Partnering with utilities to meet your energy goals

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

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FEMP
Federal Energy Management Program

FEMP's Mission:

"The Federal Energy Management Program facilitates the Federal Government's implementation of sound, cost effective energy management and investment practices in order to enhance the nation's energy security and environmental stewardship."

Bottom Line Up Front

- Your utility can be your strategic partner
- Federal agencies have legislative authority to accept goods and services offered by utilities
- What utilities are willing to offer varies greatly
- There are currently BILLIONS in rebates, incentives and other free services available
- Before you make investments in EERE talk to your utility
- Before you install on-site generation talk to your utility
- Before you install on-site generation talk to your utility

Presentation Overview

- Legislative Authority
- What are Utility Energy Services
- Rebates and Incentives
- Demand Response
- Renewable Generation
- Utility Infrastructure

Legislative Authority

42 USC 2856
Utility Incentive Programs

1. Agencies are authorized and encouraged to participate in programs to increase energy efficiency and for water conservation or the management of electricity demand conducted by gas, water, or electric utilities and generally available to customers of such utilities.

2. Each agency may accept financial incentive, goods, or services generally available from any such utility, to increase energy efficiency or to conserve water or manage electricity demand.

3. Each agency is encouraged to enter into negotiations with electric, water, and gas utilities to design cost-effective demand management and conservation incentive programs to address the unique needs of facilities utilized by each agency.

4. If an agency satisfies the criteria which generally apply to other customers of a utility incentive program, such agency many not be denied collection of rebates or other incentives.

