

Ending the Energy Stalemate

A Bipartisan Strategy to Meet America's Energy Challenges

Jason Grumet
Growing the Bio-Economy
Ames, Iowa
August 28, 2006



The Commissioners

John Holdren (co-chair)

Teresa and John Heinz Professor of Environmental Policy, Harvard University; Director of the Woods Hole Research Center

William K. Reilly (co-chair)

Founding Partner, Aqua International Partners; former Administrator, U.S. Environmental Protection Agency

John W. Rowe (co-chair)

Chairman and CEO, Exelon Corporation

Philip Sharp (congressional chair)

President, Resources for the Future; Former Congressman, Indiana



The Commissioners

Marilyn Brown

Interim Director of Oak Ridge National Laboratory's Engineering Science and Technology Division

Ralph Cavanagh

Co-Director, Energy Program,
Natural Resource Defense Council

Archie Dunham

Fmr. CEO Conoco-Phillips, (*resigned 2005)

Rodney Ellis

State Senator, Texas

Leo W. Gerard

President, United Steelworkers of America

Robert E. Grady

Managing Partner, Carlyle Venture Partners,

F. Henry Habicht

CEO, Global Environment & Technology Foundation; fmr. Deputy Administrator U.S. EPA

Frank Keating

CEO of the American Council of Life Insurers;
former governor of Oklahoma

Richard A. Meserve

President of the Carnegie Institution;
fmr. Chairman of the U.S. Nuclear Regulatory Commission

Mario Molina

Professor, University of California, San Diego; Nobel Laureate

Sharon L. Nelson

Chief, Consumer Protection Division, Washington Attorney's General Office; Chair of Consumers Union

Richard L. Schmalensee

Dean of the MIT Sloan School of Management

Linda Stuntz

Partner Stuntz, Davis & Saffier
fmr Deputy Secretary U.S. DOE (*resigned 2005)

Susan Tierney

Managing Principal, The Analysis Group;
fmr. Assistant Secretary U.S. DOE

R. James Woolsey

Vice President, Booz, Allen, Hamilton;
fmr. Director of Central Intelligence

Martin Zimmerman

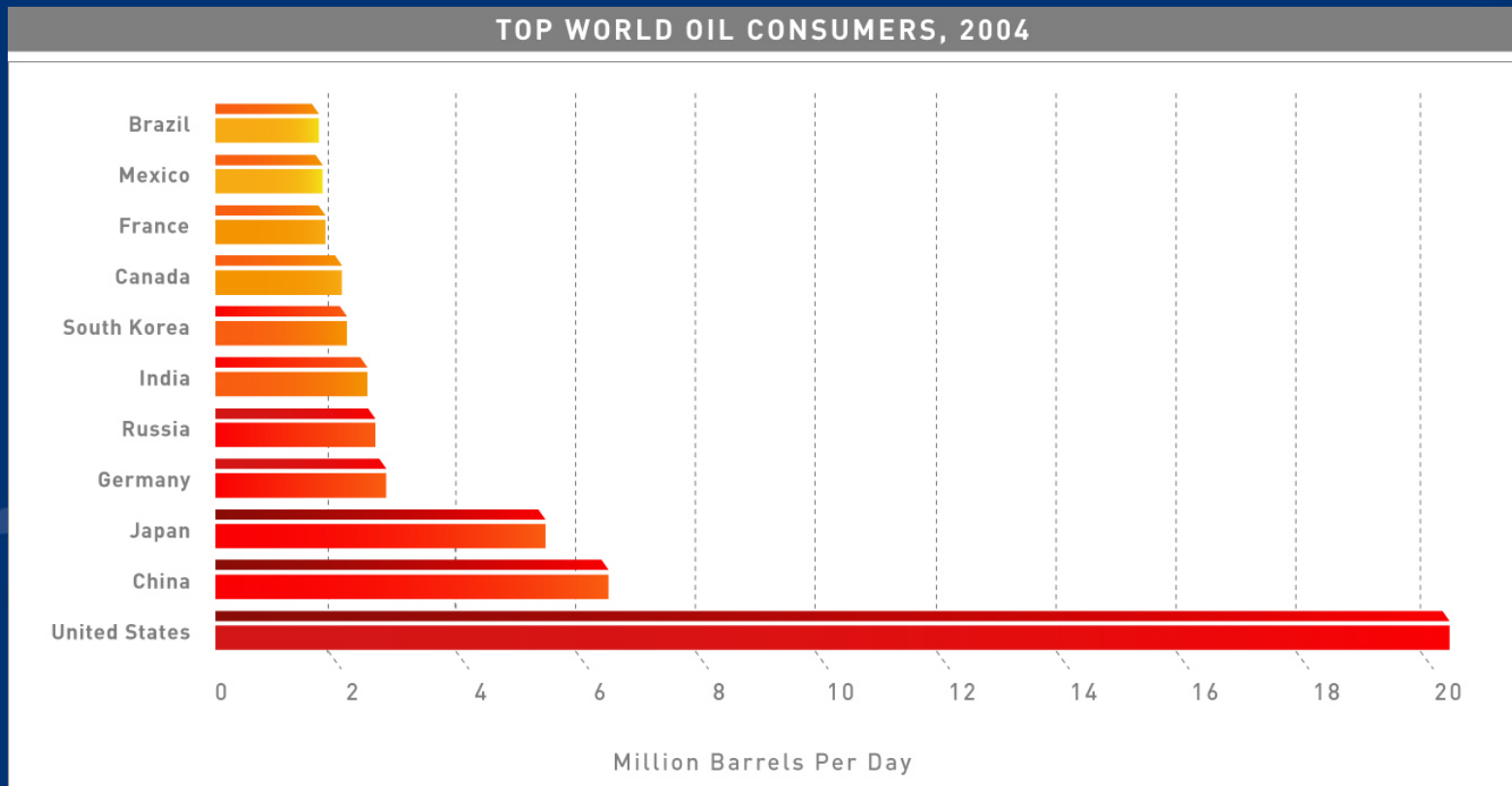
Professor of Business, University of Michigan;
Fmr. Group Vice President, Ford Motor Company



