Verify Schema Change Log for Verify Light Duty Greenhouse Gas Updates
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Compliance Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency
Purpose

This document identifies XML schema modifications to the VERIFY Light Duty (LD) and Fuel Economy (FE) family of schemas to include Green House Gas (GHG) data elements. There are two basic types of modifications. Modifications that involve internal file structure, having no impact to the logical data model, were made to bring the new schema in sync with the current schema development paradigm per EPA XML data standard [GD2-E]. These changes involve only the location and organization of the schema components that comprise the logical data model and some changes to data type names. Modifications that involve the addition of new schema components to included GHG data were also made. Because the current schema development paradigm for certain kinds of data validation has moved the validation to business rules, hence making the schema much less susceptible to data requirement changes, new GHG data elements have more generic data types. Because some of the GHG data elements have been reused from the original LD schemas, these LD data elements now also have more generic data types. This basically relaxes the schema validation of the LD instances of these data elements but also requires that any business rules written for data validation for the GHG instances additionally be applied to the LD instances as well.

LD Modified XML Files

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Individual XML Schema File Modifications

For new and modified data elements, the annotation following the data element name references the corresponding data element identifiers in the DR spreadsheet. Note that individual data elements may be used in more locations in the schemas than defined in the DR spreadsheet.

EN_VER_LD_CD_CertificationDataSubmissionRootElement_v0.9.xsd

- The following changes were made to TestGroupIdentificationDetails [Type]:
  - Data element HeavyDutyGreenhouseGas2bOr3Indicator [Y/N (LD-TG6.5)] was added with cardinality (1,1).

EN_VER_LD_CFT_DecisionInformationSubmissionRootElement_v0.9.xsd

- The following changes were made to DecisionInformationDetails [Type]:

...
Data element HighSellingVehicleForFuelEconomyLabelingPurposesIndicator [Y/N/NA (LD-DI25.15)] was added with cardinality (1,1).

EN_VER_LD_FE_CAFESubmissionRootElement_v0.9.xsd

- The following changes were made to FootprintInformationDetails [Type]:
  - Data element FinalModelYearGreenhouseGasTemporaryLeadTimeAllowanceAlternativeStandardProductionNumber [0 to 9,999,999 (FE-CA194)] was added with cardinality (0,1).

- The following changes were made to ModelTypeDetails [Type]:
  - Data element TemporaryLeadTimeAllowanceAlternativeStandardIndicator [Y/N (FE-CA156)] was renamed to TemporaryLeadTimeAllowanceAlternativeStandardIndicator [Y/N (FE-CA156)] having cardinality (0,1).

- The following changes were made to ReformedStandardDetails [Type]:
  - Data element ManufacturerUnroundedGreenhouseGasTemporaryLeadTimeAllowanceAlternativeStandardValue [0.0 to 9999.9 (FE-CA195)] was added with cardinality (0,1).
  - Data element ManufacturerUnroundedReformedStandardValue [0.0000 to 999.9999 (FE-CA22.3)] was renamed to ManufacturerUnroundedReformedTruckCAFEStandardValue [0.0000 to 999.9999 (FE-CA22.3)] having cardinality (0,1).
  - Data element ManufacturerUnroundedReformedDomesticPassengerVehicleCAFEStandardValue [0.0000 to 999.9999 (FE-CA199)] was added with cardinality (0,1).
  - Data element ManufacturerUnroundedReformedImportPassengerVehicleCAFEStandardValue [0.0000 to 999.9999 (FE-CA203)] was added with cardinality (0,1).

- The following changes were made to FuelEconomyCAFEDetails [Type]:
  - Complex data element EPAGeneratedFuelEconomyCAFEDetails [Type] has been removed.
  - Complex data element EPAGeneratedResultsDetails [Type] has been added with cardinality (0,1).
  - Complex data element EPAReformedStandardCalculationResultsDetails [Type] has been added with cardinality (0,1).

- The complex data type EPAGeneratedResultsDetailsType was added as follows:
  - Data element OriginalReceiptDate [YYYYMMDD (FE-CA,GL,FT,RL)] was added with cardinality (1,1).
  - Data element EPAFinalStatusIndicator [Y/N (FE-CA223)] was added with cardinality (1,1).
  - Complex data element EPAOfficialModelYearProductionVolumeDetails [Type] was added with cardinality (0,1).
  - Complex data element EPAOfficialCalculationResultsDetails [Type] was added with cardinality (0,1).

