Automotive Regulations & Certification Processes

A global manufacturer's perspective

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For more than 185 years, Navistar has been a leading global manufacturer of commercial trucks, buses, defense vehicles and engines.

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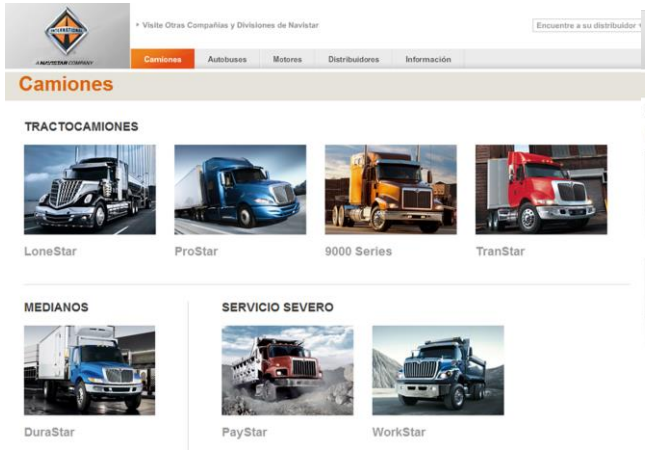

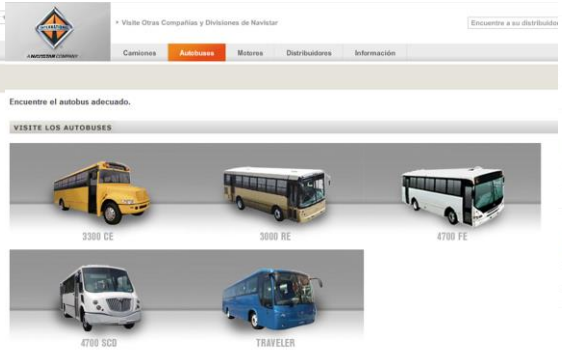

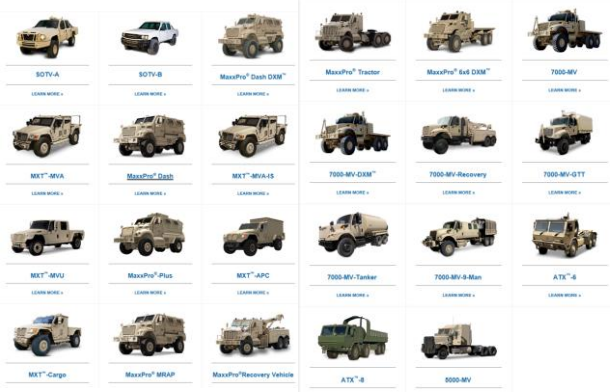

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FIAT CHRYSLER AUTOMOBILES

Ford

GM

Outline

- Regulations & Certification
  - US processes
  - ECE processes
- Recommendations
- Questions

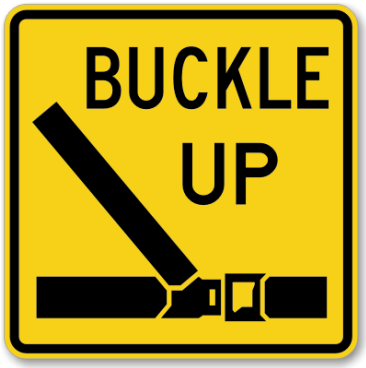
The World without Regulatory Borders

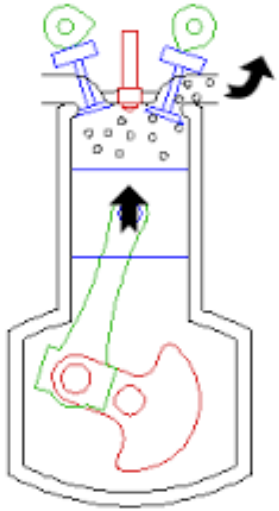
- We live in an increasingly interrelated and integrated world
- Global automakers build and sell in markets across the world, promoting trade and investment
- The ideal is to *test once and sell anywhere*, maintaining high levels of safety and environmental protection

Automobile Safety & Environmental Impact

Governments everywhere are looking for ways to make their roads safer and reduce the impact on the environment associated with motor vehicles.

- According to the UN's WHO, road traffic accidents are one of the world's top 10 causes of death.
- Some studies have found that almost ¼ of CO_2 emissions comes from cars and trucks.





How to Address These Societal Challenges

There are two major - *equally robust* - sets of existing vehicle safety and environmental regulations.

