



Strength through Science
Office of Energy Efficiency and Renewable Energy



Office of Transportation Technologies U.S. Department of Energy

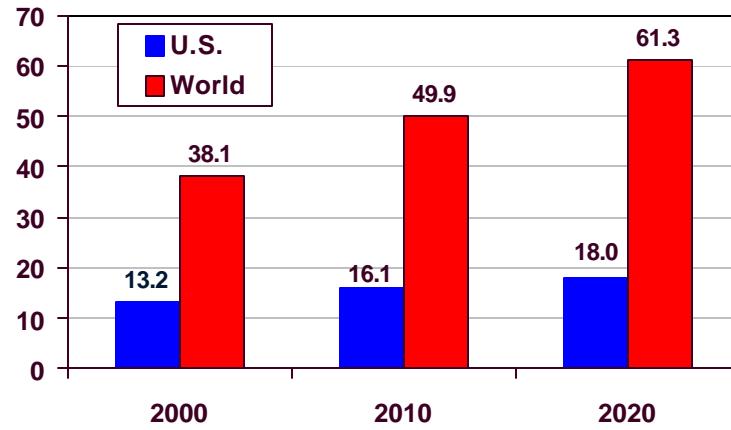
April 11, 2000



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World and U.S. Transportation Oil Use (million barrels per day)

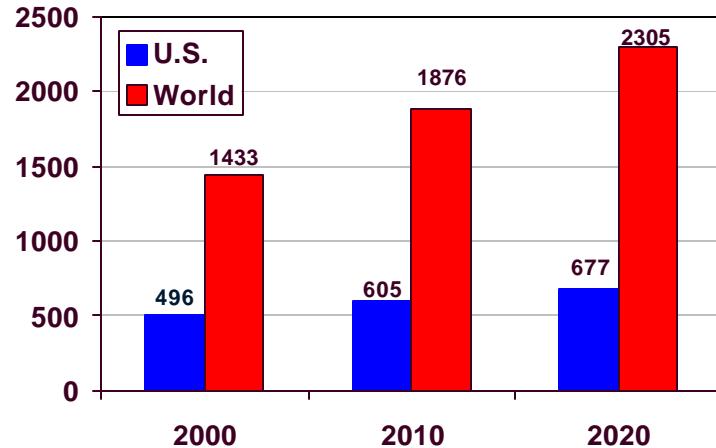




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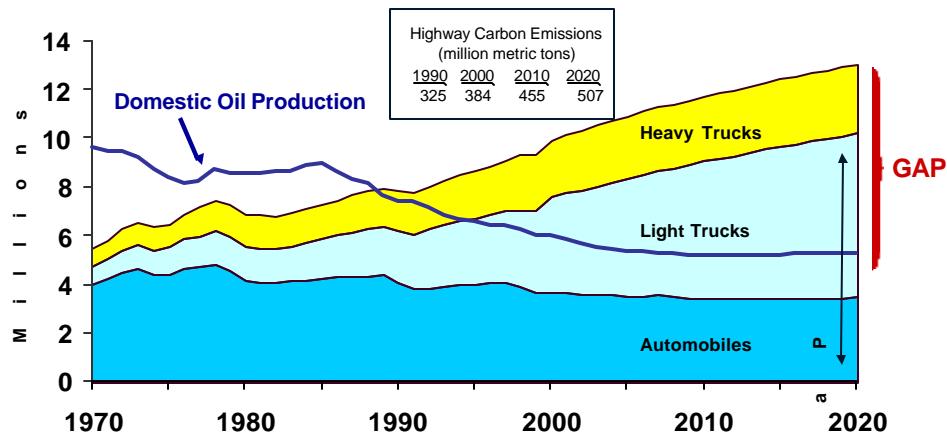
World and U.S. Transportation Carbon Emissions (million metric tons of carbon)



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Key Driver – Energy Security



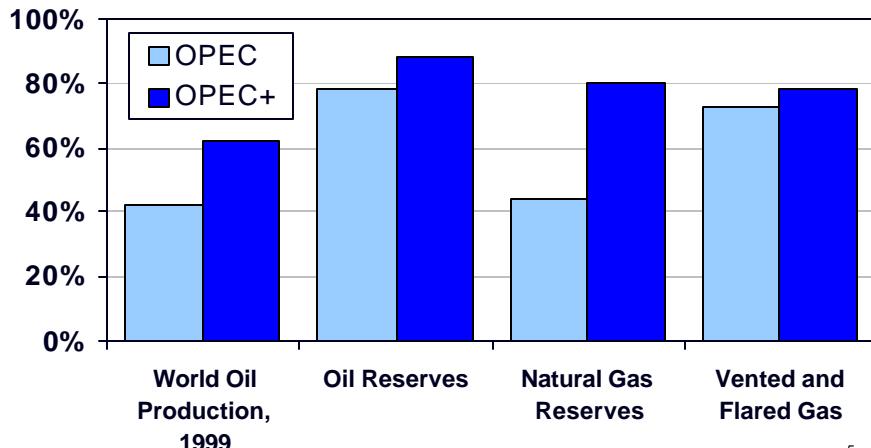


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OPEC and OPEC+ Control Most of the Oil and Gas Reserves and Vented/Flared Gas



