

How Mobile Source Regulations are Implemented

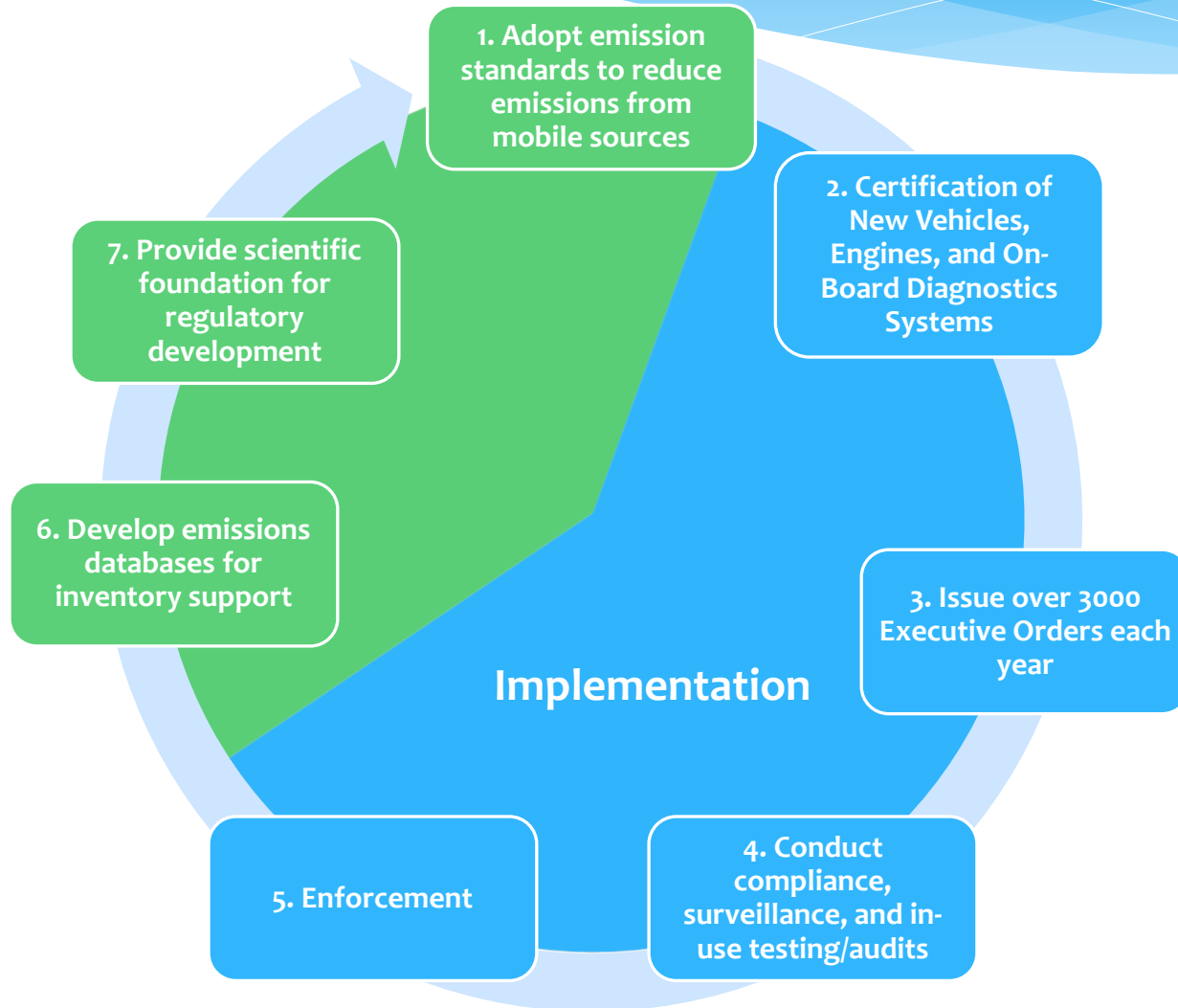
Certification and In Use Compliance

March 17, 2016

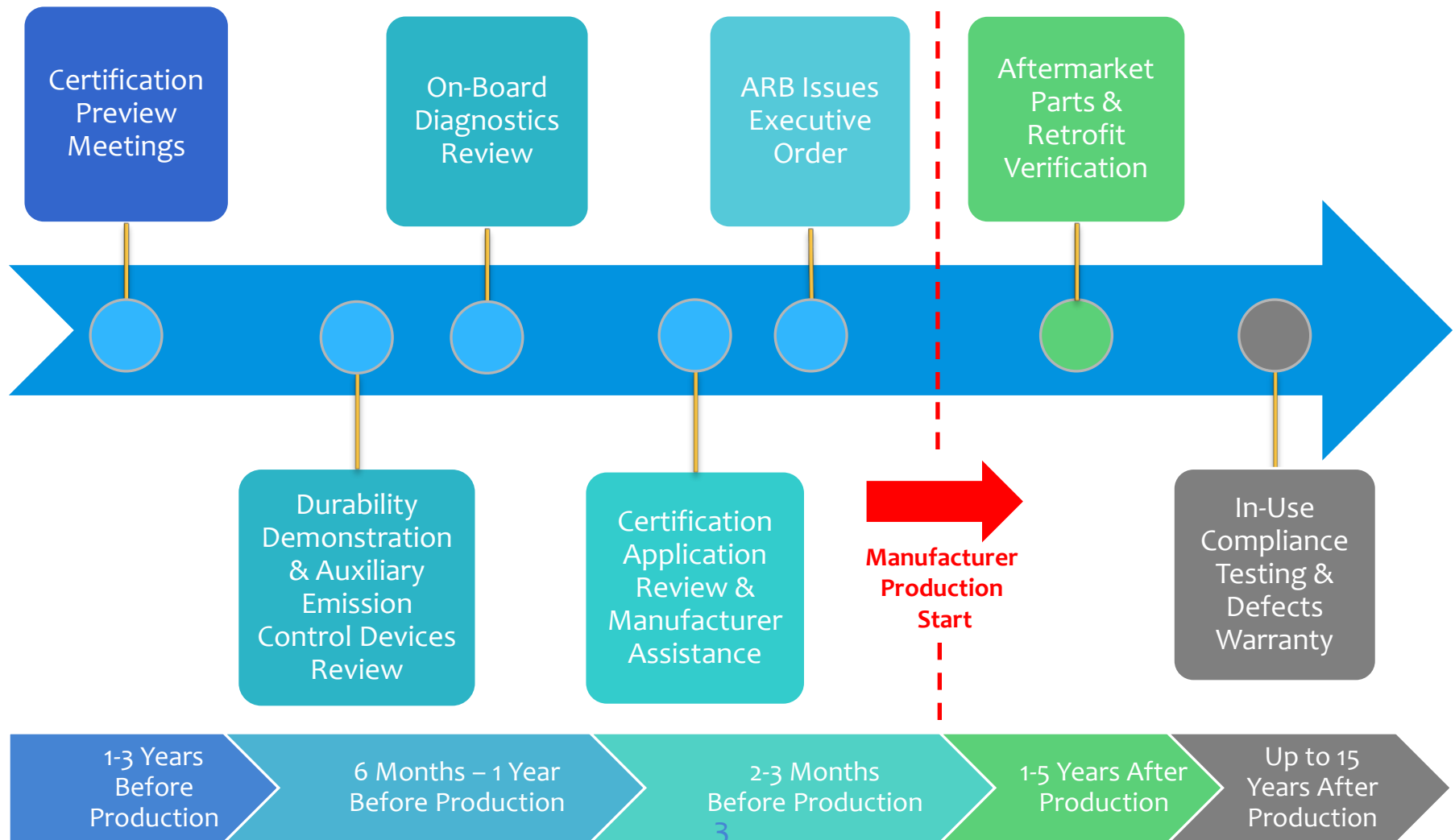