1. **US Federal Motor Vehicle Safety Standards (FMVSS) and Environmental Protection Agency (EPA) regulations**

2. **UN Economic Commission for Europe (ECE) standards, now referred to as UN regulations – (e.g., UN 127)**

U.S. Department of Transportation
National Highway Traffic Safety Administration

UNECE

Motor Vehicle Regulations & Certification

1. **Regulations** – the ***technical requirements*** that must be met to the satisfaction of the regulator that a vehicle, system or component is fit for purpose.
    - Safety or Environmental.
    - Regulations are generally ECE or Federal Motor Vehicle Safety Standard (FMVSS).

2. **Certification** – The ***process*** by which a manufacturer demonstrates compliance to the required regulations to the designated government regulator.

Regulations

U.S. Department of Transportation
National Highway Traffic Safety Administration

US Regulations

US safety and environmental regulations are rigorous and robust:

- There is a robust legal framework and data-driven process which US regulators use to develop technical regulations for motor vehicles.
- Methods are used to verify that vehicles certified to these technical requirements are in fact manufactured in full compliance with these requirements.
- In the case of EPA rules, there are also in-use verification requirements.
- There are 65 motor vehicle and motor vehicle equipment safety standards in the U.S.
  - 29 cover pre-crash (active or crash avoidance) safety
  - 27 cover crash (passive or crash worthiness) safety
  - 5 cover post-crash safety
  - 4 additional 'special' safety standards
- Anyone with experience in designing and developing a motor vehicle in conformity to U.S. safety and environmental regulations can attest to the stringency of these regulations.

ECE Regulations

ECE safety and environmental regulations are <u>equally</u> rigorous and robust:

- The 1958 Agreement, administered by UN Working Party 29, has been the principle standard setting body from which Contracting Parties (countries) adopt and apply technical requirements into their national law.
- There are 62 contracting parties to the '58 Agreement (34 if the EU and members are counted as one.)
- There are 128 regulations that cover active, passive safety & theft as well as environmental requirements for the construction of motor vehicles and motor vehicle equipment.

Under the '58 Agreement vehicles are type-approved by a certified third party – and like in the US (although not as rigidly as the US), production vehicles and components are tested to assure ongoing Conformity of Production (CoP) to the regulations.

Global Technical Regulations (GTRs)

In 1998, the UN started to administer a new agreement specifically to develop globally harmonized technical requirements for motor vehicles and motor vehicle equipment.

- The 1998 Agreement has 34 contracting parties (19 if the EU and members are counted as one- in 2015). Both the US and EU, as a single block, (one vote) are contracting parties to the '98 Agreement.
- There are currently 16 GTRs that have been developed under the '98 Agreement:
  - 12 light duty standards/regulations,
  - 3 motorcycle standards
  - 1 off-road emissions standard

Under the '98 Agreement there is currently no certification or conformity of production (CoP) provisions. Those are left up to each contracting party.

Current GTRs (as of end of 2015)

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Global Technical Regulations (GTR) under the 1998 Agreement

1. Doors locks and door retention components
2. Measurement procedure for two-wheeled motorcycles equipped with a positive or compression ignition engine with regard to the emission of gaseous pollutants, CO2 emissions and fuel consumption
3. Motorcycle brake system
4. Test procedure for compression-ignition engines and positive-ignition engines fuelled with natural gas or liquefied petroleum gas with regard to the emission of pollutants
5. Technical requirements for on-board diagnostic systems (OBD) for road vehicles
6. Safety glazing materials for motor vehicles and motor vehicle equipment
7. Head restraints
8. Electronic stability control systems
9. Pedestrian safety
10. Off-cycle emissions
11. Test procedure for compression-ignition engines to be installed in agricultural and forestry tractors and in non-road mobile machinery with regard to the emissions of pollutants by the engine
12. Concerning the location, identification, and operation of motorcycle controls, telltales and indicators
13. Global technical regulation on hydrogen and fuel cell vehicles
14. Pole Side Impact
15. Worldwide harmonized Light vehicle Test Procedures (WLTP)
16. Tires

Light Duty
Motorcycle
Off-road

Why Accept Both US and ECE Vehicles?

While work continues to develop more GTRs and flaws in the GTR development process are fixed, it is strongly recommended that economies maintain a regulatory policy that accepts vehicles for sale in the region that meets either ECE or US regulations.

FIVE PRIMARY REASONS

1. Both are Robust, Long-standing & Tested

- Both regulatory regimes have been developing safety and environmental regulations for over 40 years.
- Both systems use technical assessment of real-world data as the basis for regulatory development.
- Both sets of regulations cover active and passive safety, along with environmental emission control, which lead to state-of-the-art technologies to meet their mandated levels of performance.

Why Accept Both …?

High Level Comparable Performance

2. Both Have Comparable Performance & Outcomes

For each comparable FMVSS and ECE auto regulation, some technical differences are certain but that should NOT be the focus.

Instead, we should be aware that there are far more similarities in the objectives and outcomes for both regulatory schemes.

