



Energy Security

Monday, May 2, 2011; 2:30 PM – 3:40 AM

Moderator:

Ralph Eads, Chairman, Energy Investment Banking, Jefferies & Co. Inc.

Speakers:

Gary Doer, Ambassador of Canada to the United States

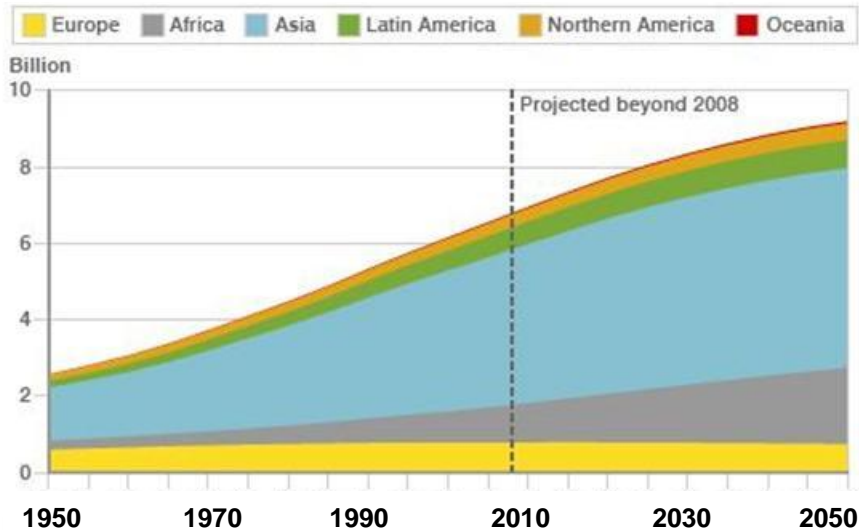
T. Boone Pickens, Entrepreneur and Philanthropist; Founder, BP Capital

Michael Wirth, Executive Vice President, Downstream & Chemicals, Chevron Corp.

R. James Woolsey, Chairman, Woolsey Partners; Of Counsel, Goodwin Procter LLP; former Director, Central Intelligence Agency

