Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: The hybrid engine produced by Cummins Inc. (Cummins) and the hybrid system produced by Allison Transmission Inc. (Allison) are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. The production hybrid engine and the production hybrid system shall be identical in all material respects as those for which certification is granted.

HYBRID ENGINE DESCRIPTION

HYBRID ENGINE MANUFACTURER	MODEL YEAR	ENGINE FAMILY	EXECUTIVE ORDER NUMBER	FUEL TYPE	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS	ENGINE OBD COMPLIANCE	PRIMARY ENGINE'S IDLE EMISSIONS CONTROL
CUMMINS INC.	2016	GCEXH0408BAR	A-021-0645	DIESEL	DIESEL	UB-Hybrid	OBD($)	Exempt

ENGINE (L)	ECS & SPECIAL FEATURES	ENGINE MODELS / CODES (rated power, in hp)
6.7	DDI, TC, CAC, ECM, EGR, OC, PTOX, SCR-U, AMOX	ISB 280H / 4610;FR94806 (270)

HYBRID SYSTEM DESCRIPTION

HYBRID SYSTEM MANUFACTURER	HYBRID SYSTEM MODEL YEAR	HYBRID SYSTEM MODELS	INTENDED SERVICE CLASS	ENERGY STORAGE SYSTEM	HYBRID OBD COMPLIANCE
ALLISON TRANSMISSION INC.	2016	H 40 EP	UB-Hybrid	Nickel-Metal Hydride Battery	OBD($)

	HYBRID ENGINE MODELS / CODES
	ISB 280H / 4610;FR94806

* =not applicable; **GVWR**=gross vehicle weight rating; **13 CCR xyz**=Title 13, California Code of Regulations, Section xyz; **40 CFR 86.abc**=Title 40, Code of Federal Regulations, Section 86.abc; **L**=liter; **hp**=horsepower; **kw**=kilowatt;
1 **L/M/H HDD**=light/medium/heavy heavy-duty diesel; **UB**=urban bus; **HDO**=heavy duty Otto;
2 **CNG/LNG**=compressed/liquefied natural gas; **LPG**=liquefied petroleum gas; **E85**=85% ethanol fuel; **MF**=multi fuel a.k.a **BF**=bi fuel; **DF**=dual fuel; **FF**=flexible fuel;
3 **ECS**=emission control system; **TWC/OC**=three-way/oxidizing catalyst; **SCR-U / SCR-N**=selective catalytic reduction – urea / -- ammonia; **WU (prefix)** =warm-up catalyst; **DPF**=diesel particulate filter; **PTOX**=periodic trap oxidizer; **HO2S/O2S**=heated/oxygen sensor; **HAFS/AFS**=heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); **TBI**=throttle body fuel injection; **SFI/MFI**=sequential/multi port fuel injection; **DGI**=direct gasoline injection; **IDI/DDI**=indirect/direct diesel injection; **TC/SC**=turbo/ super charger; **CAC**=charge air cooler; **EGR / EGR-C**=exhaust gas recirculation / cooled EGR; **PAIR/AIR**=pulsed/secondary air injection; **SPL**=smoke puff limiter; **ECM/PCM**=engine/powertrain control module; **EM**=engine modification; **2 (prefix)**=parallel; **(2) (suffix)**=in series;
4 **EMD**=engine manufacturer diagnostic system (13 CCR 1971); **EMD+**=engine manufacturer diagnostic system (13 CCR 1971.1); **OBD**= on-board diagnostic system; **OBD(F) / (P) / ($)**= on-board diagnostic full / partial / partial with a fine
5 **ESS**=engine shutdown system (per 13 CCR 1956.8(a)(6)(A)(1); **30g**=30 g/hr NOx (per 13 CCR 1956.8(a)(6)(C); **APS** =internal combustion auxiliary power system; **ALT**=alternative method (per 13 CCR 1956.8(a)(6)(D); **Exempt**=exempted per 13 CCR 1956.8(a)(6)(B) or for CNG/LNG fuel systems; **N/A**=not applicable (e.g., Otto engines and vehicles); (Aug 2013)

Following are: 1) the FTP exhaust emission standards or family emission limit(s) as applicable under 13 CCR 1956.8; 2) the SET and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty engines and vehicles (Test Procedures); and 3) the corresponding certification levels, in g/bhp-hr, for this Cummins' engine family. "Diesel" CO, SET and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For dual- and flexible-fuel, the CERT values in brackets [ ] are those when tested on conventional test fuel.)