- The complex data type EPAOfficialModelYearProductionVolumeDetails was added as follows:
  - Data element OfficialModelYearGHGProductionCount [0 to 9,999,999 (FE-CA130)] was added with cardinality (0,1).
Data element OfficialModelYearGHGTLAASProductionCount [0 to 9,999,999 (FE-CA131)] was added with cardinality (0,1).

Data element OfficialModelYearCAFEDomesticPassengerVehicleProductionCount [0 to 9,999,999 (FE-CA54)] was added with cardinality (0,1).

Data element OfficialModelYearCAFEImportedPassengerVehicleProductionCount [0 to 9,999,999 (FE-CA55)] was added with cardinality (0,1).

Data element OfficialModelYearCAFETruckProductionCount [0 to 9,999,999 (FE-CA53)] was added with cardinality (0,1).

The complex data type EPAOfficialCalculationResultsDetailsType was added as follows:

- Data element OfficialGHGAverageGramsPerMileNumber [0 to 9,999 (FE-CA151)] was added with cardinality (0,1).
- Data element OfficialGHGTLAASAverageGramsPerMileNumber [0 to 9,999 (FE-CA152)] was added with cardinality (0,1).
- Data element OfficialCAFEDomesticPassengerVehicleMilesPerGallonValue [0.0 to 9,999.9 (FE-CA91)] was added with cardinality (0,1).
- Data element OfficialCAFEImportedPassengerVehicleMilesPerGallonValue [0.0 to 9,999.9 (FE-CA92)] was added with cardinality (0,1).
- Data element OfficialCAFETruckMilesPerGallonValue [0.0 to 9,999.9 (FE-CA93)] was added with cardinality (0,1).

The complex data type EPAReformedStandardCalculationResultsDetailsType was added as follows:

- Complex data element GHGReformedStandardDetails [EPAGHGReformedStandardDetailsType] was added with cardinality (0,1).
- Complex data element GHGTLAASReformedStandardDetails [EPAGHGReformedStandardDetailsType] was added with cardinality (0,1).
- Complex data element DomesticPassengerVehicleReformedStandardDetails [EPACAFEReformedStandardDetailsType] was added with cardinality (0,1).
- Complex data element ImportedPassengerVehicleReformedStandardDetails [EPACAFEReformedStandardDetailsType] was added with cardinality (0,1).
- Complex data element TruckReformedStandardDetails [EPACAFEReformedStandardDetailsType] was added with cardinality (0,1).

The complex data type EPAGHGReformedStandardDetailsType was added as follows:

- Data element CalculatedUnroundedReformedGHGStandardValue [0.0 to 9,999.9 (FE-CA161,196)] was added with cardinality (0,1).
- Data element CalculatedUnroundedReformedGHGDiscrepancyValue [-9,999.9 to 9,999.9 (FE-CA162,197)] was added with cardinality (0,1).
- Data element CalculatedFinalReformedGHGStandardNumber [0 to 9,999 (FE-CA163,198)] was added with cardinality (0,1).

The complex data type EPACAFEReformedStandardDetailsType was added as follows:

- Data element CalculatedUnroundedReformedCAFEStandardValue [0.0000 to 999.9999 (FE-CA22,200,204)] was added with cardinality (0,1).
- Data element CalculatedUnroundedReformedCAFEDiscrepancyValue [-999.9999 to 999.9999 (FE-CA22.5,201,205)] was added with cardinality (0,1).
- Data element CalculatedFinalReformedCAFEStandardValue [0.0 to 999.9 (FE-CA22.7, 202, 206)] was added with cardinality (0,1).