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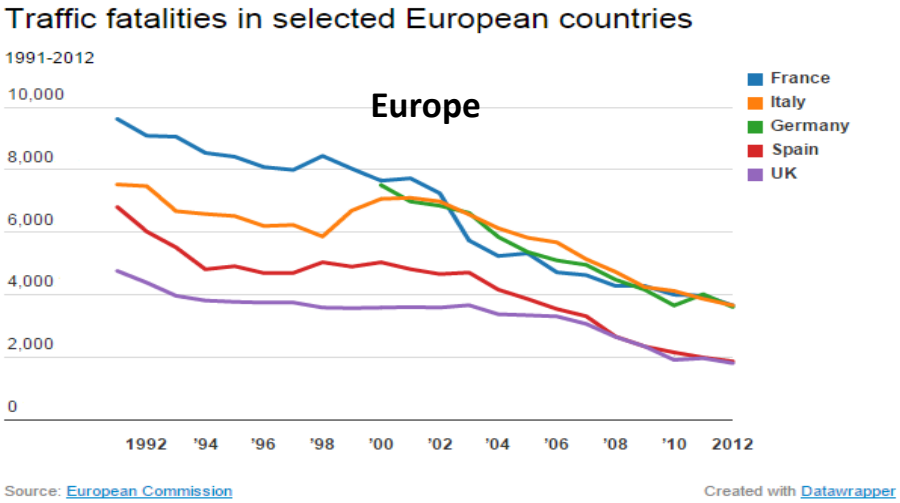
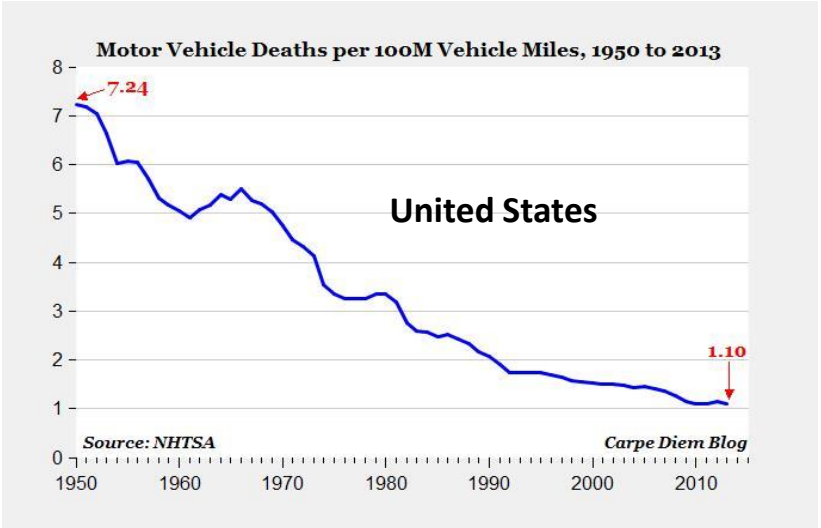
Comparable Performance

Real-world data demonstrates the comparable levels of performance resulting from ECE or US safety and environmental regulations.

- Various data show that with regards to safety, the EU and US sets of automotive regulations offer the same high-level of performance and outcomes.
- For auto emissions, both the EU's "Euro 5"/ECE R83.06 and US's "Tier 2" have similar requirements.