Structure of the Commission's Report

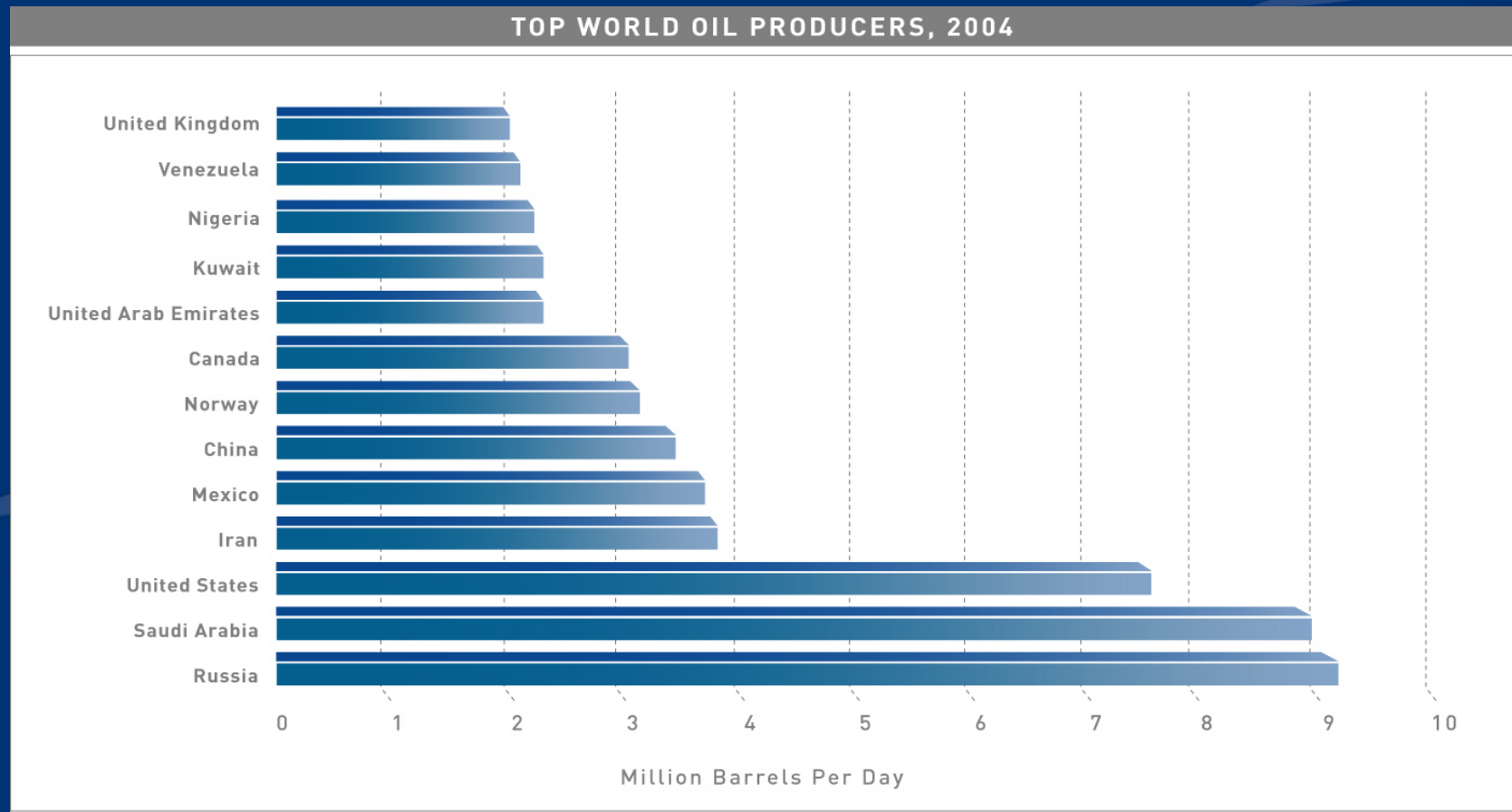
- Improving Oil Security
- Reducing Risks from Climate Change
- Improving Energy Efficiency
- Expanding Energy Supplies
- Strengthening Energy Supply Infrastructure
- Developing Energy Technologies for the Future

Top World Oil Consumers



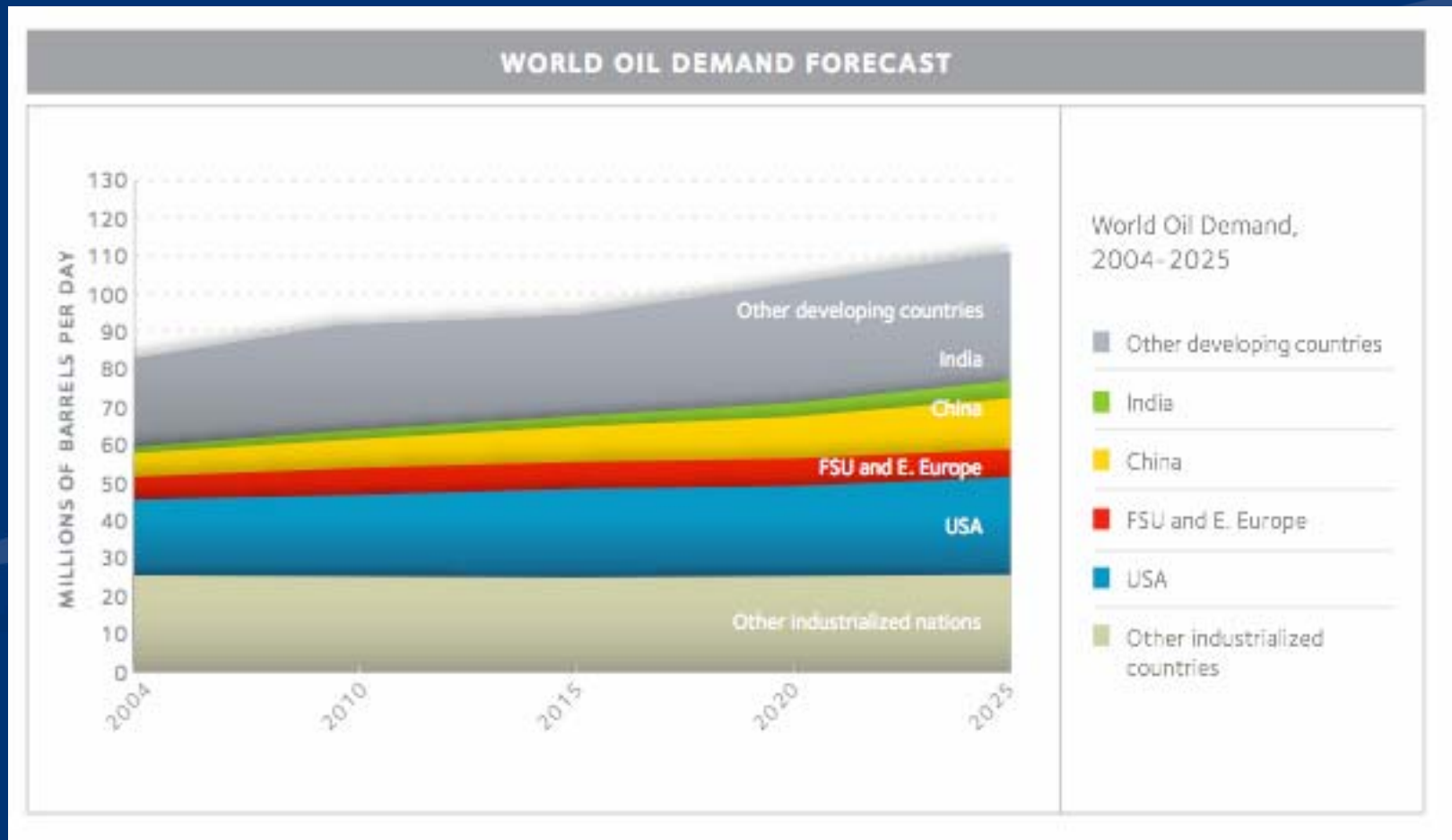
US accounts for 25% of global consumption

