Issues and Emerging Policy and Program Trends in Energy Efficiency

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Energy efficiency as a resource?

- Verdict from ACEEE's recently concluded national conference on this very topic (October 2005):

"WOW!....."

- Marty Kushler, Utilities Program Director, ACEEE and Conference Organizer

Why "Wow!"?

- Unprecedented new commitment to energy efficiency as a resource in California
- Energy efficiency as the Pacific Northwest's first priority, lowest cost new resource for long-term planning
- Energy efficiency's key role in emerging regional efforts to combat greenhouse gases (Northeast and West Coast)

Wow! (part 2)

- Energy efficiency being used to address T&D constraints and system needs
- Regional efforts emerging to use energy efficiency as a tool to dampen natural gas demand and decrease prices
- Support for energy efficiency growing rapidly in new states and areas—e.g., the Southwest
- All sorts of new areas—linkages to water efficiency, integration with demand response, "rapid ramp-up" efforts, "energy efficiency portfolio standards"

Energy efficiency is a multi-tool

Energy efficiency is the right answer (or an important part of it) for:

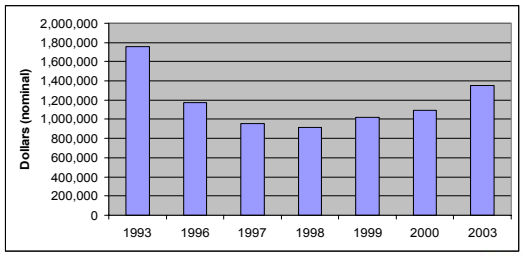
- Rising energy costs
- New resource needs
- New environmental objectives
- Reliability
- Economic development

No surprise it enjoys wide support

What a wild and crazy trip it's been for energy efficiency programs …

- Late 80s/early 90s:
  - "Future's so bright, I gotta wear shades"
- Late 90s:
  - "That's me in the corner, losing my religion"
- 2000s
  - "I'm BACK!"
    [or maybe I never really went away?]

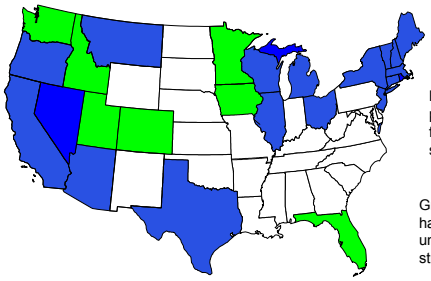
Annual Spending on Utility Sector Energy Efficiency Programs 1992-2003 [nominal dollars]



Filling the void: the emergence of "public benefits" programs

- In recognition of the adverse effects of restructuring on various societal services provided by regulated utilities, many states created "public benefits" programs to support energy efficiency, renewable energy, etc.
- As a result, energy efficiency spending began to rebound from its low point in 1998—and in 2003 was about $1.35 billion (both utility DSM and public benefits programs)
- Now we have a patchwork of programs….

States with utility sector energy efficiency programs—public benefits or DSM



Blue states have public benefit funds that support EE

Green states have utility DSM under regulated structure

Structure and delivery of energy efficiency programs and services

- Utilities are still the primary providers of energy efficiency programs—including public benefits programs. But "non-utility" segment is growing.
- ACEEE research shows that numerous structures are possible for administration and delivery of services—no single "best model"

Examples of non-utility public benefits programs

- Efficiency Vermont—the statewide "energy efficiency" utility
- Energy Trust of Oregon
- Focus on Energy [Wisconsin]
- New York Energy $mart
- Efficiency Maine

2002/3 Public Benefits Energy Efficiency Program Spending

	Annual Budgets ($ Millions)	% of revenues
AZ	2.0	0.1%
CA	240.0	1.5%
CT	89.0	3.1%
DC	2.2	0.3%
DE	----	----
IL	2.0	0.02%
ME	2.9	0.3%
MD	----	----
MA	135.0	3.0%
MI	7.8	0.1%
MT	14.3	2.0%

2002/3 Public Benefits Energy Efficiency Program Spending

	Annual Budgets ($ Millions)	% of revenues
NH	5.2	0.5%
NJ	99.6	1.5%
NY	129.0	1.3%
NV	11.2	0.5%
OH	14.3	0.1%
OR	19.1	0.9%
PA	----	----
RI	16.4	2.7%
TX	69.0	0.4%
VT	16.8	3.3%
WI	49.7	1.4%
Total	925.5	

Okay, so what's this money buying us?

- Total cumulative annual energy savings from utility sector programs in 2003 were over 67,198 GWH—or about 1.9% of total annual retail energy sales
- Cumulative annual impact in top 10 states is from 4 to 8%: CT, CA, WA, VT, MN, RI, MA,, OR, WI and UT
- But are energy efficiency programs cost effective?

