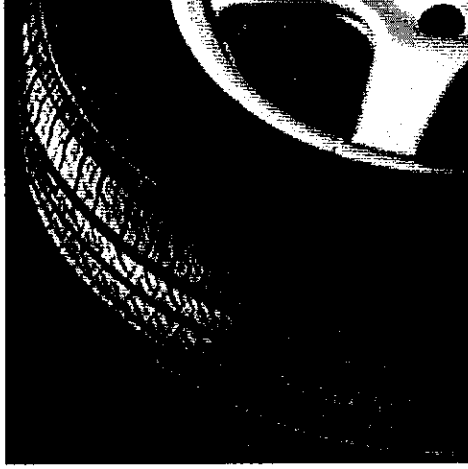


# Pilot Program Discussion:

## Fuel Efficient Replacement Tires for Passenger Vehicles



June 3, 2014

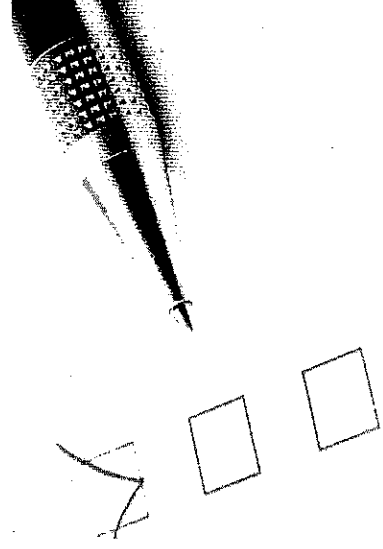
Prepared by: Energy Solutions

Ed Pike, PE, Sr. Project Manager; Alex Chase, Director



# Overview

1. Energy Solutions Background
2. Opportunity Assessment
3. Fuel Efficient Tire Pilot Overview



# Energy Solutions Background

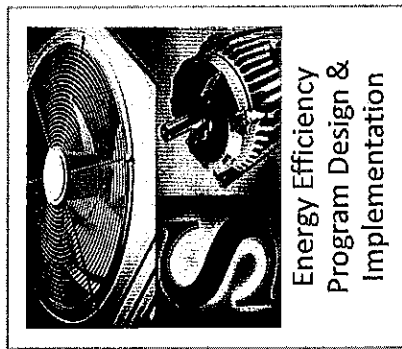
**Company Mission:** Energy Solutions' mission is to create large-scale environmental benefits for our clients by implementing market-based solutions and developing policies that contribute to these goals.

- Founded in 1995
- 90 Employees in California
- 3 National awards for outstanding energy efficiency incentive program implementation
- Authored whitepaper on fuel efficient tire replacement program for SCAQMD
- Strong expertise in clean transportation

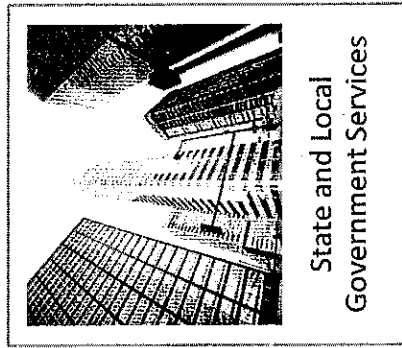


Award-winning energy program design and implementation experience

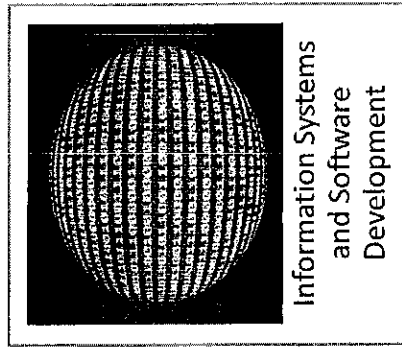
# Energy Solutions Relevant Practice Areas



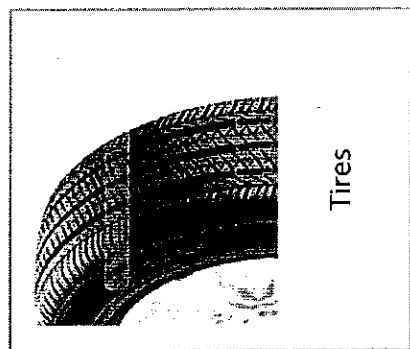
Energy Efficiency  
Program Design &  
Implementation