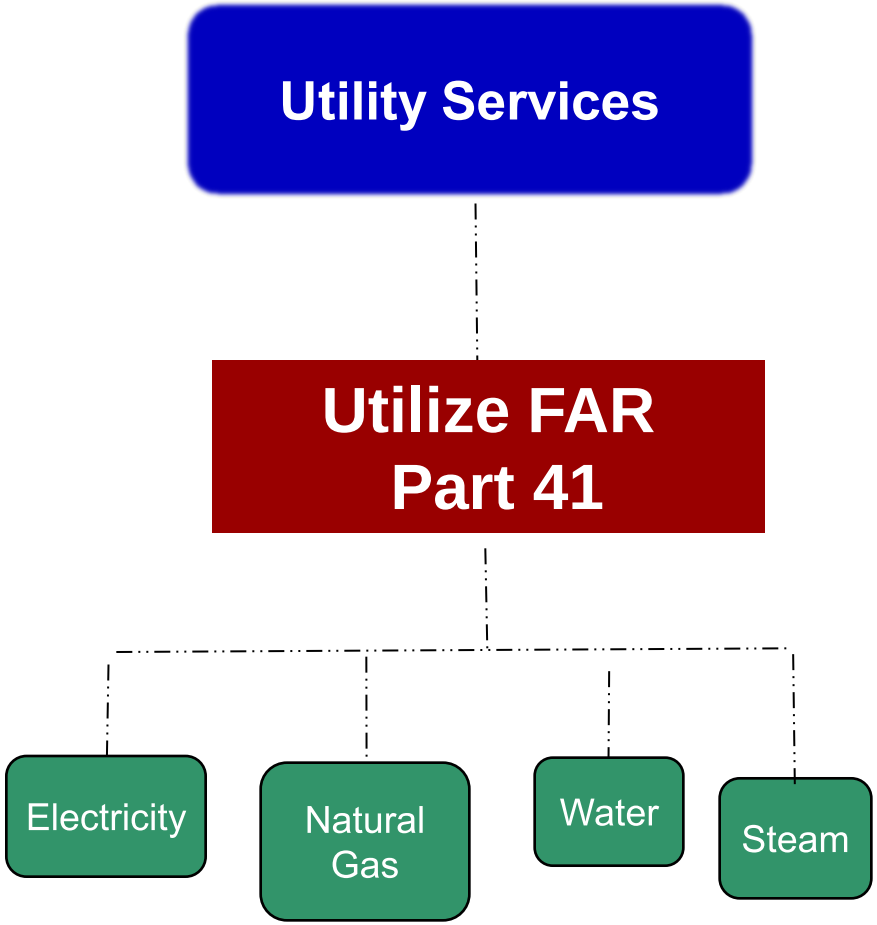
Utility Incentive Programs

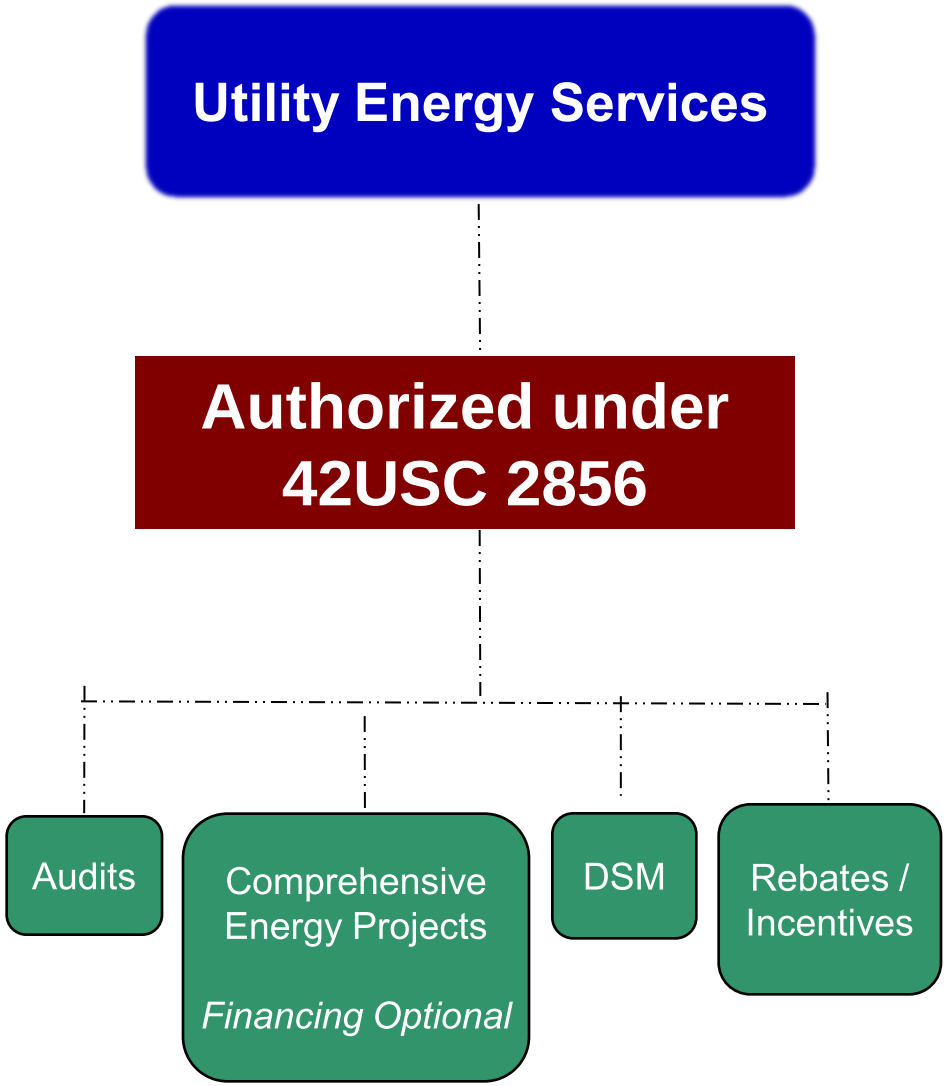
Definition: Good or Service offered by a utility or developed by a utility in conjunction with an agency that assists the agency in implementing energy and water conservation projects or managing their energy or water demand

