DOE Quadrennial Technology Review

Alternative Fuels Workshop

Chicago, IL

April 26, 2011

Welcome and Logistics

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FACA Guidelines

- Participants attending this Workshop are not members of a Federal Advisory Committee, nor do we intend to use this group as a Federal Advisory Committee.
- We are not seeking a group decision or consensus view with respect to the issues before you, or as to any action the Federal government should take.
- We welcome your individual recommendations and advice, and are looking forward to a productive workshop.

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Transparency and Outreach

PCAST Recommendation: *"The [process] needs strong external input from many sources, including other levels of government, large and small businesses, academia, national laboratories, Congress, nongovernmental organizations, consumers, and other Federal agencies. …"*

We are committed to engaging our stakeholders consistent with the President's commitment to transparency, public participation, and collaboration. To meet these goals, the DOE will pursue a variety of mechanisms, including:

- A publicly accessible web site
- Release of ex parte communications
- Request For Information (RFI) and Framing Document (published mid-March)
- Public comment
- Focus groups & workshops through mid June

Notes and attendee list from this workshop will be published on the project webpage. Individuals' names will be redacted from comments.

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Outreach: Workshops

TRANSPORT

- Alternative Fuels
  - April 26
  - Chicago, IL
- Vehicles Efficiency and Electrification
  - May 4
  - Knoxville, TN

STATIONARY

- Stationary Efficiency
  - May 17
  - Pittsburgh, PA
- Grid
  - May 24
  - Tempe, AZ
- Clean Electricity
  - June 7
  - Denver, CO

Capstone

June 21 in Washington, DC

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Agenda and Logistics

8:30-9:00 AM	**Welcome and framing remarks, LaSalle II**
	Dr. Steven E. Koonin, Under Secretary for Science
9:00-9:30 AM	**Panel discussion of cross-cutting questions, LaSalle II**
	Dr. Bill Provine, Dupont
	Dr. Don Paul, USC
	Ian Purtle, Cargill
	Dr. Lee Lynd, Dartmouth
9:30-10:00 AM	**Discussion with the panel**
10:00-10:15 AM	**Break**
10:15-11:15 AM	**Breakout sessions on the cross-cutting questions, LaSalle I**
11:15-11:45 AM	**Report-backs from the breakouts, LaSalle II**
11:45-1:15 PM	**Lunch, LaSalle I**
1:15-2:00 PM	**Technology roadmaps presentations, LaSalle II**
	Zia Haq, DOE Biomass Program
2:00-3:00 PM	**Technology-specific breakout sessions, LaSalle I**
3:00-3:15 PM	**Break**
3:15-3:45 PM	**Report-backs from the breakout sessions, LaSalle II**
3:45-4:45 PM	**Full group discussion on cross-cutting questions, LaSalle II**
4:45-5:00 PM	**Closing Remarks, LaSalle II**
	Dr. Steven E. Koonin, Under Secretary for Science

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DOE Quadrennial Technology Review

Steven E. Koonin

Under Secretary for Science

U.S. Department of Energy

26 April 2011

Scope

- The DOE-QTR will provide a context and robust framework for the Department's energy programs, as well as principles by which to establish multiyear programs plans and budgets. It will also offer high-level views of the technical status and potential of various energy technologies.

- The primary focus of the DOE-QTR process and document will be on the following:
  - Framing the energy challenges
  - A discussion of the roles of government, industry, national laboratories, and universities in energy system transformation
  - Summary roadmaps for advancing key energy technologies, systems, and sectors
  - Principles by which the Department can judge the priority of various technology efforts
  - A discussion of support for demonstration projects
  - The connections of energy technology innovation to energy policy

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Timeline

Nov 2010

PCAST made recommendations for DOE to do QER

3/14 – 4/15

Public comment period for DOE-QTR Framing Document

4/20

First batch of public comments released on project website

Through mid-June

Hold workshops and discussions of each of the Six Strategies

End July/Aug

Submit DOE-QTR to White House for approval

Before Dec 2011

Release DOE-QTR

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DOE-QTR Logic Flow

Energy context
- Supply/demand
- Energy essentials

Energy challenges
- Oil security
- US Competitiveness
- Environmental Impact

Six strategies

Players and Roles
- Private/Gov't
- Within gov't
- Econ/Policy/Tech
- Acad/Lab/Private

