

PROPOSED NATIONAL FUEL CONSUMPTION STANDARD FOR COMMERCIAL HEAVY-DUTY VEHICLES IN CHINA

ICCT POLICY UPDATES

SUMMARIZE
REGULATORY
AND OTHER
DEVELOPMENTS
RELATED TO CLEAN
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WORLDWIDE.

On September 24, 2012, China's Ministry of Industry and Information Technology (MIIT) put forward a proposal for a National Fuel Consumption Standard for new commercial heavy-duty vehicles (HDVs). The proposed standard stipulates a set of limits on the fuel consumption for new commercial trucks, dump trucks, tractors, coaches and buses with gross vehicle weight over 3,500 kg. The standard would take effect from July 1, 2014 onwards.

BACKGROUND

MIIT first announced its plan to develop fuel consumption standards for commercial HDVs in 2008. As a first step, the China Automotive Technology & Research Center (CATARC) was commissioned by MIIT to develop a fuel consumption test procedure that combined chassis dynamometer testing and simulation modeling.¹ In brief, the test procedure requires that fuel consumption of *base* models be measured using chassis dynamometer testing, whereas fuel consumption of *variants* may be measured using a computer simulation model developed by CATARC (see Box 1 for a definition of *base* and *variant* models). The final test procedure was formally adopted in December 2011.²

In order to determine the stringency of the HDV fuel consumption standards, CATARC and two other testing laboratories conducted a study to estimate the fuel consumption level of the newest vehicles from the existing fleet. This study was performed in 2010 and 2011 by following the previously mentioned test procedure on a number of vehicles. The resulting data, collected from a combination of chassis and simulation tests of over 300 HDVs, were then used as the basis for setting an Industry Standard for HDV fuel consumption (known as the Stage I standard), which was adopted by MIIT in January 2012.³

- 1 Zheng, T., Jin, Y., Wang, Z., Wang, M. et al., "Development of Fuel Consumption Test Method Standards for Heavy-Duty Commercial Vehicles in China," SAE Technical Paper 2011-01-2292, 2011, doi:10.4271/2011-01-2292. (<http://papers.sae.org/2011-01-2292/>).
- 2 MIIT. 2011. GB/T27840-2011. Fuel consumption test methods for medium- and heavy-duty commercial vehicles. (<http://www.miit.gov.cn/n11293472/n11295142/n11299183/14415104.html>) (*Chinese*)
- 3 MIIT. 2012. QC/T924-2011. Fuel consumption limits for heavy-duty commercial vehicles (The first stage) (<http://www.miit.gov.cn/n11293472/n11295023/n11310717/14442598.html>). (*Chinese*) See the English summary in TransportPolicy.net (http://transportpolicy.net/index.php?title=China:_Heavy-duty:_Fuel_Consumption).