Top World Oil Producers



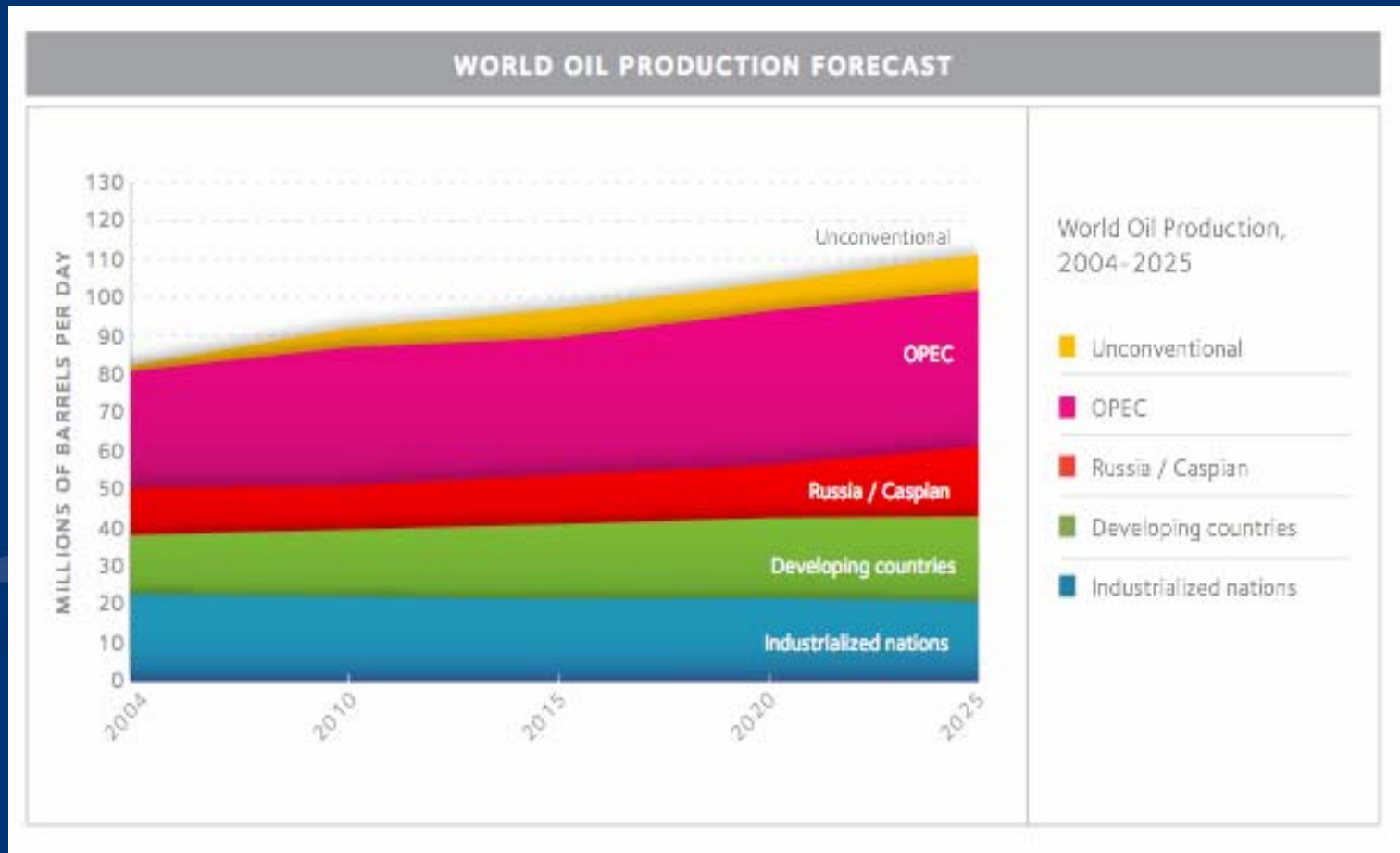
U.S. the third largest producer, but only has 3% of world's proved reserves.

World Oil Demand Forecast



US demand +24%; Industrialized Countries +1%; China ++66%.

