Combined Heat and Power Education and Outreach Guide to State and Federal Government

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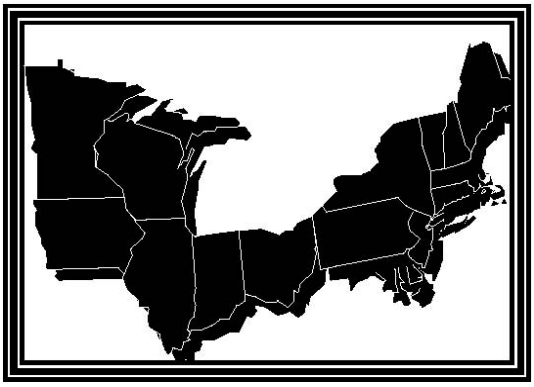

Northeast-Midwest Institute

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SECTION I. INTRODUCTION

The Combined Heat and Power Challenge

The U.S. Department of Energy (DOE), in partnership with the U.S. Environmental Protection Agency (EPA), introduced a challenge to double by 2010 the use of combined heat and power systems in commercial, industrial, and institutional buildings, and in communities throughout the United States. The challenge will produce 46 gigawatts of electricity, equal to the output of more than 50 large power plants. DOE announced this initiative, "The Combined Heat and Power Challenge," at a meeting of government and industry representatives in Washington, D.C., in December, 1998.

"A primary goal of the challenge is to eliminate barriers that prevent more widespread adoption of combined heat and power technologies and systems," said Dan Reicher, Assistant Secretary for Energy Efficiency and Renewable Energy. "Other goals will call attention to the role of combined heat and power in reducing air pollution by 40 million metric tons of carbon -- the equivalent of eliminating 40 million cars from U.S. roadways -- and helping to improve local economic development."

Combined heat and power systems, sometimes called cogeneration systems, generate electricity and heat simultaneously, at the point of use. Much of the energy normally lost in separate power generation can be utilized in a combined heat and power system and used for a wide variety of thermal needs, including water, steam, and process heating or cooling. Combined heat and power can generate system efficiencies greater than 70 percent as compared to central generating plants that operate at a national average of 33 percent efficiency. Generating electricity on-site can avoid transmission and distribution losses and potentially the need to expand the electricity transmission grid.

Competition in the retail sale of electricity will create more opportunities for combined heat and power. Energy produced on-site may not only be used at the site, but may be sold to energy marketers, utilities or transmission and distribution companies, potentially improving system reliability.

On May 4th, 2005, at the 6th Annual CHP Policy Summit in Washington, DC, David Garman, Assistant Secretary for Energy Efficiency and Renewable Energy, renewed the compact for another five years. The compact was signed by representatives of the U.S. Department of Energy, the U.S. Environmental Protection Agency, the U.S. Combined Heat and Power Association, the CHP Recycling Energy Communications Council, and the International District Energy Association.

Purpose of This Legislative Toolkit

The Northeast-Midwest Institute (NEMW), a Washington-based, private, non-profit research organization, serves the research and outreach needs of the Congressional and Senate Northeast-Midwest Coalitions. Members of Congress from the eighteen states in the Northeast, Midwest, and Mid-Atlantic regions of the US make up the coalitions. Formed in the late 1970s, the institute fulfills its mission by conducting research and analysis, developing and advancing innovative policy, evaluating key federal programs, disseminating information, and highlighting sound economic and environmental technologies and practices.

The Institute has joined with many partners, including the DOE and EPA, in support of the challenge to double the use of CHP in the US by 2010. Institute staff created and distributed this toolkit in support of this challenge. Hopefully the toolkit will aid in the education and outreach efforts of those who understand the benefits of CHP and the barriers preventing its greater implementation.

Types of Information Provided

This toolkit provides information for those who wish to educate their legislative representatives in the states and the federal government. It was compiled in October 2000 and up-dated October 2005. We welcome additional input from the regions and states where there might be some gaps in the identification of the appropriate contact people or contact numbers/addresses.

The toolkit focuses on the states found in the NEMW region. The toolkit does give general guidance to other regions regarding how to locate the appropriate agencies and contact people in these states. Web sites and reference material are sited and addresses given. Anyone wishing additional help locating information or contact people can feel free to email or call the NEMW. Contact Diane De Vaul, ddevaul@nemw.org, or call 202-544-5200.

The toolkit also includes a recent white paper outlining an electricity policy for the Northeast-Midwest states written by the Institute's Executive Director. Also, included are representative cover letters to various legislators, agency personnel, and regulators, as well as a listing of the legislative staff responsible for energy issues to current U.S. Senators.

Lastly, there are additional helpful web sites given such as the US CHPA homepage for added contacts, publications, links, and information. The U.S. DOE Distributed Energy Resource Task Team's web page is also listed for direct information and contact with the DOE CHP Challenge team.

Follow-Up Opportunities

Ideally this toolkit will help efforts to educate and excite appropriate organizations, individuals, and companies in your state and region to understand this highly efficient technology system approach to cleaner and more reliable energy in the US. It is hoped that we can all do our part in making the CHP Challenge a reality.

SECTION II. THE ISSUES

A. National Combined Heat & Power Legislation

Goal

Create a level playing field for combined heat and power (CHP) systems to secure the national benefits of significant improvements in energy efficiency and electric power reliability in US markets.

Strategy

To develop model legislative language that can be used both federally and at the state level to address regulatory and market imperfections that discourage CHP. This language and supporting documentation will be made available to advocates and legislative staff for incorporation in other legislative vehicles. We will also attempt to have the language introduced at the federal level as several stand-alone bills to get the language in play.

Legislative Agenda[1]

Issue areas where legislative action would be potentially helpful to CHP

The primary obstacle to larger-scale deployment of CHP is a policy framework that excludes CHP from energy markets and fails to capture environmental and reliability benefits associated with energy derived from CHP. Cost is no longer an issue: energy services provided by combined heat and power systems (CHP) are often less than those procured through traditional, large electric-only power plants and extensive transmission and distribution (T&D) infrastructure. Paradoxically, however, national policy frameworks often discriminate against CHP systems. Because the nexus between policy and CHP development is so vital that a central mission of the USCHPA is to forge Federal legislation that provides a fair basis for CHP to compete with traditional sources of energy.

This agenda represents a panoply of approaches that the USCHPA might consider in supporting this pursuit. The ensemble is not a comprehensive, unified set of policies, rather, it is an assemblage of the various policies that USCHPA staff, members, and allies have identified as potentially politically viable means of connecting the benefits of CHP to public policy. They are intended to be improved and held ready to submit to the

[1] This legislative agenda came from the USCHPA website.

legislative process when the timing is right, either as elements of other legislative vehicles or as a stand-alone act focus solely on CHP. View entire Legislative Agenda or click direct link below.

Agenda Components

General Energy Policy:
PURPA Protection
Recognition of waste-heat recapture within renewable portfolios

Clean distributed generation and transmission & distribution system policies:
Report on CHP Activities

Utility Regulatory Issues:
Interconnection and Standby Charges
Natural Gas Delivery Rates

Tax Issues:
10% Tax Credit for CHP Investments

Environmental Regulatory Issues:
Output-based allocation

Budget and Appropriation Issues
Office of Electrical Transmission and Distribution
Electric Transmission and Distribution Programs
Advanced Power System Technology Program
Revolving fund for non-profit CHP facilities
Low income program

The Energy Policy Act of 2005 – Opportunities for CHP[2]

This document lists and interprets the provisions of the Energy Policy Act of 2005 that may have some relationship to CHP/DG project or technology development. It also suggests a strategy for the USCHPA and other actors in the CHP community to take maximum advantage of these new provisions of law.

I. Title I - Energy Efficiency
   a. Federal Programs
      i. §101 (new §552 of National Energy Conservation Policy Act [NECPA]) – Energy and water saving measures for Congressional buildings, calls for the Architect of the Capitol to

[2] John Jimison, U.S. CHPA, "The Energy Policy Act of 2005—Opportunities for CHP," U.S.CHPA, Washington, DC, September 23, 2005.

develop an energy and water efficiency plan using life-cycle analysis of energy-saving measures. *Strategy: encourage members to communicate with Architect of Capitol concerning CHP options, offer to assist with life cycle analysis.*

ii. §104 (new §553 of NECPA) for Federal Procurement of Energy Efficient Products. Requires heads of agencies requiring energy-consuming products to use Energy Star products or FEMP-designated products. The General Services Administration and Department of Defense shall list such products in catalogs. *Strategy: USCHPA members should submit their CHP-related products to FEMP for inclusion in catalogs of heating, cooling, and power generation equipment, and provide life-cycle cost data.*

iii. §105 extends Energy Savings Performance Contract authorization for ten years. ***Strategy: for members to seek to have their equipment used by ESP Contractors***.

b. State Programs

i. §123 – Energy Policy and Conservation Act amended to require invitation by Secretary of Energy to each state to review energy conservation, identify opportunities and actions by other states in the region. Authorization of $100 million for 2006 and 2007 and $125 million for 2008 for state energy conservation plans that achieve 25% improvement in efficiency with respect to 1990. *Strategy: RACs and Initiatives to work with states to identify CHP opportunities, obtain DOE funding to support.*

ii. Section 125 – State buildings that achieve 30% reduction in energy use relative to baseline can obtain share of $30 Million authorized toward costs. *Strategy: to assure that CHP is used in such buildings.*

iii. Section 127 – Authorizations to promote State Technology Advancement Collaboratives. *Strategy: to include CHP in technologies to be advanced through state-federal collaboratives*.

iv. Section 139 – Provides for study of utility incentives and disincentives and efficiency programs. *Strategy: assure that study takes full account of CHP potential use and barriers created by current utility practices.*

v. Section 140 – Three to seven states to receive funding for receive share of $5 million authorized to conduct pilot program for reduction of electricity and gas consumption in the state by 0.75%. *Strategy: Demonstrate that CHP can easily provide such savings.*

II. Title II - Renewable Energy

a. Programs supporting opportunities from landfill gas, biomass, biofuels provisions. *Strategy: look for CHP opportunities using renewable fuels.*

III. Title IX Research and Development

a. Subtitle B – Distributed Energy and Electric Energy Systems

i. §921 – Authorizes $240, $255, $273 million respectively in 2007, 2008, and 2009 for R&D in distributed generation, with $20

million earmarked for micro-cogeneration in 2007 and 2008. *Strategy: work to assure appropriations matching authorized levels.*

ii. §922 – Creates High Power Density Industry Program to perform R,D&D to improve efficiencies of energy for high power density facilities such as server farms, data centers and telecommunication facilities. *Strategy: note CHP opportunities in such high power density opportunities, seek funding to demonstrate.*

iii. §923 – Authorizes competitive merit-based grants for development of micro-cogeneration in residential sector. *Strategy: encourage members to seek grants, work to assure full funding of grant program.*

iv. §924 – Secretary may provide financial assistance to coordinating consortia programs for use of distributed energy technologies in high energy intensive commercial applications, specifically including CHP. *Strategy: work to assure funding.*

v. §925 – Secretary shall conduct a comprehensive R,D&D program to ensure integrity of electric systems, including (3) technologies contributing to significant load reductions, (7) integration of power systems, including systems to deliver high-quality electric power, electric power reliability, and combined heat and power, and (8) supply of electricity to the power grid by small scale, distributed and residential-based power generators. Secretary shall consult with stakeholders and prepare 5-year plan. *Strategy: participate in plan, comments, to assure maximum reference to CHP in all technical variations.*

b. Subtitle F – Fossil Energy including Coal Gasification and Advanced Combustion Systems

i. Authorization for ongoing work in fossil energy program. *Strategy: seek funding for research and demonstration on industrial-scale smaller coal-gasification, in light of failure of EPAct to provide incentives for IGCC of less than 400 megawatts or loan guarantees for coal gasification projects of less than 100 megawatts.*

IV. Title XII – Electricity

a. §1211 – Electric Reliability Standards (new §215 of Federal Power Act) – FERC must implement new reliability structure assuring compliance of all actors on the grid – including merchant generators (and presumably demand response, capacity resource, and other potential CHP users) with reliability standards. FERC's Notice of Proposed Rulemaking in this regard was issued on September 1, with a thirty-day comment period after Federal Register publication. *Strategy: consider filing comments in rulemaking emphasizing reliability potential of ancillary services from CHP/DG.*

b. §1221 – Siting of Transmission Facilities (new FPA §216) – Secretary of DOE must study transmission congestion in consultation with the states

(every three years), designating those areas with congestion as national interest electric transmission corridor. Commission may authorize permits for transmission if (1) state cannot approve (2) taking interstate benefits into account or (3) has withheld approval more than a year after corridor designation. *Strategy: Demonstrate that CHP/DG has the ability to backfeed power that may help defer requirements for new transmission in such corridors, and should be considered in any study of congestion.*

c. §1223 – Study of Advanced Transmission Technology -- Definition of advanced transmission technologies specifically includes distributed generation as one to be included in the study. *Strategy: Participate in study to emphasize potential role of DG/CHP in offsetting, unloading transmission grid.*

d. §1224 – Advanced Power System Technology Incentive Program – DOE makes incentive payments to eligible owners of advanced power system technologies (including fuel cells, turbines, or hybrid power systems or power storage system) to "increase power generation through enhanced operational, economic, and environmental performance" (payments of 1.8 cents per kWh) or to "qualifying security and assured power facilities" (payments of 0.7 cents per kWh) up to the first 10 million kWh ($180,000 per year, $70,000 per year respectively). *Strategy: emphasize potential CHP use of such technologies as means of helping them meet economic thresholds.*

e. §1234 – Study of the benefits of economic dispatch in the electricity industry – Study is intended to review dispatch procedures to see benefits of allowing non-utility energy to be dispatched [Study will be performed for DOE by Alison Silverstein]. *Strategy: Participate in study, seek demonstration of ability of utilities to model supply side like demand side of market without requiring separate dispatch control for all small generators, especially since CHP use (and thereby electricity supply available) is normally driven by demand for thermal energy.*

V. Subtitle E – Amendments to PURPA

a. §1251 – Adds Net Metering, Fuel Source, and Fossil Fuel Generation Efficiency standards to PURPA, requiring states to consider them. *Strategy: work with Small Gen Coalition, regional initiatives, IREC, others to intervene in state proceedings.*

b. §1252 – Smart Metering standards are required to be considered by the state regulators. Includes study by DOE of demand response potential to be completed 180 days after enactment. *Strategy: monitor study to assure ability of CHP/DG to participate in demand response programs.*

c. §1253 – Ends mandatory purchase and sale requirements from qualifying facilities on utilities in areas where QFs can purchase and sell in competitive markets. Requires FERC to initiate rulemaking to modify standards for QFs in areas where utility monopoly persists, under new , vague, and problematic guidelines. *Strategy: Participate fully in FERC rulemaking to assure reasonable interpretations of new standards leave*

room for legitimate cogeneration projects to be designated Qualifying Facilities.

d. §1254 – Interconnection standards based on IEEE and NARUC standards must be considered by all states, rulemakings to begin within one year and be completed within two years. *Strategy: work with Small Gen Coalition, regional initiatives, IREC, others to intervene in state proceedings.*

VI. Subtitle F – Repeal of PUHCA

a. §1262 preserves PUHCA definitions.
b. §1263 repeals prior operative provisions of PUHCA.
c. §1264 provides federal access and §1265 state access to holding company and associate books and records relevant to consumer rates.
d. §1266 exempts QFs, EWGs, and foreign utilities from records requirements.
e. Establishes FERC authority to review electric utility mergers.

Strategy: Monitor developments to see if non-competitive utilities use absence of PUHCA to abuse or suppress competition from DG/CHP.

VII. Tax Incentives

a. §1301 – Renewable Electricity Production Credit extension amends Section 45 of Internal Revenue Code to include new trash combustion facilities, but excludes those which have received Section 29 credit for use of landfill gas. *Strategy: emphasize potential to do CHP with renewable and bio-fuels.*

b. §1331 – Energy Efficient Commercial Buildings deduction for the cost of energy efficient equipment (up to $1.80 per square foot) including heating, cooling, ventilation and hot water systems that reduce energy and power costs relative to a reference building by 50%. The deduction may be claimed by a third party for equipment installed in a public building. *Strategy: encourage members to seek incentive for commercial CHP installations.*

c. §1332 – Credit for Construction of New Energy Efficient Homes allows credit of $1,000 to $2000 for new homes with heating and cooling energy consumption at least 50% below comparable building units, with building envelope responsible for at least 1/5 of the 50% reduction. *Strategy: encourage members to seek incentive for residential CHP installations.*

d. §1335 – Credit of $500 per kW of installed residential fuel cells. *Strategy: emphasize CHP potential for fuel cells, argue that kilowatt-equivalent of heat recovery be counted toward creditable output.*

e. §1336 – Credit for business installation of qualified fuel cells and stationary microturbine power plants of 10% and 30%, respectively, over 2 years (not after 12/31/07). Fuel cells are greater than 0.5 kW in capacity with electrical efficiency of at least 30%. Microturbines are defined as those under 2 MW with electricity efficiency of not less than 26%.