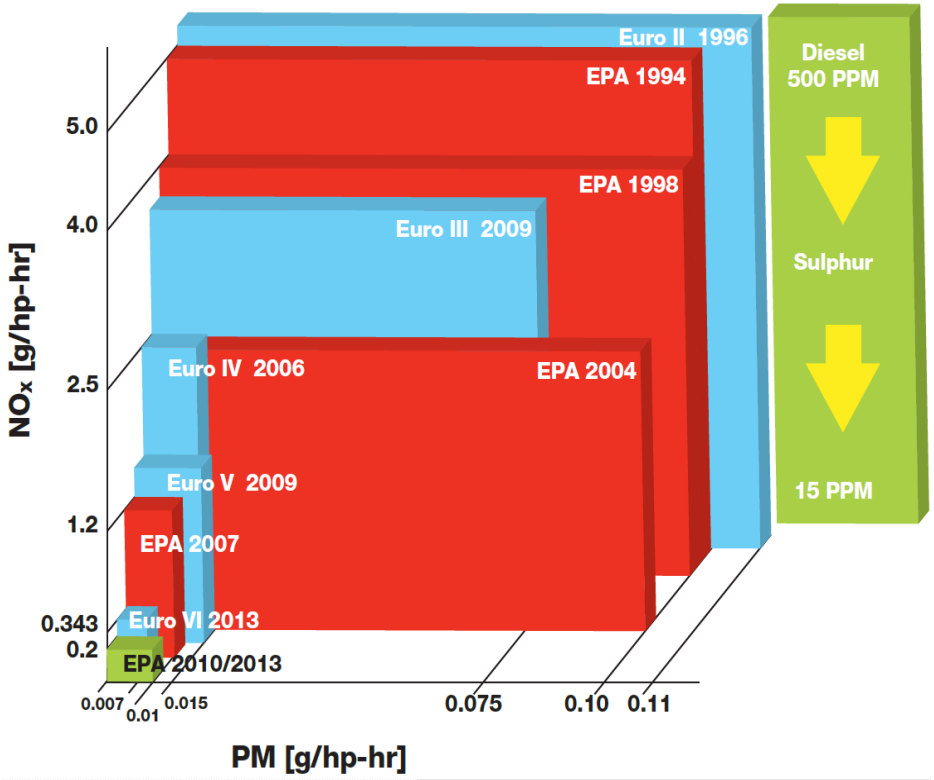




EPA & Euro HD Emission Standards

- Heavy Duty Diesel emissions have been under continual reduction for decades.
- Viewed as either US EPA based, or Euro, emission technology benefits are evident.
- Since 2004, emissions levels are lower for: NOx 7-12 times, PM 10-13 times.

	NOx	PM	HC	CO
EURO II	7.00	0.25	1.10	4.00
EURO III	5.00	0.15	1.10	4.00
EPA 98	5.36	0.13	1.74	20.79
EURO IV	3.50	0.02	0.46	1.50
EPA 04	3.35	0.13	0.67	20.79
EURO V	2.00	0.02	0.46	1.50
EPA 07	0.27 (1.6)	0.01	0.19	20.79
EURO VI	0.50	0.01	0.13	1.50
EPA 10	0.27	0.01	0.19	20.79
g/kWhr				

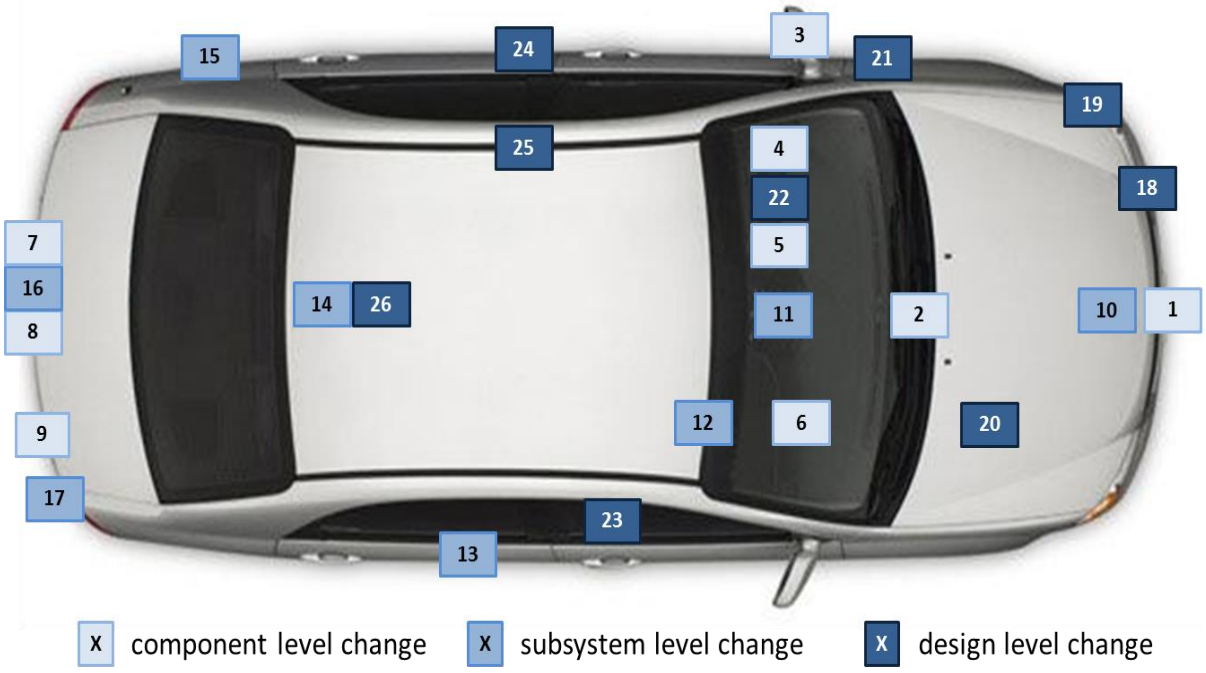


Why Accept Both…?