	NMHC		NOx		CO		PM		HCHO	
	FTP	SET	FTP	SET	FTP	SET	FTP	SET	FTP	SET
STD	0.14	0.14	0.20	0.20	15.5	15.5	0.01	0.01	*	*
FEL	*	*	*	*	*	*	*	*	*	*
CERT	0.08	0.01	0.17	0.09	1.3	0.6	0.000	0.000	*	*
NTE	0.21		0.30		19.4		0.02		*	

g/bhp-hr=grams per brake horsepower-hour; **FTP**=Federal Test Procedure; **SET**=Supplemental Emissions test; **NTE**=Not-to-Exceed emission limit; **STD**=standard or emission test cap; **FEL**=family emission limit; **CERT**=certification level; **NMHC/HC**=non-methane/hydrocarbon; **NOx**=oxides of nitrogen; **CO**=carbon monoxide; **PM**=particulate matter; **HCHO**=formaldehyde;

BE IT FURTHER RESOLVED: The manufacturer has demonstrated compliance with the Greenhouse Gas Emission Standards as specified in Title 13 CCR 1956.8 and the incorporated "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy Duty Diesel-Engines and Vehicles" (HDDE Test Procedures) adopted Dec. 12, 2002, as last amended Oct. 21, 2014 using the 2014 model year National Heavy-Duty Engine and Vehicle Greenhouse Gas Program as specified in Section 1036.108 of the HDDE Test Procedures. The manufacturer has submitted the required information and therefore has met the criteria necessary to receive a California Executive Order based on the Environmental Protection Agency's Certificate of Conformity for the above listed engine family.

	EPA CERTIFICATE OF CONFORMITY		PRIMARY INTENDED SERVICE CLASS	
	CEX-ONHWY-16-15		VOCATIONAL	
In g/bhp-hr	CO_2		CH_4	N_2O
	FTP	SET		
STD	555	*	0.10	0.10
FCL	608	*	*	*
FEL	626	*	*	*
CERT	608	*	0.03	0.06

4 **g/bhp-hr**=grams per brake horsepower-hour; **FTP**=Federal Test Procedure; **SET**=Supplemental emissions testing; **STD** = standard or emission test cap; **FEL**=family emission limit; **FCL**=family certification level; **CERT**=certification level; **CO_2**=carbon dioxide; **CH_4**=methane; **N_2O**=nitrous oxide; **VOCATIONAL**=vocational engine; **TRACTOR**=tractor engine

SUPERSEDED

BE IT FURTHER RESOLVED: That the listed engine family is certified to the Alternate Phase-in CO_2 Emission Standards as specified in 13 CCR 1956.8 and section 40 CFR 1036.150 (e) as incorporated in the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy Duty Diesel-Engines and Vehicles" adopted Dec. 12, 2002, as last amended Oct. 21, 2014.

BE IT FURTHER RESOLVED: Certification to the FEL(s) / FCL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) / FCL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

BE IT FURTHER RESOLVED: For the listed engine models, Cummins certified the engines to operate in the primary intended service class for urban buses with the emission compliance useful-life of 435,000 miles, 10 years, or 22,000 hours, whichever occurs first. The listed engine models were designed by Cummins with an emissions compliance period of 185,000 miles. To demonstrate the useful life emissions compliance of the intended service class of an urban bus, Cummins shall provide a required service to the engine at, or about, 185,000 and 370,000 miles of the urban bus. The required service shall include a replacement engine, related parts and labor.