VIII. Miscellaneous Provisions

a. §1405 – National Priority Project medals may be awarded to high efficiency projects using fuel cells, biomass, and renewables.

IX. Climate Change

a. §1610 – Cabinet-level Committee on Climate Change established to report within 18 months a national strategy to promote deployment and commercialization of greenhouse gas intensity reducing technologies and practices, and an inventory of such technologies. Climate Change Technology Advisory Committee formed of private sector actors to report within one year on the barriers to use of such technologies and recommendations for removing such barriers. *Strategy: participate in Climate Change Technology Advisory Committee to emphasize GHG reduction effects of CHP, assure that CHP is prominent in inventory of greenhouse-gas reducing technologies, working with EPA Partnership.*

b. §1611 – Secretary of State shall create inventory of climate change reducing technologies and promote their use and export to developing countries, specifically including demonstration of cogeneration technologies. *Strategy: work to assure prominent role for CHP technologies in inventory, promote overseas demonstrations by members.*

X. Incentives for Innovative Technologies

a. §1702-1703 – Secretary of Energy may authorize 80% loan guarantees for projects that reduce greenhouse gas emissions employing new technologies not already commercially available, specifically including efficient electric generation, transmission, and distribution technologies, efficient end-use energy technologies, and fuel cell technologies. *Strategy: encourage members to seek loan guarantees for innovative CHP projects to assist financing.*

XI. Studies

a. §1817 – Study of the benefits of distributed generation to the grid, to the public interest, and to other parties. Strategy: participate in study, assure that results are positive and that published study is widely disseminated and used in state regulatory proceedings for rate credits.

Elements of the recently passed Energy Policy Act of 2005 incorporate some policies that will help the United States realize the benefits of combined heat and power.[3] However, many CHP advocates see the new law as a "glass half full." While the bill contains important provisions encouraging CHP, other important provisions such as a proposed ten percent investment tax credit for new CHP properties got left on the cutting room floor.

Federal Energy Regulatory Commission (FERC)

STANDARD MARKET DESIGN (SMD)

FERC continues to show its determination to restructure interstate and wholesale electricity markets, despite the misgivings of many state regulators and utilities who saw in the California debacle a lesson about not trying to reengineer electricity markets. In July 2002, FERC issued its long-anticipated Notice of Proposed Rulemaking (NOPR) to create a Standard Market Design (SMD) for all interstate and wholesale power markets.

[3] U.S.CHPA, "CHP Proponents Find Opportunities in New Energy Law," U.S.CHPA, Washington, DC: August 10, 2005.

The goal is to create consistent and seamless regional markets under the authority of regional authorities. FERC intends to eliminate remaining discrimination transmission-owners may show to their own affiliated generators, and thus create more appropriate conditions for independent generation. FERC proposes that transmission rights be priced on the basis of Locational Marginal Pricing, which awards a premium to generation that avoids congested transmission paths, such as most CHP units which are sited at their load.

While CHP projects will benefit from such improved market access in many instances, and should also benefit from locational transmission pricing, the most significant aspect of this 600-page rulemaking proposal for CHP may be its proposal to require regional grids to assure system resource adequacy by contracting for generation or demand responsiveness. The requirement that regional Independent Transmission Providers demonstrate adequacy of resources to meet need, including contractual ability to assure additional capacity or schedule load to be off the system when needed, potentially opens opportunities for CHP projects to participate in new ways in evolving electric markets. Because of these aspects of the so-called "GigaNOPR," USCHPA expects to comment on and be involved in its further consideration, favoring the ability for CHP plants to be integrated into the new competitive regional markets FERC envisions.

INTERCONNECTION: LARGE AND SMALL GENERATOR

On May 12, 2005, the Federal Energy Regulatory Commission issued standard procedures for the interconnection of generators no larger than 20 megawatts. The Commission has designated it as Order No. 2006. This rule is intended to move the country “a step closer to truly non-discriminatory, competitive bulk power markets” and help preserve grid reliability, increase energy supply, and lower wholesale electric costs. The rule applies only to interconnections with facilities already subject to the jurisdiction of the Commission; the Commission emphasized that it does not apply to local distribution facilities. This rule complements the final rule the Commission issued in July 2003 for facilities larger than 20 megawatts (Order No. 2003). The final rule is effective 60 days after its publication in the Federal Register. Regional transmission organizations (RTOs) and independent system operators (ISOs) have an additional 90 days to comply. A press release announcing the order is available at http://www.ferc.gov/press-room/pr-current/05-12-05.asp. A complete copy of the rule is available through http://elibrary.ferc.gov/idmws/search/fercadvsearch.asp (search on Docket # RM02-12, subdocket # 000).

On July 23, 2003, FERC announced it has set new generator interconnection standards, proposed expedited procedures for small generators and that these actions will facilitate infrastructure development. View FERC News Release. (Docket Nos. RM02-1-000 and RM02-12-000). More history of the process follows.

In August 2002, FERC acted on issues of small-generator interconnection policy. The Commission issued a decision by notation creating a new proceeding to adopt interconnection rules for generators of 20 megawatts or less.

The Commission's Advance Notice of Proposed Rulemaking (ANOPR) (Docket RM02-12-000) severed small generation issues from the rulemaking it is already conducting on interconnection policy (RM02-1-000) in which USCHPA filed comments on June 17, 2002.

USCHPA was very pleased that FERC's substantive policy as proposed in the ANOPR was adopted directly and verbatim from the USCHPA proposals attached to our comments on the Interconnection NOPR for units from 2 to 20 megawatts. FERC found that our suggested proposals were reasonable and based on working standards in PJM and ERCOT regions, and has directed all parties to start from our recommended policy in looking for consensus. The burden is effectively placed on opponents of small generator interconnection as we proposed it be done to demonstrate why FERC should not adopt our substantive policy. This can only be seen as a significant victory for USCHPA in its efforts to promote appropriate policy, but the launching of a new consensus-seeking process means that there is much more to be done to assure ultimate success. View the USCHPA News Bulletin including this FERC information.

For background on FERC efforts in 2002, visit the USCHPA Policy Alerts archive.

B. WHITE PAPER:

An Electricity Policy for the Northeast-Midwest

by Dick Munson

July 2005

The Northeast-Midwest could become the center for electricity innovation. The region already hosts shining examples of recycled energy, modern technologies, and far-sighted local plans. Opportunities to further enhance the region's economy and environment through electricity innovation are enormous.

It must consider electricity production and use since power generators are one of the region's largest businesses, they supply a critical economic resource, and they are the basin's largest polluters. Also unfortunate is the limited nature of most discussions about electricity policy, which focus on subsidizing preferred fuels rather than on creating an economic climate for innovative technologies to thrive in the marketplace. Most utilities, for instance, want to continue their mix of coal-fired power plants and nuclear reactors. Some environmental groups, wanting to take advantage of the region's coal yet reduce the pollution associated with its burning, propose substantial taxpayer benefits for coal gasification; others argue for government to support biomass and solar technologies.

Such shortsighted approaches fail to appreciate that the region is on the verge of a tremendous explosion in energy innovation. Entrepreneurs advancing an array of modern technologies could double the electric system's efficiency, cut the generation of pollutants and greenhouse gases, expand consumer choices, enhance productivity and economic development, and spawn a multi-billion-dollar export industry. The technological revolution, however, needs to be matched by a policy revolution. Congress in 1978 opened monopoly markets slightly to modern technologies, and the Federal Energy Regulatory Commission and several state regulators have sought to further encourage electricity entrepreneurs. Yet scores of laws and regulations still protect old-line monopolies and lock out the most promising innovations. States and cities could lead the nation in overcoming those legislative and regulatory barriers and enable the region to become the center of power innovation.

A Superior Form of Energy

Electricity is clean at the point of use, capable of performing many tasks, and easily controlled. Such attributes have increased its share of total energy use over the past three decades from 25 percent to nearly 40 percent. Yet unlike water and natural gas, electricity is not a substance, but a physical effect occurring throughout the wires that conduct it. This power does not exist naturally in quantities that can be manipulated for our benefit. It also cannot be easily stored. Its delivery, in fact, requires the ultimate just-in-time enterprise that balances supply and demand at every instant.

This wonderful, drudgery-reducing form of energy has changed our lives. Electric lights lengthened our days. Electric elevators and streetcars altered our cityscapes. And electric processes continue to accelerate an industrial revolution with precision machinery.

Electricity's profound impacts can be traced over only a few generations. My grandparents were born in houses that relied on candles and kerosene lamps for light and on wood-burning stoves for heat and hot water. Their first refrigerator was a leaky chest on the back porch into which my grandfather regularly placed fifty-pound bags of ice. By the time my father entered high school, his family enjoyed running water warmed by an electric heater. Still, my parents initially had to put their wash through a hand-powered wringer and placed those clothes on an outside line because their washing machine lacked a spin cycle and they had no dryer. Only when I became a teenager did wall-mounted air conditioners make hot summers more tolerable, and my own children now cannot imagine that I suffered through school without a computer or electronic games.

Electricity may be wonderful and a necessary part of modern life, but its generation does have downsides. Power plants spew two-thirds of the nation's sulfur dioxide emissions, one-third of the nitrogen oxides that cause smog, one-third of the carbon dioxide (a greenhouse gas), and one-third of mercury emissions. They have other negative impacts as well. For example, the 1,108 generators in the Great Lakes basin, are the largest consumers of the region's water. Hydroelectric dams disrupt instream flows, and thermal facilities – those that rely on nuclear power or the burning of coal or gas – entrain millions of fish and heat the region's rivers and lakes. Some utilities use almost 2 billion gallons daily to cool a large power plant.

The U.S. power system, although remarkable, is rickety and old. The average generating plant was built in 1964 using 1959 technology, and more than one-fifth of U.S. power plants are more than 50 years old. Today's high-voltage transmission lines were designed before planners ever imagined that enormous amounts of electricity would be sold across state lines, and, consequently, the wires often are overloaded and subject to blackouts. One outcome of this overloading has been an increase in line losses from 5 percent in the early 1980s to 10 percent today, placing a little-recognized $12-billion annual "tax" on consumers that didn't exist 20 years ago.

Another problem is that the average efficiency of generators has not increased in the past 50 years. While the efficiency of computers and electronics has soared, power plant efficiency has been stuck at approximately 33 percent. That means for every unit of fuel, two-third of it is wasted, sent up the smokestacks or down the water pipes as waste heat.

The system's waste is substantial and has serious consequences. U.S. generators throw away more energy than Japan consumes. High energy prices are driving manufacturers and their U.S. jobs to locate in other countries. Unreliable supplies are shocking the nation's computer-dependent industries.

A Changing Industry

Electricity is a huge business. The traditional generators and deliverers of power – electric utilities – hold assets exceeding $600 billion and have annual sales above $260 billion. They are this nation's largest industry – roughly twice the size of telecommunications and almost 30 percent larger than the U.S.-based manufacturers of automobiles and trucks.

This huge business, however, is changing. For almost 80 years, it was based on the model of a monopoly, overseen by a state agency, controlling all power business within its service territory. The Public Utility Regulatory Policies Act of 1968 provided the first crack in that monopoly structure, and now the bulk of new power generation is provided by independent generators.

Most policy discussions about electricity over the past several decades have taken two forms. First, some have argued that power should be provided by private or investor-owned companies, while others favor public or government-owned enterprises. That public-private battle certainly continues as each side labels the other either a robber baron or a socialist.

The second debate could be described as fuel bickering. Some favor nuclear power, others embrace solar and wind, while others support coal and its gasification. The battle amongst the various fuels has led to enormous taxpayer expenditures, a good portion of which has been wasted.

The policy focus, instead, should be on innovation and efficiency. The issue is no longer whether the nation's and region's interest is better served by profit-seeking monopolies or by government-owned monopolies. Today's debate must be about what balance of competition and regulation will deliver more consumer choices, cost savings, environmental sustainability, and reliable electrical service.

Technological Innovations

Technological advances are transforming the electricity industry. Compared with the decades-old, efficiency-stagnant generators protected by tradition-bound utility monopolies, an array of modern equipment offers opportunities for new and innovative players to enter the electricity market. Such technologies, if not blocked by outmoded

policy, could vastly increase productivity, expand consumer options, and reduce pollution. They are particularly important to northeastern and midwestern states that lack traditional energy resources and need to deploy power efficiently.

Consider what's happening with the recycling of energy at several steel mills along Lake Michigan's southern shore. At U.S. Steel's Gary Works, for instance, an entrepreneur is producing 161 megawatt of power – enough to supply a small city – from the gas that used to be flared from the giant blast furnaces. Similar processes are working at Ispat Inland's steel-making operation in East Chicago, Illinois; sixteen heat recovery boilers capture and utilize the waste heat from that steel company's metallurgical coke-making facility, and a desulfurization process and fabric-filter system make Ispat the steel industry's environmental standard. The potential for such recycled heat exceeds a substantial 45,000 megawatts of electricity – the equivalent of 60 large coal-fired power plants – and could reduce carbon dioxide pollution by 320 million tons. Recycled energy is every bit as environmentally friendly as heat and power from renewable energy sources, yet few people – even environmental advocates – pay it any mind.

Another hot item is the cogenerator. This ingenious machine, a primitive version of which Edison employed at his Fleet Street power plant, produces both heat and electricity and can mean huge savings for consumers that might otherwise vent most of their energy to the great outdoors. A cogenerator captures the usually wasted heat to warm buildings, power chillers, dry paints and materials, and run an array of industrial processes. The benefit of cogeneration – sometimes called combined heat and power – is efficiency. The hybrid machines more than double the deployment of useful energy. A power plant producing only electricity is approximately 32 percent efficient, while a cogenerator using the same amount of fuel – but utilizing both electricity and heat – can be 80 percent efficient. Despite the economic downturn, some 31,000 megawatts of cogeneration capacity were added in the United States between 1998 and 2002, and the identified potential exceeds 200,000 megawatts.

Less noticed but equally productive are back-pressure steam turbines that capture the energy when industries or institutions reduce pressures in their steam pipes. Many universities, hospitals, and industrial buildings, particularly in colder climates, employ district heating systems that distribute hot water or steam through pipes to buildings throughout their complexes. Few of these institutions, however, capture the pressure reduction when valves cut the high-pressure steam coming from the generator to the low-pressure steam that can be handled by individual buildings. Lumber, pulp & paper, food, refining, and chemical firms also could employ similar back-pressure steam turbines to extract the energy released when they reduce steam pressure in order to run different industrial processes or when they release pressurized flue gas. Similarly-designed expansion turbines take advantage of the pressure drop when natural gas in high-pressure pipelines is decompressed for local networks. These simple, micro turbines are relatively inexpensive, the "fuel" is recycled and free, and their U.S. potential exceeds 6,500 megawatts or the output of 13 large coal-fired power plants.

Huge energy savings can result from the widespread adoption of seemingly simple technologies that increase energy efficiency. Compared to the basic incandescent bulb, for instance, compact fluorescent lamps consume one-quarter the energy and last seven times longer. Modern compressors and heat exchanges can reduce dramatically the operating costs of refrigerators. Architects can make better use of natural lighting and ventilation, and the federal government's Energy Star program highlights electronic devices that cut the standby consumption of computers and other equipment. Numerous energy management firms install sophisticated monitors and controls that trim costs and pollution, and scores of companies are devising more efficient and cleaner ways to produce paper, aluminum, steel, and chemicals.

Such efficient technologies already have reduced the nation's energy intensity. From 1973 to 2000, this measure of energy used per unit of economic activity fell 42 percent in the United States. In essence, the nation produced more with less power. The government's national laboratories maintain the energy-savings potential remains great – almost 50 percent for lighting and space heating and cooling, and about 33 percent for refrigeration, water heating, and iron and steel production. Advancing the efficiency resource has meant less need for electricity generation and transmission and their accompanying economic and environmental costs. New efficiency standards for appliances could further reduce electricity demand over the next 20 years by 25,000 megawatts, the equivalent of 50 coal-fired power plants, yet one of the Bush administration's first acts was to roll back air-conditioner efficiency standards.

Another modern technology is the combined-cycle gas turbine, made possible by advances in jet airplane engines that resulted from cash-strapped airlines demanding lower fuel costs and the military demanding better efficiency. These innovative turbines capture waste heat from the combustion turbine and use it to power a steam turbine. Put another way, the heat from burning natural gas or some other fuel is cycled twice through turbines in order to generate more electricity. (Unlike cogenerators, however, the remaining heat is vented and not captured.) Combined-cycle units, although they now generate only 3 percent of U.S. electricity, account for 88 percent of planned power plants. Because their relatively low emissions don't spark lengthy environmental reviews, a power-only, natural-gas-fired unit can be sited and licensed in less than 18 months. Combined-cycle units, while still substantial in size, can be mass produced to meet near-term demands for power.