- The complex data element EPABaseLevelDetails [Type] was removed.
- The complex data type EPABaseLevelDetailsType was removed.
- The complex data element EPABaseLevelFuelEconomyResults [EPAFuelEconomyResultsType] was removed.
- The complex data element EPABaseLevelGreenhouseGasResults [EPAGreenhouseGasResultsType] was removed.
- The complex data type EPABaseFuelEconomyResultsType was removed.
- The complex data element EPAConfigurationDetails [Type] was removed.
- The complex data type EPAConfigurationDetailsType was removed.
- The complex data element EPAConfigurationFuelEconomyResults [EPAFuelEconomyResultsType] was removed.
- The complex data element EPAConfigurationGreenhouseGasResults [EPAGreenhouseGasResultsType] was removed.
- The complex data element EPADomesticPassengerVehicleDetails [VehicleResultsDetailsType] was removed.
- The complex data element EPAGeneratedFuelEconomyCAFEDetails [Type] was removed.
- The complex data type EPAGeneratedFuelEconomyCAFEDetailsType was removed.
- The complex data type EPAFuelEconomyResultsType was removed.
- The complex data type EPAGreenhouseGasResultsType was removed.
- The complex data element EPAFuelEconomyResultBaselineDetails [EPAFuelEconomyResultDetailsType] was removed.
- The complex data element EPAFuelEconomyResultFinalDetails [EPAFuelEconomyResultDetailsType] was removed.
- The complex data type EPAFuelEconomyResultDetailsType was removed.
- The complex data element EPAGreenhouseGasResultBaselineDetails [EPAGreenhouseGasResultDetailsType] was removed.
- The complex data element EPAGreenhouseGasResultFinalDetails [EPAGreenhouseGasResultDetailsType] was removed.
- The complex data type EPAGreenhouseGasResultDetailsType was removed.
- The complex data element EPAGreenhouseGasResultsDetails [ResultsDetailsType] was removed.
- The complex data element EPAImportedPassengerVehicleDetails [VehicleResultDetailsType] was removed.
- The complex data element EPAModelTypeDetails [Type] was removed.
- The complex data type EPAModelTypeDetailsType was removed.
- The complex data element EPAModelTypeFuelEconomyBaselineDetails [EPAModelTypeFuelEconomyResultDetailsType] was removed.
- The complex data element EPAModelTypeFuelEconomyFinalDetails [EPAModelTypeFuelEconomyResultDetailsType] was removed.
- The complex data type EPAModelTypeFuelEconomyResultDetailsType was removed.
- The complex data element EPAModelTypeFuelEconomyResults [Type] was removed.
- The complex data type EPAModelTypeFuelEconomyResultsType was removed.
The complex data element EPAModelTypeGreenhouseGasBaselineDetails [EPAModelTypeGreenhouseGasResultDetailsType] was removed.
The complex data element EPAModelTypeGreenhouseGasFinalDetails [EPAModelTypeGreenhouseGasResultDetailsType] was removed.
The complex data type EPAModelTypeGreenhouseGasResultDetailsType was removed.
The complex data element EPAModelTypeGreenhouseGasResults [Type] was removed.
The complex data type EPAModelTypeGreenhouseGasResultsType was removed.
The complex data element EPAReformedStandardDetails [Type] was removed.
The complex data element EPAReformedStandardDetailsType was removed.
The complex data element EPASubConfigurationDetails [Type] was removed.
The complex data type EPASubConfigurationDetailsType was removed.
The complex data element EPASubConfigurationFuelEconomyResultBaselineDetails [EPASubConfigurationFuelEconomyResultDetailsType] was removed.
The complex data element EPASubConfigurationFuelEconomyResultFinalDetails [EPASubConfigurationFuelEconomyResultDetailsType] was removed.
The complex data type EPASubConfigurationFuelEconomyResultDetailsType was removed.
The complex data element EPASubConfigurationFuelEconomyResults [Type] was removed.
The complex data type EPASubConfigurationFuelEconomyResultsType was removed.
The complex data element EPASubConfigurationGreenhouseGasResultBaselineDetails [EPASubConfigurationGreenhouseGasResultDetailsType] was removed.
The complex data element EPASubConfigurationGreenhouseGasResultFinalDetails [EPASubConfigurationGreenhouseGasResultDetailsType] was removed.
The complex data type EPASubConfigurationGreenhouseGasResultDetailsType was removed.
The complex data element EPASubConfigurationGreenhouseGasResults [Type] was removed.
The complex data type EPASubConfigurationGreenhouseGasResultsType was removed.
The complex data element EPATemporaryLeadtimeAllowanceAlternativeStandardResultsDetails [ResultsDetailsType] was removed.
The complex data element EPATruckResultDetails [TruckResultDetailsType] was removed.

