

# China Experience with Fuel Efficiency Standards

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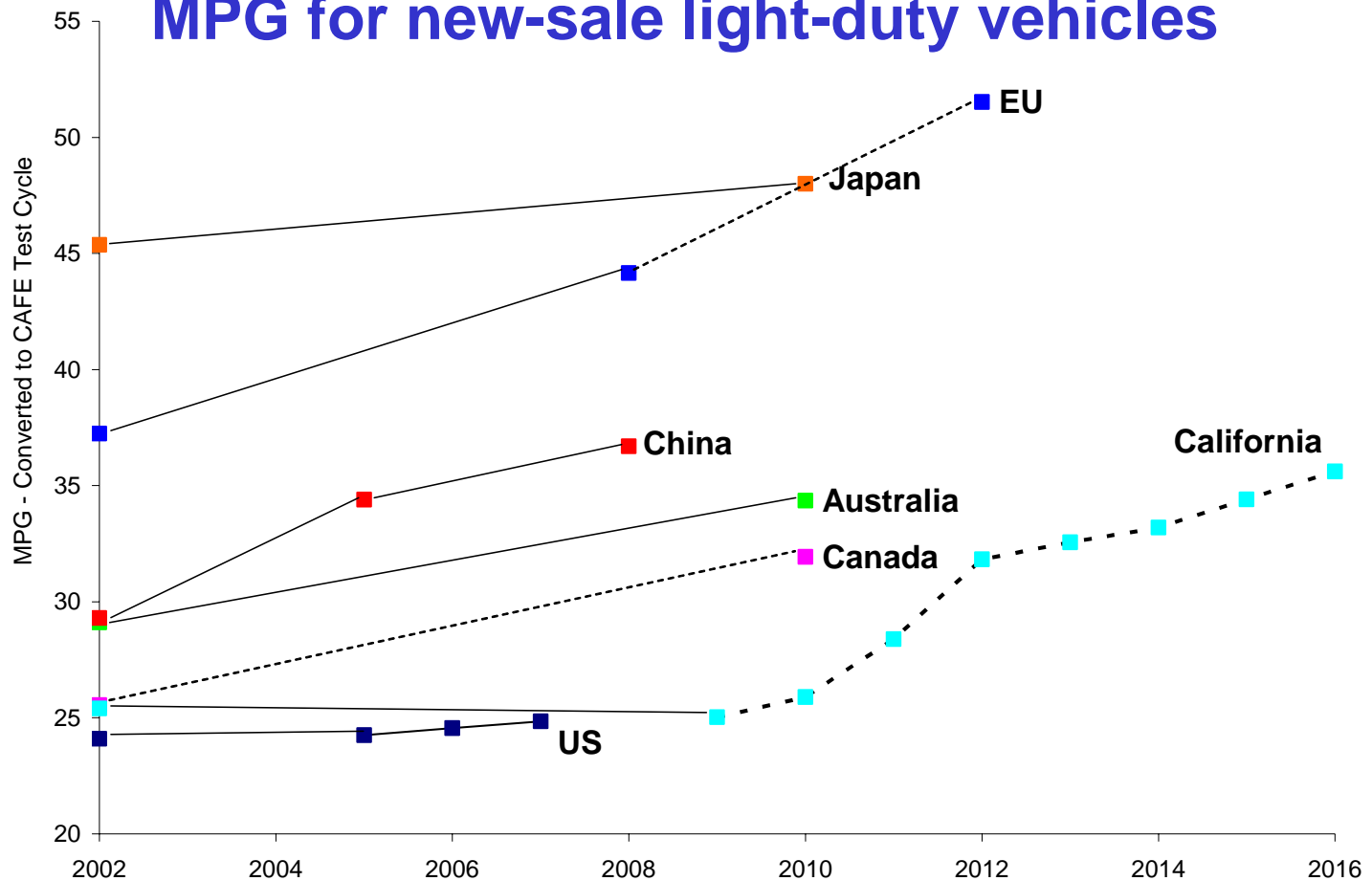
# Global Trends in Vehicle FE Standards

## - Overview of Countries and Regions that have Vehicle Fuel Efficiency and GHG Standards

At-least nine countries and regions have established or proposed motor vehicle fuel efficiency or GHG emission policies. Due to various historic, cultural and political reasons, different countries and regions chose to adopt different fuel efficiency or GHG standards