California Environmental Protection Agency

 **Air Resources Board**

Mobile Source Control Process



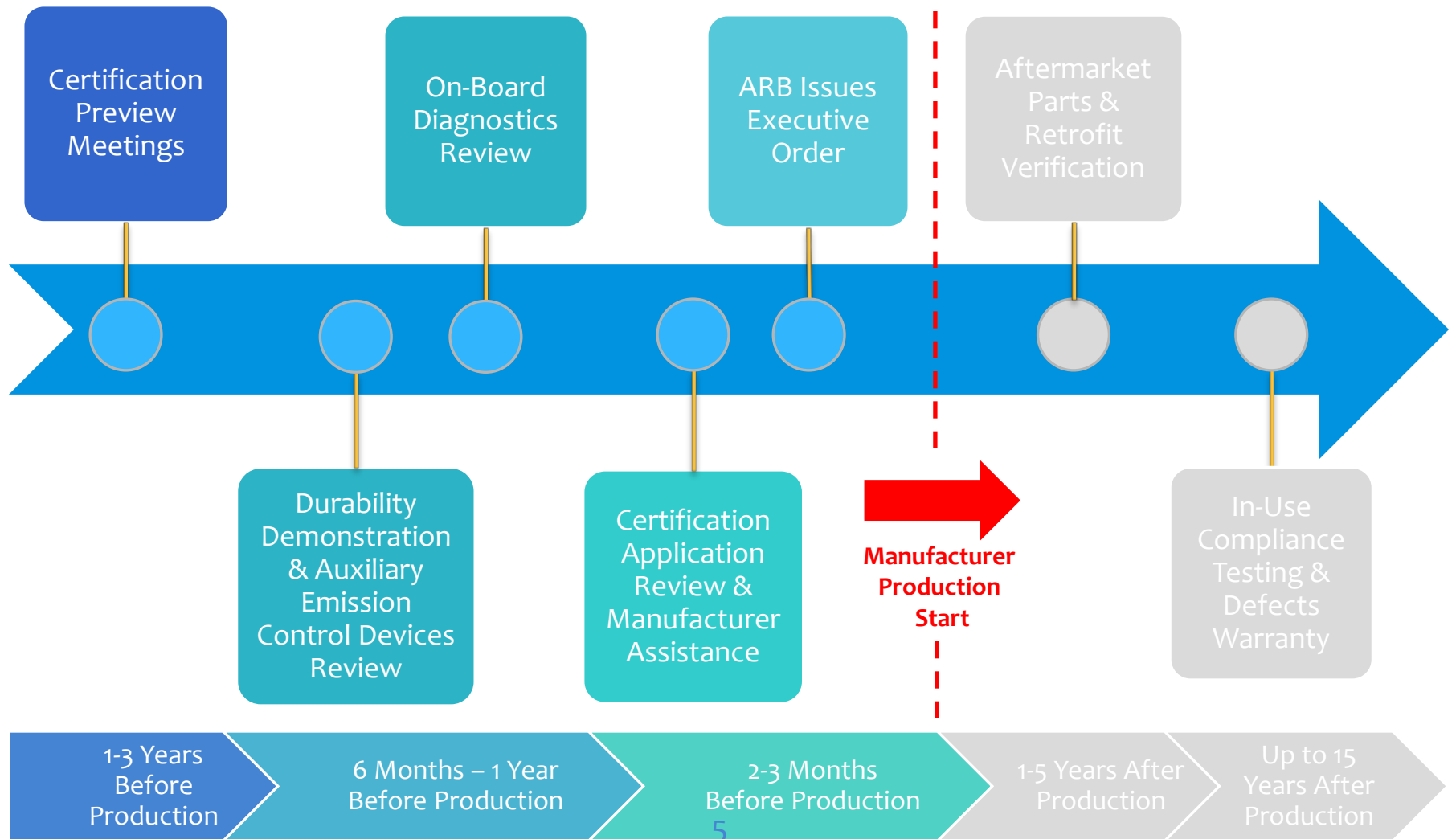
Certification Process Timeline



What do we Certify?