EN_VER_LD_FE_LabelSubmissionRootElement_v0.9.xsd

The complex data type CarbonDioxide1ValueDetailsType was added as follows:
  o Data element CityCarbonDioxide1Value [0.0 to 9,999.9 (FE-GL226,232,268,271)] was added with cardinality (1,1).
  o Data element HighwayCarbonDioxide1Value [0.0 to 9,999.9 (FE-GL227,233,269,272)] was added with cardinality (1,1).
  o Data element CombinedCarbonDioxide1Value [0.0 to 9,999.9 (FE-GL228,234,270,273)] was added with cardinality (1,1).

The complex data type CarbonDioxideNumberDetailsType was added as follows:
  o Data element CityCarbonDioxideNumber [0 to 9,999 (FE-GL235)] was added with cardinality (1,1).
  o Data element HighwayCarbonDioxideNumber [0 to 9,999 (FE-GL236)] was added with cardinality (1,1).
- Data element CombinedCarbonDioxideNumber [0 to 9,999 (FE-GL201)] was added with cardinality (1,1).

- The following changes were made to ModelTypeDetails [Type]:
  - The cardinality of data element ActualModelSalesAreaIdentifier [2 characters (FE-GL106.2)] was changed from (1,∞) to (0,∞).

- The following changes were made to LabelDetails [Type]:
  - Data element MediumDutyPassengerVehicleOnlyIndependentCommercialImporterIndicator [Y/N (FE-GL200)] was added with cardinality (1,1).
  - Data element VoluntaryLowerMPGLabelIndicator [Y/N (FE-GL85)] was renamed to VoluntaryLowerFuelEconomyLabelIndicator [Y/N (FE-GL85)] having cardinality (1,1).
  - Data element FuelEconomyRatingNumber [1 to 10 (FE-GL203)] was added with cardinality (0,1).
  - Data element GreenhouseGasRatingNumber [1 to 10 (FE-GL205)] was added with cardinality (0,1).
  - Complex data element SubConfigurationSmogRatingDetails [Type] was added with cardinality (0,∞).
  - Data element AmountSavedOverFiveYearsNumber [0 to 99,999 (FE-GL210)] was added with cardinality (0,1).
  - Data element IncreasedAmountSpentOverFiveYearsNumber [0 to 999,999 (FE-GL212)] was added with cardinality (0,1).
  - Data element ManufacturerVoluntaryHigherCarbonDioxideCombinedNumber [0 to 9,999 (FE-GL276)] was added with cardinality (0,1).

- The complex data element SubConfigurationSmogRatingDetails [Type] was added as follows:
  - Data element TestGroupName [12 characters, optional . after 5th and before last (FE-IV6, GL13.5, 126, CA34, RL4, GL207)] with cardinality (1,1).
  - Data element ManufacturerCalculatedSmogRatingNumber [1 to 10 (FE-GL208)] was added with cardinality (1,1).
  - Data element EPACalculatedSmogRatingNumber [1 to 10 (GL-209)] was added with cardinality (0,1).

- The following changes were made to FuelEconomyLabelDetails [Type]:
  - Complex data element EPAGeneratedFuelEconomyDetails [Type] was changed to EPAGeneratedFuelEconomyLabelDetails [Type].

- The following changes were made to EPAGeneratedFuelEconomyLabelDetails [Type]:
  - Data element EPAFuelEconomyRatingNumber [1 to 10 (FE-GL204)] was added with cardinality (0,1).
  - Data element EPAGreenhouseGasRatingNumber [1 to 10 (FE-GL206)] was added with cardinality (0,1).
  - Data element EPAMonthlyAmountSavedOverFiveYearsNumber [0 to 99,999 (FE-GL211)] was added with cardinality (0,1).
  - Data element EPAMonthlyIncreasedAmountSpentOverFiveYearsNumber [0 to 999,999 (FE-GL213)] was added with cardinality (0,1).
Data element DiscrepancyBetweenManufacturerAndEPACalculatedLabelValuesIndicator [Y/N (FE-GL274)] was added with (0,1).
Complex data element CalculatedFuelUsageAndEconomyDetails [Type] was removed.
Data element EPAFiveCycleRoundedAdjustedFinalLabelCombinedCarbonDioxideNumber [0 to 9,999 (FE-GL248)] was added with cardinality (0,1).