AKA: Utility Energy Services

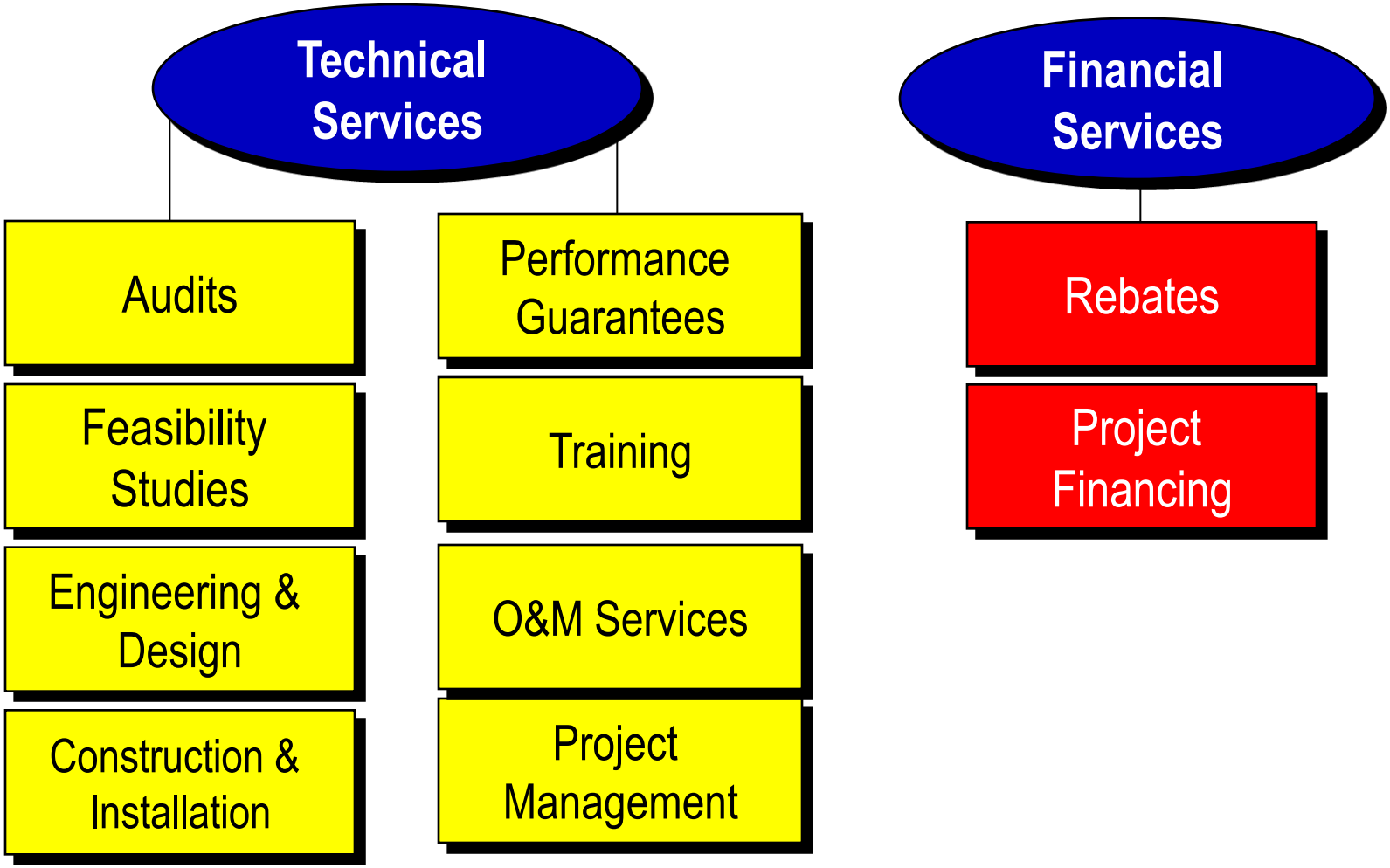
What are Utility Energy Services?

