

## Summary for Drivers

IPM is only active when cruise control is active. Please drive in cruise control when possible.

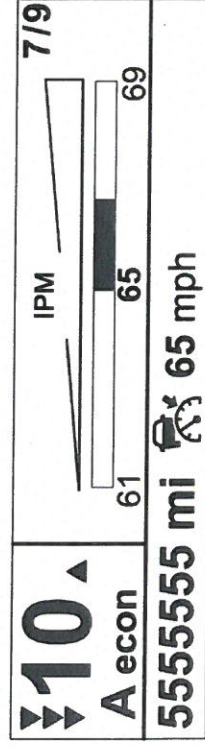
IPM knows the road ahead and picks the optimal gear based on the upcoming terrain.

IPM might increase or decrease the cruise control set speed in specific use cases.

When the throttle pedal is used while in cruise control, IPM use cases abort.

When IPM is actively controlling the cruise set speed and the gear selection, the cluster display will show IPM active.

When an IPM use case is active and changes the cruise set speed either higher or lower, the cluster will show this change in a bar graph.



IPM might engage eCoast sooner, later or not at all compared to systems without IPM, depending on the current road grade and the road grade ahead.

IPM can temporarily increase the allowed speed above the cruise set speed before engine brakes engage.

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## IPM Predictive Modes

- ◎ Predictive Acceleration
- ◎ Hill Coasting
- ◎ Dip Coasting
- ◎ Crest Coasting
- ◎ Predictive eCoast



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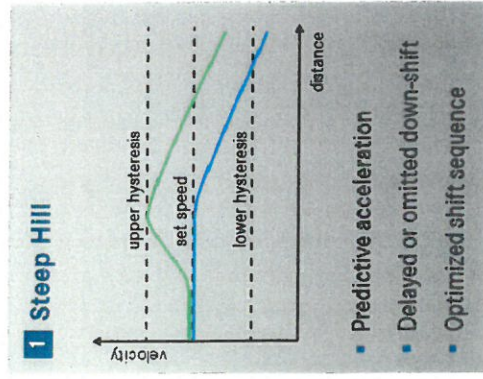
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## IPM - Background

- Only active in cruise control
- Looking 1+ miles (2 km) ahead at terrain using GSP mapping
- Uses kinetic energy of the vehicle in the most optimal fashion to save fuel
- Works to prevent unnecessary:
  - Engine brake events
  - Shifts
  - Fueling
- Logic is designed to minimize the increase in travel time
  - PPP – no differences
  - Germany – 5 minute increase on a 9 hour trip
- eCoast – coasting in Neutral at engine idle speed (~1.1 gal/h)
- Coasting – coasting in Gear at ‘geared’ engine speed (0.0 gal/h)

## Predictive Acceleration

The predictive acceleration logic will never allow the vehicle to fuel above the Cruise Control Speed Limit



RSL – Road Speed Limit  
 CSL – Cruise Speed Limit  
 CSS – Cruise Set Speed

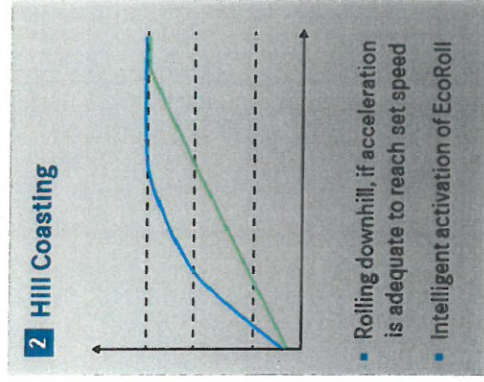
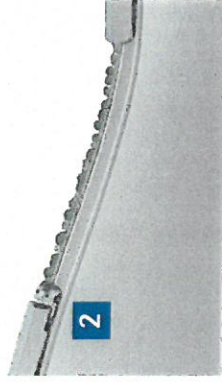
MPH	#1	#2	#3	#4	#5
RSL	65	65	65	65	68
CSL	65	65	68	68	65
CSS	65	62	64	68	65
aEcon (4 kph)	65	64.5	66.5	68	65
aPerf (6 kph)	65	65	67.7	68	65

4 kph = 2.5 mph  
 7 kph = 3.7 mph

with IPM  
 without IPM

## Hill Coasting

May get eCoast event  
May coast down hill in gear  
Depending on length and severity of grade  
If the vehicle will reach a speed where engine  
brakes are needed, eCoast will not be used.



