

National Perspective on Program Administration and Design Issues

Charles Goldman

E. O. Lawrence Berkeley National Laboratory

CAGoldman@lbl.gov

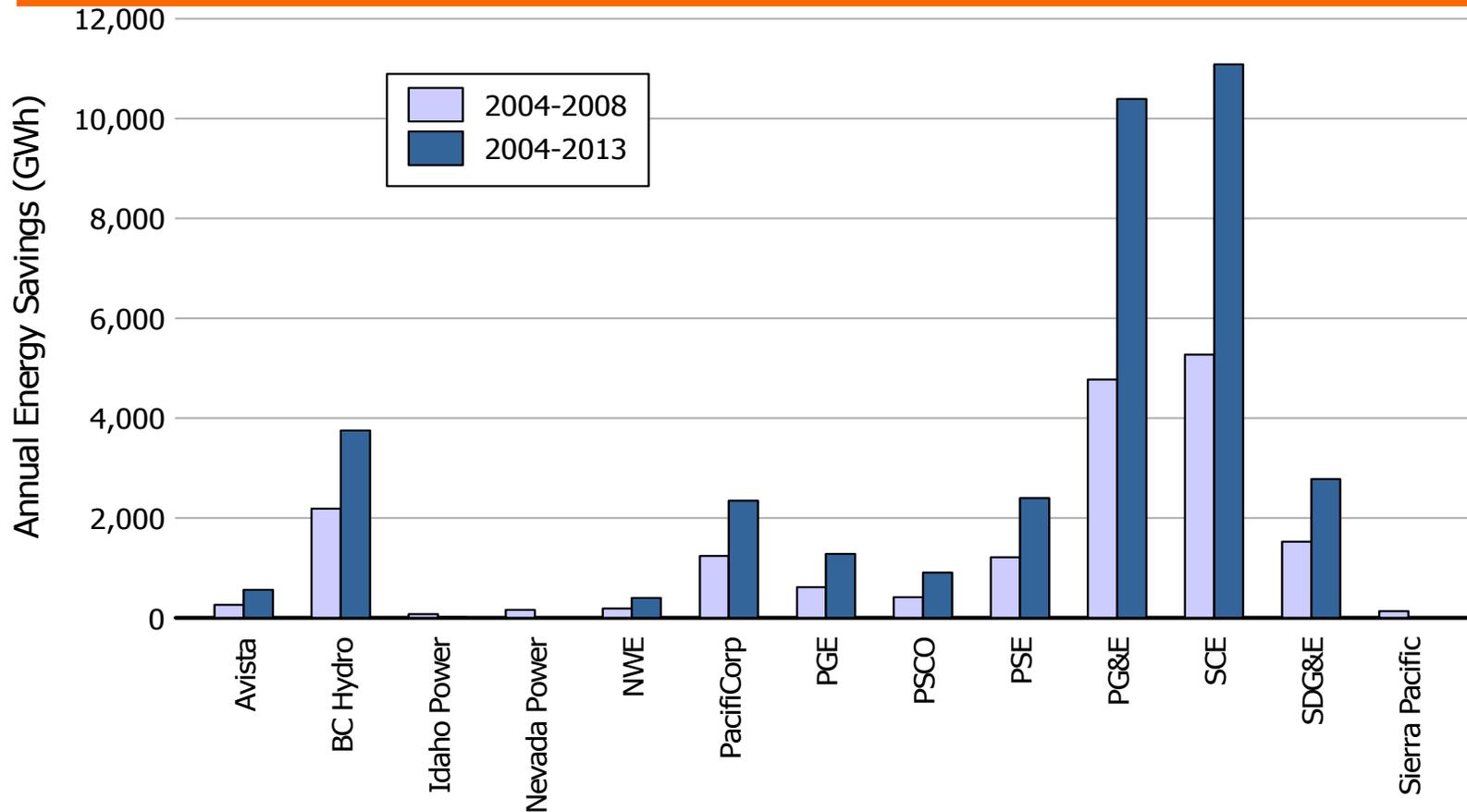
Colorado DSM Informational Workshop
Colorado Public Utilities Commission
February 8, 2007



Overview of Talk

- Role of Energy Efficiency in the West
- Program Administration
 - **Key functions in administering and delivering EE**
 - **Alternative Approaches: Utility, State Agency, Third-party**
 - **Policies on program delivery**
- Program Design
 - **Role of DSM Bidding**
 - **Incorporating Market Transformation strategies as part of EE program design**
 - **Examples of “Best practices”:** Residential programs