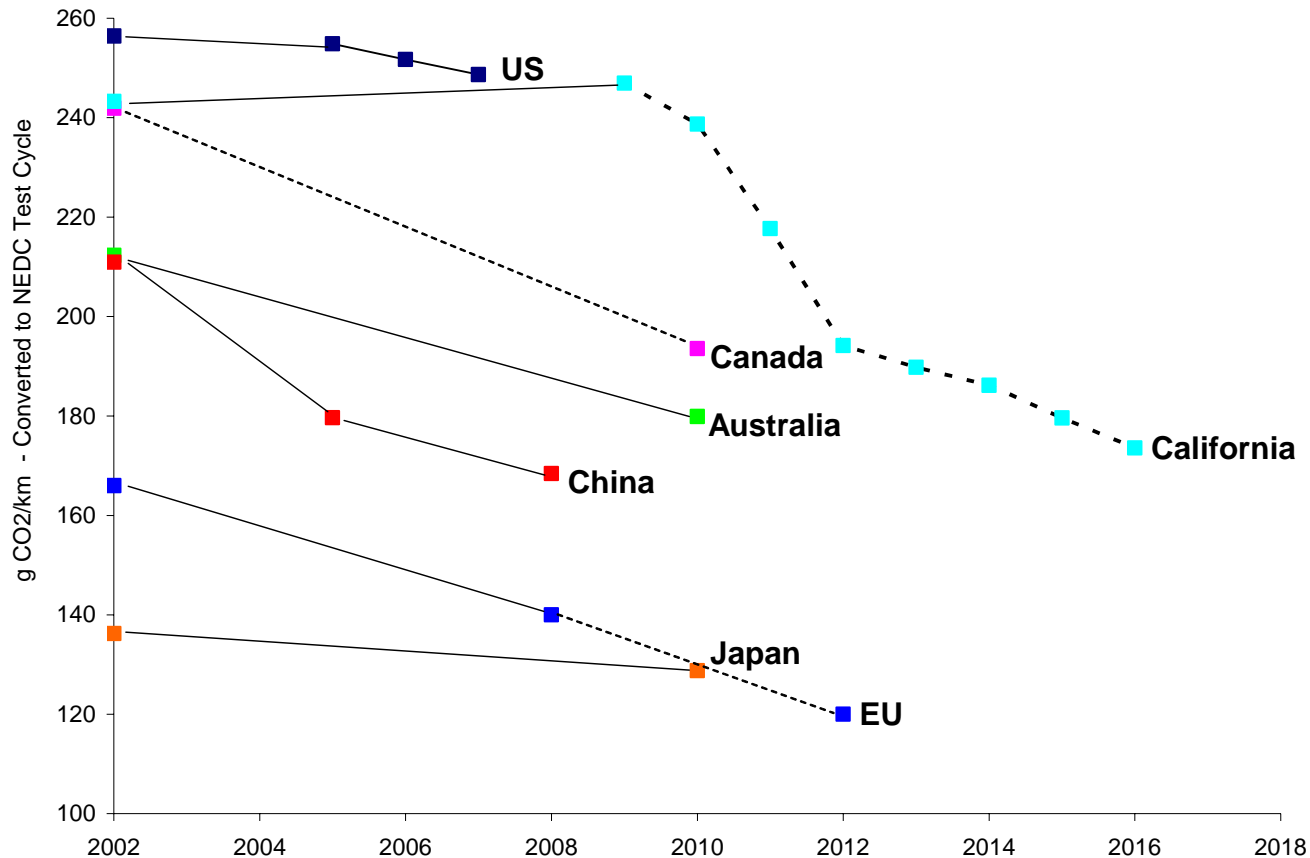
<i>Countries/regions</i>	<i>Types</i>	<i>Measures</i>	<i>Structures</i>	<i>Test Methods</i>
The United States	Fuel	MPG	Cars and Trucks	US CAFE
European Union	CO <sub>2</sub>	g/km	Overall fleet	EU NEDC
Japan	Fuel	km/L	Weight-based	Japan 10-15
China	Fuel	L/100-km	Weight-based	EU NEDC
California	CO <sub>2</sub>	g/mile	Car/LDT1 and LDT2	US CAFE
Canada	Fuel	L/100-km	Cars and Trucks	US CAFE
Australia	Fuel	L/100-km	Overall fleet	EU NEDC
Taiwan, Korea	Fuel	Km/L	Engine size	US CAFE

# Comparison of fleet average fuel economy and GHG emission standards standardized by CAFE-converted MPG for new-sale light-duty vehicles



