

The Energy Imperative, Technologies, and the Role of Emerging Companies



E. Floyd Kvamme

PCAST Energy Subcommittee Chair

September 12, 2006



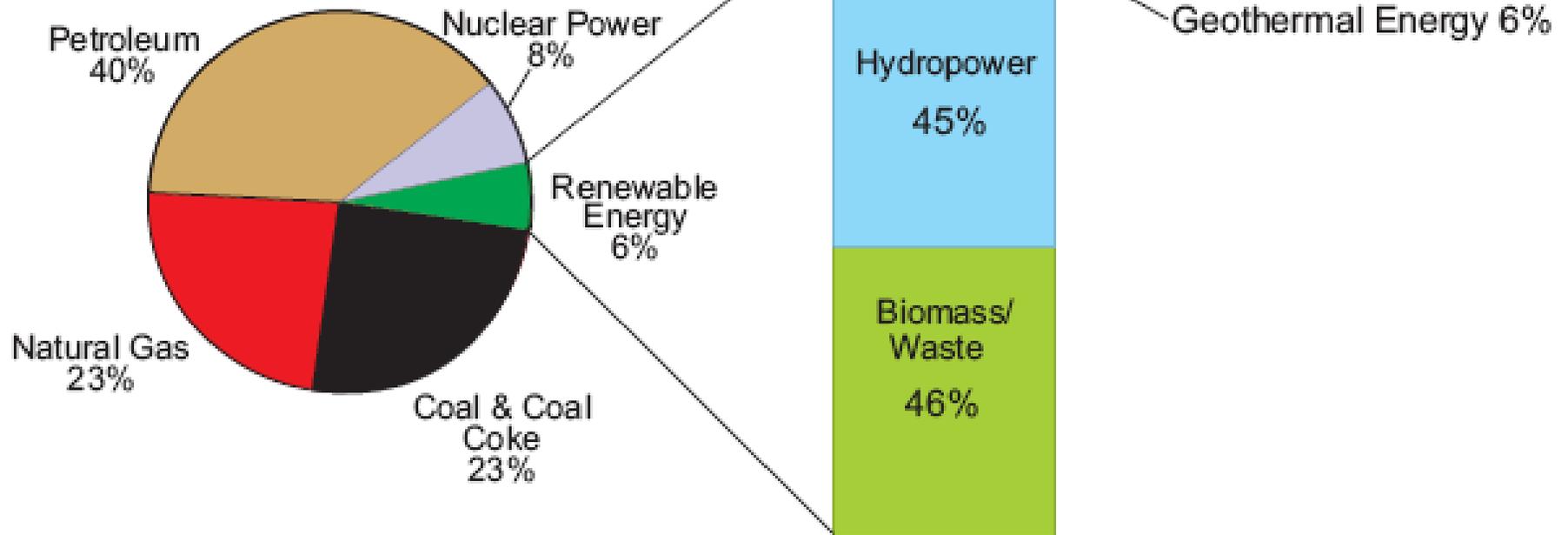
Overview of the report

- Clean, affordable, and secure energy is critical to sustainable economic and national security
- Advanced technologies offer a range of approaches
- Entrepreneurs are developing innovative solutions
- Federal and State governments, universities, small and large businesses, and investors each play a role
- Recommendations for action

