Fuel-efficiency formula needs cars wired with better brainpower, less vroom

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A University of Michigan researcher says it's possible to triple fuel economy in gasoline-powered cars by 2035, but it'll mean getting our automotive kicks from smart electronic technology and other forms of virtual performance rather than horsepower.

As federal regulators are poised to propose the next round of fuel economy mandates, John DeCicco, a senior lecturer at the School of Natural Resources and Environment and faculty fellow with the Michigan Memorial Phoenix Energy Institute, says the most cost-effective answer is steady progress in advanced combustion engines and hybrid drive---but stopping short of plugging in and requiring super batteries or gaseous fuels.

He finds that the solution is in our garages if Americans shift gears in terms of priorities. What DeCicco calls a "revolution by evolution" avoids politically trendy breakthrough technologies that will remain too expensive for most consumers.

"If we really prioritize efficiency, we can get just as far with less sticker shock," he said. "Evolutionary change can be of profound consequence for cutting oil use and greenhouse gas emissions, and do so with manageable costs and minimal risks for automakers."

DeCicco has completed a study for The Energy Foundation examining how far fuel economy can be taken if it becomes a top priority in product planning.

His analysis shows that optimizing internal combustion engines plus rising adoption of grid-free hybrids will enable new fleet efficiency to reach 52 mpg by 2025 and 74 mpg by 2035.

Reaching such a horizon would entail cultural change in a gearhead world attuned to nuances of power performance. DeCicco identifies emerging trends for what he dubs "efficiency compatible" design strategies, enticing buyers away from brute force and toward smart technologies, intelligent safety features and svelte styling. Amenities like Bluetooth hookups, communication bandwidth and other information technology enhance customer value with minimal demands on power.

The report develops new interpretations of technology cost estimates that better depict the benefits of ongoing innovation while acknowledging the limits of how much consumers can spend. The analysis reflects the three-way trade-off among efficiency, performance and cost that the car market is likely to face in the years ahead.

"The fleet I've modeled for 2025 does not give up any of the performance and creature comforts consumers already enjoy," he said. "You don't have to go back to being Fred Flintstone, but you will see lower fuel costs instead of ever more mass and muscle."

Provided by University of Michigan