Western Utility Resource Plans: Projected Energy Efficiency Program Savings



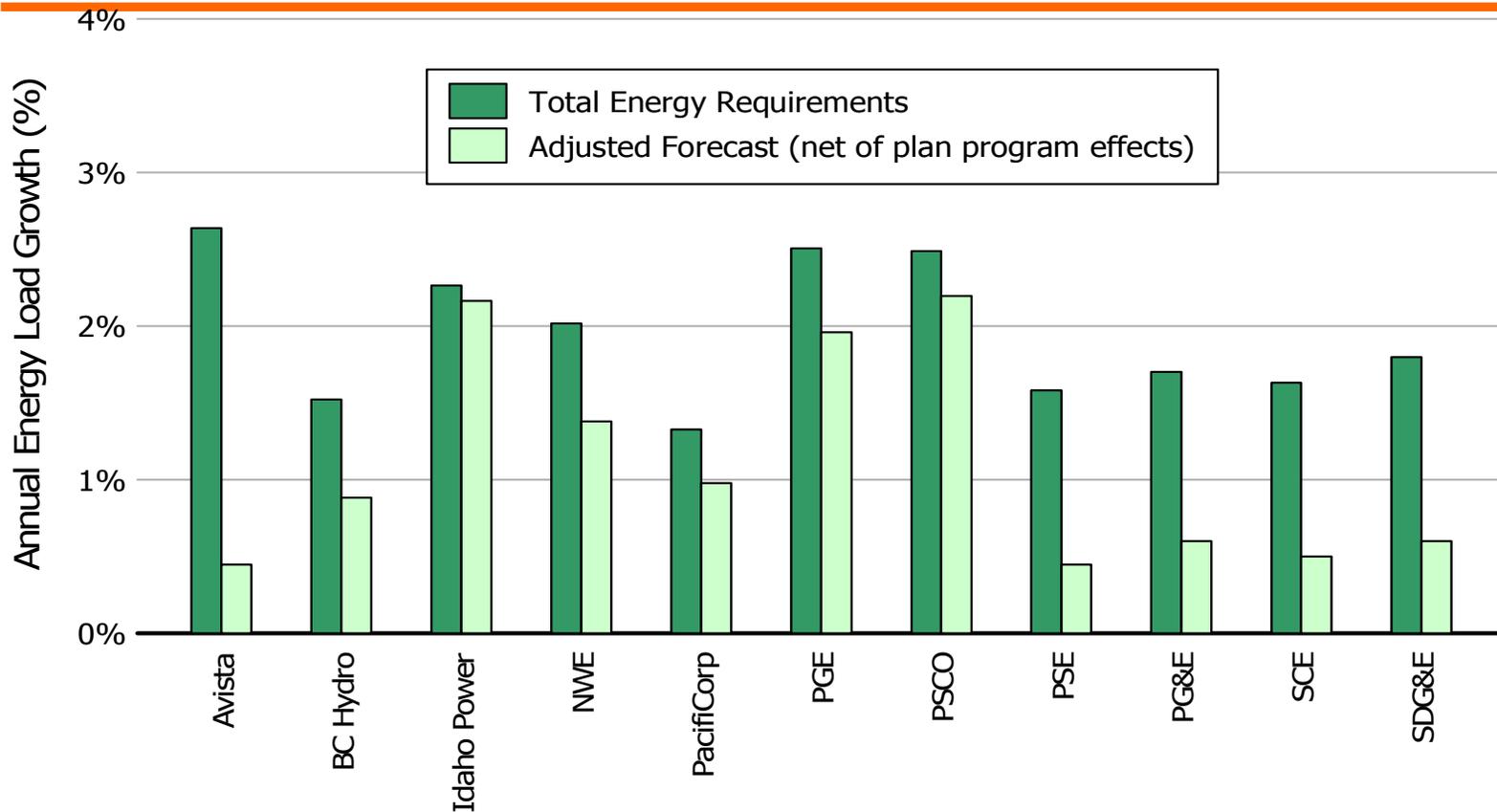
% of energy demand* growth (2008):

26%	64%	5%	8%	26%	44%	27%	16%	100%	74%	76%	91%	23%
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* Energy demand does not include load reductions from EE programs, or reserve margins

- **California and Pacific Northwest utilities administer large-scale energy-efficiency programs**
- **Energy efficiency programs expected to offset significant share of demand growth at some utilities**

Impact of Energy Efficiency programs in reducing utility load growth (2004-2013)



- Five utilities (**Avista, PSE, PG&E, SCE and SDG&E**) proposed EE programs that reduce growth from 1.6–2.6% per year to under ~0.5%
- Impacts of other EE strategies (efficiency standards, building codes) not included

What does it take to administer and deliver Energy Efficiency programs?

- **General Administration and Coordination**
 - Propose & manage budget for portfolio of programs; maintain contracts with primary contractors; maintain IT system for reports to PUC, legislature
- **Program Development, Planning, and Budgeting**
 - Facilitate public planning and input process; propose general program descriptions and budgets
- **Program Administration and Management**
 - Manage budget and sub-contracts for individual programs; provide detailed program design; propose program changes based on experience and market response
- **Program Delivery and Implementation**
 - Market individual programs; provide program delivery services (e.g., energy audits, tech. assistance, rebates); develop M&V guidelines; develop individual projects
- **Program/Market Assessment and Evaluation**

KEY QUESTION: What functions are done by Energy Efficiency Administrator (EEA) and/or Third Parties?

Energy Efficiency Program Administration (and Governance) Models

Selection Process

Administrative
Determination



- 1) Continue Utility Administration
- 2) Use Existing State Agency (and Expand their Scope)
- 3) Create New Non-Profit Corporation with Board of Directors