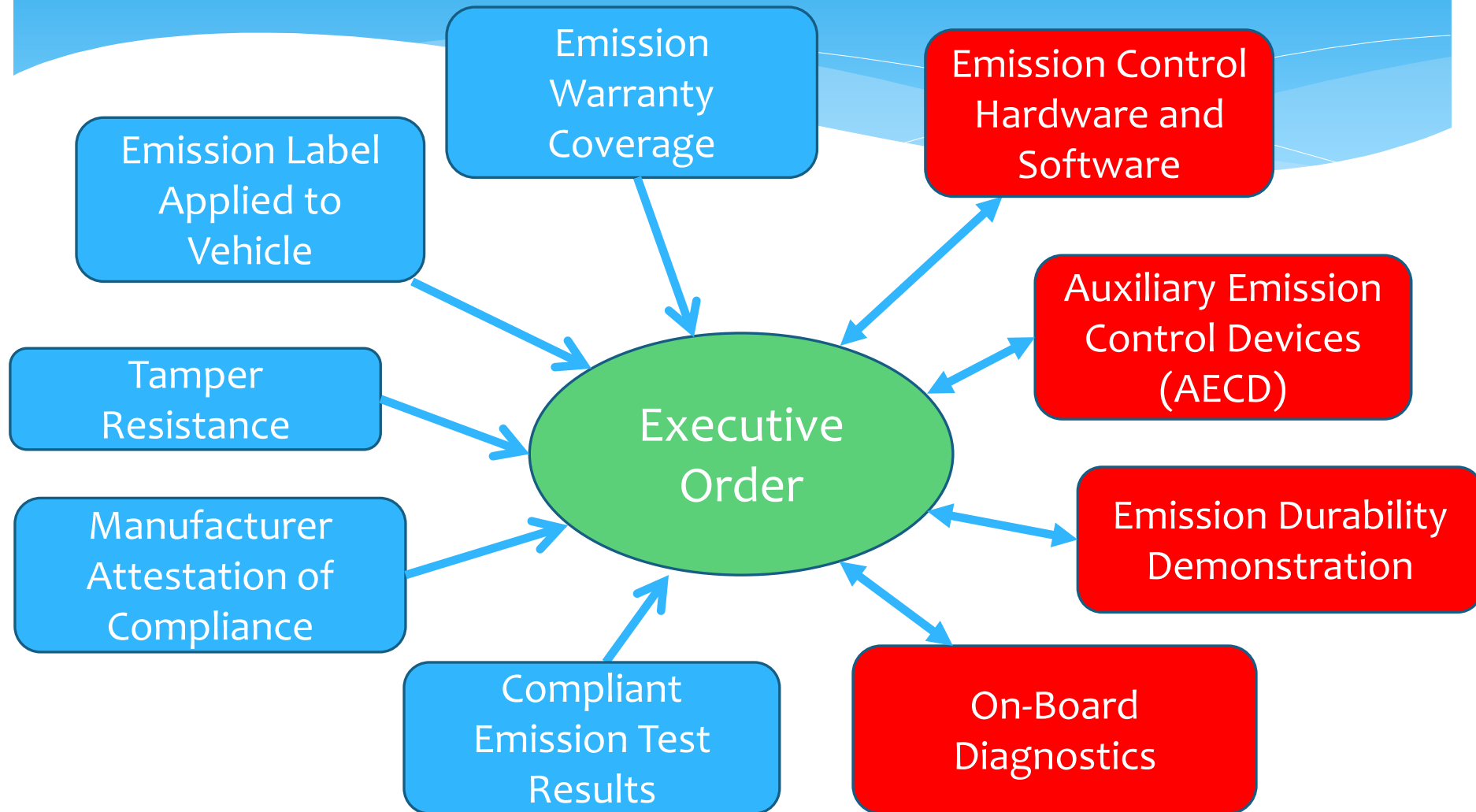


Certification Process Timeline



Certification Information and Data

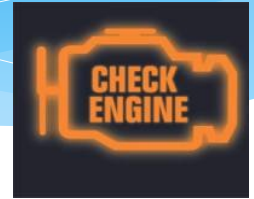
ARB's goal is to ensure compliant vehicles



On-Board Diagnostics (OBD)

