



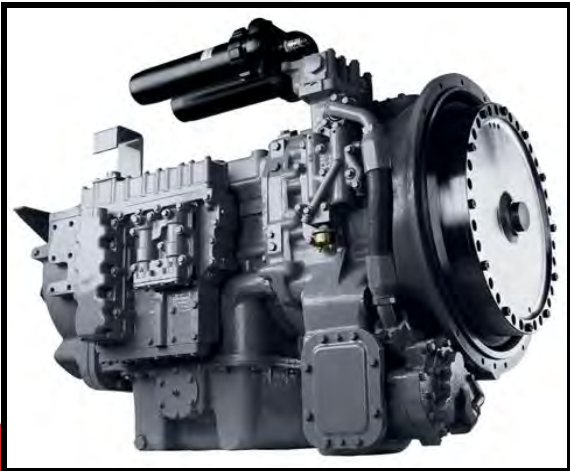
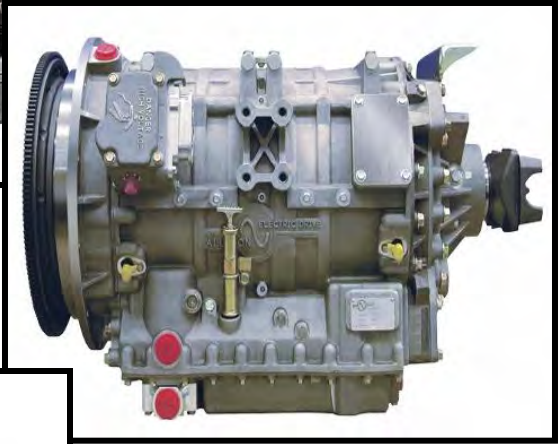
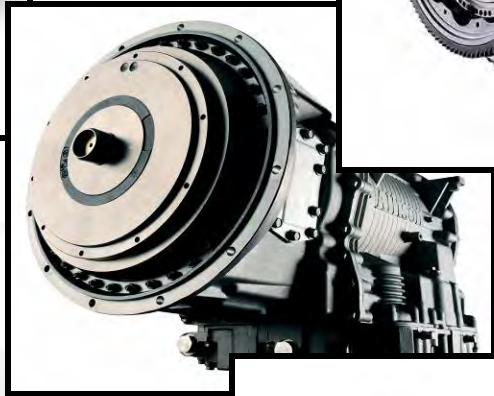
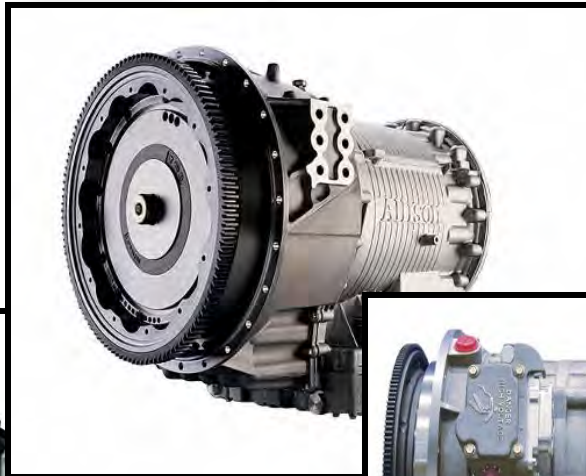
**EPA-NHTSA Fuel Efficiency & GHG
Rule Draft Comments**

June 29, 2011

Overview

Allison Transmission, Inc., is the world's largest manufacturer of fully-automatic transmissions for medium- and heavy-duty commercial and military vehicles and hybrid-propulsion systems for transit buses.