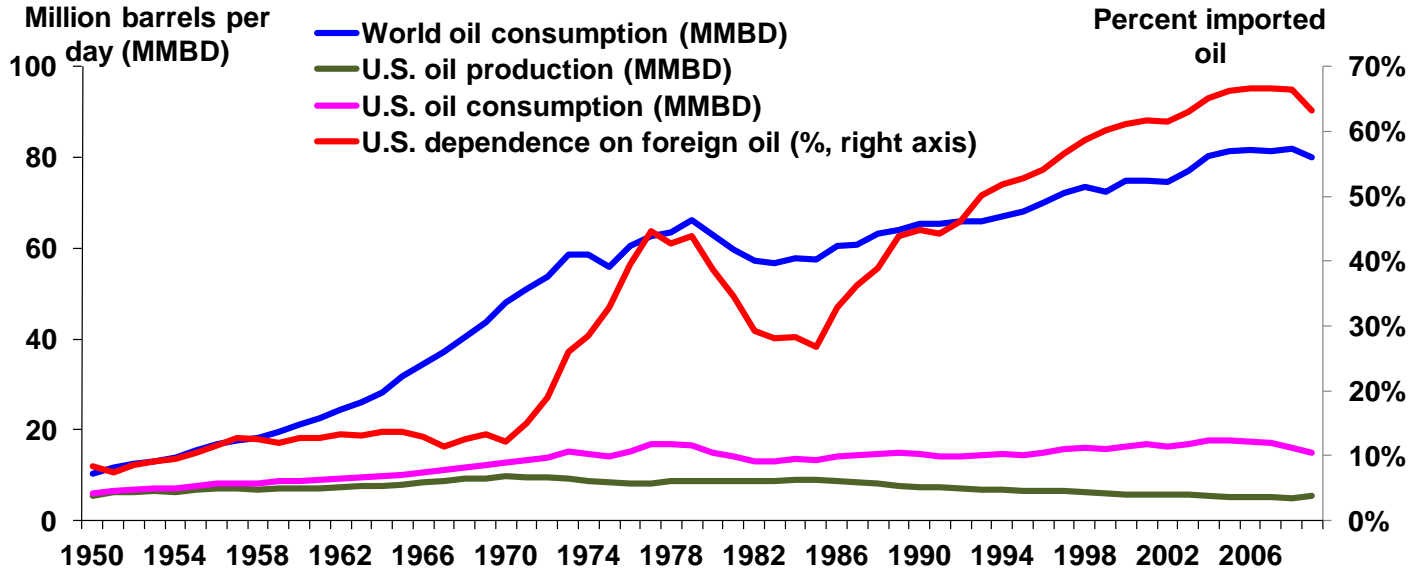
Providing for an increasing population

The world's rising population, 1950-2050



U.S. dependence on foreign oil

Dependence grows

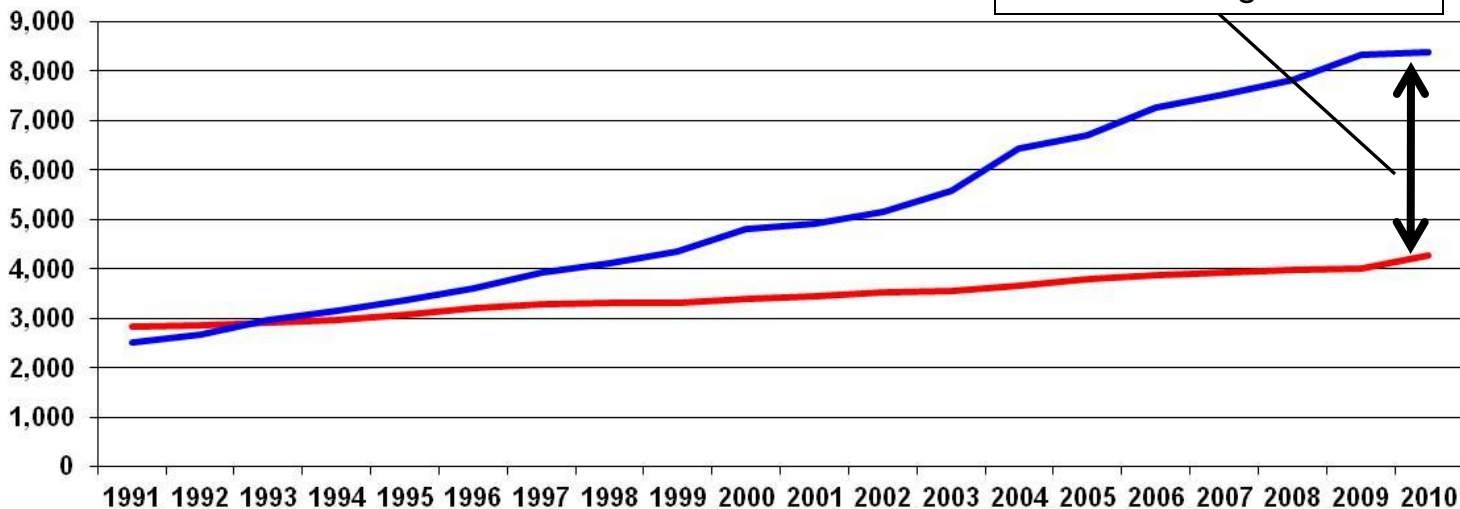


Chinese oil dependency

thousand barrels per day

— Production — Consumption

China is 49% dependent on foreign oil



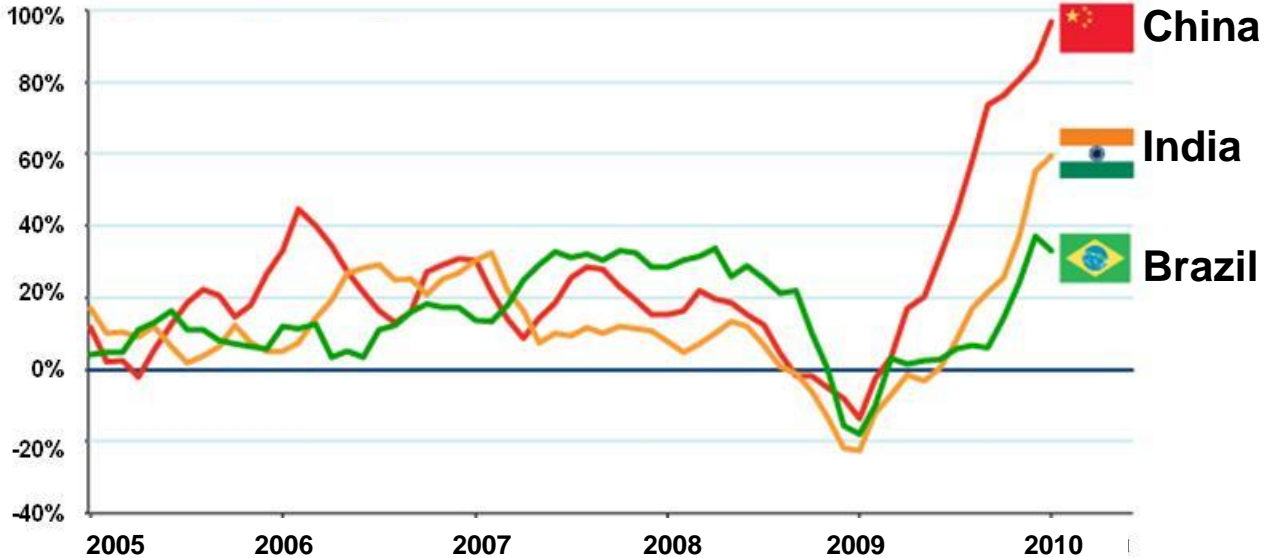
Explosive growth of vehicle sales