ARB Original Program

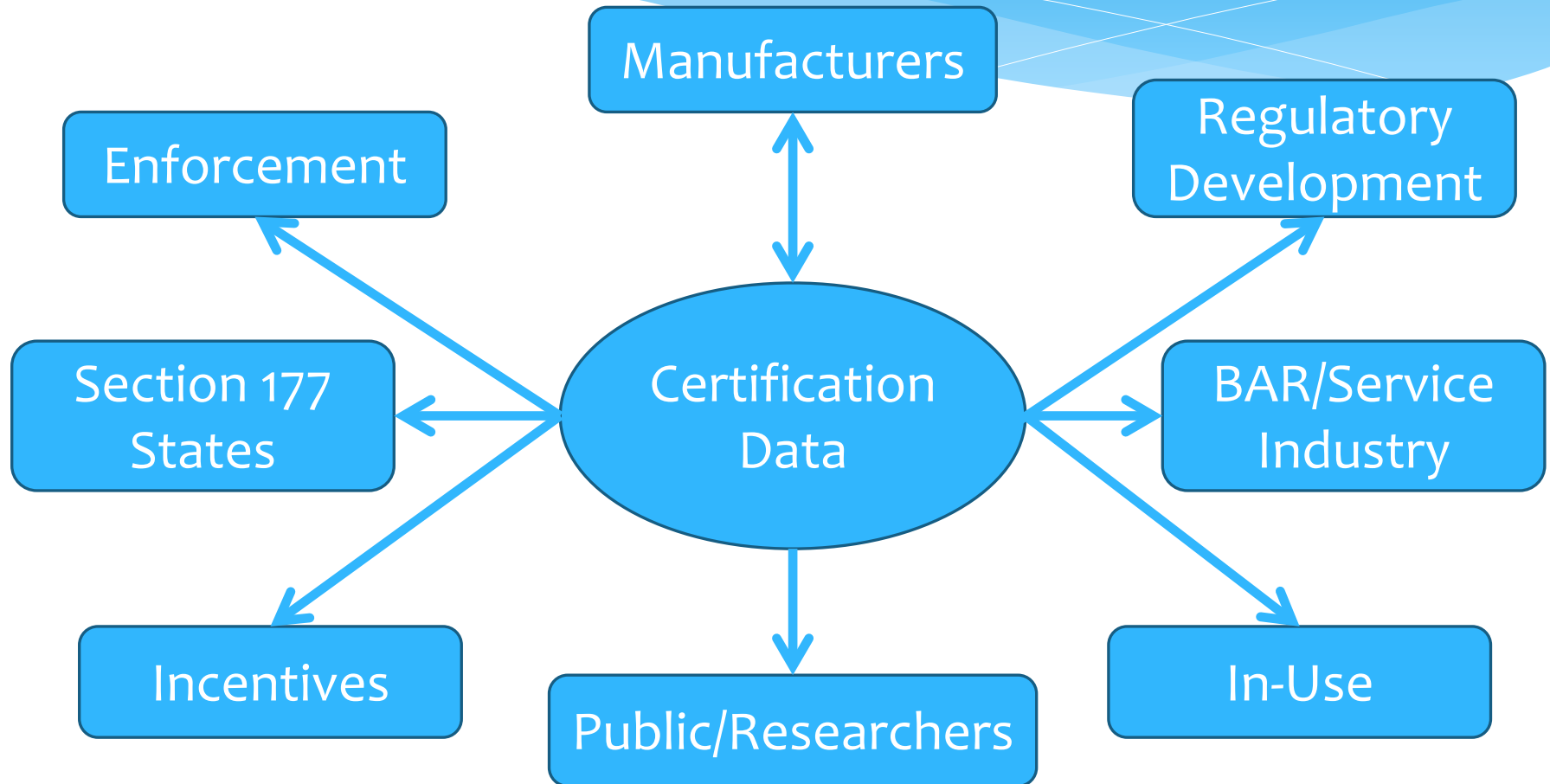
- * Illuminate 'check engine light' when fault is detected
- * Reduce in-use emissions through faster identification/repair of problems
- * OBD II systems are used as basis for emission inspection programs throughout U.S.
- * Manufacturer self-testing and ARB in-house compliance testing occurs on a subset of vehicles/engines after certification



