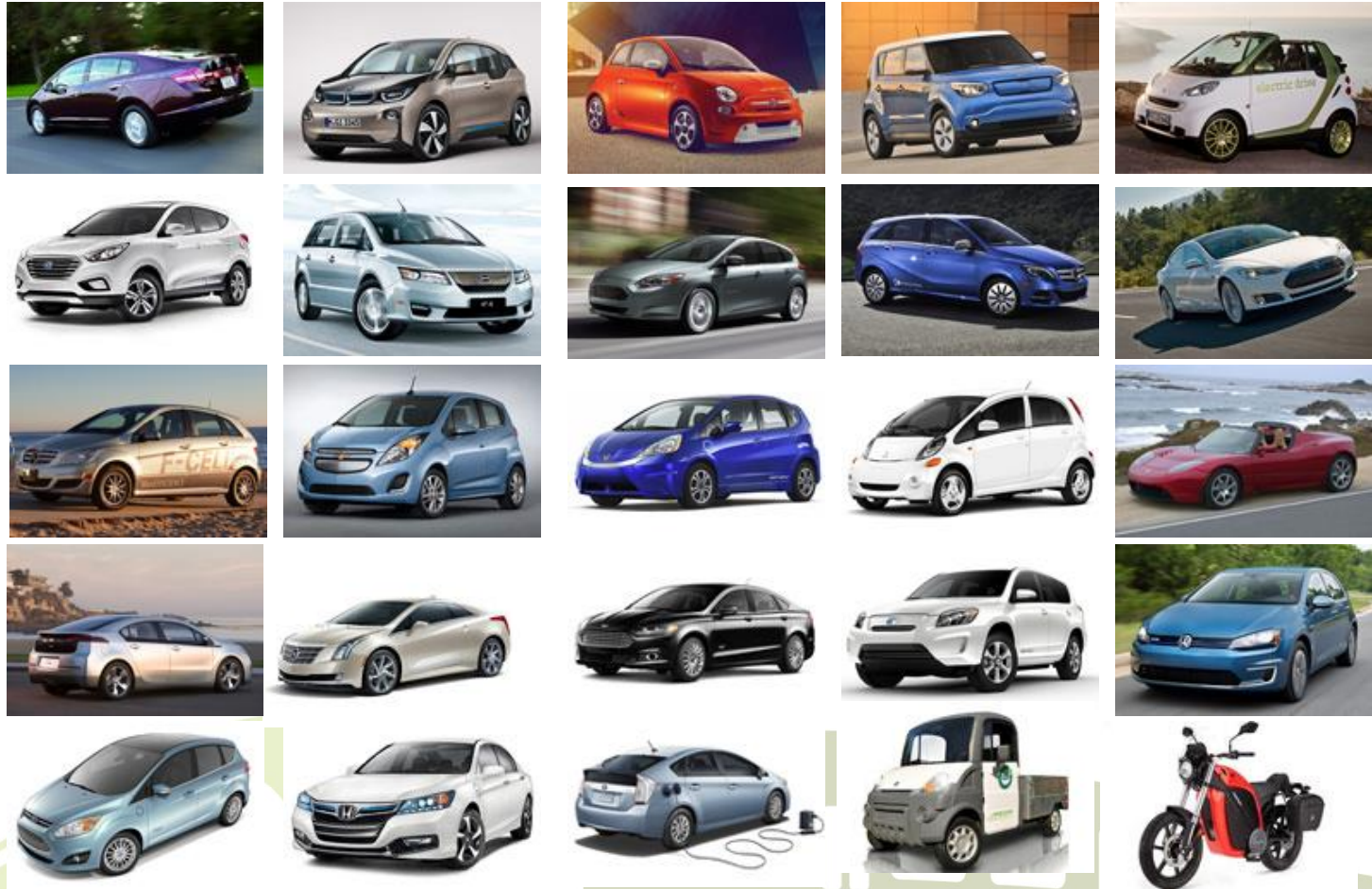


Electricity

- 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



