



March 14, 2013

Commissioner Karen Douglas  
Chair Robert Weisenmiller  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814-5512  
Via: [docket@energy.ca.gov](mailto:docket@energy.ca.gov)

California Energy Commission

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TN # 69927

MAR. 14 2013

**Subject: AB118 2013/14 Investment Plan and Demand Side Management for Drivers**

Dear Commissioner Douglas and Chair Weisenmiller:

We appreciate the opportunity to comment on the draft AB118 2013/14 Investment Plan. California is a national and international leader for running demand-side management (DSM) programs in the electricity and natural gas sectors and we encourage the Commission to further expand this success into the transportation sector. Using AB118 Investment Plan funding for regional technology incentive demonstrations, such as an incentive program for fuel efficient replacement tires and engine oil can create a success model that can be leveraged for broad-scale implementation in California and beyond.

Energy Solutions estimates that a robust implementation of a "DSM for Drivers" program, with a primary focus on low rolling resistance tire technology, could save consumers \$750 million annually and reduce GHG emissions by over two million tons per year. The incentive program can be optimized for cost-effectiveness by incenting California retailers to stock, market, and sell more efficient tires. In addition, a tire incentive program will complement important efforts to provide labeling information and create standards for low rolling resistance tires.

Please see our attached comments for additional information and feel free to contact me or have your staff contact me at [epike@energy-solution.com](mailto:epike@energy-solution.com) or (510) 482-4420x239 if you have any questions.

Sincerely,

A handwritten signature in blue ink that reads "Ed Pike".