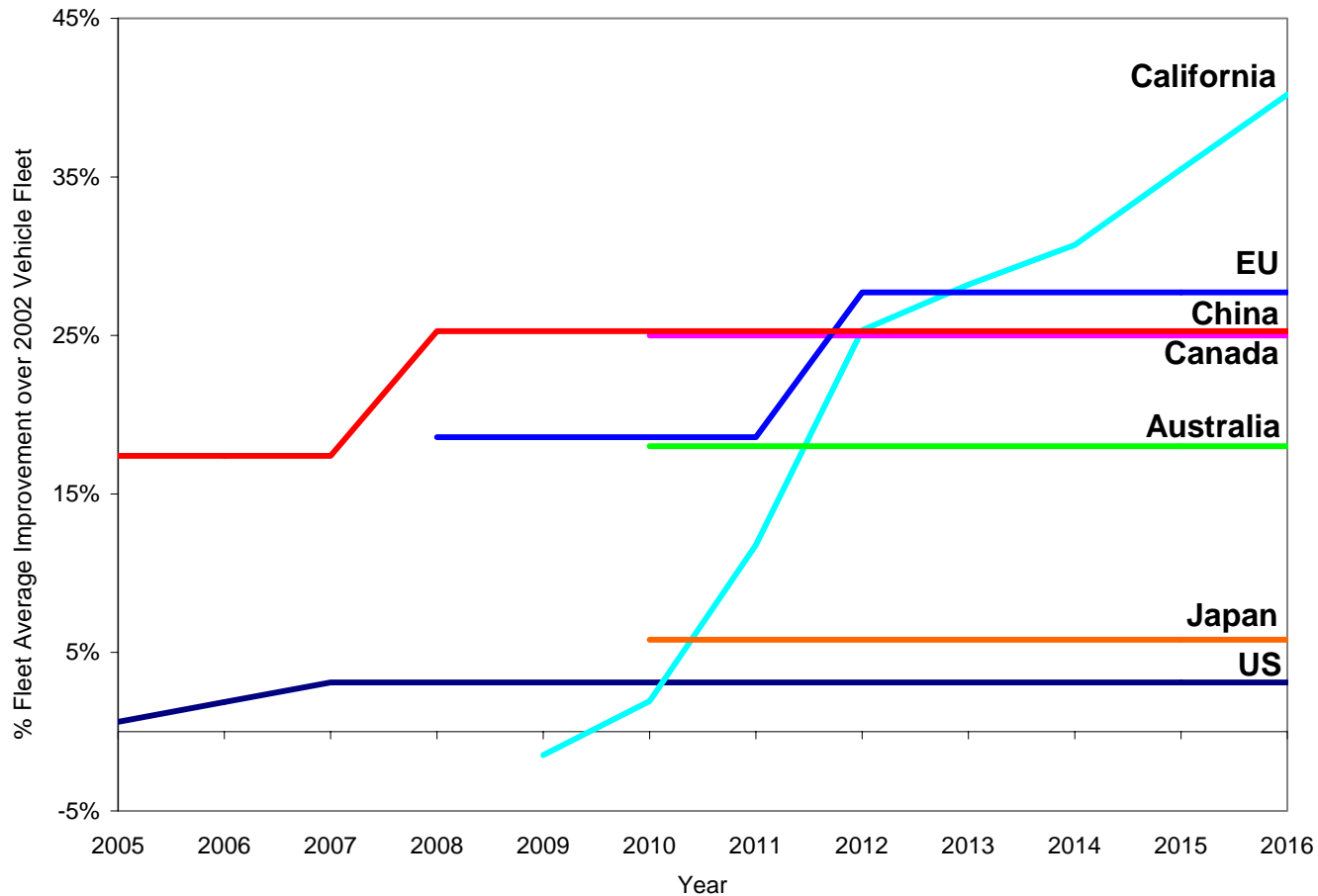
Source: Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards around the World, by Feng An and Amanda Sauer, Report for *the Pew Center on Global Climate Change*

# Comparison of fleet average fuel economy and GHG emission standards standardized by NEDC-converted gCO<sub>2</sub>/km for new-sale light-duty vehicles



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# Comparison of fuel economy standards by percentage improvement over 2002 baseline year



Source: Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards around the World, by Feng An and Amanda Sauer, Report for *the Pew Center on Global Climate Change*

# Development of Chinese Vehicle Fuel Consumption Standards Began in 2000

- First multi-agency workshop held in December 2000
- Feasibility study started in 2001
- The first set of standards focuses on light duty passenger vehicles
- Light Duty Vehicle Fuel Efficiency Test Procedure was adopted and issued in 2003
- Fuel consumption standards were reviewed and approved by WTO in May 2004
- Officially approved by Chinese government in Sept., 2004

