

# Real Drive Emissions

Status Update from India



**Indian Delegation**  
**27<sup>th</sup> / 28<sup>th</sup> Nov 2018**  
**2<sup>nd</sup> RDE IWG Meeting**  
**Venue: European Commission,**  
**Brussels**

# The Need - Key Motivators in India



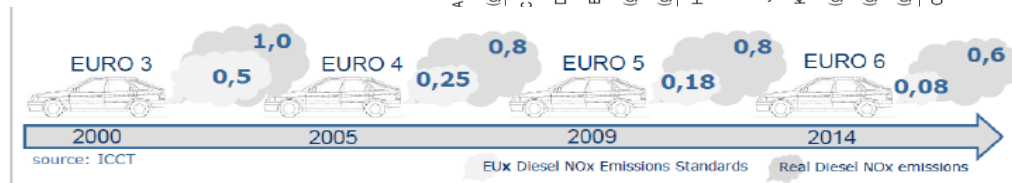
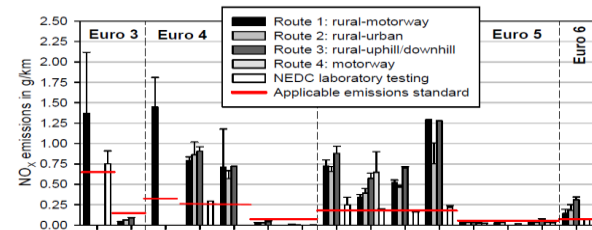
## Global Influences

- ❑ Differences in Test Lab vs Road Results
- ❑ The issue of Test Cycle Recognition / Defeat Devices.
- ❑ Ambient Air Quality Issues (NOx Hotspots in EU Cities)



RDE Test Procedure Formulation in EU / Other Countries

(Source: Air quality in Europe - 2015 report, EEA & EUR 25572 EU-2013 report, JRC)



## Drivers in India

- ❑ Ensure that Real Drive Emissions remain within Compliance Limits with reference to Lab Emissions
- ❑ Improving Ambient Air Quality in Major India Cities by achieving National Air Quality Guidelines

**A Need to have a Test Protocol for evaluating Emissions in Real Driving Conditions in India**

# Indian RDE Status - Overall Summary



**First Announcement- Ministry of Road Transport & Highways, Govt. of India**

**Govt. Notification, GSR 889(E), dtd. 16<sup>th</sup> Sep 16**

During type approval and COP applicable from 1<sup>st</sup> April, 2020, real world driving cycle emission measurement using PEMS shall be carried out for data collection and from 1<sup>st</sup> April, 2023 real world driving cycle emission conformity shall be applicable.

## Indian RDE Formulation- Highlights

- ❑ Test Procedure for Light Duty Vehicles
- ❑ Dec 16: Technical Committee Constituted
- ❑ Feb 17: 1<sup>st</sup> IRDE Committee Meeting
- ❑ Oct 17: 5<sup>th</sup> IRDE Meeting - EU 3<sup>rd</sup> Package considered as Baseline for Indian RDE
- ❑ Nov 18: 12<sup>th</sup> IRDE Meeting- In Principle Agreement on key Items Indian RDE

## Progress Till Date

- ✓ Temperature / Altitude Boundary Conditions – **Completed**
- ✓ Speed Bins /Trip Share /Duration – **Completed**
- ✓ Driving Dynamics Criteria -**Completed**
- ✓ Post Processing- **Completed**
- ✓ Drafting – **In Progress (Expected Completion –Dec 18)**

**Key Items of Indian RDE have been finalized. Regulation Drafting in progress. Expected Completion within Dec 2018.**

# Basic Approach – Indian RDE



EU Model (3<sup>rd</sup> Package)



Adaptations - India Specific Items



Indian RDE

## Key India Specific Adaptation

- ❑ Ambient Temperature
- ❑ Speeds
  - Low Speed in Indian Cities / Highways.
  - Maximum Speeds Lower in India
  - Typical Indian Vehicles (Small Engines / Low PMR)
- ❑ Driving Dynamics
  - Typical Traffic Conditions in India Cities / Highways
  - Typical Indian Vehicles (Small Engines / Low PMR)
- ❑ Data Post Processing
  - Based on Type-1 Test (MIDC)
  - Adaptation of other Factors for Post Processing

## Methodology Adopted

- Indian Climate Data (15 Year Monthly Avg. Data with correction for Regional & Seasonal Extremes)
- Data Collection on Indian Roads in different Cities & Speed Distribution Analysis
- V\*Apos & RPA Scatter based on Data Collection on Indian Roads considering Usable Acceleration Potential.
- Adaptions for using MIDC (2-Point Post Processing & Validation for CO2 Correction Factors, Normality and Completeness)