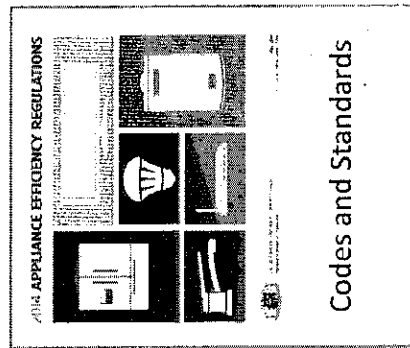
State and Local  
Government Services



Information Systems  
and Software  
Development

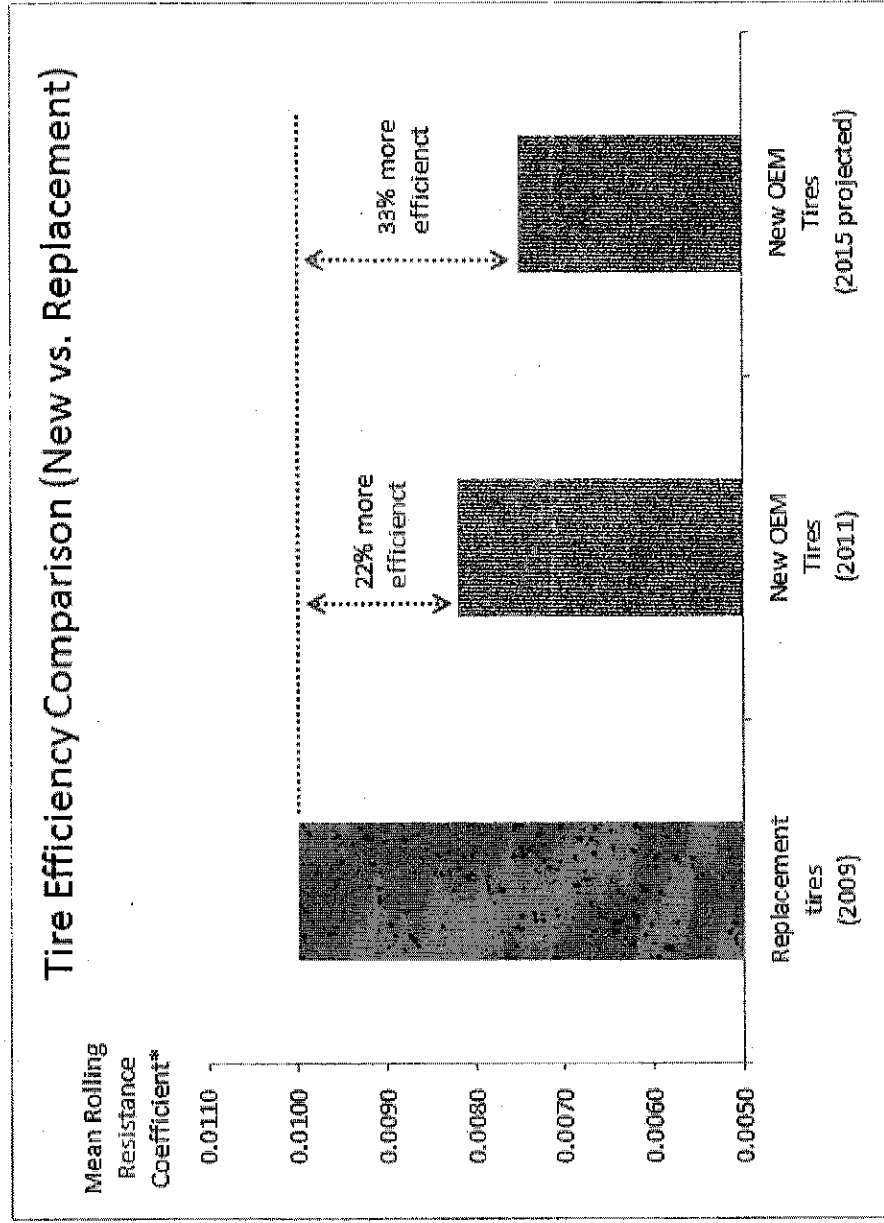


Tires



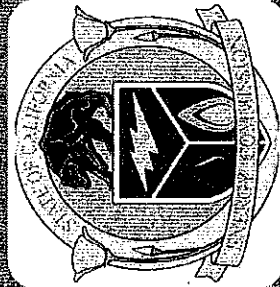
Codes and Standards

# Problem: Replacement tires are not fuel-efficient



\*A lower coefficient means the tires will use less energy (fuel) to travel a certain distance.  
Source: Energy Solutions "Passenger Vehicle Replacement Tire Efficiency Study" October 2013 for South Coast AQMD.