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

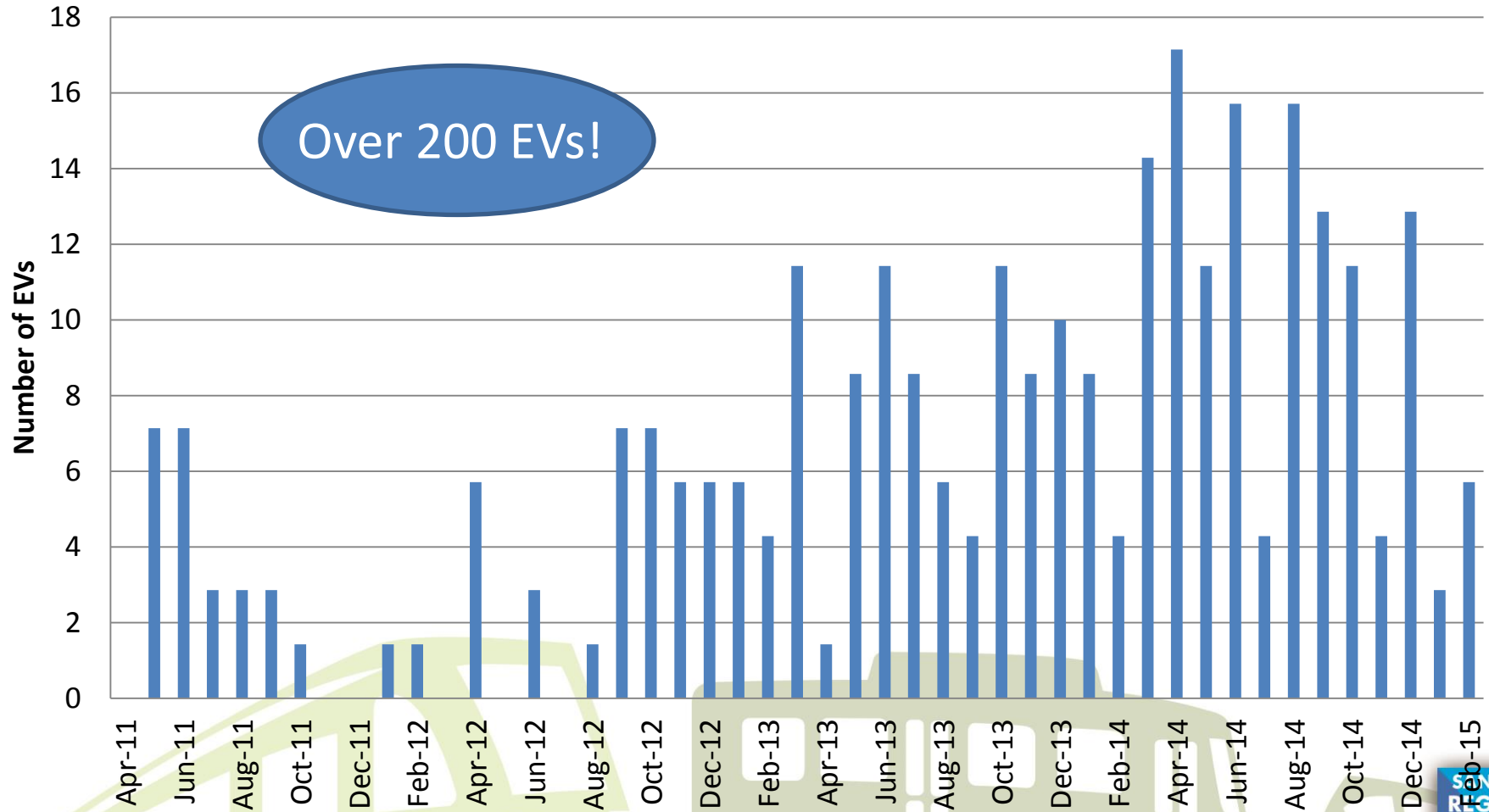
More than \$45 million remaining for FY2014-2015