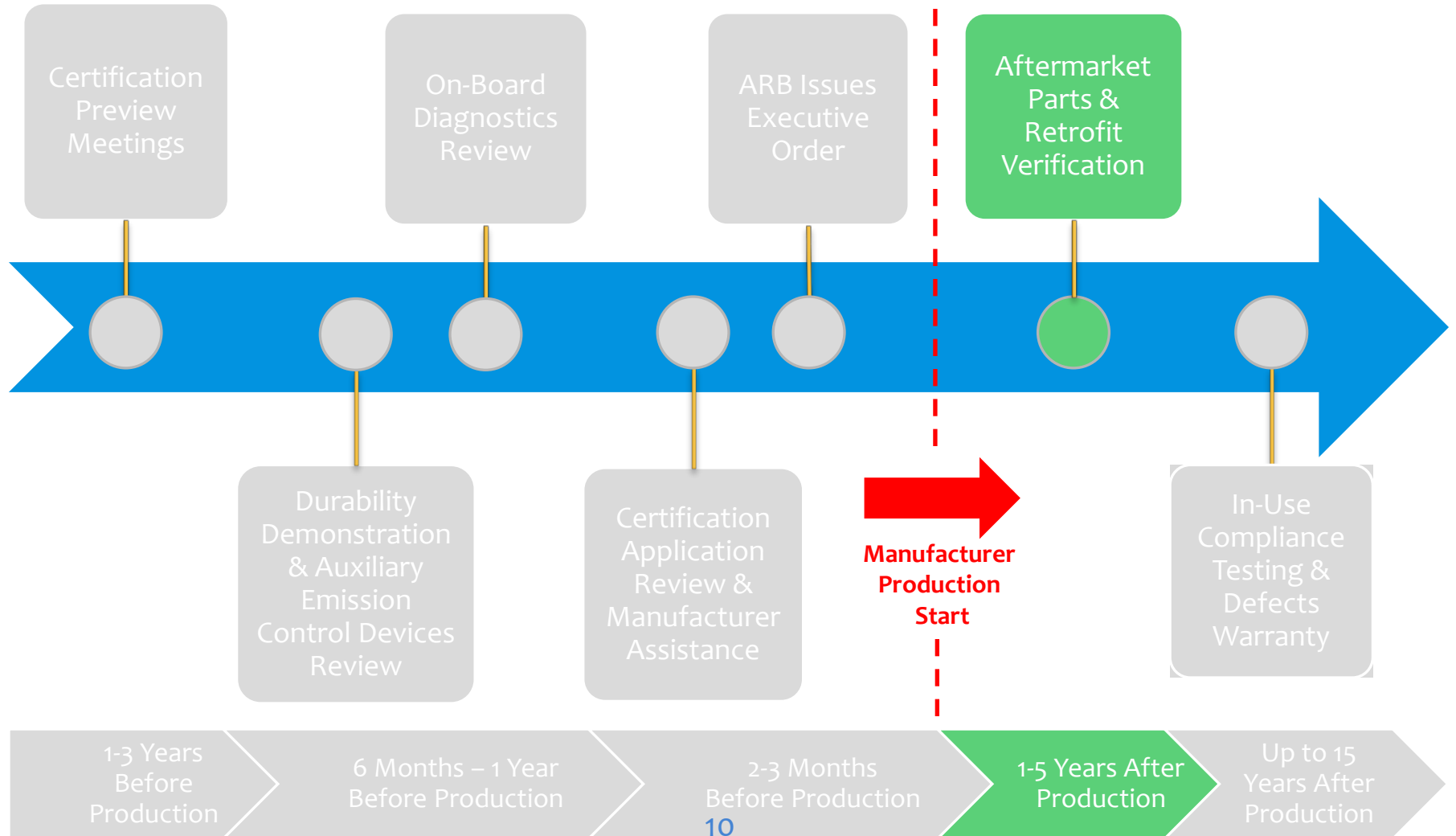
2015 Certification Statistics

Manufacturers	>1000
Executive Orders issued	>3000
Units covered	>2 million
Certification documents processed	>18000

Certification Data Client Base

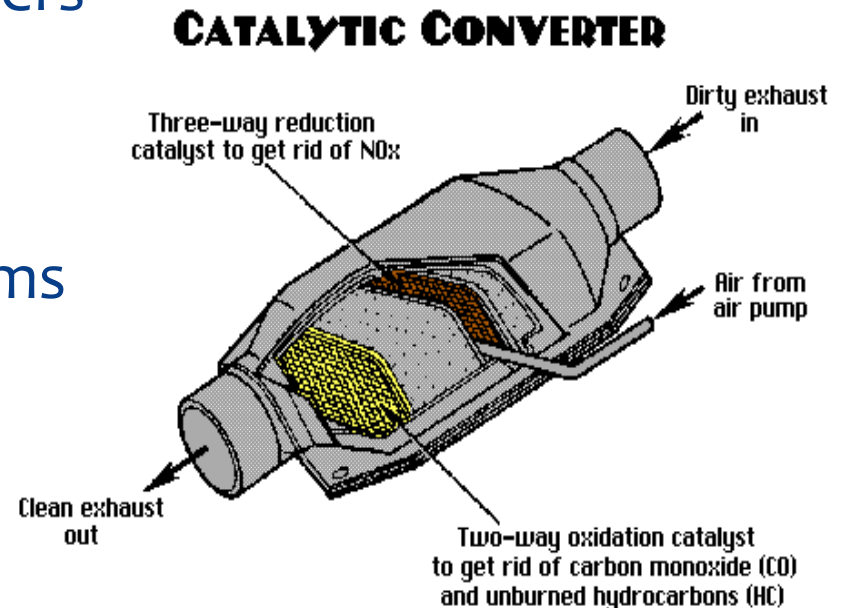


Aftermarket Programs



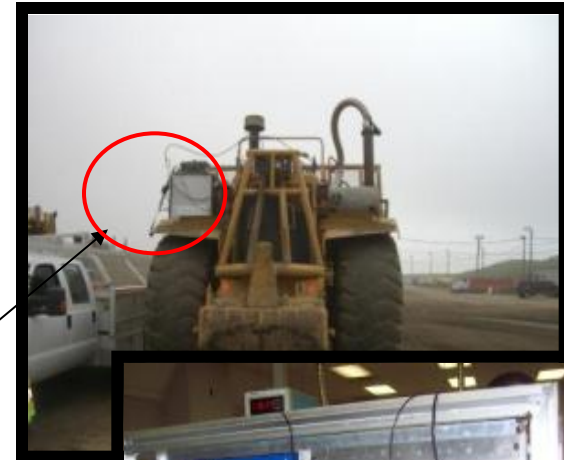
Aftermarket Parts Program

- * Performance parts, air intake systems, turbochargers, programmers, fuel tanks, exhaust headers
- * Aftermarket catalytic converters
- * Highway motorcycle critical emission control parts
- * Alternative fuel retrofit systems
- * Hybrid conversion systems
- * Experimental technologies