# Opportunity: More fuel-efficient replacement tires



"If the...21 million vehicles [using replacement tires] used tires with a 10% lower rolling resistance this would result in statewide savings of ...\$882 million, and 2.7 million metric tons less CO2 emissions annually."

Equal to near 10% of Pavley I & Pavley II standards!



"Deployment of fuel efficient vehicle tires for in-use vehicles could include limited incentives, followed by ratings and then standard setting to permanently shift the market."

Scoping Plan Update Adopted by CARB Board May 22, 2014

Sources:

CEC: <http://www.energy.ca.gov/tires/index.html>

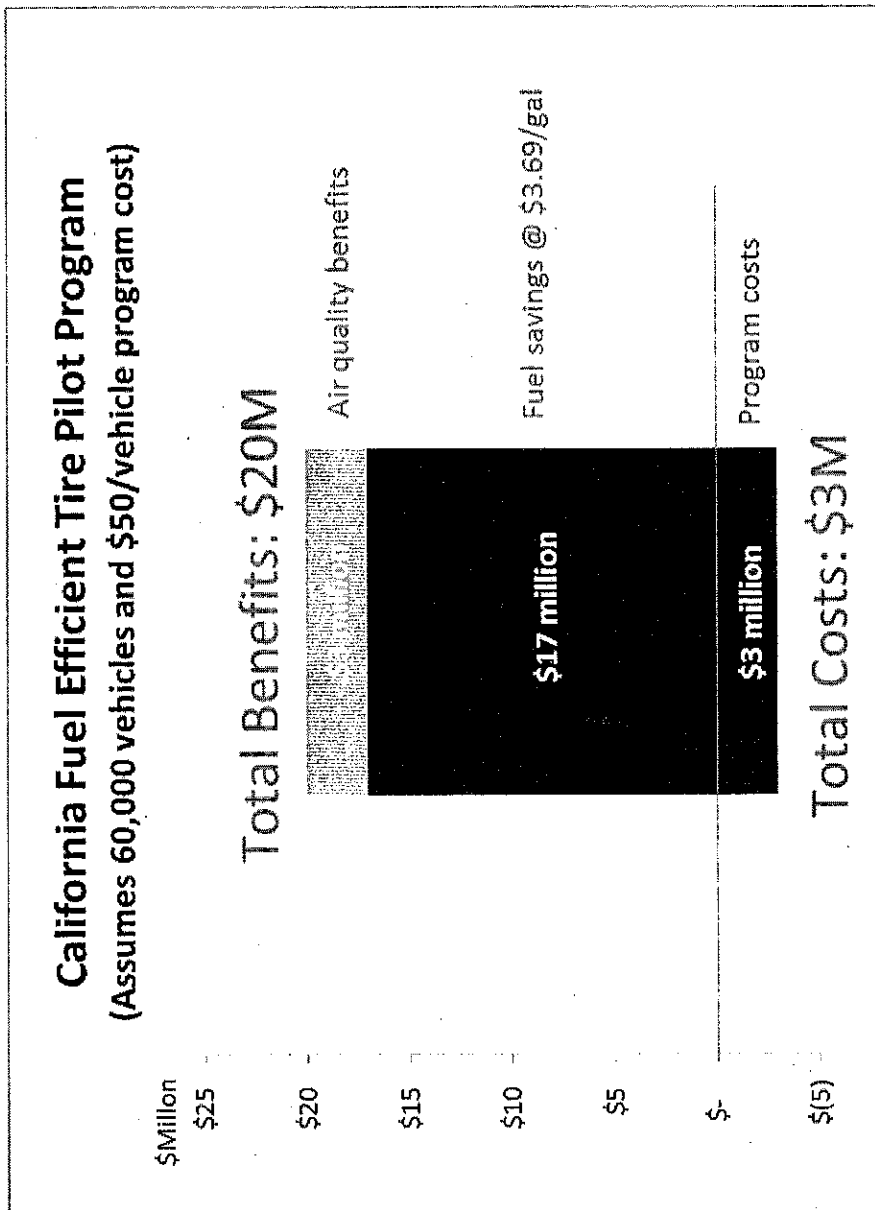
CARB, First Update to Scoping Plan (May 2014) :