# Key Elements for Success

- **Strong government desire to reduce transportation oil use**
  - **Consensus building among stakeholders**
  - **Inter-agency working group**
  - **Clear objectives and drivers**
  - **Active involvement of key players**
  - **Auto industry participation**
  - **Strong technical analysis**
    - **Data collection and industry surveys**
    - **Establish fuel economy frameworks with Chinese context**
  - **Mechanism for compliance and enforcement**
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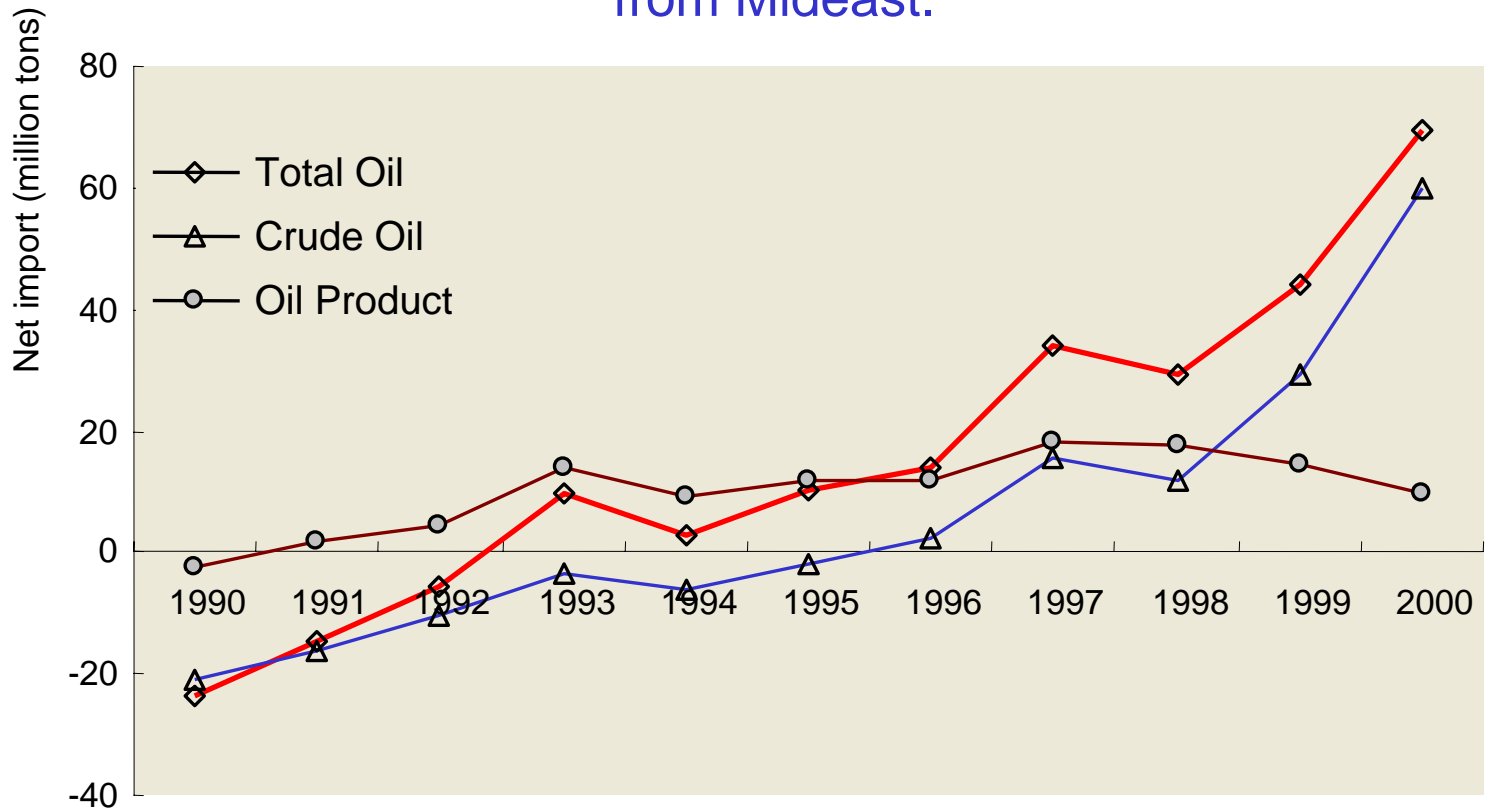
# Major Driving Forces for Chinese Vehicle FC Standards

- **Reduction in oil import for energy security**
- **Industry consolidation – currently too many car manufacturers in China, government calls for consolidation to eliminate small, inefficient firms**
- **Transfer of better technologies from JVs' foreign partners. Increase competitiveness of China's auto industry**



# Oil Import to China

China currently ranked 2nd in oil consumption in the world after US. From 1993 China has turned into an oil net-import country, and in 2004 the net-import oil amount has reached 40% of the total oil use. About half of imports from Mideast.



# Data Collection and Industry Surveys

- Big tasks for developing countries like China

- Motor vehicle sales data by vehicle models
- Fuel economy or consumption data by vehicle model
- Breakdown of motor vehicle data by weight or class categories
- Imports versus domestic models
- Motor vehicle registration data
- State of local vehicle technologies

# Technical analyses and modeling are critical in making sound policy decisions

- Vehicle stock models to forecast future vehicle sales and population
- Transportation fuel demand & supply forecasting
- International vehicle technological trend and best practice, advanced vehicle technology forecasting and modeling
- Cost-effectiveness analysis and modeling of adopting fuel economy technologies
- Establishing technology and cost scenarios. Scenario analysis and modeling of vehicle fuel economy targets and options
- Estimating transportation fuel saving potential

