DOE Quadrennial Technology Review

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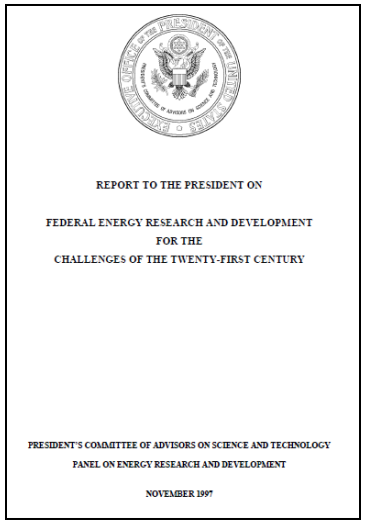
Under Secretary for Science, DOE

Presentation at the Secretary of Energy Advisory Board Meeting

20 July 2011

Two PCAST reports begat the QTR


REPORT TO THE PRESIDENT ON

FEDERAL ENERGY RESEARCH AND DEVELOPMENT
FOR THE
CHALLENGES OF THE TWENTY-FIRST CENTURY

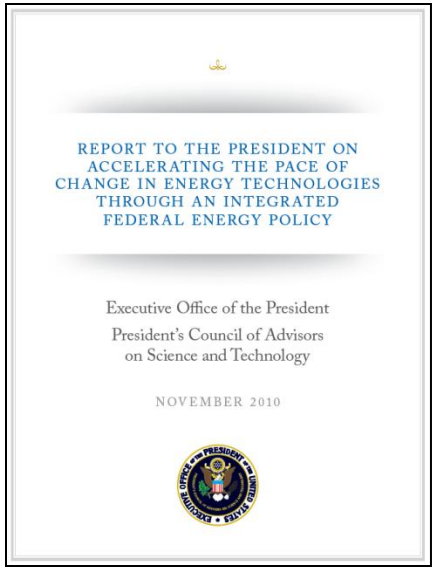
PRESIDENT'S COMMITTEE OF ADVISORS ON SCIENCE AND TECHNOLOGY
PANEL ON ENERGY RESEARCH AND DEVELOPMENT

NOVEMBER 1997

November, 1997: "Federal Energy R&D…"

(J. Holdren, Panel Chair; J. H. Gibbons, Dir OSTP and PCAST Co-Chair)

We recommend that the Department make a much more systematic effort in R&D portfolio analysis: portraying the diverse characteristics of different energy options in a way that facilitates comparisons and the development of appropriate portfolio balance, in light of the challenges facing energy R&D and in light of the nature of private sector and international efforts and the interaction of U.S. government R&D with them.


REPORT TO THE PRESIDENT ON
ACCELERATING THE PACE OF
CHANGE IN ENERGY TECHNOLOGIES
THROUGH AN INTEGRATED
FEDERAL ENERGY POLICY

Executive Office of the President
President's Council of Advisors
on Science and Technology

NOVEMBER 2010

November, 2010: "Accelerating the Pace of Change in Energy Technologies …"

(E. Moniz & M. Savitz, Panel Co-Chairs; J. Holdren, Dir OSTP and PCAST Co-Chair)

… we recommend that the Administration initiate a process analogous to the Quadrennial Defense Review undertaken every four years by the Department of Defense. A Quadrennial Energy Review (QER) could establish government-wide goals, coordinate actions across agencies, and identify the resources needed for the invention, translation, adoption, and diffusion of energy technologies.

… we recommend that the Secretary of Energy should prepare and implement the DOE component of the full interagency QER focused on energy technology innovation, promptly.

DOE-QTR Goals

- To **define and promulgate a simple framework** in which non-experts can understand and discuss the energy system and the challenges it presents

- To **explain** to ourselves (the DOE) and our stakeholders, **the roles** that the Department, the broader government, the private sector, the national laboratories, and academia play in energy innovation and transformation

- To establish a robust **conceptual framework** for DOE's energy technology programs and a **rough sense of priorities** among them
  - Techno-economic analyses with explicit principles and logic should underpin clear programmatic choices
  - The QTR is not the budget process, but should inform it with a five-year horizon

