

Energy Efficiency for Illinois



ILLINOIS DEPARTMENT OF COMMERCE AND ECONOMIC OPPORTUNITY
Rod R. Blagojevich, Governor • Jack Lavin, Director

Hans Detweiler, Deputy Director

With Marty Kushler, the American Council for an Energy
Efficient Economy

August 10, 2006

Illinois Sustainable Energy Plan

Per Gov. Blagojevich's 2005 State of the State Proposal

Key Components Include:

- Energy Efficiency Portfolio Standard
- Renewable Portfolio Standard
- Competitive procurement
- Full cost recovery
- Independent program evaluation
- Illinois Sustainable Energy Advisory Council

Illinois Sustainable Energy Plan

Per Gov. Blagojevich's 2005 State of the State Proposal

Goals:

- Reduce total energy costs for consumers
- Reduce the cost of doing business in Illinois by reducing total energy costs for businesses
- Capture economic development benefits of renewable energy and energy efficiency development
- Increase in-state self-reliance for energy
- Improve environmental quality in Illinois

Illinois Sustainable Energy Plan

Per Gov. Blagojevich's 2005 State of the State Proposal

Efficiency investments bring real cost reductions for all customers:

*“...investments in energy efficiency (and load management) are not only beneficial to those consumers who use the technologies, they also lower the wholesale market prices paid by **all** consumers...the ability to reduce peak demand reduces the power costs paid to every unit running at the time of the peak.”*

- Per Regulatory Assistance Project, *Efficient Reliability*, Cowart, page 65.

Illinois Sustainable Energy Plan

ICC recognized benefits of efficiency in Nicor case:

“...the Commission understands the importance and critical necessity of using energy efficiency plans as strategic tools to protect Illinois consumers and reduce their energy costs. Indeed, this Commission has begun to address other aspects of this issue in the Illinois Sustainable Energy Plan. We believe that smart energy efficiency programs will have two effects. First they will lower the cost of heating the home or business participating in the program. Second, targeted correctly, they will reduce the amount of high cost natural gas that Illinois has to buy, thus reducing everyone’s costs, as well.”

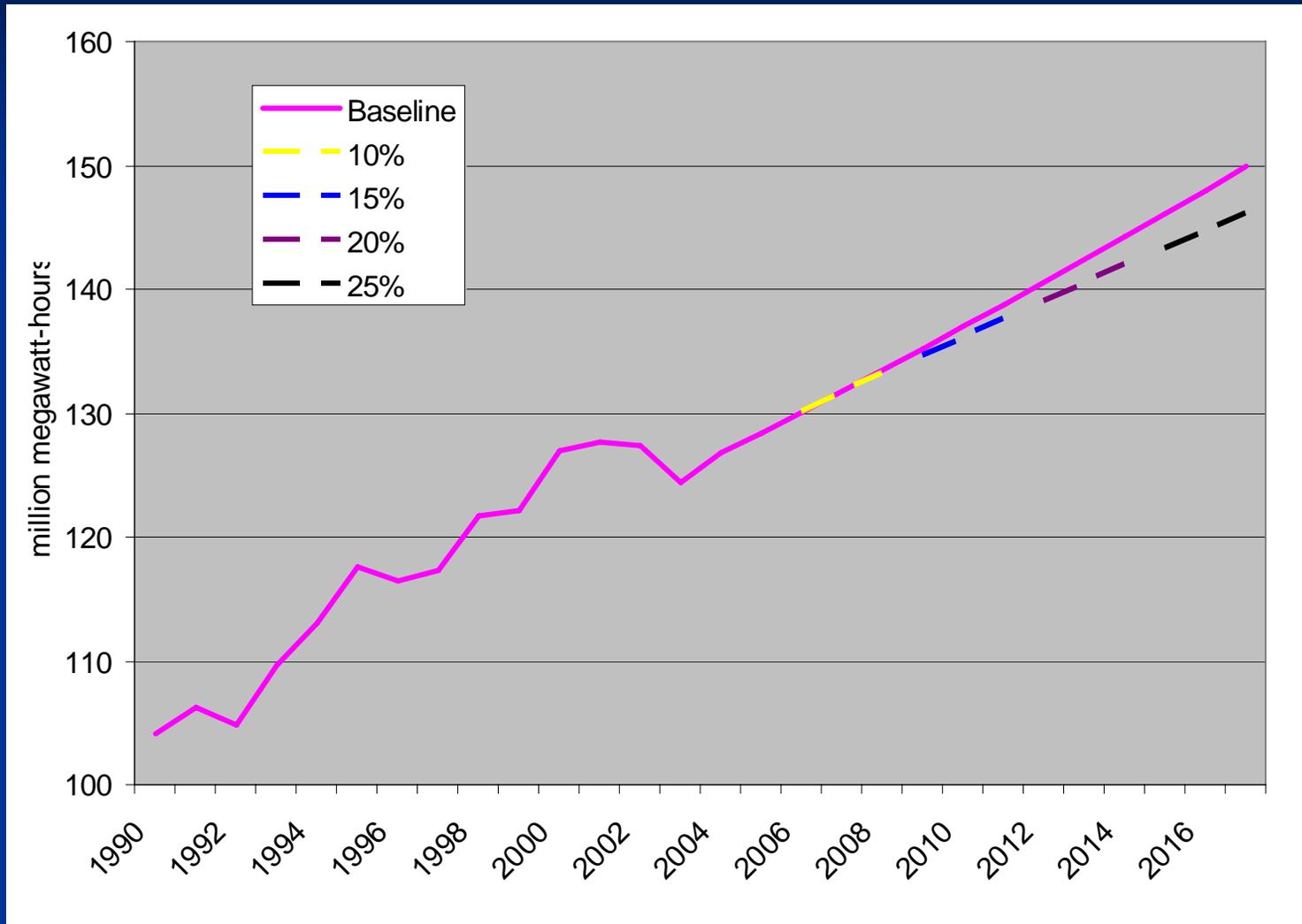
- docket 04-0779 (page 192):

Energy Efficiency Portfolio Standard

Per Gov. Blagojevich's 2005 State of the State Proposal

- Procure energy efficiency & demand reduction to reduce projected annual load growth by:
 - 10% in 2006-2008
 - 15% in 2009-2011
 - 20% in 2012-2014
 - 25% in 2015-2017
- Hybrid administration method combining competitive procurement and DCEO programs

Baseline vs. EE Portfolio Standard



Source: Historical data from ICC, *Comparison of Electric Sales*; forecast from ERC-UIC, *The Economic Environmental Impacts of Clean Energy Development in Illinois*, June 2005 based in on EIA data and forecasts.

Today's Discussion Topics

- History of EEPS proposal in Illinois
- Presentation by Marty Kushler of ACEEE:
 - Energy Efficiency as a Resource, a National Overview of Best Practices
- Key existing EE programs in Illinois
- ICC Staff Report on EEPS Implementation
- DCEO Policy Recommendations

Introduce Marty Kushler

ENERGY EFFICIENCY AS A RESOURCE: A NATIONAL OVERVIEW OF BEST PRACTICES

Martin Kushler, Ph.D.

Director, Utilities Program

American Council for an Energy-Efficient Economy

Presentation to the ICC Energy Efficiency Workshop

August 10, 2006



RELATED EXPERIENCE

- 25 years research on energy efficiency
- 10 years Supervisor of Evaluation at the Michigan Public Service Commission (utility regulatory agency)
 - Responsible for all Michigan DSM evaluation
 - Integrated Resource Planning (IRP) [DSM components]
 - Collaboratives (established several & served as staff rep)
 - Utility DSM incentives (lead staff witness)
 - Rate case work (staff witness)
- 5 years as President of the Board of Directors, International Energy Program Evaluation Conference
- Last 7 years, Director, Utilities Program, ACEEE
 - several national studies of utility EE programs
- Consultant to numerous states and the federal govt.



