

Results You Can Expect From Eco-flaps Depending on Wind Shear (Crosswinds) Explained In Layman's Terms

It is well known that many different factors affect a tractor-trailer's drag coefficient as it travels the highway. However, one factor that may be the most influential but has not received enough attention is wind shear, also known as side or crosswind. (See 1. or 2. below)

On any given day in the U.S., Canada and Mexico, the average crosswind speed is at least 5 miles-per-hour or more. This crosswind resistance force is *in addition to* the better known head-on air resistance determined by the tractor-trailer's mph speed.

Traditional, solid surface mud flaps obstruct all air movement (including crosswinds) and increase the drag coefficient of the vehicle. Eco-flaps, on the other hand, with nearly 75% open surface area, allows an easy path for all air and wind to pass through easily and reduces drag.

Traditional flaps equal 18 square feet of flat surface hanging below the truck and trailer: 4 square feet behind each tractor tire and 5 square feet behind each trailer tire. It's like hanging more than a half sheet of plywood under your vehicle to intentionally obstruct air flow.

So, based on the crosswinds speed, the angle at which it hits the tractor and trailer (among other forces) the fuel economy is affected. And, since Eco-flaps allow the air to pass through; the harder the wind blows the higher the efficiency result will be.

Estimated results when using Eco-flaps (see 7. below)

Test Condition

Estimated Test Result

Eco-flaps with no wind	1.7% fuel savings
Eco-flaps with 10 mph direct headwind	1.7% fuel savings
Eco-flaps with 5 -7 mph crosswinds	4 – 5% fuel savings
Eco-flaps with 7 – 10 mph crosswinds	5%+ fuel savings

1 http://www.goodyear.com/truck/pdf/radialretserv/Retread_S9_V.pdf

2 http://www.me.rochester.edu/courses/ME241/5-_Truckin'.pdf

3 <http://www.ecoflaps.com/Crosswind3.pdf>

4 <http://www.ecoflaps.com/Crosswind4.pdf>

5 <http://www.ecoflaps.com/Crosswind1%20.pdf>

6 <http://www.ecoflaps.com/Crosswind2.pdf>

7. Based on various fleet on-road tests 2007 - 2011

Example of wind shear (crosswinds) on a tractor trailer