[http://www.arb.ca.gov/cc/scopingplan/2013\\_update/first\\_update/first\\_update\\_climate\\_change\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/2013_update/first_update/first_update_climate_change_scoping_plan.pdf)

June 2014

Fuel Efficient Tires

# Solution: Fuel-efficient replacement tire program



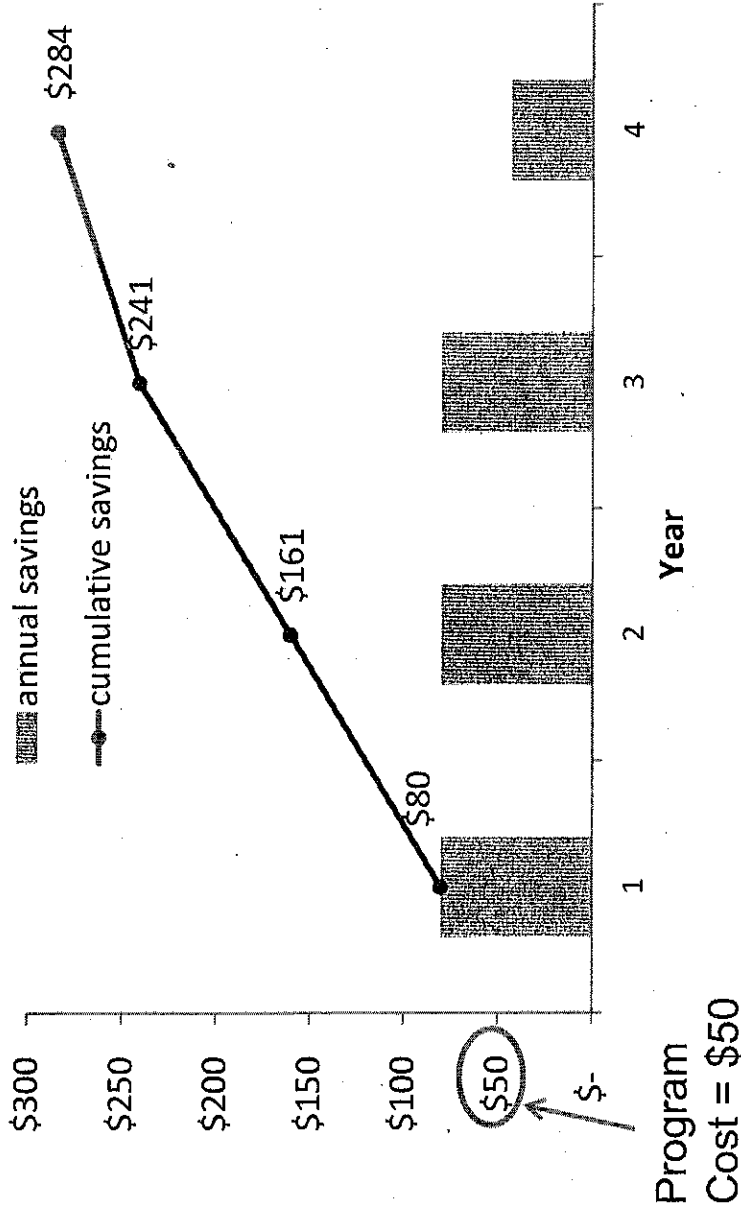
**Pilot Program:**  
 Costs = \$3M  
 Benefits = \$20M

Benefit to  
 Cost ratio  
 exceeds 6:1

Note: Air quality benefits include tailpipe criteria pollutant emission and CO<sub>2</sub> reductions. Assume \$17,500/ton for ozone precursors (higher cost per ton for fine particulate and lesser for carbon dioxide) and \$34/ton CO<sub>2</sub> (matches Interagency Working Group Social Cost of Carbon estimated avoided damages (@3% discount rate)). All values are estimates based on Energy Solutions' research for SCAQMD's "Passenger Vehicle Replacement Tire Efficiency Study" (October 2013). Actual values may vary based on savings methodology.