The following changes were made to BaseLevelDetails [Type]:
- The cardinality of complex data element FuelUsageDetails [Type] was changed from (1,∞) to (0,∞).

The following changes were made to FuelUsageAndEconomyDetails [Type]:
- Data element FuelEconomyValueUnitIdentifier was removed (relocated to FuelEconomyValueUnitDetails)
- Complex data elements ManufacturerUnroundedUnadjustedModelTypeDetails and ManufacturerFiveCycleUnroundedAdjustedModelTypeDetails were removed (relocated to FuelEconomyValueUnitDetails)
- Complex data element ManufacturerCalculatedRoundedAdjustedModelTypeDetails was removed
- Complex data element ManufacturerVoluntaryLowerDetails was removed (relocated to FuelEconomyValueUnitDetails)
- Complex data element FuelEconomyValueUnitDetails [Type] was added with cardinality (1,∞).
- Complex data elements ManufacturerUnroundedUnadjustedModelTypeCarbonDioxideDetails and ManufacturerFiveCycleUnroundedAdjustedModelTypeCarbonDioxideDetails, both with type CarbonDioxide1ValueDetailsType, were added with cardinality (0,1).
- Complex data element ManufacturerFiveCycleRoundedAdjustedModelTypeCarbonDioxideDetails, with type CarbonDioxideNumberDetailsType, was added with cardinality (0,1).
- Data element ManufacturerCalculatedAdjustedCombinedModelTypeFuelConsumptionValue [0.0 to 999.9 (FE-GL214)] was added with cardinality (0,1).
- Data element ManufacturerVoluntaryHigherCombinedFuelConsumptionValue [0.0 to 999.9 (FE-GL275)] was added with cardinality (0,1).
- The cardinality of complex data element ManufacturerCityLabelDetails [Type] was changed from (1,1) to (0,1).
- The cardinality of complex data element ManufacturerHighwayLabelDetails [Type] was changed from (1,1) to (0,1).
- Complex data element ElectricVehicleFuelEconomyDetails [Type] has been added with cardinality (0,1).
- Complex data element EPACalculatedFuelUsageAndEconomyDetails [Type] has been added with cardinality (0,1).

The complex data element FuelEconomyValueUnitDetails [Type] was added as follows:
- Data element FuelEconomyValueUnitIdentifier [Enumeration of 3 identifiers (FE-GL90)] was added (relocated from FuelUsageAndEconomyDetails) with cardinality (1,1).
- Complex data elements ManufacturerUnroundedUnadjustedModelTypeDetails and ManufacturerFiveCycleUnroundedAdjustedModelTypeDetails, both with type FuelEconomy4ValueDetailsType, were added (relocated from FuelUsageAndEconomyDetails) with cardinality (1,1).
- Complex data element ManufacturerFiveCycleRoundedAdjustedModelTypeDetails, with type FuelEconomy3ValueDetailsType, was added with cardinality (1,1).
- Complex data element ManufacturerVoluntaryLowerDetails, with type FuelEconomyNumber1DetailsType, was added (relocated from FuelUsageAndEconomyDetails) with cardinality (0,1).

- The following changes were made to FuelUsageDetails [Type]:
  - The cardinality of complex data element ManufacturerUnroundedUnadjustedBaseLevelDetails [Type] was from (1,1) to (0,1).
  - The cardinality of complex data element ManufacturerFiveCycleUnroundedAdjustedBaseLevelDetails [Type] was from (1,1) to (0,1).

- The complex data element ElectricVehicleFuelEconomyDetails [Type] was added as follows:
  - Data element ChargeTimeHoursAtTwoHundredFortyVoltsNumber [Hours, 0 to 99 (FE-GL216)] was added with cardinality (0,1).
  - Data element ChargeTimeHoursAtOneHundredTwentyVoltsNumber [Hours, 0 to 99 (FE-GL217)] was added with cardinality (0,1).
  - Complex data element PlugInHybridElectricVehicleFuelEconomyDetails [Type] was added with cardinality (0,1).

