

# *Japan' discussion Status on Evaporative Emission and OBD*

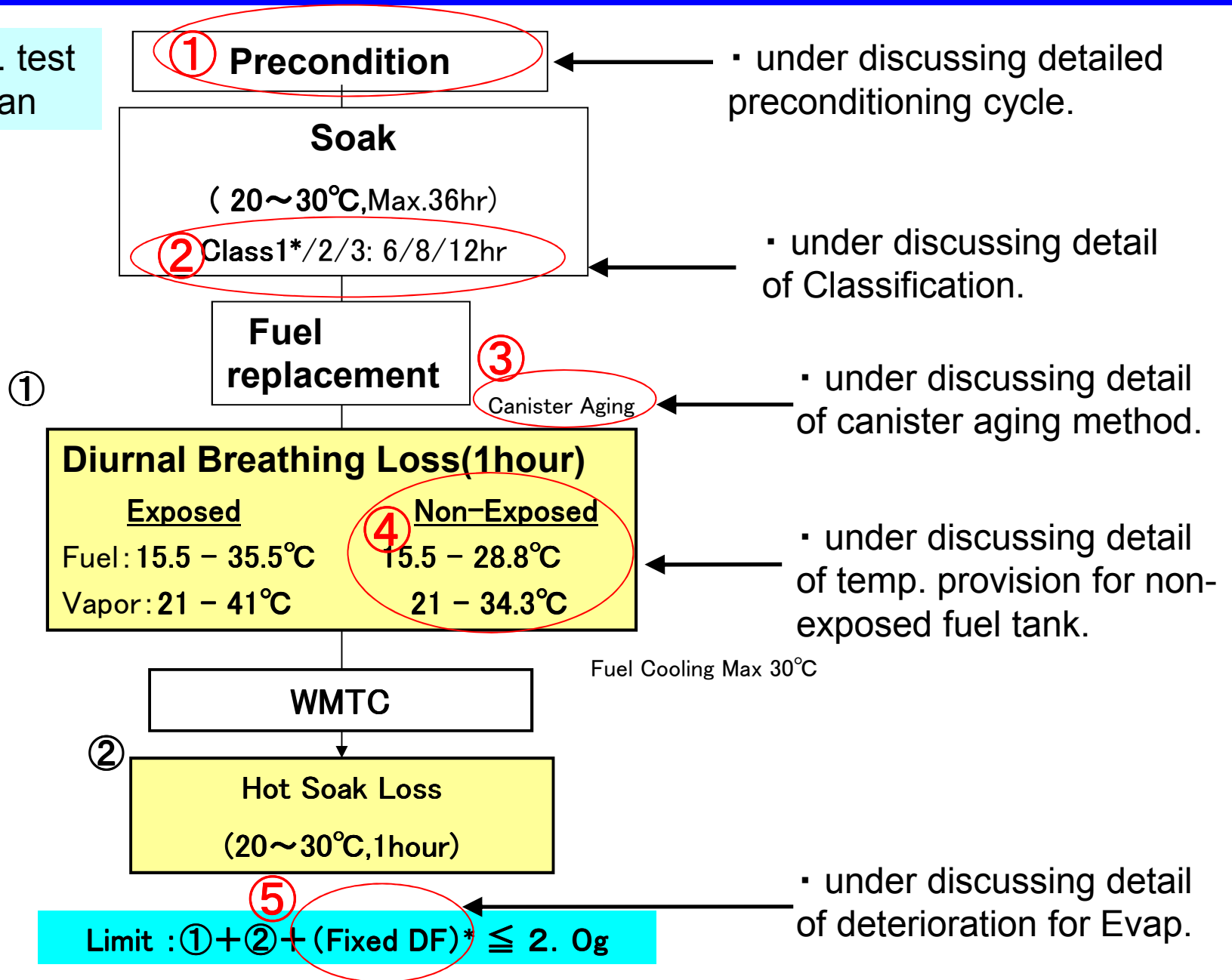


**Ministry of Land, Infrastructure,  
Transport and Tourism (MLIT) , Japan**

# ***Evaporative Emission***

# Evaporative Emission Study for Japan next standard

Draft Evap. test flow in Japan



# ① Preconditioning

## REPPR

The vehicle is placed on a chassis dynamometer and driven through the test cycle specified in Part A of Annex VI to Regulation (EU) No 168/2013 as appropriate for the class of vehicle being tested.

## JAPAN (Draft)

The vehicle is placed on a chassis dynamometer and driven through once each the WMTC test cycle as appropriate for the class of vehicle being tested.