# Customer Benefits

## Fuel Savings Per Participant



- Disadvantaged community members disproportionately rely on replacement tires compared to buying new cars.

- Incentive program will bring down first cost of fuel efficient tires and can save customers over \$280 in fuel costs per set of tires - about \$1000 over vehicle lifespan.

Note: Assumes 20% improvement in rolling resistance equates to 4% improvement in fuel efficiency. Assumes \$3.69/gal average fuel costs. Assume four fuel efficient replacement tires per vehicle, with 3.54 year lifespan per US EPA.



# Pilot Program Basics



- Uses internationally accepted test procedures, minimum grip
- 20% improvement in rolling resistance compared to BAU
- Includes warranty requirement
- Results in ~4% fuel efficiency increase for participants



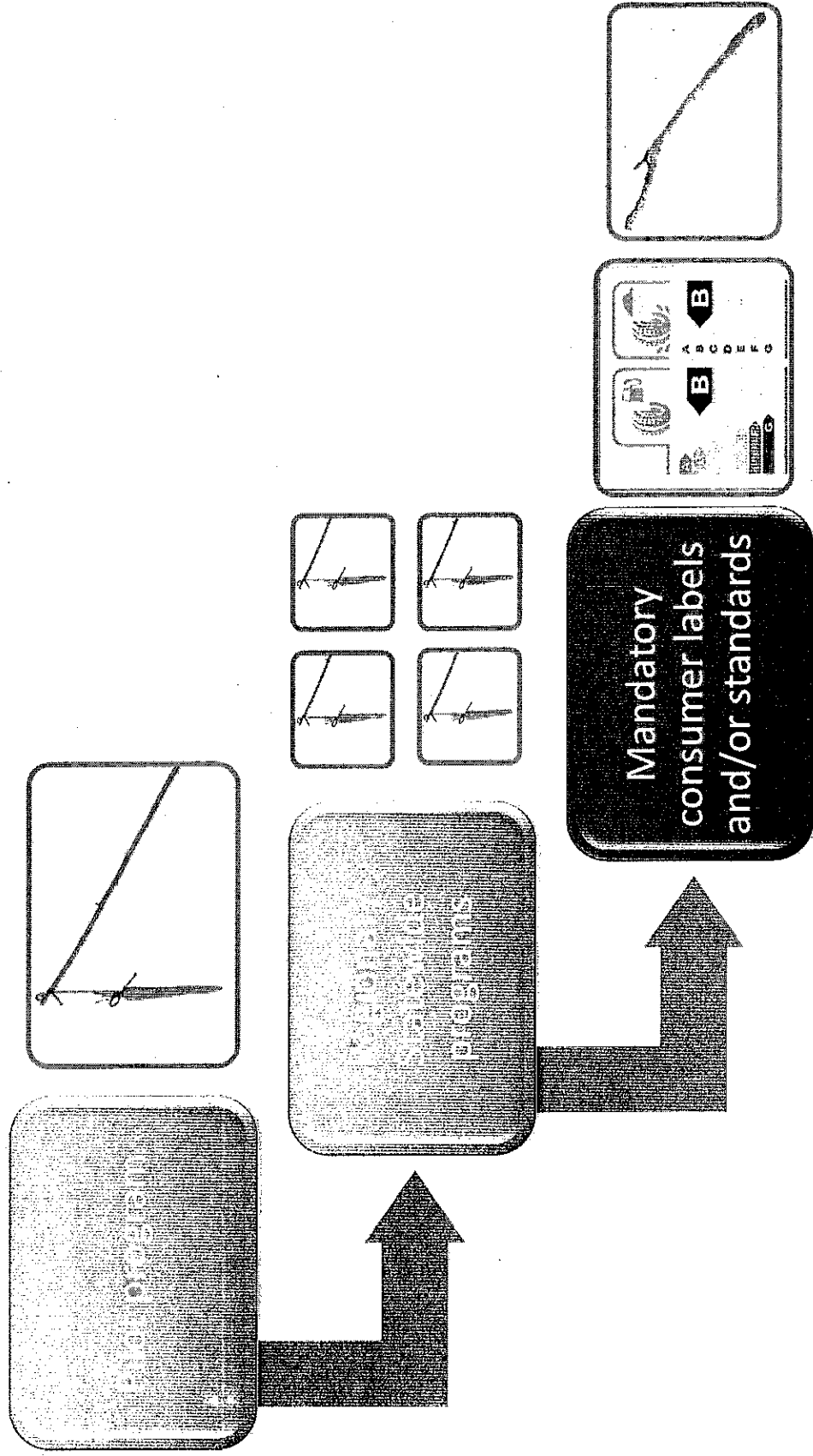
- Pilot in disadvantaged communities
- Target 60,000 vehicles in 2015
- Retailers promote efficient tires (e.g., in-store displays)
- Financial incentives at point of sale
- Qualifying product list based on manufacturer data verified with independent QA and testing