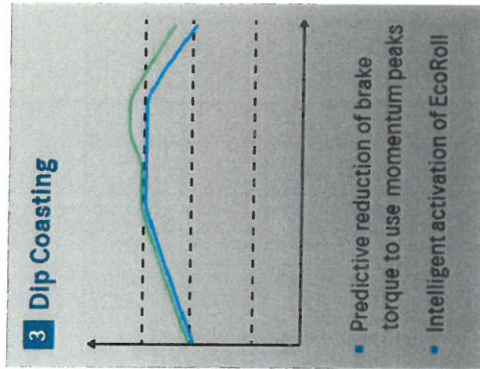
— with IPM  
— without IPM

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## Dip Coasting

Downhill grade followed quickly by an uphill grade  
Vehicle will be allowed to exceed the upper limit by an additional 2 kph for up to 20 seconds to conserve momentum into the next hill

Under an engine braking event.



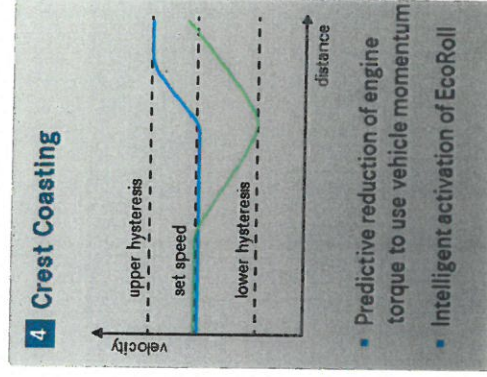
## Crest Coasting

May get eCoast event  
May coast down hill in gear  
Depending on length and severity of the backside grade

Vehicle speed is allowed to dip below the set cruise speed.

Vehicle will recover to set speed on the backside of the hill

This is the only event case that will not be aborted during an Adaptive Cruise Control scenario



— with IPM  
— without IPM

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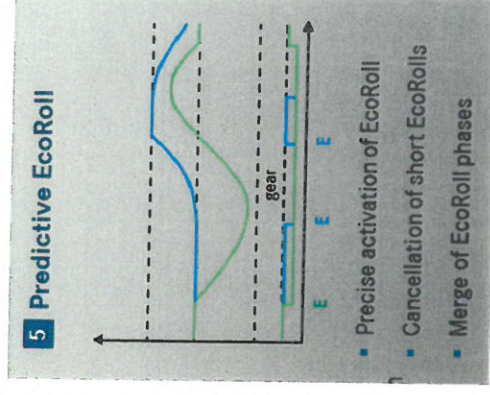
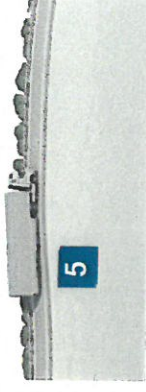
## Predictive eCoast

Vehicle may go into eCoast sooner than the top of the grade, losing vehicle speed in the process

Vehicle speed will be recovered on back side of grade

Only if the predicted acceleration would NOT cause the vehicle to exceed the engine braking hysteresis  
In that case the vehicle would coast in gear

eCoast offset parameter is only active (used) on pedal or in the case that GSP signal is lost