TOPICS

1. Issue Background and Definitions
2. Energy Efficiency as a Resource (leading examples)
3. National Overview of Utility Energy Efficiency Activity
4. How Does Illinois Compare?
5. Rationale for Improvement
6. Benchmarks from other states (EEPS, spending)
7. Information about Programs (and links to resources)
8. Conclusions



RATIONALE FOR ENERGY EFFICIENCY AS A UTILITY SYSTEM RESOURCE

SIMPLY STATED:

- Utility systems need to have adequate supply resources to meet customer demand
- To keep the system in balance, you can add supply resources, reduce customer demand, or a combination of the two
- In most cases, it is cheaper to deliver programs to help customers save energy than it is to acquire new supply resources

[True for electricity and natural gas]

- There needs to be a practical mechanism for utilities to acquire energy efficiency resources



BACK TO THE FUTURE

- In the late 1980's, early 1990's, the U.S. electric system was well on its way to incorporating energy efficiency as a resource [i.e., the IRP era]
- In the late 1990's, "restructuring" to a great extent took us away from that path
- Today, for a variety of reasons, energy efficiency is making a comeback as a utility system resource
 - Soaring fuel prices (& customer/political dissatisfaction)
 - Electric system reliability concerns
 - Power plant construction cost recovery risk
 - Environmental risk



Definitions

ENERGY CONSERVATION

Saving energy by doing with less or doing without (e.g., setting thermostats lower in winter and higher in summer; turning off lights; taking shorter showers; turning off air conditioners; etc.)

ENERGY EFFICIENCY

Measures which result in producing the same or better levels of amenities (e.g., light, space conditioning, motor drive power, etc.) using less energy. Measures are generally long-lasting and save energy across all time periods for which the end-use equipment is in operation.



Definitions (continued)

LOAD MANAGEMENT (Including Demand Response)

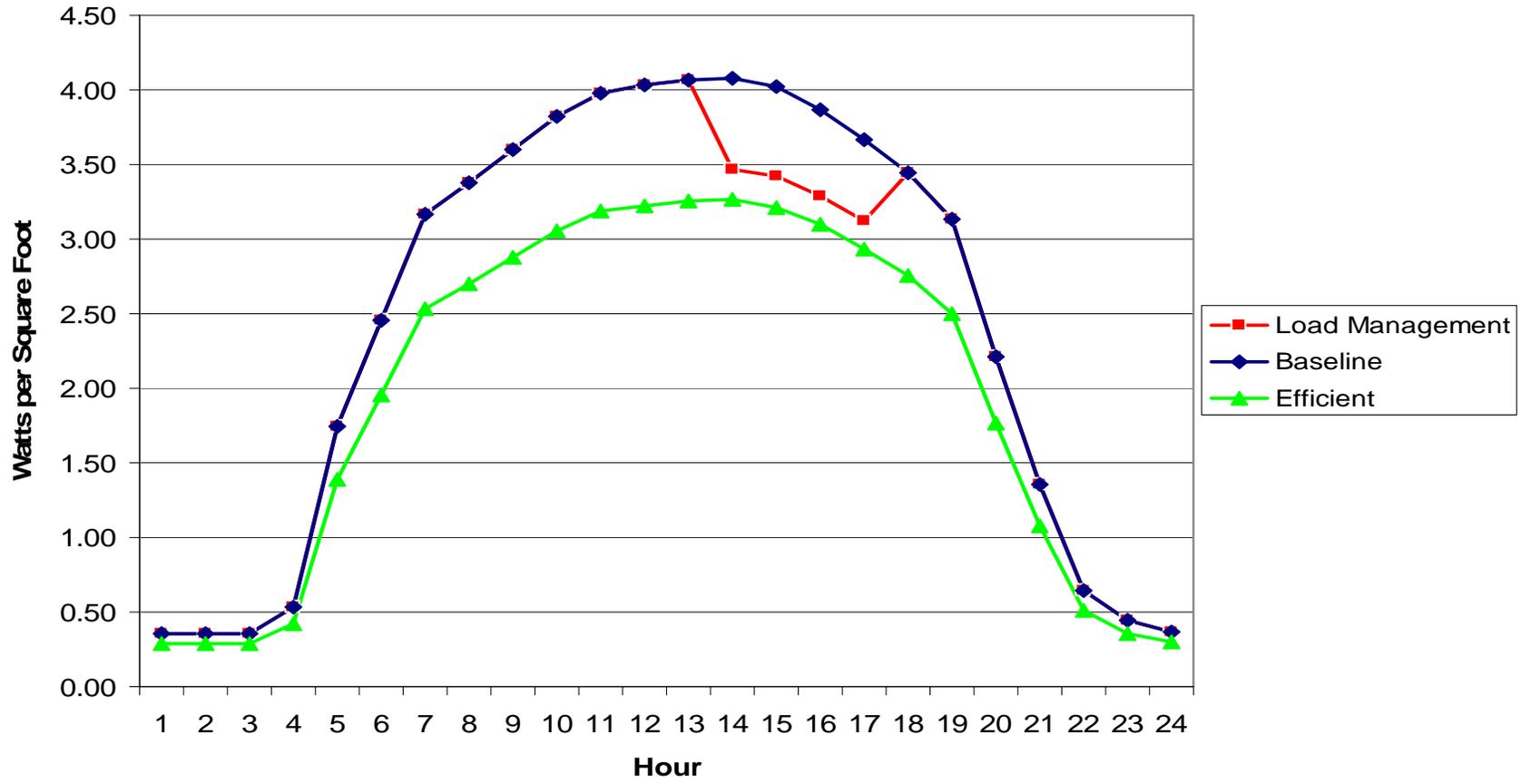
Load management programs seek to lower peak demand during specific, limited time periods, by temporarily curtailing electricity usage or shifting usage to other time periods.

[“Demand Response” programs are a category of load management that uses time-differentiated price-signals to stimulate customer action (as opposed to things like traditional air conditioner or water heater “cycling” programs, which rely on hard-wired dispatch).]



Energy Efficiency Compared to Load Management (4 hr curtailment)

Combined Commercial Cooling and Lighting Loadshape
Baseline, Load Management (STDR), and Energy Efficiency



COMPARISON OF BENEFITS

ENERGY EFFICIENCY

- can reduce system peak demand
- reduces total energy consumption
- reduces consumption of natural resources
- reduces air emissions
- can reduce energy imports
- effects are long-lasting

LOAD MANAGEMENT (& DEMAND RESPONSE)

- reduces system peak demand specifically
- little or no effect on total energy use
(or possibly even increases usage)
- little or no effect (or possibly negative) on:
use of resources; air emissions; energy imports
- effects are temporary and short duration

WHY ARE ENERGY EFFICIENCY PROGRAMS NECESSARY?

Market Barriers/Obstacles to Energy Efficiency

- Lack of information about EE options
- Lack of availability in local market
- Lack of capital
- Tendency to choose lowest first-cost
- “split incentives” between owners and renters
- “payback gap” (individual customers vs. utility system)
- Procrastination

BOTTOM LINE: EXPERIENCE SHOWS LARGE POTENTIAL FOR ENERGY EFFICIENCY IS NOT BEING CAPTURED.



WHAT IS AN "ENERGY EFFICIENCY PROGRAM" ?

An organized effort to try to encourage and facilitate customer implementation of energy efficiency improvements (residential and business)

Key elements

- Public information, education and persuasion
- Training and incentives to “trade allies” (e.g., appliance retailers, contractors, etc.)
- Economic incentives for customers (e.g., rebates)
- Quality control, monitoring, and evaluation



C & I "STANDARD OFFER" PROGRAM

['PAY FOR SAVINGS' ...ALL TYPES OF TECHNOLOGIES]

- Set incentive levels [e.g., NY lighting: 11 cents; motors: 13 cents; cooling 29cents (all “first year” kWh)]
[equivalent to ~ 1 – 2 cents/kWh lifetime]
- Educate and train trade allies (ESCOs, contractors, suppliers)
- Market to trade allies and customers
- 5 Step Process
 - Application proposal (incl. pre and proposed equipment)
 - Technical review and negotiate contract
 - Installation
 - 3rd party inspection and verification
 - Payment to customer or ESCO/contractor



SMALL COMMERCIAL LIGHTING RETROFIT

- Educate and train trade allies (“pre-qualify” vendors)
- Free energy audit for customer
- Present proposal for retrofit (measures, costs, savings)
- Financial incentive/rebate (e.g., 50% of cost)
(higher incentive needed for this market segment)
- May also include “financing” on utility bill
(to repay over time, allowing immediate positive cash flow)
- “One stop shop” turnkey installation (minimize hassle)
- Post-inspection and verification
- Utility pays contractor, arranges billing with customer



RESIDENTIAL APPLIANCE/LIGHTING PROGRAMS (ENERGY STAR APPLIANCES, CFL BULBS AND FIXTURES)

- **Work upstream with manufacturers and suppliers**
 - To assure adequate product availability
 - To seek co-funding (e.g., pricing discount, marketing assistance)
- **Work with retailers**
 - To provide training on products and sales strategies for hi-efficiency
 - To provide “point of purchase” marketing materials and displays
 - Sometimes “spiffs” for sales staff
 - To coordinate advertising and promotion
 - To coordinate customer rebate process & recordkeeping
- **Work with consumers**
 - Education and marketing
 - Financial incentives (e.g., rebates, in-store instant discounts, etc.)