California Environmental Protection Agency

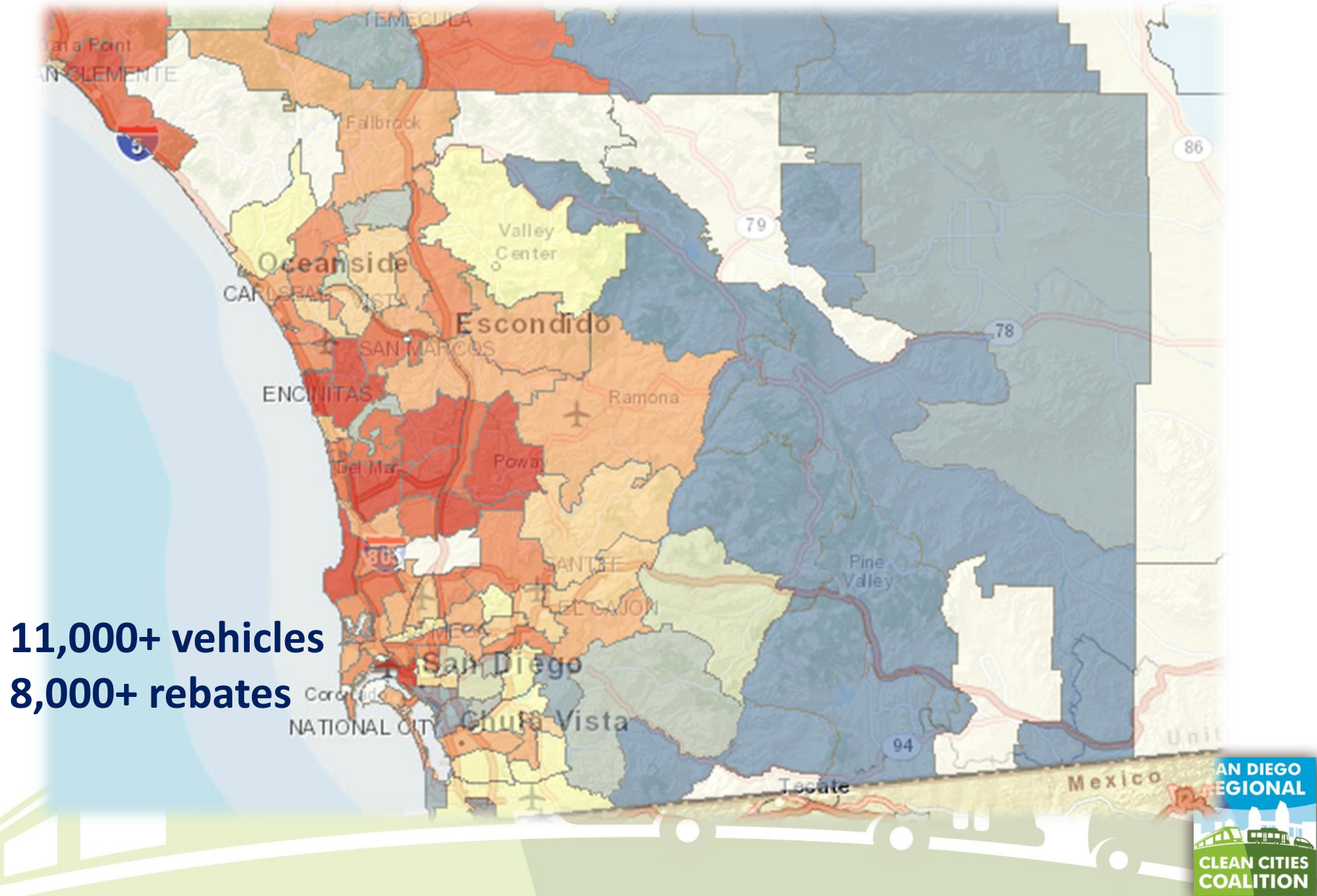
 **Air Resources Board**



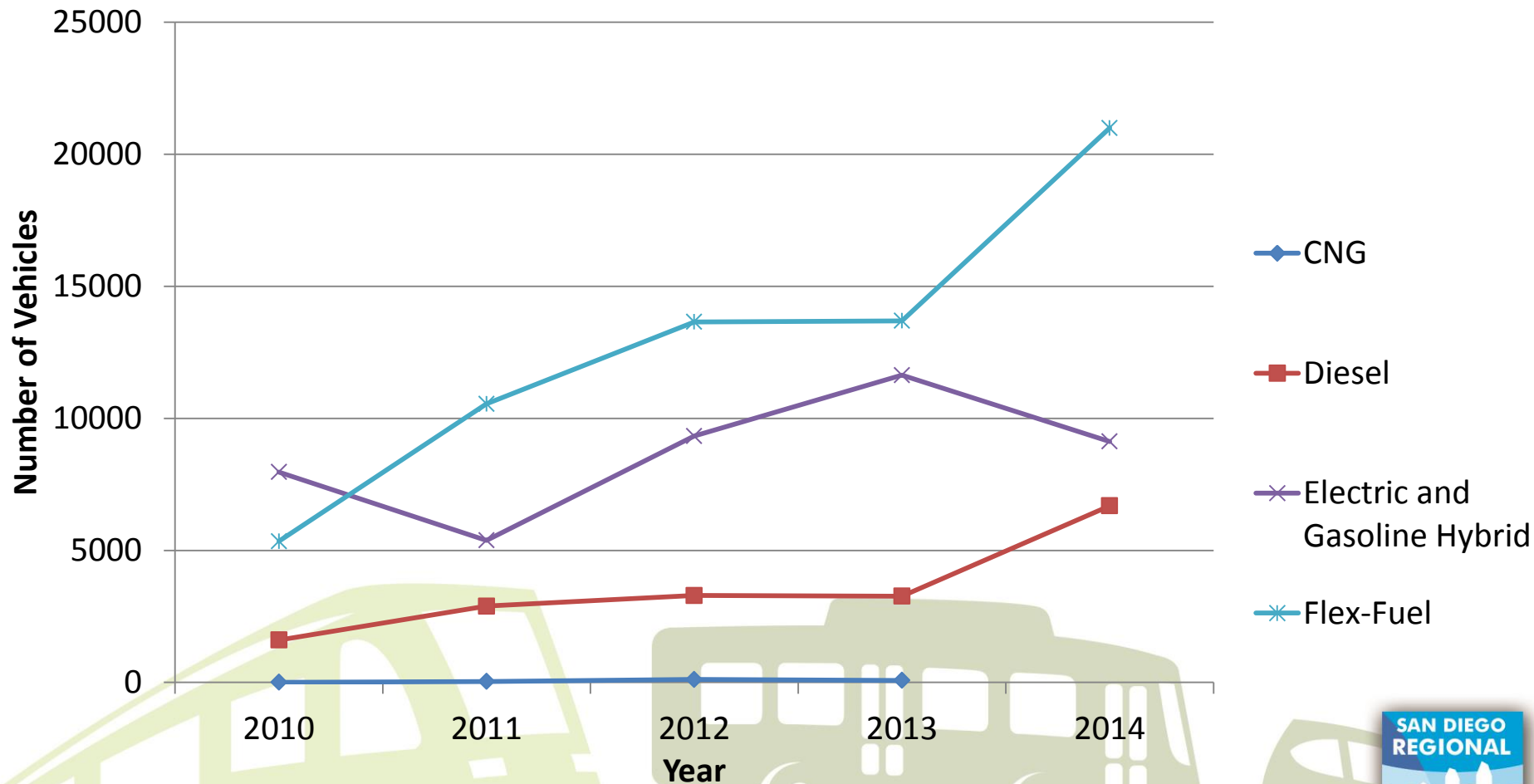
Scripps Ranch EVs



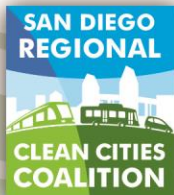