— with IPM  
— without IPM



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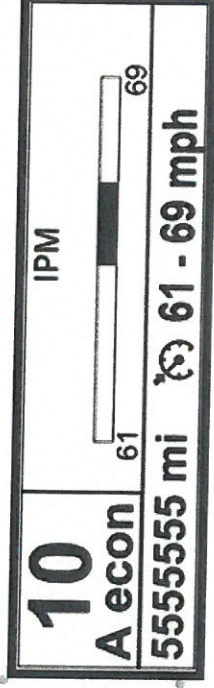
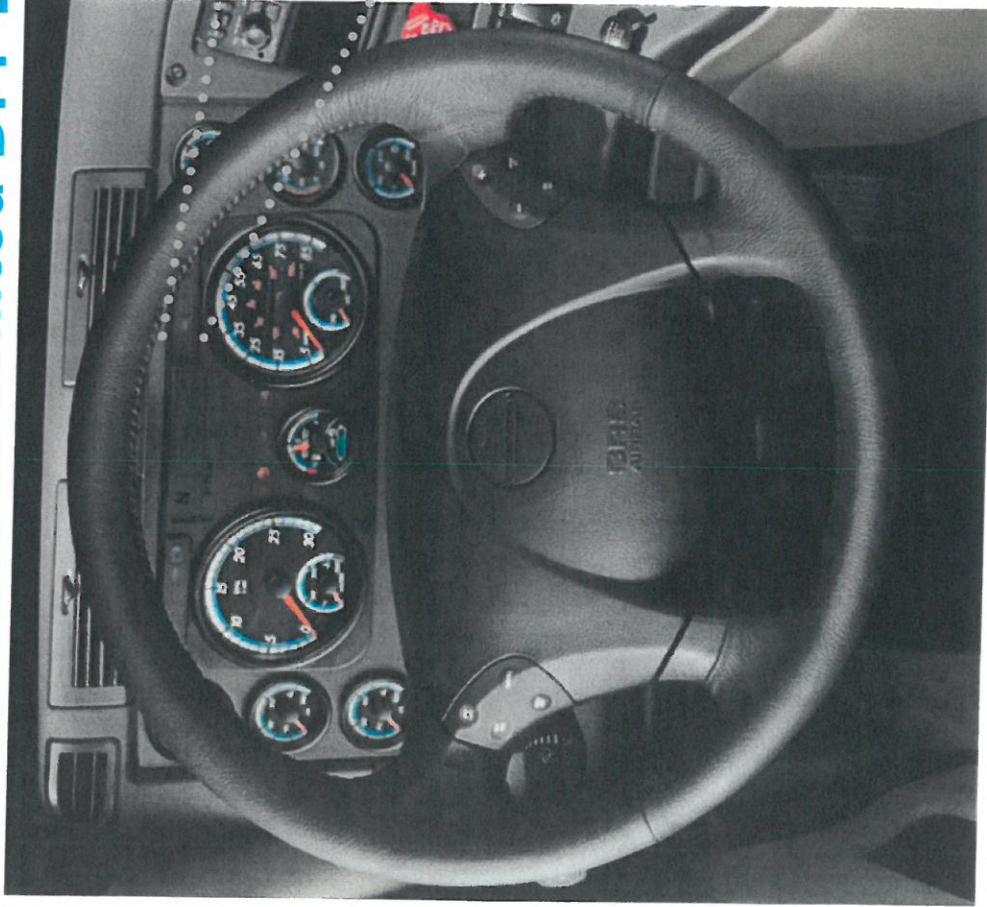
## ICU4me Dash Display



- ⦿ The IPM, CC, Engine Brake Symbols Displayed
- ⦿ System is fully operational
- ⦿ CC Band Switch position will affect Engine Brake icon

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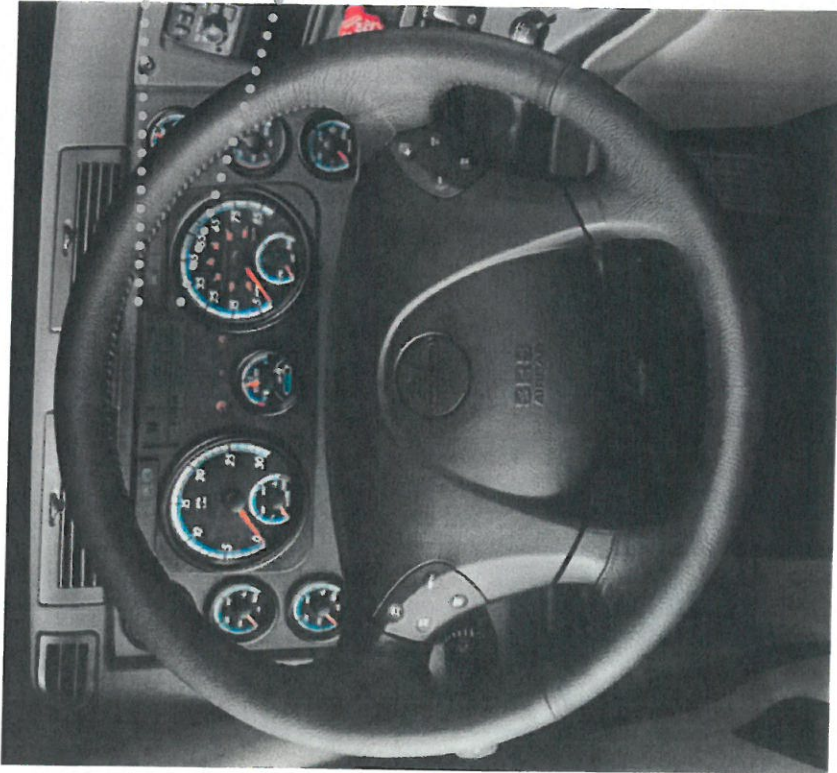
## IPM Feature Limited DPF Zone 1