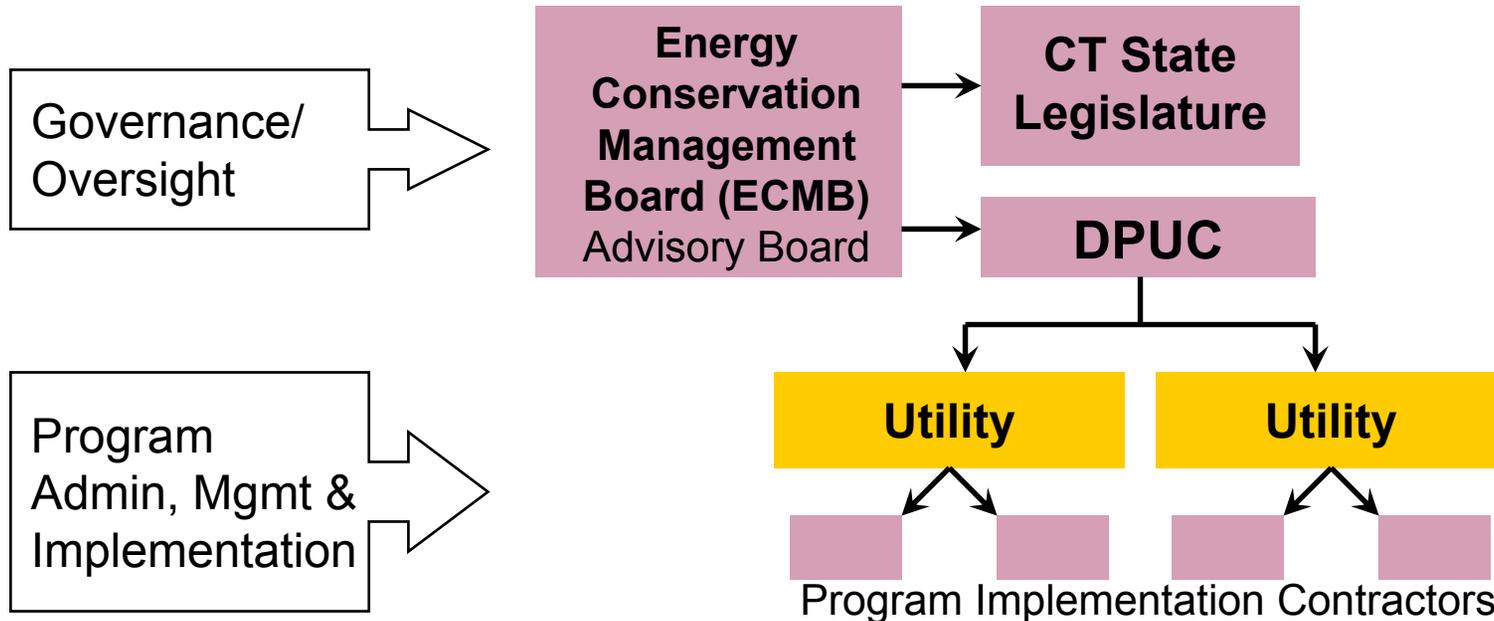
Competitive
Process



Eligible Bidders

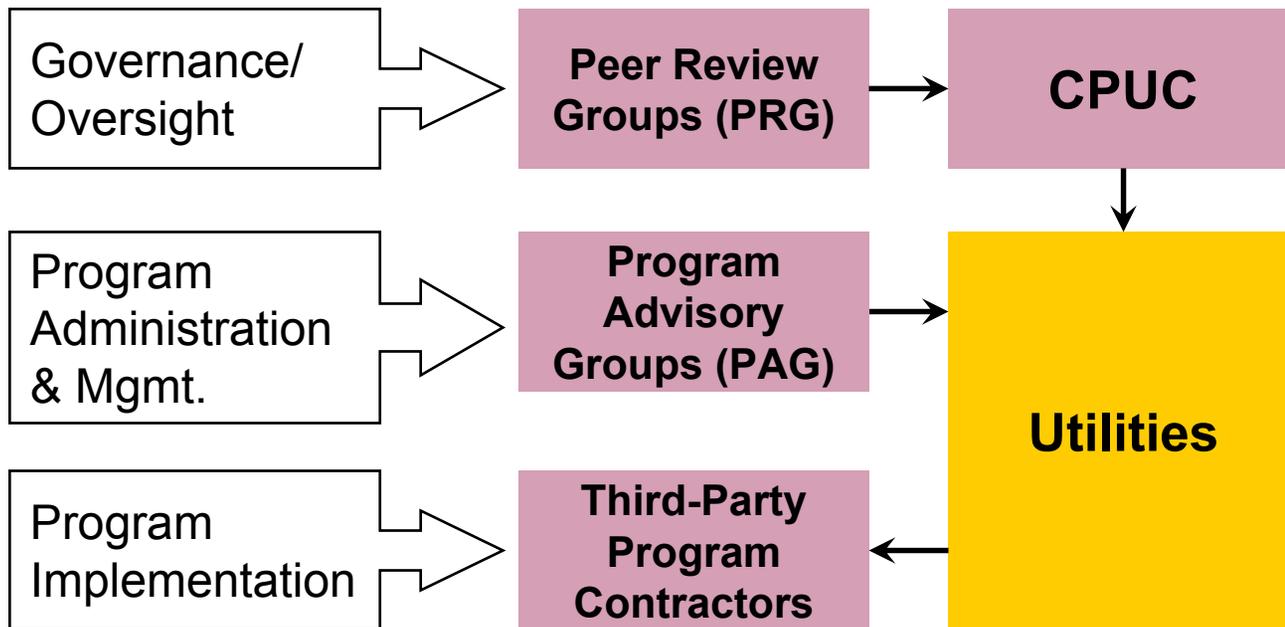
- Non-profit organizations
- For-profit firms
- Utilities (?)
- State agencies (?)

Energy Efficiency Administration: Connecticut



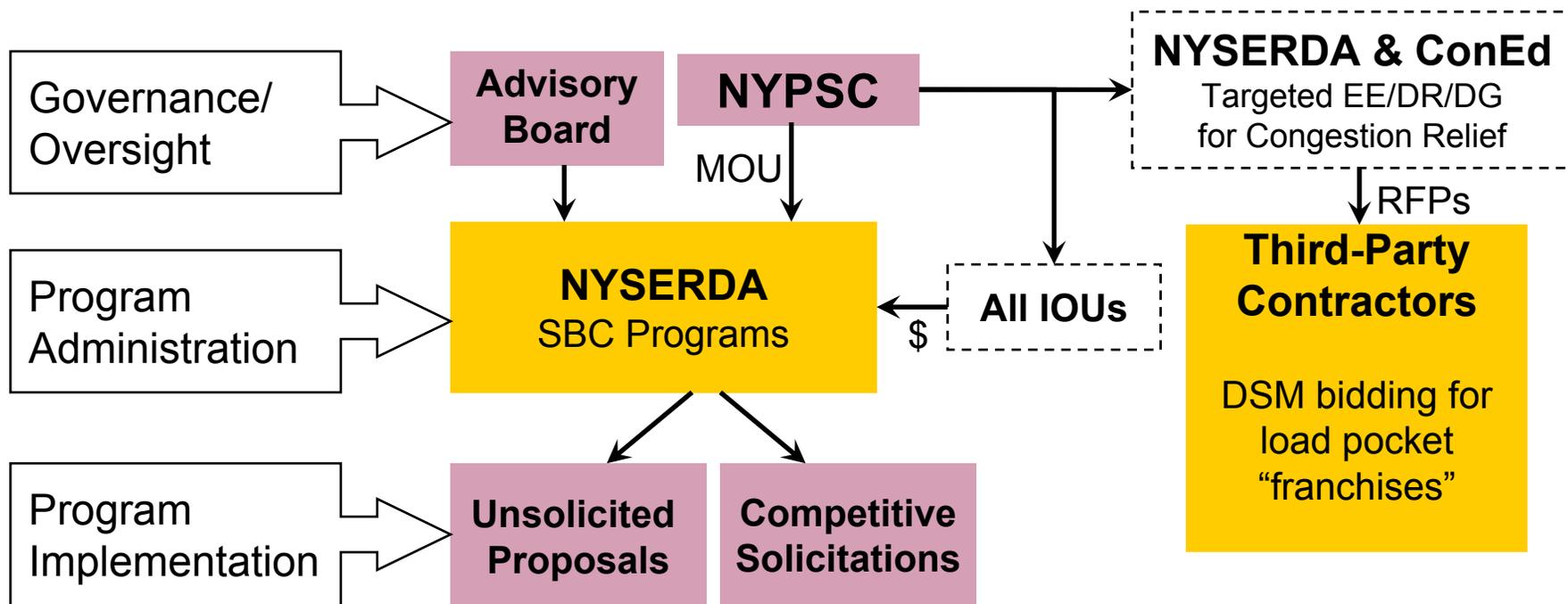
- **Utility administration with a public/stakeholder advisory board (ECMB)**
- **Accomplishments**
 - facilitates DPUC regulatory approval of C&LM programs, budgets, goals, incentives, M&V
 - coordinated statewide programs