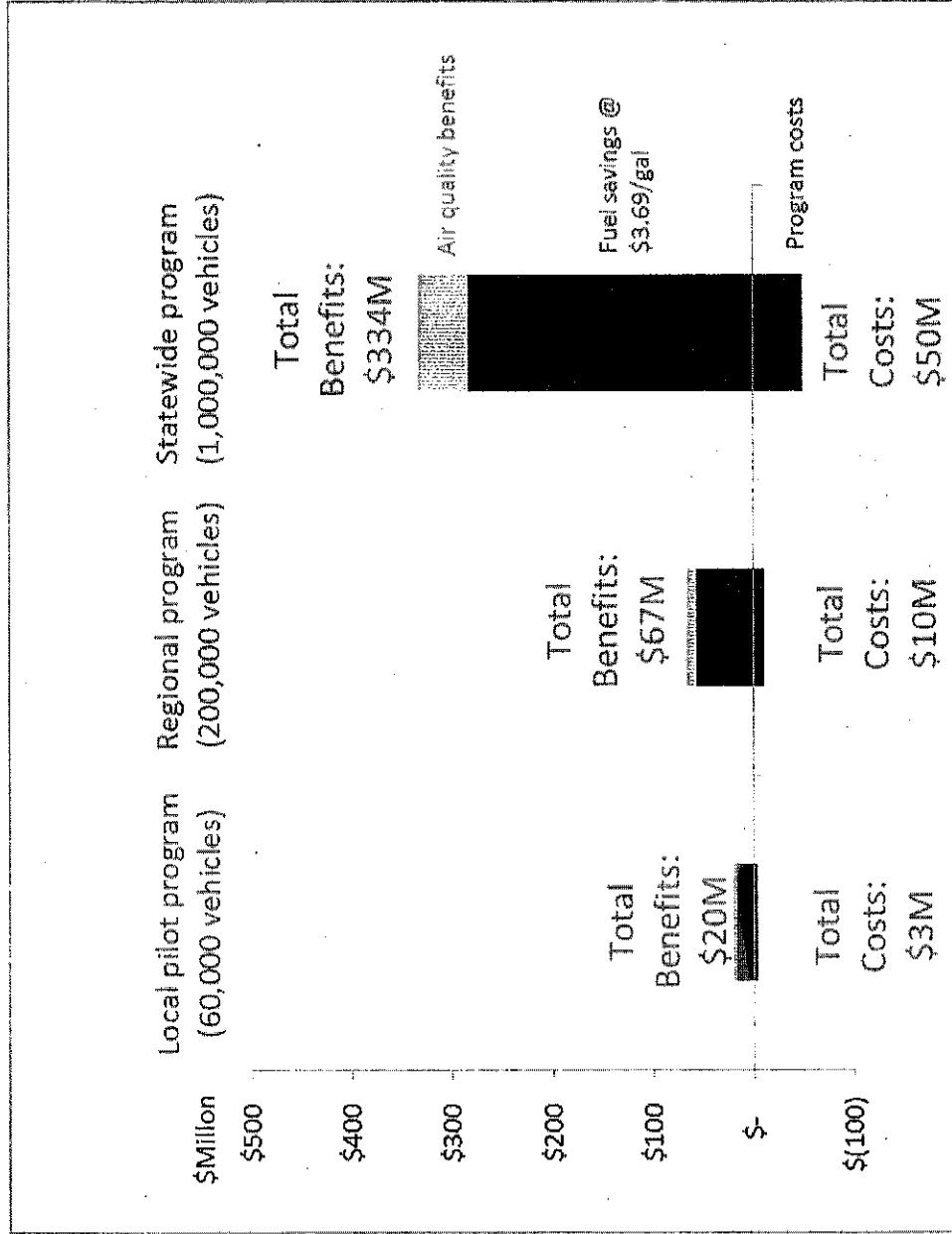
- Engage tire retailers because they control in-store stocking and promotions
- Example potential partners (non-exhaustive):