Utility Contracting Vehicles





Typical UESC Offerings



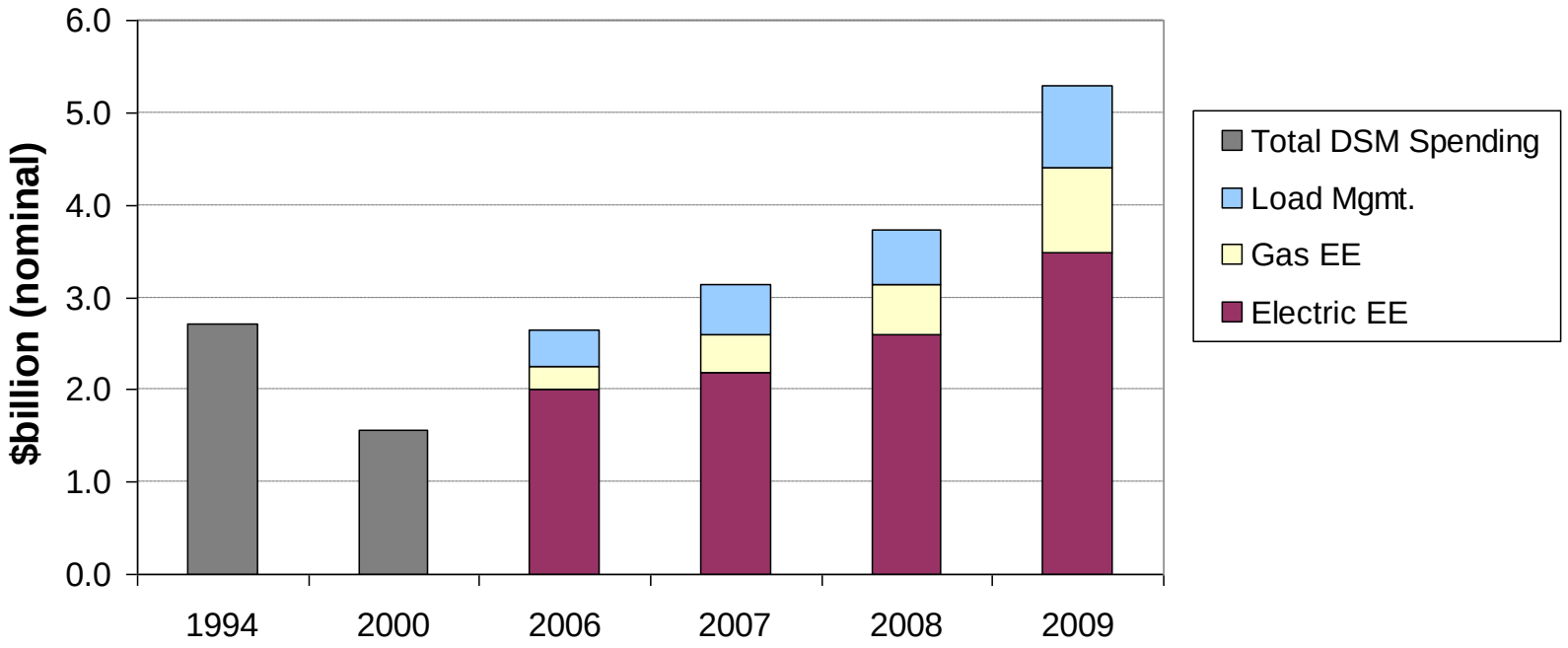
Typical No/low Cost Utility Services

- Rebates/Incentives
- Rate analysis and load management assistance
- Technical assistance and/or design review
- Building Audits
- Retro Commissioning
- Electronic data transfer
- Metering
- Peak shaving
- Real time pricing
- Interruptible programs
- Green Power
- Power quality and reliability assistance
- Web access to utility account data

Many of the things agencies are paying contractors to do utilities will do for free

Rebates and Incentives

Rebate and Incentive Budgets Have Been Steadily Rising



Sources/Notes: 1994 and 2000 data are from EIA and represent actual spending on DSM (EE plus load management). 2006-2009 data are from Consortium for Energy Efficiency and represent approved budgets.

- Spending on Electric and Gas EE has been rising 15-20% per year for the past 3 years
- 2009 EE budgets were $4.4B (electric + gas) plus another $0.88B for load mgmt.
- CA utilities account for ~32% of total U.S. EE spending
- Does not include renewable energy incentives add +- $1 Billion

Why the Generosity?

- Ultimate driver: EE is cheaper than generation
  - EE programs, *en masse*, cost ~ 2-5¢/kWh
- And easier
  - No siting, permitting, or transmission issues
- And cleaner
  - NO GHG or other emission requirements
- Other drivers:
  - EE Portfolio Standards and mandatory savings targets
  - Statutory requirement that utilities acquire all cost-effective EE
  - Integrated Resource Plans (IRP) and Demand Side Management plans required by PUCs

Types of EE programs?

- Most common: rebates for EE equipment
  - Perscriptive
  - "Custom" programs
- Design assistance (e.g., for new construction)
- Free or subsidized audits
- Re-/retro-Commissioning
- Direct Installation (little or no cost)
- Load management programs (focus on kW)