Technology Assessments
- History
- Status
- Potential

Technology Roadmaps
- Milestones
- Cost
- Schedule
- Performers

DOE portfolio principles

DOE priorities and portfolio
Balanced within and across strategies

Program plans and budgets

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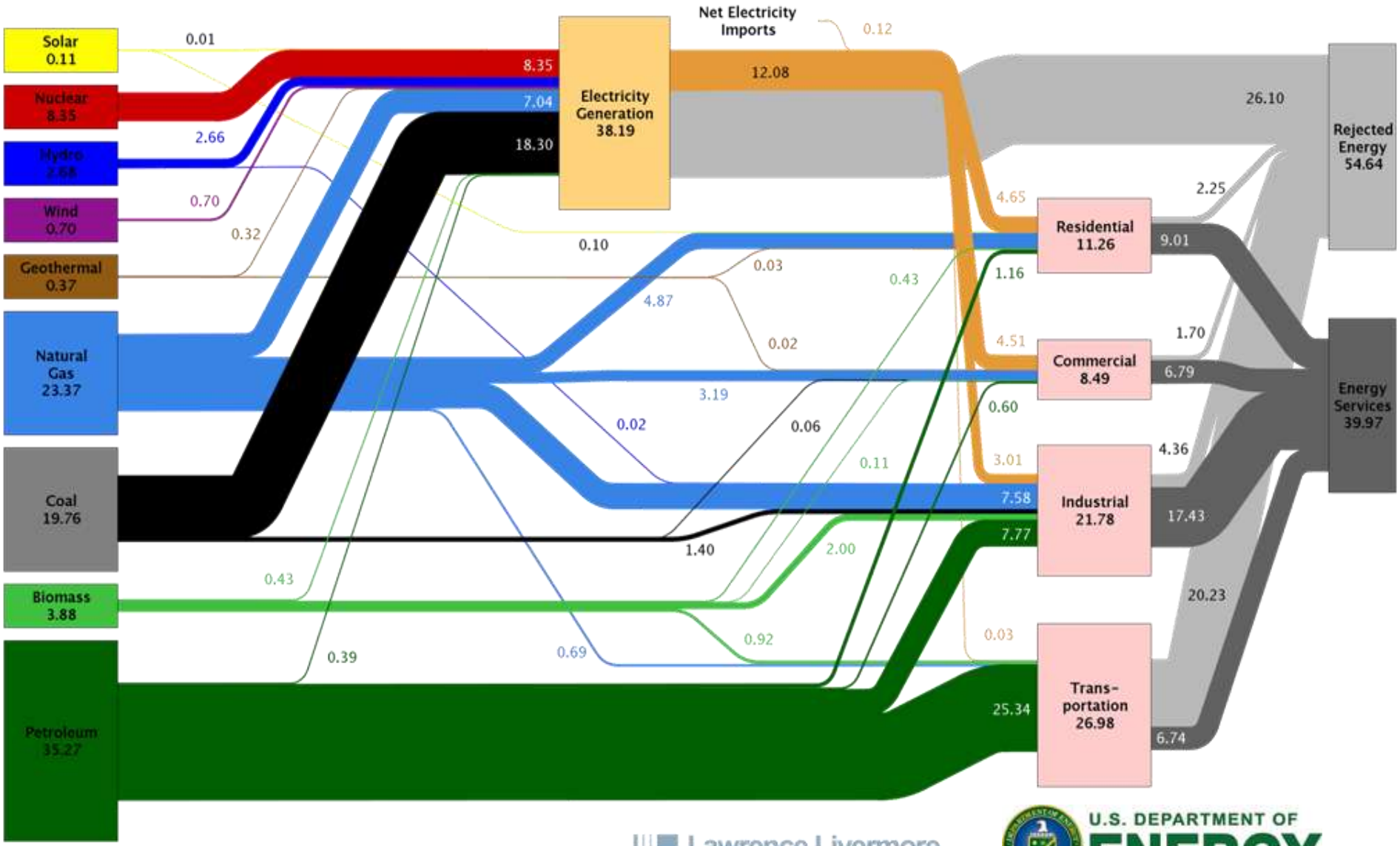
Estimated U.S. Energy Use in 2009: ~94.6 Quads