Energy Efficiency Administration: California



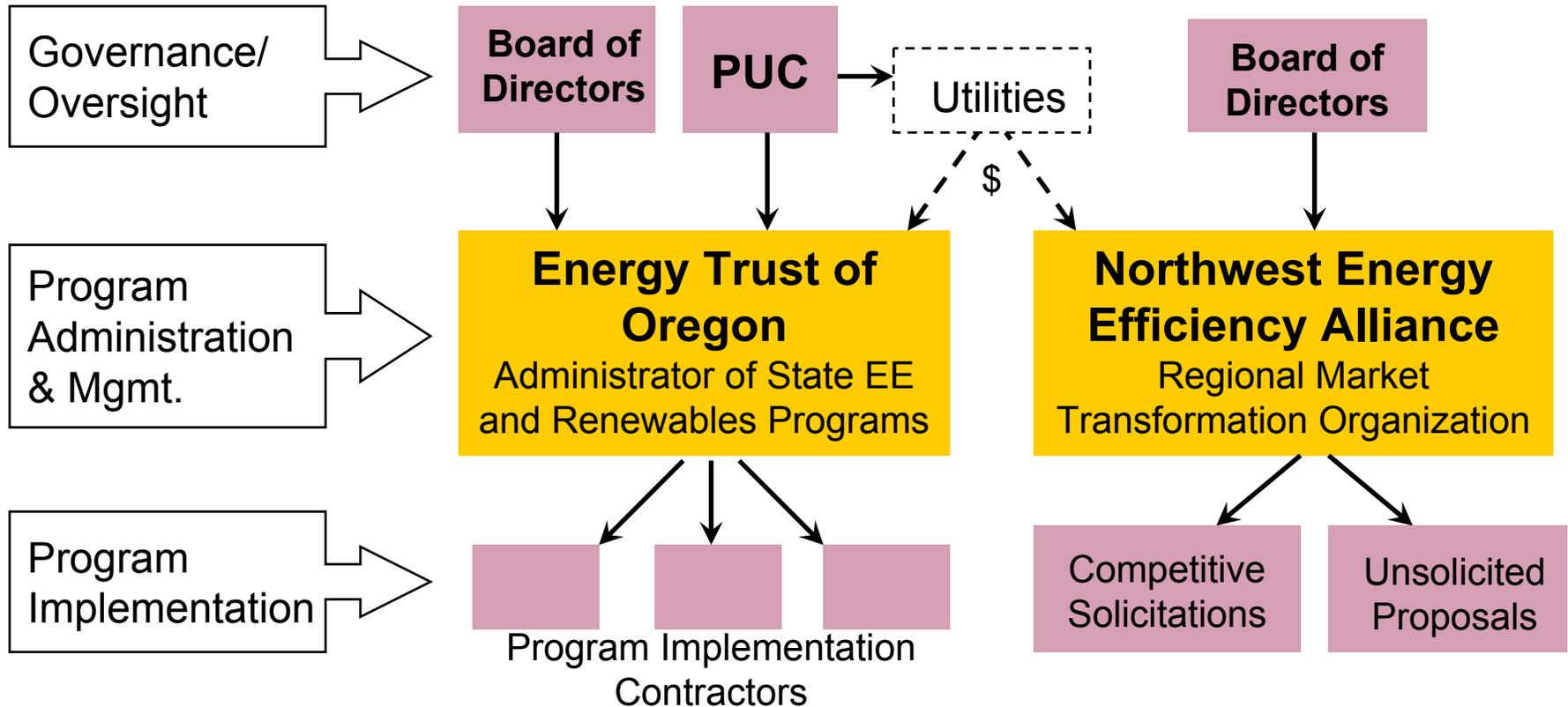
- **Utility Administration with informal advisory groups**
 - PRG: sub-set of non-financially interested PAG members who assess utility portfolio plans and solicitations
 - PAG: provide input on program design
- **Third-Party Program Contractors:**
 - 20% of EE budget reserved for programs designed & administered by third-parties

Energy Efficiency Administration: New York



- **Expanded Scope for Existing State Agency (NYSERDA)**
 - MOU between NYPSC and NYSERDA; NYPSC approves 5 year Operating Plan
 - 5-yr SBC Funding is \$1.1B thru 2011: EE (\$547M), LI (\$232M) and R&D (\$279M)
- **In NYC, utility also administers programs**
 - 2-yr Funding for targeted congestion relief: NYSERDA (\$112M) and ConEd (\$112M)

Energy Efficiency Administration: Oregon



- **Non-profit Corporation model**
- **NEEA has strong track record of success, which increased support for non-profit model (Energy Trust of OR)**