- ⦿ Dash Displays a fully-functional system
- ⦿ IPM functionality may be limited – no eCoasting

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## Dash Display Feature Limited



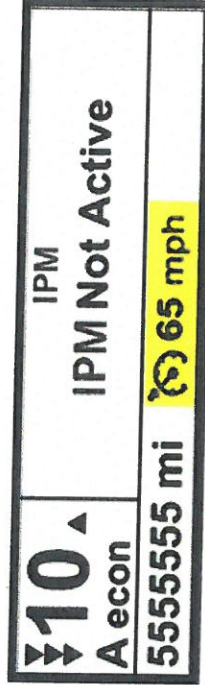
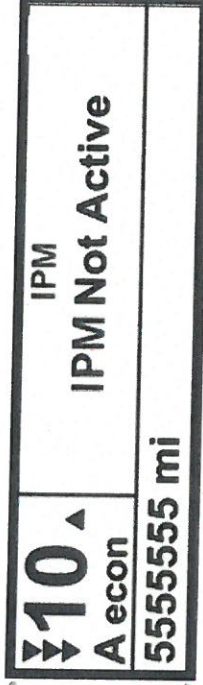
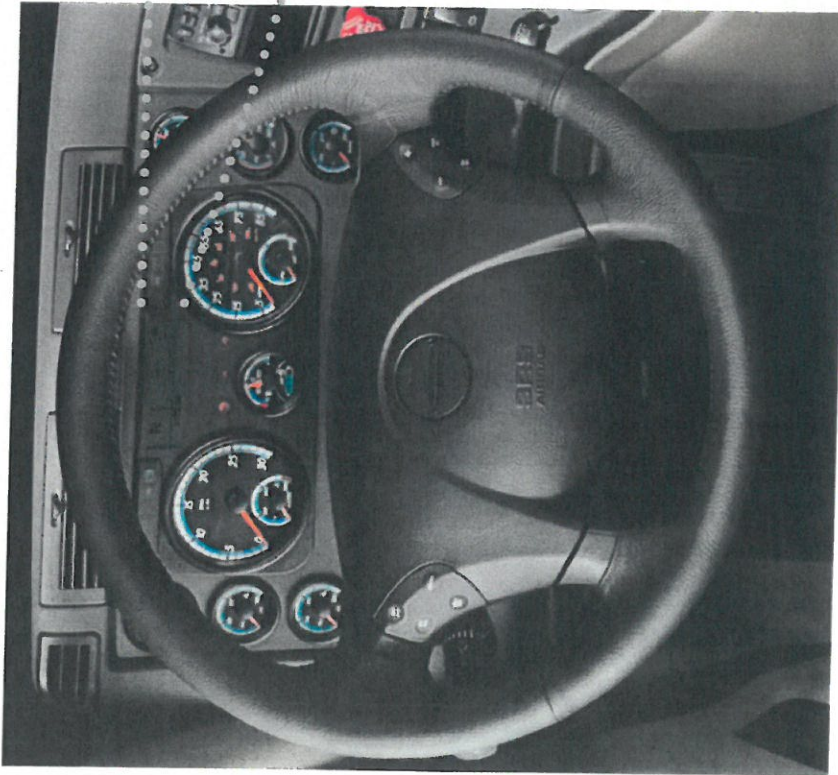
10 <sup>▲</sup> A econ	IPM IPM Not Active
5555555 mi	65 mph

No Available map for Area



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## Dash Display Feature Limited



Tunnels (maybe)

Weather

Driver Interaction