# Path to Market Transformation



# Program Deployed at Scale



Note: Air quality benefits include tailpipe criteria pollutant emission and CO<sub>2</sub> reductions. Assume \$17,500/ton for ozone precursors (higher cost per ton for fine particulate and lesser for carbon dioxide) and \$34/ton CO<sub>2</sub> (matches Interagency Working Group Social Cost of Carbon estimated avoided damages (@3% discount rate). All values are estimates based on Energy Solutions' research for SCAQMD's "Passenger Vehicle Replacement Tire Efficiency Study" (October 2013). Actual values may vary based on savings methodology.

# Support for Tire Incentive Pilot

April 10, 2013  
 Commissioners Karen Douglas,  
 Chair Robert Westervelt,  
 California Energy Commission  
 1516 Ninth Street  
 Sacramento, CA 95814-5700  
[Via: dave@concernedscientists.org](mailto:Via: dave@concernedscientists.org)



**Union of Concerned Scientists**  
 Citizens and Scientists for Environmental Solutions

April 10, 2013  
 Commissioners Karen Douglas,  
 Chair Robert Westervelt,  
 California Energy Commission  
 1516 Ninth Street  
 Sacramento, CA 95814-5712  
[Via: dave@concernedscientists.org](mailto:Via: dave@concernedscientists.org)

**AB118 and Opportunity to Save Fuel and Reduce Emissions from the Vehicle Stock**  
 Dear Commissioners Douglas and Chair Westervelt:

For decades, California has been a leader in programs to reduce energy use and emissions from home appliances, cars, boats, power plants, and more. These programs have saved California's money, protected public health, and helped support a strong economy. We encourage you to take another step on this path by considering the use of a small portion of funding under the AB118 2013-14 Investment Plan to support pilot programs that will help consumers save fuel and reduce emissions through improved vehicle replacement equipment and maintenance.

Purchasing fuel-efficient replacement tires, keeping tires properly inflated, using low air leak tires, and having vehicles inspected for proper tire pressure are some of the easiest ways to reduce fuel consumption, money and air emissions from vehicles already on the road. For example, the AB118 Savings Plan estimates that tire rolling resistance tires and low friction tires will reduce rolling resistance emissions by over 1 million tons per year. Such benefits would complement existing and planned programs that set emissions and efficiency standards for vehicles and more, and that require tires to be checked and inflated when vehicles are serviced.

Pilot programs could explore the potential for purchase incentives or educational efforts to shift consumer and retailer behaviors to increase adoption of these fuel-saving and emissions-saving approaches. We therefore recommend including the potential benefits of these opportunities in the Emerging Opportunities section of the AB118 2013-14 Investment Plan.

Sincerely,  
 Andrea Alford  
 Director, California and Western States  
 Repair-Driven Vehicle

Miss Bamberger,  
 Natural Resources Director

**"...robust implementation of incentive programs...could save consumers \$750 million annually."**  
 - NRDC and Energy Independence NOW



**ENERGY INDEPENDENCE NOW**



**Union of Concerned Scientists**  
 Citizens and Scientists for Environmental Solutions

**"Pilot programs could explore the potential for purchase incentives or educational efforts to shift consumer and retailer behaviors to increase adoption of these fuel, money, and emissions savings approaches"**  
 -Union of Concerned Scientists

Sources: April 10, 2013 letters to California Energy Commission re: AB118 investments

June 2014

Fuel Efficient Tires

# Opportunities to Move Forward

- CARB's 2014-15 funding plan (AQIP/Greenhouse Gas Fund Investment Plan) is up for consideration by Board on June 26<sup>th</sup> and 27<sup>th</sup>.
  - Includes \$9 million disadvantaged community set aside
  - Potential to leverage air district efforts
- Would like to have funding plan explicitly fund tire efforts, similar to goals outlined in recent Scoping Plan Update.
- Other potential opportunities ?



