California Energy Commission Replacement Tire Efficiency Proceeding

DISCLAIMER NOTICE: The following is an accessible outline of the California Energy Commission PowerPoint presentation for the April 27, 2023 BAR Advisory Group meeting (agenda item 6: Replacement Tire Efficiency Regulations). To view a webcast recording of the presentation, visit the BAR Advisory Group page at www.bar.ca.gov.

Slide 1: California Energy Commission Replacement Tire Efficiency Proceeding

- Bureau of Automotive Repair
- California Energy Commission Replacement Tire Efficiency Proceeding
- Docket No.: 20-TIRE-01 Date: April 27, 2023
- Sebastian Serrato, FTD Jontae Clapp, FTD
- Ken Rider, Chair Advisor
- Ralph Lee, Chief Counsels Office Andrew Hom, FTD
- Bill Blackburn, FTD

Slide 2: Agenda

- Order Instituting Informational (OII) Proceeding Objectives
- Background
- Proceeding Progress and Schedule
- Efficiency Regulations and Programs
- Smithers Tire Testing and Results
- Staff Analysis
- Staff's Proposed Regulations
- Comments
- Closing Remarks

Slide 3: Program Status

- CEC staff directed to look at investigating replacement tire efficiency and implementing AB 844 through an Order Instituting Informational (OII) Proceeding in November 2020
- Public workshop held February 2021
- Staff gathered information to inform proceeding, including discussions with:
    - Canada, European Union, Tire Retailers, US Tire Manufacturers Assoc., Smithers testing laboratories and other sources
- Tested 149 (SKUs) tires, in triplicate, at Smithers Lab in Ohio
- Released Draft Staff "Framework" Report Feb. 1, 2023

Slide 4: AB 844 Key Goal

AB 844 directs:

"...the (Energy) commission, in consultation with the board (CalRecycle), shall, after appropriate notice and workshops, adopt and, on or before July 1, 2008, implement, a tire energy efficiency program of statewide applicability for replacement tires, designed to ensure that replacement

tires sold in the state are at least as energy efficient, on average, as tires sold in the state as original equipment on new passenger cars and light-duty trucks."

Slide 5: AB 844 Directives

Components of the Replacement Tire Efficiency Program:

1. a database of the energy efficiency of a representative sample of replacement tires (based on test procedures adopted by the CEC);
2. a rating system for the energy efficiency of replacement tires;
3. requirements that manufacturers report the energy efficiency of replacement tires;
4. minimum efficiency standards for replacement tires; and
5. consumer information requirements, including readily accessible point-of-sale information.

Slide 6: Min. Performance Std. Criteria

Section PRC 25773 (a)(1)

"...Energy efficiency standards adopted pursuant to this paragraph shall meet all of the following conditions:

(A) Be technically feasible and cost effective.
(B) Not adversely affect tire safety.
(C) Not adversely affect the average tire life of replacement tires.
(D) Not adversely affect state efforts to manage scrap tires..."

Slide 7: Proposed California Regulation

- Rating System
- Consumer Information
- Minimum Performance Standard
    - January 1, 2026 - 9.0 N/kN
    - January 1, 2028 - 7.0 N/kN

Slide 8: Original Equipment vs. Replacement Tires

- ORIGINAL EQUIPMENT TIRES (Out of Scope of Proposed Regulation)
    - "OE" tires are essentially those found on new cars, SUVs and trucks
    - Generally designed to be highly energy efficient (low rolling resistance, or LRR) tires help automakers meet strict federal Corporate Average Fuel Economy (CAFE) standards
- REPLACEMENT TIRES (In Scope of Proposed Regulation)
- Tires sold or offered for sale in California, except as wholesale for sale outside the state; designed to replace new car, SUV or light-duty truck tires
    - These include OE tires purchased from a retailer
- The CAFE standards are not an issue in the replacement tire market.
- Further, because there is little information on tire efficiency of specific tire models, they tend to be less efficient

Slide 9: Exemptions

AB 844 includes several exemptions:

- Low-volume tires (under 15,000 units annually)
- Deep tread, winter snow tires
- Space-saver tires or temporary use spare tires
- Tires with a nominal rim diameter of 12 inches or less
- Motorcycle tires
- Tires manufactured specifically for use in an off-road motorized recreational vehicle

Slide 10: Rolling Resistance

- In a tire, deformation and friction cause heat transfer and energy losses.
- Additionally, friction between the tire and road, and between the tire and rim, causes heat to be generated, and the wind resistance aerodynamic drag between the tire and surrounding air leads to heat generation.
- Hysteretic losses account for about 80-95% of the total rolling resistance

Slide 11: Federal Regulations

NHTSA

- Adopted Uniform Tire Quality Grading (UTQG) Standards 49 CFR, § 575.104
    - Treadwear, Traction, Temperature
- EISA 2007, sec. 111 – National Tire Fuel Efficiency Consumer Information Program
    - 49 USC, § 32304A
    - 49 CFR, § 575.106
- Congress enacted FAST Act, Part III—Tire Efficiency, Safety, and Registration Act of 2015
- Summary
    - UTQG is performance
    - 49 USC § 32304A & 49 CFR § 575.106 are rolling resistance