"MARKET TRANSFORMATION" ORIENTED PROGRAMS (PERHAPS 10-25% OF TOTAL EE PORTFOLIO BUDGET)

“Market Transformation” seeks to increase the use of energy efficiency in a market over time, so that “energy efficient” products and services become the “normal” practice.

Programs include:

- Education for consumers (residential and business) about energy efficiency technologies and their benefits
- Training for key trade allies (e.g., contractors, builders, engineers, architects, building maintenance staff, etc.) on the latest energy efficiency technologies and practices
- Technical support for complimentary policies such as building codes, equipment standards, etc.



Key Points from this Presentation

1. Energy Efficiency is more than a ‘virtue’
it’s a RESOURCE
2. Energy Efficiency programs cost less than new supply
(~ half as much, 3 cents/kWh vs. 6 cents/kWh)
3. Utilities won’t pursue energy efficiency programs
without policy and regulatory action
4. High prices are not enough
5. Energy Efficiency programs work. Well-documented
examples are readily available.

Energy Efficiency Has Proven Itself as a Resource

- Really began with Integrated Resource Planning (IRP) and Demand Side Management (DSM)
- DSM from 1985-1994: 29,000 MW @ \$.03/kWh
[see RAP report: *Efficient Reliability...* Cowart, 2001]
- A number of states have reported avoiding multiple power plants over time with energy efficiency
- Use of Energy Efficiency dropped significantly with the onset of “restructuring”, but has made a major comeback
- Several excellent examples out there.



CALIFORNIA'S DOCUMENTED RESULTS

Most Recent 5-Year Evaluation of their SBC Programs (2000-2004)

- \$1.4 billion spent on utility energy efficiency programs
- Annual savings: 1,100 to 1,900 GWh
225 to 450 MW
- Overall levelized cost: 2.9 cents/kWh

Funding and Savings for Energy Efficiency Programs for Program Years 2000 Through 2004, California Energy Commission,
July 2005



CALIFORNIA NOW BREAKING NEW GROUND

- In 2003, CA established state policy of Energy Efficiency as their 1st priority resource in their “loading order” of utility resource acquisition.
- Have more than doubled their utility Energy Efficiency investment (SBC plus resource recovery in rates)
- CA utilities will spend \$2 billion on Energy Efficiency programs over 2006-2008 period.
- Expect to meet over half of forecasted load growth with Energy Efficiency



ANOTHER GREAT EXAMPLE: THE PACIFIC NORTHWEST (ID, MT, OR, WA)

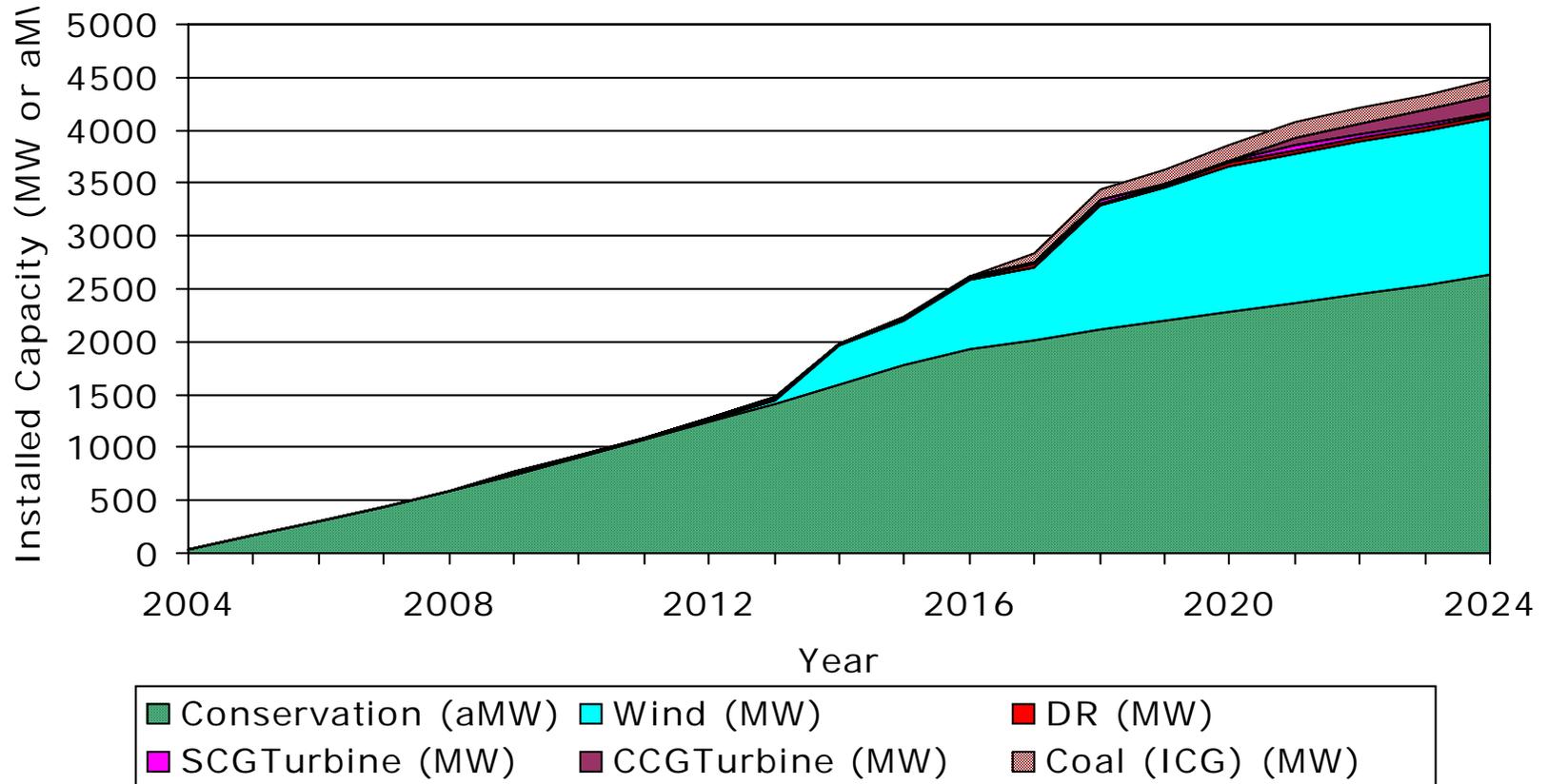
- Best electric resource planning process in the U.S.
- 20 years of energy efficiency program experience
- The Pacific NW expects energy efficiency to meet all forecasted needs for new electricity resources through 2012, and half of all new resource needs thru 2025
- Based on historical program evaluations results, they project an overall levelized cost of 2.4 cents/kWh

The Fifth Northwest Electric Power and Conservation Plan,
Northwest Power and Conservation Council, Portland,
Oregon, May 2005.

[<http://www.nwcouncil.org/energy/powerplan/plan/>]



NW Plan Relies on Conservation and Renewable Resources to Meet Load Growth



Other Examples of Energy Efficiency Program Cost-effectiveness

State	Benefit/Cost All programs	Benefit/Cost Comm/Ind programs	Benefit/Cost 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	
<i>Median</i>	2.1 to 2.5	2.5 to 2.6	1.6 to 1.7	0.03

STATES SETTING AGGRESSIVE ENERGY EFFICIENCY RESOURCE GOALS

- Texas law requires utilities to meet 10% of projected load growth thru energy efficiency. (This has proven so easy that they are considering increasing the target to 20% to 50%.)
- California utilities are now funding energy efficiency to meet over 50% of forecasted growth. (California utilities will spend \$2 billion on energy efficiency programs in next 3 yrs)
- The Pacific NW expects energy efficiency to meet all forecasted needs for new electricity resources through 2012, and half of all new resource needs thru 2025
- Vermont is considering targeting negative load growth as an goal, through aggressive energy efficiency programs.