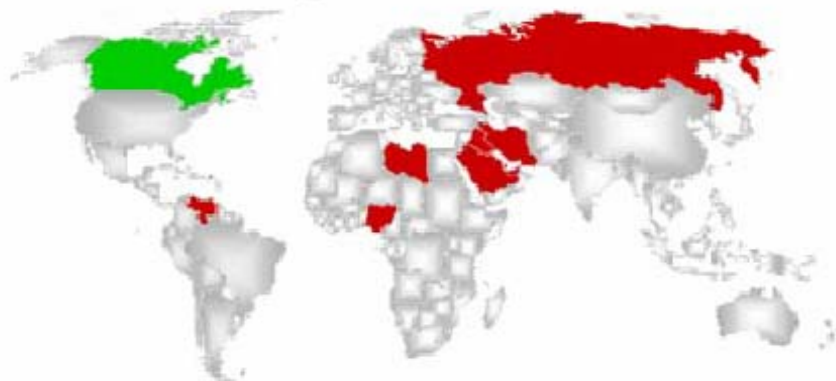
World Oil Production Forecast



Increased Global Reliance on OPEC

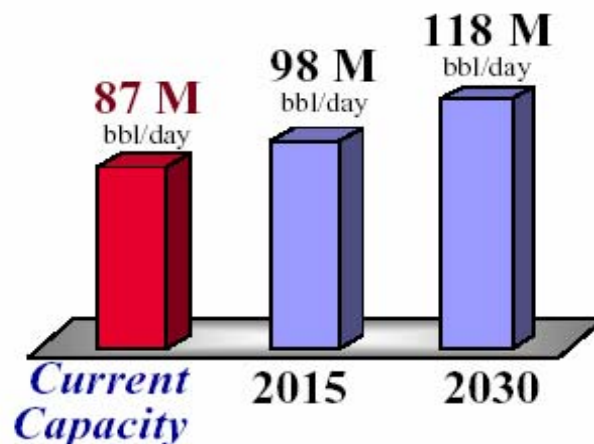
Oil Facts

Largest Oil Reserves



Most are adversarial to the US.

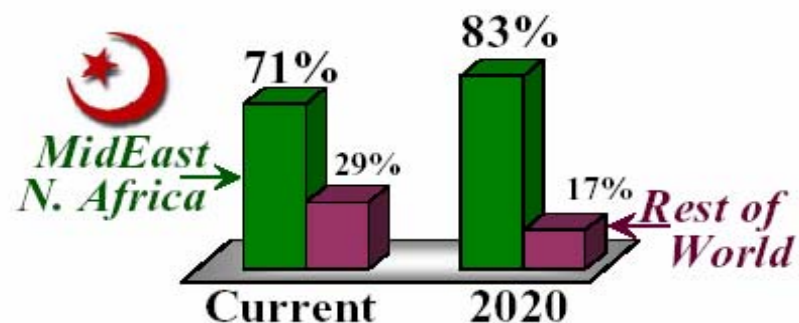
World Oil Demand Projections (EIA)