# Establish Fuel Economy Frameworks

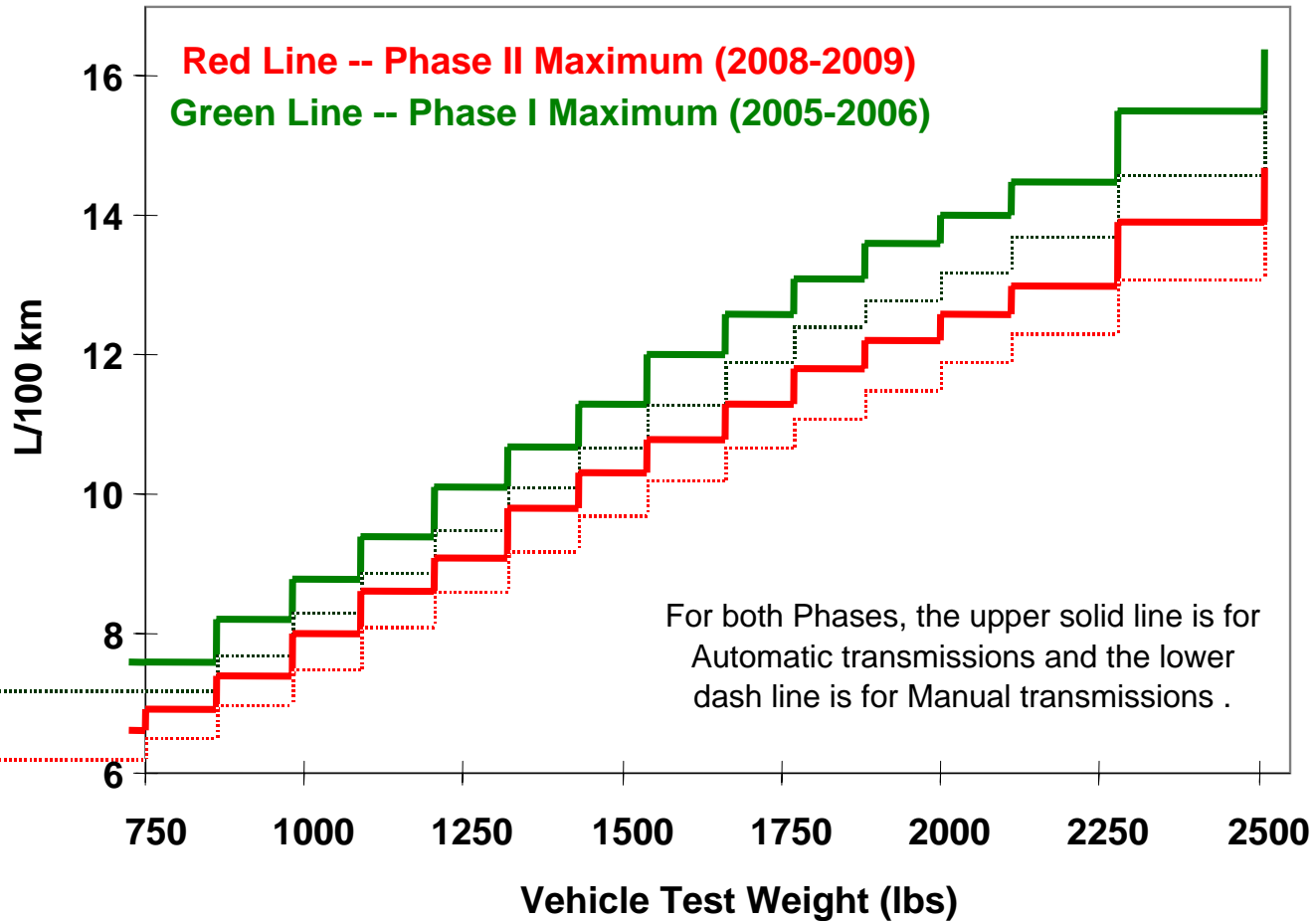
- Survey international practices  
(US, EU, Japan, CA, Taiwan ...)
- Select regulation structure and framework
- Establish
  - testing protocol
  - reporting and certification process
  - labeling system
  - standards (individual vs. fleet average)

# Highlights of Chinese Motor Vehicle Fuel Consumption Standards

- M1 and M1G type vehicles (EU classification), including passenger cars, SUVs and MPVs less than 9 seats
- Two separate sets of standard for:
  - passenger cars with manual transmission
  - passenger cars with automatic transmission, SUVs and MPVs with 3+ rows (all transmission types)
- Weight-based, 16 classes (based on EU emission wt. categories )
- Based on European Test Cycle (NEDC)
- Liters/100 km
- Maximum fuel consumption level for individual vehicle models within each wt. class, instead of average value associated with each wt. class