2010, China, India, and Brazil



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Y/Y %
change
3 month
moving
avg.



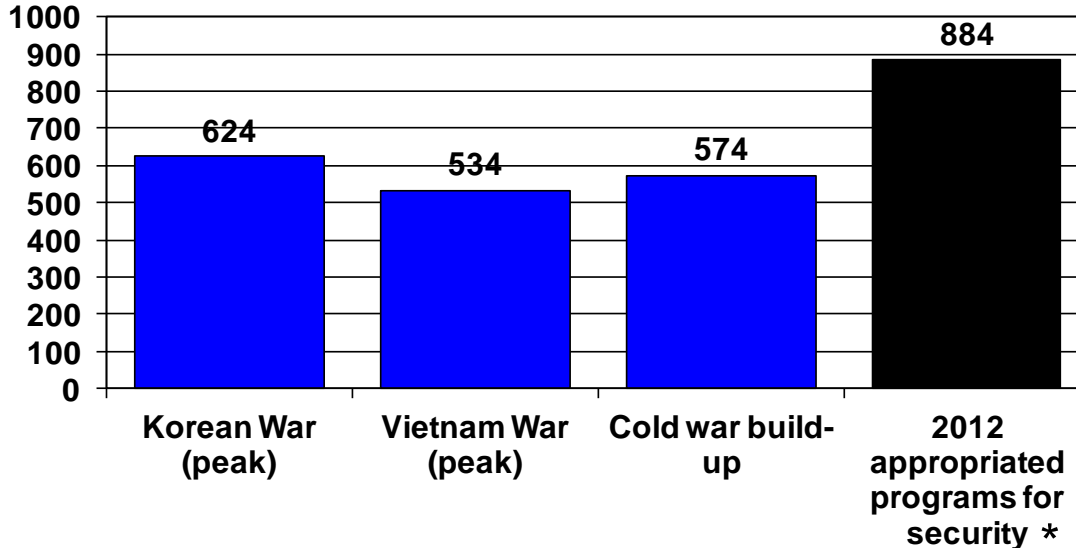
U.S. military spending

Inflation adjusted



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U.S.\$ billions



* After including intelligence and other security-related spending the total is approaching **\$1 trillion**