(Source: NHTSA)

Slide 12: International Regulations

- European Union
- Japan
- South Korea

Slide 13: Program Timeline

- Order Instituting Informational Proceeding
    - Opened: November 2020
    - Workshop and Request for Information: February 2021
    - Outreach: 2021 & 2022
    - Testing Program: 2022 and continuing
    - Staff Report and Draft Proposed Regulation: February 2023

- Review Comments: 2023

Slide 14: Outreach to Date

- Industry
  - US Tire Manufacturers Assoc.
  - Tire and Rubber Assoc. of Canada
  - Tire Industry Assoc.
  - California
  - Tire Dealers Assoc.
  - Specialty Equipment Market Assoc.
- Federal
  - NHTSA
- State Agencies
  - CalRecycle
  - Air Resources Board
  - Natural Resources Agency
  - Caltrans
  - Dep. of Toxic Substances Control Board
  - Office of Env. Health Hazard Assessment
  - Water Resources Control Board
- International
  - European Commission
  - Natural Resources Canada
  - Transport Canada
- Others
  - League of Cities
  - Natural Resources Defense Council
  - PG&E
  - Smithers
  - South Coast AQMD
  - Transport Canada

Slide 15: Feedback and Next Steps

- Comments can be submitted
  - https://www.energy.ca.gov/tire
    - Docket (20-TIRE-01)
    - Submit an e-Comment
- What is presented today is an initial proposal. Based on comments we receive the regulatory language will likely change before the formal rulemaking process starts later this year.
- We encourage industry and interested stakeholders to provide comments and staff will be available to meet with to consider changes

Slide 16: Testing Program

- The OII did not yield any recent tire efficiency performance data. A new testing program was implemented.
- Smithers was selected to conduct rolling resistance and wet traction testing.

- 149 tire models for high volume California vehicles
- Results are available in Smithers' report https://efiling.energy.ca.gov/GetDocument.aspx?tn=248631&DocumentContentId=83127

Slide 17: Tire Selection Process for Testing

- Replacement Tires
- OE Tires
- Efficient Replacement Tires

Slide 18: Tire Measured Characteristics

- UTQG
    - Treadwear
    - Traction
    - Temperature
- Sidewall Ratings
- Efficiency
- Wet grip

Source: NHTSA

Slide 19: Energy Use in Tires

- Over 30 million miles traveled in 2022 against the rolling resistance of tires.
- Vehicles use fuel to replace this energy through a lossy system of motor/engine and drive train which amplifies the energy losses in tires.

Slide 20: Current Tire Performance

Test Tire Average RRC and Cost

- OEM Tires/OEM average RRC
- Efficient Tires/Efficient average RRC
- Replacement Tires/Replacement average RRC

Slide 21: Tire Technology

- Efficiency Technology Examples:
- Tread Design
- Chemistry of rubber compounds
- Tire components
- Additives to increase efficiency

Source: USTMA

Slide 22: Cost Effectiveness

- Set of 4 tires traveling 45,000 miles - Rolling Resistance Coefficient (RRC)

- Low
  - Vehicle 1
    - 516 Gallons (0)
    - $2,372 (0)
    - Incremental Cost: $0
  - Vehicle 2
    - 816 Gallons (0)
    - $3,755 (0)
    - Incremental Cost: $0
- Medium
  - Vehicle 1
    - 422 Gallons (94 saved)
    - $1,941 ($431 saved)
    - Incremental Cost: $4
  - Vehicle 2
    - 668 Gallons (148 saved)
    - $3,073 ($681 saved)
    - Incremental Cost: $6
- High
  - Vehicle 1
    - 328 Gallons (187 saved)
    - $1,510 ($862 saved)
    - Incremental Cost: $44
  - Vehicle 2
    - 519 Gallons (297 saved)
    - $2,388 ($1,366 saved)
    - Incremental Cost: $66

Source: CEC Staff

Slide 23: Safety

Rolling Resistance Coefficient (RRC) vs Wet Grip Index (WGI)

- All Terrain
- Economy
- Fuel Efficient
- Highway

Slide 24: Safety Cont'd

Rolling Resistance by UTQG Traction Rating

Slide 25: Tire life and Waste

Rolling Resistance vs Treadwear

Slide 26: Environmental Impacts

Pollutant	**Estimated Potential Annual Reductions (2035)**
CO2 equivalent	5.4 MMT
NOx	1,485 Tons
PM2.5	239 Tons

Slide 27: Other Environmental Impacts

- Tire Waste: CA generates about 51 million reusable/waste tires annually.
- Effects of compound 6PPD (used to extend tire life)

Slide 28: Economic and Fiscal Analysis

Potential Annual Savings from Reduction in Fuel Use

Fuel Type (units)	**Estimated Potential Annual Reductions (2035)**
Diesel (Gallons)	9,678,528
Gasoline (Gallons)	430,481,525
Electricity (Gigawatt- hours)	1,996
Hydrogen (kilograms)	1,181,657