- The complex data element EPACalculatedFuelUsageAndEconomyDetails [Type] was added as follows:
  - Complex data element EPAFuelEconomyValueUnitDetails [Type] was added with cardinality (0,∞).
  - Complex data elements EPAUnroundedUnadjustedModelTypeCarbonDioxideDetails and EPAFiveCycleUnroundedAdjustedModelTypeCarbonDioxideDetails, both with type CarbonDioxide1ValueDetailsType, were added with cardinality (0,1).
  - Data element AnnualFuelCostNumber [1 to 99,999 (FE-GL81,81.1)] was added with cardinality (1,1).
  - Data element GasGuzzlerIndicator [Y/N (FE-GL174)] was added with cardinality (0,1).
  - Data element GasGuzzlerMilesPerGallonValue [0.0 to 999.9 (FE-GL173)] was added with cardinality (0,1).

- The complex data element EPACalculatedFuelUsageAndEconomyDetails [Type] was added as follows:
  - Complex data element EPAFuelEconomyValueUnitDetails [Type] was added with cardinality (1,1).
  - Complex data elements EPAUnroundedUnadjustedModelTypeDetails and EPAFiveCycleUnroundedAdjustedModelTypeDetails, both with type FuelEconomy4ValueDetailsType, were added with cardinality (0,1).
  - Complex data element EPAFiveCycleRoundedAdjustedFinalLabelDetails, with type FuelEconomy3ValueDetailsType, was added with cardinality (0,1).

- The complex data element PlugInHybridElectricVehicleFuelEconomyDetails [Type] was added as follows:
  - Data element TotalDrivingDistanceInMilesNumber [Miles, 0 to 9,999 (FE-GL218)] was added with cardinality (0,1).
- The complex data element CompositeGasolineElectricityCityMilesPerGallonEquivalentNumber [Miles per gallon, 0 to 9,999 (FE-GL219)] was added with cardinality (0,1).
- The complex data element CompositeGasolineElectricityHighwayMilesPerGallonEquivalentNumber [Miles per gallon, 0 to 9,999 (FE-GL220)] was added with cardinality (0,1).
- The complex data element CompositeGasolineElectricityCombinedMilesPerGallonEquivalentNumber [Miles per gallon, 0 to 9,999 (FE-GL221)] was added with cardinality (0,1).

- The complex data element CalculatedBaseLevelDetails [Type] was removed.
- The complex data type CalculatedBaseLevelDetailsType was removed.
- The complex data element CalculatedConfigurationDetails [Type] was removed.
- The complex data type CalculatedConfigurationDetailsType was removed.
- The complex data element CalculatedFuelUsageAndEconomyDetails [Type] was removed.
- The complex data type CalculatedFuelUsageAndEconomyDetailsType was removed.
- The complex data element CalculatedSubConfigurationDetails [Type] was removed.
- The complex data type CalculatedSubConfigurationDetailsType was removed.
- The complex data element ManufacturerCalculatedRoundedAdjustedModelTypeDetails [FuelEconomy3ValueDetailsType] was removed.

EN_VER_LD_FE_RoadLoadSubmissionRootElement_v0.9.xsd

- The complex data element EPAGeneratedDataDetails [Type] was renamed to EPAGeneratedRoadLoadDetails [Type].
- The complex data type EPAGeneratedDataDetailsType was renamed to EPAGeneratedRoadLoadDetailsType.