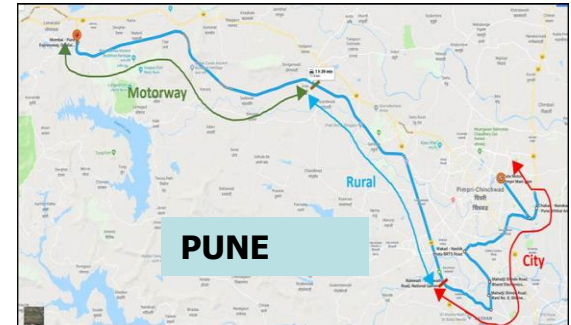
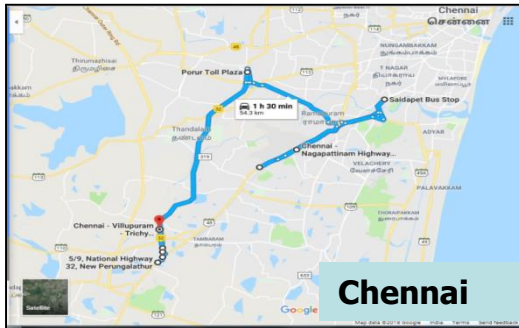
**Indian RDE is mainly based on EU 3<sup>rd</sup> Package with Adaptations for India**

# Indian RDE Development : Snapshot

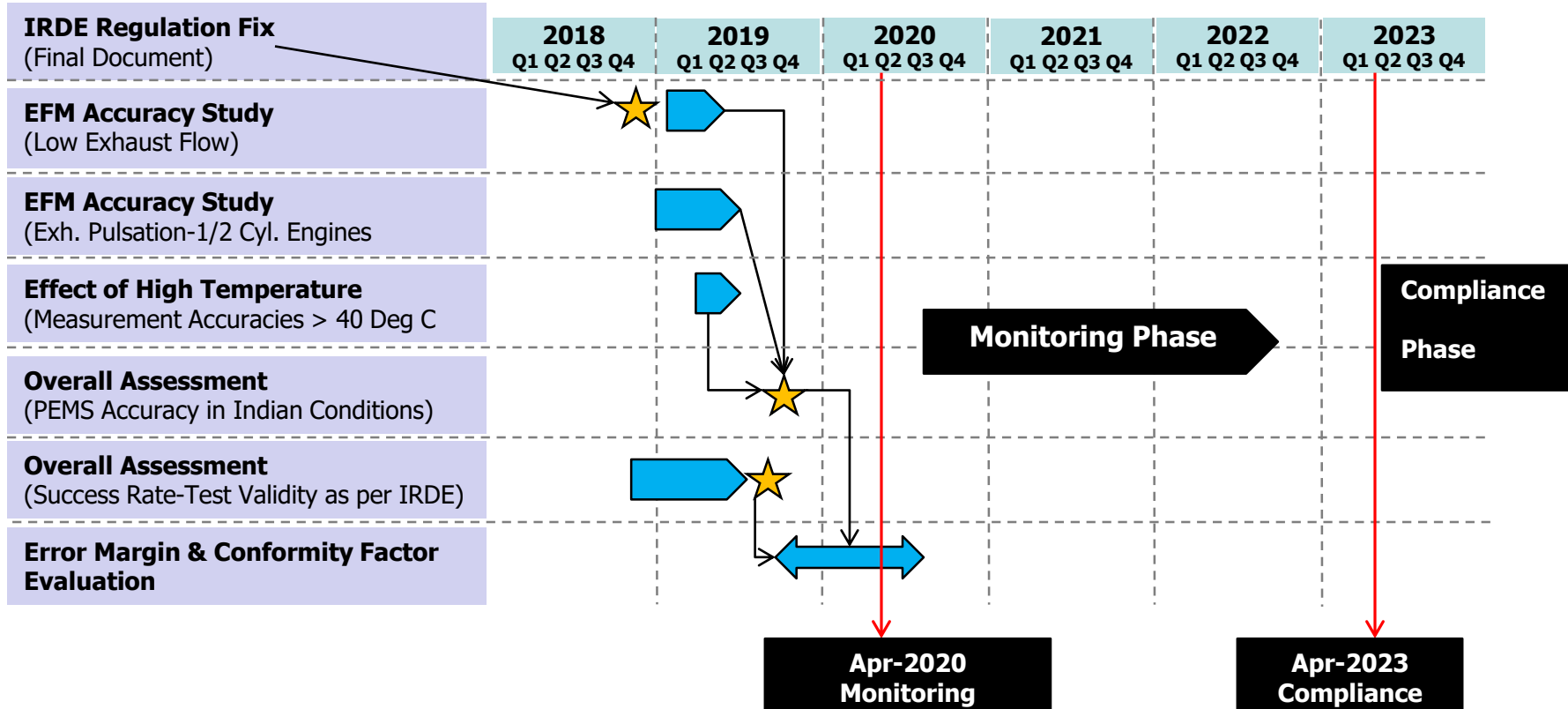


- ❑ Over 60 vehicles Evaluated across various categories(M1, N1 & Low powered M1 & N1)
- ❑ Across Various Regions (North, West and South India) in different seasons
- ❑ Approx. 10,000km of Road Tests done.
- ❑ 12 IRDE Committee Meetings and Over 50 Expert Group Meetings & Telecoms
- ❑ Around 2 years of Work since commencement of activities from Jan 2017

## Examples of Test Routes



# Future Actions



**IRDE Implementation Timelines are already fixed. Conformity Factor Decision expected at beginning of the Monitoring Phase – Plan under discussion.**

**Thank You**