

## Technology indicators for light duty and heavy duty applications

Technology indicators that industry is likely to achieve in a mass-market competitive environment. All the cost and performance metrics are ambitious, but relate to the same technology.



		2020	2025	2035
Light Duty Vehicles	\$/kW (System)	112	68	40
	\$/kW (Stack)	70	40	20
	System Efficiency <sup>1</sup> (%)	60	65	70
	Stack Durability (Hrs)	5,000	6,000	8,000



		2020	2025	2035
Heavy Duty Vehicles	\$/kW (System)	455	195	80
	\$/kW (Stack)	285	115	40
	System Efficiency* (%)	60	65	70
	Stack Durability (Hrs)	15,000	22,000	30,000

		2020	2025	2035
Hydrogen Storage Tank <sup>2</sup>	Onboard Hydrogen Storage Cost (\$/kg of H <sub>2</sub> )	470	365	200

### Notes:

- All indicators are based on averaged data and volume-corrected figures derived from the following published data - US Department of Energy (DoE), the Fuel Cells and Hydrogen Joint Undertaking (FCH JU), Strategy Council roadmaps from China and Japan.
- System Efficiency values are based on specific rated load values for PEM and SOFC. These do not represent a fuel efficiency target and cannot be compared as such.
- Although single point efficiency values are shown, these are not accurate indicators of real world vehicle efficiency which will vary across propulsion technologies and product applications.

Indicators are based on the following global FCEV production volumes:

2020	2025	2030	2035
15,000	50,000	750,000	> 3,000,000

This roadmap represents a snapshot-in-time view of the global automotive industry propulsion technology forecast for mass market adoption. Specific application-tailored technologies will vary from region to region.



**Light bar:**  
SOFC Specific technologies for mass market application



**Dark bar:**  
Common or PEM – technology is in a mass market application. Significant innovation is expected in this time frame



**Transition:**  
Transitions do not mean a phase out from market but a change of R&D emphasis



**Dotted line bar:**  
Market Mature – technology has reached maturity. Likely to remain in mass market until it fades out where it's superseded