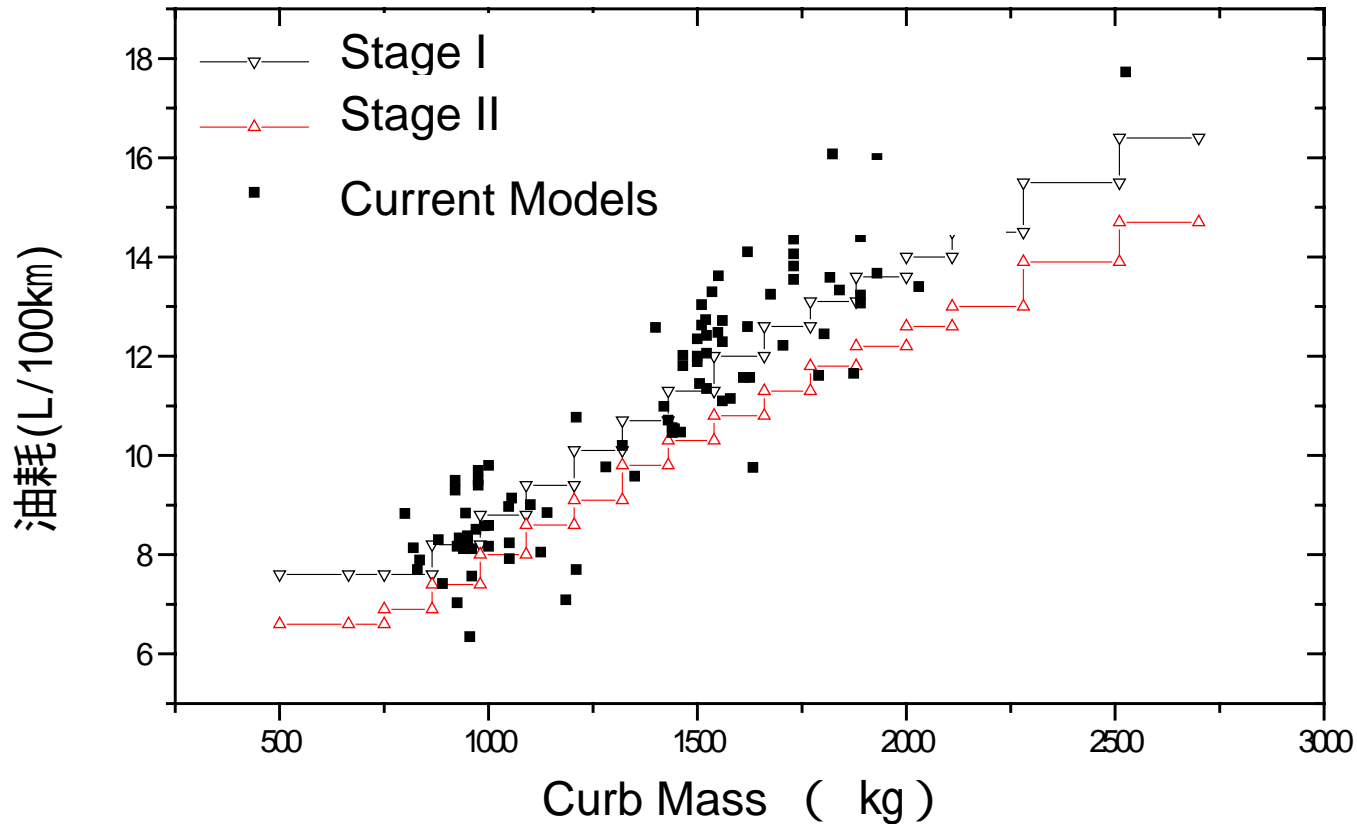
# China Light-duty Vehicle Fuel Consumption Standards