Source: CEC Staff

Slide 29: Lack of Consumer Information

- Unlike other tire attributes (wet grip, tread wear, etc.), there are no requirements for rating tire efficiency and limited information on individual tire model efficiency
- AB 844 directs the CEC to adopt consumer information requirements
- Aims to help consumers make informed decisions about tires
- Program will include Point-of-Sale focused consumer education
- CEC Database of efficiency information
- Star rating (1-5) system designed to be consumer friendly
- Consumer education program will include tire retailers (traditional and web-based) and include on-site poster with QR-code or link to CEC Database
- Efficiency and estimated lifetime fuel savings available through online calculator

Slide 30: Consumer Equity

Consumer equity was also examined – how the proposed program may impact low-income consumers and disadvantaged communities

- Disadvantaged communities are areas that suffer the most from economic, health, and environmental burdens
- The proposed regulation is not expected to degrade tire longevity which would lead to higher lifetime tire replacement costs

- Except under the most extreme scenarios (very low fuel costs coupled with high incremental tire costs), the anticipated fuel savings over the tire's life exceeds the estimated incremental cost
- The expected lifetime savings from using LRR tires will provide important economic benefits to consumers, especially those with low incomes
- Higher incremental costs could potentially pose a safety risk to the most price sensitive buyers if they delay replacing worn tires. Incentives could address this potential concern
- The CEC will continue to monitor potential impacts of the proposed program and will make adjustments accordingly

Slide 31: Staff's Proposed Regulatory Framework (20 C.C.R., §§ 3300-3311) (1 of 6)

- § 3300 - Scope
- § 3301 - Regulatory construction
- § 3302 - Definitions
- § 3303 – Test methods (See 49 C.F.R., § 575.106(f) & (g).)
    - (a) Rolling Resistance
        - ISO 28580:2009(E)
    - (b) Peak Coefficient of Friction
        - Incorporates 49 C.F.R., § 575.106(g) (2021)
        - Modified UTQG test conditions to additionally measure peak coefficient of friction.

Slide 32: Staff's Proposed Regulatory Framework (20 C.C.R., §§ 3300-3311) (2 of 6)

- § 3308 - Ratings

Slide 33: Staff's Proposed Regulatory Framework (20 C.C.R., §§ 3300-3311) (3 of 6)

- § 3305 - Tire Rolling Resistance Efficiency Database (TRRED)
- § 3306 - Filing of Statement by Manufacturers or Brand Name Owners
    - Information of the manufacturer and brand name owner
    - Markings on a tire sidewall
    - Efficiency and Peak traction ratings
    - Price, OEM fitment, manufacture date and manufacture facility
    - Tire weight, tread and sidewall ply and material identification; load index; sidewall max load (lbs); sidewall max pressure (psi); load range; speed rating; whether lettering is blackwall, whitewall, outlined white letter, outlined black letter; and special features such as run flat, or color tread

Slide 34: Staff's Proposed Regulatory Framework (20 C.C.R., §§ 3300-3311) (4 of 6)

- § 3306 - Filing of Statement by Manufacturers or Brand Name Owners
    - Staff's proposed self-certification framework does not require manufacturers to report actual test results.
- Request for Stakeholder Comment:
    1. Should manufacturers be required to test each basic model if its tire and report the actual test result?

2. If not, what specific documentation can the Energy Commission require from manufacturers to verify that reported ratings were accurate?

Slide 35: Staff's Proposed Regulatory Framework (20 C.C.R., §§ 3300-3311) (5 of 6)

- § 3307: Energy Performance Minimum Standard
  - (a) Rolling resistance coefficient is greater than:
    - January 1, 2026 – 9.0 N/kN
    - January 1, 2028 – 7.0 N/kN
  - (b) Petition for Exemption
    - Tires to Equip Authorized Emergency Vehicles.
- Request for Stakeholder Comment:
  1. Are there classes of emergency vehicle tires that should be exempted in the regulations?
  2. Would exempting high speed tires (149 miles/hour) create a loophole?

Slide 36: Staff's Proposed Regulatory Framework (20 C.C.R., §§ 3300-3311) (6 of 6)

- § 3309: Retail Disclosures
- § 3310: Compliance and Verification
- § 3311: General Administration

Slide 37: Alternatives Considered

Staff considered various alternative pathways when developing the proposed program. These include:

- Provide consumer information (on LRR tires) only
- Provide rating system and consumer information only
- Establishing different levels for a minimum efficiency performance standards
- Delay program implementation
- Do nothing

All were found to either not match the projected fuel and emission reduction and/or did not meet the directives of the enabling legislation

Slide 38: Feedback and Next Steps

- Comments can be submitted
  - https://www.energy.ca.gov/tire
    - Docket (20-TIRE-01)
    - Submit an e-Comment
- What is presented today is an initial proposal. Based on comments we receive the regulatory language will likely change before the formal rulemaking process starts later this year.
- We encourage industry and interested stakeholders to provide comments and staff will be available to meet with to consider changes

Slide 39: Contact Information

- Sebastian Serrato: sebastian.serrato@energy.ca.gov

- Jontae Clapp: jontae.clapp@energy.ca.gov
- Replacement Tire Efficiency Program Website: https://www.energy.ca.gov/tire
- Docket (20-TIRE-01)