Public Benefits Energy Efficiency Program Cost-effectiveness

State	Benefit/Cost All programs	B/C Comm/Ind programs	B/C Residential programs	Cost of saved energy ($/kWh)
California	2.0 – 2.4			0.03
Connecticut	NA	2.4 to 2.6	1.5 to 1.7	0.023
Maine	1.3 – 7.0			
Massachusetts	2.1	2.4 to 2.7	1.3 to 2.1	0.04
New Jersey				0.03
New York				0.044
Rhode Island	2.5	3.3	1.5	
Vermont	2.5	2.9	1.8	0.03
Wisconsin	3.0	2.0	4.3	
Median	**2.1 to 2.5**	**2.5 to 2.6**	**1.6 to 1.7**	**0.03**

Energy efficiency as a resource? Have we exhausted the well?

- In 2004 ACEEE recently completed a "meta-analysis" of energy efficiency potential studies (which have re-emerged as a tool)
- Median economic potential of 21.5% for electricity; 22% for natural gas
- Lesson: Still a lot we haven't drawn out yet—and at the same time the well is replenished and even expanded with new technologies

Renewed commitments to energy efficiency as a resource

- California:
  - CPUC new EE savings targets will double savings over the next decade—to ~5000 MW peak demand and ~23,000 GWh by 2013
  - Budgets for programs have been increased accordingly—unprecedented levels of state funding commitment
- Illinois: Implementing an "Energy Efficiency Portfolio Standard"—will require utilities to meet 10% of annual load growth by 2008; 25% by 2017
- Texas: Regulated distribution utilities must meet 10% of new demand growth through energy efficiency

Renewed commitments: Northwest Power Planning and Conservation Council's 2005 Long-Range Plan

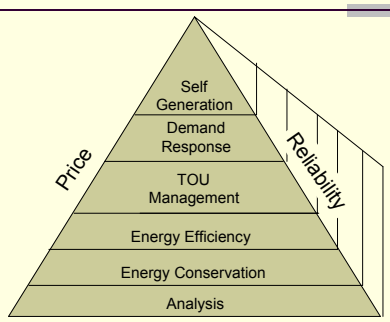
- *"The primary message of the power plan is a familiar one from the Council: energy conservation is the lowest-cost, lowest-impact resource to meet our future demand for electricity," Council Chair Judi Danielson of Idaho said. "In fact, our plan shows that the Northwest can meet almost half of the predicted growth in demand for power over the next 20 years by using electricity more efficiently."*

"Balanced portfolios" of demand resources—the age of enlightenment?

- "Demand response"– there's a lot of interest in pricing and market mechanisms
- "Resource acquisition"—was—and is—still a good thing
- "Market transformation"—yes, it's important to change products and consumer demand for them (regional groups especially helpful here—MEEA, NEEP, NEEA, SWEEP—along with national programs like ENERGY STAR®)
- All fit within a broad spectrum….

Pacific Gas & Electric Company's

Integrated DSM Model



Why energy efficiency is even more important today

- Energy efficiency is still the least-cost resource
- Growing risks associated with new power plant construction
  - Construction costs
  - Fuel price risks
  - Future environmental costs
- Increasing evidence of climate change; energy efficiency is a proven, cost-effective means to reduce emissions of green house gases (along with other pollutants)

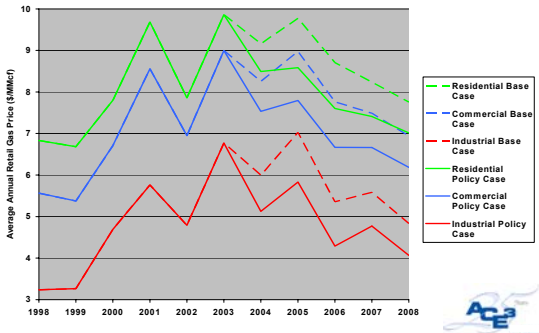
Why energy efficiency is even more important today

- Energy efficiency can provide T&D system reliability benefits—reduce overall and targeted loads to reduce system stress—reduce scale or delay need for expansions and upgrades
- Energy efficiency can provide broader economic benefits—create jobs and help reduce overall energy prices

Broader economic benefits of increased levels of energy efficiency

- ACEEE's recent analysis of market impacts of increased levels of energy efficiency and renewables shows that natural gas costs could be decreased by about 20% by relatively modest energy efficiency savings of about 1% per year
- Nothing startling about this, just Econ 101: Reduced demand=reduced price (flip side of what happens when supplies are constrained and prices "spike!")

Impacts of EE & RE on Annual Retail Natural Gas Prices (from Elliott et al. 2003, ACEEE)



Harvesting the resource: What energy efficiency programs need to grow and thrive

- Stable, adequate funding
- An effective administrative and delivery structure
- Programs that demonstrate success—effective evaluation in place to monitor and report results
- Support from customers, regulators, utilities and other key stakeholders

Conclusions

- Energy efficiency has proven its worth now for over 20 years as a viable resource. After "market mania" has diminished, states are coming back to *integrated resource planning* (if not in name--in concept)
- *Portfolios* of resources have emerged as the key for system planning and operation—including portfolios on the demand side