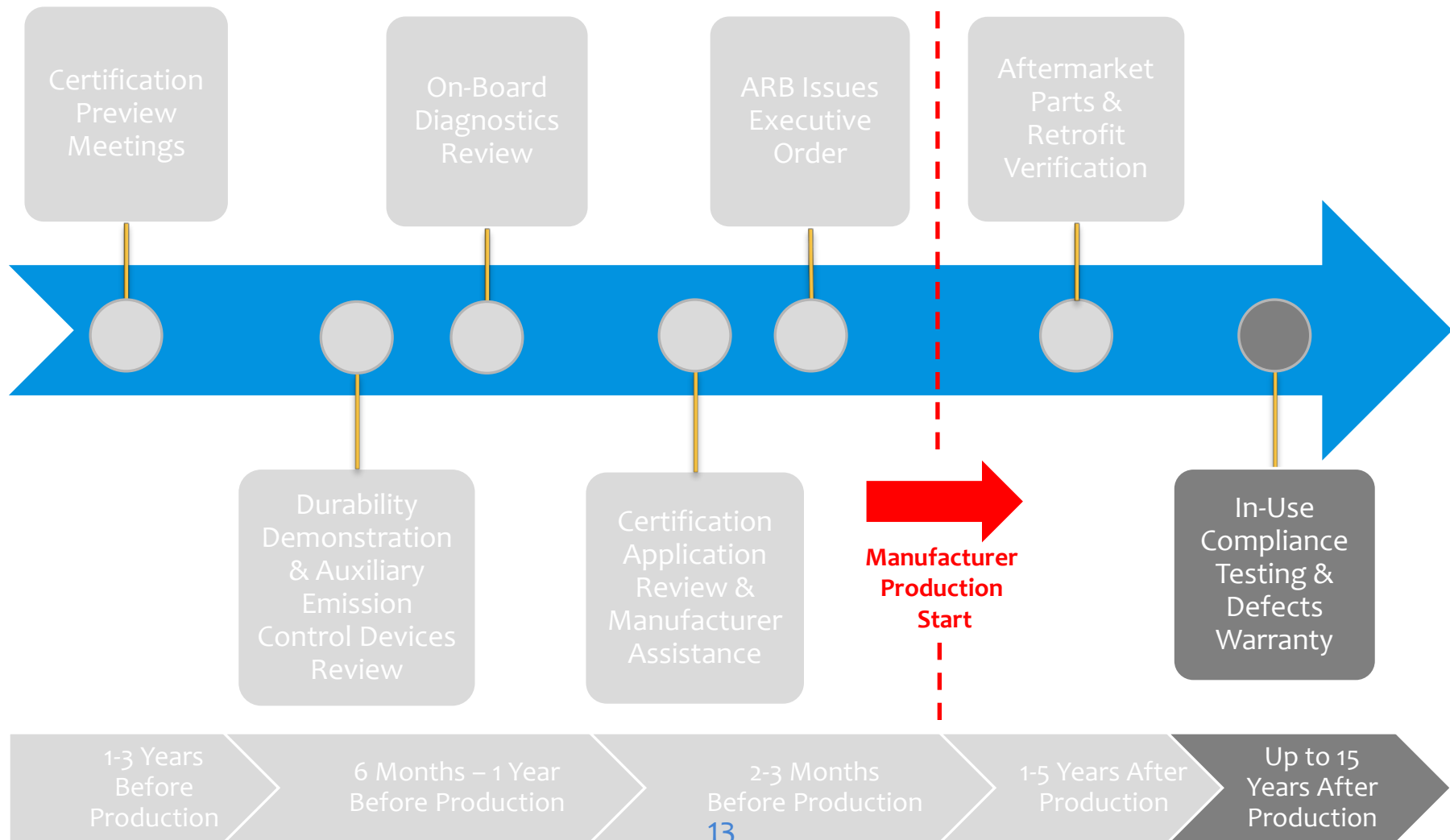


Retrofit Verification Program

- * Supports Fleet Rule regulations
- * Heavy duty on and off road
- * Emission reductions must be confirmed
- * Durability demonstration
- * Operational compatibility
- * Warranty/In-use compliance
- * Retrofit advocate facilitator



In Use Compliance Programs



In-Use Compliance Testing leads to the recall of millions of cars

- * Procure vehicles from consumers for testing
- * 100% of vehicles tested in 1982 failed
 - ➡ 11% of vehicles tested in 1999 failed
- * In 2000 manufacturers are required to procure and test their own in-use vehicles
 - * Allows better targeting for ARB testing
 - * Vehicle failure rates are increasing again