**Japan will add a number of test cycle.**

## ② Test vehicle soaking time

### REPPR

Displacement (cm <sup>3</sup> )	MIN. (h)	MAX (h)
$\leq 180$	6	36
$180 < \text{Disp.} \leq 280$	8	36
$> 280$	12	36

### CARB

Displacement (cm <sup>3</sup> )	MIN. (h)	MAX (h)
$\leq 169$	6	36
$170 \leq \text{Disp.} \leq 279$	8	36
$\geq 280$	12	36

### JAPAN (Draft)

Displacement (ℓ)	MIN. (h)	MAX. (h)
$\leq 0.169$	6	36
$0.170 \leq \text{Disp.} \leq 0.279$	8	36
$0.280 \leq$	12	36

**Japan will follow the current CARB regulation.**

**REPPR should also be harmonized.**

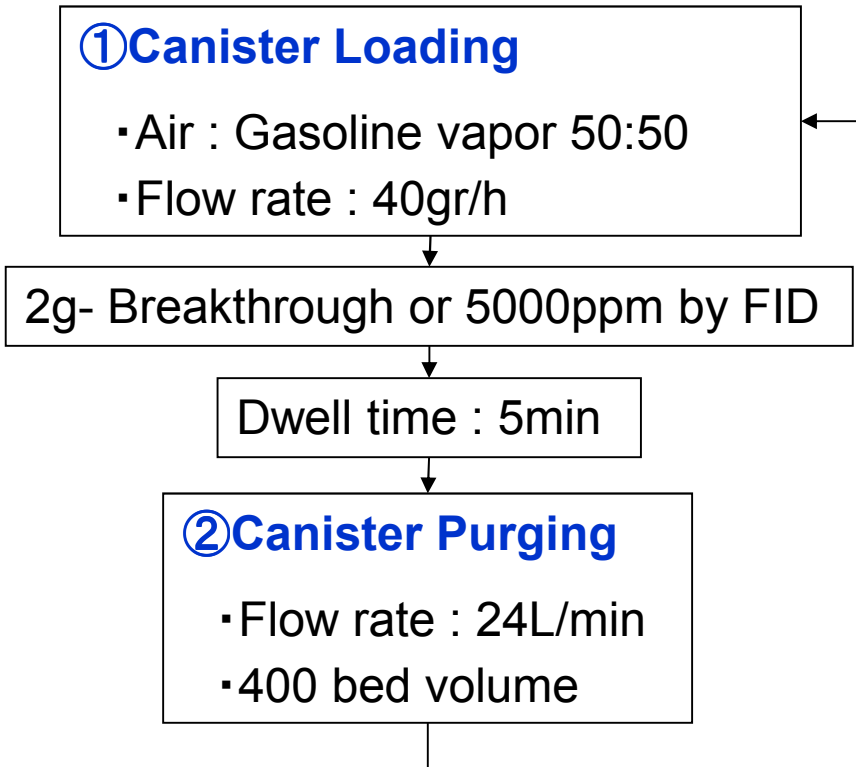
## ③-1、⑤ Evaporative test vehicle conditions

	CARB	REPPR		JAPAN Next STD (Under discussion)
		V.5	V.7	
Method 1	1.Aged Vehicle ▪ Full distance ▪ Half distance 2.Aged evaporative control devices	Aged Vehicle ▪ Full distance ▪ Half distance	/	<b>Aged Vehicle</b> <b>▪ Full distance</b>
Method 2	Degreened vehicle + Aged evaporative control devices.	Degreened vehicle + Aged evaporative control devices.	←	← <b>Canister Aging Method</b> <b>(REPPR or CARB)</b>
Method 3	-----	-----	Degreened vehicle with fixed DF (0.3g/test)	<b>Not Applicable</b>