https://flowcharts.llnl.gov/

Lawrence Livermore National Laboratory

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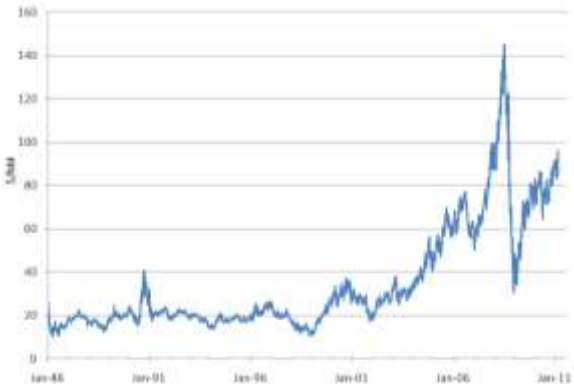
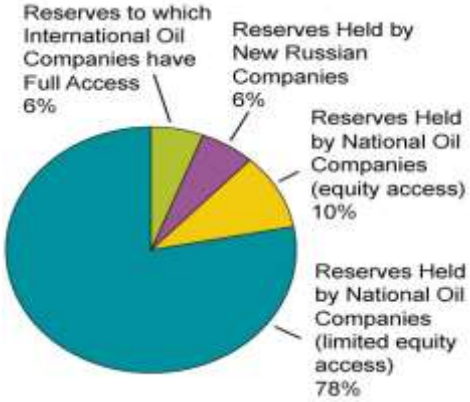
U.S. Energy Challenges

Energy Security

Daily Spot Price OK WTI

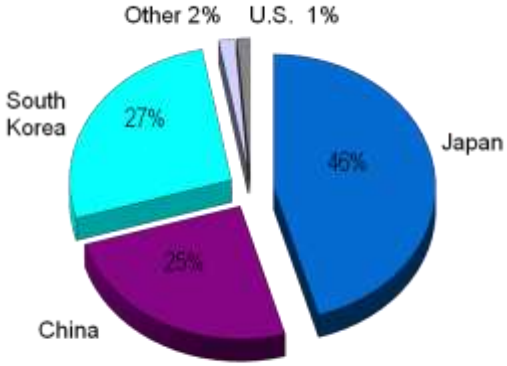


Share of Reserves Held by NOC/IOC

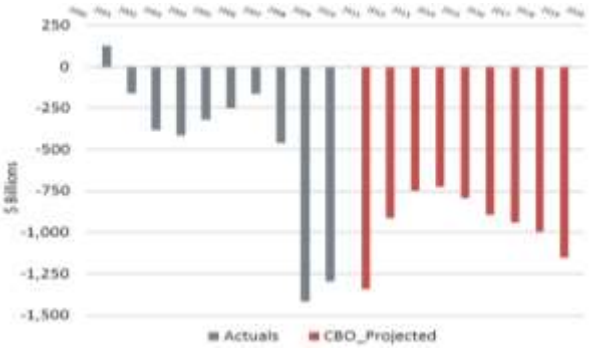


Competitiveness

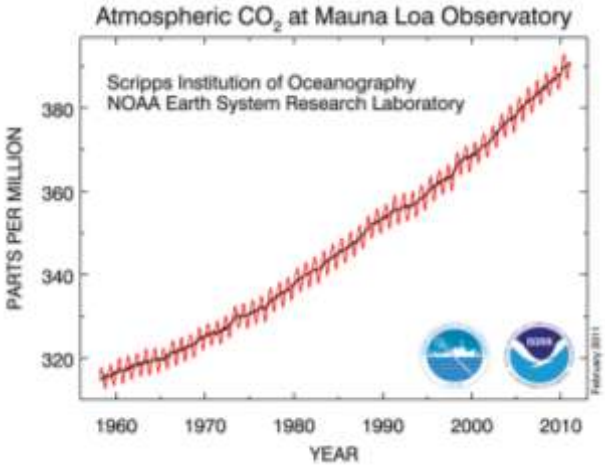
Global Lithium-ion Battery Manufacturing (2009)