BE IT FURTHER RESOLVED: Each replacement engine shall be: 1) a new California certified urban bus engine of the model year in which the service interval occurs, 2) a new replacement engine that is equivalent in all material respects to the engines listed in this Executive Order, or 3) a newly remanufactured engine conforming to all specifications of the engines listed in this Executive Order or conforming to all specifications of newer model-year engines certified to the urban bus primary intended service class.

BE IT FURTHER RESOLVED: For the listed engine models Cummins has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels), 13 CCR 1971.1 (on-board diagnostic, full or partial compliance) with the exception of monitoring of the hybrid system under 13 CCR 1971.1(g) (Monitoring Requirements For All Engines), and 13 CCR 2035 et seq. (emission control warranty).

BE IT FURTHER RESOLVED: For the listed hybrid system Allison has submitted the materials to demonstrate certification compliance with 13 CCR 1971.1 (on-board diagnostic, full or partial compliance) except 13 CCR 1971.1(e) Monitoring Requirements for Diesel/Compression-Ignition Engines, (f) Monitoring Requirements for Gasoline/Spark-Ignited Engines, and (i) Monitoring System Demonstration Requirements for Certification.

BE IT FURTHER RESOLVED: For the listed hybrid system Allison has submitted the materials to demonstrate certification compliance with 13 CCR 2035 et seq. (emission control warranty).

BE IT FURTHER RESOLVED: The listed Cummins' hybrid engine models and Allison's hybrid system models are conditionally certified in accordance with 13 CCR Section 1971.1(k) (deficiency and fines provisions for certification of the heavy-duty on-board diagnostic (HD OBD) system) because the HD OBD system of the listed hybrid engine and hybrid system models have been determined to have deficiencies. The listed hybrid engine models are approved with fourteen deficiencies and are subject to Cummins paying a fine for the third through fourteenth deficiencies in the listed engine family that is produced and delivered for sale in California. The listed hybrid system models are approved with seven deficiencies and are subject to the Allison paying a fine for the first through seventh deficiencies in the hybrid system model listed in this Executive Order that is produced and delivered for sale in California. The listed hybrid engine and hybrid system models are approved subject to Cummins and/or Allison paying a fine of $500 per combined hybrid engine and system that is produced and delivered for sale in California under this Executive Order. On a quarterly basis, Cummins and Allison shall submit to the Air Resources Board reports of the number of engines and hybrid systems produced and delivered for sale in California and pay the full fine owed for that quarter pursuant to this conditional certification. Payment shall be made payable to the State Treasurer for deposit in the Air Pollution Control Fund no later than thirty (30) days after the end of each calendar quarter during the 2016 model-year production period. Failure to pay the quarterly fine, in full, in the time provided, may be cause for the Executive Officer to rescind this conditional certification, effective from the start of the quarter in question, in which case all engines and hybrid systems covered under this conditional certification for that quarter and all future quarters would be deemed uncertified and subject to a civil penalty of up to $5000 per engine pursuant to HSC Section 43154.

BE IT FURTHER RESOLVED: The Allison hybrid system models listed on this Executive Order may only be used with Cummins' hybrid engine models listed on this Executive Order whose on-board diagnostic system have been approved as compatible.

BE IT FURTHER RESOLVED: Sales of the Cummins hybrid engine and Allison hybrid system models using any identification other than that listed, selling the hybrid engine or hybrid system models for an application not listed in this Executive Order, or selling any components of the hybrid engine and hybrid system models as an individual system separately shall be prohibited unless prior approval is obtained by Air Resources Board.

BE IT FURTHER RESOLVED: Hybrid Engines certified under this Executive Order shall conform to all applicable California emission regulations.

REVISED

Hybrid systems certified under this Executive Order shall conform to applicable provisions of 13 CCR 1971.1 (on-board diagnostic system, full or partial compliance), 13 CCR 2035 et seq. (emission control warranty), and 13 CCR 2141, 2142, 2144-2146 (emissions warranty information report and field information report).

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 15th day of January 2016.

for Annette Hebert, Chief
Emissions Compliance, Automotive Regulations and Science Division

SUPERSEDED