**Japan will allow to use an aged vehicle for the test.**  
**Japan will not apply the fixed DF.**

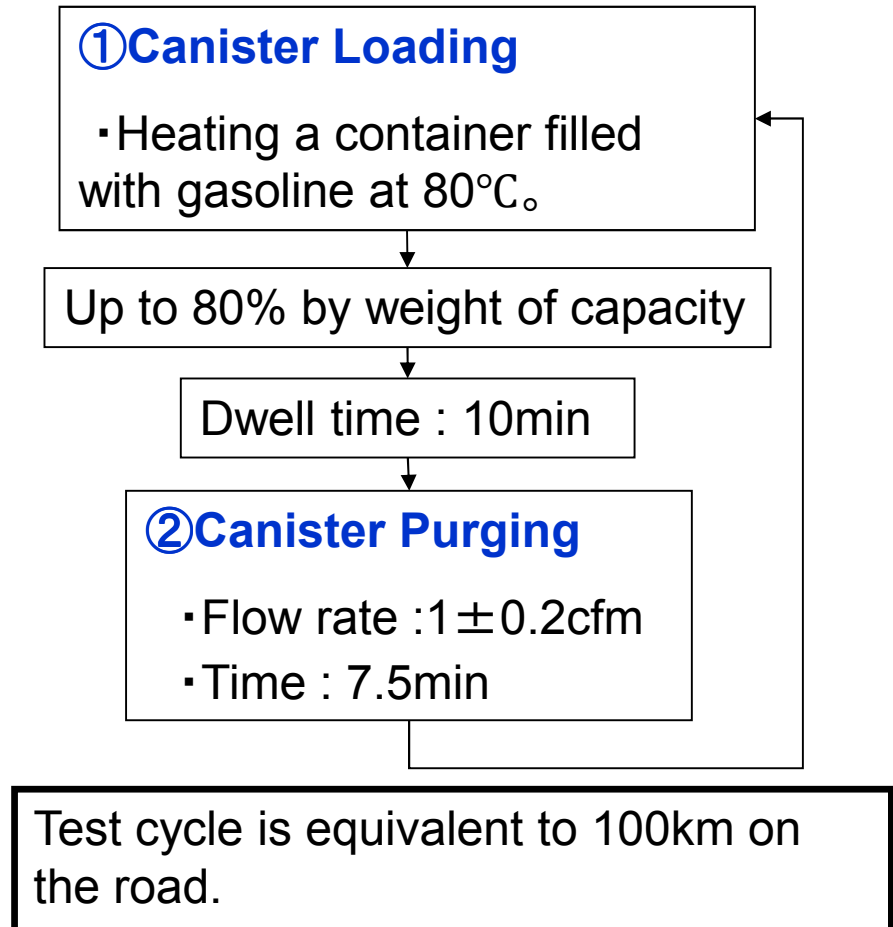
## ③-2 Canister Aging Methods

### REPPR



V max	Test cycles
< 130km/h	170
≥ 130km/h	300

### CARB



**Each of the Ageing method will be allowed in the Japan regulation.**

## ④ Non-Exposed Fuel Tank

### Fuel Tank heating profile for DBL test in REPPR.

#### For exposed type fuel tanks:

$$T_f = 0.3333 \cdot t + 288.5$$

$$T_v = 0.3333 \cdot t + 294.0$$

#### For non-exposed type fuel tanks:

$$T_f = 0.2222 \cdot t + 288.5$$

$$T_v = 0.2222 \cdot t + 294.0$$

where:

$T_f$  = required temperature of fuel (K);

$T_v$  = required temperature of vapor (K);

$t$  = time from start of the tank heat build in minutes.

#### Definition

**Non-exposed type fuel tank means that a fuel tank which is not exposed any parts of fuel tank including a fuel cap (excepting a plastic cap) to direct sunlight.**

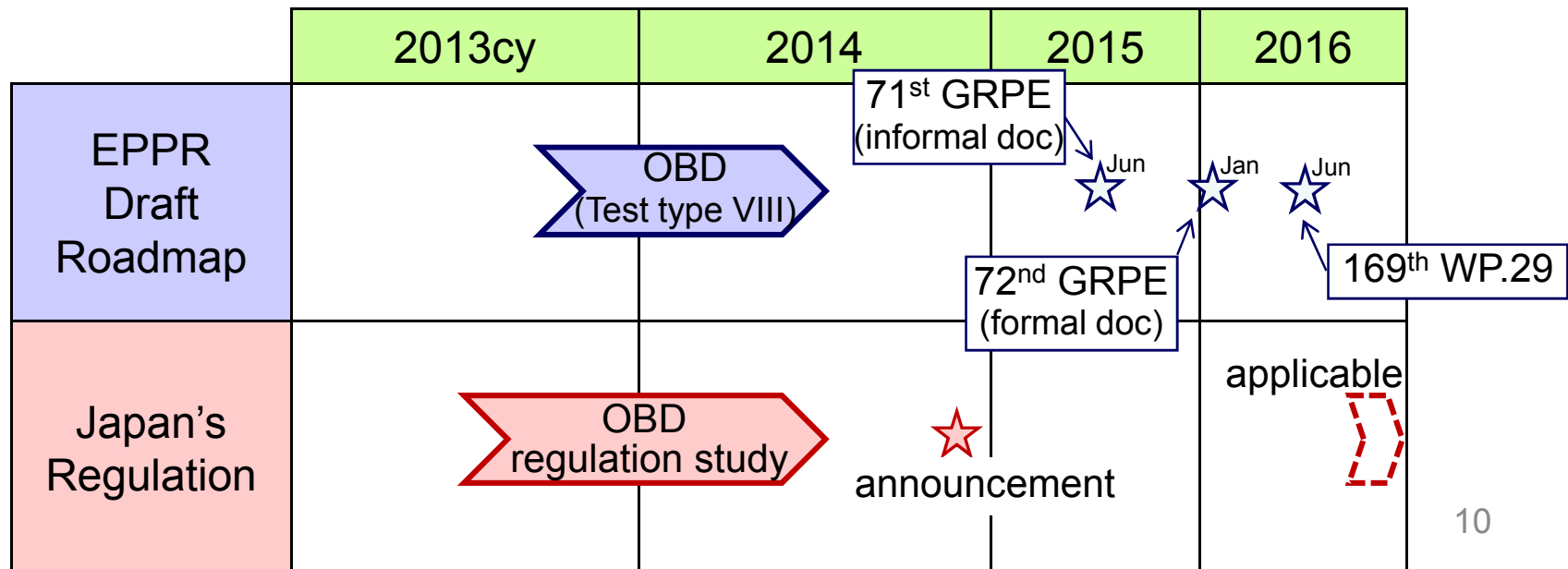
**Japan will apply the same heating profile as REPPR and considers to add the definition of “Non-exposed type fuel tanks”.**