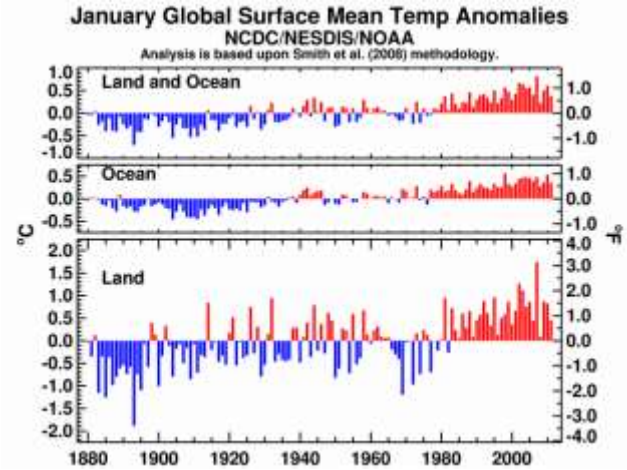


Federal Deficit



Environment





Six Strategies

	Supply		Demand
Stationary	Deploy Clean Electricity	Modernize the Grid	Increase Building and Industrial Efficiency
Transport	Deploy Alternative Fuels	Progressively Electrify the Fleet	Increase Vehicle Efficiency

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DOE-QTR Logic Flow

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Six strategies

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A QTR Technology Discussion Includes

- Why this technology is included
- Headroom
  Resource
- Current industry
  Actors and their roles
- Roadmap
- DOE history and accomplishments
- Policy context
  Barriers
- Tech-specific items needed for prioritization
- More?

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We will require input on:

- Roles of government, industry, national laboratories, and universities in energy system transformation
- Principles by which the Department can evaluate and prioritize various technology efforts
- Connections of energy technology innovation to energy policy

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A Few Comment Excerpts Specific to Alternative Fuels

Organization	Alt Fuels Specific Comments in QTR Framing Document (direct quotes)
Association of Public and Land Grand Universities	We encourage the program to include alternative fuels including algae and algae-culture development in states; university research in this area is not limited to the Southwest; states like Ohio are also convinced that they also are places where algae can grow abundantly.
Codexis, Inc.	DOE should recognize the critical importance of biomass conversion technologies that displace more than just transportation fuels; milestones and timetables for innovation in biochemicals and bioproducts are critical to securing America's energy future.
Gas Technology Institute	While a portion of the funding proposed in the Industrial Technology Program at USDOE will likely be spent on natural gas technology, the current USDOE budget proposed by the Administration has no specific money outlined for natural gas technologies, even though these technologies strongly and directly support the number one stated energy policy objective of the Administration.
Near Zero	Perhaps considering whether DOE funding is necessary, Jane Long said "biofuels are being worked very hard by venture money and the implementation problem will be a policy problem." Max Henrion took a somewhat different view, stating, "while the commercialization of cellulosic ethanol and advanced biofuels has been disappointingly slow in recent years, there are a wide range of promising technologies and improved sources of biomass. Some continuing support from DOE to supplement the extensive private capital is worthwhile."
Individual (David Bruderly)	This entire section is biased by the audacious statement that drop-in liquid fuels have a structural advantage over gaseous fuels. This statement is NOT fact based; it is an opinion based on assumptions made by those who have an obvious bias for liquid motor fuels and who choose to ignore economic and policy benefits offered by gaseous motor fuels. This statement must be recognized for what it is; an assumption. Unfortunately it is an assumption that has created an ill-advised and unacceptable bias against gaseous motor fuels in the USDOE Energy Strategy and this Framing Document.

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Comments can be found at: http://energy.gov/qtr/10091.htm

Cross Cutting Questions

- There are lots of fuels and pathways – should we make fewer bigger bets or support all bets with fewer dollars? What are the rules for entry, allocation and exit in the fuels portfolio? As a technology becomes more mature, how should DOE's posture change?
- What value does DOE provide to you? Where have you seen the benefit of DOE involvement in your work in alternative fuels?
- What do you think will happen in this field if oil prices drop, or skyrocket? How would you alter your priorities? How should DOE's portfolio differ if oil prices change? How should we account for price in seeking to balance our portfolio?
- How should we balance across the boxes in the Six Strategies, particularly between alternative fuels and vehicle electrification?
- How should DOE balance the challenges of GHG emissions and oil security?
- Should the US focus on competition or cooperation in alternative fuels R&D?

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Panel Discussion

- Dr. Bill Provine, Dupont
- Dr. Don Paul, USC
- Ian Purtle, Cargill
- Dr. Lee Lynd, Dartmouth

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THANK YOU!

Project Website

http://www.energy.gov/qtr

Questions/Feedback

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Official (Public) Comments

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