## Contact information

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Energy Solutions

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510.482.4420 x239

**Alex Chase**

Director

Energy Solutions

[achase@energy-solution.com](mailto:achase@energy-solution.com)

510.482.4420 x228

## Additional Resources

Passenger Vehicle Replacement Tire Efficiency Study, Ed Pike and Sarah Schneider, 2013, for South Coast AQMD

Tire Energy Efficiency, Ed Pike, 2011, for International Council on Clean Transportation.

# BACK-UP SLIDES

# Cost-effectiveness Relative to Potential Projects

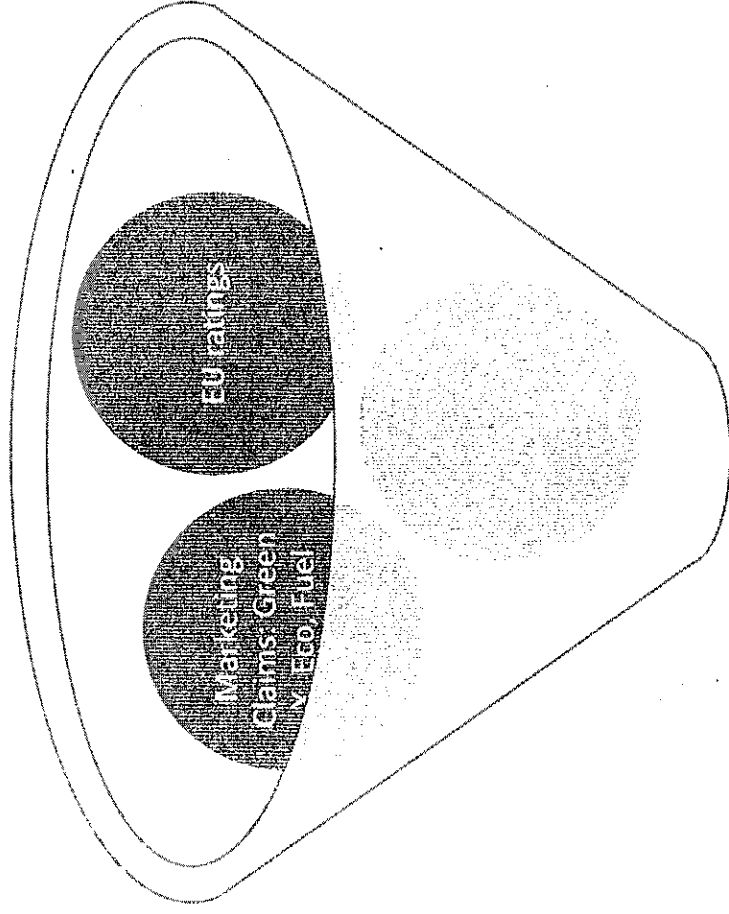
Project	Criteria Emissions (\$/ton)	Greenhouse Gas (\$/ton)
Truck Loans	\$7,100	NA
CVRP	\$9,800	\$20
<b>Fuel Efficient Passenger Vehicle Replacement Tire Pilot*</b>	<b>\$17,000</b>	<b>\$30</b>
HVIP	\$26,000	\$190
EFMP with EV Replacement Pilot	\$50,000	\$70
Zero-Emission Public Fleet Pilot	\$55,000	\$70
Zero-Emission Drayage Truck Pilot	\$79,000	\$210
Zero-Emission Yard Hostler Pilot	\$170,000	\$660
Zero-Emission Transit Bus Pilot	\$250,000	\$660
Car Share Pilot	<b>\$760,000</b>	<b>\$430</b>

**\*Notes:**

1. Fuel Efficient Passenger Vehicle Replacement Tire Pilot cost-effectiveness is based on comparing the combined benefits of all GHG and criteria pollutants against costs as shown in the October 2013 "Passenger Vehicle Replacement Tire Efficiency Study"; including weighing PM 20x and discounting CO by roughly 40x.
2. Other projects are copied from CARB's "Second public workshop on the development of the Assembly Bill (AB) 118 Air Quality Improvement Program (AQIP) Funding Plan and Funding Recommendations for Low-Carbon Transportation Greenhouse Gas Reduction Fund (GGRF) Investments For Fiscal Year (FY) 2014-15 DISCUSSION DOCUMENT" April 2014.



# Developing Qualifying Product List



Submittal QA

List of submitted products

Test/audit

**Verified qualifying products list**