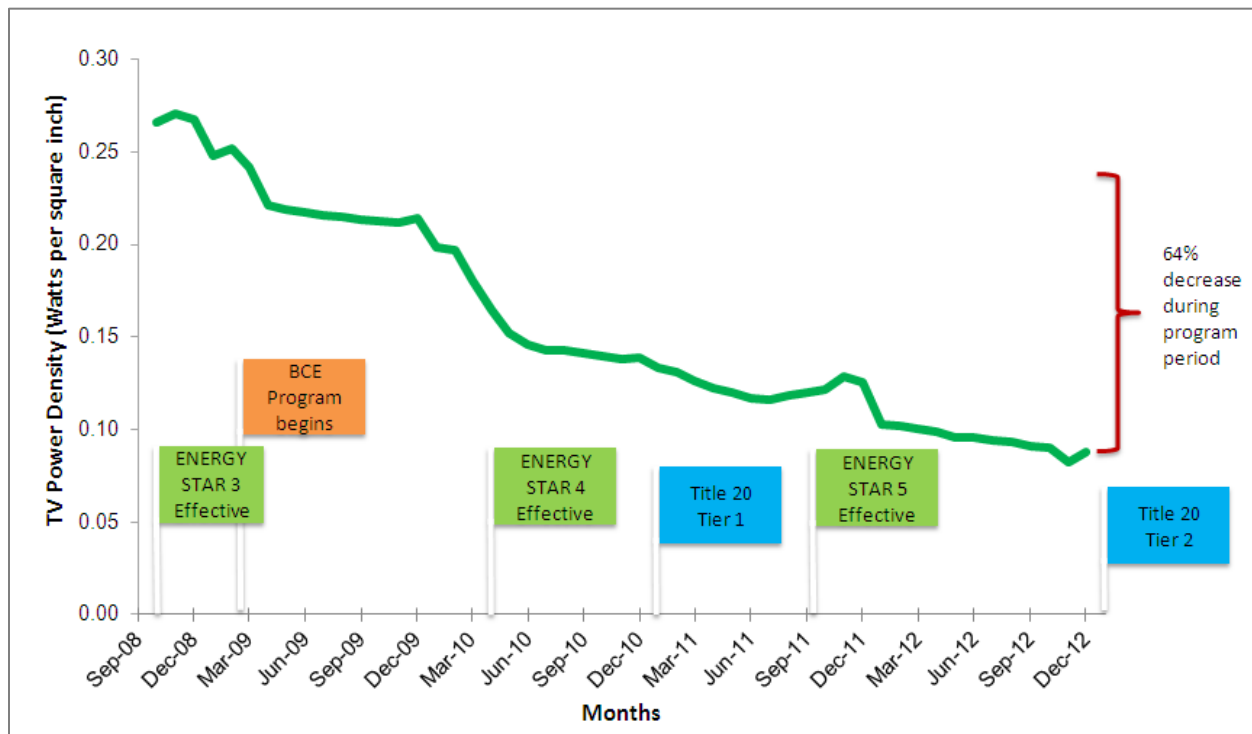
Ed Pike, PE  
Senior Project Manager

cc: Charles Smith  
Jim McKinney  
Ray Tuvell

## DSM for Drivers Program Rationale

California has saved \$65 billion over three decades through demand side management (DSM) incentive programs and created a national and international model for cost-effective DSM programs as noted.<sup>1</sup> DSM programs have been proven to accelerate market transformation for products such as consumer electronics, lighting, and appliances. This experience can be leveraged to achieve similar benefits for passenger vehicle aftermarket products.

For example, in 2009 six utilities and one third-party administrator from California, Nevada and the Pacific Northwest launched a program with assistance from Energy Solutions called the Business and Consumer Electronics (BCE) program to mitigate rapid increases in television (TV) plug load energy consumption. The program incentivized TV retailers such as Best Buy, Costco and Walmart to stock, promote and sell the most efficient units on the market. Since the program's inception in 2009 TV power density (measured in watts per square inch) has decreased by 64%, achieving significant consumer cost savings.<sup>2</sup> The program has engaged retailers to train employees and educate customers on the benefits of choosing energy efficient products and has been a key driver in reducing TV energy consumption across the entire United States (U.S.) TV market.



**Figure 1: Changes in TV Energy Intensity from 2008-12**

Source: Program Analysis Data developed on behalf of Northwest Energy Efficiency Alliance (NEEA).

<sup>1</sup> Brown Jr., [Edmund G. State of the State Address Remarks as Prepared January 24, 2013](#).

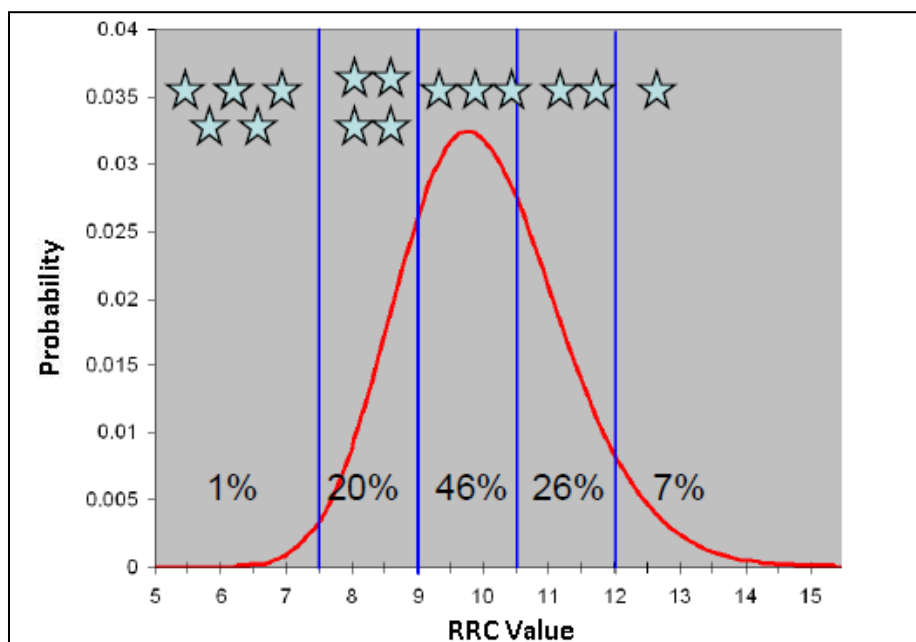
<sup>2</sup> This value is normalized to account for changes in TV screen size over the program time period. While naturally occurring efficiency improvements are also a factor contributing to this improvement, program evaluation interviews with major retailers and U.S. EPA indicate that this program significantly affected retailer decision making as well as ENERGY STAR specification development.