EVEN IN RESTRUCTURED STATES

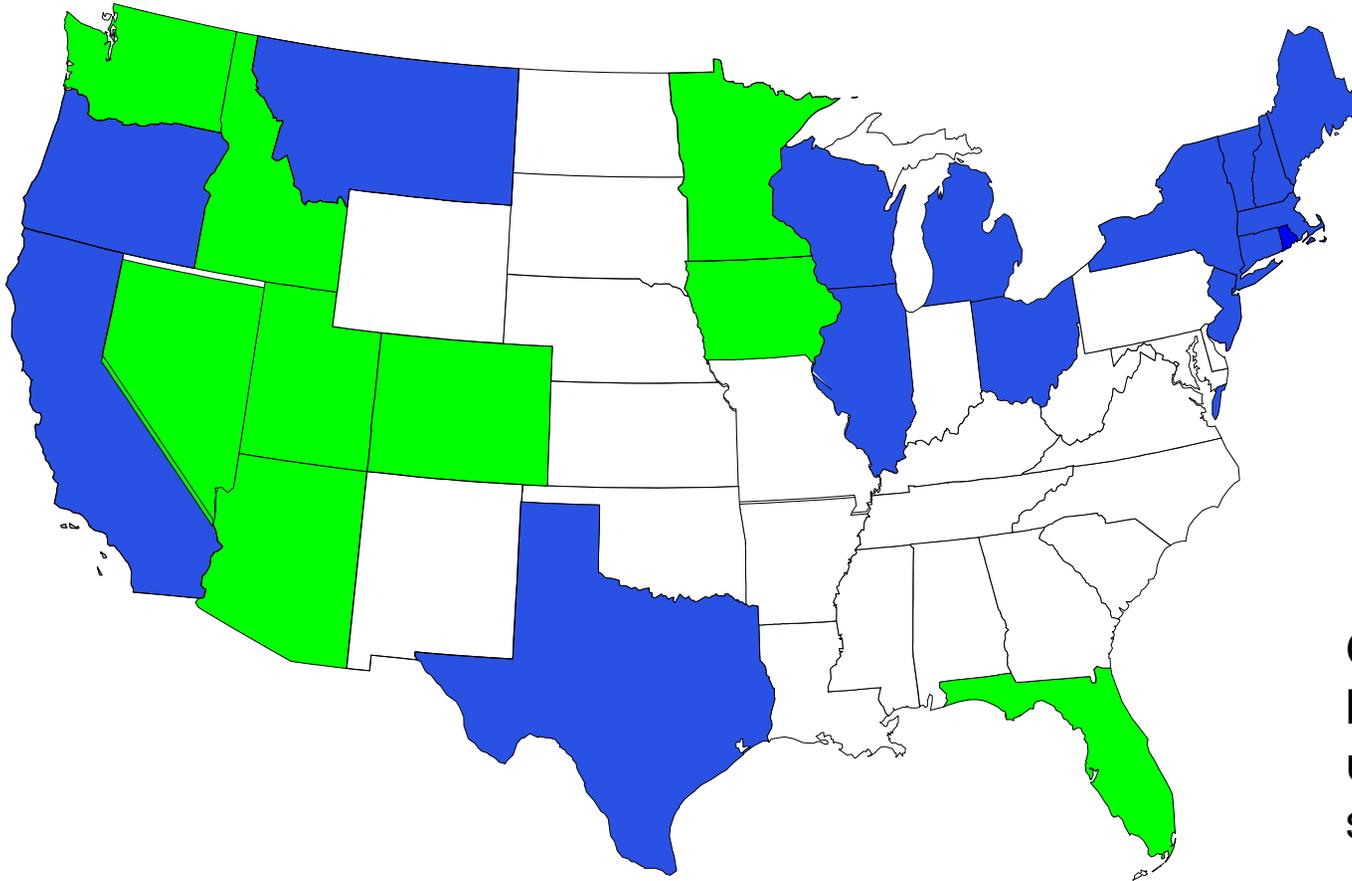
“Resource Procurement” – newest emerging paradigm in restructured states*

- a. Retail markets for electricity have not developed (esp. for residential and small & medium commercial customers)
- b. Vast majority of customers are on “default” service
- c. Simply buying for them on the spot market is inefficient and risky, and drives up market prices
- d. Movement to put responsibility for a well-designed portfolio of resources for default service back on the utility (CA is the leading example...EE is priority resource...\$1 billion extra EE over 2006-2008.)

* In non-restructured states, traditional IRP and EE still apply.



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”

ADMINISTRATIVE APPROACHES

- Of the 18 states with active statewide “public benefits” Energy Efficiency programs:
 - Half feature utility administration
 - ❖ 6 exclusively utility-based
 - ❖ 3 “hybrid”
 - Half have “independent” (non-utility) administration
 - ❖ 6 use a state government agency
 - ❖ 3 use independent non-profits
- This represents some change over time
(In 2000, two-thirds of states featured utility administration)
- There are very successful examples in each category, and utilities have succeeded as effective administrators.

HOWEVER, GOVERNMENT “ENCOURAGEMENT” AND OVERSIGHT ARE ESSENTIAL

There are a number of economic and institutional reasons why utility companies do not voluntarily provide serious energy efficiency programs

[see reports *Can We Just “Rely on the Market”* by ACEEE and *Efficient Reliability* by RAP, plus:

Regulating Electric Distribution Utilities as if Energy Efficiency Mattered Kushler & Suozzo, ACEEE 1999]

The good news is that utilities can be influenced into doing an excellent job administering energy efficiency programs, IF there is strong policy guidance and an effective regulatory structure.... including appropriate cost-recovery and incentive mechanisms. There are a number of practical examples of such success.



FOR MORE INFORMATION

See state-by-state summaries in the appendices of:

Five Years In: An Examination of the First Half-Decade of Public Benefits Energy Efficiency Policies

[<http://www.aceee.org/pubs/u042.htm>]

- descriptive summaries of 21 states plus DC
- cites to orders, legislation and reports
- contact persons



So how does Illinois compare?

CURRENT APPROACH IN ILLINOIS

- State administration (Restructuring legislation in 1997 required utilities to provide \$3 million per year to the state to administer energy efficiency programs)
- Illinois is generally well-regarded for doing some good things with its limited energy efficiency funds
- But overall, Illinois has only a very tiny utility sector energy efficiency resource allocation



2004 Elec Utility Energy Efficiency Spending Per Capita

Rank	State	Spending/Capita
1	Vermont	\$22.54
2	Massachusetts	\$20.81
3	Oregon	\$17.51
4	Connecticut	\$16.60
5	Washington	\$14.28
6	Rhode Island	\$12.95
7	New Hampshire	\$11.64
8	Minnesota	\$10.95
9	New Jersey	\$10.68
10	California	\$10.60
11 (tie)	Iowa and Wisconsin	\$ 9.76
	U.S. Average	\$ 4.93
	Illinois	\$ 0.24

WHY DO POLICYMAKERS/REGULATORS ENCOURAGE UTILITY SECTOR ENERGY EFFICIENCY PROGRAMS?

