

Model X Range Improvement Due to Drafting

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Objective: Determine any range improvement of a Tesla Model X when following behind an 18-wheel truck at various distances (see **Table 1** below).

Car: Tesla Model X Signature, P90D, 20 inch tires @ 42lbs, A/C: on, Range Mode: on.

Technique: Follow an 18-wheel truck at distances determined by the Tesla Traffic Aware Cruise Control (TACC) following settings. Record kW/mile.

- Utilized an Interstate segment about 7-miles long with flat terrain, no overpassing, sea level, 88 degrees, no significant wind, Insane Mode, Range Mode: ON. Recorded results in both road directions. (I-75, north of the Manatee County, Florida, interchange to I-275).
- Set the average energy consumption display to 5 miles. Monitored the graph to ensure no peculiarities.
- Identified a truck traveling at 65 mph**. Set the TACC to 70 mph and set the TACC following distance as in the table below. Approached the truck until the car speed dropped to the speed of the truck. Followed the truck for at least 5 miles, avoiding any nearby vehicles that may affect wind resistance. Documented the average energy consumed over 5 miles (kWh/mile) and recorded the speed.
- Repeated above for various TACC settings and suspension settings.

Summary Results at 65 MPH: Drafting at any TACC setting (1-7) improves range 5%. Lowering suspension from LOW to VERY LOW improves range 4%. (These may not be additive.)

TABLE 1: Effect of Drafting & Suspension Height at 65 MPH

Suspension Setting*	TACC Following Distance Setting	Following Time Estimate (seconds)	Following Distance Estimate (feet)	Car Lengths (@ 198")	Energy Consumption (kWh/mile)	Drafting Improvement	Suspension Improvement
Low	No Drafting	Infinite	Infinite	Infinite	299	0 (Reference)	0 (Reference)
Low	1	1.00	95 feet	6	284	5.02%	-----
Low	2	1.25	119	7	no data***	no data	-----
Low	3	1.50	143	9	no data	no data	-----
Low	4	1.75	167	10	no data	no data	-----
Low	5	2.00	190	11	no data	no data	-----
Low	6	2.25	215	13	no data	no data	-----
Low	7	2.50	238	15	285	4.7%	-----
Very Low	No drafting	Infinite	Infinite	Infinite	287	-----	4.0%

* Automatically adjusts to LOW from Standard above 50 MPH.

** On this segment, many trucks were cruise-controlled to 65 MPH.

*** Negligible difference between #1 and #7 suggested no need for this data.