California has a golden opportunity to leverage this experience and overcome market barriers to more energy efficient passenger vehicle replacement products such as low rolling resistance tires and low friction engine oil. These market barriers include upfront cost, retailer stocking practices and lack of consumer information. Implementing a DSM for Drivers incentive program is an excellent opportunity to overcome those barriers and accelerate adoption of efficient passenger vehicle aftermarket products.

**Program Benefits**

- Achieving AB32 Scoping Plan GHG reduction goal:** The AB32 Scoping Plan calls for 3.6 million metric tons CO<sub>2</sub>e per year (MMTCO<sub>2</sub>e/yr) GHG reductions from improving the efficiency of the in-use passenger vehicle fleet (including 0.55 MMTCO<sub>2</sub>e/yr from a tire inflation program that has already been adopted) – the fourth largest transportation category of GHG emission reductions in the AB32 Scoping Plan.<sup>3</sup> The DSM for Drivers program would complement standards for fuels and new vehicles and smart growth planning by targeting in-use passenger vehicle GHG emissions.

We estimate that DSM for Drivers can achieve in-state GHG reductions of about two MMTCO<sub>2</sub>e/yr, or two-thirds of the remaining AB32 target for in-use passenger vehicles, once scaled up after successful regional demonstration pilots. Figure 2 shows the estimated distribution of replacement tires sold based on their rolling resistance. The lower the value (more stars) indicates the better tire with respect to fuel efficiency.



**Figure 2: Fitted Sales-Weighted Rolling Resistance Coefficient (RRC) Distribution Curve.**

(Note: RRC is multiplied by 1000 to show a whole number on the X-axis)

Source: Rubber Manufacturers Association, 2009.<sup>4</sup>

<sup>3</sup> See AB32 Scoping Plan [Appendix C p-64](#).

<sup>4</sup> Michelin North America. (2009, June). [Rubber Manufacturers Association Presentation](#).

We estimate that a tire incentive program can achieve 1.8-2.4 MMTCO<sub>2</sub>e/yr by improving the average rolling resistance of all tires by 10%. In addition, we estimate that low friction engine oil would achieve GHG reductions of 0.2 MMTCO<sub>2</sub>e/yr at a modest deployment rate of 20% of sales assuming a 1% efficiency gain (with the potential for greater reductions at higher deployment rates).<sup>5</sup>

In addition to climate benefits, the program would achieve significant local air quality benefits. These benefits occur both from lower tailpipe emissions, as well as reduced upstream petroleum refining emissions.<sup>6</sup>

- **Achieving AB32 Scoping Plan \$750 million annual consumer savings target:** The DSM for Drivers program could achieve CARB's \$750 million annual cost savings estimate for in-use passenger vehicle efficiency measures, as outlined in the AB32 Scoping Plan Appendix C. We estimate that a full program cost (incentives, marketing, and administration) would need to be approximately \$200 million in round numbers to achieve the full \$750 million savings, resulting in a significant benefit-cost ratio of 3.75. Lower level initial program amounts could be used to develop a pilot program that has the potential to scale up.
- **Engaging disadvantaged communities:** This program will also facilitate disadvantaged community participation. It is inherently well suited to low-income drivers because they are more likely to drive used cars and thus purchase replacement tires. Low-income consumers are also likely to be more sensitive to prices and therefore are more apt to leverage incentives. An initial Regional pilot program can be designed to make sure that disadvantaged communities are strongly represented from the start. Targeted outreach to disadvantaged communities can encourage their participation during broader scale-up of the program leveraging other funding sources.
- **Synergies with other government programs:** California enjoys an excellent opportunity to leverage European Union and other tire efficiency incentive programs.<sup>8</sup> Harmonized rating bins have been adopted in the European Union, Japan and South Korea. In addition, these countries and the United States have adopted a harmonized test method, providing potential building blocks for a California program.