Timeline

Nov 2010
PCAST recommended that DOE do QTR to prep for future govt-wide QER

3/14 – 4/15
Public comment period for DOE-QTR Framing Document

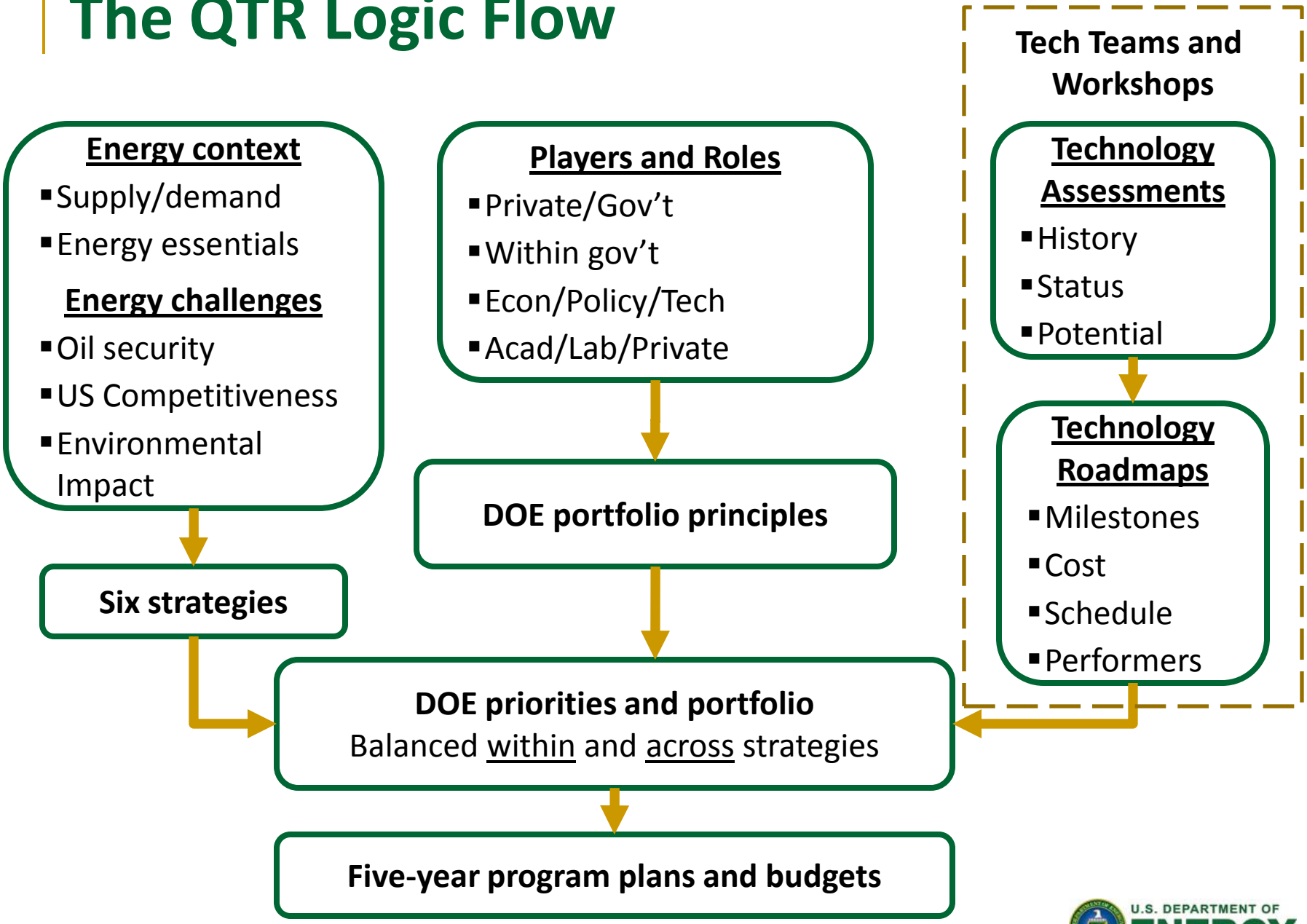
4/20
First batch of 60 public comments released on project website