Number of Vehicles and Rebates



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

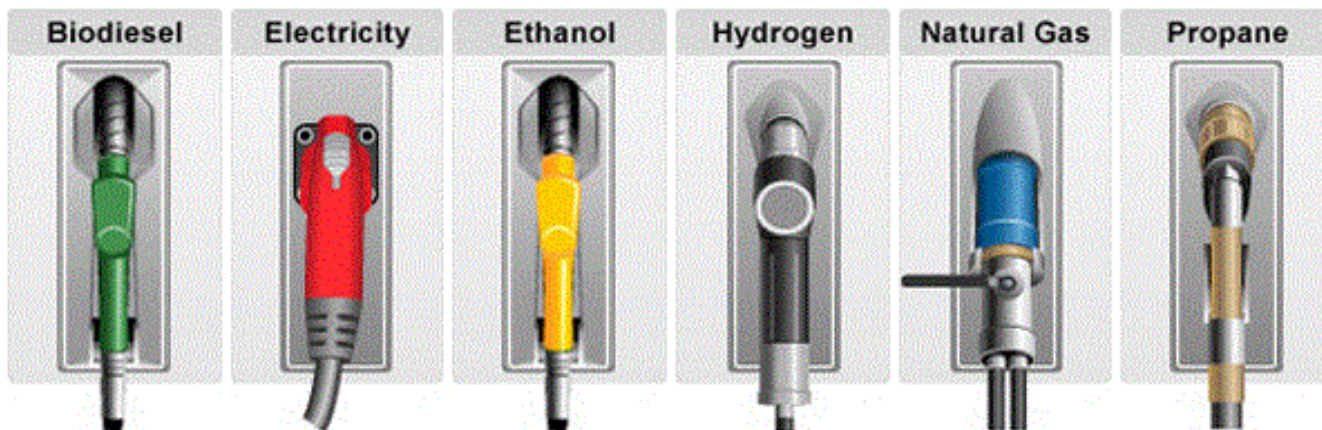


Source: National Renewable Energy Laboratory analysis, R.L. Polk, POLK_VIO_DETAIL_2014, January 2015.