Crude Oil Prices 2004-2006

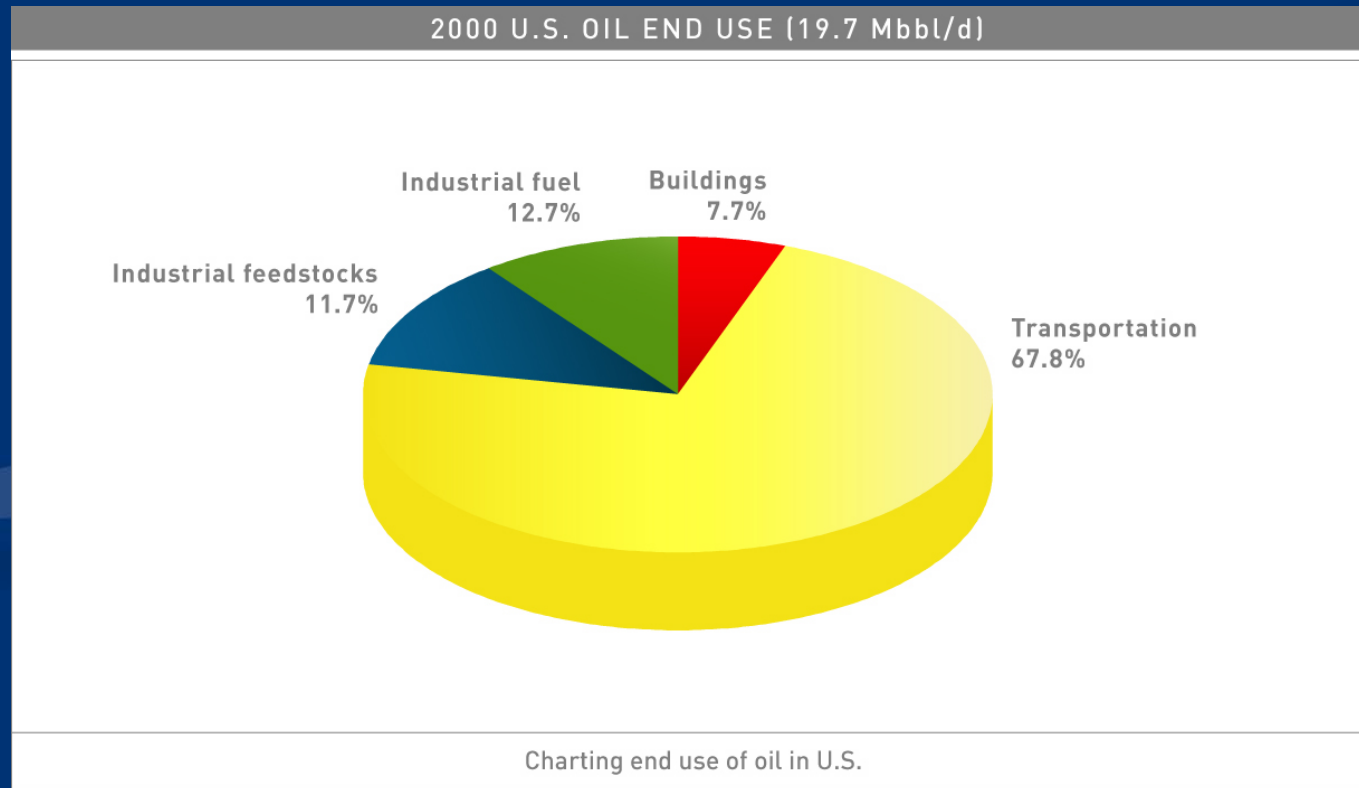


Share of Global Reserves



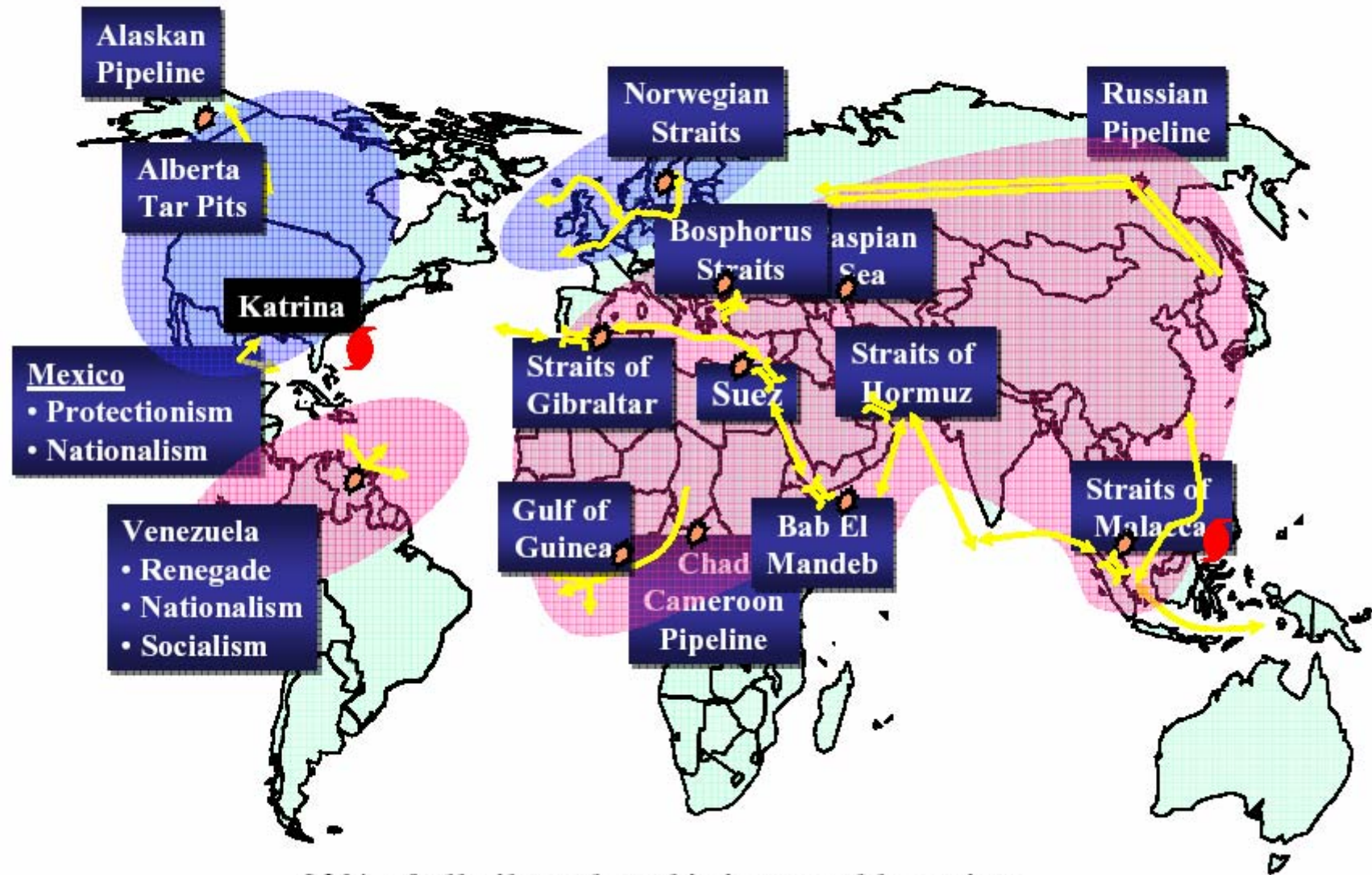
US strategic interests are very much at risk.

US Oil End Use



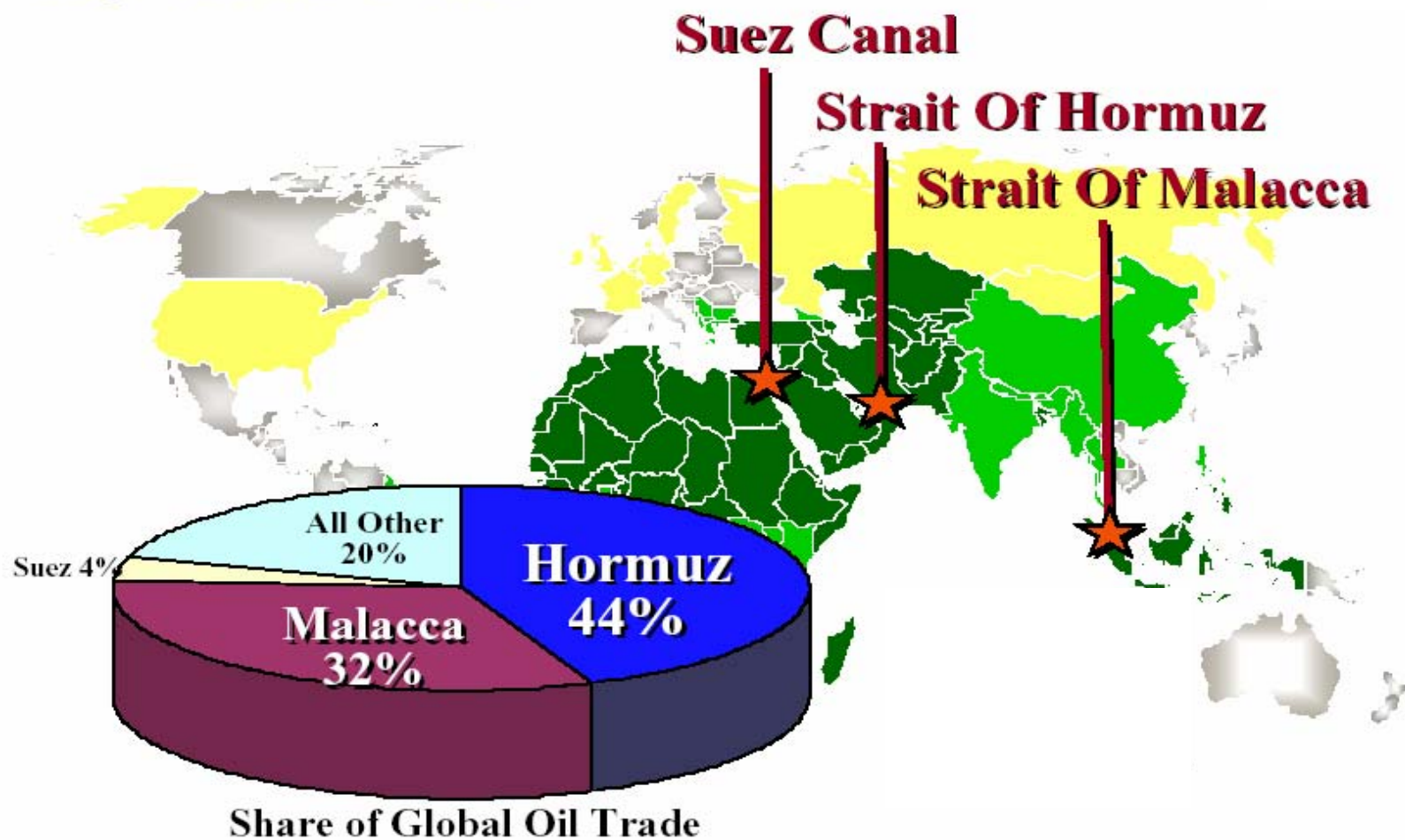
97% of US transportation is petroleum dependent

