

Press statement, September 18, 2015

## EPA's notice of violation of the Clean Air Act to Volkswagen

Investigation into "defeat device" allegedly used to circumvent emissions tests began with ICCT-sponsored research on in-use emissions from diesel passenger cars

Highlights the global need for vigilant enforcement of air pollution laws by regulatory agencies in all vehicle markets

The International Council on Clean Transportation applauds the U.S. Environmental Protection Agency and California Air Resources Board for their announcement today of an investigation into possible violations of the Clean Air Act by Volkswagen, through the use of defeat devices on diesel passenger cars from 2009 to 2015.

"This is a powerful affirmation of U.S. federal and California vehicle emission regulations, and of the agencies" said Drew Kodjak, ICCT's Executive Director. "Clear protocols, in-use requirements for the useful life of vehicles, clear enforcement follow-through, the authority to fine and force recalls—these are 'best practices' that regulations worldwide should incorporate, and today's announcement shows why."

The EPA and CARB action has its beginnings in an ICCT research project done in collaboration with West Virginia University during 2013 and 2014, which aimed to evaluate real-world operating emissions from light-duty diesel vehicles in the United States. The ICCT conducted in-use tests, using portable emissions modeling systems, on three vehicles: a VW Jetta, a VW Passat, and a BMW X5.

In the tests, conducted over five pre-defined routes categorized based on their predominant driving conditions (highway, urban/suburban, and rural-up/downhill driving), real-world nitrogen oxide (NOx) emissions from the Jetta exceeded the US-EPA Tier2-Bin5 (at full useful life) standard by 15 to 35 times. For the Passat, real-world NOx emissions were 5 to 20 times the standard. The BMW vehicle was generally at or below

the standard, and only exceeded it during rural uphill operating conditions. (See the detailed fact sheet below for more on this study.)

"The BMW vehicle's performance on the in-use tests shows that the technology needed to meet the U.S. motor vehicle air pollution emission standards for diesels is available," said Francisco Posada, who led the research project.

John German, U.S. program lead for the ICCT, said that "The huge discrepancy in real-world performance among these vehicles makes it clear that without vigilant enforcement of air pollution laws, companies that comply with the standards will be placed at a competitive disadvantage. If left unchecked that could undermine the whole regulatory framework. That's why the actions by EPA and CARB are so important."

Drew Kodjak emphasized that excessive pollutant emissions during real-world driving is not something confined to the United States. ICCT research studies in Europe have repeatedly found large and growing gaps between real world emissions and the regulatory certification levels. "This is a global problem that will require a coordinated global solution," said Kodjak.

#### **For further information:**

"In-use emissions testing of light-duty diesel vehicles in the U.S." (ICCT)  
<[www.theicct.org/use-emissions-testing-light-duty-diesel-vehicles-us](http://www.theicct.org/use-emissions-testing-light-duty-diesel-vehicles-us)>

U.S. EPA notice of violation:  
<<http://www3.epa.gov/otaq/cert/documents/vw-nov-cao-09-18-15.pdf>>

CARB letter to Volkswagen Group of America:  
<[http://www.arb.ca.gov/newsrel/in\\_use\\_compliance\\_letter.htm](http://www.arb.ca.gov/newsrel/in_use_compliance_letter.htm)>

#### **Contacts**

Drew Kodjak, Executive Director, (Washington DC), [drew@theicct.org](mailto:drew@theicct.org), 202.285.3672 (cell)

John German, US program co-lead (Ann Arbor), [john@theicct.org](mailto:john@theicct.org), 734.355.1055 (cell)

Nic Lutsey, U.S. program co-lead (Washington DC), [nic@theicct.org](mailto:nic@theicct.org), 530.848.3740 (cell)

Anup Bandivadekar, passenger vehicles program lead (San Francisco),  
[anup@theicct.org](mailto:anup@theicct.org), 202.316.4348 (cell)

## **FACT SHEET: Light-duty diesel in-use tests**

In 2013, the ICCT contracted with the Center for Alternative Fuels, Engines and Emissions at West Virginia University to conduct in-use emissions tests on three light-duty diesel vehicles: a Volkswagen Jetta, a VW Passat, and a BMW X5. The full results and analysis are available here: <<http://www.theicct.org/use-emissions-testing-light-duty-diesel-vehicles-us>>