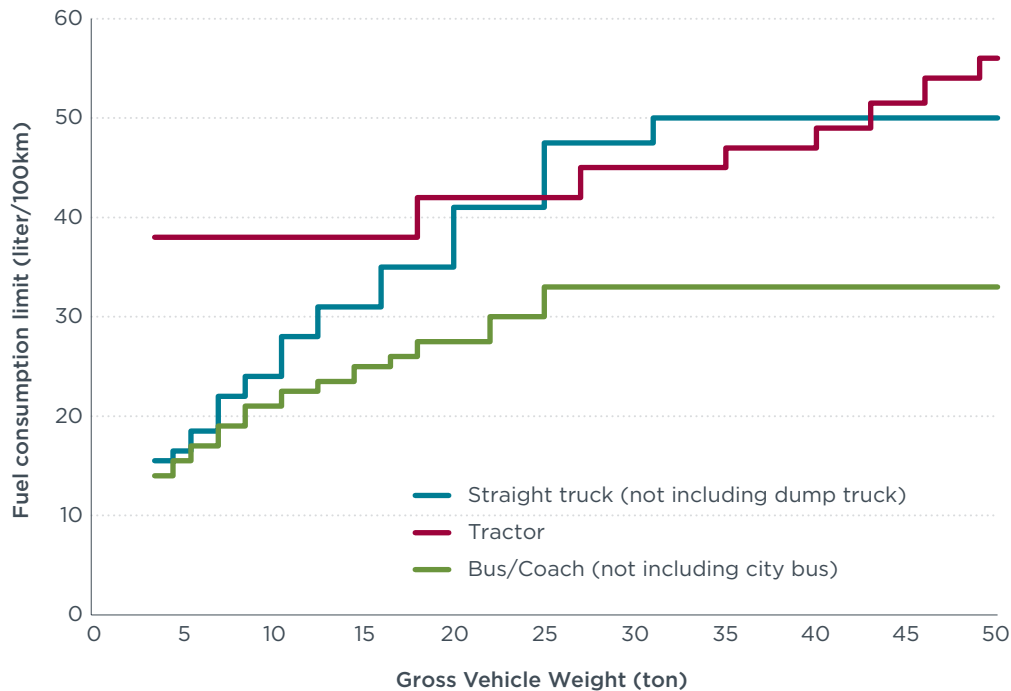


Figure 1. Fuel consumption limits stipulated in China’s Industry Standard (known as Stage I) for new commercial heavy-duty vehicles

The Industry Standard sets fuel consumption limits for three types of HDVs: tractors, straight trucks and coaches (Figure 1). It requires manufacturers to report fuel consumption performance of all new models applying for type approval starting from February 1, 2012. By July 1, 2012, the standard mandates all new models applying for type approval must not exceed the fuel consumption limits set in the Industry Standard. Starting July 1, 2014, all new vehicles manufactured in China from the three regulated vehicle categories are required to comply with the Industry Fuel Consumption Standard.

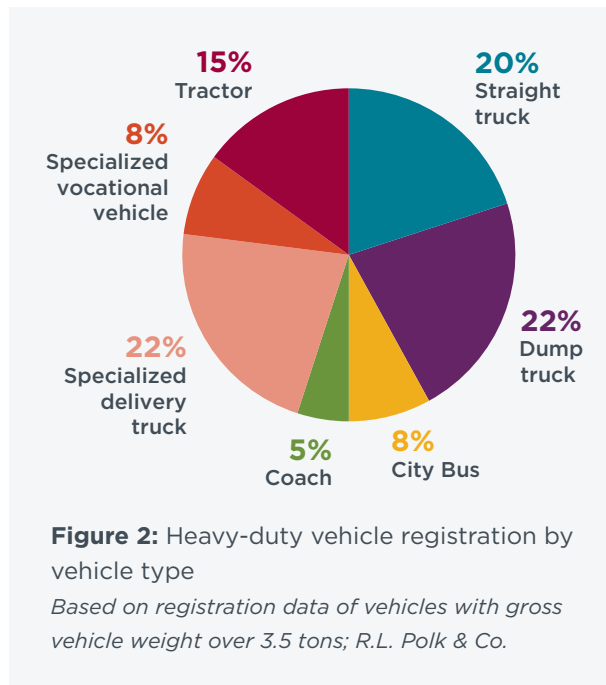
Due to a relatively limited understanding of the HDV market and fuel consumption level at the time, the Industry Standard was intentionally set at a level that manufacturers could meet relatively easily⁴, and it focused on the three vehicle types with highest sales and highest expected overall fuel consumption. At that time, the plan was to develop a more comprehensive National Standard in 2012.

PROPOSED NATIONAL STANDARD

Over the course of 2012, MIIT collected more fuel consumption data through additional testing and simulation performed on the latest models of the five regulated vehicle categories, but with a special focus on city buses and dump trucks. The agency also obtained additional fuel consumption data of new models through the new fuel consumption type approval process for the Industry Standard. Based on a broader set of fuel consumption data, MIIT proposed the next stage of HDV fuel consumption standard in September 2012. The following are the key elements of the proposed National Standard (Stage II standard):

⁴ MIIT. 2011. Industry Standard - Fuel Consumption Limits for Heavy Commercial Vehicles (Stage 1) (Disclosure Draft) Edition Description (*Chinese*).

- » Sets maximum fuel consumption levels for five vehicle types—tractors, straight trucks, dump trucks, city buses and coaches. (Dump trucks and city buses were not included in the Industry Standard). The five regulated vehicle categories account for over 90% of new HDV sales.⁵ Specialized vocational vehicles (like cement trucks), which contribute to about 8% of new HDV sales, are exempted from the proposed regulation (Figure 2).
- » Uses liter per 100km as the evaluation metric, consistent with the Industry Standard.