Global Energy Security Risk Areas



82% of all oil produced is in unstable regions.

Key Choke Points



Three Steps Toward Oil Security

1. Improve the reliability and resiliency of the global oil supply chain.
2. Dramatically Improve Transportation Efficiency (Fuel Economy).
3. Diversify Transportation Fuels.

Vulnerable Critical Assets



Personnel, pipelines, production and storage facilities, ships and ports.

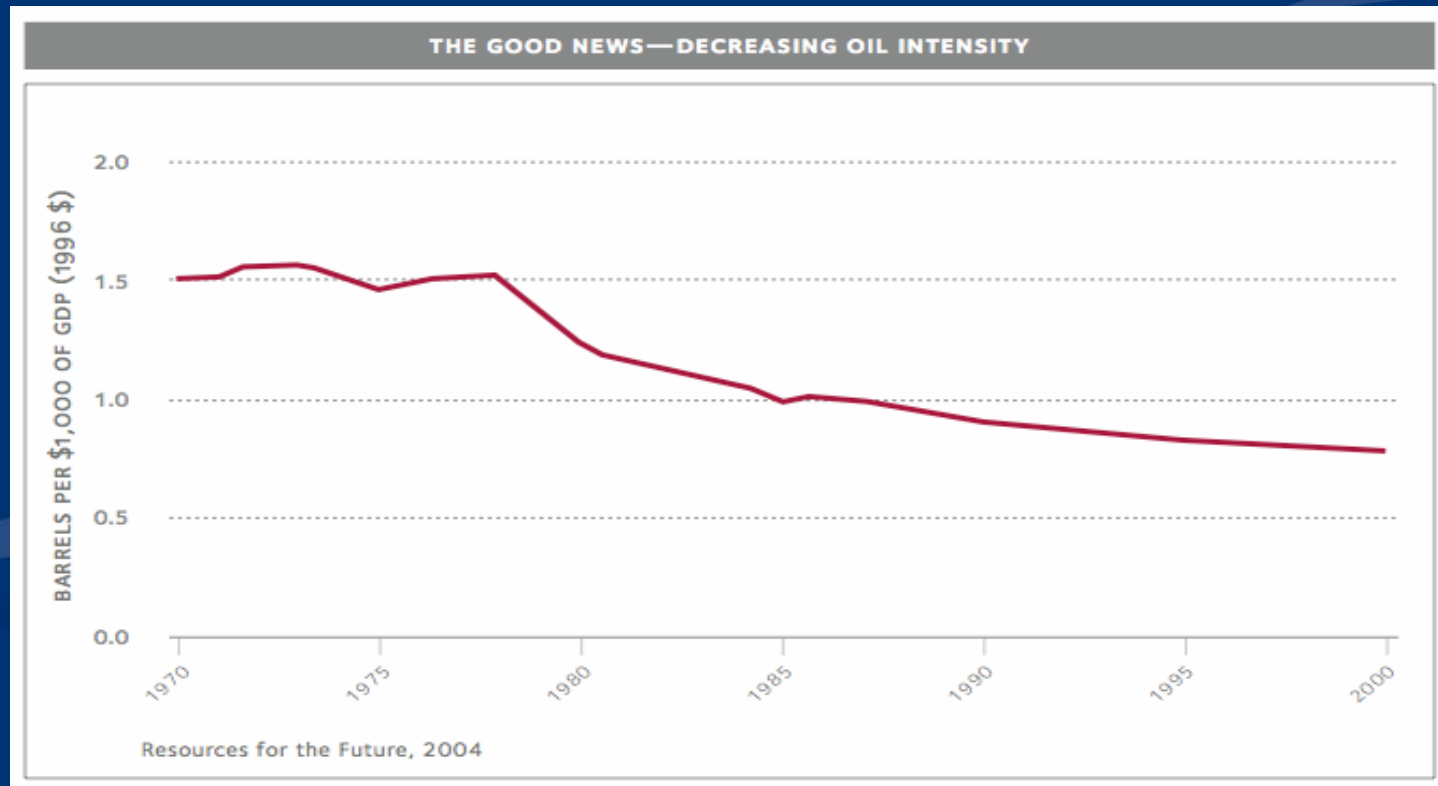
Increase Conventional Oil Production

Global Supply @ 110 MBD In 2025

| CONVENTIONAL RESERVES | CRUDE OIL (BILLION BARRELS) |
|------------------------|-----------------------------|
| Alaska (ANWR) | 10.36 |
| Pacific Offshore | 10.71 |
| Eastern Gulf of Mexico | 3.58 |
| Atlantic Offshore | 2.31 |

- **Technically recoverable, but off limits to leasing**
- **Potential 2 million barrels per day by 2020**