### Key information:

- The testing was done using a portable emissions measurement system (PEMS), which provides a continuous stream of vehicle data signals including emission rates, velocity, acceleration, road gradient and exhaust temperature. PEMS data was gathered over a variety of pre-defined test routes exhibiting diverse driving conditions pertinent to major United States population centers located in California. The city-driving route selected was the “Los Angeles Route Four” loop (LA4), which was ultimately used in developing the original FTP vehicle certification cycle [11], with some minor modifications at locations where the traffic pattern or roads have changed since the FTP’s development.
- Additionally, the Passat was operated over an extended distance of nearly 2,500 miles predominantly composed of highway driving conditions between California and Washington State.
- The three test vehicles were certified to US-EPA Tier2-Bin5 and California LEV-II ULEV emissions limits and were equipped with NOx after-treatment technologies: the Jetta was tested with a lean-NOx trap (LNT), the Passat with a urea-based selective catalytic reduction (SCR) system, and the BMW X5 with an SCR system. All three test vehicles were thoroughly checked for possible engine or after-treatment malfunction codes using an on-board diagnostics (OBD) scanning tool, with none of them showing any fault code or other anomalies. No reduction in catalytic activity due to aging was expected, as the total mileage was relatively low (< 15,000 miles) for all test vehicles.
- The two VW vehicles were tested over the FTP-75 certification cycle at California Air Resources Board’s (CARB) El Monte vehicle certification test facility, and their NOx emissions were below the US-EPA Tier2-Bin5 standard.
- Real-world NOx emissions, as reported by the PEMS, were found to exceed the US-EPA Tier2-Bin5 (at full useful life) standard by a factor of 15 to 35 for the Jetta, and by a factor of 5 to 20 for the Passat, over five pre-defined routes categorized based on their predominant driving conditions (highway, urban/suburban, and rural-up/downhill). The BMW was generally at or below the standard and only exceeded the standard during rural uphill operating conditions.

- The VW vehicles met the emission standard on FTP-chassis dynamometer tests, which include cold-start NO<sub>x</sub> emissions. But the on-road emissions testing was performed with the engine and after-treatment in warmed-up condition (i.e. warm/hot start), and the VW vehicle emissions were 5 to 35 times the standards during on-road testing, which did not include cold-start NO<sub>x</sub> emissions. This inconsistency was a major factor in ICCT's decision to contact CARB and EPA about our test results.
- In general, carbon monoxide (CO) and total hydrocarbon (THC) emissions were observed to be well below the U.S. regulatory levels for all three test vehicles. Particulate number (PN) emissions, inferred from particle sensor (PPS) measurements, were observed below the Euro 5b/b+ standard except during vehicle operation exhibiting DPF regeneration events.
- This project was part of a larger meta-analysis of PEMS data from EU (Euro 6) and US (Tier 2 Bin 5/ULEV II) diesel passenger cars. (For details on this project, see <http://www.theicct.org/real-world-exhaust-emissions-modern-diesel-cars>) This broader study analyzed the on-road emissions performance of fifteen new diesel passenger cars, twelve certified to the Euro 6 standard and three to the US Tier 2 Bin 5 standard (which is more stringent than Euro 6). Emissions were measured over 97 trips, totaling more than 140 hours of operation and 6,400 kilometers driven. On average, real-world NO<sub>x</sub> emissions from the tested vehicles were about seven times higher than the limits set by the Euro 6 standard. In most cases the exceedances found could not be attributed to “extreme” or “untypical” driving. Instead, they were due to transient increases in engine load typical of everyday driving (e.g., going up a slight incline), or to normal regeneration events in the diesel exhaust aftertreatment systems.
- Performance differences among the vehicles tested indicate that the technologies for real-world clean diesels already exist. Some of the tested vehicles, such as the BMW X5, had average emissions below Euro 6 emission limits, suggesting that the technologies to achieve that level of performance are available.