Improvements in truck turbo-chargers and hybrid electric vehicles have spurred a slew of micoturbines, which provide electricity and heat or cool air to small buildings and commercial businesses. These innovations feature a shaft that spins at up to 100,000 rpm and drives a high-speed generator. Because microturbines use recuperators to transfer heat energy from the exhaust steam back into the incoming air stream, they are far more efficient than other small combustion turbines. The recuperators also lower the exhaust temperature to the point where nitrogen-oxide pollution is not formed. Mass production should soon lower costs to only $250 per kilowatt, making them attractive to the residential market. Capstone Turbine, headquartered in Chatsworth, California, is selling gas-powered microturbines – ranging in size from 24 kilowatts (enough to power a home)

to 500 kilowatts (enough to power a McDonald's) – whose operating costs are about a third of a comparable diesel generator's. Maintenance costs are relatively low because microturbines have only one moving part, the high-speed shaft spinning on air bearings. ABB, a large European engineering firm and generating-equipment manufacturer, has abandoned the construction of nuclear reactors in favor of producing and integrating efficient microturbines.

Such small units also can be good for the environment. Kawasaki's one-megawatt generator, which uses a catalytic combustor, is the world's cleanest gas turbine. It emits only two parts per million of nitrogen oxides compared to the roughly nine parts per million for the best 250-megawatt gas turbine. Small-scale fluid bed boilers also allow for decentralized and relatively clean coal burning; these generators emit little nitrogen oxide or sulfur dioxide, and their excess steam can be captured for increased fuel efficiency.

Wind turbines are another increasingly-sophisticated technology, and, although starting from a relatively small base, they represent the world's fastest growing energy source, expanding some 30 percent annually. Progress in the United States, while substantial, has depended upon a federal tax credit equaling 1.8 cents per kilowatt-hour. Wind turbine performance has improved dramatically as a result of better rotor blades and controls. Larger turbines also are lowering costs, which average, depending upon wind speed, about $0.04 to $0.06 per kilowatt-hour. Wind technologies can be deployed in centralized wind farms or on a smaller scale, as evidenced by the retail chain Target marketing a one-kilowatt Bergey wind machine for home use.

Among the more promising, but not yet widely commercialized, developments are hydrogen fuel cells that produce an electric current and heat from chemical reactions rather than from combustion. They work by combining hydrogen with oxygen from the air, and their waste product is simply water. Although similar to a battery, fuel cells are recharged by the addition of hydrogen. Despite relatively high costs (more than $3,000 per kilowatt-hour), fuel cells are attractive in niche applications because they emit negligible pollution, have very high electric efficiency, employ few moving parts, require low maintenance, and are quiet. Of the several types of fuel cells, perhaps the most attractive is the proton-exchange membrane (PEM), which uses a special polymer "filter" that looks like an ordinary sheet of plastic wrap. Daimler-Chrysler and Toyota already are using PEM units in cars, while General Motors and Dow Chemical are installing a large-scale proton exchange membrane fuel cell (up to 35 megawatts) at the giant chlorine-production plant in Freeport, Texas.

Hydrogen also can store and carry energy directly. One advocate says, "Hydrogen as a widely used energy carrier is essential and inevitable," yet other researchers argue that using electricity directly remains more efficient than making hydrogen to store and transport power. The transition to a hydrogen economy, although promising, will take time and demand substantial costs. According to the National Academy of Sciences, it will require "a comprehensive, long-range program of innovative, high-risk/high-payoff basic research" in catalysis, nanomaterials, membranes, and separation. That report

makes a specific plea for expanded research into distributed hydrogen production and storage systems.

Another innovation is the photovoltaic cell, a solid-state device that converts sunlight into electricity. PV costs have fallen fourfold in the last 15 years and further reductions seem likely because of advances in the manufacture of silicon wafers. Firms are developing more efficient solar cells as well as modules that can be integrated into a building's structure. At current prices, approximately $0.25 per kilowatt-hour, photovoltaics can compete in niche markets, often in rural areas where it is more costly to extend transmission and distribution lines, yet they remain about three times the cost of conventional electricity.

New technologies also are improving the production and processing of biomass, which includes wood, forestry and farm wastes, municipal garbage, and crops grown for energy use. These sources can be burned as well as converted into gaseous and liquid fuels. Biomass-powered electricity generation doubled in the U.S. from 1987 to 1999. Sweden, which has established willow tree plantations, intends to obtain 40 percent of its energy from biomass by 2020.

External heat generators produce power not by explosive internal combustion but by an external heat source, such as a continuous-combustion burner. When burning fossil or biomass fuels, such systems avoid temperature spikes, making emissions very low and easy to control. Stirling engines, one form of external heat generator, closely couples a burner to a heat exchanger that induces harmonic oscillations in a piston; the result is a highly-efficient system that can deliver ten units of electricity and 90 units of useful heat from 105 units of natural gas. Thermo-photovoltaics generate electricity from infrared radiation, typically radiant heat from a burner or from concentrated solar energy. More esoteric are the space program’s alkali metal thermal-to-electric converters that use a burner to vaporize potassium or sodium; in the last three years, efficiencies of these low-noise cells have risen from 2 percent to 20 percent.

Advocates of centralized power point to new nuclear designs, such as the pebble-bed modular reactor (PMBR) that would employ tennis-ball-sized "pebbles" filled with uranium oxide granules. Compared to reactors from the 1970s, the smaller PMBRs are promoted as safer, quicker to construct, and less expensive. Although PMBR would emit no air pollution, it still would produce long-term radioactive wastes, and most investors (as well as the general public) remain skeptical of nuclear technologies after past accidents and cost overruns.

To continue burning the nation's substantial supply of coal, other engineers advance processes that convert coal into a gas. When subjected to heat and pressure, coal breaks down into a relatively clean-burning "syngas" of hydrogen and carbon monoxide, which can then be piped to turbines and burned. The combined-cycle process uses the waste heat to create steam and additional electricity. Without using the scrubbers that usually clean pollutants, four coal-gasification pilots – including a 250-megawatt station in West Terra Haute, Indiana – are releasing significantly less sulfur, nitrogen oxides, and

mercury than conventional coal-powered generators. The technology, however, remains expensive, and risk-sensitive power companies have been reluctant to invest, although the climate may change if stricter air pollution regulations are enforced.

All of these innovations, of course, need to be compared to mature technologies that now dominate the electricity industry. Today's centralized coal plants, which account for 56 percent of U.S. power, have not enhanced their delivered efficiency in more than 43 years, and their last significant improvement – supercritical boilers – was perfected in the mid 1950s. Oil and gas-fired plants also represent dead-end technologies.

Innovations also are occurring in the transmission and distribution of power. The traditional power industry's knee-jerk reaction to the 2003 blackout was "expand the grid." Specific problem areas certainly need to be upgraded, yet holistic planning and modern technologies could minimize substantially the grid's vulnerability.
A growing number of engineers argue that the 2003 blackout should provoke a dramatically new approach to delivering electricity. They draw a comparison to computers and their evolution from centralized mainframes of the 1960s that were tied in a hub-and-spoke arrangement to today's decentralized web in which distributed computers are networked. These engineers foresee a radical new power network – one that's adaptive, self-healing, and compatible with distributed, on-site energy sources. It would have sophisticated sensors to anticipate crises, electronic circuits to redirect wayward currents, and a computerized "brain" to power down dishwashers and other noncritical electricity loads when the system is nearing its capacity. Such automatic adjustments would be unnoticeable – slightly dimming overhead lights or raising the summer temperature by a degree or two – but throughout a skyscraper or at a factory they would result in substantial energy savings.

Microgrids link small generators within an industrial park or housing complex, and sophisticated software based on neural networks (a type of self-organizing system in which a computer teaches itself to optimize power transfers) can increase power quality and reduce the risk of overloads. The biggest barriers to such advancements are regulatory rather than technical. Although microgrids would save money and enhance reliability, state laws declare that only utility monopolies can string wires across streets or among customers. Microgrid advocates suggest that revised interconnection requirements would spark enormous benefits, as they did in the telephone industry in 1968 when the Carterphone legal decision enabled customers to connect to non-AT&T equipment and enjoy a world beyond the monopoly's black rotary telephones.

The University of California at Irvine, working with Southern California Edison and Southern California Gas Company, has created a "premium-power park" that deploys distributed generators and microgrids to supply the super reliable power needed by many of today's innovative industries. In the jargon of utility engineers, today's grid provides "three-nines" reliability, or power delivered 99.9 percent of the time. Sounds good, but that 0.1 percent means hours of disruptions, surges, and sags throughout a year, and those hours translate into millions of dollars in lost revenue for many businesses. The goal of

electrical engineers, such as those in Irvine, is to achieve nine-nines reliability, or uninterrupted power 99.9999999 percent of the time. Noting the modern economy's need for steady electricity, such premium-power parks could be launched in urban centers throughout the country.

Superconductivity, another possible distribution technology, could vastly increase the transmission grid's load and reliability. The Electric Power Research Institute predicts this advancement would at least triple the carrying capacity of power lines. Testing that notion, the U.S. Department of Energy and the Long Island Power Authority are sharing the $30-million cost for laying underground cable that will power 300,000 homes. Yet superconducting transmission lines remain expensive, largely because many of the prototypes contain a lot of silver. Engineers are experimenting with alternatives, including coated conductors that avoid the costly metal. Sumitomo Electric Industries, Japan's largest producer of cable, announced in late 2004 a process to make 3,000-foot-long sections of ceramic wire that transmits 130 times more electricity than normal copper lines. Optimists suggest such improved models will be ready for the marketplace by 2005 and that mass production will cause further price declines. Skeptics wonder about the engineering advances as well as the willingness of utilities and regulators to invest in new technologies.

Another transmission innovation is a new class of conductors that expand and sag far less than current wires. Those attributes are important because as electricity pulses, wires heat up, and if they sag too far, high-voltage electricity can arc to nearby trees or structures, possibly causing fires and shorting circuits. Since new low-thermal conductors do not produce as much heat, they can carry more electricity. Such an advancement would help to relieve transmission congestion and enable centralized power plants to send more power over longer distances.

Integrated transmission and distribution planning, however, may offer the best returns. By focusing on customer needs rather than simply delivering electrons, Ontario Hydro and several other electric companies began in the 1990s to reevaluate their power delivery options, particularly the use of efficiency measures or dispersed generators to reduce peak loads. Rather than spend $65 million to upgrade its grid, New York State Electric & Gas Corporation spent only $45,000 on meters and radios that dispatch two small, backup generators when demand is high; such alternative planning provided a 99-percent capital savings.

Improved information, in fact, can provide enormous benefits. When consumers better understand their energy usage and the varying cost of power over time, they make more efficient and cost-saving decisions. The slight adjustment of a thermostat during a heat wave when power demand is at its peak, for instance, can save money for both the consumer and generator of electricity. New York's Niagara Mohawk offers the sophisticated meters that provide many of its largest customers with real-time power prices, enabling them to purchase less-expensive power at night and on weekends when the utility's generators are not stressed and have extra capacity. Rather than consumers paying the same rate whenever they use electricity throughout the month – the common

practice that insulates buyers and sellers from the frequent and often substantial changes in power prices – a study by McKinsey Co. calculates that the availability of real-time pricing across the country would save some $15 billion each year.

Improved price signals, such as transmission tolls, also can encourage efficiency by reflecting the higher costs for moving power when lines are congested. Such charges would spur a shift to distributed generators that do not rely on the grid to deliver electricity.

The ability to trim consumption during peak hours can reduce a utility's expenses significantly. The Electric Power Research Institute estimated that a 2-percent demand reduction in California during the summer of 2001 would have slashed power expenditures by $700 million; another study found a 10-percent reduction would have cut wholesale prices in half. Several companies are marketing electronic monitors that allow homes and businesses to tweak their energy consumption in order to save money. Others are selling software so utilities can shed load by instantaneously reducing by a couple of degrees the thermostats of thousands of customers.

The appearance of so many innovative technologies is surprising since utilities spend so little on research. Compared to the pharmaceutical industry's 12 percent of revenue, power companies devote less than 3/10 of 1 percent on R&D, less, according to one researcher, than the research commitments of the dog food industry. The federal government also has cut its energy research and development by more than a third over the past decade, despite the rise of oil imports and the increasing costs of blackouts. New electric technologies, therefore, result largely from developments within several separate industries. Airplane manufacturers, for instance, introduced the advanced turbines that power companies now utilize, while computer makers enabled the power industry to obtain more sophisticated electricity distribution.

Some analysts argue that today's cornucopia of electric technologies reflect the entrepreneurial climate created by the Public Utilities Regulatory Policy Act of 1978 and the Energy Policy Act of 1992. Others suggest that the development of modern equipment, particularly the cogenerator, forced policymakers to reform the regulated and centralized utility paradigm. No doubt today's opportunities result from some combination of policy and technology, and future benefits will depend upon innovations in both fields.

Policy Barriers

The fact that more efficient technologies are available or just on the horizon does not mean they all will be adopted, or that continued technology development will be a priority of a restructured electricity industry. Whether power innovations are boosted depends a great deal on how policy barriers are removed and open markets are advanced.

To obtain additional savings across the country, what's needed is a policy revolution to accompany the emerging technological revolution. Rather than provide subsidies to

politically-favored technologies, energy laws and regulations must overcome regulatory inertia and become innovation-friendly. Current rules designed to support the status quo – centralized, steam-powered generators controlled by regulated monopolies – include restrictive interconnection standards, counter-productive environmental permits, and outmoded equipment depreciation schedules.

Bringing innovation to the power industry requires a paradigm shift in thinking. More than four generations of Americans have come to accept the notion that electricity is best produced by monopolies at centralized generators. Most take for granted the traditional system in which distant power plants throw away much of their heat, while more fuel is burned elsewhere to produce that same thermal energy. Few appreciate that improved small-engine and turbine technologies have made it more efficient and economical to build dispersed power plants that provide both heat and power to consumers. Although utilities have been protected from market discipline for almost 100 years, few challenge the wildly-inaccurate assumption that the United States already has achieved maximum efficiency.

Crafting the rules for an innovation-based electricity market is an uncertain and complex process. California's "restructuring" experience certainly demonstrates that costly consequences of haphazard planning, yet other states have introduced rules that are increasing consumer options and limiting any producer's market power. In essence, they represent experiments at integrating competition and regulation. These ground rules will be tested and revised, but the reforms demonstrate an ongoing effort to restructure an inefficient system based on centralized power plants and regulated monopolies.

Innovation-friendly markets will require the elimination of numerous regulatory, financial, and environmental obstacles to innovation. Consider the following barriers:

- Dominant power companies limit competition by blocking competitors from connecting to the grid, or by imposing obsolete and prohibitively-expensive interconnection standards and metering requirements that have no relation to safety.
- States ban the stringing of independent wires across any public street, forcing distributed generators to negotiate with their competitors in order to send power to their customers. Developers can build telephone lines, steam tunnels, and internet extensions to their neighboring buildings, but stringing their own electric wires across a street, rather than relying on the utility monopoly, would send them directly to jail.
- The balkanization of state electricity regulation fails to appreciate the interstate nature of electricity sales and discourages efficiency and reliability.
- Utility lobbyists have won state regulatory approval to recover most of their investments in power plants and transmission lines that would not survive in a competitive market. These so-called stranded costs are being recovered through either a fee on future electricity sales or a charge to those individuals or businesses exiting the utility's system, thereby discouraging energy entrepreneurs.
- Fifteen, mostly southern, states prohibit independent sales of electricity to third parties. An entrepreneur, as a result, can install a cogenerator at a chemical plant

but cannot sell the resulting electricity to that facility; instead, he must market his power to the local utility.