BENEFITS TO THE STATE AS A WHOLE

- Lower total cost for meeting the state's electricity needs
[Overall, electric system life-cycle costs are reduced by \$2 to \$3 for every dollar spent on energy efficiency programs]
- Increased local economic activity for delivering and installing energy efficiency measures
- Reduced dollar drain for imported energy fuels
[Note: Federal data shows Illinois imports 100% of the natural gas and uranium fuel, 95% of the petroleum, and 38% of the coal it uses]
- Increased local discretionary income from reduced bills is re-spent locally
- Reduced pollution from electricity generation



BENEFITS TO “NON-PARTICIPANTS”

Note: this concept is not applied to any other area of utility investment (e.g., all customers pay for things like substations they don't use). Nevertheless:

Benefits to “non-participants”

- All of the previous “benefits to the state” are shared by all non-participants
 - Reduced demand for electricity puts downward pressure on energy market prices, thus benefiting all customers
- [\$ value of this is greater than participant direct savings!
See RAP report *Efficient Reliability*. ACEEE found the same thing in our Midwest Natural Gas study]



Figure 1. Impact of Demand Reductions on Wholesale Energy Clearing Prices (ECP) on June 7, 1999

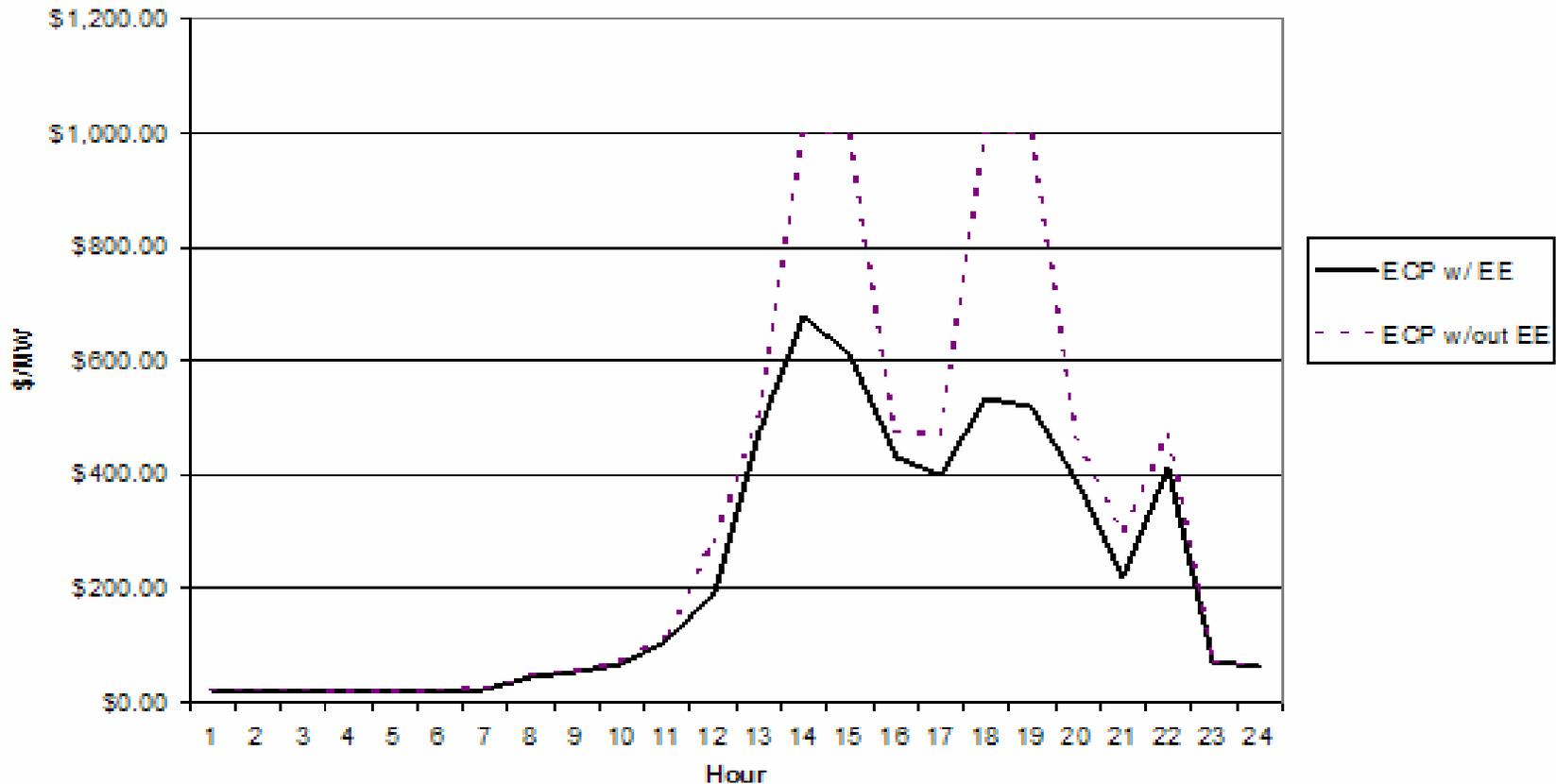


Figure : Impact of demand reductions (EE) on wholesale energy clearing prices (ECP) in the New England regional power pool on June 7, 1999

[Source: Regulatory Assistance Project, *Efficient Reliability*, June 2001]

**IN FACT, NOT DOING ENERGY EFFICIENCY
ACTUALLY PENALIZES "NON-PARTICIPANTS"**

“There is a simple answer to help this region control soaring power costs, avoid potential shortages during peak power use periods, and cut emissions:

Reduce the amount of electricity that is used.

A 5 percent reduction during high consumption hours can lower wholesale costs by an estimated \$600 million a year. In contrast, a 5 percent increase in electricity use will drive up wholesale costs by \$700 million a year - - a \$1.3 billion swing.”

[Gordon Van Welie, President and CEO of ISO New England, July 26, 2006, Boston Globe]



ADDITIONAL SPECIFIC ELECTRIC SYSTEM BENEFITS SHARED BY "NON-PARTICIPANTS"

ENERGY EFFICIENCY PROGRAM SAVINGS LOWER COSTS
TO ALL CUSTOMERS, BY:

- reducing the investment needed in additional transmission and distribution equipment
- Reducing reserve margin resources that the system would otherwise have to maintain
- Reducing ancillary service charges
- Reducing transmission line losses
- Reducing costs of hedging against volatility

“Many of these system benefits are difficult to quantify, but that does not make them any less real or significant”

[Vermont Public Service Board, August 2, 2006]



MORE BENEFITS TO "NON-PARTICIPANTS"

- The energy efficiency programs increase the availability of energy efficiency products and technologies in the local market, AND reduce their costs, thereby improving available options for all customers
- Reduced demand lowers the risk of electric system reliability failures. All customers benefit from this reduced risk.
- Greater use of “clean” electric resources like energy efficiency reduces the cost risk from future environmental costs that may be applied to generation resources (e.g., Carbon, Mercury, particulates, etc.)



GOOD REFERENCES DESCRIBING SYSTEM BENEFITS

Efficient Reliability: The Critical Role of Demand-Side Resources in Power Systems and Markets

by Richard Cowart, Regulatory Assistance Project, June 2001

<http://www.raonline.org/Pubs/General/EffReli.pdf>

Using Targeted Energy Efficiency Programs to Reduce Peak Electrical Demand and Address Electric System Reliability Problems Nadel, et.al. ACEEE, 2000

<http://www.aceee.org/store/proddetail.cfm?CFID=527376&CFTOKEN=86519831&ItemID=189&CategoryID=7>

Examining the Potential for Energy Efficiency to Help Address the Natural Gas Crisis in the Midwest

Martin Kushler, Ph.D., Dan York, Ph.D., and Patti Witte, M.A.

January 2005 URL: <http://aceee.org/pubs/u051.htm>



So, let's assume that Illinois wants to start capturing its significant energy efficiency potential...

UTILITY SECTOR POLICY APPROACHES

(The cornerstone of an overall state approach)

1. Provide funding for energy efficiency through state **system benefit funds**
2. Establish binding **savings targets** for utilities/states (e.g., an “**energy efficiency portfolio standard**”)
3. Require funding for energy efficiency through electric and gas **utility rate cases**

[Funding approaches and programs can be tailored to meet the unique needs of each state. Some states are using a combination of approaches]



ONE BENCHMARK: ENERGY EFFICIENCY PROGRAM SPENDING LEVELS

[Based on 20 states with restructuring related funding for energy efficiency and low-income programs.]

Energy Efficiency

- Range: 0.03 to 3.3 mills/kWh
- Median: 1.0 mills/kWh
- \$ Range: \$1.5 million to \$228 million/yr.

>>If Illinois spent at median:

1.0 mills/kWh =

\$130 million/yr. for electric energy efficiency



A GROWING TREND: SETTING ENERGY SAVINGS TARGETS

- At least 8 states have established, or are actively considering, specific utility sector energy savings targets
- One key issue: What energy savings levels should be targeted?

WHAT IS THE SIZE OF THE ENERGY EFFICIENCY RESOURCE?