Total spending on securing access to oil

FY 2010, US\$ billions



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Geographic combatant command	Percentage of total conventional military spending	Share of conventional military spending	Percentage estimated for securing oil	Dollar estimate for securing oil
Central command	15%	\$44.7	75%	\$33.5
European command	30%	\$89.4	40%	\$35.8
Pacific command	35%	\$104.3	20%	\$20.9
Northern and southern command	20%	\$59.6	0%	\$0.0
Subtotal				\$90.2
Iraq war				\$76.1
Total				\$166.3



Total spending on securing access to oil

**Total= \$166.3 billion
or
24% of a \$700 billion
defense budget**

Keeping U.S. aircraft carriers in the Persian Gulf
from **1976-2007** has cost

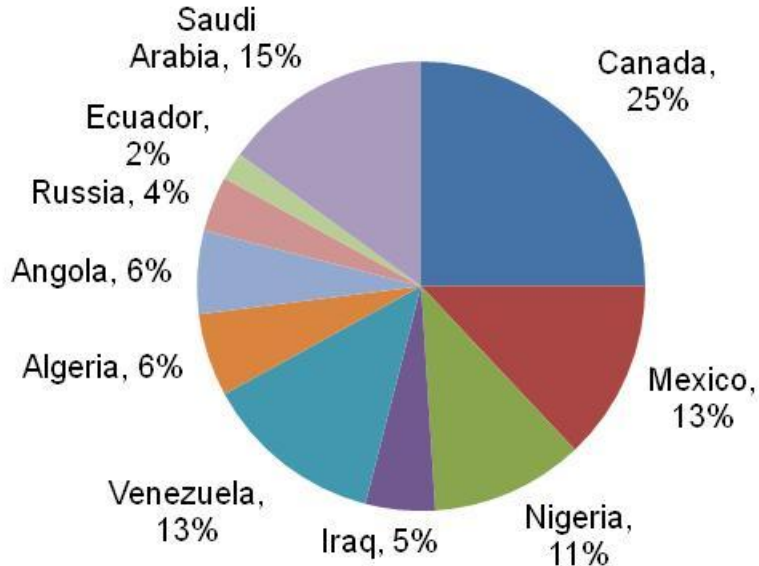
\$7.3 trillion

Countries exporting oil to the U.S.

2009



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Natural resources are organizationally and regional consolidated



	OPEC % of world	Gulf plus Iran % of world
Crude oil proven reserve (billion barrels)	70%	47%
Natural gas proven reserve (trillion cu ft)	50%	41%
Total oil supply (million barrels/day)	42%	28%

Oil transit chokepoints

24.3 million barrels per day (bbl/d)



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The Suez Canal/
Sumed Pipeline

