



## The US Experience With Fuel Economy Standards

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## OVERVIEW

- Background
- Past benefits of CAFE
- Why CAFE worked
- California's CO<sub>2</sub>-eq emission standards
- Conclusions

## Energy Policy and Conservation Act (EPCA) of 1975



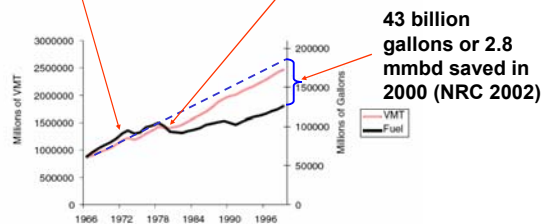
- Mandated by Congress in response to 1973-74 Arab oil embargo
- Goal was to reduce oil demand by 2 mmbd
  - Roughly 6 mmbd of gasoline used in 1975
  - Average fuel economy in 1975 was 13.2 mpg
- Standards first took effect in 1978
  - 18 mpg for cars increasing to 27.5 by 1985
  - Light trucks standards increased less steeply, from about 15 mpg to 20.5 mpg by 1987
- In 2003, NHTSA raised light truck standards by 1.5 mpg over 3 years
  - 21.0 mpg for MY2005, 21.6 mpg for MY2006, and 22.2 mpg for MY2007

## CAFE Worked: Fuel Savings, 2.8 mmbd in 2000



Pre 78: Demand increased faster than VMT

78-82: Demand declined due mostly to higher CAFE



## CAFE Worked: Oil, Cost, and GHG Savings in 2000

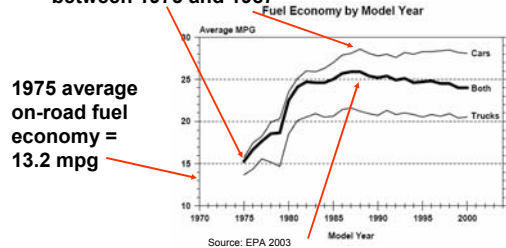


- Oil savings in 2000 = 2.8 mmbd (NRC 2002)
  - 25% reduction in demand for gasoline
  - 13% reduction in demand for oil (19.5 mmbd total)
- Oil cost savings in 2000 = about \$70 billion/yr
  - \$66 billion in direct consumer savings (@\$1.54/gallon)
  - Reduced imported oil price by \$1 to \$1.80/bbl, yielding \$3-6 billion savings in 2000, and \$40-80 billion cumulative (undiscounted) from 1975 to 2000 (NRC 2002)
- Global Warming Pollution savings in 2000 = 100 million metric tons of carbon/yr (NRC 2002)
  - 7 percent reduction in overall US emissions

## Why CAFE Worked: Increase in Average Fuel Economy

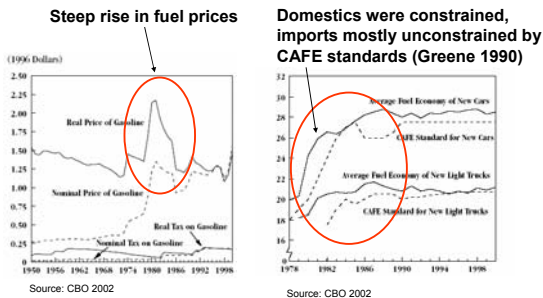


Average fuel economy for new cars increased 46% between 1975 and 1987



CAFE prevents PC and LDT fuel economy from declining, though fleetwide average has been declining ever since 1987 due to increase share of light trucks

## Why CAFE Worked: CAFE Standards vs Fuel Prices

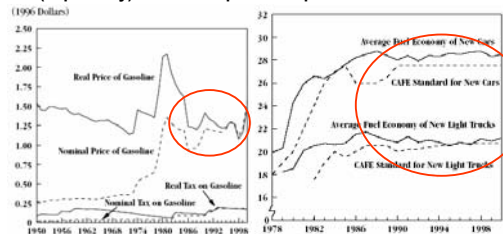


"...[the CAFE standards] were perhaps twice as important an influence as gasoline prices." (Greene 1990)

## Why CAFE Worked: CAFE Prevented FE From Dropping



Post 1983, average fuel economy for cars and light trucks (separately) did not drop back to pre-shock levels



"CAFE standards have played a leading role in preventing fuel economy levels from dropping as fuel prices declined in the 1990s." (NRC 2002)

## What Didn't Work With CAFE



- **“SUV” Loophole**
  - Light trucks (pickups, SUVs, and minivans) held to lower standard than cars and with rise in minivans and SUVs, average fuel economy has dropped since 1987
- **Flex fuel vehicles loophole**
  - Alternative fuel vehicles assigned higher fuel economy values for CAFE compliance purposes, but not required to actually use alternative fuel
- **Failure to regularly update standards to reflect new technologies**
  - 30% higher fuel economy possible if technologies since 1981 were not applied to increasing weight and acceleration
  - Weak construction of CAFE laws and lack of political will

## CA Approach: CO<sub>2</sub> Emission Standards



- California has unique authority under Federal Clean Air Act to set own motor vehicle pollution standards
- Program now being expanded to include regulation of greenhouse gases
- Longstanding, successful history of programs to control motor vehicle emissions
  - Over 95% reduction over the past four decades of smog-forming pollution controls (beginning in 1960's in CA)
  - Standards have been continuously adjusted to take advantage of new technologies (unlike CAFE)

## CA Approach: CO<sub>2</sub> Emission Standards



- AB 1493 law passed Legislature in July 2002, regulations adopted September 24, 2004
- Maximum feasible CO<sub>2</sub>-equivalent emission standards
  - 30% reduction by 2016 (phase in begins 2009)
  - Bundle of gases, CO<sub>2</sub>, HFC, N<sub>2</sub>O, CH<sub>4</sub>
- Cost-effective to drivers
  - \$1047 extra cost paid back in about 5 years

## Benefits of Standards



- **Greater certainty**
  - Stronger signal to automakers (supply side response)
  - No backsliding if prices drop
- **Standards can be efficient**
  - Inefficient (“sluggish”) markets undersupply efficiency
  - Gap between social and high private discount rates, same justification used to set appliance and building standards
  - Consumers not perfectly rational, lack of information to calculate fuel savings, lack of choice in marketplace, uncertainty in fuel prices, relatively small savings
  - Removes disincentives and uncertainty for profit-maximizing, risk-adverse automakers to investment in production and R&D of fuel-efficient technologies

## Standards Help Industry Competitiveness



- US auto fleet has strictest air pollution standards and leads the world on emission control technologies
- Lax fuel economy standards has led US to lag behind Europe and Japan in new vehicle technologies and an over dependence on large SUVs and pickups
- New, more stringent standards necessary to force US auto industry to become more competitive in the global vehicles market

## Conclusions



- Fuel economy standards provide greatest certainty in achieving fuel savings goals
- Fuel economy standards worked = 2.8 mmbd saved in 2000 or 25% reduction in gasoline demand
- Purchase incentives and fuel taxes can provide incentive for continuous improvement
- Strong fuel economy standards provide greater incentives for industry to invest in new technologies, and enhance global competitiveness of domestic auto industries