...and We Produce Great Transmissions



A Proud Heritage For 94 Years

1915 - Allison Speedway Team Company founded



1917 - Incorporated as the Allison Experimental Company

1920 - Name changed to Allison Engineering Company

1929 - Purchased by General Motors

1934 - Transferred to status of Allison Division

1946 - First transmission (CD850) developed for military tanks

1970 - Detroit Diesel and Allison Divisions merged

1983 - Allison Gas Turbine Division created

1987 - Detroit Diesel sold

1988 - Allison Transmission Division created

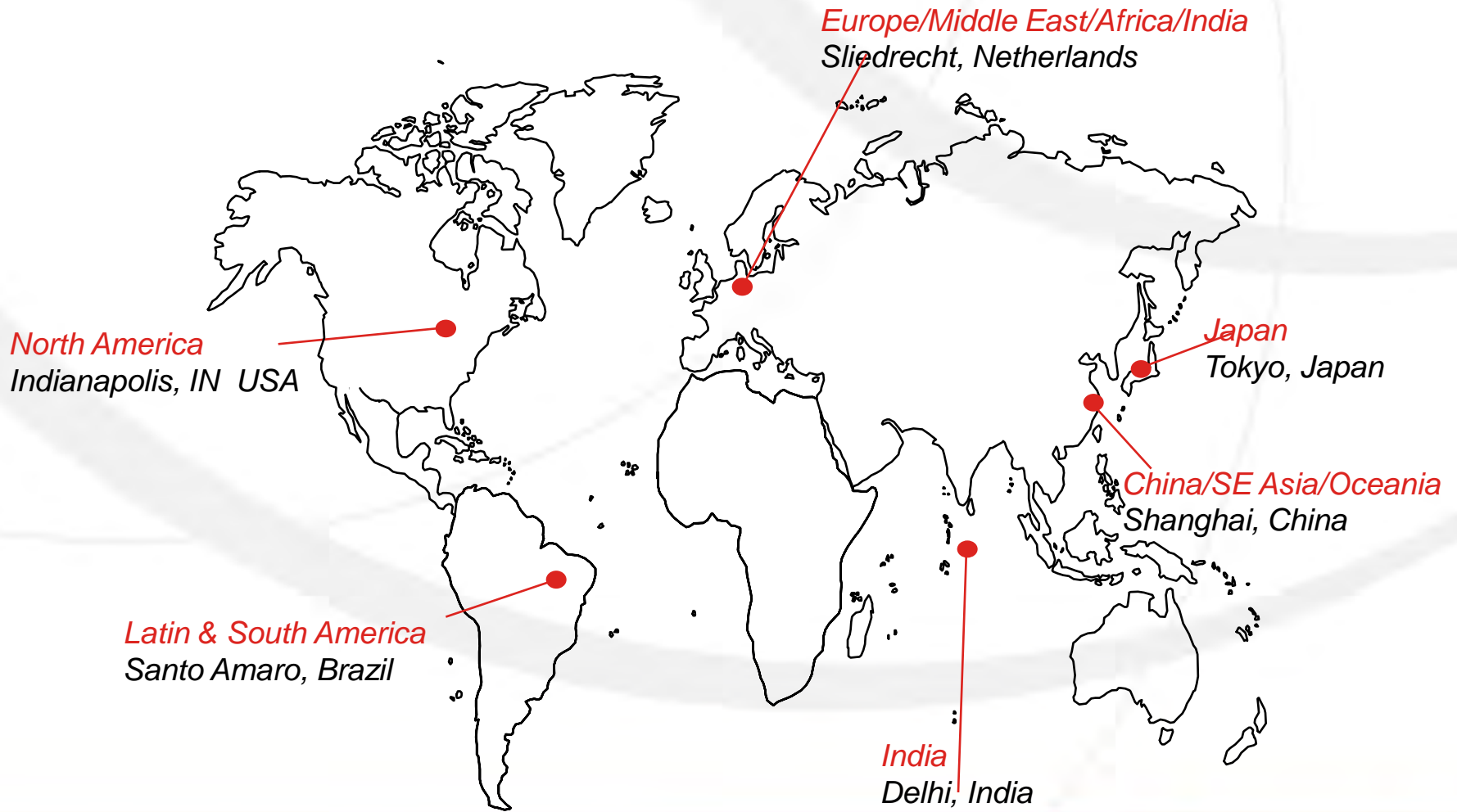
1990 - 75th Anniversary Celebration

2003 - Became official part of GM Powertrain Group

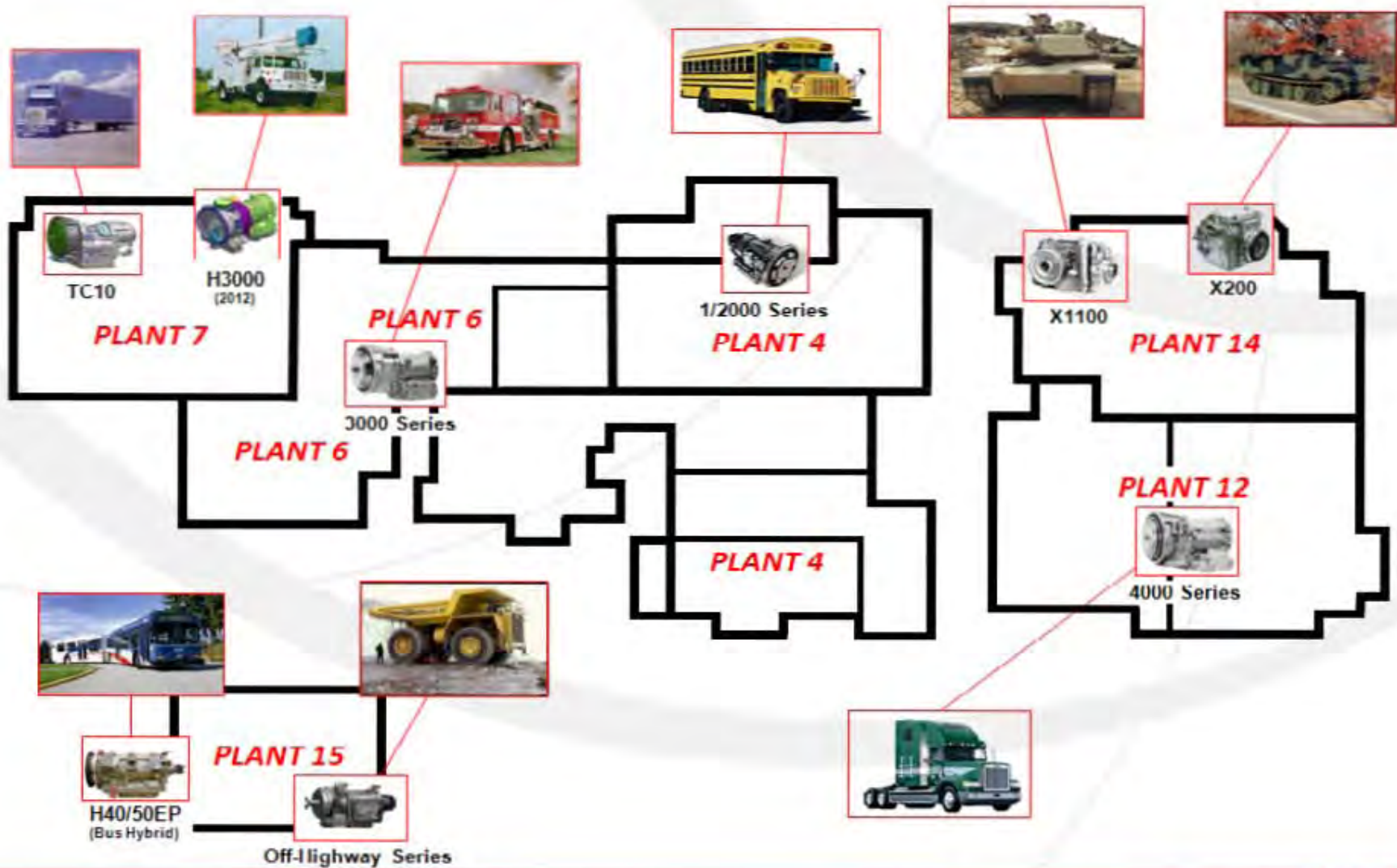
2007 - Purchased by Carlyle Group & Onex Corporation



Allison Regions



Global Headquarters Based in Indianapolis, IN



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Allison Activities

- Allison maintains dialogue with:
 - Nearly all vehicle OEMs
 - Nearly every commercial vehicle vocation
 - Many different body builders
 - Many different fleets & end-users
 - Many industry groups (TMC, SAE, VDI, CTi, NACFE, 21CTP, ATA, TRALA, NRMCA, U.S. Chamber of Commerce)
- Allison's government outreach/interactions include:
 - EPA
 - National Academy of Science (NAS) – submitted comments
 - Argonne National Laboratory (ANL) on simulations for EPA & NAS
 - NHTSA / DOT – EIS comments/additional meetings
 - DOE – hybrid grant
 - DOD