High Misalignment Cost

3. Reduces Cost and Increases Efficiency

26 Non-Global Standards/Regulations which Influence Global Vehicle Design



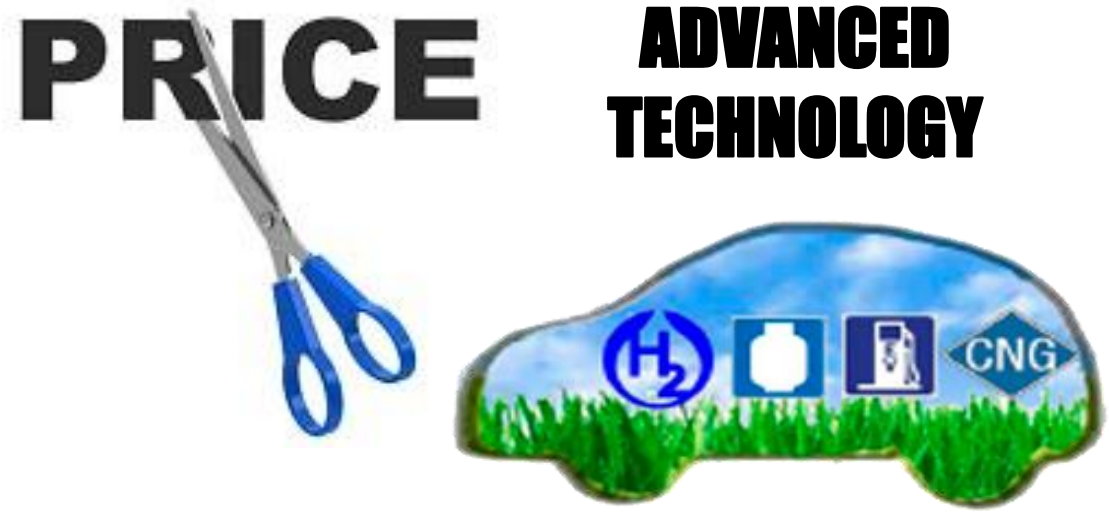
"A popular U.S. model a manufacturer wanted to sell in Europe required 100 unique parts, an additional $42 million in design and development costs, incremental testing of 33 vehicle systems, and 133 additional people to develop—all without any performance differences in terms of safety or emissions."

Why Accept Both…?

Consumer Benefits

4. Brings Consumer Benefits

- **Increased choices** for consumers – *what they want and need.*
- **Cost savings and efficiencies** can be passed on to consumers.
- Proliferation of new **technologies** - *more kinds and more rapidly*.



Why Accept Both…?
Innovation & Regulation

5. Global Automakers Lead in Safety Innovations

- Standards on the Shelf
  - ISO / SAE / DIN / ANSI / IEEE / … GTR
  - Written by technical working partnerships between automotive engineers and suppliers

- Almost every regulated component or system was invented & introduced by automakers first
  - Government regulations accelerate introduction to all applicable classes and types

Why Accept US and ECE Compliant Vehicles?

1. **Both are robust, long-standing & tested**
2. **Both have comparable performance & outcomes**
3. **Reduces cost and increases in efficiency**
4. **Brings consumer benefits**
5. **Global automakers are ahead of government regulations and most often exceed requirements**

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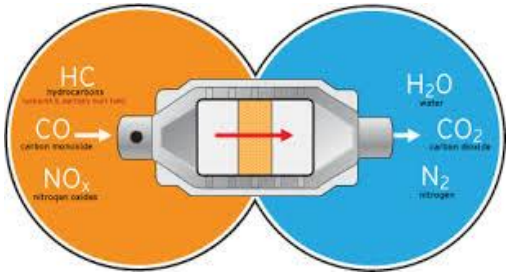
U.S. Department of Transportation
National Highway Traffic Safety Administration



Acceptance of US and ECE Vehicles

Conclusion Part 1 - Regulations

- Automakers can offer a diversity of automotive products and technologies, from around the world.

- As we move toward a globally harmonized vehicle regulatory process, we recommend economies facilitate acceptance of both ECE and FMVSS/EPA compliant vehicles.

- A regulatory policy that accepts vehicles for sale in the region that meets either set of safety and environmental regulations offers many benefits:
  - Such a policy will meet the highest safety and environmental standards.
  - Offers state-of-the-art technologies from around the world.
  - Provides consumers with a greater variety of products at a lower cost.
  - Avoids disruption of significant automotive trade.

Certification Systems

Certification Systems

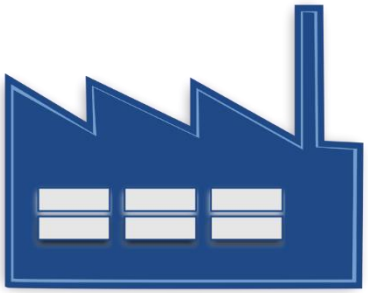
Certification process – What should it be?