DEFINITION OF BASE AND VARIANT MODEL

Commissioned by MIIT, the China Vehicle Technology Service Center issued the definitions of *base* and *variant* vehicle, specifying that a vehicle can be considered a variant of a base vehicle only if there are **no** changes in the following design parameters:

- » Vehicle type (tractor; dump truck; truck, other than dump truck; city bus; bus, other than city bus)
- » Fuel type
- » Power required to operate engine-driven accessories (unless power is reduced)
- » Chassis bearer (load-, semi-, and non load-bearing)
- » Body style of buses/coaches (i.e. double decker, articulated, low floor, etc)
- » Type of truck cab
- » Frontal area (unless area is reduced)
- » Type of drive train and position of drive axle
- » Transmission type and number of gears
- » Gross mass (within same mass bin)
- » Number of axles

Within the same vehicle family, which encompasses the base and its variant models, the base model must be the model with:

- » the highest gross vehicle weight within the vehicle family
- » the highest rated power for engines from the same manufacturer and same engine family, or model using an engine with the highest certified fuel consumption
- » the largest frontal area
- » the smallest net load tire rolling radius, widest cross-section area
- » largest gross transmission ratio
- » or combination of the above

Source: China Vehicle Technology Service Center. 2012. "Specific regulation regarding implementing the management of heavy-duty vehicle fuel consumption catalog (provisional)". January. (<http://www.cvtsc.org.cn/cvtsc/zcfg/692.htm>, accessed Nov. 26, 2012). (*Chinese*)

⁵ Based on the China HDV sales data from January 2007 to August 2010.

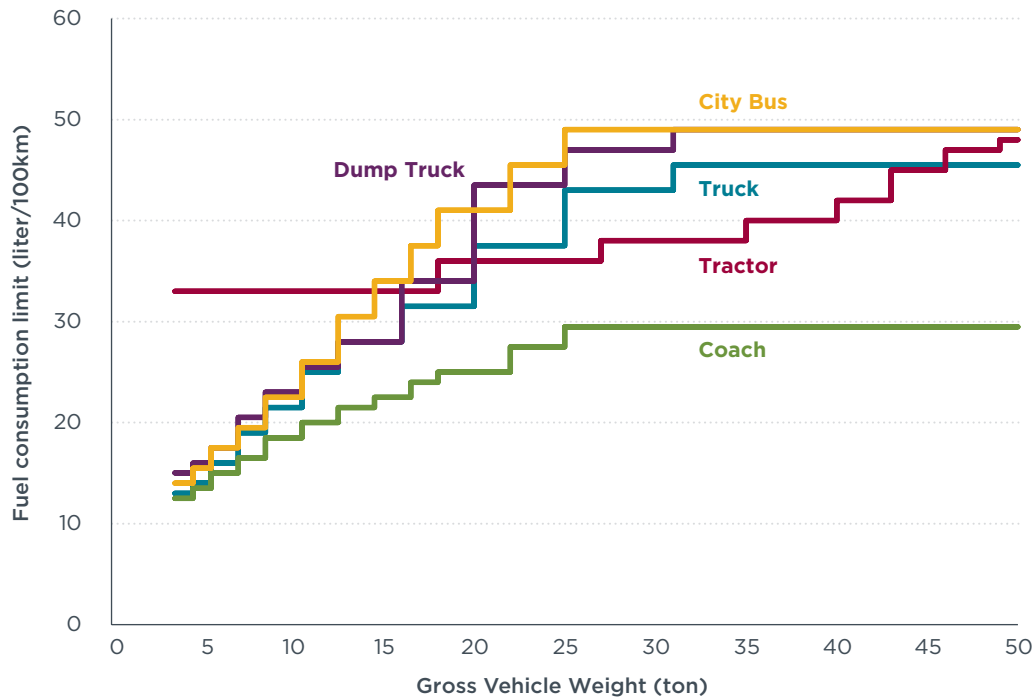


Figure 3. Fuel consumption limits stipulated in the proposed China National Fuel Consumption Standard for new commercial heavy-duty vehicles

