

Federal Light-Duty Vehicle GHG Plans

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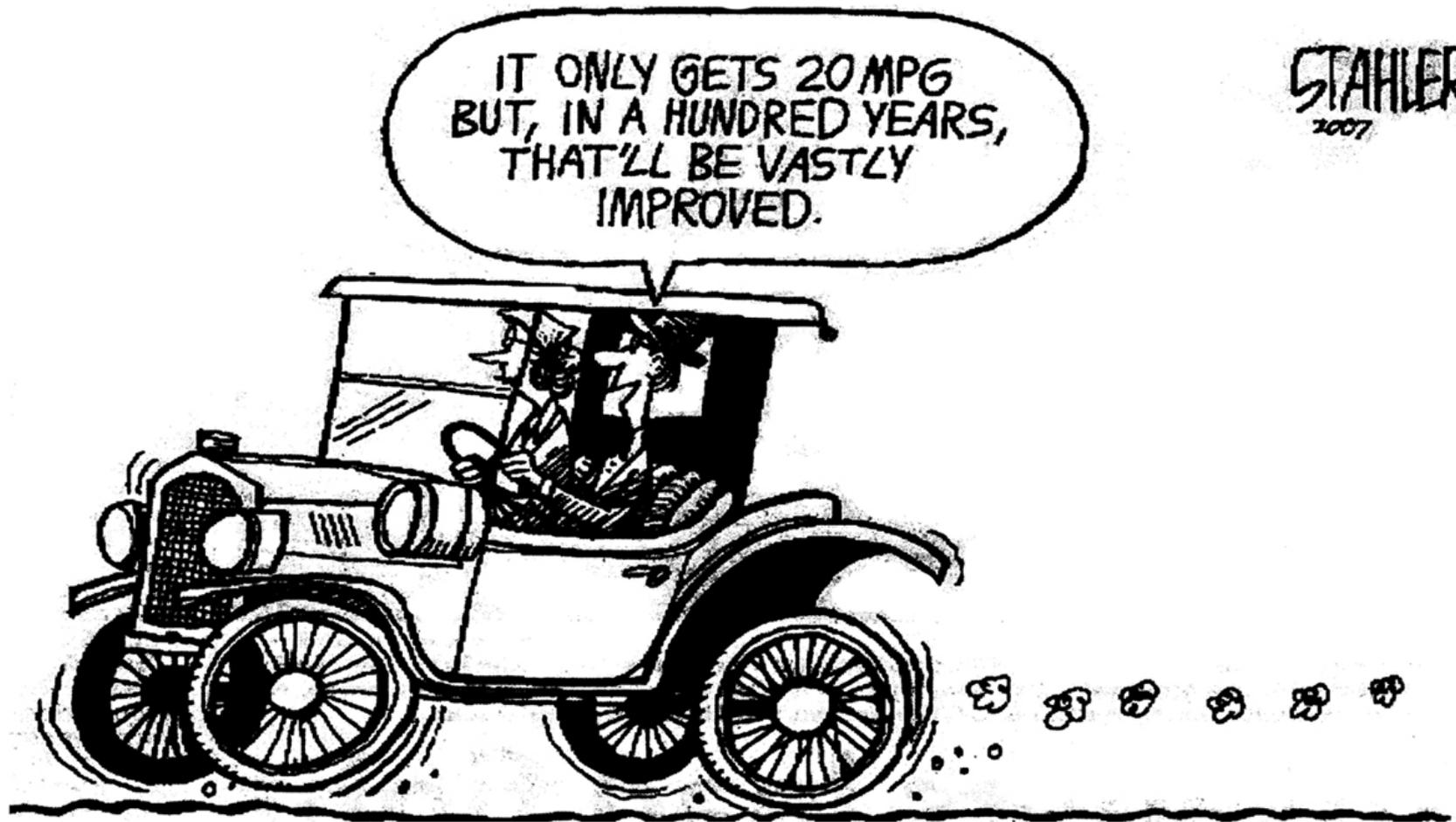
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Historical Context