It must satisfy the requirements of the **consumer.**

Government

Protect its Citizens (Consumers)

Manufacturer



Serve its Customers (Consumers)

Certification Systems

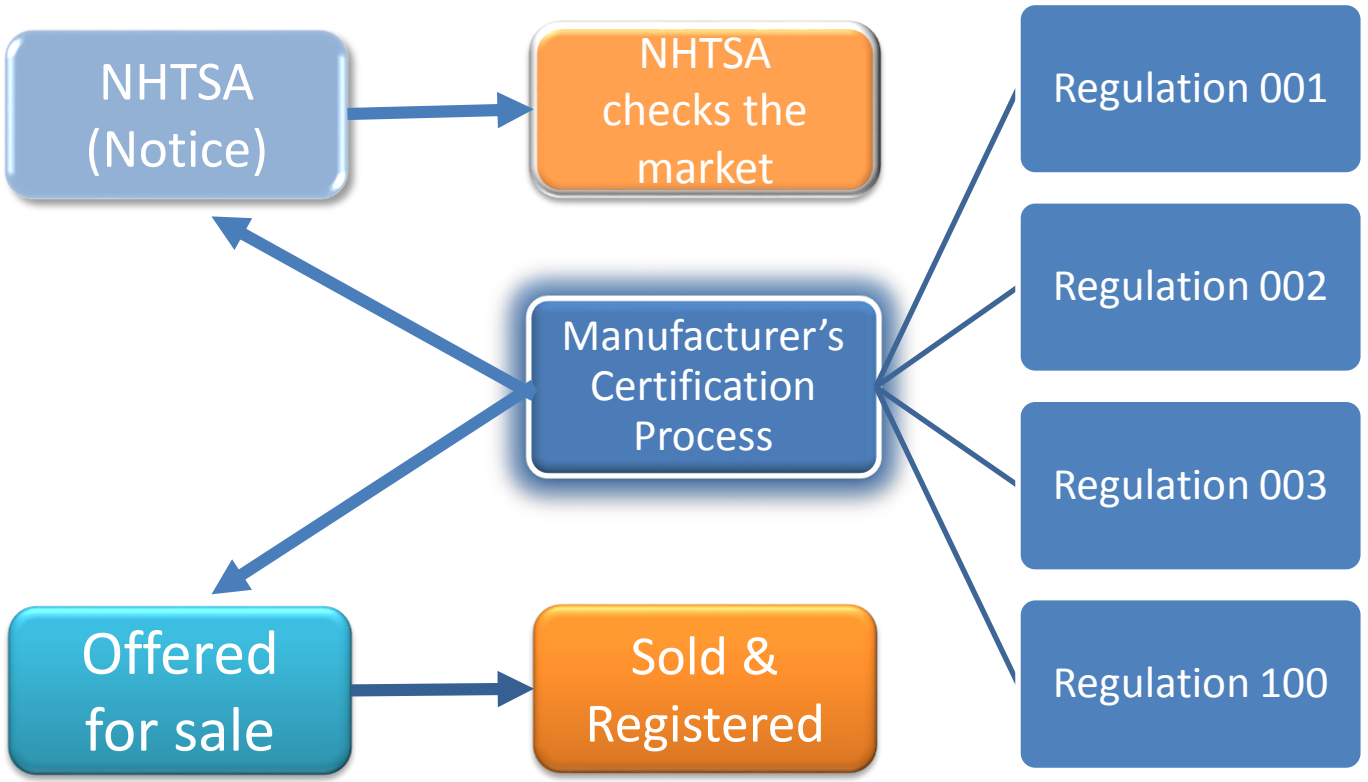
Many Types of Certification

- First Time registration process
- Self Certification
  - The Government has direct access to the Manufacturer
  - In-use surveillance, enforcement, product litigation …
- In-Country Certification
  - Requires all testing to be conducted in local test facilities
  - May require local marking: e.g., CCC, TISI, INMETRO, GSO, JIS, DOT, …
- Third Party Certification
  - Private test authorities – approved by Government
- Component/system/whole vehicle
- Type Approval under a Mutual Recognition Agreement (MRA)
  - ECE & EU Type Approval