- The complex data element RoadLoadDetails [Type] was added as follows:
  - Data element FuelEconomyLabelSubconfigurationReferenceIndicator [Y/N (FE-RL1.7)] was added with cardinality (1,1).
  - Data element FuelEconomyLabelManufacturerCode [3 characters (FE-RL1.8)] was added with cardinality (1,1).
  - Complex data element FuelEconomyLabelSubConfigurationInformationDetails [Type] was added with cardinality (0,1).
  - Complex data element RoadLoadSubConfigurationInformationDetails [Type] was added with cardinality (0,1).
  - Complex data element RoadLoadDataDetails [Type] was added with cardinality (1,1).
  - Complex data element EPAGeneratedRoadLoadDetails [Type] was added with cardinality (0,1).
  - Data element SubConfigurationIndexNumber was removed (relocated to FuelEconomyLabelSubConfigurationInformationDetailsType).
  - Data element ModelInformationReleaseDate was removed.
  - Data elements TestGroupName, EngineCodeText, AxleRatioValue, and EquivalentTestWeightValue was removed (relocated to RoadLoadSubConfigurationInformationDetailsType).
  - Data element EngineDisplacementValue was removed.
  - Data elements RimAndTireSizeDescriptionText, TireTypeIdentifier, TireManufacturerName, NVRatioValue, CurbWeightValue, TargetCoefficientAValue, TargetCoefficientBValue,
TargetCoefficientCValue, and RoadLoadDeterminationIdentifier were removed (relocated to RoadLoadDataDetails Type).

- Data element RoadLoadHorsepowerValue was removed (relocated to RoadLoadDetailsType and renamed as TotalRoadLoadHorsepowerValue).
- Data element EPAGeneratedDataDetails was removed

- The complex data element FuelEconomyLabelSubConfigurationInformationDetails [Type] was added as follows:
  - Data element BaseLevelIndexNumber [1 to 99 (FE-GL109, CA25.5, RL2.1)] was added with cardinality (1,1).
  - Data element ConfigurationIndexNumber [1 to 999 (FE-GL117, CA26, RL2.2)] was added with cardinality (1,1).
  - Data element SubConfigurationIndexNumber [1 to 99 (FE-GL121, CA29.5, RL3)] was added with cardinality (1,1).

- The complex data element RoadLoadSubConfigurationInformationDetails [Type] was added as follows:
  - Data element TestGroupName [12 characters, optional . after 5th and before last (FE-IV6, GL13.5, 126, CA34, RL4, GL207)] was added (relocated from RoadLoadDetailsType) with cardinality (1,∞).
  - Data element EngineCodeText [1 to 14 characters (FE-GL119, CA28, RL5, IV30)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element AxleRatioValue [0.00 to 9.99 (FE-IV29, GL120, CA29, RL15)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element EquivalentTestWeightValue [Enumeration of 48 values (FE-GL123, CA31, RL21, IV31)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element TotalRoadLoadHorsepowerValue [0.0 to 99.9 (FE-IT21, GL122, CA30, RL22)] was added with cardinality (1,1).

- The complex data element RoadLoadDataDetails [Type] was added as follows:
  - Data element EquivalentEngineCodeText [1 to 14 characters (FE-RL5.1)] was added (relocated from RoadLoadDetailsType) with cardinality (1,∞).
  - Data element InUseEngineCodeDescriptionText [1 to 500 characters (FE-RL6)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element RimAndTireSizeDescriptionText [1 to 20 characters (FE-RL16)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element TireTypeIdentifier [Enumeration of 5 identifiers (FE-RL17)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element TireManufacturerName [1 to 25 characters (FE-RL18)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element NVRatioValue [0.0 to 999.9 (FE-RL19)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element CurbWeightValue [0 to 14000 (FE-RL20)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
  - Data element TargetCoefficientAValue [Lbf, -999.999 to 999.999 (FE-IT25, RL24)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
- Data element TargetCoefficientBValue [Lbf/mph, -9.99999 to 9.99999 (FE-IT26,RL25)] was added with (relocated from RoadLoadDetailsType) cardinality (1,1).
- Data element TargetCoefficientCValue [Lbf/mph**2, -9.999999 to 9.999999 (FE-IT27,RL26)] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).
- Data element RoadLoadDeterminationIdentifier [Enumeration of 2 identifiers type definition] was added (relocated from RoadLoadDetailsType) with cardinality (1,1).

- The complex data element RoadLoadReportDeleteDetails [Type] was added as follows:
  - Data element ModelTypeIndexNumber [1 to 999 (FE-GL1,CA25,RL2)] was added with cardinality (1,1).
  - Data element DeletionReportReasonText [1 to 500 characters (FE-IV45,IT39,RL28)] was added with cardinality (0,1).

**XML Shared Data Element and Data Type File Modifications**

The annotation following the data element name references the corresponding data element identifiers in the DR spreadsheet. Note that some data elements may be used in more locations in the schemas than defined in the DR spreadsheet.