Energy Efficiency 2009 Budget: Utility Sector

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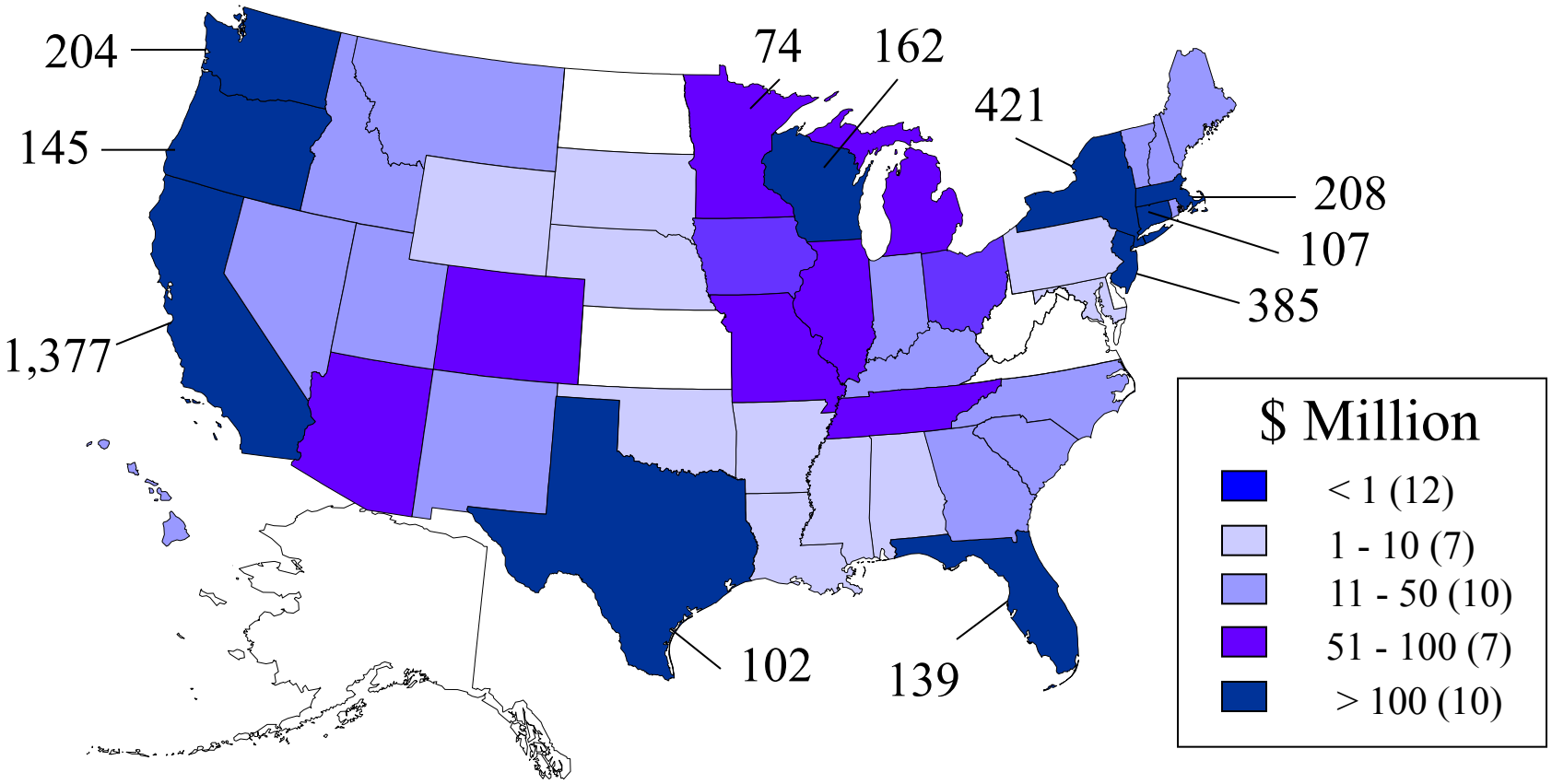
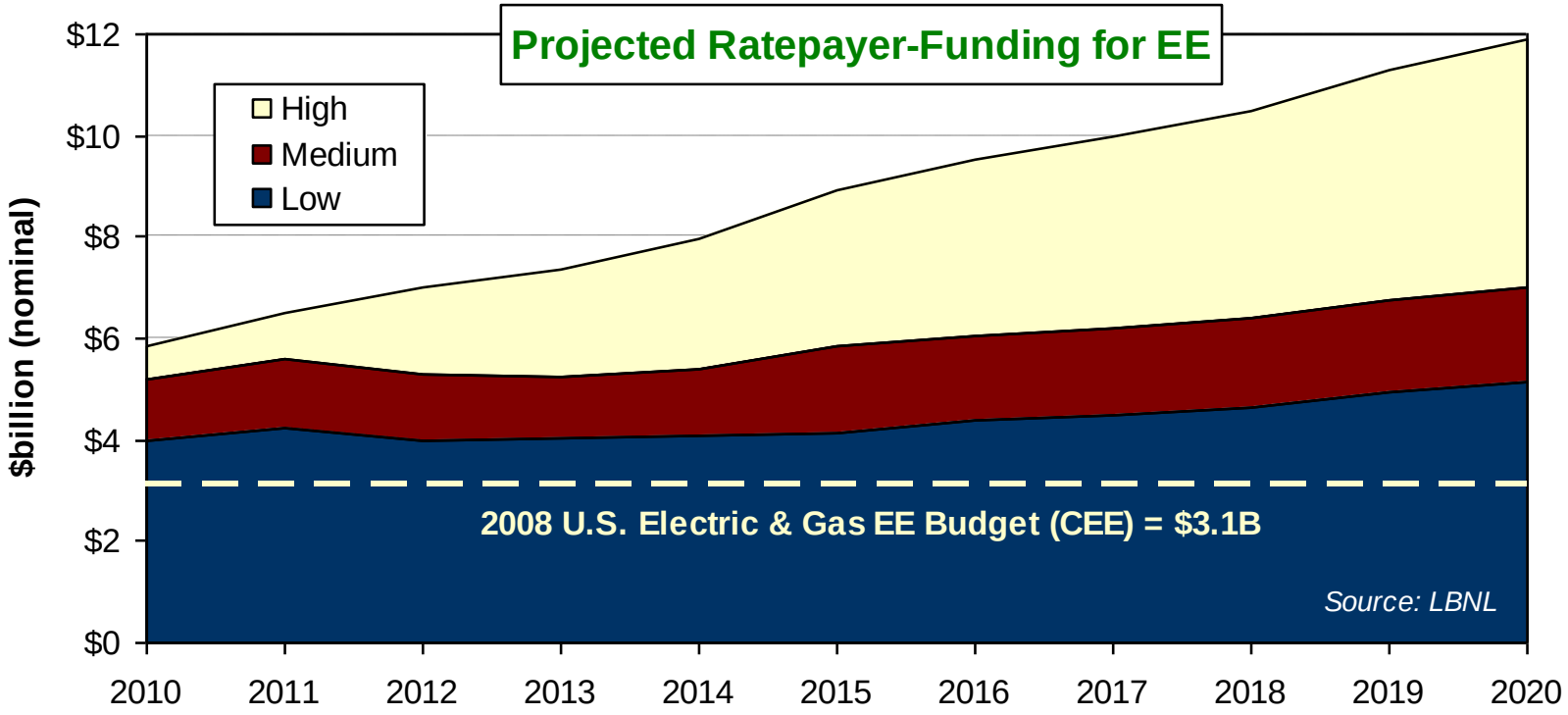