- Most states allow only the local utility monopoly to supply backup electricity to an independent generator down for maintenance, and regulators have endorsed high backup rates that assume all distributed generators will fail at the same time during periods of peak demand. Since the need for backup power at any given moment is only about 2 percent of total contracted power, these arrangements impose exorbitant rates on competitors. Unlike insurance premiums of only $2 for $1,000 of coverage, utility monopolies essentially get to charge $1,000 per year for a $1,000 life-insurance policy.
- Many consumers can cost-effectively generate some of their own electricity, but monopolists penalize customers who purchase less than all of their power from them.
- Regulated electricity rates average monthly costs and don't send accurate pricing signals to consumers. Regulators, by allowing utilities to pass all fuel costs to the customers, also provide no incentive for power companies to improve efficiency or install distributed generators.
- Market power abuses can occur when one or two companies own most of the transmission as well as generation facilities in a particular region.
- Depreciation schedules for electricity-generating equipment are, on average, three times longer than those for similar-sized manufacturing equipment. They made sense when a utility monopoly wanted to operate its facilities, whatever the efficiency, for 30 or more years. However, they discourage the introduction of innovative technologies that spur efficiency and productivity.
- Because regulated monopolies obtain a profit on any investment, they have an incentive to build large, expensive, and site-constructed power plants. Such regulation also offers little incentive for utilities to retire those rate-based generators, even when new technologies are more economical, efficient, and environmentally sound.
- The Clean Air Act of 1970 exempted existing electric generating plants from stringent air-pollution rules. More than 30 years later, these "grandfathered" coal-fired facilities keep polluting while emission reductions must be borne by the small subset of new generators. Federal regulations, moreover, fail to recognize that efficient power plants, which emit 20 times less pollution, will curtail the need to generate electricity at dirtier facilities.
- State rules fail to recognize the locational value of generators, even when distributed placements reduce transmission and distribution costs dramatically.
- The U.S. currently measures air emissions based on fuel inputs, usually stated as pounds of pollutants per unit of fuel. Unfortunately, this input-based approach fails to reward power plants that operate more efficiently. In contrast, output-based regulations would calculate emissions based on the amount of electricity generated, thereby rewarding those innovative generators that supply more electricity but less pollutants.
- Although federal regulations clearly require that all generators enjoy ready access to the electricity grid, most transmission/generation owners give priority to their own customers, which they refer to as their "native load."

- Several other countries have systematically eliminated such policy barriers. Portugal, for instance, embraces distributed generation as a means to increase kilowatt-hour while they maintain robust industrial economies. Similar policy innovations are needed for the United States to obtain the benefits of technological advances.

Initiatives

Local electricity-innovation initiatives are plentiful in the region. The City of Chicago, for instance, has adopted an energy policy that focuses on cogenerators that produce both heat and electricity, capturing the usually wasted heat to warm buildings, power chillers, dry paints and materials, and run an array of industrial processes. Using the combined-heat-and-power system at McCormick Place as a model, Chicago projects 1.5 billion kilowatt-hours of electricity from cogeneration by 2010.

Buffalo is developing a district energy project that will produce low-cost heat using wood residues and energy crops grown in the region. The project will initially serve the downtown area, but is capable of being expanded to serve the entire city. It will keep Buffalo's energy dollars in the local community, provide much-needed employment opportunities to construct and operate the system, reduce air emissions, and provide an incentive for companies to move to or expand in Buffalo.

The region, of course, also needs to lead at the national level. Most attention on the energy bill being debated in Congress has focused on drilling in Alaska, but a major regional battle on innovation lurks in the details. Since modern technologies need markets and regional coordination of the transmission grid, regulators and industry engineers in the region have been taking the lead with independent system operators like Midwest ISO that are necessary for fair and transparent trading. Without such unbiased institutions, a dominant utility would control the transmission lines in order to benefit its own generators and block competitors. Unfortunately, lawmakers from the South and Pacific Northwest – who fear losing access to their cheap electricity, much of it subsidized by federal utilities such as the Bonneville Power Administration and Tennessee Valley Authority – are lobbying aggressively to block regional transmission coordination.

Conclusion

Electricity – which provides flexibility, convenience, and controllability – holds enormous promise. This precious energy source altered our landscape and lives, and electrotechnologies have revolutionized the flow of information, the processing of steel, and the construction of machines. Modern electricity-powered applications offer even greater precision and reliability; higher quality, portability, and modularity; enhanced speed and control; expanded productivity and consumer options; and “smarter” and miniaturized designs. Yet innovation in electricity generation and delivery hold enormous promise only if they are not blocked from the marketplace.

Just the environmental benefits alone are enormous since power plants spew almost half of all North American industrial air pollutants, and forty-six of the top fifty emitters are electricity generators. In contrast, new gas turbines emit 500 times less nitrogen oxide per kilowatt-hour than today's older power plants, and modern refrigerators use only 10 percent of the electricity consumed by a unit built in 1975.

Businesses also increasingly realize they need more reliable power than the status quo can provide. Hewlett-Packard estimates that a fifteen-minute outage at one of its chip manufacturing facilities would cost $30 million, or half the plant's annual power budget. According to a microchip executive, "My local utility tells me they only had 20 minutes of outages all year. I remind them that these four five-minute episodes interrupted my process, shut down and burnt out some of my controls, idled my workforce. I had to call in my control service firm, call in my computer repair firm, direct my employees to 'test' the system. They cost me eight days and millions of dollars." No wonder more and more corporations are installing their own modern technologies in order to control costs and increase security.

Timing is critical if the United States is to capture economic and environmental benefits. In the next several years, much of the nation's aging electrical, mechanical, and thermal infrastructure will need to be replaced, offering a unique opportunity to substitute efficient generators for outmoded power plants and old industrial boilers.

The industry that supplies electricity is changing. Once dominated by integrated monopolies, the generation of power has become increasingly competitive as entrepreneurs deploying innovative technologies offer lower-cost and more-reliable electricity. Independent power companies now provide almost one-third of the nation's electricity, up from only 1.7 percent in 1993. From another perspective, the wholesale exchanges by non-utilities soared from 40 million kilowatt-hours in 1986 to 259 million kilowatt-hours in 1998, for an average annual growth rate of 16.8 percent.

Maintaining the status quo is no longer an option, in part because the current monopoly-based structure has forced Americans to spend far more than needed on outmoded and polluting energy services. Yet achieving the benefits of innovation requires the elimination of numerous regulatory, financial, and legal barriers. Restructuring the electricity industry based on the principles of technology modernization, market efficiency, and consumer choice will bring about immense benefits for both the economy and the environment.

While paying attention to national action, much of the needed leadership can come from a region, states, or cities. The region could provide that leadership, overcome policy barriers, and enjoy the benefits of being the center for electricity innovation.

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SECTION III.
EDUCATION & OUTREACH GUIDELINES

A. Contacting Federal and State Policymakers

Contacting public policymakers such as Members of Congress or state legislators to discuss public policy issues of interest to you, your company, and/or customers can be an effective way to facilitate change. Members appreciate and respond to such opportunities—particularly when they are focused; clear in what is being asked of them; and timely.

Often the most effective way to communicate your interest and concerns combines both a written and oral approach. In other words—visit your Congressman or Senator in their office and share with them a brief, written statement of your concern. If a personal meeting isn't feasible, a letter is the next best thing. In either case your communication should be:

- brief;
- focused; and
- timely.

1. Meeting with Policymakers

Set up the meeting by calling either the local office of the congressman/senator/state legislator within whose district or area of representation you or your company reside or their Washington, DC, office in the case of a Member of Congress. When calling request a meeting with the member herself, or if she is not available, the staff member who handles the issue you wish to discuss. Before calling identify either the piece of legislation you wish to discuss or formulate a succinct description of the issue—such as interconnection standards in the electricity title of the Energy Bill, so the scheduler can note the topic you wish to address.

If possible identify and invite others to join you in the meeting. The impact of the meeting will be magnified by gathering together a number of others who share an interest in the same issue. While the group should be limited to a manageable size (probably not more than six or seven, but representing either diverse sectors such as industry, environmental, and universities or diverse companies to make the point that the changes requested have a broad base of support within the member's district or state.

Schedule a time to talk with the others in your group before you meet with the policy maker to go over the focus of your discussion; what you are asking him to do; and to

cover the points you wish to make so you are all clear on the content of the meeting. This discussion can provide the content of the one-page summary you will need for your meeting. (This is described in greater detail below.)

Leave a one-page written summary of your request with the member at the conclusion of the meeting. It will also serve to remind you of the points to be covered in the meeting. List the members that support this request at the bottom along with their affiliation. This is a good place to include others who support your initiative but either couldn't make the meeting because of scheduling problems or in the interest of keeping the size of the group manageable. Also try to meet with policy makers in their Washington, DC, office, but if that is not possible, set up the meeting at their local office. If you do meet at the Congressional district or state office, send a note about the meeting and a copy of the one-page summary to the appropriate staff member in the Washington, DC, office.

2. Summary of your request.

Start the document with a statement of purpose. Write one or two sentences that sum up what you would like the policymaker to do. For example--we ask you to support comprehensive interconnection language in the electricity title of the National Energy Bill.

Follow this with a paragraph or two as a background on what the problem is and why it needs to be addressed.

Follow this with why you are requesting that the policy maker do what you suggest. Explain how what you request will solve the problem and try to address concerns or arguments against your position.

3. Letter Writing:

One of the best ways to communicate with a policymaker is through a well-reasoned personal letter. Taking the time to write a letter shows sincerity and thoughtfulness. Given the time-consuming screening practices that all mail goes through before it is delivered to Congressional offices, however, it is better to send a letter electronically and then follow it up with a mailed copy. Since Congressional offices are inundated with e-mails and faxes it is critical to call the Congressional office ahead of time, find out the name of the staff member who handles the issue you want to communicate about, and explain that you want to send a letter on the subject to the Member of Congress. Ask them what the best way to send that letter would be-- e-mail or fax. You can also follow up with the mailed letter so they have the original copy with actual signatures if necessary or if they think it is advisable. Typically e-mails and faxes should be addressed to the appropriate staff member so they are not lost in the flood of electronic mail that arrives unsolicited. Make sure that the staff member knows who is sending the e-mail or fax and when it will be sent so they can keep an eye out for it.

To find out what issues are being heard in Congress, and other pertinent legislative information, you can check the Internet site Thomas at http://thomas.loc.gov/. The Thomas site also has links to State and Local government Internet sites.

4. General Rules for Letter Writing:

Timing

- The most effective time to write about legislation is when it is still in committee. A letter sent months before an issue is considered is likely to be forgotten; one sent after Congress acts is a missed opportunity.

Style and Format

- Be brief.
- Keep letter to one page and one subject (if you have more concerns, address each in separate letters).
- Do not use a form letter.
- Write legibly or type.
- Include recipient's name and address on both envelope and letter.
- Ask your policymaker for a response.
- Thank your policymaker for his/her cooperation.
- Include your name, address, and telephone number.
- Letters on federal legislation should be addressed to your policymaker's Washington DC office.

Substance

- Identify yourself and your organization. Let them know you're from their home district/state, and/or that you're a member of an organization interested in the legislation.
- Identify the bill number and title whenever possible, otherwise describe the legislation.
- Be polite, give reasons for support.
- Do not use technical jargon. Put your argument in layman's terms.

5. Layout

Be concise. Use 3 or 4 Paragraphs.

1 . Opening Paragraph

State that you are a constituent/voter in policymaker's district. Explain reason for writing. State your position on the issue (support, oppose, wish to amend). Briefly note your credentials and include other pertinent information.

2 . Middle Paragraph(s) (can sometimes use 2 middle paragraphs, but should always remember to keep entire letter to one page)

Describe the importance of the issue. Cite relevant facts and avoid emotionalism. Frame your discussion from a national, rather than personal, perspective.

3 . Closing Paragraph

Request, do not demand, a specific action. Thank the policymaker for his/her consideration of your views. Offer assistance.

6. Guidelines for Mailing and Addressing Federal Policymakers

Locating Federal Policymakers:
To find out who your Members of Congress are, look up your senator or representative online at: http://congress.nw.dc.us/congressorg/search.html

You can phone your senator or representative by calling the US Capitol Switchboard at 202.224.3121.

Addressing Senators:

Title/Heading:

The Honorable (first and last name)
U.S. Senate
Washington, DC 20510

Salutation:

Dear Senator (last name)

Addressing Representatives:

Title/Heading:

The Honorable (first and last name)
U.S. House of Representatives
Washington, DC 20515

Salutation:

Dear Representative (last name):

Salutation to a committee chair or the speaker of the House:

Dear Mr. Chairman or Madam Chairwoman:
Dear Mr. Speaker:

Addressing the President:

Title/Header:

President (first and last name)
The White House
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Salutation:

Dear Mr./Ms. President:

Comment Line: 202.456.1111
Fax: 202.456.2461.
Email: president@whitehouse.gov

4. Guidelines for Mailing and Addressing State Policymakers

Locating State Level Policymakers:

To Find out who your state representatives are, there are a few options. You can go online to the National Conference of State Legislatures (NCSL) Internet site at: http://www.ncsl.org.

You can access most official state websites by typing in the address: http://www.[your state abbreviation].us. For example, the state of New Jersey's Internet site is www.state.nj.us, Delaware is www.state.de.us, and so on.

The blue pages in your local phone book will also contain government contact information.

Addressing Senators:

Title/Heading:

The Honorable (first and last name)
[Your State] Senate
Address

Salutation:

Dear Senator (last name):

Addressing Representatives:

Title/Heading:

The Honorable (first and last name)
[Your State] House of Representatives
Address

Salutation:

Dear Representative (last name):

Addressing Assemblymen or Assemblywomen:

Title/Heading:

The Honorable (first and last name)
[Your State] Assembly

Address

Salutation:

Dear Assembly person (last name):

B. Sample Letters

Example 1. SAMPLE NATIONAL LETTER

January 21, 2006

The Honorable (first and last name)
U.S. Senate Washington,
DC 20510

Dear Senator (Last Name):

As a member of the U.S. Combined Heat and Power Association (U.S. CHPA), I would like you to consider supporting the onsite power generation language sponsored by Senators M and N within the Federal Restructuring Bill, SB 86. As CEO of Company X, I believe the ability to install combined heat and power applications is critical for supplying uninterrupted, reliable, and cleaner power in (your state) and the nation.

Support for SB 86 will help ensure reliability by taking pressure off of the nation's overtaxed electric power grid. In addition, combined heat and power applications provide their users with cheap, efficient, and more environmentally friendly energy. SB 86 will remove barriers to establishing open, competitive markets by addressing national interconnect standards, back-up power and exit fees with regard to onsite generation.

I hope that I can count on you as my senator to support this important legislation. If you wish to speak with me, I can be reached at (phone number). Thank you for your consideration.

Sincerely,

Jane Doe Company

Example 2. SAMPLE NATIONAL LETTER

October 15, 2005

The Honorable (first and last name)
U.S. House of Representatives
Washington, DC 20515

Dear Representative (Last Name):

As plant manager of Industry X in your district, I think you should support the combined heat and power provisions of the Energy Policy bill, HB 666. These provisions will remove the barriers currently in place which make it difficult for plants like mine to reap the many benefits of this form of onsite generation: the use of cheap, reliable, and environmentally friendly energy.

The ability to take advantage of onsite combined heat and power generation takes pressure off the electricity grid and reduces the need for future transmission and distribution lines. HB 666 will remove barriers to deploying combined heat and power in our state and the nation. Manufacturing makes up Z % of (name state's) businesses, so it's essential that we can remain competitive with plants in our neighboring states as well as the global market. I believe being able to operate with the most reliable and cheapest power available will let us do that.

I hope that I can count on you as my representative to support this important legislation. If you wish to speak with me, I can be reached at (phone number). Thank you for your consideration.

Sincerely,

Jane Doe Company Your District

Example 3. SAMPLE STATE LETTER

(4 Paragraphs. Neighboring states have pro-cogen rules, but not yours)

May 5, 2005

Honorable (first and last name)
State Senate or State House or State Assembly
Town, State Zip

Dear Representative (Last Name):

Dear Assemblyman or Assemblywoman (Last Name):

As owner of the Dunkin Donuts on Main Street in Hillsdale, I request your support for Provision 123 in the state restructuring legislation that would remove regulatory barriers to using onsite heat and power generation in facilities like mine throughout our district and the state.

Combined heat and power would afford my company more reliable and more environmentally friendly power, while improving availability and reliability on the electric grid in our region. Provision 123 would afford industries and businesses the option of onsite generation and would also alleviate the pressing need for new and costly transmission and distribution lines.

I am concerned because our neighboring states have already enacted (may enact) legislation/rules that make it easy for companies like mine to use this cheaper, more reliable and more efficient power. This leaves our state at a market disadvantage with regional competitors. Until our state adopts similar legislation, we will continue to lose revenues and a stable tax base to our neighbors.

I hope that I can count on you as my representative to support this important legislation. If you wish to speak with me, I can be reached at (phone number). Thank you for your consideration.

Regards,

John Doe
Company

Example 4. SAMPLE STA T E LE TTER

(4 Paragraphs. Neighboring states don't have pro-cogen rules, why my state should)

May 5, 2006

Honorable (first and last name)
State Senate or State House or State Assembly
Town, State Zip

Dear Representative or Dear Assemblyman or Assemblywoman (Last Name):

As owner of the Dunkin Donuts on Main Street in Hillsdale, I request your support provision 123 in the state restructuring legislation that would remove regulatory barriers to using onsite heat and power generation in facilities like mine throughout our district and the state. It would also give us a competitive advantage over our neighboring states that have yet to enact this pro-business, pro-reliability, and pro-environment legislation.

Supporting Provision 123, which would make combined heat and power applications more readily accessible, would relieve bottlenecking and reliability issues on the electric grid in our region. It would afford industries and businesses the choice of onsite generation for their heat and power, which would improve reliability for the businesses, as well as for all the constituents, who are effected by fluctuations in the electric grid's stability. Onsite generation would also alleviate the pressing need for new and costly transmission and distribution lines.