Continued Utility Administration

- **Pros**

- Technical and administrative experience on utility staff
- Well-developed regulatory channels for oversight and accountability
- Often have established infrastructure and network with market participants (e.g., vendors)

- **Cons**

- Financial disincentives to pursue energy efficiency
- Potential and perceived (by market participants) conflicts of interest
- Service territory boundaries may lead to market and administrative inefficiencies

- **Suggestion**

- Establish Advisory Committee process to facilitate stakeholder input

Existing State Agency Model

- **Pros:**

- Statewide scope can harness economies of scale
- Agency objectives/mission are potentially compatible with EE goals

- **Cons:**

- State procurement requirements may limit ability to select “best-value” programs/proposals
- Lack of experience and ability to attract qualified staff
- Potentially greater political exposure of program funds

Third-Party Administration: Create New Non-Profit Organization

- **Pros:**
 - **Structure and mission can be strongly aligned with policy goals**
 - **Ability to create lean, efficient administration**
 - **High probability of attracting qualified administrative and technical staff**
- **Cons:**
 - **Institution building takes long time and significant political will and resources (e.g. typically requires enabling legislation)**
 - **Warranted only if funding duration is sufficiently long**

Lessons Learned: Utility Administration with Advisory Process

- **Advisory committees can facilitate and broaden stakeholder input and enhance EE portfolio and programs**
- **Advisory Boards to PUCs**
 - Act like an Exec. Board not a “staff” Board (CT ECMB vs. CA CBEE)
 - Hire technical consultants; plan to spend ~1-2% of EE budget
 - Establish processes (e.g. bylaws, members, officers, voting rules, public notice)

Lessons Learned: Changing Administration

- **Regulatory vs. Contract model?**

- Expect high switching costs if move toward contract model (CA, NJ)
- Contract model: Min. 3 year term with option to renew for multi-year period (VT, WI)
- Be creative: inter-agency (NY) or grant (OR) agreement

- **Plan for transition**

- Prepare for unexpected (e.g., lawsuits, how to transfer \$\$ from utility)
- Longer than expected (~2-3 years minimum)
- Minimize disruption in program offerings to customers and loss of EE services infrastructure and capability

Lessons Learned: Changing Administration (cont.)

- **Require EE Administrator to develop a long-term strategic plan (and ST action plan)**
 - Energy Trust of Oregon is good example
- **Non-profit corporation model needs:**
 - Broad political/legislative support
 - “Independent” Board of Directors
 - Accountability/oversight (strategic plan, budget, annual report, advance notice of LT contracts, indpt. mgmt review)
 - Procurement guidelines

Policies on Program Delivery

- **Role of utility EE administrator vs. third parties (e.g., contractors, vendors) has been contentious in some states**
 - **Scope of work performed by utility staff; need to define functions/roles**
 - **Selection processes**
- **Questions for regulators**
 - **Linkage to longer term goal? Example - how best to create a vibrant energy-efficiency services industry?**
 - **Extent to which EE Pgm Administrator uses competitive processes to select implementers?**
 - **Does EE Pgm. Administrator have incentives to outsource activities? What is their core competency?**
 - **How to avoid “micro-managing” (and potentially increasing program costs)?**

Policies on Program Delivery (cont.)

- **Approaches**

- **1) Utility Administrator decides third party roles based on program design and core competencies**
 - ▼ Upfront input from Advisory Group can help
- **2) PUC adopts explicit policies or targets**
 - ▼ Target example: In CA, 20% of EE program funds designed and administered by third-parties; RFP process
 - ▼ EE Administrator directed to develop RFP for third parties to manage, design and deliver EE programs; solicit innovative program concepts
 - 1998 CA Third Party Initiatives (\$8.5M)
 - 2000 SCE Third Party Initiative (\$2.1M)
 - 2000 CA Summer Reliability Initiative (\$6.8M)

Program Design issues

- Role of DSM Bidding: Overview
- Incorporating Market Transformation strategies as part of EE program design
- Examples of “Best practices”: Residential programs

Demand-Side Bidding: Overview

- **RFP soliciting bids for energy savings projects with the incentive level proposed by the bidder**
- **Eligible Bidders**
 - ESCOs and end users
- **Bid evaluation criteria**
 - Proposed payment for energy savings and other factors
- **Performance-based contract**
 - **Contract specifies incentive payments, minimum savings levels, & contract term**
 - **Payments linked to actual savings, based on M&V protocol and plan**

Demand-Side Bidding Experience: Summary

- **Implemented by ~35 utilities (1987-95)**
- **Utilities in aggregate contracted for about 480 MW of peak demand reduction**
 - **DSM bidding program typically resulted in 10-50 MW of savings**
 - **ESCOs provided bulk of savings (~85%); also large end users directly**
- **Utility payments ranged from 2 to 7 cents per kWh saved (avg. of 4.5 cents), levelized over lifetime of the measures**

U.S. Experience with Demand-Side Bidding Experience: Summary (cont)

- **Contract terms typically 7-15 years**
 - **Shorter terms in more recent programs**
- **Overall Economics**
 - **DSM bidding programs provided savings at lower cost than utility supply alternatives**
 - **But total cost of energy savings from DSM bidding programs was not lower than utility rebate program costs**
- **Recently, Standard Performance Contract programs favored by ESCOs and more utilities (NJ, NY, CA, TX)**

Market Transformation: Definition

- **Market Transformation for energy efficiency is a strategy or program undertaken to establish energy efficient products and technologies as common product offerings in the competitive market place.**
- **Market transformation initiatives are:**
 - **strategic interventions**
 - **that cause lasting, beneficial changes in the structure or function of a market**
 - **or the behavior of market participants**
 - **resulting in an increase in the adoption of energy efficient products, services, or practices.**

Source: Schlegel & Coakley, ACEEE MT Workshop, March 2000

Examples of Market Transformation

- Commercial lighting 1985-1998
- Manufactured housing - Northwest 1988-1999
- Resource efficient clothes washers 1989-1999
- Residential gas furnaces - Wisconsin 1982-1996
- Super-efficient refrigerator program 1992-1996
- Residential window energy ratings 1989-1999

Source: Schlegel & Coakley, ACEEE MT Workshop, March 2000

Who is Doing Market Transformation?