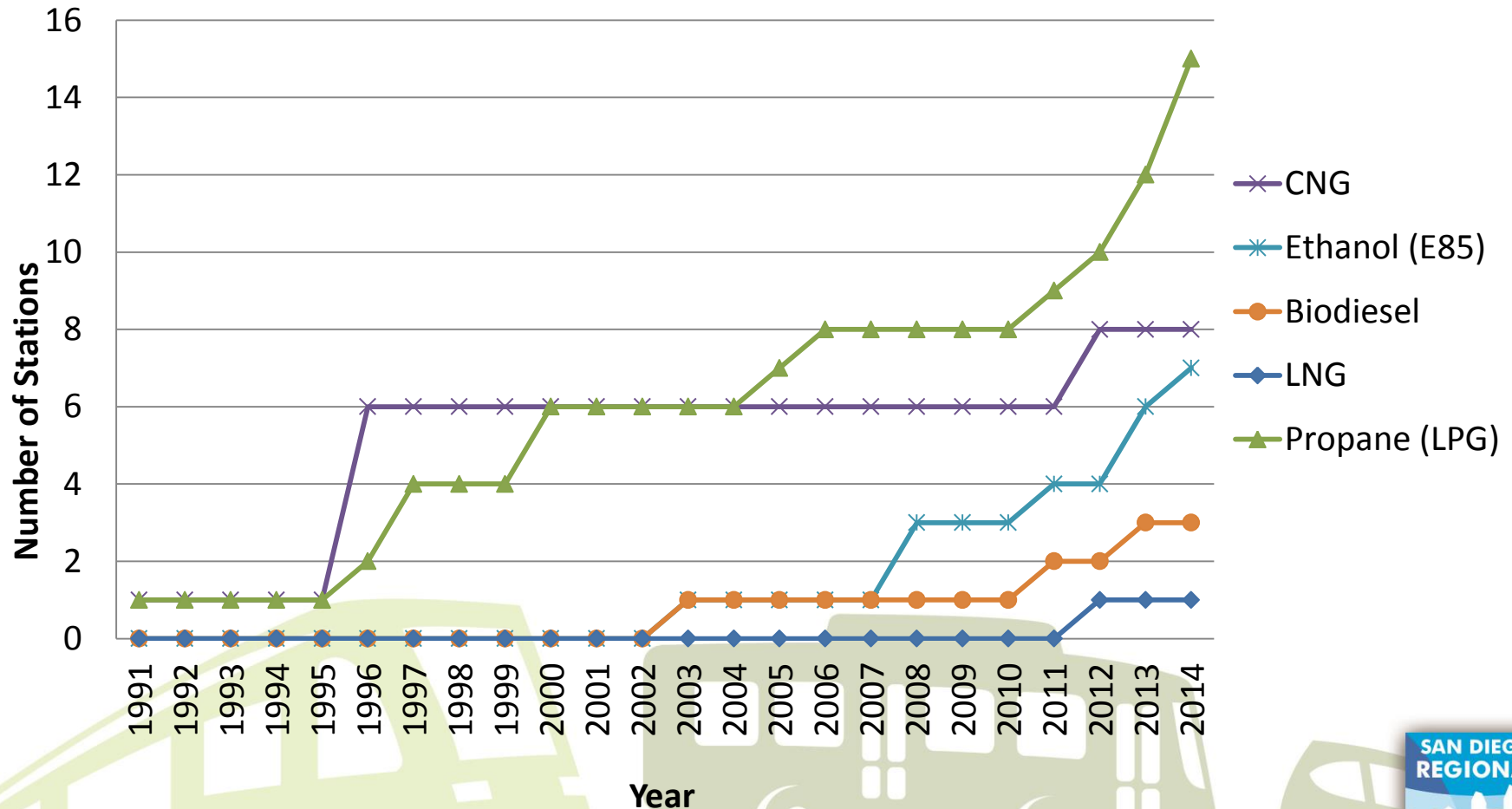


Importance of Infrastructure

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



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



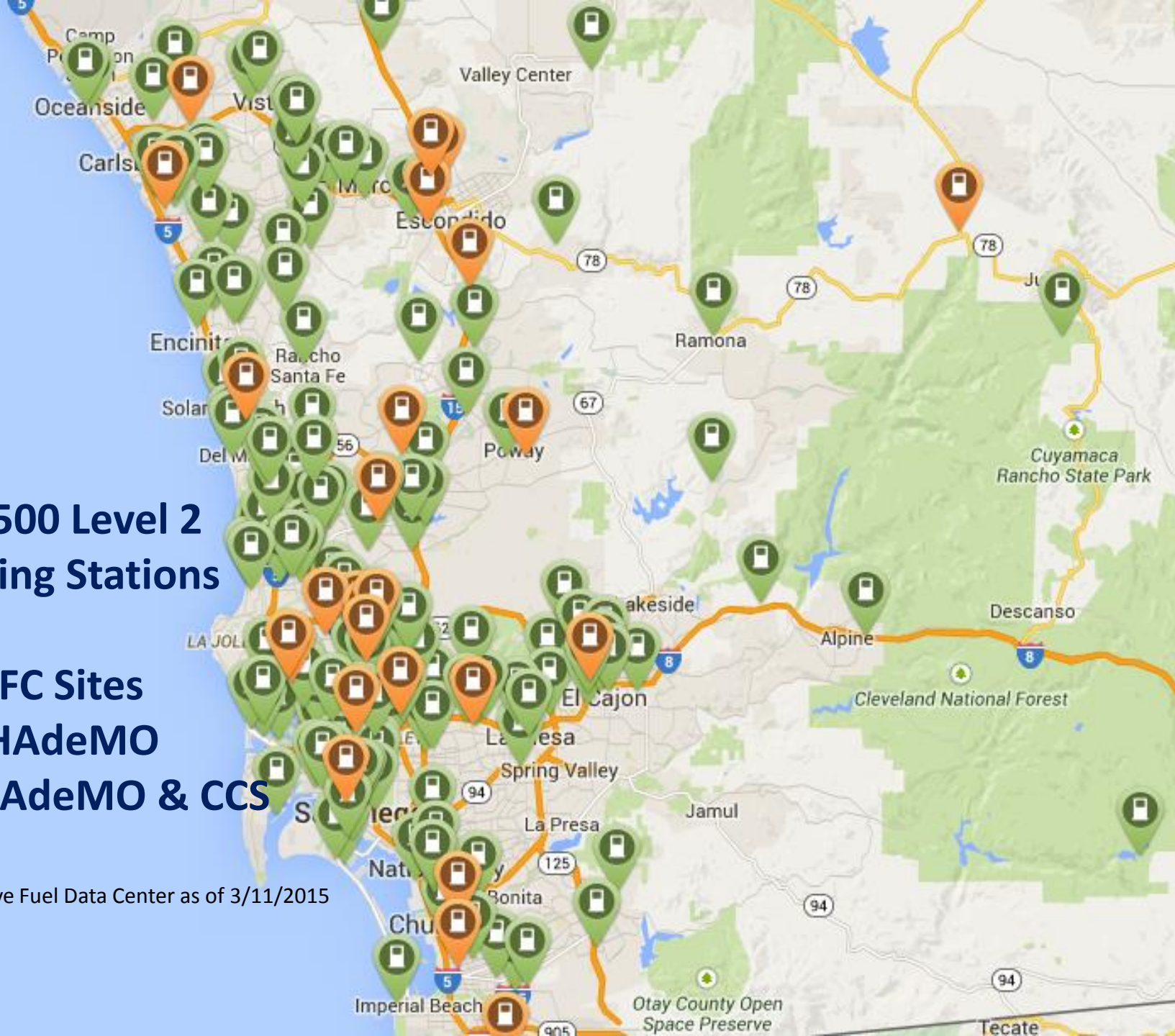
**Over 500 Level 2
Charging Stations**

24 DCFC Sites

-16 CHAdeMO

- 8 CHAdeMO & CCS

Alternative Fuel Data Center as of 3/11/2015



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.

Find Stations

Plan a Route

Go

All Fuels

more search options

Alternative fuel stations near 92131

Excluding private stations

A

CFS

10150 Meanley Dr
San Diego, CA 92131

Phone: 888-758-4389

Fuel: Electric

Electric charging types: Level 2

Distance: 2.6 mi

B

Miramar College - Parking Structure - 1st Floor

10440 Black Mountain Road
San Diego, CA 92126

Phone: 888-998-2546

Fuel: Electric

Electric charging types: Level 2

airbanks

Ranch

Embed

Submit New Station

Legend

Biodiesel

CNG

Electric

Ethanol

Hydrogen

LNG

Propane

Map data ©2015 Google

Terms of Use

Clean Cities Resources