I believe supporting provision 123 will provide (your state) with a competitive edge over our neighboring states. Removing barriers to onsite cogeneration has the potential to increase our state's tax base by making us more attractive to manufacturers looking to lessen their overhead and stoppage times through the use of cheaper and more reliable energy.

I hope that I can count on you as my representative/assembly person to support this important legislation. If you wish to speak with me, I can be reached at (phone number). Thank you for your consideration.

Regards,

John Doe, Company

Example 5. SAMPLE LETTER TO STATE UTILITY REGULATOR

October 1, 2005

Name of Appropriate Recipient NJ BPU Trenton, NJ 07555

Dear (Name):

I run Company X in town, state, and would like you to support Rule 86 to remove barriers to cogeneration.

The existing rules were effective and useful in a regulated market, but now inhibit the use of distributed energy resources in our deregulated state. Distributed energy resources are critical right now to provide us with cheap, reliable and environmentally friendly heat and power. Deployment of these resources would also relieve the overtaxed electrical grid lessen bottlenecks. They will reduce needs for added transmission and distribution lines, which are expensive and increasingly difficult to gain public support for.

I urge you to support Rule 86. Other states including Texas and New York have already adopted similar rules. If you wish to speak with me, I can be reached at (phone number). Thank you for your consideration.

Regards,

Jane Doe Company

SECTION IV. SAMPLE LEGISLATION

Examples of State Legislative Initiatives

A. NJ Enacted Legislation: Exemption from Exit Fees

28. (New Section) a. Whenever an on-site generation facility produces power that is not consumed by the on-site customer, and that power is delivered to an off-site end-use customer in this state, all the following charges shall apply to the sale or delivery of such power to the off-site customer:

(1) The societal benefits charge or its equivalent, imposed pursuant to section 12 of this act;
(2) The market transition charge or its equivalent, imposed pursuant to section 13 of this act; and
3) The transition bond charge or its equivalent, imposed pursuant to section 18 of this act.
b. None of the following charges shall be imposed on the electricity sold solely to the on0site customer of an on-site generating facility, except pursuant to subsection c. of this section:
(1) The societal benefits charge or its equivalent, imposed pursuant to section 12 of this act;
(2) The market transition charge or its equivalent, imposed pursuant to section 13 of this act; and
(3) The transition bond charge or its equivalent, imposed pursuant to section 18 of this act.
c. Upon finding that generation from on-site generation facilities installed subsequent to the starting date of retail competition as provided in subsection a. of section 5 of this act has, in the aggregate, displaced customer purchases from an electric public utility by an amount such that the kilowatt hours distributed by the electric public utility have been reduced to an amount equal to 92.5 percent provided in subsection d. of this section, the charges listed in subsections a., b., and c. of this section on the on-site customer. Such charges shall not be levied on any power consumption that is displaced by an on-site generation facility that is installed before the date of such finding:
(1) The societal benefits charge or its equivalent, imposed pursuant to section 12 of this act;
(2) The market transition charge or its equivalent, imposed pursuant to section 13 of this act; and
(3) The transition bond charge or its equivalent, imposed pursuant to section 18 of this act.
d. Notwithstanding the provisions of subsection c. of this section, a charge shall not be imposed on power consumption by the on-site customer that is derived from an on-site generation facility:
(1) That the on-site customer or its agent installed on or before the effective date of this act, including any expansion of such a facility for the continued provision of on –site power consumption by the same on-site customer that occurs after the effective date of this act; or
(2) For which the on-site customer or its agent has made, on or before the effective date of this act, substantial financial and contractual commitments in planning and development, including having applied for any appropriate air permit from the Department of Environmental Protection, including any expansion of such a facility for the continued provision of on-site power consumption by the same on-site customer that occurs after the effective date of this act.

B. Tax Exemption for Urban Enterprise Zones

Proposed (Not Enacted) to NJ Restructuring Bill

Provide sales tax exemption and market transition charge discount for energy produced and sold in economic enterprise zones.

Urban Enterprise Zones ("UEZs") are special tax-privileged areas, usually in poor, urban areas. This amendment would give tax benefits to energy producers and consumers in UEZs in order to entice businesses to settle in UEZs. The sales tax on the energy sold would be reduced by 50%. This energy would also be exempt from one half of the market transition charge normally assessed against retail electric sales.

The amendment would not permit the energy sold and produced in an UEZ to be exempt from the societal benefits charge.

This amendment would encourage industrial and commercial development in UEZs. Households in UEZs would also benefit from reduced electric prices.

Add new section to A-10 as follows:

(New Section) a. Electricity generated and consumed in an economic enterprise zone, as defined in section 2 of P.L. 1983, c. 303 (C. 52:27H-62) shall be exempt from the following taxes and charges:
(1) Fifty percent of the sales and use tax imposed pursuant to P.L. 1966, c. 30 (C. 54:32B-1 et seq.) that would otherwise be assessed against the electricity; and
(2) Fifty percent of the market transition charge assessed pursuant to section 13 of P.L. , c. (C.) (now pending before the Legislature as this bill).
b. Electricity referenced in subsection a. of this section would be subject to all other charges imposed on the sale of retail energy pursuant to P.L. , c. (C.) (now pending before the Legislature as this bill).

C. Interconnect Language

DRAFT LANGUAGE FOR INSERTION IN OKLAHOMA'S RESTRUCTURING BILL

To encourage the use of alternate means of providing efficient energy, electricity, heating and cooling, the Legislature authorizes a "combined heat and power" system (CHP) which is an efficient, non-utility generator of electricity to supply electricity along its current or future granted rights-of-way to any customers that contract with the CHP for heating and or cooling.

For purposes of this section, "CHP" means any system that maintains an average efficiency level of 60% or greater (based on overall fuel use and all energy produced and captured) by utilizing all the available heat of energy production to generate steam, hot water, chilled water, electricity or other forms of energy transported to its customers over its own system of wires, pipes and conduits.

The CHP may sell electricity only to its heating and/or cooling consumers and shall therefore be exempt from stranded cost charges, transition charges, exit fees and OCC regulation, but shall

not be exempt from applicable sales taxes or right-of-way fees.

Efficiency shall be certified annually by a professional engineer, licensed by the State of Oklahoma, who is not an employee of the CHP.

All interconnects to the local utility grid and all supporting services required by the CHP's customers for parallel operation, standby, supplemental and backup service shall be consistent with just and reasonable standards and electrical codes, and the provision of such service by the local utility shall not be unreasonably withheld.

D. Avoided Emissions by CHP

NJ Legislative Initiative: Following is a draft insert into section B.11.b of the "New Jersey Air Containment Emissions Cap Requirements and Flexibilities". This is a first draft and has not undergone DEP internal review.

b. Cogeneration Incentive – Cogenerating District Energy Companies which supply electricity and heating and/or cooling may have an emission cap based on the facility's actual emissions, plus the avoided actual emissions at the offsite building being supplied with heat and/or cooling. The avoided actual emissions at offsite properties must be the lesser of actual emissions before the supply of heat/cooling by the district energy company or SOTA emissions for that amount of energy. SOTA emissions are determined by NJDEP's latest SOTA manuals for the most efficient available alternative heating and or cooling equipment used at the off site facilities interconnected to the cogenerated district energy company. The resultant cap is subject to the same air quality modeling requirement as other gold track facilities. Addition of new units at the cogeneration facility are subject to the same flexibilities if de minimis and same permitting, SOTA, and BACT requirements if not de minimis, as other gold track facilities. The practical result of this incentive is to allow additional expansion of cogeneration facilities supplying offsite heat/cooling without triggering an emission offset or LAER requirement. SOTA and BACT would continue to be required.

E. Depreciation Language

SEC. 104. RECOVERY PERIOD FOR COMBINED HEAT AND POWER EQUIPMENT.

(a) 7-YEAR RECOVERY PERIOD.— Subparagraph (C) of section 168(e)(3) of the Internal Revenue Code of 1986 (relating to 7-year property) is amended by striking the period at the end of clause (ii) and inserting ‘‘, and’’ and by inserting after clause (ii) the following new clause:

‘‘(iii) any qualified CHP system.’’.

(b) QUALIFIED CHP SYSTEM.— Section 168(e) of such Code is amended by adding at the end the following new paragraph: ‘‘(6) QUALIFIED CHP SYSTEM.— For purposes of paragraph (3)(C)(iii), the term ‘qualified CHP system’ shall include equipment and related facilities used to provide used energy products through combined heat and power (CHP), excluding assets used to transport fuel to the generating facility. CHP property may include property

owned by a third party for primary use by one or more customers located in close proximity to the CHP property. CHP property shall include all equipment necessary to provide usable energy products through CHP, including, but not limited to, prime movers such as engines and turbines, boilers, air and water filtration, pollution and noise control, pumps, pipes and electrical switchgear. Further, the term "qualified CHP system" refers to applications of technologies that achieve an actual average, annual, fuel-
conversion efficiency, as asserted by a registered and licensed engineer utilizing standard engineering practices, that meets or exceeds the following levels:

(A) For systems with a total used energy output of less than 10 MWt+e , an efficiency of 55%,

(B) For systems with a total used energy output of 10 MWt+e, but less than 100 MWt+e, an efficiency of 60%, and

(C) For systems with a total used energy output of 100 MWt+e or greater, an efficiency of 65%, where MWt+e is the sum of the thermal and electrical/mechanical capacity of the system in common units with the thermal power converted to MW using the conversion of 3,412,000 Btu/hr per MW. These shall be delivered power ratings measured at the bus bar for electrical, the output shaft for mechanical, and at the distribution header for thermal In addition, a "qualifying CHP system" must meet the following performance criteria:

(D) Sum of all used thermal energy products must constitute at least 20 percent of the technology's total used energy output, and

(E) Sum of all used electric or mechanical energy must constitute at least 20 percent of the technology's total used energy output.

However, the following technologies do not need to meet the minimum, fuel-conversion efficiency requirement above:

(F) Retrofit technologies that generate electricity using back-pressure steam turbines in place of existing pressure-reducing valves, or

(G) Technologies that make use of waste heat from industrial process. (We will have Legislative Counsel's office put in language to insure that no one who takes advantage of this depreciation schedule can claim credit or deductions again for the same technology under any other legislation.)

(d) EFFECTIVE DATE.— The amendments made by this section shall apply to property placed in service after December 31, 2000.

F. Definitions

Section XX -- Definitions:

As used in this act

The term **"technology"** includes, but is not limited to, equipment, hardware, software, information management systems, business practices, and system changes.

The term **"electric or mechanical energy"** includes but is not limited to electricity, shaft power, compressed air or other electric or mechanical energy generated by a technology that has the potential to do work.

The term **"thermal energy"** refers to any media generated by a technology that transports energy in the form of a difference between its temperature and that of the surrounds. Thermal energy media include, but not limited to, hot gases, steam, hot water, chilled water, and refrigerant.

The term **"used energy products"** refers to any electric or mechanical energy or thermal energy that is transferred to an application where it provides utility. These products shall be measured at their point of generation. For example, for heated gases, steam, hot or chilled water, or compressed air, the product shall be measured at the point at which it is discharged into the pipe or duct system. For electricity, the product shall be measured at the generator buss. For mechanical energy, the product shall be measured at the point of power transfer.

The term **"total used energy"** refers to sum of all used energy products generated by a technology, converted into common units of British Thermal Units (BTU) or kilowatt-hours (kW), using accepted conversion factors as specified by the National Institute of Standards and Technology.

The phrase **"measured at its higher heating value"** means that the latent heat of condensation of the moisture formed by combustion of the hydrogen in the fuel is included in measuring the fuel's energy output.

The term **"fuel conversion efficiency"** refers to the ratio expressed as a percentage of the total used energy produced by a technology to the sum of all fuel or other energy inputs to the technology measured at its higher heating value. For purpose of qualifying technologies, these values should be for the average annual efficiency calculated by using aggregate, annual fuel consumption and energy production totals.

Combined Heat and Power (CHP) is defined as the production of two or more used energy products from a single fuel or energy source. To be considered CHP for purposes of this act, the technology must meet the performance criteria listed below for "qualifying CHP."

(A)
The term **"CHP property"** shall include equipment and related facilities used to produce used energy products through CHP, excluding assets used to transport fuel to the generating facility. CHP property may include property owned by a third party for primary use by one or more customers located in close proximity to the CHP property.

(B)
CHP property shall include all equipment necessary to generate usable energy products through CHP, including, but not limited to, prime movers such as engines and turbines, boilers, air and water filtration, pollution and noise control, pumps, pipes and electrical switchgear.

The term **"package system"** refers to technologies of less than 50 megawatts electric that are available on a ready-to-install production basis.

The term **"output-based"** refers to any measure that is based on the total used output from a technology. Specifically, in the context of the measurement of environmental emissions, output-based refers to the rate at which emissions are discharged by the technology to the environment per unit of total used energy produced by the technology, as opposed to emissions per unit of fuel consumed.

The term **"qualifying CHP"** refers to applications of technologies that achieve an average, annual, fuel-conversion efficiency meeting or exceeding the following levels:

C) For systems with a total used energy output of less than 1 MW_{t+e} per hour, an efficiency of 60%,
(D) For systems with a total used energy output of 1 MW_{t+e}, but less than 100 MW_{t+e}, an efficiency of 63%, and
(E) For systems with a total used energy output of 100 MW_{t+e} or greater, an efficiency of 66%.

In addition, "qualifying CHP" must meet the following performance criteria:

(D) Sum of all used thermal energy products must constitute at least 20 percent of the technology's total used energy output, and
(E) Sum of all used electric or mechanical energy must constitute at least 20 percent

of the technology's total used energy output.

However, the following technologies do not need to meet the minimum, fuel-conversion efficiency requirement above:

(F) Retrofit technologies that generate electricity using back-pressure steam turbines in place of existing pressure-reducing valves, or
(G) Technologies that make use of waste heat from industrial process.

Section 5. Senate Contact Information

SENATE ENERGY CONTACT LIST
(As of: Summer 2005)

Senator	Phone*	Fax*	Room**	Energy Staff
A				
Daniel K. Akaka (D-HI)	224-6361	224-2126	SH-141	Shirley Fiske
Alexander, Lamar (R-TN)	224-4944	228-3398	SH-302	Sharon Segner
Wayne Allard (R-CO)	224-5941	224-6471	SD-521	Mandi McKinley
George F. Allen (R-VA)	224-4024	224-5432	SR-204	Brent Perry
B				
Max Baucus (D-MT)	224-2651	224-4700	SH-511	Karen Bridges
Evan Bayh (D-IN)	224-5623	228-1377	SR-463	Emily Duncan
Robert F. Bennett (R-UT)	224-5444	228-1168	SD-431	Luke Johnson
Joseph R. Biden (D-DE)	224-5042	224-0139	SR-201	Lisa Borin
Jeff Bingaman (D-NM)	224-5521	224-2852	SH-703	Jonathan Epstein
Christopher "Kit" Bond (R-MO)	224-5721	224-8149	SR-274	Tom Horgan
Barbara Boxer (D-CA)	224-3553	415-228-2382	SH-112	Jennie Quick
Sam Brownback (R-KS)	224-6521	228-1265	SH-303	Riley Scott
Richard Burr (R-NC)	224-3154	228-2981	SR-217	Brian Vanderbloemen
Jim Bunning (R-KY)	224-4343	228-1373	SH-316	Kim Taylor
Conrad Burns (R-MT)	224-2644	224-8594	SD-187	Christine Heggem
Robert C. Byrd (D-WV)	224-3954	228-0002	SH-311	Franz Wuerfmannsdobler
C				
Maria Cantwell (D-WA)	224-3441	228-0514	SH-717	Clark Brunkow-Mather
Thomas R. Carper (D-DE)	224-2441	228-2190	SH-513	Tom Lawler
Lincoln D. Chafee (R-RI)	224-2921	228-2853	SR-141A	Nathan Miller
Chambliss, Saxby (R-GA)	224-3521	224-0103	SR-416	Heather Reilly
Hillary Rodham Clinton (D-NY)	224-4451	228-0282	SR-476	Dan Utech
Tom Coburn (R-OK)	224-5754	224-6008	SR-172	Brian Treat
Thad Cochran (R-MS)	224-5054	224-9450	SD-113	Marie Thomas
Norm Coleman (R-MN)	224-5641	224-1152	SH-320	Tony Eberhard
Susan M. Collins (R-ME)	224-2523	224-2693	SD-461	David Hunter
Kent Conrad (D-ND)	224-2043	224-7776	SH-530	Aaron Severn
John Cornyn (R-TX)	224-2934	228-2856	SH-517	Beth Jafari
Jon S. Corzine (D-NJ)	224-4744	228-2197	SH-502	Bob Helland
Larry Craig (R-ID)	224-2752	228-1067	SH-520	Corey McDaniel
Michael D. Crapo (R-ID)	224-6142		SD-239	Ryan White
D				
Mark Dayton (D-MN)	224-3244	228-2186	SR-123	Katie Pass
Jim DeMint (R-SC)	224-6121	228-5143	SR-340	Chris Socha
Mike DeWine (R-OH)	224-2315	224-6519	SR-140	Elizabeth Belleville