	New models	Continued models
Phase I	7/1/2005	7/1/2006
Phase II	1/1/2008	1/1/2009

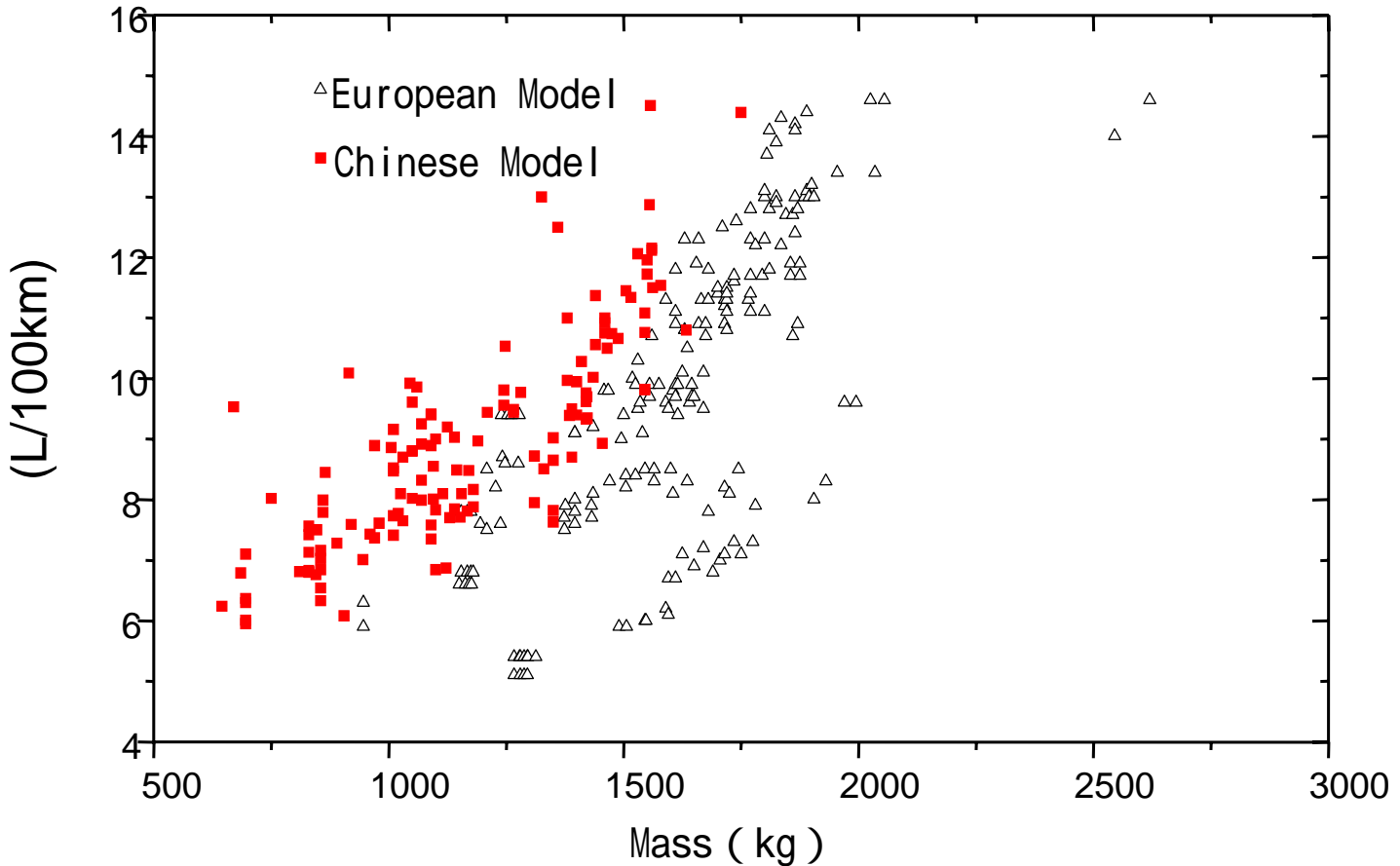


# China's Current SUVs, MPVs and Automatic Cars (Black Dots) vs. Fuel Consumption Limits in L/100 km

Black line- Phase I, Red line – Phase II  
82% of 2002 models fail to meet Phase II



# Current Chinese (red dots) vs. European Models (black triangles) - Smaller but less efficient

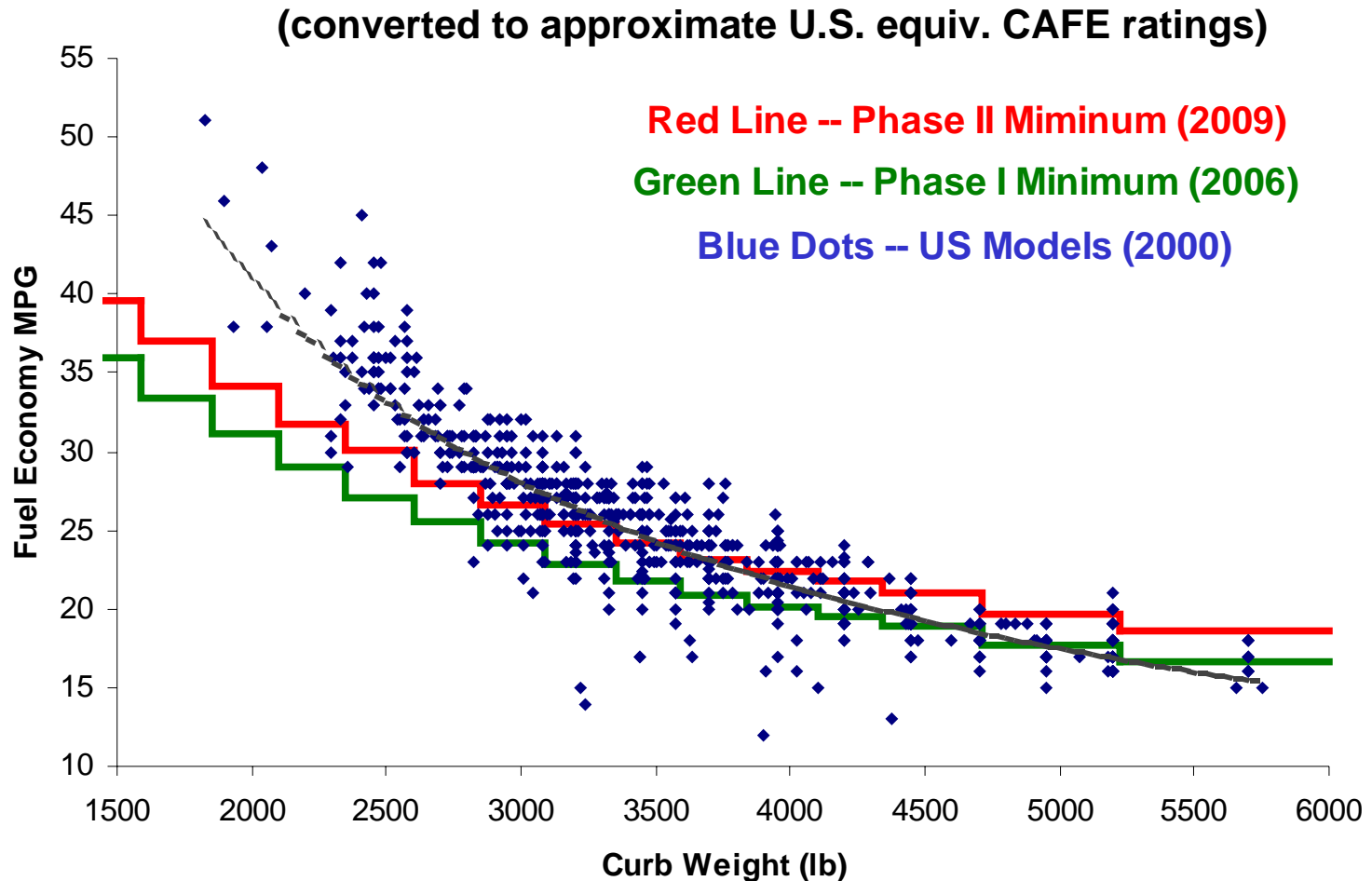


(Source: CARTAC)