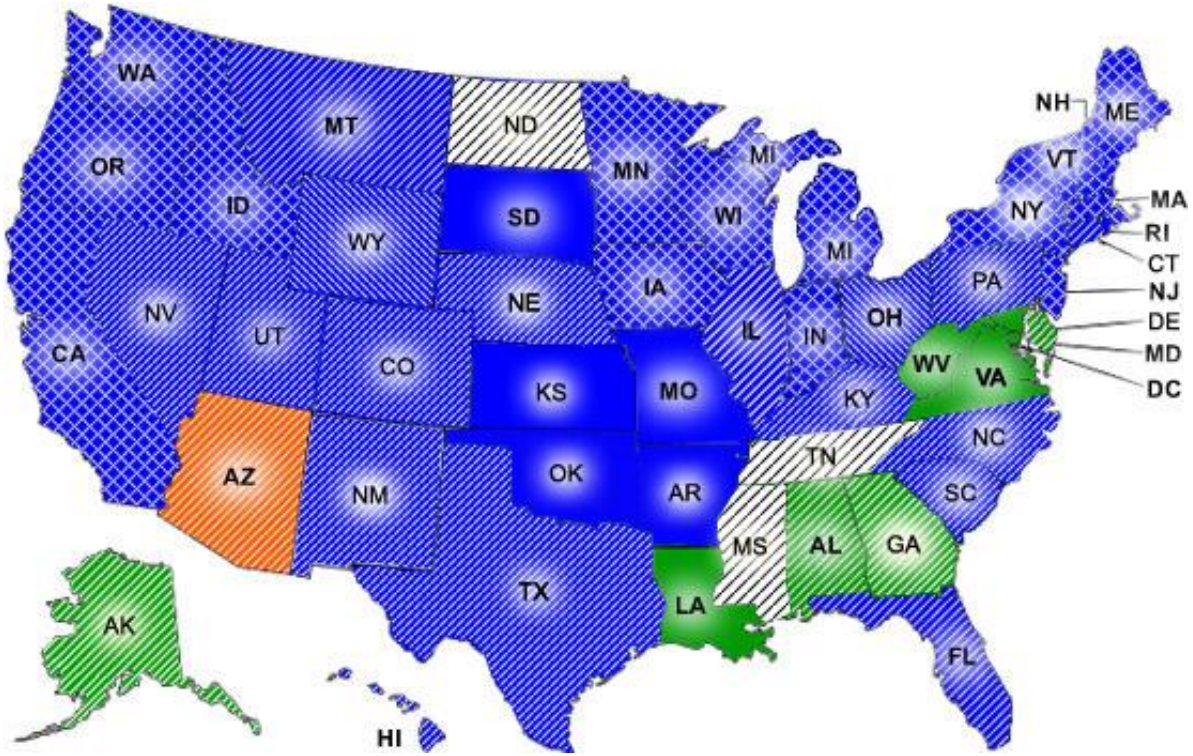
- In 2009 ~45 state PUCs directed utilities and/or public benefit administrators to invest in energy efficiency
- U.S. Electric and Gas utility budget for energy efficiency was ~$4.4B in 2009 + $1Bil DR and +$1Bil RE.