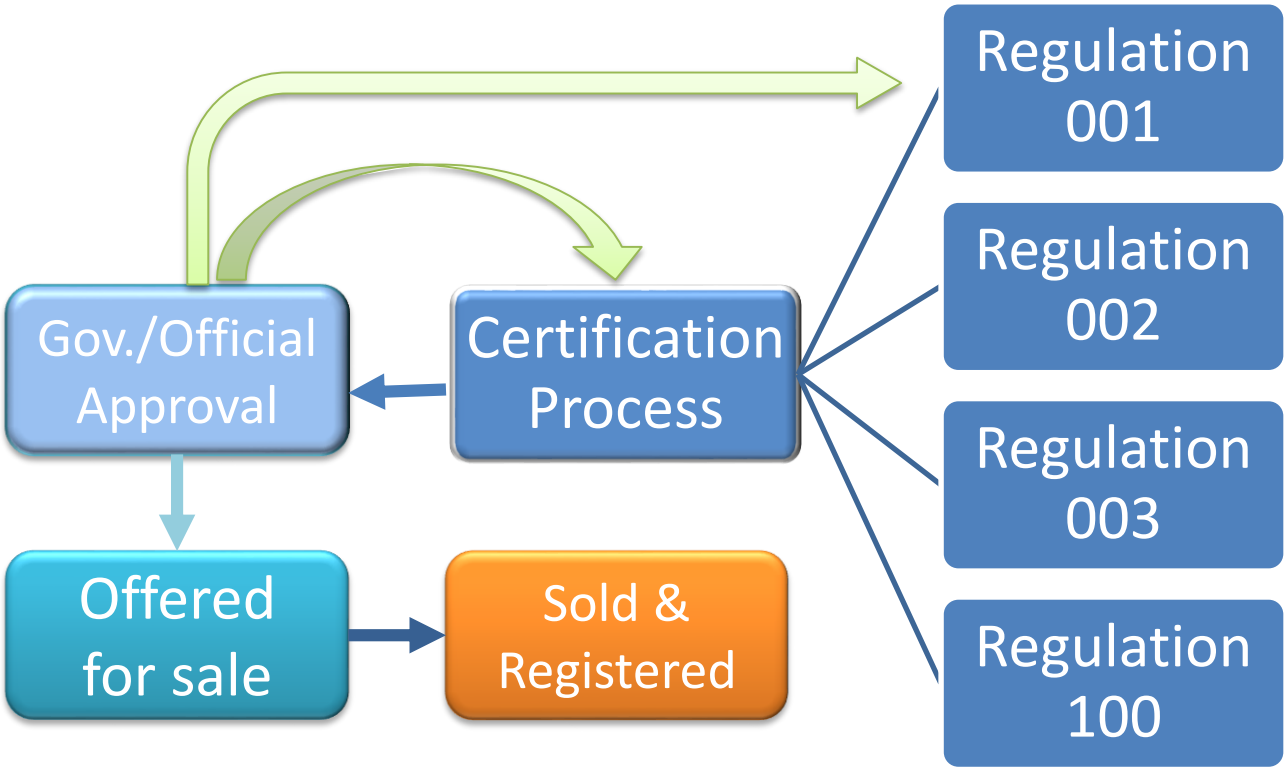
Type Approval & Self-Certification

- As we discussed, acceptance of both FMVSS/EPA and ECE can be achieved in terms of Safety and Environmental performance.
- There remains the difference in the type approval and self-certification processes.
- So, how would a manufacturer's self-certification to an accepted U.S. regulation be recognized in a jurisdiction that requires type approval and vice-versa?
  - The principal difference is the requirement that for **type approval** the "certification" tests are witnessed by a government authority, and for **self-certification** these same types of tests are conducted by the vehicle manufacturer.
  - **In both cases, data are generated to provide assurance** that a product meets or exceeds the technical performance requirements of any regulation.

Certification Systems – US/Canada Safety



Certification Systems – ECE



Mutual Recognition of Certification

- So, if an automaker has type approval for a regulation that is accepted as equivalent to a US regulation, that manufacturer ***could*** use the test data that supported the type approval as a basis for self-certification in the United States.
- And, if an automaker has self-certified to a regulation that is equivalent to a regulation being applied in an country that uses type approval, data used to support the self-certification ***could*** be accepted as sufficient to approve the vehicle's sale.

Blue Ribbon Safety and EPA Certification

- NHTSA can supply a Blue Ribbon certificate confirming the manufacturer’s statement of safety compliance to be used by countries accepting FMVSS.
- EPA already provides an emissions compliance certificate.

U.S. Department of Transportation
National Highway Traffic Safety Administration

CERTIFICATE OF AUTHENTICITY

I HEREBY CERTIFY that the annexed is a copy of the NHTSA STATEMENT concerning the 2014 Model year Navistar, Inc. vehicles for export to Israel

electronically accessed by National Highway Traffic Safety Administration, in my custody.