***OBD***  
***(On-Board Diagnostics)***

# Current status of OBD study in Japan

- ❑ Japan's OBD regulation for motorcycles will be applied to the new type vehicle by the end of 2016.
- ❑ Basically we are studying based on the J-OBD I regulation for the passenger vehicle existing already.
- ❑ Details are still being discussed between governments and industry.
- ❑ Draft will be completed by the middle of 2014.



# Japan's OBD regulation under study

## Scope

- ❑ Only L3e vehicle with gasoline/spark ignited engine is considered.
- ❑ Other categories are not taken into account at all.

### Our Scope

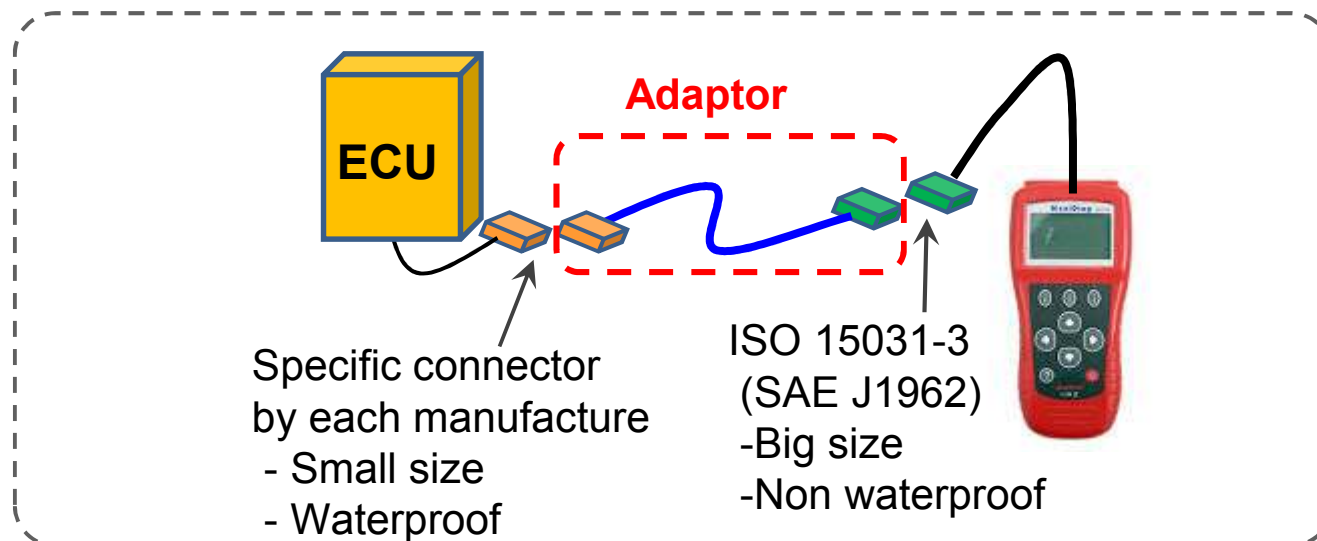
Category	L1e	L2e	L3e	L4e	L5e	L6e	L7e
	L1e-A 	L2e-P 	L3e-A1 	L4e 	L5e-A 	L6e-A 	L7e-A 
	L1e-B 	L2e-U 	L3e-A2 		L5e-B 	L6B-BP 	L7e-B 
			L3e-A3 			L6e-BU 	L7e-C 