DOE Grant Awarded in August 2009

- **\$62.8 million is DOE-funded through CY2013**
- **Allison Grant Application was specifically to establish “Electric Drive Component Manufacturing Facilities” for commercial truck hybrids**
 - Program scales up and applies known hybrid product technologies
 - Program manufactures hybrid variants of current Allison fully-automatic transmissions

Initial Vocations Likely to Benefit from New Hybrid



President Obama Visits Allison: May 6, 2011

“What you’re doing here at Allison Transmission is really important. Today there are more than 3,800 buses using (your) hybrid technology all over the world..... soon, you’ll be expanding this technology to trucks as well..... That means more jobs here at Allison. Last month, you added 50 jobs at this company and I hear that you plan to add another 200 over the next two years. So we are very proud of that. ”



“I don't want the new breakthrough technologies and the new manufacturing taking place in China and India. I want all those new jobs right here in Indiana, right here in the United States of America, with American workers, American know-how, American ingenuity.”

President Obama Visits Allison: May 6, 2011

“The reason I’m here today is because the answers to these questions are right here at Allison,right here in these transmissions. This is where the jobs of the future are..... ...we’re a mature economy, but America’s economy is always going to rely on outstanding manufacturing.....And that's what Allison is all about....The federal fleet is enormous, and we’ve already doubled the number of hybrids in the federal fleet. And I’m directing every agency to make sure that 100 percent of our cars and trucks are fuel-efficient or clean-energy vehicles by 2015. So you’re going to have a customer..... in the United States government.”



“We can’t cut investments in clean energy that are going to help us out-innovate and out-compete and help America win the future. We’re not going to stop making investments that allow plants like this one to find the new ways of doing business in the future. I want to make sure the federal government is right here with you as a partner with you as you move forward, and we can do it...”

Allison Transmission serves a diverse set of vehicle applications and end-markets

On-Highway

School Bus /
Shuttle Bus



Transit Bus



Motorhome



Truck RV



Distribution



Rugged Duty



Emergency
Vehicles



Allison Transmission serves a diverse set of vehicle applications and end-markets

Military



Off-Highway



Aftermarket



Allison H 40/50 EP™ Hybrid Experience

- ❑ **By EOY2010 > 4,200 had been sold & Allison estimates that they have:**
 - > 320,000,000 miles in combined revenue service
 - > 17,170,000 gallons of diesel fuel saved
 - > 170,000 metric tons of CO₂ emissions avoided



Allison H 40/50 EP™ Hybrid Experience

Larger fleets include:

- Washington DC: 399
- Seattle: 335
- Philadelphia: 219
- Baltimore: 187
- Boston: 25



**Allison Transmission Views
on
Proposed Greenhouse Gas and Fuel
Efficiency Standards for Medium- and
Heavy-Duty Vehicles and Engines**

June 29, 2011

MD/HD Rulemaking Must Address a Complex Industry and Diverse Vehicles

- **EPA and NHTSA have been working on an extremely complicated rulemaking within a very short timeframe:**
 - **8 months between proposal and final (versus 22 months between ANPRM and final LDV rule)**
 - **Much wider range of vehicle types, sizes, weights**
 - **Very different industry structure**
 - **LDV Rule offers little precedent (e.g., non commercial vehicles; dynamometer testing, preexisting computer models, existing Volpe model)**
 - **Rules take effect in less than 2 years (versus CAA “no less than 3 Model Years”; 4 Model Years specified in EISA)**

Simplified Rulemaking Is Not Equivalent to Technically-Supportable Rulemaking

- **Major Concerns**

- **Proposed Metric**
- **Drive Cycles – Weighting and Compliance**
- **Structure of Proposed Rule**
- **GEM Model**
- **Hybrid Provisions**
- **“A” to “B” Testing**
- **Innovative Technology Program**
- **Heavy Duty On Board Diagnostics for Hybrids**