Christopher J. Dodd (D-CT)	224-2823	224-1083	SR-448	Sheila Duffy
Elizabeth H. Dole (R-NC)	224-6342	224-1100	SD-555	Bethany Pantuck
Pete V. Domenici (R-NM)	224-6621	228-3261	SH-328	
Byron L. Dorgan (D-ND)	224-2551	224-1193	SH-322	Toby Short
Richard J. Durbin (D-IL)	224-2152	228-0400	SD-332	Jessica Lenard
E				
John Ensign (R-NV)	224-6244	228-2193	SR-364	Matthew McCullough
Michael B. Enzi (R-WY)	224-3424	228-0359	SR-379A	Chris Tomassi
F				
Russell D. Feingold (D-WI)	224-5323	224-2725	SH-506	Heather White
Dianne Feinstein (D-CA)	224-3841	228-3954	SH-331	Rachel Miller
Bill Frist (R-TN)	224-3344	228-1264	SH-509	Allison Martin
G				
Lindsey Graham (R-SC)	224-5972	224-3808	SR-290	Matthew Rimkunis
Charles E. Grassley (R-IA)	224-3744	224-6020	SH-135	Kurt Kovarik
Judd Gregg (R-NH)	224-3324	224-4952	SR-393	Christopher Gahan
H				
Chuck Hagel (R-NE)	224-4224	224-5213	SR-248	Dale Nellor
Tom Harkin (D-IA)	224-3254	224-9369	SH-731	Lloyd Ridder
Orrin G. Hatch (R-UT)	224-5251	224-6331	SH-104	Jared J. Brown
Kay Bailey Hutchison (R-TX)	224-5922	224-0776	SR-284	Cortney Hazen
I				
James M. Inhofe (R-OK)	224-4721	228-0380	SR-453	Mike Ference
Daniel K. Inouye (D-HI)	224-3934		SH-722	Marie Blanco
Johnny Isakson (R-GA)	224-3643	2280724	SR-120	Mike Quiello
J				
James M. Jeffords (I-VT)	224-5141		SD-413	Mary Katherine Ishee
Tim Johnson (D-SD)	224-5842	228-5765	SH-324	Matt Thornblad
K				
Edward M. Kennedy (D-MA)	224-4543	224-2417	SR-317	Ianna Kachoris
John F. Kerry (D-MA)	224-2742	224-8525	SR-304	George Abar
Herb Kohl (D-WI)	224-5653	224-9787	SH-330	Chad Metzler
Jon Kyl (R-AZ)	224-4521	224-2207	SH-730	Brenda Burman
L				
Mary L. Landrieu (D-LA)	224-5824	224-9735	SH-724	Jason Schendle
Frank R. Lautenberg (D-NJ)	224-3224	228-4054	SH-324	Cindy Bethelle
Patrick J. Leahy (D-VT)	224-4242	224-3479	SR-433	Brian Baenig
Carl Levin (D-MI)	224-6221	224-1388	SR-269	Mary Louise Wagner
Joe Lieberman (D-CT)	224-4041	224-9750	SH-706	Joe Goffman
Blanche Lambert Lincoln (D-AR)	224-4843	228-1371	SD-355	Todd Wooten
Trent Lott (R-MS)	224-6253	224-2262	SR-487	Beth Spivey
Richard G. Lugar (R-IN)	224-4814	228-0360	SH-306	Steve Koerner
M				
Martinez, Mel R (R-FL)	224-3041	228-5172	SH-317	
John McCain (R-AZ)	224-2235	228-2862	SR-241	
Mitch McConnell (R-KY)	224-2541	224-2499	SR-361A	Charles Marshall

Barbara A. Mikulski (D-MD)	224-4654	224-8858	SH-503	Tony Lawrence
Lisa Murkowski (R-AK)	224-6665	224-5301	SH-709	
Patty Murray (D-WA)	224-2621	224-0238	SR-173	Doug Clapp
N				
Ben Nelson (D-NE)	224-6551	228-0012	SH-720	Jamey Nygren
Bill Nelson (D-FL)	224-5274	228-2183	SH-716	Bridgette Walsh
O				
Obama, Barack (D-IL)	224-2854	228-5417	SH-713	
P				
Pryor, Mark (D-AR)	224-2353	228-0908	SD-257	Derrick Freeman
R				
Jack Reed (D-RI)	224-4642	224-4680	SH-728	Steven Eichenauer
Harry Reid (D-NV)	224-3542	224-7327	SH-528	
Pat Roberts (R-KS)	224-4774	224-3514	SH-109	Joel Leftwich
John D "Jay" Rockefeller (D-WV)	224-6472	224-7665	SH-531	John Richards
S				
Ken Salazar (D-CO)	224-5852	228-5036	SH-702	
Richard J. Santorum (R-PA)	224-6324	228-0604	SD-511	Ashley Horning
Paul S. Sarbanes (D-MD)	224-4524	224-1651	SH-309	Josh Pollack
Charles E. Schumer (D-NY)	224-6542	228-3027	SH-313	Ryan McConaghy
Jeff Sessions (R-AL)	224-4124	224-3149	SR-335	Stephen Boyd
Richard C. Shelby (R-AL)	224-5744	224-3416	SH-110	Shannon Hines
Gordon H. Smith (R-OR)	224-3753	228-3997	SR-404	Valerie West
Olympia J. Snowe (R-ME)	224-5344	224-1946	SR-154	Ginny Worrest
Arlen Specter (R-PA)	224-4254	228-1229	SH-711	Tom Dower
Debbie Stabenow (D-MI)	224-4822	228-0325	SH-133	Erik Floden
Ted Stevens (R-AK)	224-3004	224-2354	SH-522	Karina Waller
John E. Sununu (R-NH)	224-2841	228-4131	SR-111	
T				
James M. Talent (R-MO)	224-6154	228-1518	SR-493	Katie Smith
Craig Thomas (R-WY)	224-6441	224-1724	SD-307	Celia Wallace
John Thune (R-SD)	224-2321	228-5429	SR-383	
V				
David Vitter (R-LA)	224-4623	228-5061	SH-516	
George V. Voinovich (R-OH)	224-3353	228-1382	SH-524	
W				
John Warner (R-VA)	224-2023	224-6295	SR-225	Conrad Schatte
Ron Wyden (D-OR)	224-5244	228-2717	SD-230	Joshua Sheinkman

Section 6. State Agency Contact Information

Types of Information Presented

This toolkit is a working information center for those who wish to educate their legislative representatives in the states and the federal government. It is compiled and up-to-date as of October, 2000, and will require updating from time to time. We welcome additional input from the regions and states where there might be some gaps in the identification of the appropriate contact people or contact numbers/addresses. We can post these changes on the US Combined Heat and Power Association Internet site located at <www.nemw.org/uschpa> where data can be regularly updated and accessed.

Section 6 provides contact information on state agencies that are, or would be, involved in implementing the onsite generation of combined heat and power. The subsections are broken out in the following order: The information below is cross-referenced in the following Subsections:

State Utility Commission Contacts
State Energy Department Contacts
State Air Quality Board Information
State Environmental Agency Contacts

The information presented is tailored to the states found in the Northeast and Midwest (NEMW) regions. Also, more NEMW state agency information is available online at the Northeast-Midwest Institute's homepage <www.nemw.org>, through the "State Resources" link.

As you will observe, states in the Northwest, Southwest, and Southeast are not specifically included in this Section, but the information provided in the earlier Sections is beneficial to all states. The toolkit does give general guidance to these other regions regarding how to locate the appropriate agencies and contact people in these states. Web sites and reference material are sited and addresses given.

Anyone wishing additional help locating information or contact people can feel free to email or call the Northeast-Midwest Institute. Contact Diane DeVaul (ddevaul@nemw.org) or call 202-544-5200.

Lastly, there are additional helpful web sites given, such as the U.S. CHPA homepage for added contacts, publications, links, and information. The U.S. DOE Distributed Energy Resources Task Team's web page is also listed for direct information and contact with

the DOE CHP Challenge team. These resources are presented in Section 6 of this guide.

Follow-up Opportunities

The opportunity presented by this toolkit is to educate and excite appropriate organizations, people, and industry in your state and region to better understand this highly efficient technology system approach to cleaner and more reliable energy in the US. It is hoped that we can all do our part in making the CHP Challenge a reality.

State Utility Commission Contacts

State: Connecticut **Restructured: Yes**

Public Utilities Agency: **Connecticut Department of Public Utility Control**

Utilities Contact: N/A

Utilities Phone: **860.827.1553**

Utilities Fax: **860.827.2613**

Utilities Email: **dpuc.information@po.state.ct.us**

Utilities Website: **http://www.state.ct.us/dpuc/**

State: Delaware **Restructured: Yes**

Public Utilities Agency: **Delaware Public Service Commission**

Utilities Contact: **Karen Nickerson**

Utilities Phone **302-739-4247**

Utilities Fax: **302.739.4849**

Utilities Email: **Karen.nickerson@state.de.us**

Utilities Website: **http://www.state.de.us/delpsc**

State: Illinois **Restructured: Yes**

Public Utilities Agency: **Illinois Commerce Commission**

Utilities Contact: **NA**

Utilities Phone: **217.782.7295**

Utilities Fax: **217.782.1042**

Utilities Email: **NA**

Utilities Website: **http://www.icc.illinois.gov/home.aspx**

State Utility Commission Contacts

State: Indiana **Restructured: No**

Public Utilities Agency: **Indiana Utility Regulatory Commission**

Utilities Contact: **NA**

Utilities Phone: **Electricity Division 317.232.2758**

Utilities Fax: **317.232.6758**

Utilities Email: **info@urc.state.in.us**

Utilities Website: **http://www.state.in.us/iurc/index.html**

State: Iowa **Restructured: No**

Public Utilities Agency: **Iowa Utilities Board**

Utilities Contact: **Policy Development Section, Frank Bodine 515.281.8825**

Utilities Phone: **515.281.5979**

Utilities Fax: **515.281.5329**

Utilities Email **iub@max.state.ia.us**

Utilities Website: **http://www.state.ia.us/government/com/util/util.htm**

State: Maine **Restructured: Yes**

Public Utilities Agency: **Maine Public Utilities Commission**

Utilities Contact: **Marjorie McLaughlin**

Utilities Phone: **207.287.3831**

Utilities Fax: **207.287.1039**

Utilities Email: **Marjorie.mclaughlin@state.me.us or maine.puc@maine.gov**

Utilities Website: **http://www.state.me.us/mpuc/**

State Utility Commission Contacts

State: Maryland **Restructured Yes**

Public Utilities Agency: **Maryland Public Service Commission**

Utilities Contact: **John Sillin, Director, Integrated Resource Planning**

Utilities Phone: **410.767.8024**

Utilities Fax: **NA**

Utilities Email **mpsc@psc.state.md.us**

Utilities Website: **http://www.psc.state.md.us/psc/**

State: Massachusetts **Restructured: Yes**

Public Utilities Agency: **Massachusetts Department of Telecommunications and Energy**

Utilities Contact: **Barry Perlmutter**

Utilities Phone: **617.305.3500**

Utilities Fax: **617.723.8812**

Utilities Email **EPD.Filing@state.ma.us**

Utilities Website: **http://www.mass.gov/dte/**

State: Michigan **Restructured: Yes**

Public Utilities Agency: **Michigan Public Service Commission**

Utilities Contact: **Daniel Blair**

Utilities Phone: **5127.241.6180**

Utilities Fax: **517.241.6181**

Utilities Email **Daniel.J.Blair@cis.state.mi.us**

Utilities Website **http://cis.state.mi.us/mpsc/electric/**

State Utility Commission Contacts

State: Minnesota	**Restructured: No**
Public Utilities Agency:	**Minnesota Public Utilities Commission**
Utilities Contact:	**NA**
Utilities Phone:	**651.296.7124**
Utilities Fax:	**651.297.7073**
Utilities Email:	**consumer.puc@state.mn.us**
Utilities Website:	**http://www.state.mn.us/**

State: New Hampshire	**Restructured: Yes**
Public Utilities Agency:	**New Hampshire Public Utilities Commission**
Utilities Contact:	**NA**
Utilities Phone	**603.271.2431**
Utilities Fax:	**603.271.3878**
Utilities Email:	**puc@puc.nh.gov**
Utilities Website:	**http://www.puc.state.nh.us/**

State: New Jersey	**Restructured: Yes**
Public Utilities Agency:	**New Jersey Board of Public Utilities**
Utilities Contact:	**NA**
Utilities Phone:	**973.648.2026**
Utilities Fax:	**NA**
Utilities Email:	**NA**
Utilities Website:	**http://www.bpu.state.nj.us**

State Utility Commission contacts

State: New York	**Restructured: Yes**
Public Utilities Agency:	**New York State Public Service Commission**
Utilities Contact:	**James Gallagher, Office of Electricity and Environment**
Utilities Phone:	**518.473.7248**
Utilities Fax:	**NA**
Utilities Email	**NA**
Utilities Website:	**http://www.dps.state.ny.us**

State: Ohio	**Restructured: Yes**
Public Utilities Agency:	**Ohio Public Utilities Commission**
Utilities Contact	**NA**
Utilities Phone:	**800.686.7826**
Utilities Fax:	**NA**
Utilities Email:	**NA**
Utilities Website:	**http://www.puc.state.oh.us**

State: Pennsylvania	**Restructured: Yes**
Public Utilities Agency:	**Pennsylvania Public Utility Commission**
Utilities Contact:	**NA**
Utilities Phone:	**717.783.1740**
Utilities Fax:	**717.772.3177**
Utilities Email	**NA**
Utilities Website:	**http://www.puc.state.pa.us**

State Utility Commission Contacts

State: Rhode Island	**Restructured: Yes**
Public Utilities Agency:	**Rhode Island Public Utilities Commission**
Utilities Contact:	**Doug Hartley, Director of Energy**
Utilities Phone:	**401.941.4500**
Utilities Fax:	**401.222.6805**
Utilities Email	**Dhartley@ripuc.org**
Utilities Website:	**http://www.ripuc.org**

State: Vermont	**Restructured: No**
Public Utilities Agency:	**Vermont Department of Public Service**
Utilities Contact:	**NA**
Utilities Phone:	**802.828.2811**
Utilities Fax:	**802.828.2342**
Utilities Email:	**publicservice@vermont.gov**
Utilities Website:	**http://www.publicservice.vermont.gov/**

State: Wisconsin	**Restructured: No**
Public Utilities Agency:	**Wisconsin Public Service Commission**
Utilities Contact:	**Bob Norcross, Administrator, 608.267.0699**
Utilities Fax:	**NA**
Utilities Email	**robert.norcross@psc.state.wi.us**
Utilities Website:	**http://www.psc.wi.gov**

State Air Quality Board Information

State: Connecticut **Restructured: Yes**

Air Quality/Permitting Agency: **Connecticut Siting Council**
Air Permit Contact: **S. Derek Phelps, Executive Director**
Air Quality Phone: **860.827.2935**
Air Quality Fax: **860.827.2950**
Air Quality Email: **sitingcouncil@po.state.ct.us**
Air Quality Website: **http://www.ct.gov/csc/site/default.asp**

State: Delaware **Restructured: Yes**
Air Quality/Permitting Agency: Division of Air and Waste Management
Air Permit Contact: **NA**
Air Quality Phone: **302.739.9400**
Air Quality Fax: **NA**
Air Quality Email: **NA**
Air QualityWebsite:
http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/AWM.htm

State: Illinois **Restructured: Yes**
Air Quality/Permitting Agency: **Environmental Protection Agency, Bureau of Air, Division of Air Pollution Control**
Air Permit Contact: **Laurel Kroack (Acting Director)**
Air Quality Phone: **217.785.4140**
Air Quality Fax: **NA**
Air Quality Email: **Kim.Kuntzman@epa.state.il.us**
Air Quality Website: **http://www.epa.state.il.us/air**

State Air Quality Board Information

State: Indiana **Restructured: No**

Air Quality/Permitting Agency: **Indiana Department of Environmental Management, Office of Air Quality**

Air Permit Contact: **Paul Dubenetzky**

Air Quality Phone: **317.232.8217**

Air Quality Fax: **317.232.6749**

Air Quality Email: **NA**

Air Quality Website: **http://www.in.gov/idem/air**

State: Iowa **Restructured: No**

Air Quality/Permitting Agency: **Department of Natural Resources, Air Quality Bureau**

Air Permit Contact: **NA**

Air Quality Phone: **515.242.5100**

Air Quality Fax: **515.242.5094**

Air Quality Email: **NA**

Air Quality Website: **http://www.iowanr.com/air/index.html**

State: Maine **Restructured: Yes**

Air Quality/Permitting Agency: **Department of Environmental Protection, Bureau of Air Quality**