- In 2004 ACEEE completed a “meta-analysis” of energy efficiency potential studies from around the U.S.¹
 - Median cost-effective “achievable” potential for energy efficiency was 24% of total forecasted electricity use
 - Median achievable potential equivalent to 1.2% of total electricity consumption per year
- [Note: leading states are saving 0.8% to 1.0% of total sales in current programs already]

¹ [*The Technical, Economic, and Achievable Potential for Energy Efficiency in the United States: A Meta-Analysis of Recent Studies*, Nadel, Shipley & Elliott, ACEEE, 2004.]

WHAT ARE STATES USING FOR EEPS TARGETS?

<u>STATE</u>	<u>ANNUAL % SAVING</u>	<u>% OF GROWTH</u>
California	0.9%	50%+
Connecticut	1.0% (incl. CHP)	N/A
New Jersey	1.0% (discussed)	N/A
Nevada	0.5%	N/A
Texas	0.2% (equivalent)	10%
Vermont	1.0%	N/A
Illinois	0.2% (equivalent)	10%

THE TEXAS APPROACH

Texas is the state with a policy approach closest to what is proposed in Illinois. The Texas approach features:

- Relatively modest goals: utilities required to save at least 10% of projected electric load growth each year through energy efficiency
- Utilities estimate costs of programs to meet the target and file for cost recovery in rates
- Required to use a combination of “standard offer” programs and “market transformation” programs
- Serve all sectors (residential, commercial, industrial, and low-income)

TEXAS RESULTS

For 2005

- \$80 million total spent on EE programs
- Savings 27% above goal
[many programs “sold out” within weeks]
- Annual savings: 181 MW and 509 GWh
- Very cost-effective
[~ 2 cents/kWh levelized cost of energy saved]



WHAT TYPES OF PROGRAMS MIGHT BE INCLUDED IN ILLINOIS?

Residential

- Lighting (CFL bulbs and fixtures)
- Appliances (i.e., Energy Star equipment)
- HVAC (central & window A/C, water heaters, htg. conversions)
- Weatherization (for lower income categories especially)

Commercial

- Lighting (perhaps the single most cost-effective opportunity)
- HVAC (A/C, chillers, economizers, motors)
- New Construction (design assistance & incentives)
- Specialty Programs (e.g., cooking equipment, laundry equipment, water & wastewater treatment facilities, etc.)

Industrial

- Custom programs (tailored to specific industry needs)



HOW CAN WE IDENTIFY PROGRAMS TO USE?

Help is available:

America's Best: Profiles of America's Leading Energy Efficiency Programs (York & Kushler,2003)

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

Gives brief description

Links on that page:

Introduction (body of report)

Exemplary and Honorable Mention Program Profiles

Other Programs Nominated

[Hard copy: 284 pp., 2003, \$60.00 U032]



DATABASE OF PROGRAM PROFILES

<http://www.aceee.org/utility/bestpractoc.pdf>

Program Profiles

Administrative Organization

Residential Low-Income Programs

Exemplary Programs

[Multifamily Low-Income Program](#)

Efficiency Vermont

[Indiana Low-Income Weatherization and Refrigerator](#)

[Replacement Program](#)

Indiana community action programs in partnership with Cinergy/PSI Energy

Honorable Mention

[Assisted Multi-Family Building Program](#) New York State Energy Research and Development Authority

Residential Air-Conditioning Programs

Exemplary Programs

[Cool Advantage](#)

New Jersey Clean Energy Collaborative

[Keep Cool, New York](#)

New York State Energy Research and Development Authority

[CheckMe!®](#)

Proctor Engineering Group, Ltd.



A few last thoughts....

ENERGY EFFICIENCY RESOURCE FUNDING IS NOT A "TAX" !

Rather, this would be having the utilities re-direct 1% or 2% of the \$9 billion in annual revenues in the Illinois electric system..

That 1% or 2% would be spent on energy efficiency resources instead of electric generation supply resources.

Because energy efficiency costs less than half as much, this would **reduce** the total cost of meeting Illinois' energy needs. [A dollar spent on energy efficiency saves 2 to 3 dollars on energy supply costs.]



ENERGY EFFICIENCY IS VERY POPULAR WITH THE PUBLIC

Surveys repeatedly show very strong public support for energy efficiency.

Plus, amazingly strong attitudes against importing more energy from outside the state. (MI, 1996)

% of the public that favors or strongly favors:

83% Energy Efficiency

72% Renewable Energy

30% Building a coal or natural gas power plant

21% Building a new nuclear power plant

**19% Buying more power from other states or
Canada**



CONCLUSIONS

- Energy Efficiency programs are a proven cost-effective resource
- Energy Efficiency can save electricity at half the cost of constructing, fueling, operating and delivering electricity from a new power plant
- Significant local economic and environmental benefits are a bonus
- Policy/regulatory action will be required to enable utility-sector energy efficiency to happen
- Fortunately, excellent models are available from other states
- Illinois' proposed EEPS goals should be easily achievable and very cost-effective



DCEO EE Programs

*Key Current DCEO EE Programs
Designed to Facilitate Expansion per
EEPS*

DCEO EE Programs

- Commercial: Small Business Smart Energy (SBSE) design assistance program
- Industrial: Manufacturing Energy Efficiency Program identifies cost-effective energy efficiency improvements
- Residential: Home Performance With ENERGY STAR
- Low Income: Energy Efficient Affordable Housing Construction Program
- Training: building operator certification, commercial building code, 2006 code update, residential code

Small Business Smart Energy

- Partnership with:
 - UIUC School of Architecture's Smart Energy Design Assistance Center (SEDAC)
 - Geothermal Heat Pump Consortium,
- SB\$E reduces the cost of doing business by providing energy efficiency design assistance (technical assistance only, currently no cash incentives).
- Thus far, the SB\$E program has identified 15.7 million kWh in potential electricity reductions and 1.25 million therms in natural gas reductions at 54 Illinois small businesses that employ more than 3,000.
- The net present value of savings is estimated at \$25 million and the return on investment 22.5%.

Small Business Smart Energy (cont'd)

- Currently without incentives, about one third of the companies are implementing on average about half of the recommended energy efficient measures.
- Assuming those still in early stages of the decision making process implement at the same rate, the state's return on investment for \$950,000 spent thus far for design assistance equates to \$0.005/kWh (or \$0.251/therm of gas).
- Providing cash incentives to adopt the recommended energy efficiency measures would increase the number of companies seeking design assistance and the overall implementation rate.

Manufacturing Energy Efficiency Program

- MEEP helps Illinois manufacturers manage their energy costs by providing technical and consulting services to identify and help implement cost-effective efficiency improvements.
- Afton Chemical's Sauget facility has saved \$100,000/year and anticipates saving an additional \$200,000/year by implementing some of the technical opportunities presented in the MEEP Action Plan
- Caterpillar's Mossville Engine Center facility implemented recommended changes to energy policies and operations that will save an estimated \$656,000 per year.
- The state's return on investment for \$680,000 spent thus far on MEEP equates to \$0.0004/kWh (or \$0.009/therm of gas).
- Combining the technical and consulting services with incentives for up to 25% of implementation costs would dramatically increase the reach of the program.

Home Performance with ENERGY STAR

- Pilot program in Peoria using whole-house approach to improve energy efficiency, comfort, and safety of existing homes.
- Provides homeowners with energy evaluations that rank energy saving measures and list qualified contractors.
- Trains participating contractors in whole-house principles.
- Reduces electricity use an average 2,000 kWhs and natural gas by more than 500 therms, saving about \$900/year, through sealing air leaks, changing lighting, replacing appliances with ENERGY STAR, and adding insulation.
- Participation has been limited, by the cost of energy evaluations, about \$400, and the lack of incentives or financial mechanisms.
- Subsidizing evaluation and combining with incentives could reach 5,000 households per year with present value of savings of \$40 million at a cost of about \$3M per year.

Energy Efficient Affordable Housing Construction

- Helps low income residents access the most energy efficient housing possible and have affordable utility bills.
- Addresses split incentive problem between renters/landlords.
- Grants to not-for-profits up to \$2,000/unit for new construction and \$2,500/unit for rehab projects for energy efficiency improvements.
- Lowers electricity use by about 1000 kWh and natural gas use by an average of 500 therms, reducing energy bills by \$700, with a return on investment of over 30%.
- The state's investment of \$817,000 last fiscal year for energy efficient affordable housing produced savings at \$0.085/kWh (or \$0.248/therm).
- Large demand: Just within the not-for-profit sector, potential to more than triple the number of energy efficient affordable housing units built annually.