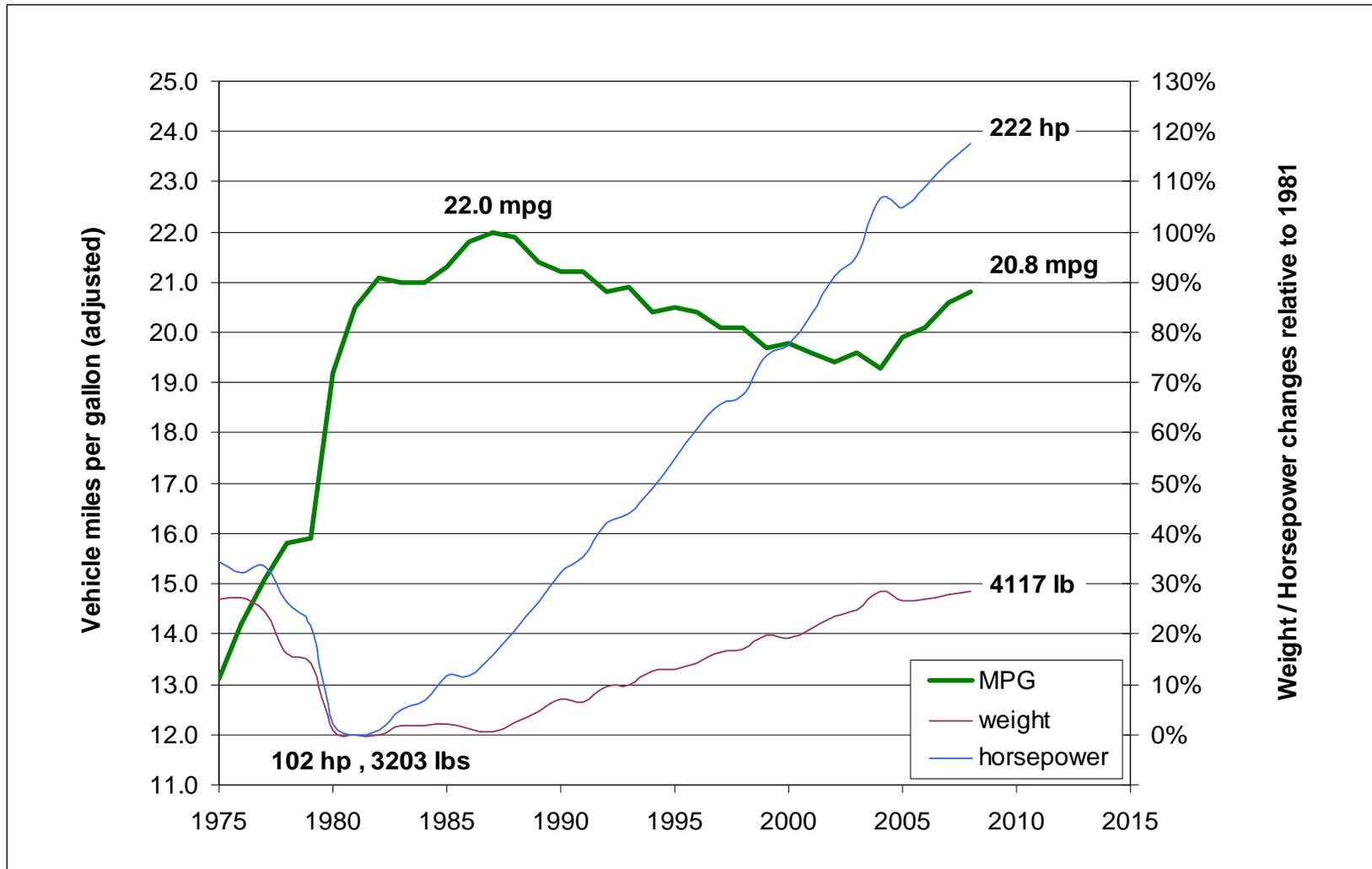
Historical Context

U.S. Car Culture



How Have We Used Technology?