- **National: Consortium for Energy Efficiency (CEE)**
- **EPA/ DOE Energy Star Program**
- **Pacific Northwest: Northwest Energy Efficiency Alliance (NEEA)**
- **Regional alliances: Northeast Energy Efficiency Partnership (NEEP) and Midwest Energy Efficiency Alliance (MEEA)**
- **Energy Efficiency Program Administrators**
 - **Utilities in CA, MA, CT**
 - **NYSERDA**
 - **Efficiency Vermont**

Applying Market Transition Approach in DSM Program Design

- **Address market barriers and opportunities**
- **Effect lasting changes**
- **Set long-term goals with near-term objectives**
- **Work with existing market channels**
- **Build on market trends**
- **Track market changes and progress**
- **Coordinate efforts to leverage maximum effect**

Source: Schlegel & Coakley, ACEEE MT Workshop, March 2000

Set Long-term MT Goals with Near-term Objectives: Residential HVAC

- Establish *multi-year goal* for large, systemic change
 - Permanently change the market to one where high-quality installations (proper sizing/charging/air flow and minimization of duct leakage) of high-efficiency HVAC equipment are standard practice
- Set *near-term objectives* tied to long-term goal
 - Increase consumer awareness of the benefits of high efficiency HVAC
 - Enhance HVAC contractor skills and tools
 - Lower the incremental cost of high efficiency HVAC equipment & services
- Identify and track *market indicators*
 - % market share of program-qualified HVAC equipment
 - Increase in consumer awareness of high-efficiency HVAC equipment
 - Number of qualified contractors.

Energy Efficiency Program Portfolio for Residential Customers: “Best Practices”

- **Lighting**
 - **Promote a variety of CFLs: RFP for Mfg/retailers (buydown at wholesale and cooperative promotion)**
- **HVAC**
 - **Equipment Replacement: Tiered consumer and contractor rebates for replacement and performance testing [Nevada Power, APS]**
 - **Quality Installation: Contractor Training**
 - **Performance-based tune-up [CT]**
 - **Very-high Efficiency Pilots: Ductless, mini-split heat pumps (SEER-16); pilots in CT, MA, AZ**
- **New Homes**
 - **Stimulate Mass Market: “Energy Star” and Builder Incentives**
 - **“Bring up the Bottom”: Code Training & Enforcement**
 - **“Push the Envelope”: Support Federal tax credit homes [SRP] and Zero-Energy Homes [SMUD]**

Energy Efficiency Program Portfolio for Residential Customers: “Best Practices”

- **Promoting Appliances**
 - **Point-of-sale promotion**
 - **Coordinate with Energy Star campaigns**
 - **Support Federal standards process**
- **Low-income**
 - **Work with Comm. Action Agencies (e.g. qualifications and outreach/marketing)**
 - **Partnerships between electric, gas (and water?) utilities: joint RFP for program delivery**
 - **Neighborhood blitz strategies**
 - **Integrate with appliance replacement programs**

Additional Resources on Program Design

Best Practices for Energy Efficiency Program Benchmarking

<http://www.eebestpractices.com>

Consortium for Energy Efficiency (CEE)

<http://www.cee1.org>

Energy Star

<http://www.energystar.gov>

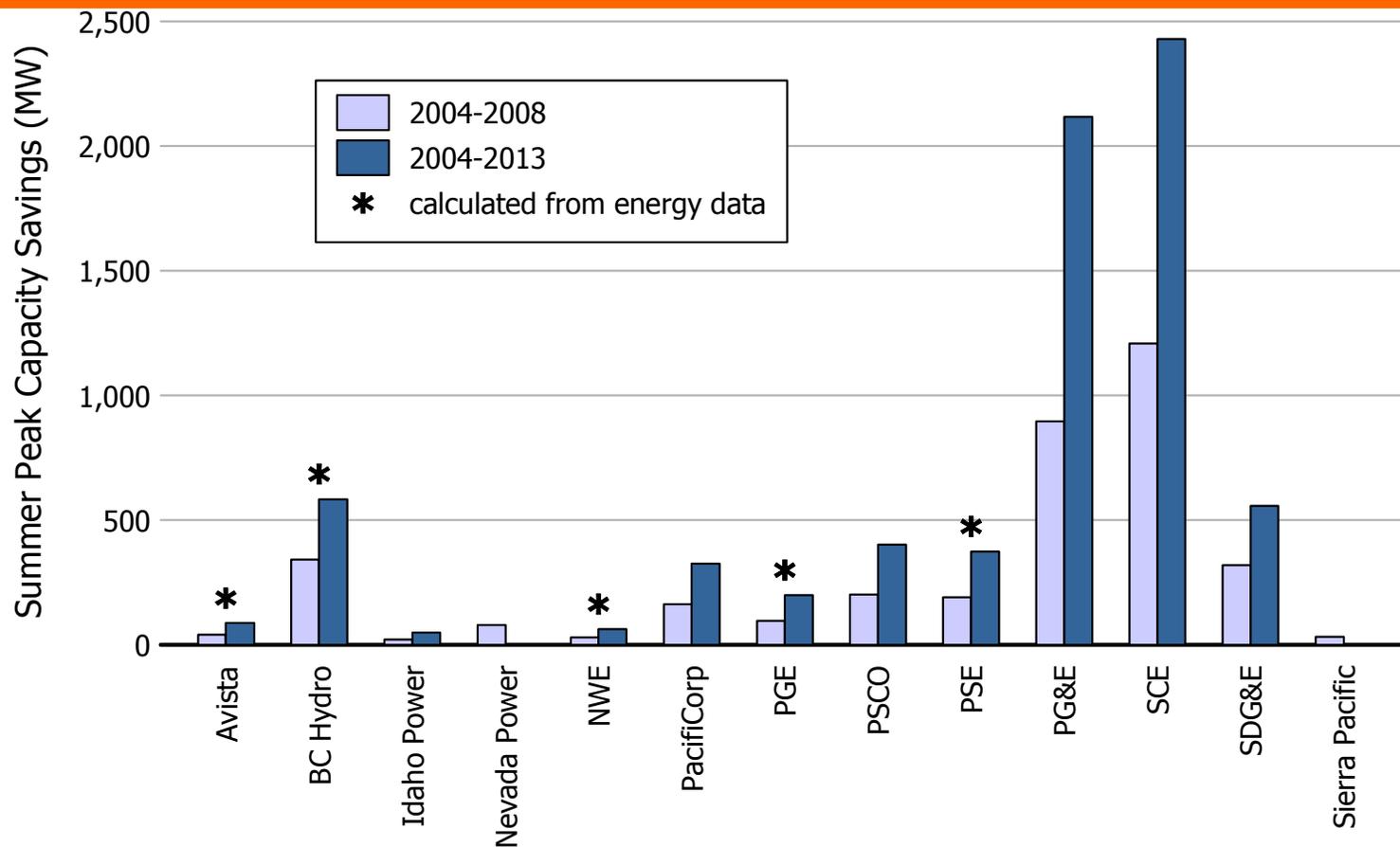
ACEEE America's Best: Profiles of America's Leading Energy Efficiency Programs