Oil Intensity Per GDP 1970 -2000



- Repeating this success will require displacing @ 8MBD of oil by 2030

Improve Efficiency

Base Consumption in 2025: 26.5 million barrels per day

Heavy-Duty Trucks

Improved Engines & Aerodynamics 1.0 MBD

Passenger Vehicles & Delivery Trucks

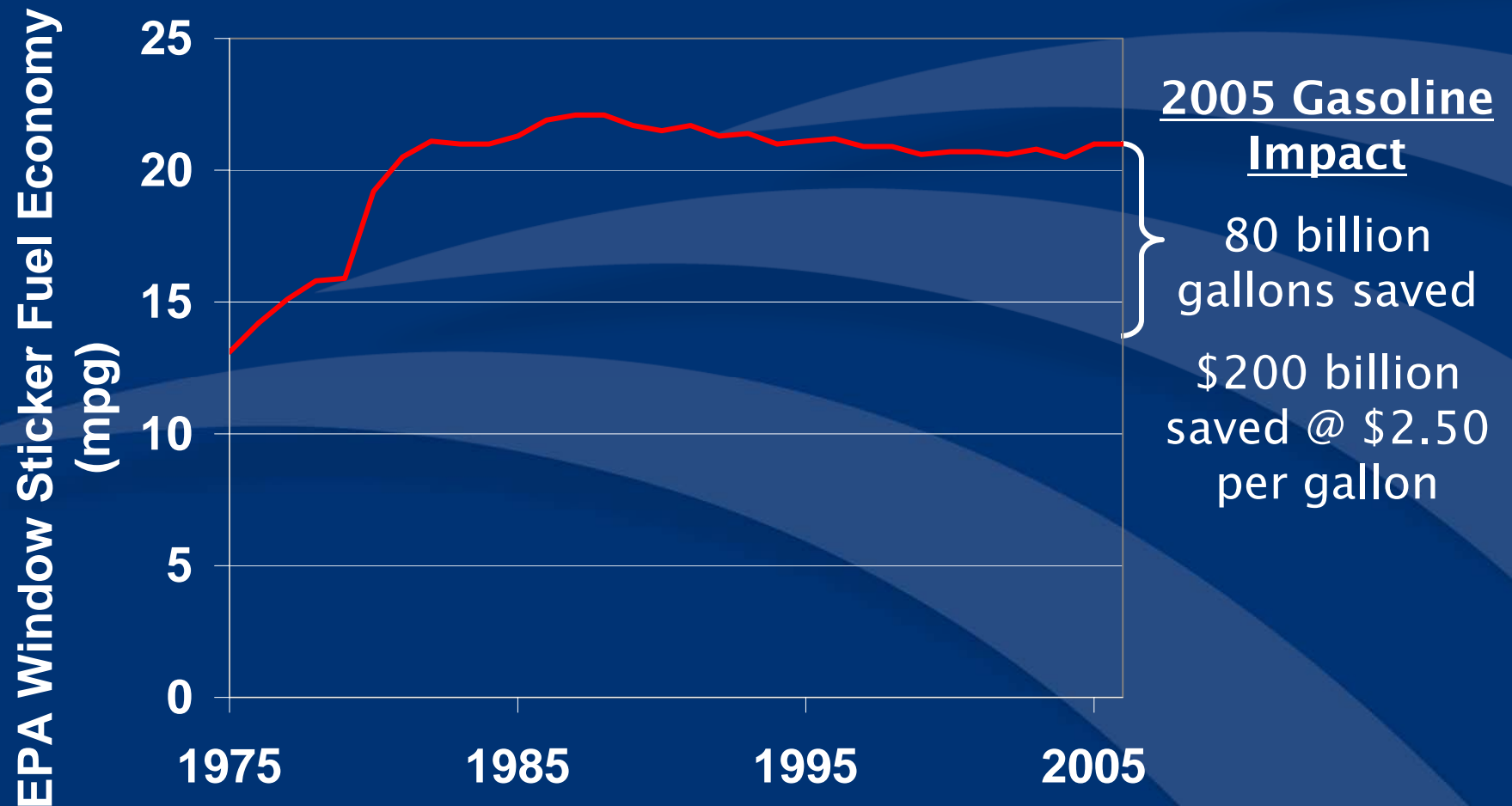
Improved Gasoline Vehicle Technology (32MPG) 2.2 MBD

50% new car sales Advanced Hybrid and diesel (40 MPG) 3.5 MBD

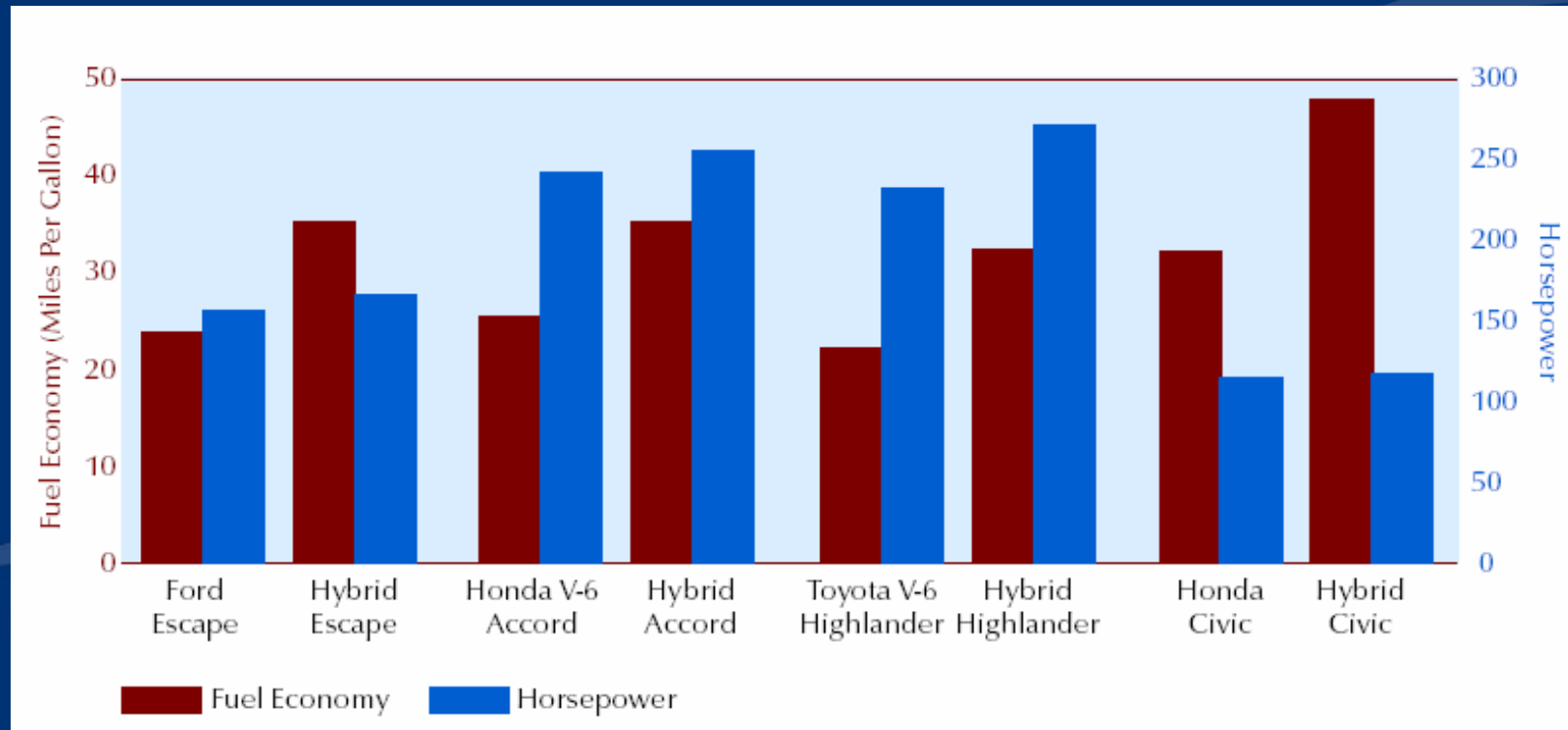
Advanced Hybrid/Diesel + 25% plug in Hybrids (50 MPG) 4.6 MBD