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<sup>5</sup> These calculations are based on a 119 MMTCO<sub>2</sub>e/yr baseline, including adjustment for reductions such as Pavley regulations; a 20% reduction in rolling resistance to 0.008 dimensionless rolling resistance co-efficient (or 8 lbs rolling resistance force per 1000 lbs vehicle weight) for half of the market compared to industry average shown in Figure 2; and a conservative estimate of 15%-20% contribution of rolling resistance to overall net passenger vehicle energy consumption for rolling resistance. We note that CARB estimated 2% improvement in vehicle energy efficiency due to low friction engine oil in AB32 Scoping Plan Appendix C p. C-63; while U.S. EPA's RIA EPA-420-R-10-009 estimated 0.5% improvement (at cost of only \$3 vehicle p1-6).

<sup>6</sup> Petroleum production emissions would also potentially decrease, to the extent that California production is sensitive to in-state demand.

<sup>8</sup> See Pike, E. 2011. [Opportunities to Improve Tire Efficiency](#).

Incentives can be implemented ahead of the California regulatory program and can also complement the California program once it is implemented. Incentives act to pull up the top end of the market while standards would push up the bottom end of the market. The DSM for Drivers program would also discourage tire dumping in California by tire manufacturers that do not upgrade their facilities to match requirements in other countries.

## **Funding**

Initial funding under the AB118 2013/14 Investment Plan for Regional pilots to demonstrate technologies such as low rolling resistance tire technology will create a success model that can be leveraged for broad-scale implementation through additional federal, state and/or local funding sources.

Energy Solutions estimates that an annual budget of \$200 million, after scaling up from successful demonstration projects, would achieve the \$750 million AB32 consumer savings estimate for low-rolling resistance tire technology and low friction engine oil.<sup>9</sup> While program cost estimates can be updated after initial pilot project experience, we expect that these benefits for full implementation can be achieved at a funding level that is for instance 10% or less of all transportation-related allowances allocated by the California Air Resources Board during Cap and Trade Phases II and III (2015-2020). By comparison, California's highly successful existing energy efficiency programs received over \$1.5 billion in funding in 2012, and serve as a national and international model.<sup>10</sup>

## **Relationships Between Low-Rolling Resistance and Other Tire Characteristics**

Policy-makers will likely have an interest in whether fuel efficiency – as represented by tire rolling resistance – is related to characteristics affecting safety and durability. Energy Solutions analyzed California Energy Commission (CEC) test data for 600 tires and over 120 models to provide initial information.<sup>11</sup>

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<sup>9</sup> This estimate is based on 50% penetration of the DSM for Drivers tire technology program, and initial funding of other potential opportunities such as low friction oil and possibly driver education. Energy Solutions' calculation is based on 14 billion gallons of fuel per year baseline after adjusting for effect of Pavley new vehicle regulations, \$3.76 fuel cost excluding state taxes, and efficiency improvement noted earlier in footnote 5. We estimate the passenger vehicle replacement tire market at 36-37 million tires annually and incremental cost estimates ranging up to \$10/tire (See Pike, E. 2011. Opportunities to Improve Tire Efficiency.). Specific details such as cost-buy down ratio, free-ridership, and implementation cost can be determined during program planning and initial pilot projects.