York & Kushler, ACEEE, 2003

<http://www.aceee.org/pubs/u032.htm>

Background Slides

Incremental EE Program Effects: Summer Peak Capacity Savings

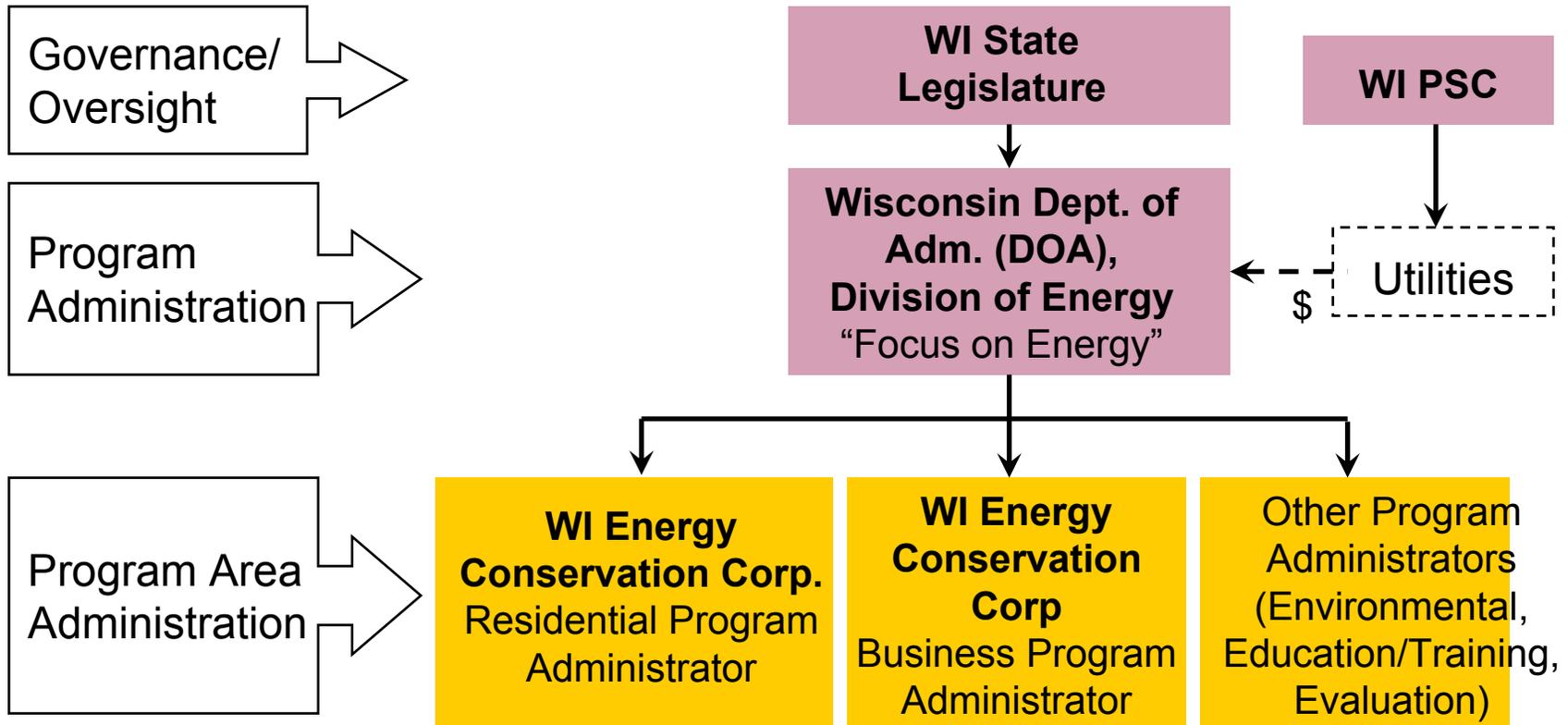


* Summer peak demand does not include load reductions from EE programs, or reserve margins