LBNL Forecast of Future EE Spending



- Projections of future ratepayer-funding for EE, based on state policies currently in place and under consideration
- Spending projected to almost double over 2008-2015 under the Medium Case scenario, rising to $5.9 billion (potentially reaching $12 billion in 2020 under the High Case)

More Info



2009

- Public purpose and/or utility EE programs + DR/load management
- DR/load management programs
- Public purpose and/or utility EE programs
- Distributed energy resource options
- Gas energy efficiency programs

www.eere.energy.gov/femp/energyincentiveprograms.html

DSIRE website: www.dsireusa.org

Demand Response

Demand Response Defined

- A short-term decrease in electrical consumption by end-use customers due to either increased electricity prices or incentive payments (triggered by high wholesale market prices or compromised grid reliability).
- Participation can be either through load curtailment (short-term conservation) or self-generation

Main DR program types

- Reliability-based: “emergency” and “capacity” programs
  - Most common: “interruptible/curtailable” rates
    - Oldest variety: also called “active load management”
  - Also includes direct load control
  - Program calls usu. require mandatory response
- Price-based: “economic” programs
  - Participation usually voluntary
  - Day-of and day-ahead options common
  - Demand bidding programs
  - Also tariff-based: real-time, time-of-use, and “critical peak” pricing

Key DR Trends

- More opportunities in economic programs
  - LBNL studies found even traditional interruptible programs could be triggered by high prices in most cases
- DR resource participation in capacity auctions
  - Large DR participation in New England ISO and PJM
  - Attractive prices, usu. > $50,000/MW
- Dynamic pricing
  - RTP is large customer default in 10+ states
  - And partial RTP is popular in others (e.g., AL and GA Power)
  - “Critical peak pricing” is default for > 200 kW CA accounts
- Automated DR (“Auto-DR”)
  - load drop or self-generation routine triggered automatically by external signal (e.g., XML)
  - Signal can indicate market price threshold (e.g., 25¢/kWh) or that utility is instigating DR program event

Federal participation has been low – why?

- Classic "split incentive" problem
  - Who benefits when fed. facility saves $ w/ DR?
  - Can fed. facility even take proceeds?
- Lack of push in legislation or EOs
  - EE & RE goals are strong, but DR/LM not addressed
- Ignorance – partly due to two issues above
  - "Our loads are flat so it doesn't make sense"
  - "It's too risky"
- Variable returns, esp. w/ economic programs makes valuing investment difficult
- Lack of proper retail tariffs or programs
  - Load shifting and other price responsiveness not rewarded
  - In some cases retail DR programs are not unavailable

Bottom Line

- DR is growing in the U.S. and will continue to because it's getting:
  - Easier
  - More lucrative
- Building power plants is getting more and more difficult and expensive

Renewable Generation

Contemplating RE?

Contact Your Utility Early!

- Possible Issues
  - Interconnection
  - Interconnection studies
  - Standby charges
  - System upgrades
  - Ownership restrictions (third party ownership maybe illegal)
- Possible Solutions
  - Rebates and Incentives
  - Local knowledge of how systems perform
  - Technical expertise
  - Project financing
    - UESC
    - PPA
  - Renewable energy or renewable energy certificate purchase by the utility