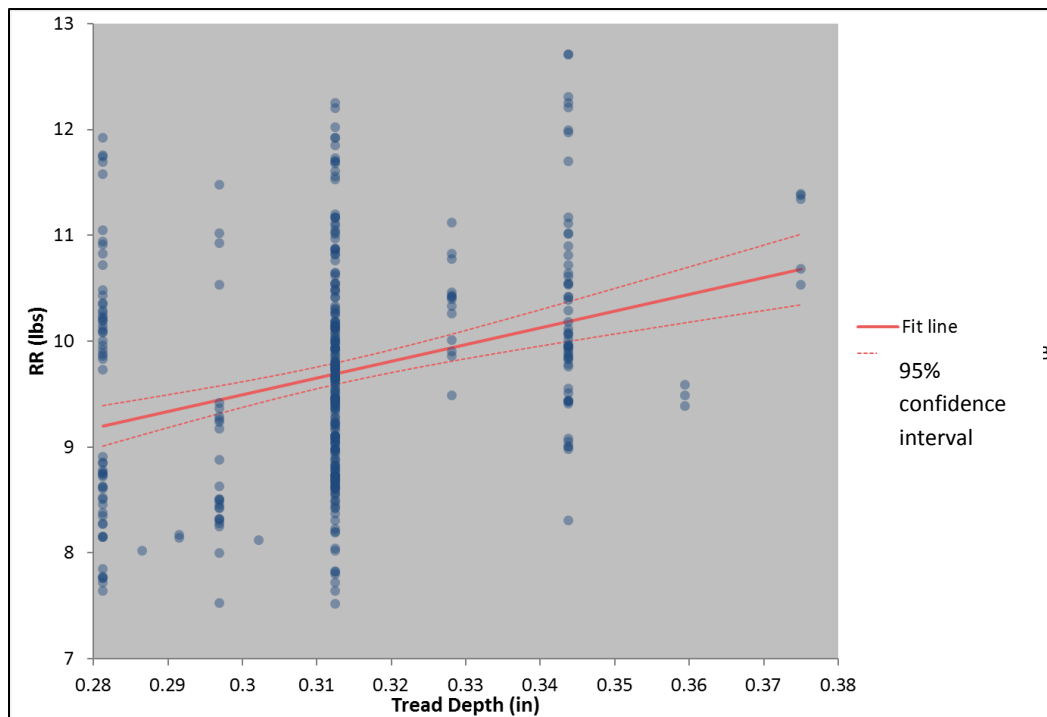
<sup>10</sup> IEE. 2013. [Summary of Consumer Funded Electric Efficiency Savings, Expenditures, and Budgets \(2011-2012\)](#). March.

<sup>11</sup> These datasheets are available from the CEC website: [http://www.energy.ca.gov/transportation/tire\\_efficiency/documents/2009-06-10\\_workshop/presentations/excel\\_files/](http://www.energy.ca.gov/transportation/tire_efficiency/documents/2009-06-10_workshop/presentations/excel_files/).

Several sources find that improved rolling resistance need not sacrifice safety (represented by wet or dry stopping distance).<sup>12</sup> Almost all tires in the CEC data set, both with above average and below average rolling resistance test scores, were rated “A” for traction by manufacturers. An incentive program could include an anti-back sliding minimum value for traction, an element included in the European Union program, to incentivize improvements in both energy efficiency and safety.