Oil flow:
4.5 million bbl/d



The Strait of Hormuz

Oil flow: 16.5 million bbl/d

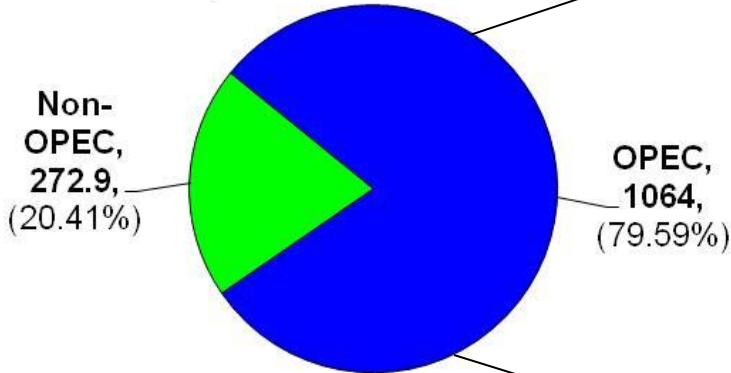
Bab el-Mandab

Oil flow: 3.3 million bbl/d

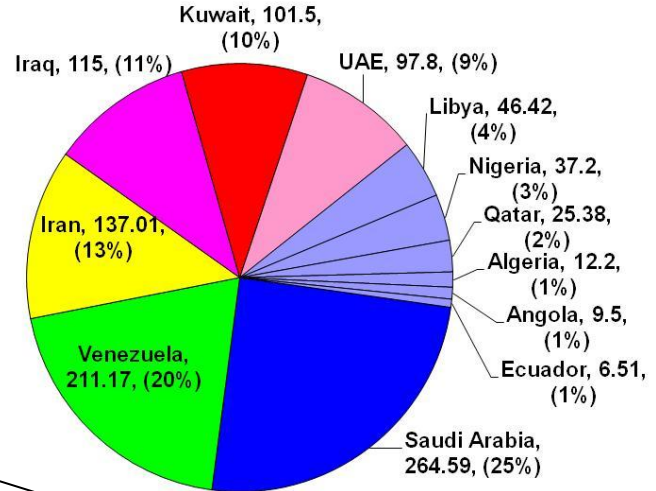


World's crude oil reserves, 2009

Share of world crude oil reserves (billions of barrels)

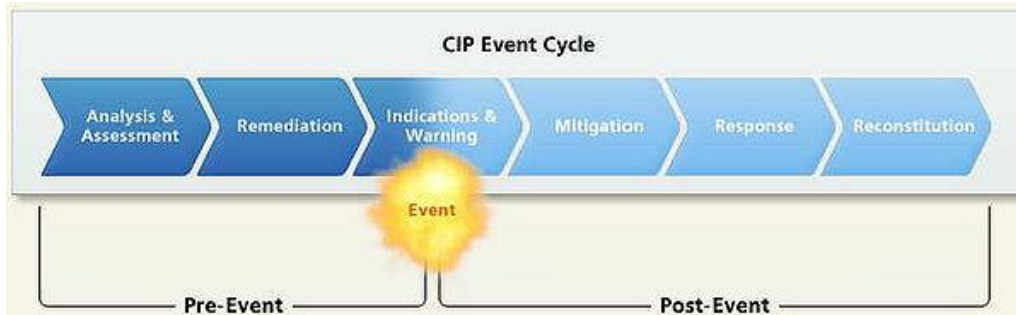


Share of OPEC (billions of barrels)