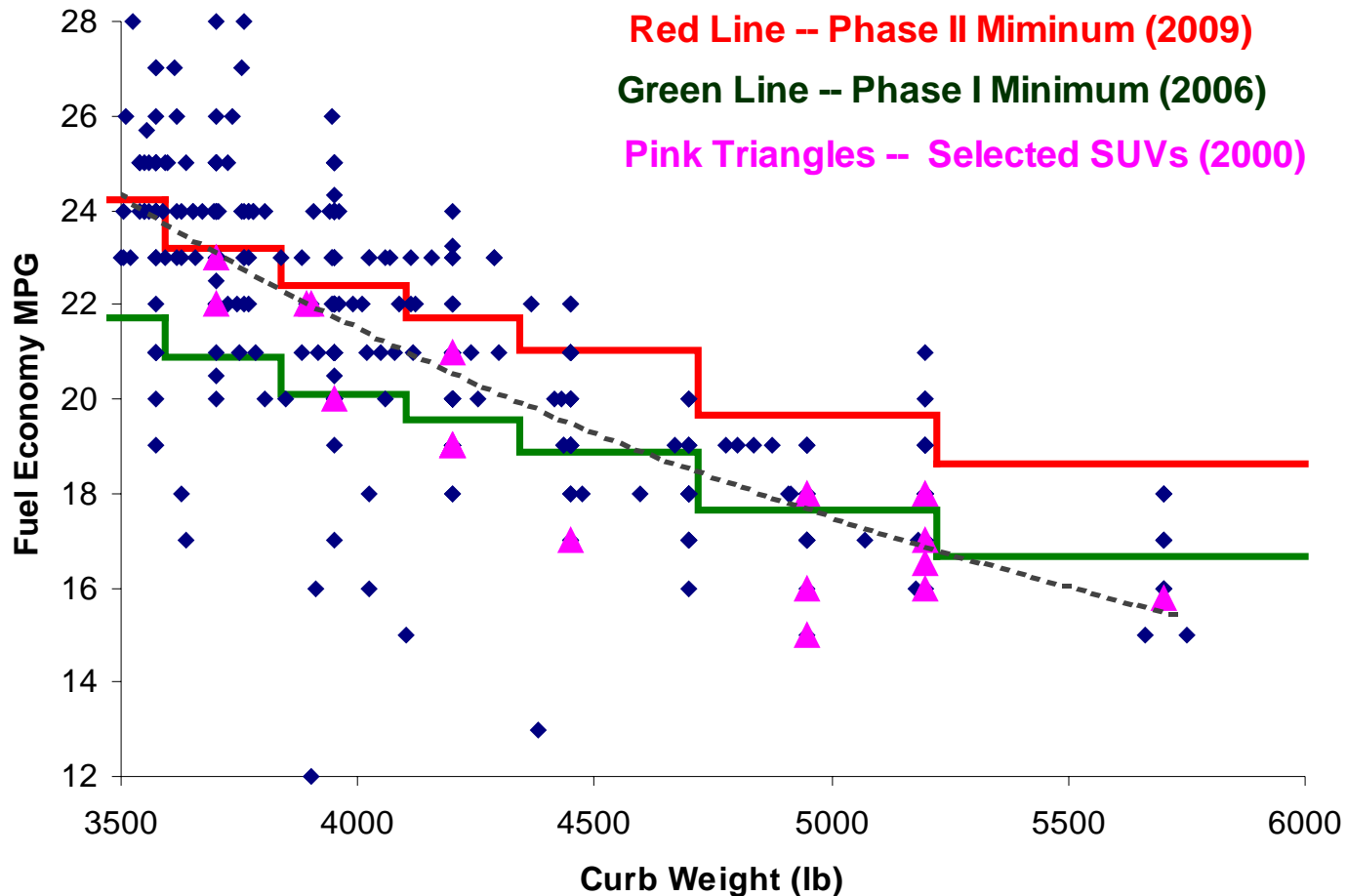


# “Converted” Chinese Standards vs. US

- Loose on Light, Tight on Heavy Models



# About Half of US Models heavier than 3500 lb Would “Fail” China Phase I, Most SUVs Would “Fail” Phase II



# “Chain of Command” for Compliance

- Promulgated by Department of Standardization, China State Bureau of Quality and Technical Supervision
- Testing by Certified Independent Testing Facilities (currently seven)
- Reporting to Industry Policy Bureau, National Development and Reform Commission (NDRC) to Obtain Permission to Produce and Sale
- Licensing/Registration Through Motor Vehicle Management Division, Ministry of Public Security

# Options for Enforcement

- Encourage compliance. Get the standards into existing vehicle certification system
- Production/licensing control for non-compliance vehicles
- Economic penalty to non-compliance vehicles, e.g. gas guzzler tax
- Report and Publish dates and values of fuel efficiency standards
- Offer consumer incentives: tax reductions for better or early implemented fuel economy vehicles. Piggybacking on low emission (Euro III) incentives?