Laboratory Testing

Light Duty Vehicle Dynamometer



Laboratory Testing

Evaporative Emissions (SHED) Testing

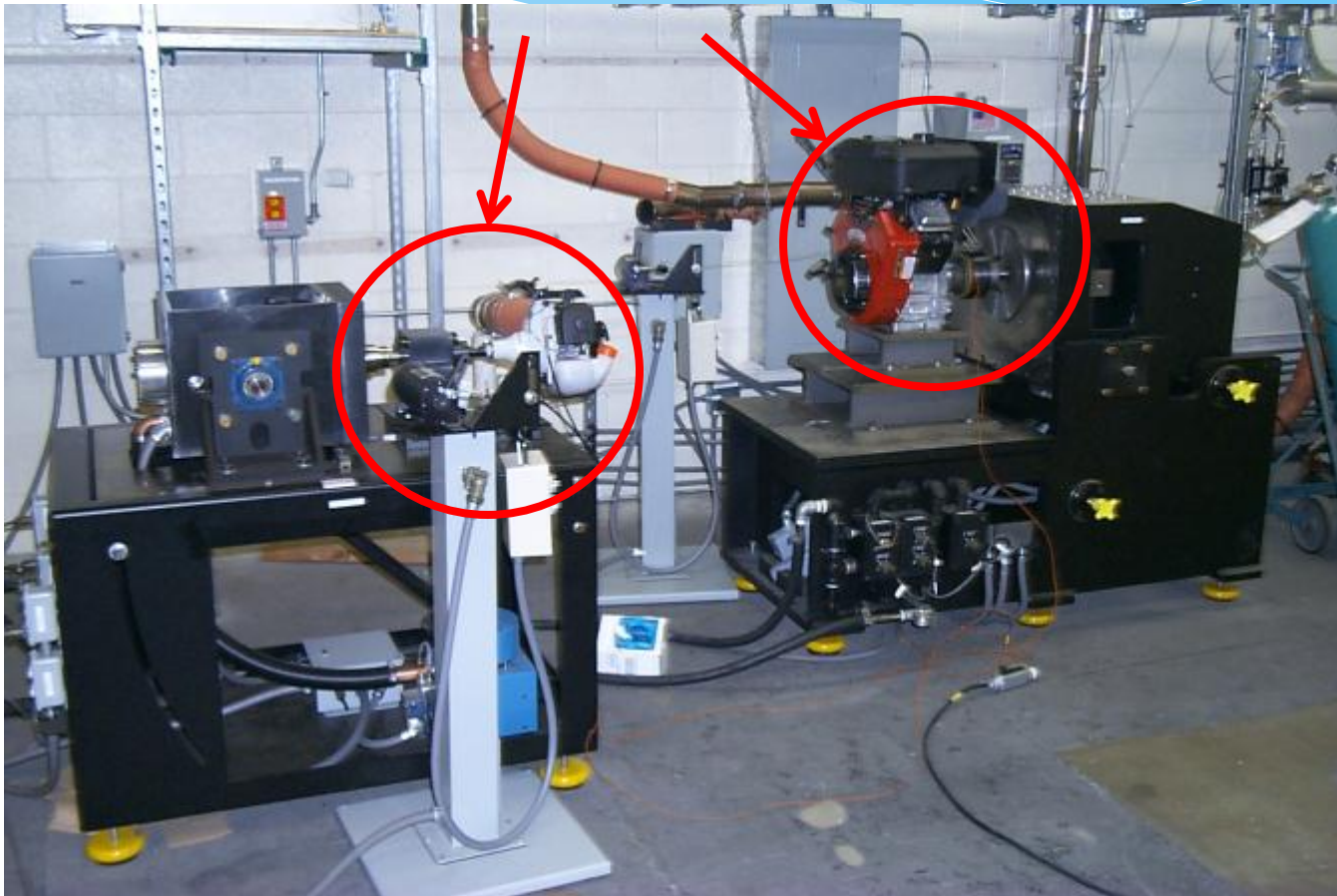


Laboratory Testing

Heavy Duty Emissions Test Lab



Laboratory Testing Small Engines

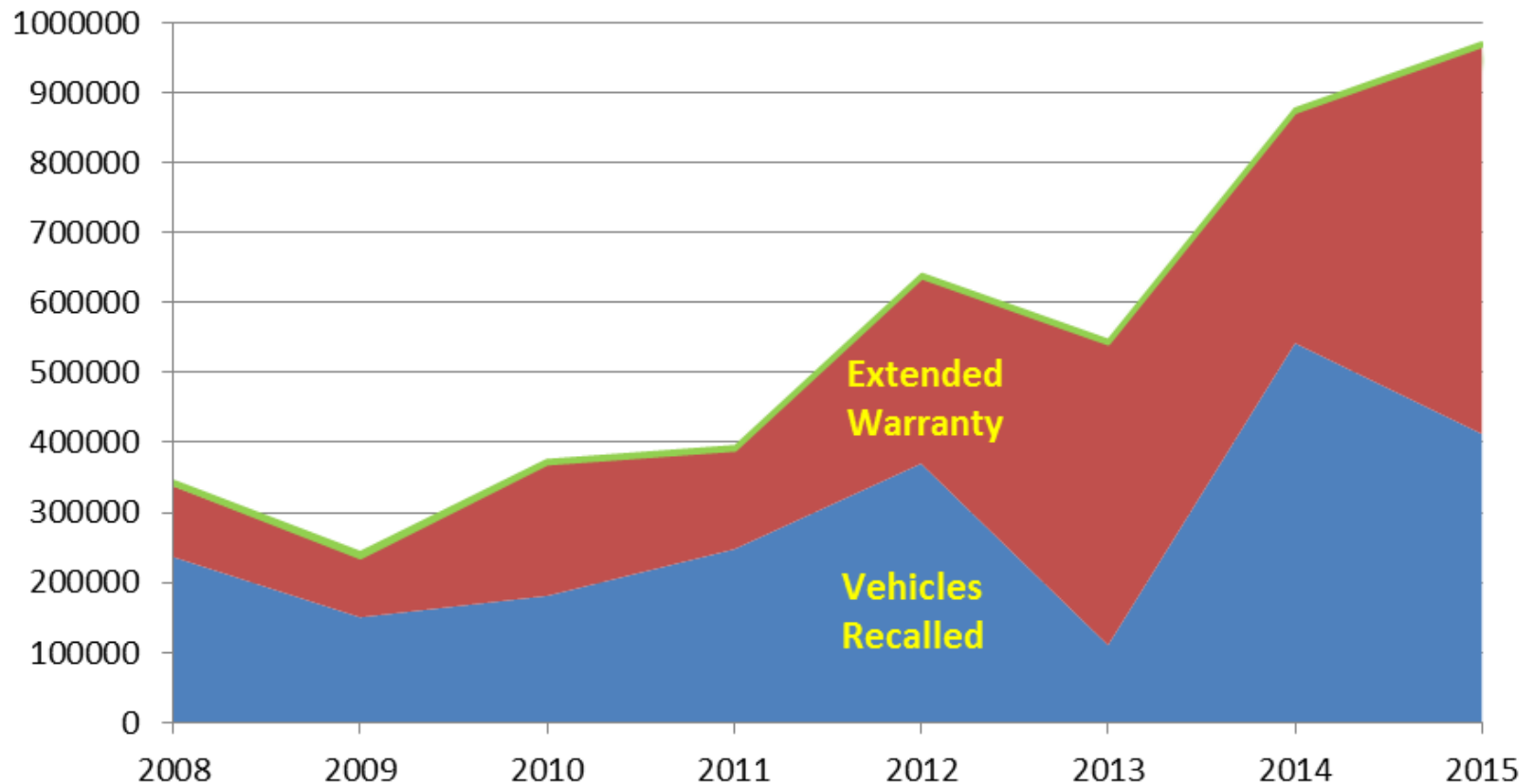


Warranty and Field Evaluation

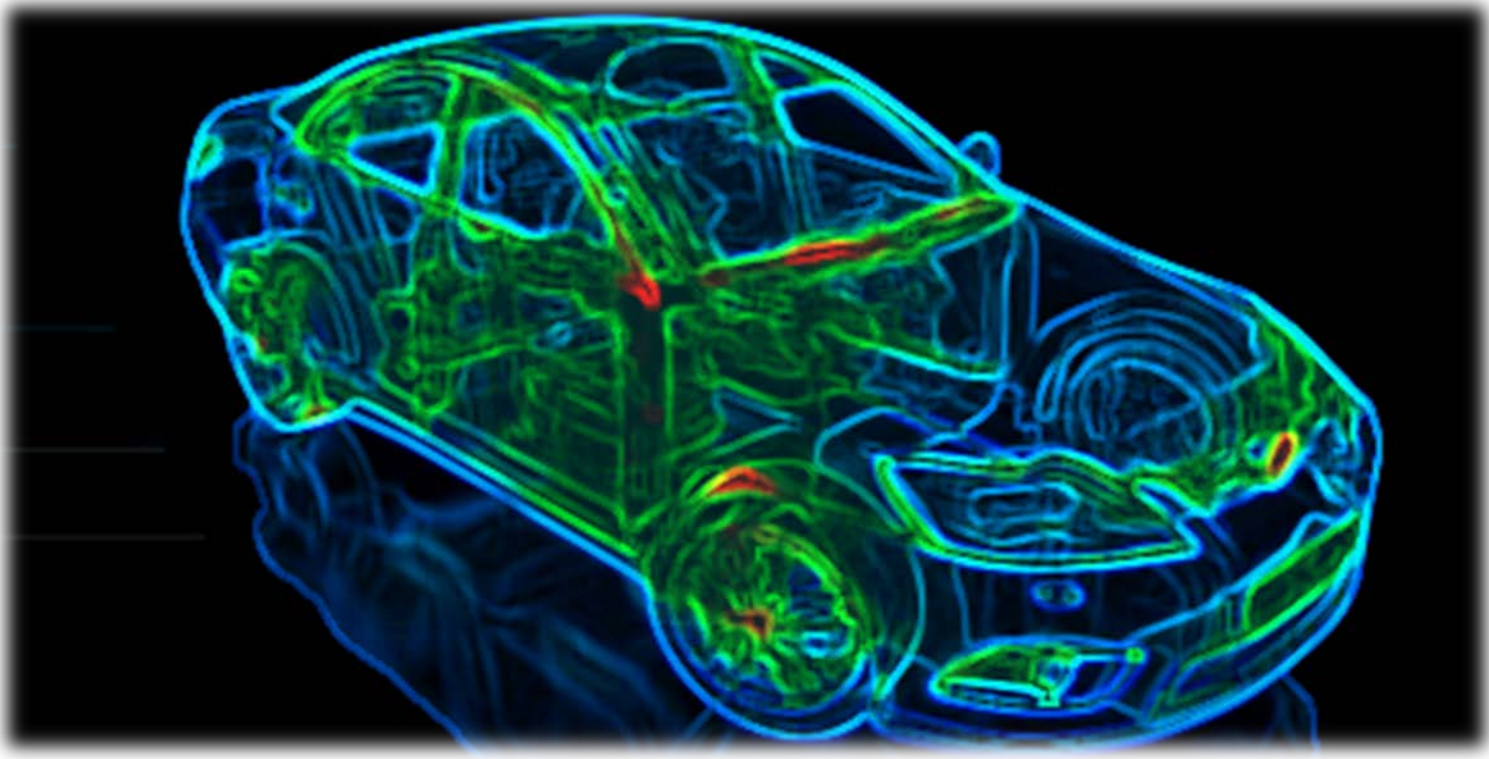
- * When high defect rates are reported, staff will require the manufacturer to initiate corrective action
- * OBD identifies and pinpoints most component defects
- * Field evaluation is an integral part of the compliance program
 - * Field personnel inspect dealerships
 - * Investigate consumer complaints
- * Staff proposing to tighten its warranty corrective action process later this year

Warranty Corrective Action Results

