Implications Of The Upcoming CARB regulations.

John Overing

Product and Segment Manager

Commercial Truck

California

FACTS ABOUT

Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation

Reducing Climate Change Emissions from Tractor-Trailers

What is the purpose of the regulation?

The California Air Resources Board (ARB) developed this regulation to reduce greenhouse gas emissions produced by heavy-duty tractors that pull 53-foot or longer box-type trailers by making them more fuel efficient. Fuel efficiency will be improved by requiring the use of aerodynamic tractors and trailers that are also equipped with low rolling resistance tires. Along with reducing greenhouse gas emissions, this regulation will, over time, save money, as well as reduce our dependence on foreign oil. In fact, over the course of the 11 years between 2010 and 2020, this regulation is estimated to save about $8.6 billion, as well as 750 million gallons of diesel fuel in California, and 5 billion gallons of diesel fuel across the nation.

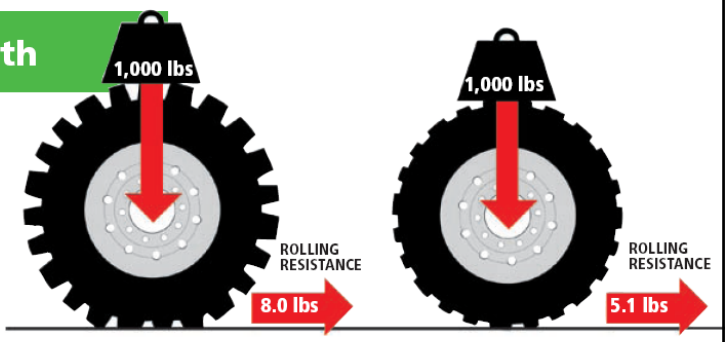
The tractors and trailers subject to this regulation must either use United States Environmental Protection Agency Smartway (SmartWay) certified tractors and trailers, or retrofit their existing fleet with Smartway verified technologies. The SmartWay certification process is part of their broader voluntary program called the SmartWay Transport Partnership Program (SmartWay program). For information about the SmartWay program, go to:
http://www.epa.gov/smartway/transport/what-smartway/tractor-trailer.htm

California

- All 2011 and newer model year tractors and trailers must be specified with Low Rolling Resistance Tires.
- Older tractors must be equipped with Low Rolling Resistance Tires by January 1st, 2012.
- Older trailers must be equipped with Low Rolling Resistance Tires by January 1st, 2013.
- Oregon recently approved legislation (HB 2186) that is similar to the CARB initiative, but the regulations have not been put in place. Other states are considering similar initiatives.

Factors Affecting RR

1. Tread Depth



XDA-HT™ *at 30/32nds*
8.0 lbs/1,000 lbs

XDA-HT™ *at 4/32nds*
5.1 lbs/1,000 lbs

Factors Affecting RR

2. Tread Design

XDS®
7.9 lbs/1,000 lbs

XDA3®
6.2 lbs/1,000 lbs

Factors Affecting RR

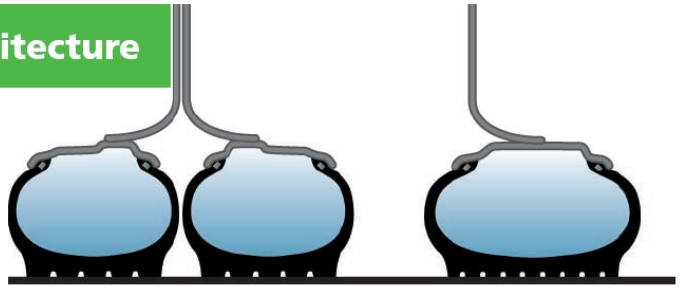
3. Compounding

XDA3®
6.2 lbs/1,000 lbs

XDA® Energy
5.6 lbs/1,000 lbs

Factors Affecting RR

4. Casing Architecture



XDA® Energy
5.6 lbs/1,000 lbs

X One® XDA®
4.9 lbs/1,000 lbs

Why this is Important.

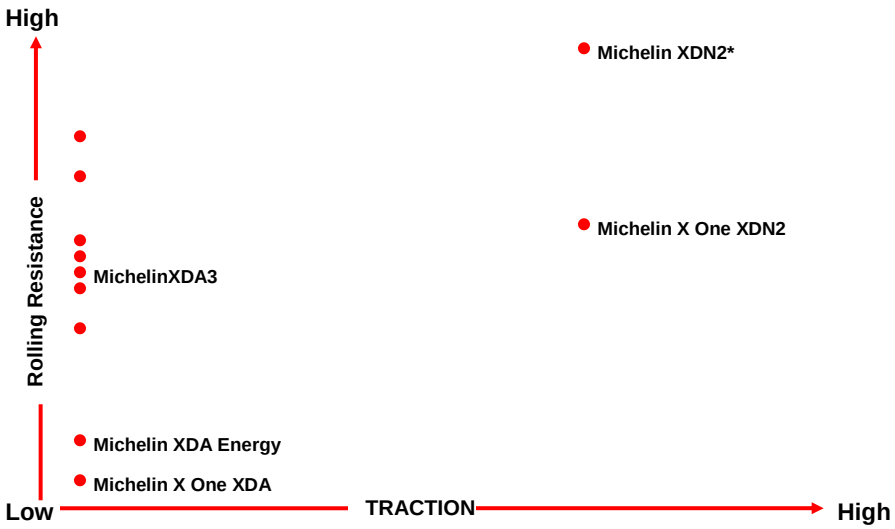
- The first three design criteria will have a direct impact on winter traction.
- No company can afford to run two dedicated fleets.
- Fleets will be forced to choose between safety and revenue.
- If more states adopt CARB style regulations, Canadian fleets could be cut out of the US market.

Michelin X One XDN2

Impact of Architecture

- Recent fuel test performed at major Canadian fleet.
- Comparison was made between identical tread designs in both dual and NGWBS tire configurations.
- Results showed a 4.67% improvement for the vehicle equipped with NGWBS tires.

Smartway Verified Drive Tires



* For comparison only. This tire is not included in the list of Smartway verified tires.