5



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What Has Happened Recently

- Crude oil price rose from \$10 per barrel in January 1999 to \$31 per barrel in March
- Average U.S. gasoline price rose from \$0.98 per gallon to \$1.53 currently
- Solomon Smith Barney estimated that these price increases will reduce economic growth by 1.5 percentage points and add a percentage point to the rate of inflation
- \$89 million provided to help NY and New England low-income families for home heating oil
- U.S. gasoline reserves at lowest point in 15 years



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What Has Happened Recently (cont'd)

Other Energy Price Increases

(excluding taxes)

- Jet Fuel: 118%
- Home Heating Oil: 53%
- Residential Propane: 36% (through December)
- Residential Natural Gas: 19% (through December)



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Impacts on Trucking

- February 13, 2000: 230 independent truckers in the Delaware Valley refuse to load their trucks until they get a 30% rate hike and a 15% fuel surcharge from customers.
- Highway retail diesel prices have risen sharply since January 1999:
 - National: 53%
 - New England: 72%
 - Central Atlantic: 59%



OTT Mission

... support the development and use of advanced transportation vehicles and fuels which will reduce energy demand, particularly for petroleum; reduce greenhouse gas emissions; and enable United States transportation to sustain a strong competitive position in domestic and world markets.



OTT Goals

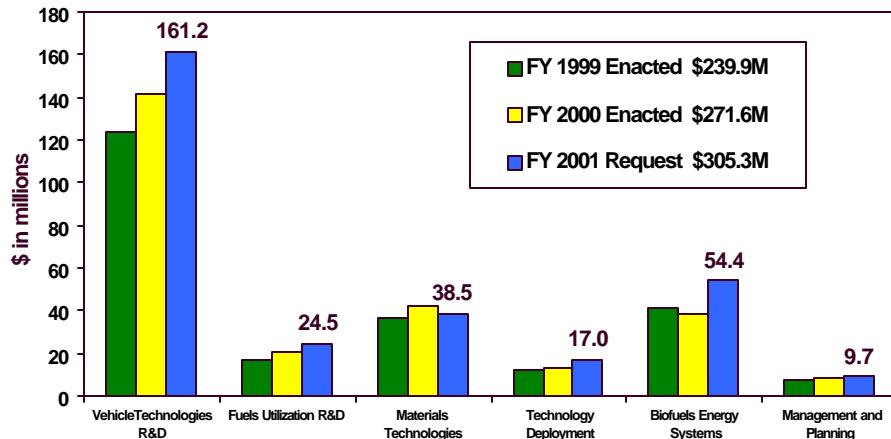
- Develop 80 mpg production prototype sedan by 2004 (PNGV).
- Improve light truck fuel efficiency by 35% while meeting newly issued EPA Tier 2 emission standards by 2004.
- Develop technologies to increase fuel economy of largest heavy trucks from 7 to 10 mpg, by 2004.
- Increase cellulosic ethanol production to 2.2 billion gallons per year, from zero today, by 2010.
- Achieve 100% AFV use in selected market niches in at least 12 Clean Cities, by 2004.



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OTT Budget History



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OTT Program Accomplishments

- Ford / DOE hybrid development culminated with delivery of P2000 to DOE.
- Successfully demonstrated the first large scale (10kW) integrated PEM fuel cell system capable of running on gasoline.
- Completed ultra-large casting facility for large, complex, lightweight, aluminum auto and truck body parts.
- Demonstrated 35 percent fuel efficiency improvement in large sport utility vehicle, while meeting Interim EPA Tier 2 emissions standards.
- CRADA with corn industry increased productivity in converting corn residues to ethanol.
- Added 15,000 alternative fuel vehicles to the Federal fleet.



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**PNGV Milestone Achieved:
Concept Vehicles Announced**

2000 Washington DC



Dodge ESX3

- Body system weighs 46% less*
- Efficient diesel engine, motor and battery achieve 72 mpg*
- Incremental cost penalty halved

2000 Detroit Auto Show



2000 Detroit Auto Show



Ford Prodigy

- Lightweight materials reduce vehicle weight 30% *
- Integrated starter/alternator *
- 33% reduction in aerodynamic drag
- Advanced diesel engine with 35% efficiency improvement *
- High power battery *

*DOE supported technologies

GM Precept

- Vehicle mass reduced 45% *
- Eliminates need for power steering
- Lowest drag coefficient ever recorded for a 5-p sedan
- Fuel cell version projected to get 108 mpg *