Air Permit Contact: **James Brooks, Director**

Air Quality Phone: **207.287.2437**

Air Quality Fax: **207.287.7641**

Air Quality Email: **NA**

Air Quality Website: **http://janus.state.me.us/dep/air/**

State Air Quality Board Information

State: Maryland **Restructured: Yes**

Air Quality/Permitting Agency: **Department of the Environment, Air & Radiation Management**

Air Quality Phone: **410.537.3255**

Air Quality Fax: **NA**

Air Quality Email: **NA**

Air Quality Website: **http://www.mde.state.md.us/**

State: Massachusetts **Restructured: Yes**

Air Quality/Permitting Agency **Department of Environmental Protection, Air Quality**

Air Permit Contact: **Robert Boisselle**

Air Quality Phone: **617.292.5609**

Air Quality Fax: **NA**

Air Quality Email: **RobertBoiselle@state.ma.us**

Air Quality Website: **http://www.michigan.gov/deq**

State: Minnesota **Restructured: Yes**

Air Quality/Permitting Agency: **Minnesota Pollution Control Agency**

Air Permit Contact: **NA**

Air Quality Phone: **651.296.6300**

Air Quality Fax: **NA**

Air Quality Email: **NA**

Air Quality Website: **http://www.pca.state.mn.us/air/index.html**

State Air Quality Board Information

State: New Hampshire **Restructured: Yes**

Air Quality/Permitting Agency: **Department of Environmental Services, Air Resources Division**

Air Permit Contact: **Michele Andy, Overall Permitting Program, x 6793**

Air Quality Phone: **603.271.1370**

Air Quality Fax: **603.271.1381**

Air Quality Email: **mandy@des.state.nh.us**

Air Quality Website: **http://www.des.state.nh.us/ard_intro.htm**

State: New Jersey **Restructured: Yes**

Air Quality/Permitting Agency: **Department of Environmental Protection, Air Quality Permitting Program**

Air Permit Contact: **NA**

Air Quality Phone: **609.633.2829**

Air Quality Fax: **609.633.8236**

Air Quality Email: **NA**

Air Quality Website: **http://www.state.nj.us/dep/aqpp/**

State: New York **Restructured: Yes**

Air Quality/Permitting Agency: **Department of Environmental Conservation, Division of Air Resources**

Air Permit Contact: **Dave Shaw, Director**

Air Quality Phone: **518.402.8452**

Air Quality Fax: **NA**

Air Quality Email: **NA**

Air Quality Website: **http://www.dec.state.ny.us/website/dar/index.html**

State Air Quality Board Information

State: Ohio **Restructured: Yes**

Air Quality/Permitting Agency: **Environmental Protection Agency, Division of Air Pollution Control**

Air Permit Contact: **Mike Hopkins, 614.644.3611**

Air Quality Phone: **614.644.2270**

Air Quality Fax: **614.644.3681**

Air Quality Email: **mike.hopkins@epa.state.oh.us**

Air Quality Website: **http://www.epa.state.oh.us/dapc**

State: Pennsylvania **Restructured: Yes**

Air Quality/Permitting Agency: **Department of Environmental Protection, Bureau of Air Quality**

Air Permit Contact: **John Slade, Chief, Division of Permits,**

Air Quality Phone: **717.787.4325**

Air Quality Fax: **717.772.2303**

Air Quality Email: **jslade@state.pa.us**

Air Quality Website:

http://www.dep.state.pa.us/dep/deputate/airwaste/aq/default.ht

State: Rhode Island **Restructured: Yes**

Air Quality/Permitting Agency: **Department of Environmental Management, Office of Air Resources**

Air Permit Contact: **Stephen Majkut, PE. Chief, x 7010**

Air Quality Phone: **401.222.2808**

Air Quality Fax: **401.222.2017**

Air Quality Email: **steve.majkut@dem.ri.gov**

Air Quality Website: **http.//www.dem.ri.gov/**

State Air Quality Board Information

State: Vermont **Restructured: No**

Air Quality/Permitting Agency: **Agency of Natural Resources, Air Pollution Control Division**

Air Permit Contact: **Richard A. Valentinetti, Director**

Air Quality Phone: **802.241.3840**

Air Quality Fax: **802.241.2590**

Air Quality Email: **dick.valentinetti@state.vt.us**

Air Quality Website: **http://www.anr.state.vt.us/dec/air/index.htm**

State: Wisconsin **Restructured: No**

Air Quality/Permitting Agency: **Department of Natural Resources, Air Management Program**

Air Permit Contact: **Jeffrey Hanson, Section Chief**

Air Quality Phone: **608.266.1054**

Air Quality Fax: **NA**

Air Quality Email: **hansojc@dnr.state.wi.us**

Air Quality Website: **http://www.dnr.state.wi.us/org/aw/air/**

State Energy Department Contacts

State: Connecticut **Restructured: YES**

State Energy Agency: **Office of Policy and Management, Energy Research and Policy Development Unit**

Energy Contact: **Joe Mengacci, Under Secretary**

Energy Phone: **860.418.6416**

Energy Fax: **860.418.6495**

Energy Email: **John.Mengacci@po.state.ct.us**

Energy Website: **http://www.opm.state.ct.us/pdpd2/energy/enserv.htm**

State: Delaware **Restructured: YES**

State Energy Agency: **Department of Natural Resources and Environmental Control**

Energy Contact: **Suzanne Sebastian, State Energy Program Manager**

Energy Phone: **302.739.1530**

Energy Fax: **302.739.1527**

Energy Email: **Suzanne.sebastian@state.de.us**

Energy Website: **http://www.delaware-energy.com**

State: Illinois **Restructured: YES**

State Energy Agency: **Department of Commerce and Economic Opportunity, Bureau of energy and Recycling**

Energy Contact: **Sara Wilcockson, Energy Division Manager**

Energy Phone: **217.785.5222**

Energy Fax: **NA**

Energy Email: **swilcockson1@ildceo.net**

Energy Website:

http://www.commerce.state.il.us/resource_efficiency/Energy/energy.htm.

State Energy Department Contacts

State: Indiana	**Restructured: NO**
State Energy Agency:	**Indiana Economic Development Corporation**
State Energy Contact:	**Marty Irwin, Director**
Energy Phone:	**317.232.7578**
Energy Fax:	**317.232.8995**
Energy Email:	**erogers@commerce.state.in.us**
Energy Website:	**http://www.iedc.in.gov/Energy/index.asp**

State: Iowa	**Restructured: NO**
State Energy Agency:	**Department of Natural Resources, Energy and Waste Management Bureau**
Energy Contact:	**Allan Goldberg**
Energy Phone:	**515.281.8912**
Energy Fax:	**515.281.8895**
Energy Email:	**Allan.Goldberg@dnr.state.ia.us**
Energy Website:	**http://www.state.ia.us/dnr/energy/**

State: Maine	**Restructured: YES**
State Energy Agency:	**Public Utilities Commission, State Energy Office**
Energy Contact:	**Denis P. Bergeron, Director**
Energy Phone:	**207.287.1366**
Energy Fax:	**207.287.0139**
Energy Email:	**denis.bergeron@maine.gov**
Energy Website:	**http://www.econdevmaine.com/**

State Energy Department Contacts

State: Maryland **Restructured: YES**

State Energy Agency: Maryland Energy Administration

Energy Contact: **Michael Richard, Director**

Energy Phone: **410.260.7655**

Energy Fax: **410.974.2850**

Energy Email: **mrichard@energy.state.md.us**

Energy Website: **http://www.energy.state.md.us/**

State: Massachusetts **Restructured: YES**

State Energy Agency: **Division of Energy Resources**

Energy Contact: **Jane Savery, Deputy Commissioner**

Energy Phone: **617.727.4732**

Energy Fax: **617.727.0030**

Energy Email: **jane.savery@state.ma.us**

Energy Website: **http://www.mass.gov/doer**

State: Michigan **Restructured: YES**

State Energy Agency: Department of Labor and Economic Growth

Energy Contact: **R. Thomas Martin, Director**

Energy Phone: **517.241.6228**

Energy Fax: **517.241.6229**

Energy Email: **tom.martin@michigan.gov**

Energy Website: **http://www.michigan.gov/cis/**

State Energy Department Contacts

State: Minnesota **Restructured: NO**

State Energy Agency: Minnesota Department of Commerce, Energy Division

Energy Contact: **Janet Streff, Manager, 651.297.2545**

Energy Phone: **651.296.5120**

Energy Fax: **651.297.7891**

Energy Email: **Janet Streff@state.mn.us**

Energy Website: **NA**

State: New Hampshire **Restructured: YES**

State Energy Agency: Governor's Office of Energy and Planning

Energy Contact: **Joe Broyles, Energy Programs**

Energy Phone: **603.271.2155**

Energy Fax: **603.271.2615**

Energy Email: **joseph.broyles@nh.gov**

Energy Website: **http://www.nh.gov/oep/index.htm**

State: New Jersey **Restructured: YES**

State Energy Agency: New Jersey Board of Public Utilities, Division of Energy

Energy Contact: **Michael Winks, Director**

Energy Phone: **973.648.2160**

Energy Fax: **973.648.7420**

Energy Email: **Michael.winka@bpu.state.nj.us**

Energy Website: **http://www.state.nj.us/bpu/home/energy.shtml**

State Energy department Contacts

State: New York **Restructured: YES**

State Energy Agency: New York State Energy Research and Development Agency

Energy Contact: **Scott Smith, x 3344**

Energy Phone: **518.862.1090**

Energy Fax: **518.862.1091**

Energy Email: **sas@nyserda.org**

Energy Website: **http://www.nyserda.org**

State: Ohio **Restructured: YES**

State Energy Agency: Office of Energy Efficiency, Department of Development

Energy Contact: **Anthony Sutor, 614.387.2733**

Energy Phone: **614.466.6797**

Energy Fax: **614.466.1864**

Energy Email: **asutor@odod.state.oh.us**

Energy Website: **http://www.odod.state.oh.us/cdd/oee/**

State: Pennsylvania **Restructured YES**

State Energy Agency: Pennsylvania Department of Environmental Protection
Office of Energy and Technology Development

Energy Contact: **Eric Thumma, Director, Bureau of Energy, Innovations and Technology Development**

Energy Phone: **717.783.0540**

Energy Fax: **717.783.0546**

Energy Email: **ethumma@state.pa.us**

Energy Website:

http://www.dep.state.pa.us/dep/deputate/pollprev/pollution_prevention.html

State Energy Department Contacts

State: Rhode Island **Restructured: YES**

State Energy Agency: Economic Development Corporation

Energy Contact: **Janice McClanaghan, 401.222.3370**

Energy Phone: **401.222.3370 (6920)**

Energy Fax: **401.222.1260**

Energy Email: **JaniceM@gw.doa.state.ri.us**

Energy Website: **http://www.riseo.state.ri.us**

State: Vermont **Restructured: NO**

State Energy Agency: Energy Efficiency Division of Department of Public Service

State Energy Contact: **Robert Ide, Director**

Energy Phone: **802.828.4009**

Energy Fax: **802.828.2342**

Energy Email: **Robert.ide@state.vt.us**

Energy Website: **www.state.vt.us/psd/ee/ee.htm**

State: Wisconsin **Restructured: NO**

State Energy Agency: **Department of Energy, Division of Energy**

Energy Contact: **Jim O'Neal, Program Manager, 608.266.8971**

Energy Phone: **608.266.8234**

Energy Fax: **608.267.6931**

Energy Email: **jm.oneal@doa.state.wi.us**

Energy Website: **http://www.doa.state.wi.us/**

State Environmental Agency Contacts

State: Connecticut **Restructured: YES**

State Environmental Agency: Department of Environmental Protection, Bureau of Air Management

Environmental Contact: Anne Gobin, Bureau Chief, 860.424.3026

Environment Phone: 860.424.3000

Environment Fax: 860.424.4063

Environment Website: http://dep.state.ct.us/air2/index.htm

State: Delaware **Restructured: YES**

State Environmental Agency: Delaware Department of Natural Resources and Environmental Control Division

State Environmental Contact: NA

Environment Phone: 302.739.9400

Environment Fax: NA

Environment Website: http://www.dnrec.state.de.us

State: Illinois **Restructured: YES**

State Environmental Agency: Illinois Environmental Protection Agency

Environmental Contact: Director, Douglas Pl. Scott

Environmental Phone: NA

Environmental Fax: NA

Environment Website: http://www.epa.state.il.us/

State Environmental Agency Contacts

State: Indiana **Restructured: NO**

State Environmental Agency: Department of Environmental Management

Environmental Contact: **NA**

Environment Phone: **317.232.8603**

Environment Fax: **NA**

Environment Website: **http://www.ai.org/idem/**

State: Iowa **Restructured: NO**

State Environmental Agency: **Department of Natural Resources**

Environmental Contact: **Lyle Asell, Agriculture and Environment**

Environment Phone: **515.281.8656**

Environment Fax: **NA**

Environment Website: **http://www.iowadnr.com/contact:html**

State: Maine **Restructured: YES**

State Environmental Agency: Department of Environmental Protection

Environmental Contact: **Office of the Commissioner**

Environment Phone: **207.287.2812**

Environment Fax: **207.287.2814**

Environment Website: **http://www.state.me.us/dep/index.shtml**

State Environmental Agency Contacts

State: Maryland **Restructured: YES**

State Environmental Agency: Department of Environment

Environmental Contact: **Kendl Philbrick, Secretary, 410.537.3084**

Environment Phone: **410.537.3000**

Environment Fax: **NA**

Environment Website: **http://www.mde.state.md.us/**

State: Massachusetts **Restructured: YES**

State Environmental Agency: Department of Environmental Protection

Environmental Contact: **NA**

Environment Phone: **617.338.2255**

Environment Fax: **NA**

Environment Website: **http://www.mass.gov/dep/dephome.htm**

State: Michigan **Restructured: YES**

State Environmental Agency: Department of Environmental Quality

Environmental Contact: **NA**

Environment Phone: **517.373.7660**

Environment Fax: **517.335.4729**

Environment Website: **http://www.michigan.gov/deq/**

State Environmental Agency Contacts

State: Minnesota **Restructured: NO**

State Environmental Agency: Minnesota Pollution Control Agency

Environmental Contact: **NA**

Environment Phone: **651.296.6300**

Environment Fax: **NA**

Environment Website: **http://www.pca/state.mn.us/air/index.html**

State: New Hampshire **Restructured: YES**

State Environmental Agency: Department of Environmental Services

Environmental Contact: **NA**

Environment Phone: **603.271.3503**

Environment Fax: **603.271.2867**

Environment Website: **http://www.des.state.nh.us/**

State: New Jersey **Restructured: YES**

State Environmental Agency: **Department of Environmental Protection**

Environmental Contact: **Bradley M. Campbell, Commissioner**

Environment Phone: **609.292.2885**

Environment Fax: **609.292.7695**

Environment Website: **http://www.state.nj.us/dep/**

State Environmental Agency Contacts

State: New York **Restructured: YES**

State Environmental Agency: New York State Department of Environmental Conservation

Environmental Contact: Carl Johnson, Deputy, Commissioner, Office of Air and Waste Management

Environment Phone: 518.402.8549

Environment Fax: 518.402.9016

Environment Website: http://www.dec.state.ny.us/index.html

State: Ohio **Restructured: YES**

State Environmental Agency: Environmental Protection Agency

Environmental Contact: Gregg Smith, Chief, 614.644.2798

Environment Phone: 614.644.2798

Environment Fax: 614.644.3687

Environment Website: http://www.epa.state.ohio.us

State: Pennsylvania **Restructured: YES**

State Environmental Agency: Department of Environmental Protection

Environmental Contact: Kathleen A. McGinty, Secretary

Environment Phone: 717.787.2814

Environment Fax: NA

Environment Website: http://www.dep.state.pa.us/dep/

State Environmental Agency Contacts

State: Rhode Island **Restructured: YES**

State Environmental Agency: Department of Environmental Management, Office of Air Resources

Environmental Contact: Stephen Majkut, PE, Chief

Environment Phone: 401.222.2808

Environment Fax: 401.222.2017

Environment Website: http://www.dem.ri.gov/

State: Vermont **Restructured: NO**

State Environmental Agency: Agency of Natural Resources

Environmental Contact: Thomas W. Torti, Secretary

Environment Phone: 802.241.3600

Environment Fax: 802.241.1102

Environment Website: http://www.anr.state.vt.us/

State: Wisconsin **Restructured: NO**

State Environmental Agency: Department of Natural Resources, Bureau of Air Management

Environmental Contact: Lloyd Eagan, Bureau Director, 608.266.0603

Environment Phone: 608.266.7718

Environment Fax: 608.267.0560

Environment Website: http://www.dnr.state.wi.us/Environment.html

Section 7. State Restructuring Status and Energy Efficiency/Renewables Initiatives

Included in this section are details on each state's restructuring status, legislation and/or rules, and energy-efficiency and renewables initiatives. State utility contacts are available in Section 5.