The Alternative Fuels and Advanced Vehicles Data Center (AFDC) provides information, data, and tools to help fleets and other transportation decision makers find ways to reduce petroleum consumption through the use of [alternative and renewable fuels](#), advanced vehicles, and other fuel-saving measures.

State Information



This site is an initiative of the U.S. Department of Energy's [Clean Cities](#) program.

[Printable Version](#)



VEHICLE TECHNOLOGIES PROGRAM

Biodiesel Basics

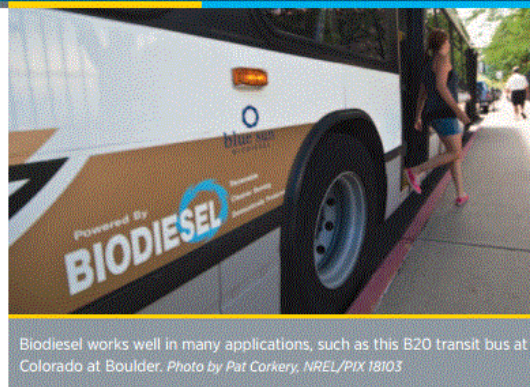
Biodiesel is a domestically produced, renewable fuel that can be manufactured from new and used vegetable oils, animal fats, and recycled restaurant grease. Biodiesel's physical properties are similar to those of petroleum diesel, but it is a cleaner-burning alternative. Using biodiesel in place of petroleum diesel significantly reduces emissions of toxic air pollutants.

What is a biodiesel blend?

Biodiesel can be blended and used in many different concentrations, including B100 (pure biodiesel), B20 (20% biodiesel, 80% petroleum diesel), B5 (5% biodiesel, 95% petroleum diesel), and B2 (2% biodiesel, 98% petroleum diesel). B20 is a common biodiesel blend in the United States.

Can I use B20 in my vehicle's diesel engine?

For vehicles manufactured after 1993, biodiesel can be used in diesel engines and fuel injection equipment with little impact on operating performance.



biodiesel blends above B5 in on-highway vehicles manufactured in model year 2007 and later. In these vehicles, high levels of fuel may accumulate in the engine lubricant under certain conditions. It's not known whether those high levels of biodiesel might affect lubricant performance.

Check your OEM's website or speak with a dealer to determine which biodiesel blend is right for your vehicle. You can also find general and manufacturer-specific information on [Biodiesel Basics](#).

Will biodiesel perform as well as diesel?

Engines operating on B20 have similar fuel consumption, torque and horsepower to engines running on conventional diesel. And a higher cetane number (the ignition value of diesel fuel) and higher lubricity (the ability of fuel pumps and fuel injectors to lubricate) than U.S. diesel fuel. B20's energy content is between those of No. 1 and No. 2 diesel.



Clean Cities 2014 Vehicle Buyer's Guide

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



Clean Mobility



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