Proposed Metric

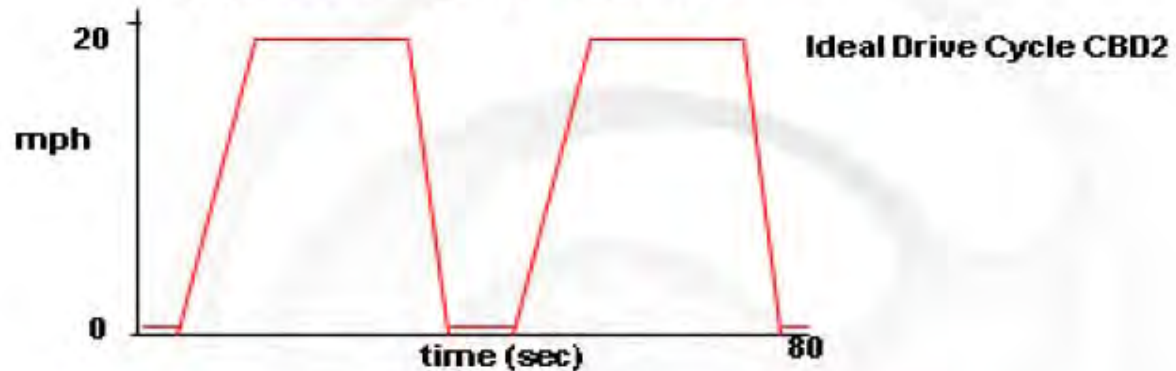
- **EPA/NHTSA proposed metrics (g/ton-mile – gallon/ton-mile) do not accurately measure the actual productivity of MD/HD vehicles**
 - **Allison proposed gallons/ton-miles adjusted by average speed of the MD/HD vehicle in compliance testing**
 - **This was consistent with information in NAS Report which indicated that fuel efficiency of truck is “not readily characterized by a single number, but rather by a curve against average speed.”**
 - **While EPA/NHTSA proposed metrics take into account payload and fuel economy, they do not reflect actual fuel efficiency of commercial vehicles**

Drive Cycles

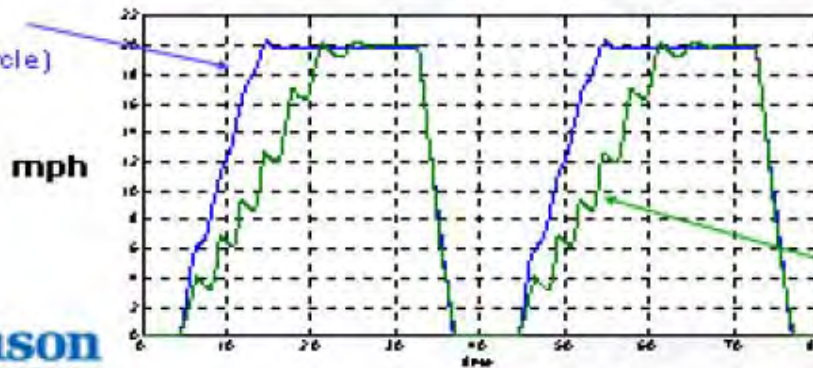
- **Proposed drive cycles do not accurately reflect real-world vehicle usage**
 - Low speed, dense traffic, stop-and-go grossly underweighted
 - Specialized vocations (e.g., garbage trucks; school buses) have different use patterns
- **Any compliance testing needs to be adjusted for non-performing vehicles**
 - Results should be weighted on time, not distance
 - Non-issue for LDVs (high power-to-weight ratio) but many MD/HD vehicles cannot meet drive cycle “trace”
- **Accuracy of drive cycles needs to be improved**
 - Include grades
 - Include vocational subgroups
 - Adjust for vehicles that cannot meet drive cycle “trace”

Not All MD/HD Vehicles/Transmissions Can Meet Drive Cycles

Certification and Testing



Allison actual
(meets drive cycle)



Same top speed but
the AMT mph is lower
AMT does less work
It is not reasonable to
directly compare MPG!