(car + truck fuel economy = real world projections)



President's National Policy and Likely EPA GHG Standards for MY2012-2016

May 19th Presidential Announcement

- Harmonized national policy on light-duty vehicles
 - EPA to set first-ever GHG standards for MY2012-2016
 - NHTSA to increase CAFE standards for MY2012-2016
 - California and 13 other states agree federal compliance will be deemed compliance with California standards
 - Automakers agree to dismiss litigation
- Notice of Upcoming Joint EPA-NHTSA Rulemaking
 - Target of 250 g/mi CO₂ for MY2016 vehicles
 - This is equivalent to 35.5 mpg, but CAFE standard will likely be somewhat lower

Historical Importance

- First-ever federal vehicle GHG standards
- Likely one of the “biggest” federal rules ever
 - 900 MMT of cumulative CO2 savings
 - 1.8 billion barrels of cumulative oil savings
 - \$60 billion of cumulative incremental vehicle costs
 - \$200 billion of cumulative consumer fuel savings
- Unprecedented cooperation
 - EPA and NHTSA standard-setting
 - Automakers/UAW and States/environmental groups

EPA MY2012-2016 GHG Standards Timeline

- EPA and NHTSA planning on a joint proposal in August/September 2009
- Final regulatory action planned for no later than March 31, 2010

EPA MY2012-2016 GHG Standards Structure

- Vehicle tailpipe CO₂ emissions minus credits for A/C-related CO₂-e emissions reductions
 - Lower GWP refrigerants or reduced leakage
 - More efficient A/C systems
- Footprint-based GHG curves
 - Larger vehicles have higher GHG targets
 - Each manufacturer has unique fleetwide standard
- Retain separate car and truck standards
 - Include largest SUVs in trucks
 - Move small, 2WD SUVs from trucks to cars
- CAFE-like FFV credits through MY2015, then end
- No GHG fines, but temporary, less stringent standard for smaller automakers

EPA MY2012-2016 GHG Standards Projections Based on Public Target

	Fuel Economy	Greenhouse Gas Emissions
2011 CAFE standard	27.3 mpg	325 gpm
2016 target GHG standard	(34-35.5 mpg)	250 gpm
% GHG reduction	--	23%

Looking Out to 2050

2050 Technology-Fuel Pathways

<u>Powertrain</u>	<u>Fuel/Feedstock</u>	<u>GHG</u>
Optimized HEV	Gasoline/diesel--oil	up to -60%
Optimized HEV	Synthetic fuels-- low-GHG renewables	up to -90%
Electric vehicle	Electricity-- low-GHG feedstocks	up to -95%
Fuel cell	Hydrogen-- low-GHG feedstocks	up to -95%

Regulatory Approach for Post-2016

- “Getting the standards right in the short term”
 - Series of 5-year rulemakings, with 3-4 years notice
 - Safer and more consistent with past regulatory practice
 - Base stringency on more certain technology feasibility and cost
- “Setting the right long-term market signals”
 - 10-15 year rulemakings, with 5-6 years notice
 - Long-term market signals can promote technology innovation which maximizes effectiveness and minimizes cost
 - Industry has greater leadtime and certainty to aid planning
 - Expectation of innovation allows stringency to be based on environmental need, with technology reviews to assess need for mid-course corrections
 - Success enhanced by complementary economic policies

Challenge of Consumer Demand

Major Barrier to New Technology

- Higher initial cost of low-GHG technology
- Lack of trust that resale market will value technology
- Avoiding perceived risks of new technology
- Volatile oil prices
 - President Obama, November 2008, 60 Minutes
 - “We go from shock to trance. You know, oil prices go up, gas prices at the pump go up, everybody goes into a flurry of activity. And then the prices go back down and suddenly we act like it’s not important, and we start, you know, filling up our SUVs again. And, as a consequence, we never make any progress. It’s part of the addiction, all right. That has to be broken. Now is the time to break it.

Challenge of Consumer Demand Problem for Automaker Planning

- Consumer preferences clearly affected by 3X change in oil and nearly 2X change in gasoline prices in last year or so
- In response, some automakers began to reconsider long-term plans
 - Automotive News cover story, Jan. 19, 2009
 - “Electric Cars: Cheap Gas Kills the Thrill”
- Automakers will not make long-term investments for low-GHG breakthrough technologies without assurance that consumers will support



2050 Crystal Ball

- Carbon and oil will matter much more than we can possibly imagine today
- Combination of strategies will lead to an “order-of-magnitude” life-cycle reduction in LDV GHG
 - Vehicle design, fuel production, consumer behavior, infrastructure
- Will be a diverse mix of vehicle-fuel pathways
 - No single “silver bullet”
 - Technology matched to consumer needs
 - Possibly to individual trip needs and regional fuel production
 - Will include some technologies that we can not foresee today