GSA Sacramento PV Project

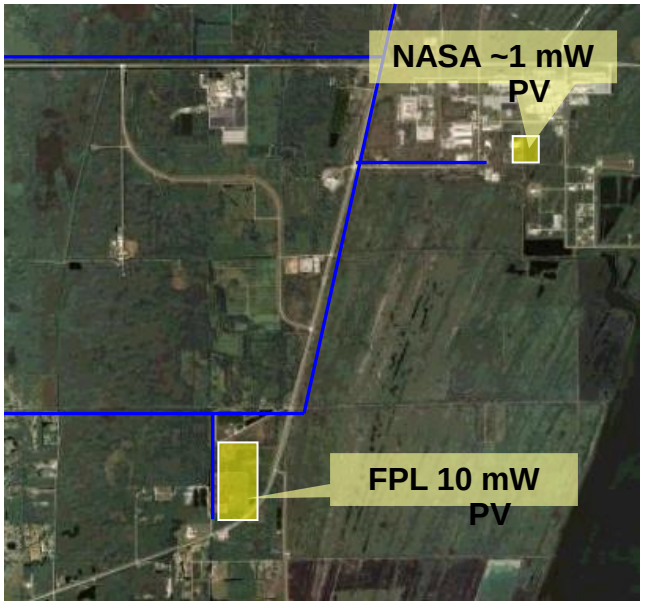
- .5 MW roof-top PV (thin film)
- 10-year PPA contract
- Price matched to utility energy rate, with price floor
- Pacific Gas and Electric rebate and federal incentives pay for approximately 1/2 cost
- License for use of roof
- Renewable developer retains RECs
- Came on-line March 2008

DOE NREL PV Project

- 720 kW (1200 MWh) single-axis tracking, ~ 5 acres
- 20-year PPA contract (utilizing Western)
- RECs sold to Xcel Energy for RPS
- PPA price equal to or less than utility electricity prices
- Operational December 2008
- Additional PV projects
  - 100 kW roof-top (operational)
  - 1 MW ground-mounted (operational)
  - 750 kW roof-top for new building that is under construction
  - All received utility incentives or REC purchase

NASA Kennedy Space Center

- Enhanced Use Lease between NASA and Florida Power and Light
- EUL signed June 2008
- Phase 1 involves 60 acres, potential phase 2 for additional 40 acres
- 10 MW FPL-owned PV project
  - Output feeds FPL transmission system
  - Substation expansion required
- In-Kind Consideration - 990 kW NASA-owned PV
  - FPL construction, O&M
  - Output feeds NASA distribution system
- 130 mph wind standard



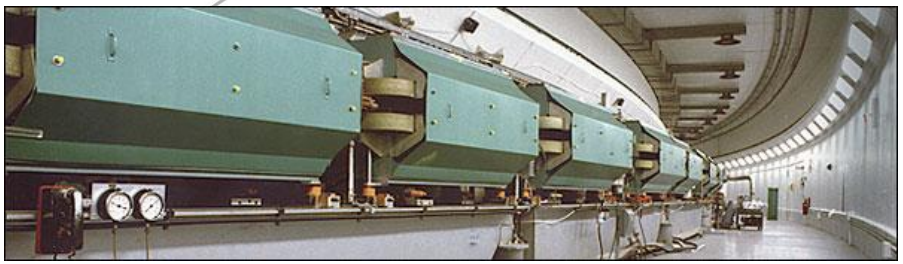
Marine Corps Logistics Base Barstow Wind Project

- UESC
- 1.5 MW wind turbine
- $4.6 million financed by Southern California Edison
  - $6.1M total, minus $1.5M Socal Edison rebate
- $515k annual savings
- 15 year term

DOE Brook Haven National Lab

- Two Arrays totaling 37 MWs and 200 acres
- Located on Long Island
- Owned and operated by BP Solar
- Power and RECs sold to Long Island Power Authority to meet RPS
- Three developers included BNL in proposals to LIPA's RFP
- BNL will receive a 2 MW research array
- BNL will receive all energy and RECs from research array

BROOKHAVEN NATIONAL LABORATORY



Utility Renewable Energy Service Contract (URESC)

AKA PPA with utility

- Contract with local serving utility for the purchase of electricity from utility owned, utility operated on-site renewable generation
- Utility/partner retain ownership and take advantage of tax benefits
- Possible authority
  - FAR Part 41.501c4
  - FAR 52.241-5 (Contractor Owned Facilities)
- Draft template agreement developed through Energy Lawyers and Contracting Officer Working Group
- Currently pursuing a pilot project

Utility Infrastructure

Improving Your Utility Infrastructure

- With the focus on UESCs we have forgotten about Utility Services
  - Gas transmission and distribution
  - Electric transmission and distribution
  - Electric substations
  - Sub-metering
  - Water and steam distribution
  - These are all traditional utility services
- Can be acquired as FAR Part 41 contracts from you local utility
- This is much easier than a UESC or ESPC

Questions?

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