**EN_VER_LD_FE_SharedDataElements_v0.9.xsd**

The following data elements had their data type or enumerations modified. As such, this modification has an impact to each schema that the associated data element is used in. The annotation following the data element name references the corresponding data element identifiers in the DR spreadsheet.

- Data type Rating1To10Type [Enumeration of 10 ratings type definition] was added with the following enumerations:
  - ‘1’ [Worst]
  - ‘2’
  - ‘3’
  - ‘4’
  - ‘5’
  - ‘6’
  - ‘7’
  - ‘8’
  - ‘9’
  - ‘10’ [Best]

- Data type for SubConfigurationFinalModelYearGreenhouseGasProductionNumber [rpm, 0 to 999,999 (FE-CA193)] was changed to Integer6DigitNonNegativeType.
- Data type for SubConfigurationFinalModelYearProductionNumber [rpm, 0 to 999,999 (FE-CA32)] was changed to Integer6DigitNonNegativeType.
- Data type for EngineManagementSystemIdentifier [Y/N (FE-GL75)] was changed to YesNoIndicatorType.
- Enumerations for TransmissionTypeIdentifierType [Enumeration of 8 identifiers type definition] were changed as follows:
  - ‘AMS’ [Automated manual – selectable (e.g., Automated manual with paddles)] was added.
Enumerations for TestResultIdentifierType [Enumeration of 37 identifiers type definition] were changed as follows:
  o ‘CO2 BAG 1’ [Bag 1 Carbon Dioxide] was added.
  o ‘CO2 BAG 2’ [Bag 2 Carbon Dioxide] was added.
  o ‘CO2 BAG 3’ [Bag 3 Carbon Dioxide] was added.
  o ‘CO2 BAG 4’ [Bag 4 Carbon Dioxide] was added.

EN_VER_LD_SharedDataElements_v0.9.xsd

The following data elements had their data type or enumerations modified. As such, this modification has an impact to each schema that the associated data element is used in. The annotation following the data element name references the corresponding data element identifiers in the DR spreadsheet.

- Enumerations for VehicleClassIdentifierType [Enumeration of 11 identifiers type definition] were changed as follows:
  o ‘HDV1’ [Federal HD chassis GVW 8501-10000] was changed to ‘HDV1’ [Federal HD chassis Class 2b GVW 8501-10000].
  o ‘HDV2’ [Federal HD chassis GVW 10001-14000] was changed to ‘HDV2’ [Federal HD chassis Class 3 GVW 10001-14000].

- Enumerations for LightDutyTransmissionTypeIdentifierType [Enumeration of 8 identifiers type definition] were changed as follows:
  o ‘AMS’ [Automated manual – selectable (e.g., Automated manual with paddles)] was added.

- Enumerations for TestResultIdentifierType [Enumeration of 37 identifiers type definition] were changed as follows:
  o ‘CO2 BAG 1’ [Bag 1 Carbon Dioxide] was added.
  o ‘CO2 BAG 2’ [Bag 2 Carbon Dioxide] was added.
  o ‘CO2 BAG 3’ [Bag 3 Carbon Dioxide] was added.
  o ‘CO2 BAG 4’ [Bag 4 Carbon Dioxide] was added.

- Enumerations for CAExhaustEmissionStandardIdentifierType [Enumeration of 16 identifiers type definition] were changed as follows:
  o ‘PZEV’ [CARB PZEV] was added.
  o ‘T1’ [Federal Tier 1 (for use by ICIs only)] was added.

- Enumerations for ExhaustEmissionsStandardLevelIdentifierType [Enumeration of 21 identifiers type definition] were changed as follows:
  o ‘PZEV’ [CARB PZEV] was added.

- Enumerations for Test5CycleCategoryIdentifierType [Enumeration of 6 identifiers type definition] were changed as follows:
  o ‘NOT5C’ [Not 5-Cycle] was added.
  o ‘HWY’ [Highway NOx] was changed to ‘HWY’ [Highway Nox].

- Enumerations for FederalExhaustEmissionStandardIdentifierType [Enumeration of 15 identifiers type definition] were changed as follows:
  o ‘T1’ [Federal Tier 1 (for use by ICIs only)] was added.