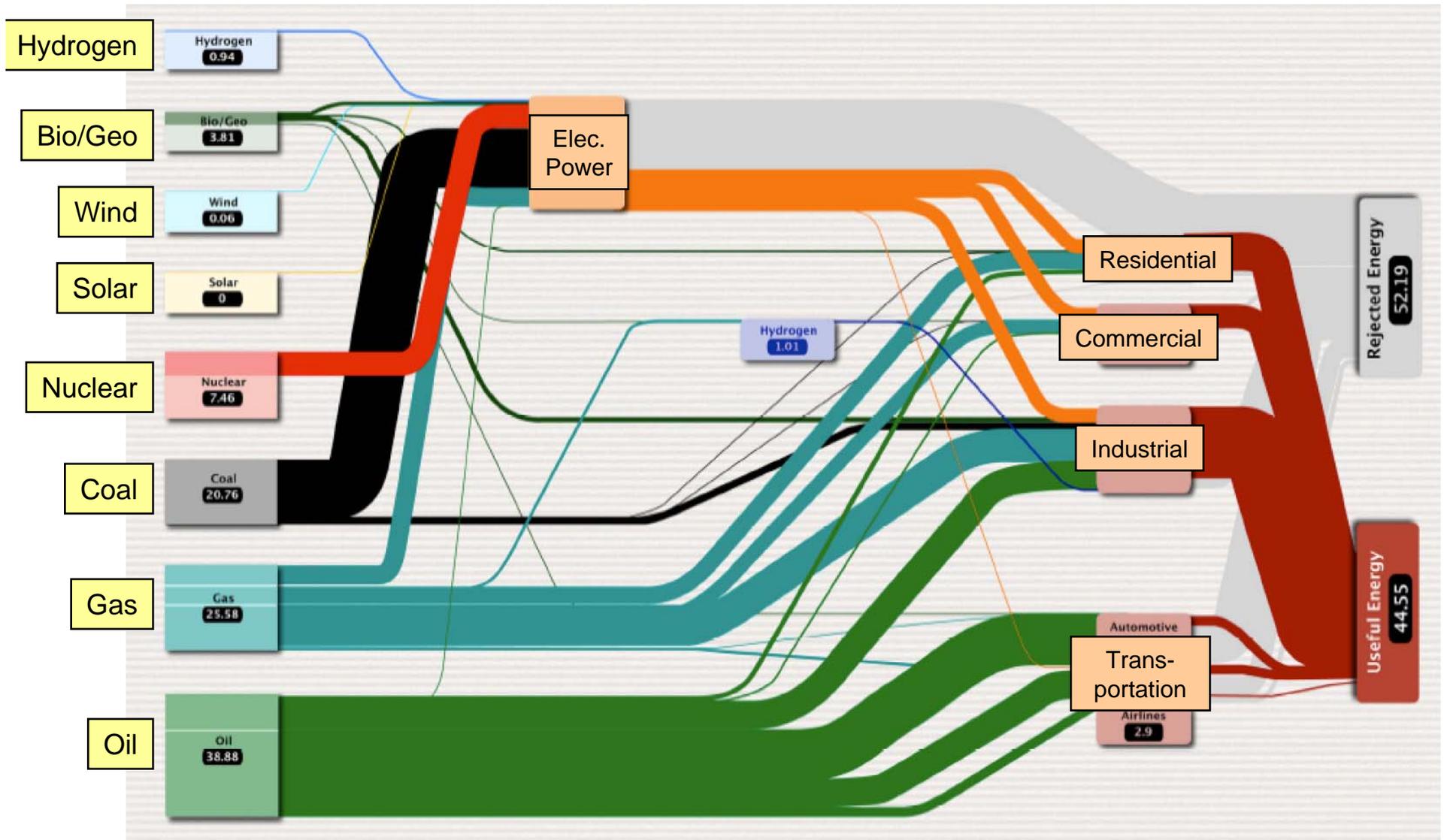
U.S. Energy Consumption by Energy Source, 2005

Total U.S. Consumption=100
(quadrillion Btu)

Total Renewable=6
(quadrillion Btu)



U.S. energy flow in 2005 (units in quads)



See p. 6 of draft rpt



Recommendations: General

The Federal Government should:

- Provide strong support for energy R&D
- Implement EPA Act of 2005 provisions
- Encourage State initiatives
- Be an early adopter



Recommendations: Electric Power Generation

- Promote expanded capacity for nuclear power generation; resolve waste storage issues.
- Encourage building of clean-coal power plants
- Support State initiatives for clean, renewable power and seek to remove barriers to incorporating distributed, renewable power sources into the grid



Recommendations: Transportation

- Encourage production, import, distribution, and use of biofuels
- Identify lands suitable for energy crops
- Review CAFE standards and modify to encourage non-fossil fuel-powered vehicles



Recommendations: Energy Storage

- Support research on nanomaterials for energy storage and next-generation batteries
- Encourage U.S. manufacture of batteries



Recommendations: Energy Efficiency

- Expand the Energy Star program
- Encourage more efficient buildings (e.g. lighting and motors)
- Promote building design/construction that includes renewable energy supplies



Summary

- There isn't a single "silver bullet."
- Entrepreneurial activity is growing.
- States and utilities are critical partners in the adoption of new technologies.
- Federal funding of basic and applied research is the foundation for innovation and competitiveness.