

Review of CARB ACC II battery durability and warranty proposal

For discussion at

UN ECE Informal Working Group on Electric Vehicles and the Environment (EVE)

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Background of CARB ACC II

- California Air Resources Board (CARB) has proposed “ZEV Assurance Measures” as part of Advanced Clean Cars II (ACC II) program
- Measures include separate battery **durability** and battery **warranty** requirements
 - Applicable to BEVs and FCEVs
 - Measures would begin with MY 2026
 - Subject to phase-in of data standardization requirement
 - 40% of applicable vehicles in MY 2026, 100% in MY 2027
- Current proposal described in Initial Statement of Reasons (ISOR)
 - <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/accii/isor.pdf>
- Status:
 - Public comment period ends May 31, 2022
 - Board hearings scheduled for June 9, 2022 and a TBD date in August
 - Modifications to any of the proposed measures could result from consideration of public comment and/or the board hearings

CARB SOH monitor concept

- Purpose: to disclose to the driver, repair technician, prospective buyer, or a battery rebuilder or re-purposer, the current level of deterioration in the battery relative to when it was new
- Based on usable battery energy (UBE) determined by SAE J1634
- Normalized from 0 to 100-percent (when the battery is new)
- Monitor value no more than 5% higher than the UBE determined from testing
- Accessible by a standardized automotive service tool
- Also displayed to the driver, in vehicle, without the use of a tool (e.g., through a dashboard display)

Comparison of CARB ACC II proposal to UN GTR #22

DURABILITY	% Retention	of	at	Mileage	% of sample must pass
UN GTR #22	80%	SOH (UBE)	5 years	100,000 km	90%
	70%	SOH (UBE)	8 years	160,000 km	90%
CARB ACC II (proposal)	80%	Range	10 years	~ 240,000 km*	50%

WARRANTY	% Retention	of	at	Mileage	Model years
CARB ACC II (proposal)	70%	SOH (UBE)	8 years	~ 160,000 km*	2026-2030
	75%				2031+

*km equivalent of 150,000 and 100,000 miles

CARB ACC II proposed durability enforcement

- At time of certification, manufacturers submit data on the expected degradation of battery SOH over the vehicle's useful life, to confirm the test group has been designed to meet the durability requirement
- Manufacturers required to collect and submit battery SOH data from 30 vehicles per test group at ages 3 and 6 years
- CARB retains the right to conduct compliance testing on any test group:
 - by procuring 10 representative in-use vehicles from the test group
 - and carrying out the official laboratory tests used at the time of certification, to determine range and verify the durability requirement was met
 - If 5 of the 10 vehicles (50%) or more fail the durability test, the manufacturer could be subject to corrective action for vehicles within the test group