Signed and dated at Washington, D.C.

this 25 day of February 20 14

by Martin Koubek

Policy Analyst International Policy [illegible]

...REBY CERTIFY that Martin Koubek *who signed the foregoing certificate, is now, and was, at the time of signing,* policy analyst NVS-133*, National Highway Safety Administration and official custodian of the ...ed record, and that full faith and credit should be given his/her certificate as such.*

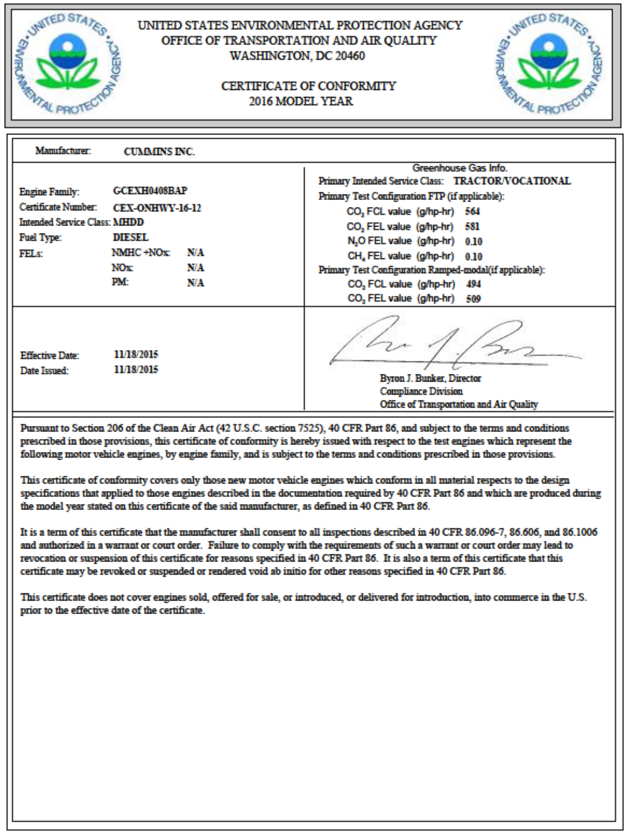
IN WITNESS WHEREOF, I have hereunto subscribed my name, and caused the seal of the Department of Transportation to be affixed this 25 *day of* February

two thousand and fourteen

For the SECRETARY OF TRANSPORTATION

Records Officer

HS-Form 126A (5-01) 75535-N34



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF TRANSPORTATION AND AIR QUALITY
WASHINGTON, DC 20460

CERTIFICATE OF CONFORMITY
2016 MODEL YEAR

Manufacturer: CUMMINS INC.

Engine Family: GCEXH0408BAP
Certificate Number: CEX-ONHWY-16-12
Intended Service Class: MHDD
Fuel Type: DIESEL
FELs: NMHC +NOx: N/A
NOx: N/A
PM: N/A

Greenhouse Gas Info.
Primary Intended Service Class: TRACTOR/VOCATIONAL
Primary Test Configuration FTP (if applicable):
CO_2 FCL value (g/hp-hr) 564
CO_2 FEL value (g/hp-hr) 581
N_2O FEL value (g/hp-hr) 0.10
CH_4 FEL value (g/hp-hr) 0.10
Primary Test Configuration Ramped-modal(if applicable):
CO_2 FCL value (g/hp-hr) 494
CO_2 FEL value (g/hp-hr) 509

Effective Date: 11/18/2015
Date Issued: 11/18/2015

Byron J. Bunker, Director
Compliance Division
Office of Transportation and Air Quality

Pursuant to Section 206 of the Clean Air Act (42 U.S.C. section 7525), 40 CFR Part 86, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which represent the following motor vehicle engines, by engine family, and is subject to the terms and conditions prescribed in those provisions.

This certificate of conformity covers only those new motor vehicle engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 86 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 86.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 86.096-7, 86.606, and 86.1006 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 86. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 86.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

Certification Processes

Conclusion Part 2 – Certification

Countries can maintain flexible certification processes which:

- Allow for different but equally robust regulations/standards
- Allows for compliance evidence/data to come from Type Approval or Self-Certification processes
- Maintains world-class safety performance for consumers
- Provides appropriate government oversight

This approach is currently used in the Middle East, Australia, Chile, Mexico, ... and now Ecuador.

As with limiting acceptance to one set of standards, limiting acceptance of vehicles from one certification system would limit choice, undermine price competiveness, decrease new technology exposure and uptake, and disrupt trade patterns/relations.

Recommendations

Accept both US and ECE Compliant Vehicles

RECOMMENDATIONS

- **Accept** products that are fully compliant with either US or ECE safety and environmental regulations.

- **Develop** and **maintain** a flexible certification system that allows for different but equally robust regulations/standards and compliance evidence/data with those requirements from Type Approval and Self-Certification sources.

These can both be accomplished while maintaining high safety performance and outcomes for consumers and providing appropriate government oversight.

In this way countries and their consumers can gain from more choice and competitive prices while enabling local production to serve both domestic and foreign markets as global standards/regulation harmonization work continues.

Ultimately, the world doesn't know the difference between US and ECE …

- Both new US and ECE vehicles are extremely clean and safe.
- It is more important to replace existing fleet with new technologies … to protect citizens, protect the environment, while providing a full range of products the consumers need to grow the markets.

Thank You

Questions?