Energy security includes grid security

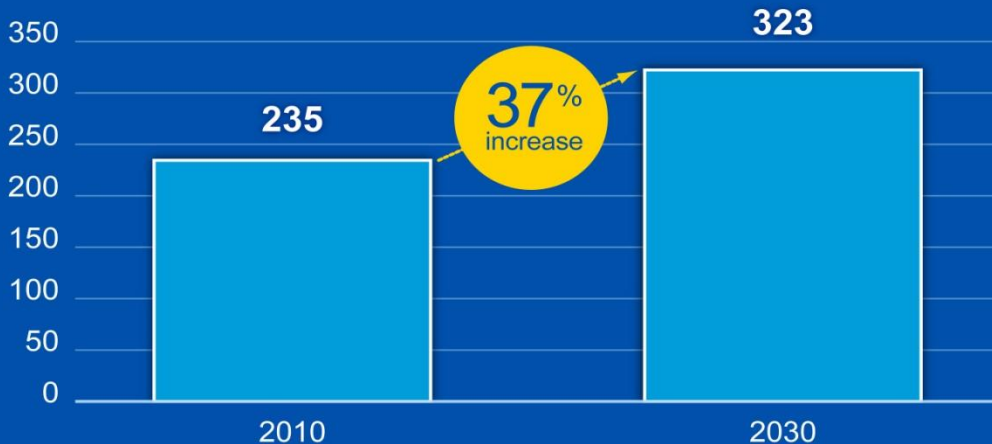
Critical Infrastructure Protection



Critical Infrastructure Protection (CIP) Cyber Security Standards, maintained by the North American Electric Reliability Corporation (NERC) and approved by the Federal Energy Regulatory Commission (FERC) in 2006, are intended to ensure the protection of the critical cyber assets that control or effect the reliability of North America's bulk electric systems. The CIP Cyber Security Standards are mandatory and enforceable across all users

Increasing Global Energy Demand

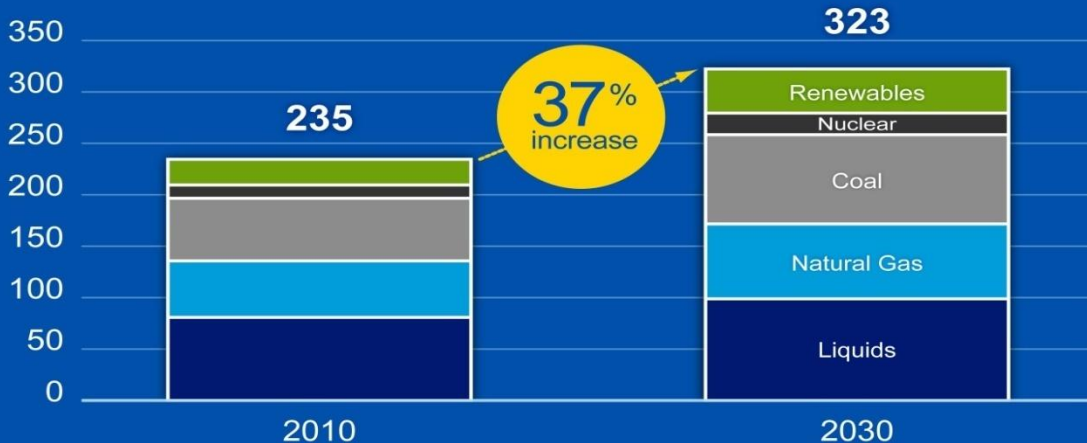
Global Energy Demand by Fuel
Million Barrels of Oil Equivalent Per Day



Source: U.S. DOE EIA International Energy Outlook, May 2010

Increasing Global Energy Demand

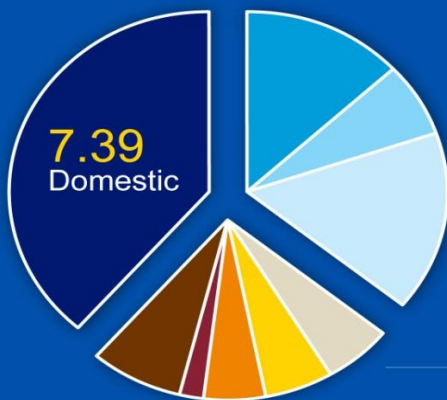
Global Energy Demand by Fuel
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Source: U.S. DOE EIA International Energy Outlook, May 2010

U.S. Petroleum Imports by Country

U.S. Petroleum* Consumption and Sources of Supply Million Barrels per Day



19.15
Consumption

11.76
Imported

6.87
Non-OPEC

4.89
OPEC

- **2.53** Canada
- **1.28** Mexico
- **3.06** Other Non-OPEC
- **1.09** Saudi Arabia
- **1.03** Nigeria
- **0.99** Venezuela
- **0.39** Angola
- **1.39** Other OPEC

*Includes crude oil and petroleum products.
Source: U.S. DOE EIA, 2010