% of summer peak demand* growth (2008):	29%	63%	6%	15%	-	14%	36%	34%	123%	62%	53%	74%	24%
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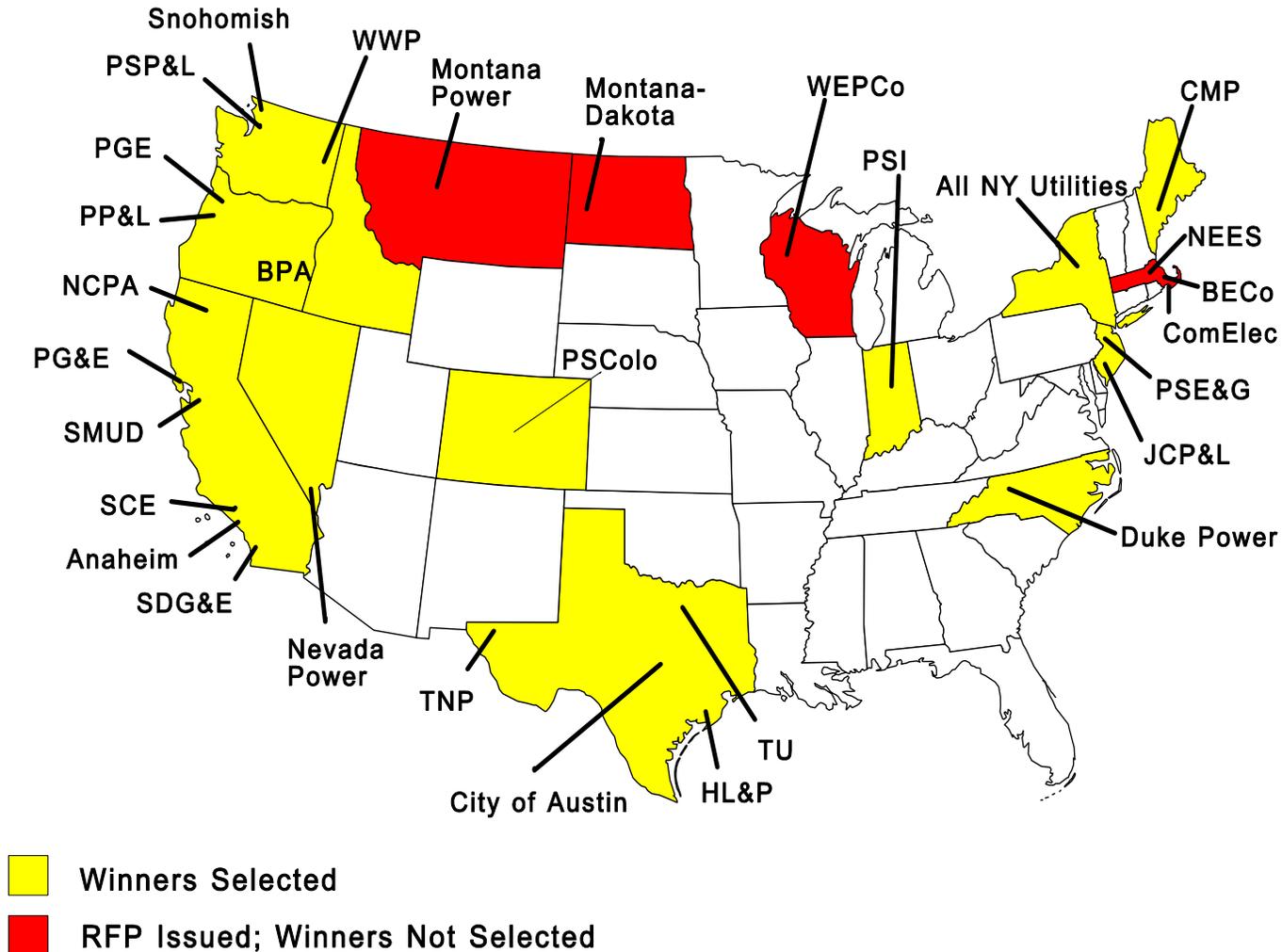
- Somewhat larger range in utilities' summer-peak capacity savings
- **Caveat**—most utilities in the Pacific Northwest did not report capacity (MW) data—the results are derived from energy data

Energy Efficiency Administration: Wisconsin



- **Existing State Agency model (2002 to July 2007)**
 - 3-yr. contract between DOA and Program Area Administrators (+ 1-yr. extensions); Budget = \$40M/year in 2005
- **Significant "raiding" by state legislature and Governor has led to new approach**

DSM Bidding Programs (1987-95)



Demand-Side Bidding Program Design Variables

- **Part of "all-source" RFP or stand-alone DSM RFP? Based on kWh or peak kW savings?**
- **Are all markets eligible or just some?**
- **What is the minimum size (energy and/or demand savings) for proposed projects?**
- **What are the economic criteria for bid evaluation - utility costs only or total project costs?**
- **Are comprehensive projects favored?**
- **How much performance risk does the project developer bear?**

Demand Side Bidding: Measurement and Verification

- **Contracts include M&V requirements and methodologies**
- **Techniques include end-use metering, analysis of utility bills before and after project implementation, weather normalization, adjustments for occupant behavior**
- **Use standard protocols such as the IPMVP**
- **Energy savings M&V routinely practiced and no longer controversial**
- **M&V costs typically 3-5% of total project costs**

Lessons Learned: Demand-Side Bidding

- **Separate RFPs for DSM resources are preferable**
- **Rank and select projects based on cost to utility per unit of energy savings and peak demand reduction**
- **Encourage DSM developers to propose comprehensive projects**
 - **Award extra points in evaluation and extra payments in implementation for comprehensive projects**
- **Allow relatively wide performance bands, e.g., 80-120% of contract savings target**

Lessons Learned: Demand-Side Bidding Programs

- **Bidding process (RFP, proposal evaluation, contracting) can take significant time**
- **Use of a minimum payback period (1-2 years) can minimize free riders**
- **Customer contribution has been higher in utility rebate programs compared to DSM bidding programs**
- **Some utilities shifted from variable payment bidding programs to standard offer programs**
 - **Standard Performance contract offers a fixed incentive level per unit of energy savings**

Comparison of Risks between Rebate and Bidding DSM Programs

	Utility Rebate Programs	DSM Bidding
Development Risk		
Proper Installation/ Commissioning	Participants	DSM Developer
Market Penetration Risk	Utility/ratepayers	DSM Developer
Performance Risk		
Energy Savings	Ratepayers	DSM Developer
Program Cost Effectiveness Risk	Ratepayers	Ratepayers