- » Similar to the Industry Standard, the National Standard sets fuel consumption limits following a step function, using gross vehicle weight as the utility parameter (Figure 3).
- » Tightens vehicle consumption limits for tractors, trucks and coach by an average of 10.5% to 14.5% compared to the limits under the Industry Standard (Figure 4).⁶
- » About half of the models tested for fuel consumption to date cannot meet the proposed fuel consumption limits; under this regulation, new fleet average HDV fuel consumption is expected to drop approximately 11% by 2015, resulting in 5 - 6 million tons of reduced annual oil consumption.⁷
- » Specifies less stringent fuel consumption limits for gasoline straight trucks and coaches: gasoline models are subject to 20% higher fuel consumption limits than diesel models.
- » The proposed National Standard is to be implemented for new HDV models applying for type approval starting from July 1, 2014; by July 1, 2015, all new commercial HDVs manufactured in China (except for specialized vocational vehicles) are required to comply with the National Standard.

⁶ MIIT. 2012. National Standard - Fuel Consumption Limits for Heavy Commercial Vehicles (Stage 1) (Disclosure Draft) Edition Description. (Chinese) Simple arithmetic average, has not accounted for sales share of each weight bin.

⁷ Jin, Y. 2012. Control strategies for China heavy-duty commercial vehicle fuel consumption. Presentation at ICCT 2012 Council Summit. November.

NEXT STEPS

The proposed National Standard has been approved by the National Technical Committee of Auto Standardization.⁸ The stringency and implementation timeline proposed in the National Standards were approved without changes. A final standard will be submitted to the Standardization Administration of China (SAC) for discussion and adoption in the next few months. An enforcement plan is expected to be developed by MIIT in 2013.

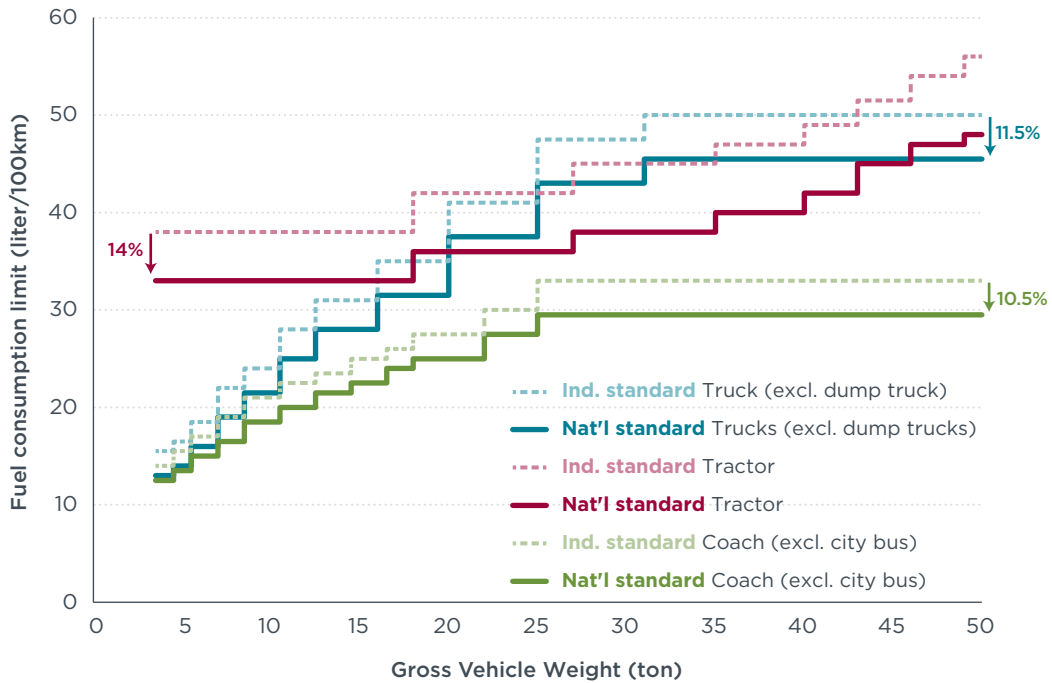


Figure 4. Comparison of the stringency of the Industry Fuel Consumption Standard and the proposed National Fuel Consumption Standard for new commercial heavy-duty vehicles

⁸ MIIT. The National Fuel Consumption Standard for commercial HDVs has been approved by the National Technical Committee of Auto Standardization. (<http://www.miit.gov.cn/n11293472/n11293832/n11293907/n12246780/15022270.html>) (Chinese)