Through mid-July
Hold workshops and discussions of each of the Six Strategies

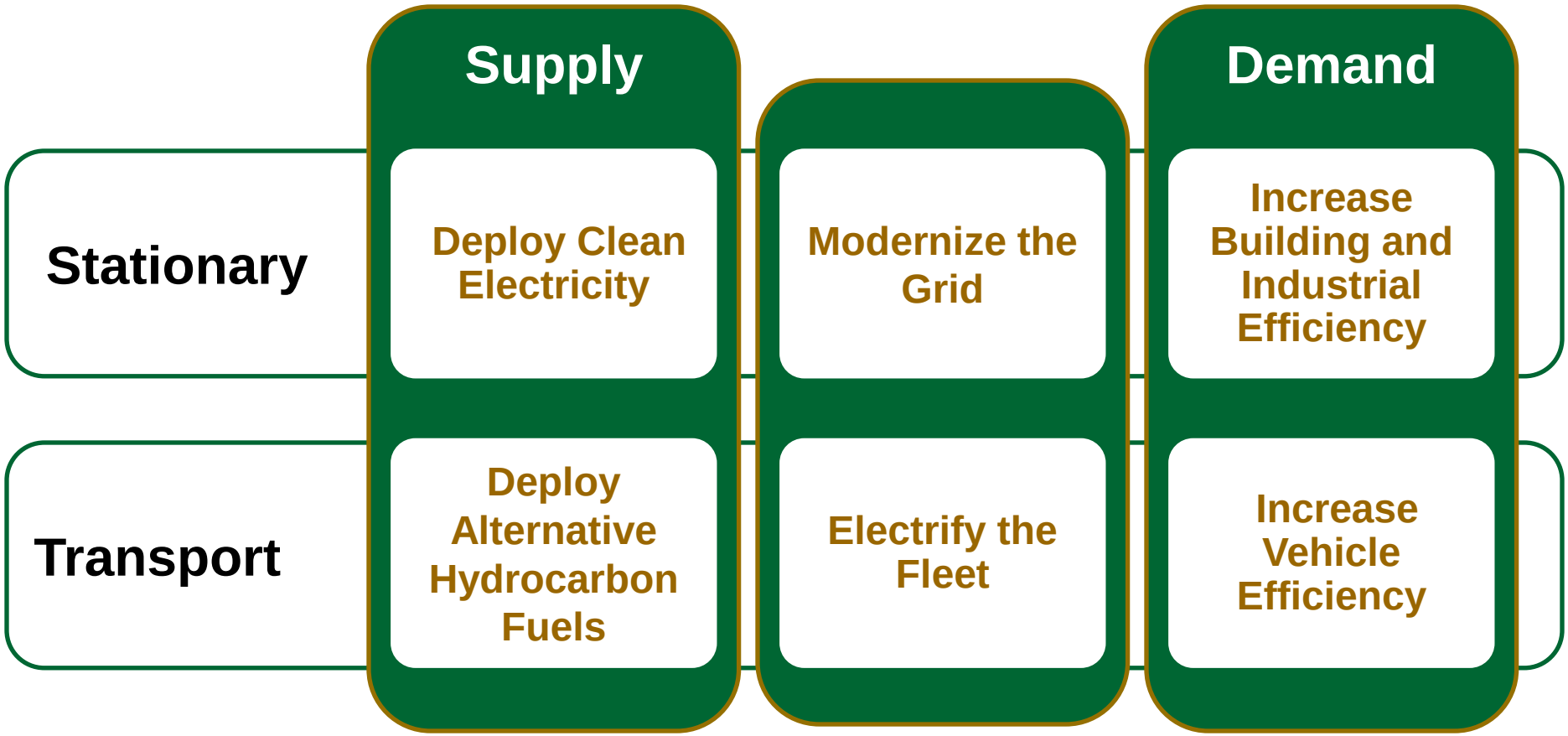
Early Aug
Submit DOE-QTR to White House for approval

