ATTACHMENT 1: INNOVATIVE TECHNOLOGY REGULATION (ITR) POTENTIAL DRAFT REGULATORY STRUCTURE

NEW HEAVY-DUTY ENGINE TECHNOLOGY ELEMENT

New Heavy-Duty Low-NOx Engine. Each manufacturer would receive up to three model years (MYs) of on-board diagnostic (OBD) compliance flexibility as described in Table 1, below. Proposed low-NOx engine OBD flexibility is modest, and includes an averaging compliance option for a manufacturer that introduces two eligible low-NOx engines in a MY.

Table 1: Possible ITR Structure for Heavy-Duty Low-NOx Engines

Model Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Spark-Ignition - 0.05 or 0.02 g/bhp-hr	Maximum Three MYs ITR per Manufacturer								
Compression-Ignition - 0.10, 0.05 or 0.02 g/bhp-hr	Maximum Three MYs ITR per Manufacturer								

New Heavy-Duty (>14,000 lbs GVW) Hybrid. A manufacturer could receive significant OBD flexibility for a new hybrid heavy-duty engine for four or six MYs depending upon whether the hybrid provides significant all-electric range (AER), as described in Table 2, below. Tier 1 flexibility would allow for EMD (i.e., minimal diagnostics) while Tier 2 would ensure progress towards full heavy-duty OBD.

Table 2: Possible ITR Structure for New Heavy-Duty Hybrid Engines and Vehicles

Model Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
<35 Miles AER	Max Two MYs Tier 1 + Two MYs Tier 2 per Manufacturer								
35+ Miles AER	Max Four MYs Tier 1 + Two MYs Tier 2 per Manufacturer								

A small off-road or on-road light- or medium-duty engine based hybrid system would also be ITR eligible if it operates exclusively at steady-state to range-extend heavy-duty truck or bus operation beyond a minimum 35 miles AER.

New Potentially Transformative Heavy-Duty Engine Technology. This category would address a new heavy-duty engine technology with potential for significant NOx or CO_2 reductions. Potential eligibility criteria could include performance thresholds for engine brake thermal efficiency (50% or greater) or CO_2 reduction at 65 mph cruise (20% or greater).

Table 3: Possible ITR Structure for Potentially Transformative New Heavy-Duty Engine Technology

Model Year	2016	2017	2018	2019	2020	2021	2022	2023	2024
Transformative New Engine Technology	ITR Eligible - Max X *(tbd)* MYs Tier 1 + Two MYs Tier 2 per Manufacturer								

POTENTIAL CONCEPTS FOR FEBRUARY 25, 2015 PUBLIC WORK GROUP MEETING