AMT actual
(does not meet drive cycle
due to power interrupts)



Approach to Hybrid Vehicle Systems Needs Substantial Revision

- **Hybrid market will most likely emerge in vehicles where they make economic sense**
- **Testing and certification of hybrids needs to recognize unique vehicle character -- should be based on probable uses/vocations of vehicles**
 - **Hybrids make most “sense” in transient operation, either stop-and-go traffic or on grades**
 - **Regenerative braking**
 - **Combined drive and PTO cycles should be available in testing protocol**

Structure of Proposed Rule

- **While one element of vehicle (engine) maintains previous regulatory testing and compliance framework – rest of vehicle subject to new computer modeling and testing (Greenhouse Gas Emissions Model or “GEM”)**
- **GEM potentially covers all non-engine vehicle components**
- **GEM inputs are critical to determining regulatory outputs, but inputs are currently very limited.**
 - **Effect of transmission on emission of GHGs and FE cannot be accurately assessed in isolation, but only with respect to entire vehicle system (including specific engine family, torque converter, shift calibration, gross vehicle weight and axle ratio).**
 - **Concerned with both immediate rulemaking and the precedent established for follow-on rulemakings (MY 2018 and beyond)**

“A” to “B” Testing

- Any “A” to “B” testing must use common vehicle configurations, i.e., the types of vehicle systems likely to be actually produced and sold
 - If “A” and “B” vehicle is not real, testing results will not be valid
 - EPA should prevent gaming of system
- Vehicles should be required to follow drive cycle trace whenever possible
- If vehicles below target speed/trace, should require and verify operation on wide-open-throttle
- Testing must be sophisticated, include pedal position monitors, monitor gear selection, use realistic accessory loads, vehicles should meet “commercially acceptable” performance criteria

Innovative Technology Program Could Be Subject to Manipulation

- **Proposed rule has very limited regulatory text given the importance of the program**
 - **Could serve as GHG performance/fuel efficiency “label” for new technology and affect marketing of technology**
 - **Those applying for credits would have different incentives**
 - OEMs would have a clear incentive to favor submitting their own technologies versus technologies developed by supplier/vendor
 - Potential for gaming
 - Component testing must be done to ensure the entire vehicle impacts are accounted for
 - **Could create contrary results to policy objective of encouraging the development of more efficient/better performing technology**

Heavy Duty On Board Diagnostics is a Recent Addition to the Proposed Rule

- **HDOBD Requires emissions monitors on Medium- & Heavy-Duty (truck/bus) engines to be fully compatible with transmissions in CY2013 are a recent addition to the rule**
- **Industry is not ready to comply with the anticipated rule for complex hybrid systems**
- **Major hybrid manufacturers have cooperated to elevate the technical and business barriers that prevent compliance and would enable development**
- **Rate of future hybrid vehicle deployments is at risk if EPA and industry can't resolve existing barriers**

Conclusions and Key Points

- **While Allison Transmission supports moving forward with MD/HD rulemaking EPA/NHTSA and OMB should take the time to “get it right”**
 - **EPA/NHTSA received many detailed comments from OEMS, component suppliers, vehicle users. Agencies should take time necessary to thoroughly consider all substantive comments**
 - **Industry/other commenters are NOT universally supportive of all elements of the proposed rule**
 - **Alternatives to finalizing entire rule exist. Possible to finalize parts of the rule; take further comment or re-propose other elements**
 - **NODAs could be issued for new regulatory elements/technical issues**
 - **Once a proposal is finalized, market will assume rulemaking will serve as template for follow-on 2018 and beyond standards**

Conclusions and Key Points

- **MD/HD rulemaking has potential to substantially affect the vehicle marketplace and the unique MD/HD network of component suppliers**
 - **Rule could realistically affect existing competitive relationships.**
 - **EPA/NHTSA should avoid creating disadvantages for component suppliers based on bifurcated regulatory system**
 - Regulatory certainty for engine manufacturers
 - GEM under development – produces regulatory uncertainty for rest of industry
 - **Credits will likely become more valuable over time, increase market leverage of OEMs**

Conclusions and Key Points

- **EPA/NHTSA should**
 - **Substantially adjust drive cycles and program for compliance testing – better reflect “real world” conditions and commercial deployment of MD/HD vehicles**
 - **Ensure “A” to “B” testing protocols use the right “A” and “B” vehicles**
 - **Improve proposed testing and certification of hybrids; account for normal utilization of such vehicles.**
 - **Protect Innovative Technology program from gaming by OEMs and component manufacturers**
 - **Take additional time to work on GEM model**
 - Effect of transmissions cannot be determined with reference to whole vehicle configurations
 - **Work with Hybrid Manufacturers to implement rules on a reasonable time line**

Thank You