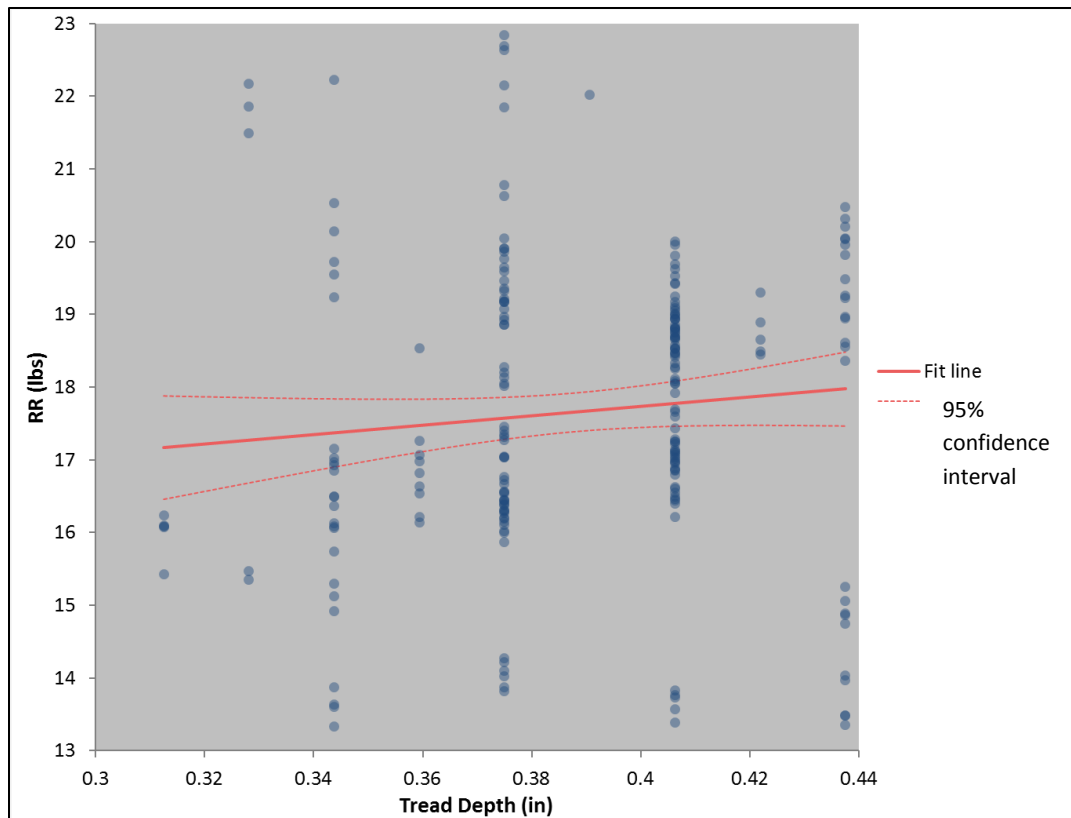
Energy Solutions also examined two potential proxies for durability: manufacturer rated treadwear and measured tread depth. We did not find any statistically significant positive or negative correlation between manufacturers’ rated tread wear and rolling resistance. We also evaluated tread depth against rolling resistance as shown in Figure 3A and 3B (in part because manufacturers’ rated treadwear values are not independently verified and thus have uncertain accuracy). These plots indicate the possibility of a small correlation between rolling resistance (RR) and reduced tread depth, which could occur because reduced tread depth reduces the amount of material that is subject to internal friction. However, the data indicates that any relationship between reduced tread depth and rolling resistance is very limited - thus other factors such as manufacturing methods and materials are likely the primary drivers for improved rolling resistance.

In both cases, the data indicate that fuel economy goals can be achieved without reducing the traction or durability of passenger vehicle replacement tires.



**Figure 3A: Tread Depth and Rolling Resistance for P195 tires**

<sup>12</sup> See discussion in Pike, E. 2011. [Opportunities to Improve Tire Efficiency.](#)



**Figure 3B: Tread Depth and Rolling Resistance for P265 tires**

**Conclusion**

California’s successful implementation of building and consumer products DSM, combined with landmark legislation such as AB32 and AB118 and other groundbreaking environmental initiatives, has made California a national and international leader in combatting climate change. DSM for Drivers is an immediate and highly cost-effective opportunity to facilitate the passenger vehicle advanced technology goals of AB118 with economic, environmental and social benefits. Annual consumer savings of \$750 million or greater and two MMTCO<sub>2</sub>e/yr of in-state GHG savings will support these goals and provide numerous ancillary benefits. California’s impressive history has set the stage to enhance its climate and advanced technology development leadership role through implementation of DSM for Drivers.