Total # of Vehicles Affected by Recalls and Extended Warranty



How Do We Evolve?

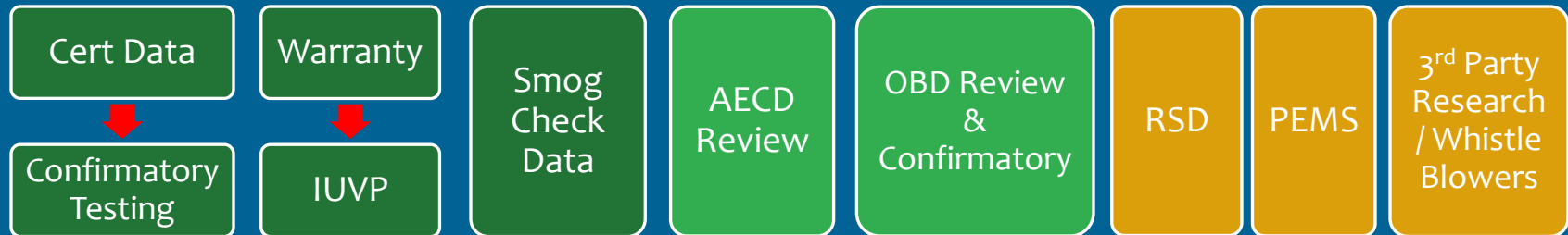


Program Evolution Needed for Real World Emissions

- * Evolution of OBD systems
 - * Data acquired/stored on vehicles for interrogation
- * Special Test Cycles Deployment
 - * Random and non-typical test cycles in the laboratory
- * Expand Real-World/On the road testing
 - * Remote Sensing Device Screening
 - * Portable Emissions Measurement Systems (PEMS)
- * Connected Vehicles Integration
- * Possible regulatory changes

Process Improvements

Tools For Screening Problem Vehicles



Expert Team to Identify Potential Candidates for In-Depth Testing

In-Depth Laboratory Testing



Compliant with Emission Standards and Test Procedures?

- Current
- Enhanced
- New

Our Goal -- Clean Air