Training – Building Codes

- Energy conservation building codes are an important tool for states and local governments to help transform how buildings are constructed.
- However, to be effective all the professionals involved in the building process – builders, architects, engineers, contractors, and code enforcement officials – need to understand the code and what it means in practice.
- DCEO with its partners trained about 1500 people in the building, construction and regulatory communities throughout Illinois to prepare for the adoption of the Illinois Commercial Energy Code.
- The state would need to play a similar role in providing education and training and on-going interpretation and assistance for a residential code, if passed.

Training – Building Operators

- Building operators are a critical group in determining building energy consumption.
- The Building Operator Certification Program is designed to improve operation and maintenance (O&M) skills for Illinois' building operators to improve efficiency and reduce costs.
- The program, in partnership with the Midwest Energy Efficiency Alliance (MEEA), has trained 187 building operators in Illinois.
- A recent evaluation shows that facilities with BOC-trained operators annually save per square foot 0.35 kWhs of electricity, 0.74 MMBtu of natural gas and oil, and 0.14 gallons of water.
- In total, the certified operators in Illinois have thus far saved an estimated 19 million kWhs of electricity and 41,000 MMBtu of natural gas.
- Past DCEO spending of \$225,000 yielded savings @ \$0.012/kWh.

EEPS Implementation

*Key Findings and Recommendations
of ICC Staff Report*

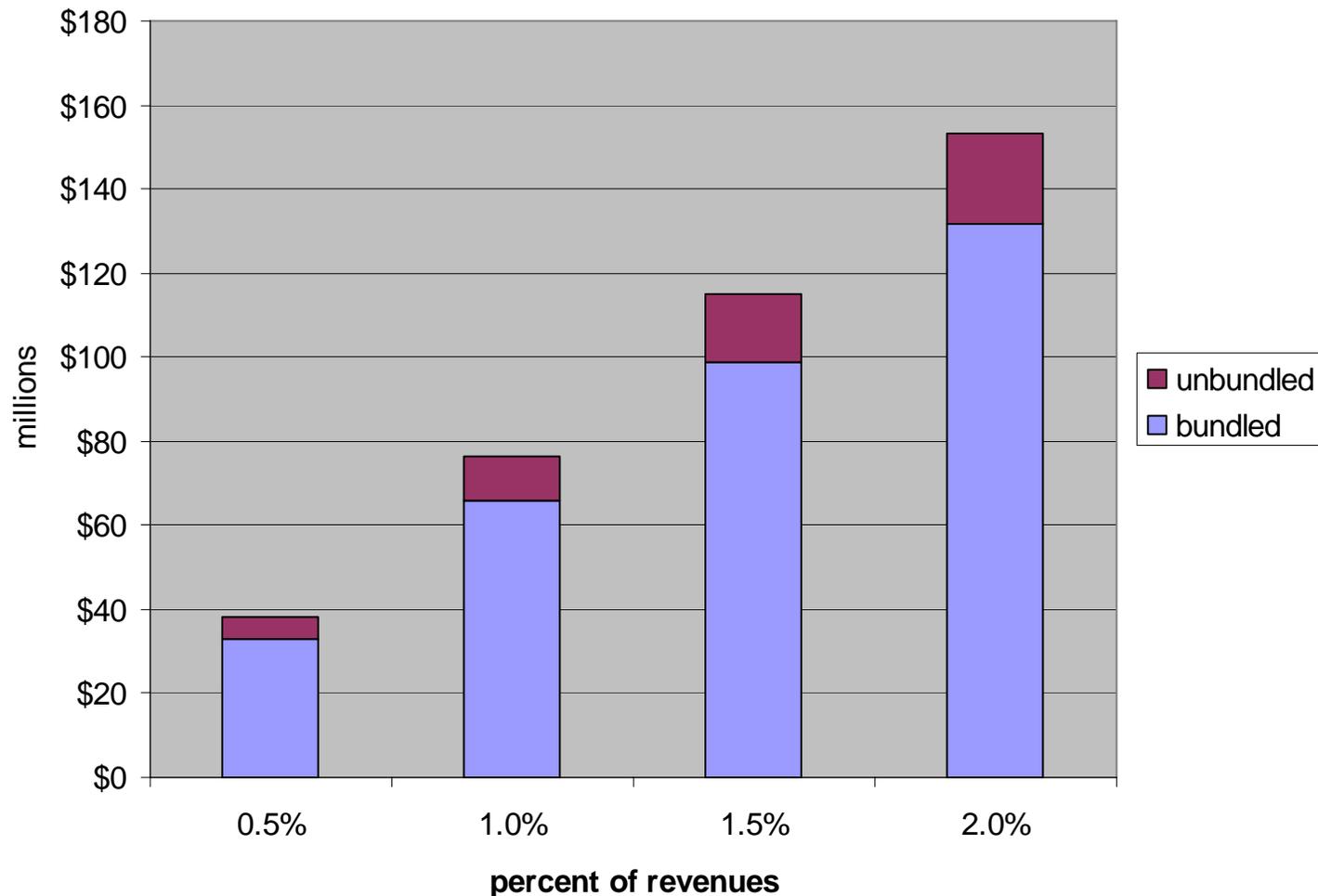
ICC Staff Report: Key Issues

- Accepted Governor's EEPS size/schedule but postponed the start of the program until 2007
- Rate impact cap of 0.5% increase per year
- Voluntary participation of electric utilities and alternative retail electric providers (ARES)
- Arms-length transactions – all energy efficiency should be secured through auctions or RFPs managed by independent third parties
- After-the-fact review limited to mismanagement or improper execution of programs

ICC Staff Report – Rate Test

- Adopt rate impact test of 0.5% increase per year
- Applied to before-the-fact expected costs
- Computed separately for each rate class, based on typical energy bills
- Annual/biannual reports showing current & planned levels of energy efficiency & demand response & comparing performance to targets

Potential EEPS Budget Per ICC Staff Rate Impact Test



Source: Illinois Sustainable Energy Initiative, ICC Staff Report, July 7, 2005

Customer Costs by Class

As Derived from ICC Staff Report*

Revenue/customer	Avg. Monthly Bill	1/2 %	2%
Residential	\$59	\$0.30	\$1.18
Commercial bundled	\$413	\$2	\$8
Commercial DS-PPO	\$2,683	\$13	\$54
Commercial DS-RES	\$950	\$5	\$19
Industrial bundled	\$34,211	\$171	\$684
Industrial DS-PPO	\$61,266	\$306	\$1,225
Industrial DS-RES Power	\$19,776	\$99	\$396

* DCEO notes that ICC Staff do not quantify the benefits, only the costs, and therefore do not indicate net cost reductions

Data is based on ICC, *Comparison of Electric Sales Statistics for Calendar Years 2004 and 2005*

DCEO

Recommendations

DCEO Recommendations

- EEPS Should be mandatory
- Scale of EEPS should be increased and schedule accelerated
- EEPS should apply to ARES
- Hybrid administration approach by both utility contractors and DCEO
- Full cost recovery
- Independent program evaluation

DCEO Recommendation: Mandatory EEPS Program

Specifically, the EEPS should be mandatory because:

- Net energy *costs* would decline for all customers (per *Efficient Reliability* earlier) even though rates would reflect program expenses. Efficiency:
 - Puts downward pressure on energy market prices
 - Reduces investment needed in T & D equipment (at lower cost)
 - Lowers risk of system reliability failures
 - Reduces “free rider” problem
 - Reduces cost risk from future environmental regulations (most notably carbon emissions but also mercury, etc.)