Release DOE-QTR

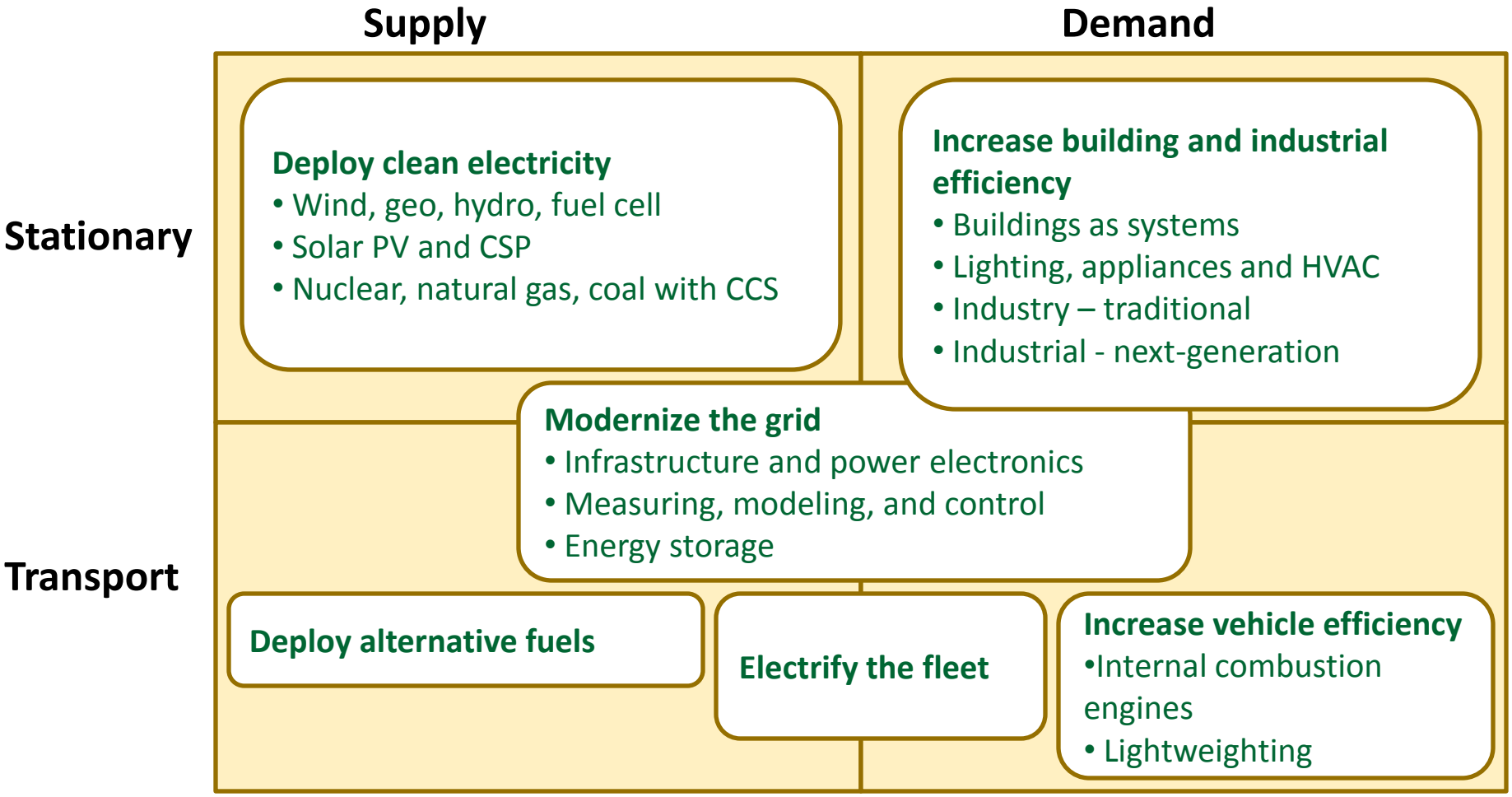
The QTR Logic Flow



Six Strategies

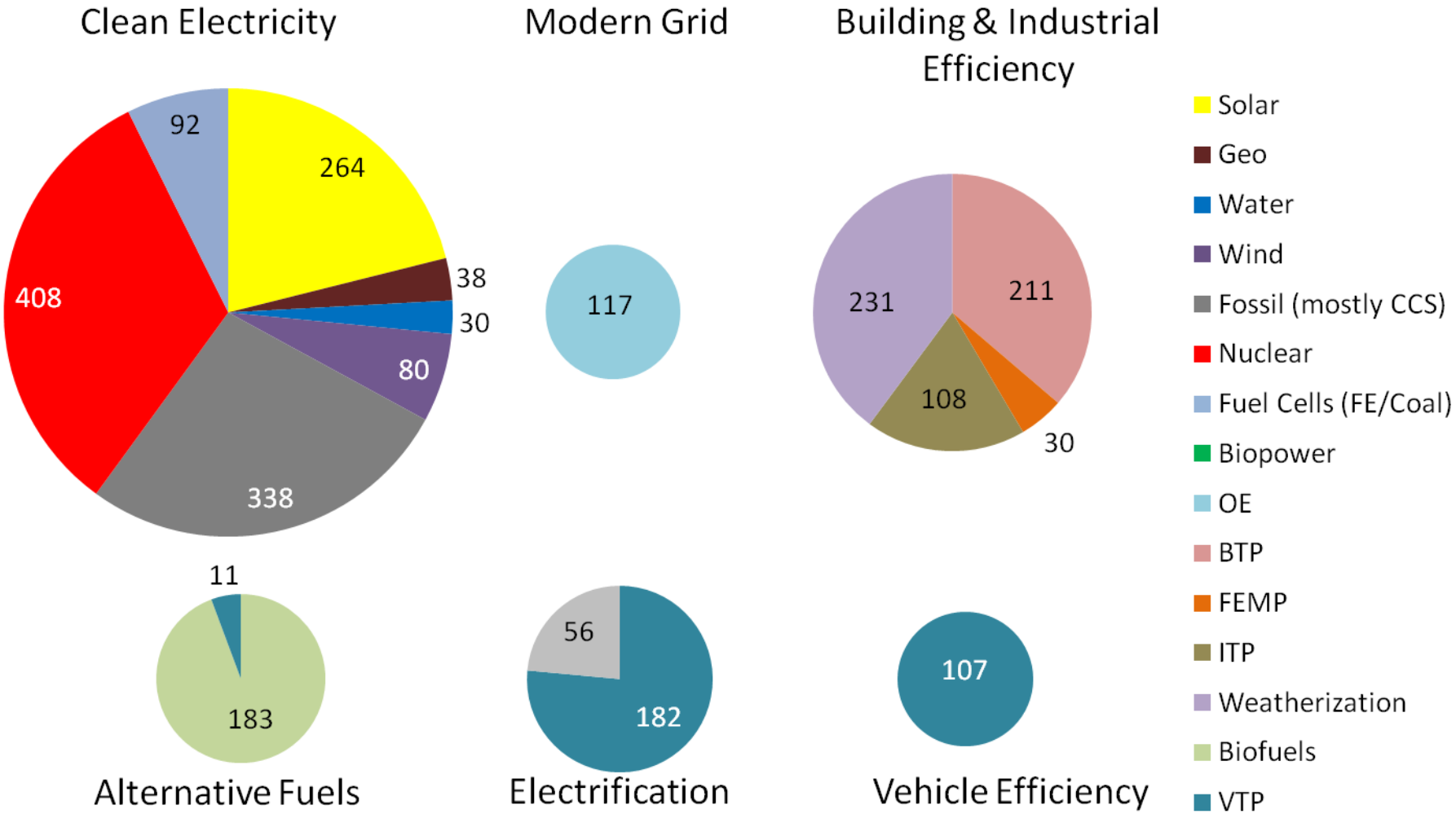


QTR includes 14 Technology Assessment Teams that map to the Six Strategies



U.S. DEPARTMENT OF ENERGY

FY11 Enacted DOE Budget Breakdown as Function of Strategy ($million)



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

Workshops

TRANSPORT

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

STATIONARY

- Stationary Efficiency
  - May 17, Pittsburgh, PA
  - 31 participants
- Grid
  - May 23, Scottsdale, AZ
  - 38 participants
- Clean Electricity
  - June 7, Denver, CO
  - 72 participants

Capstone
July 13 in Washington, DC

We asked for 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

Some of what we've read and heard

DOE-QTR Workshop	Public Comments (direct quotes)	Workshop Comments
Alternative Fuels	"Some continuing support from DOE to supplement the extensive private capital is worthwhile."	The value proposition of the department is technology assessment, not technology invention.
Vehicle Efficiency and Electrification	"Electrification of the vehicle fleet means both light-weighting vehicles and better batteries and energy systems."	Industry doesn't separate demonstration and deployment. We're entering a decade of experimentation.
Building and Stationary Efficiency	"[I]nvest substantial resources into research and development to better understand the energy flows of buildings to stimulate the development and deployment of lower-cost building and equipment monitoring technologies."	We need better data on how energy is actually used in buildings and industrial processes. Skilled workforce matters.
Grid	"Other experts saw the task of modernizing the grid as one of deployment not development, and thus questioned the need for much DOE investment."	DOE's most important role is as a convener of the different grid stakeholders– helping to build a shared vision of the future of the grid both regionally and nationally.
Clean Electricity	"DoE's present approach is not selective enough when it comes to technologies that will stand the test of market viability."	The great diversity in technical status of various generating technologies means they have different kinds of R&D needs, but all shared a common interest in tackling non-technical barriers such as permitting, siting, and grid integration.

Further discussion, summary, next steps

Website: www.energy.gov/QTR

Public Comments

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