## Monitoring requirements

- Basically, OBD in the next Japan's regulation is to monitor the malfunctions of the following components caused by an open circuit.
  - Barometric pressure sensor
  - Manifold absolute pressure sensor
  - Intake air temperature sensor
  - Engine coolant temperature sensor / Engine temperature sensor
  - Throttle position sensor
  - Camshaft position sensor
  - Crankshaft position sensor
  - O2 sensor
  - O2 sensor heater
  - Ignition coil primary control circuits
  - Secondary air injection system
  - Fuel injection system

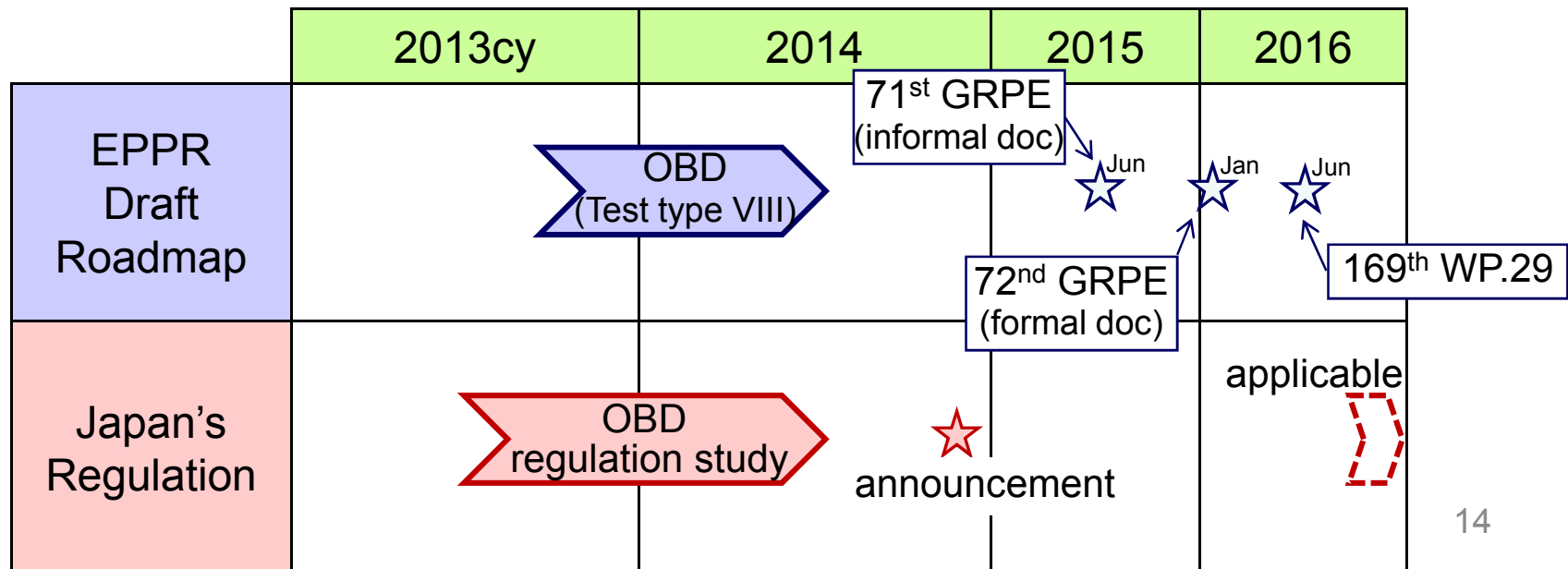
## Functional requirements

- ❑ Malfunction information to be stored in the on-board ECU
- ❑ Malfunction indicator light to be in conformity with ISO 2575
- ❑ Data link connector between the vehicle and the diagnostic tester to be in conformity with ISO 15031-3 (SAE J1962)  
An alternative connection interface may be used when the vehicle manufacture prepares an adaptor which enables connection to the diagnostic tester conforming with ISO 15031-3 (SAE J1962)



## Out of consideration

- ❑ Below items are not studied on Japan's OBD regulation at all.
  - Rationality fault diagnostic
  - Repair and maintenance information (RMI)
  - OBD emission thresholds
  
- ❑ It takes a lot of work and long time to newly study above three items and it is too late for the schedule for next Japan's OBD regulation.



**Thank you !**