DCEO Recommendation: Mandatory EEPS Program

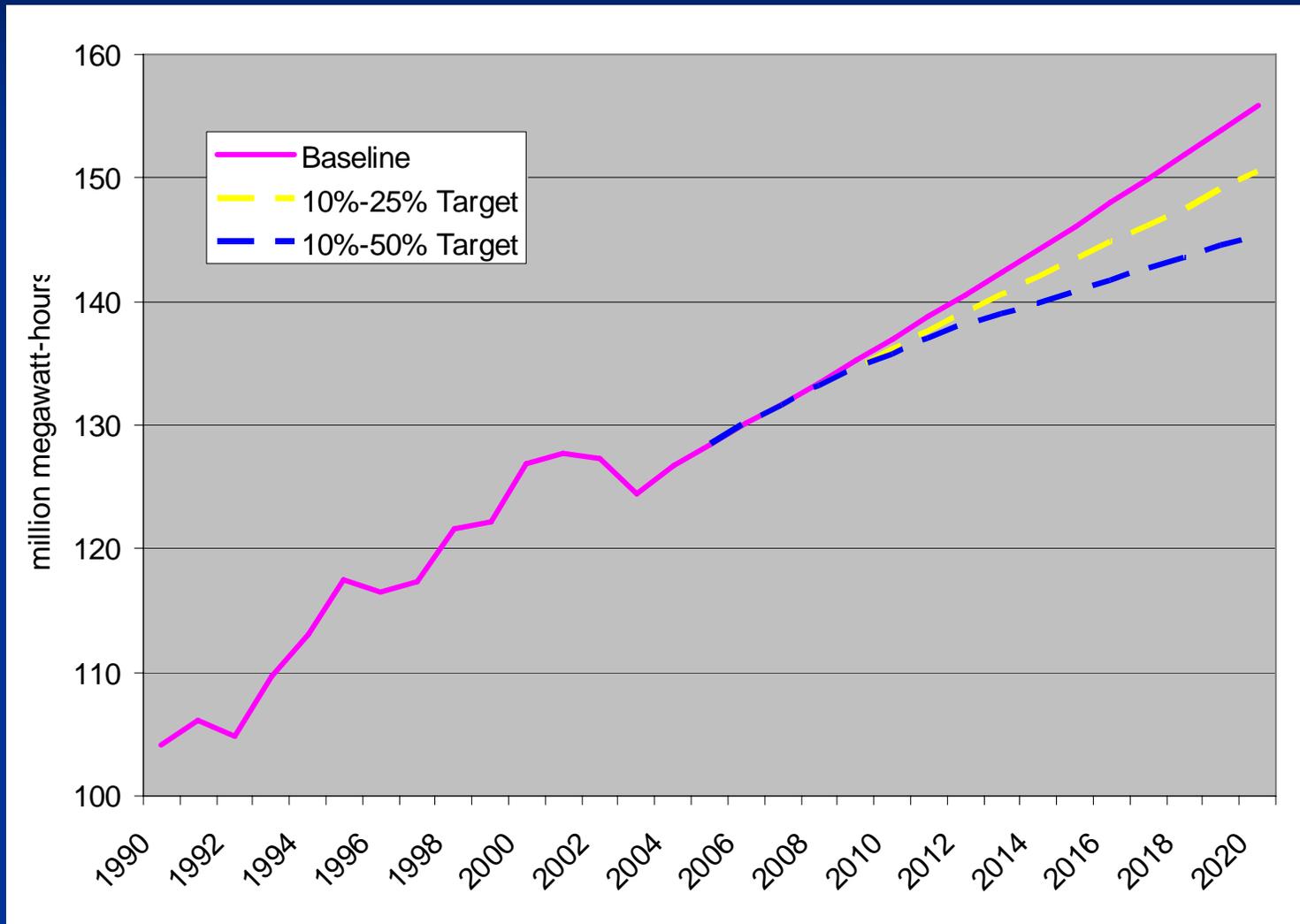
- ICC staff recommended a voluntary program for utilities and ARES for both efficiency and demand response (treating EE and DR together), citing uncertainty about Commission authority
 - This does not reflect past practice in Illinois
 - ICC has previously ordered demand response programs and should use same justifications for efficiency (cost and reliability)

DCEO Recommendation: Schedule for EEPS Implementation

- Events subsequent to Governor's EEPS proposal indicate that energy efficiency targets should be increased
 - Natural gas City Gate prices averaged \$7.05/tcf then, but averaged \$10.75 by the end of the year, peaking at over \$12
 - Electricity costs post 2006 could be 30% higher than before
- DCEO proposes 6 year transition:

10% in 2007-2008	20% in 2009
30% in 2010	40% in 2011
50% in 2012	
- Still subject to 0.5% annual and 2.0% cumulative rate cap
- Beginning in 2011, Sustainable Energy Advisory Council and ICC should evaluate issues arising from EEPS to that point and establish plan (to begin in 2013) to procure all available efficiency when cheaper than energy

Comparison of Schedules



DCEO Recommendation: Accelerate Schedule

- Small prior EE program history means current opportunities are very large
 - There has been little penetration of energy-efficient products and appliances into Illinois homes (MEEA, *Illinois Residential Market Analysis*, 2003)
 - Large opportunities in all sectors
- With abundance of untapped, low-cost efficiency opportunities, accelerated schedule should fit or come close to fitting within the 2.0% cumulative rate cap
 - If not, the rate cap would be binding, at least for the transition period through 2012

DCEO Recommendation: Include ARES

- The ICC Staff Report viewed it as “appropriate” that utilities and ARES acquire load response and energy efficiency services through competitive procurement
- All energy customers in state benefit from lower prices if ARES customers are included
- ARES currently contribute to the Energy Efficiency Trust Fund by statute (pro rata per market share)
- Inclusion of ARES minimizes the “free rider” problem of program benefits

DCEO Recommendation: Hybrid Administration

- Utilities to procure 75% of EE through contracts utilizing arms-length transactions
 - Focus on market-based acquisition of resources
- DCEO to produce 25% of EE through programs focused on Market Transformation and other hard-to-reach sectors (such as low-income residential)
 - Funding to DCEO to be 25% of total on pro-rata basis among utilities and ARES
 - DCEO programs subject to independent evaluation
- Mid-American may be treated separately

DCEO Recommendation: Administration – Utilities Section

Market-based acquisition of Energy Efficiency Resources:

- Commercial and Industrial Standard Offer Programs
 - Such as procurement of guaranteed energy reductions through Energy Service Companies
- Residential Lighting and Appliance Programs
 - Such as programs run by the Midwest Energy Efficiency Alliance
- Primary (but not exclusive) focus on peak efficiency programs to ensure net benefits for all customers

Program Design – DCEO Role

- Support market transformation to ensure availability of wide range of energy efficient products and practices
- Target hard to reach customers:
 - Capital-poor
 - Removed from price signals (tenants, new construction, etc)
- Provide education and critical technical information to residential, commercial, and industrial consumers and building and energy professionals.
- Coordinate monitoring and evaluation of load impacts, and economic and environmental impacts, to measure progress with Sustainable Energy Plan goals.
- Primary (but not exclusive) focus on peak efficiency programs to ensure net benefits for all customers

Mid-American: Administration Question

Because Mid-American is an integrated utility, and because Mid-American already has a good, integrated suite of EE programs from Iowa, it may make sense to allow Mid-American to choose to simply offer its Iowa portfolio in Illinois or to participate as other utilities.

Examples of Mid-American's Iowa EE Programs Include:

- HomeCheck – audits & free low-cost measures
- Residential Equipment – rebates/discounted financing
- EnergyAdvantage Financing – below prime rates
- BusinessCheck – audits & rebates
- Nonresidential Equipment – rebates/financing
- Efficiency Bid – large industrial
- Commercial New Construction – design assist. & incentives
- EnergyAdvantage Analysis – large customers, audits & incentives

DCEO Recommendation: Full Cost Recovery

- Energy efficiency programs costs, including any management and evaluation costs, recovered through rates
- Costs subject to an annual reconciliation proceeding and prudence review
- Consider sales/profits decoupling mechanism as incentive

DCEO Recommendation: Independent Evaluation

- Set aside percentage of funds for purposes of evaluating the portfolio standard programs (at least 3%)
- Hire professional independent evaluators
- Involve key interested parties – advisory group to provide input to the evaluation process
- Evaluate progress in meeting targets, process & programs, economic impact, environmental impact

ICC Process Moving Forward

- If requested, DCEO can undertake an Illinois-specific study to quantify the net energy cost impact to all energy customers of the Energy Efficiency Portfolio Standard as proposed today

--End of Presentation--