Fuel Economy: History and Benefits

Fuel economy standards work.



Hybrids Change The Game



- Hybrids increase fuel efficiency and horsepower

Alternatives to Conventional Oil

4 Part Test:

1. Ample Domestic Feedstock
2. Generally Compatible with Existing Infrastructure
3. Low Carbon
4. Cost-Competitive with Gasoline

- Hydrogen: Fails #2 & #4 / #3??
- Unconventional Oil: Fails #3 / #4?
- Coal to Liquids: Fails #3 / #4?
- Traditional Ethanol Fails #1

And the winner is ...

Cellulosic Ethanol

Challenge is **SCALE**

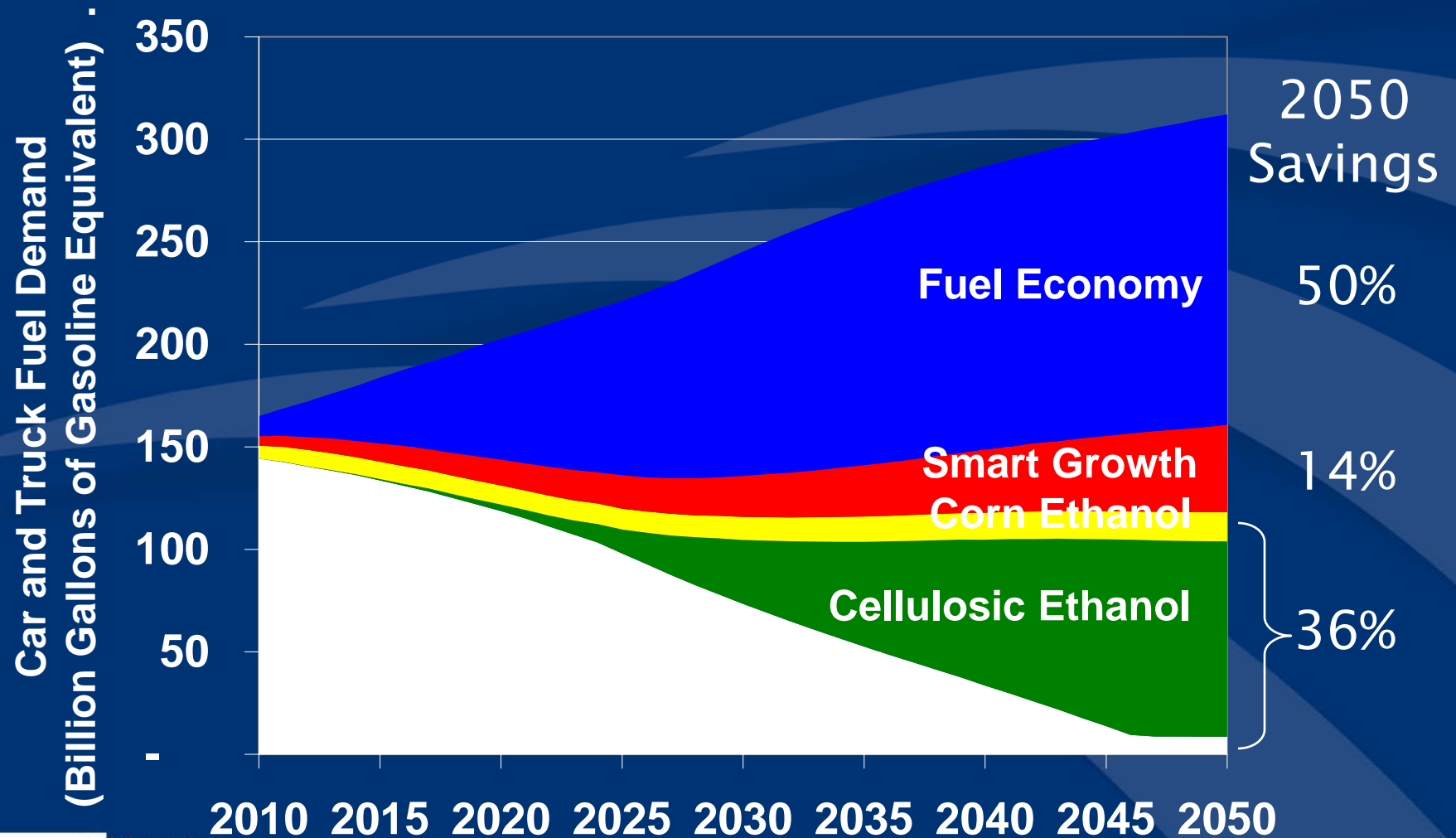
Increase RFS

(15b gal. ETOH) = 1 MBD refined petroleum product

Even with improvements in fuel economy, it will take roughly 80 billion gallons of ethanol to offset $\frac{1}{2}$ the nation's gasoline Use in 2025

A Comprehensive Approach

“Silver Buckshot”



Thank You

Jason Grumet

www.energycommission.org

jgrumet@energycommission.org

202 637 0400