The following information was obtained from official state Internet sites, the US Department of Energy's Energy Information Administration, and from the responses of state contacts. It is current as of February 2003. The information on legislation and regulatory orders has been taken from EIA's State Restructuring Status report, which can be seen in its entirety on the EIA's website as sited in the Other Resources Section.

State: Connecticut **Restructured: YES**

Public Utilities Agency Connecticut Department of Public Utility Control

Regulatory Orders: 9/99: The Connecticut Department of Public Utility Control (DPUC) issued a rule aimed at preventing customers from switching back to Standard Offer Service (SOS) after switching to an alternative supplier when SOS is the least expensive alternative. The rule would provide a 12-month switching moratorium once a customer returns to SOS.

3/99: The DPUC began a consumer education effort sponsoring statewide presentations and ordering that, beginning in July, generation charges be shown separately on bills for the purpose of comparison with competitive offers. Retail competition is set to begin January 1, 2000, and suppliers could be licensed as early as July and begin soliciting business.
In February, the DPUC approved the sale of Connecticut Power & Light's non-nuclear assets, and in March it approved United Illuminating's sale of non-nuclear assets.

1/99: The DPUC is considering utilities' divestiture plans which were filed in late 1998, and stranded cost proposals filed in January.

7/95: The DPUC issued a final report that calls for restructuring the electric power industry and gradually moving to retail

competition.
4/98: Public Act No. 98-28 (House Bill 5005), An Act Concerning Electric Restructuring, was signed into law on 4/29/98.
The bill allows access to competitive suppliers for 35 percent of consumers by 1/2000 and for all consumers by 7/2000. Utilities are required to sell non-nuclear generation assets by 1/2000 and interests in nuclear generation by 1/2004, making CT the first state to require divestiture of nuclear assets. The bill also requires participation in an Independent System Operator (ISO), public interest program funding, functional unbundling, renewable energy funding, a 5.5 percent renewable portfolio standard, environmental protections, and a 10 percent rate reduction beginning 1/2000.

State Restructuring Status:

State: Delaware **Restructuring: Yes**

Public Utilities Agency: Delaware Public Service Commission

Regulatory Orders: **9/99:** The PUC issued final rules for restructuring electric utilities in Delaware.

1/98: The PSC adopted final report on electric industry restructuring with recommendations including unbundling of rates and stranded cost recovery using Competitive Transition Charges. The report calls for competition for all Delaware consumers to begin 12 months after restructuring legislation is enacted.

Legislation: **3/99:** HB 10, "The Electric Utility Restructuring Act of 1999," was enacted on March 31, 1999. The law's provisions include: a phase-in of retail competition beginning on October 1, 1999, for large customers in Conectiv's service territory and ending on April l, s001, when all consumers in Conectiv's (DP&L) and Delaware Electric Cooperative's territories; a residential rate cut of 7.5 percent for Conectiv customers and a rate freeze for the coop customers; funding for public benefits programs; and for Conectiv, no provisions for stranded cost recovery (the cooperative has no public benefit funding and stranded cost recovery may be determined by the PSC).

Renewable Energy/ Energy Efficiency **4/99:** Restructuring legislation created funds for environmental incentive programs for conservation and energy efficiency, and for low-income fuel assistance and weatherization programs.

State Restructuring Status:

State: Illinois **Restructured: YES**

Public Utilities Agency: Illinois Commerce Commission

Regulatory Orders: **11/02:** The Illinois Commerce Commission issued an interim order to discontinue the current rate for Commonwealth Edison's large customers with 3 Megawatts of demand or more and charge competitive rates by June 2006. The current rate will not be available to new or returning customers after June 2003. Commonwealth Edison stated that competitive rates would help spur competition in the state.

12/00: The Illinois Commerce Commission (ICC) issued an update on the status of competition in the state. The Illinois electric market first opened in October 1999 to a third of non-residential customers. As of January 1, 2001, all commercial and industrial customers are eligible for retail access to competitive suppliers, and residential customers will become eligible starting in May 1, 2002. The majority of customers who switched to alternative suppliers were in Commonwealth Edison's territory. About 12 percent of ComEd's eligible customers representing about half of the company's load switched to alternative suppliers. Illinois Power had 6.9 percent of customers switch and AmerenCIPS had 6.8 percent. None was recorded for Illinois Light Co. The ICC stated that a lack of competition could be due to a need for more suppliers, electricity shortages, inefficient transmission system, a lack of uniform interconnection standards, and the surrounding states lack of restructuring.

6/98: The ICC issued a ruling that prohibits utility affiliates from exploiting the name, reputation, or logo of the utility in advertising or marketing campaigns. The rule will protect ratepayers from cross-subsidization of utility affiliates.

5/98: The ICC approved Commonwealth Edison's plan to offer nonresidential customers hourly rates under its "Hourly Energy Pricing" program.

Legislation: **7/99:** SB 24, was enacted to amend the restructuring law. The amendment moves up the transition to customer choice. The first third of commercial and industrial consumers will have retail

access by October 1, 1999, the second third by June l, 2000, and the final third by October 1, 2000. Residential customers will receive a 5 percent rate reduction by October 1, 200l, seven Months earlier. The rate cap for utilities is increased by 2 percent, Cogeneration is promoted, and ComEd is required to allocate $250 Million to a special environmental initiative and energy-efficiency fund.

12/97: HB 362, "The Electric Service Customer Choice and Rate Relief Act of 1997," was enacted. The bill provides for rate cuts for Con Ed and Illinois Power effective August 1998. The law accords some commercial and industrial customers choice by October 1999, the all customers, including residential, choice for their generation supplier by May 1, 2002. Transition charges may be collected through 2006. Most residential customers will receive a 15 percent rate reduction by August 1998, and another 5 percent reduction in May 2002.

4/97: SB 851 created a task force on electric industry restructuring that will issue a report by December 1997.

State Restructuring Status:

State: Indiana **Restructured: YES**

Public Utilities Agency: Indiana Utility Regulatory Commission

Regulatory Orders: NA

Legislation:

7/00: The State Utility Forecasting Group, which was charged by the Indiana General Assembly to investigate the electricity supply, predicts that over the next 15 years competition could lower prices in the short term, raise them in the medium term, and level off in the long term. The state's investor-owned utilities, American Electric Power and NIPSCO, are working on proposals to submit to the 2001 General Assembly that would restructure the industry to allow retail competition.

5/97: SB 427 created a legislative study committee that will meet through November on electric restructuring issues. A report is due on November 1997.

Renewable Energy/ Energy Efficiency: **NA**

State Restructuring Status:

State: Iowa **Restructured**: No

Public Utilities Agency: Iowa Utilities Board

Regulatory Orders:

4/01: The Iowa Utilities Board (IUB) issued an order closing Docket No. NOI-95-l, "Inquiry into Emerging Competition in the Electric Industry" on April 17, 2001.

9/97: The IUB adopted its "Action Plan to Develop a Competitive Model for the Electric Industry in Iowa." The plan includes a statewide pilot program for residential and commercial customers (about 3 percent of load) over 2 years.

5/96: The IUB adopted principles for restructuring the electric power industry.

Legislation:

4/00: Proposed restructuring legislation died in Iowa as the legislative session ended in April without further action on SF2361 or HF 2530.

5/98: Senate File 2416 was signed by the Governor. It will replace property taxes on electric utilities with excise taxes imposed on generation, transmission & delivery of electricity. The changes in tax law are to address concerns that under coming deregulation, non-Iowa suppliers would have a competitive advantage over Iowa-based companies that were paying property taxes.

Renewable Energy/ Energy Efficiency:

3/00: The Department of Natural Resources (DNR) proposed including a Renewable Portfolio Standard in restructuring legislation. The proposal would require renewable energy sources, such as wind, to be 4 percent in 2005 and increase to 10 percent by 2015.

State Restructuring Status:

State: Maine **Restructured:** YES

Public Utilities Agency: Maine Public Utilities Commission

Regulatory Orders: **3/02:** New standard offer rates for customers in the Central Main Power Company, Bangor Hydro Electric Company, and Maine Public Service Company service territories went into effect on March 1, 2002. According to a PUC press release, medium and large commercial and industrial CMP and Bangor Hydro customers "will see the largest overall price decreases."

3/01: Upon termination of the bid process, the PUC ordered Central Maine Power to provide standard offer service from March 2001 to March 2002 for medium and large nonresidential customers and set the standard offer rates for these classes of customers. The PUC approved CMP contracts with wholesale suppliers to supply the power for the standard offer customers, and approved nonresidential standard offer rates ranging from 5.6 cents for off peak non summer to 14.6 cents for on peak summer.

10/00: The PUC issued a request for bids to provide service for Bangor Hydro, Maine Public Service, and Central Maine Power standard offer customers. The bidding process was revised from last year's, streamlining the process and giving bidders more flexibility in hopes of attracting better offers.

1/00: In 1999, the PUC finalized the rules necessary to implement electric restructuring by March 1, 2000. Companies were selected to provide standard offer service at reasonable prices for the majority of electricity consumers in Maine. Principles were established for setting rates, including stranded costs, for distribution and transmission utilities in the state. The three IOU utilities sold their generation assets.

10/99: The PUC rejected the bids received for standard offer service for Central Maine Power and Bangor Hydro territories, saying they were too high. Using three service bids that were conditionally approved for Maine Public Service for a new ceiling, and revising some technical rules, a second round of bidding will be due November 8. The standard offer providers are to be selected by December l.

5/99: The PUC issued a schedule for suppliers to offer standard service when retail competition begins March 2000. Standard service price will be set through a bid process, rather than a predetermined price, as in other states.

12/98: The PUC will begin a consumer education program in January 1999 to prepare the public for retail access and unbundled billing.

5/98: The PUC adopted a requirement that beginning January 1, 1999, utilities must issue bills showing "unbundled" charges for generation and distribution, rules for consumer education, and standard offer service for all consumers when competition begins March 1, 2000.

12/96: The PUC issued a plan requiring utility functional unbundling, divestiture of generation assets by March 2000, and retail competition by 2000.

Legislation:

5/97: LD 1804 was enacted. The law will allow retail competition by March 2000 and, for large investor-owned utilities, features a market share cap of 33 percent in old service areas, a requirement for divestiture of generation assets by March 2000, and the nation's most aggressive renewables portfolio, requiring 30 percent of generation to be from renewable energy sources (including hydroelectric).

Renewable Energy/

5/97: Maine's restructuring legislation requires 30 percent of Generation to be from renewable energy sources.

State Restructuring Status:

State: Maryland **Restructured:** Yes

Public Utilities Agency: Maryland Public Service Commission

Regulatory Orders: **1/00:** The PSC approved PEPCO's restructuring plan. PEPCO customers will begin retail direct access by July 2000. PEPCO also received approval to sell its generation assets. The PSC approved Allegheny Energy's restructuring settlement. The Settlement will allow almost all of Allegheny's Maryland Customers direct access to their electricity supply of choice by July 1, 2000, two years earlier than required by the state law.

8/99: Public hearings on BG&E's proposed restructuring settlement began in August. The Mid-Atlantic Power Supply Association (a coalition of energy supply companies) opposes the settlement on the grounds that the price to compare at BG&E set at 4.3 cents per kilowatthour, are too low to allow competition. Also suggested was that the stranded cost recovery for BG&E be lowered. The three-day hearings were concluded August 13; Closing arguments are due August 30; and rebuttals due by Due by September 30. The PSC will issue a decision in October.

7/99: Baltimore Gas & Electric filed a proposed restructuring plan with the PSC. The plan includes a 6.5 rate decrease over six years for residential customers, $528 million for stranded costs, a six-year rate freeze and phase out of transition costs, and customer choice for all residential and business customers by July 1, 2000. Public hearings are set for July and August for comments to the plan. A decision on the plan is due in October.

10/98: Five utilities in Maryland announced that they asked a state court to stop the PSC deregulation effort until several issues are resolved, including the issue of stranded costs recovery.

4/98: A PSC order established roundtable discussions on restructuring issues: universal service, supplier authorization, demand-side management programs, customer protection, competitive billing, and consumer education. The discussion groups were to submit reports in May 1999 and July 1999.

12/97: The PSC issued an order establishing a framework for the restructuring of the electric power industry. The plan's schedule: a third of the state's consumers will have retail access by July

2000; another third by July 2001; and the entire state by July 2002. Round table discussions to address implementation of specific issues will commence in April 1998. For the order to be effective, legislation must be passed.

Legislation:

4.02: SB 285 requires electric companies in Maryland to "conduct a study that tracks shifts in generation and emissions as a result of restructuring the electric industry." The electric companies must submit their studies twice to the PSC and the Department of the Environment on or before December 31, 2003, and on or before December 31, 2005. If it is determined that restructuring has a negative impact on Maryland's environment, then the PSC will consider "establishing an air quality surcharge or other mechanism."

4/99: HB 703 (SB 300), restructuring legislation, was enacted. The legislation includes at least a 3 percent rate reduction for residential consumers, funding for low-income programs, stranded cost recovery to be determined by the PUC, disclosure of fuel sources by electric suppliers, recovery of stranded costs through a nonbypassable wires charge, and a 3-year phase-in for competition beginning in July 2000 and becoming complete by July 2002.

1/99: A bill to allow BG&E to form a holding company was enacted. The law will make it easier for BG&E to form a holding company was enacted. The law will make it easier for BG&E to enter into new business ventures in a competitive market. Maryland was the only state that prevented public utilities from forming holding companies by enacting HB3 (SB 65).

12/97: The Legislative Task Force held hearings and issued conclusions and recommendations.

4/97: SB 851 created a task force on electric industry restructuring that will issue a report by December 1997.

Renewable Energy/ Energy Efficiency: NA

State Restructuring Status:

State: Massachusetts **Restructured:** Yes

Public Utilities Agency: Massachusetts Department of Telecommunications and Energy

Regulatory Orders: **8/01:** The Department of Telecommunications and Energy approved fuel adjustment rate increases for standard offer rates by 1.23 cents per kWh for most customers of Massachusetts utilities. Utilities submitted Standard Offer Fuel Adjustment Filings with the DTE requesting increases in standard offer rates to reflect the rising cost of fuel to generate electricity.

7/01: In June, the DTE, seeking to boost customer participation in the open electricity market, issued an order for utilities to release, with customer approval, default customers' information to competitive suppliers. Suppliers may request names, addresses, and rate classes of default service customers.

7/00: The DTE issued an order that will allow utilities to base their rates for default service on the wholesale bid prices, beginning January 2001. Utilities complained that the required rate, set below the cost of wholesale power, was causing them to lose money on default customer accounts. Utilities may begin issuing competitive bids seeking 6-month to 1-year contracts for the power needed to serve their default service customers. Default service is defined as those customers who have left their competitive supplier, or are new to the utility's territory. The DTE is considering two courses of action, as required by the restructuring legislation passed in 1998. The law requires the DTE to consider opening metering, billing, and information services to competition, and also requires the DTE to look into eliminating exclusive service territories for investor-owned utilities.

5/98: Education program for consumers begins with showing the labels that will disclose the price of electricity, generation sources, and air emission contents.

3/98: DTE issued rules for distribution, default generation services, standard offer generation, aggregation requirements, and ownership of meters.

2/98: The DTE issued implementation rules for the restructured industry. Included are licensing and information disclosure for retail suppliers and provisions for public interest programs,

standard offer service, and utility transition cost recovery filings.

1/97: The DTE's final decision is to officially open the retail electricity market to competition by March 1, 1998.

Legislation:

11/97: House Bill 5117 was enacted to restructure the electric power industry. The law requires retail access by March 1998, rate cuts of 10 percent by March 1998 and another 5 percent 18 months later, and encourages divestiture of generation assets.

Renewable Energy/ Energy Efficiency

Massachusetts Restructuring legislation includes a renewable portfolio requirement and established a renewable energy fund, funded via a system benefits charge. The Fund is administered by the Massachusetts Technology Park Corporation. Funds are used to administer the utility-sponsored demand-side management (DSM) programs consistent with the manner in which DSM programs have previously been administered in MA. Funds will also be used to create initiatives to increase the supply of and demand for renewable energy.

State Restructuring Status:

State: Michigan **Restructured:** YES

Public Utilities Agency: Michigan Public Service Commission

Regulatory Orders: **10/02:** The Michigan Public Service Commission approved AEP Ohio Commercial and Industrial Retail Company's application for an alternative electric supplier license. There are 21 other licensed alternative electric suppliers in the state.

8/02: The Michigan PSC issued an order that mandates the CHOICE Advisory Council subcommittee to instigate a statewide customer choice education program. Their program must complete the following tasks: "informing commercial electric customers about customer choice, informing commercial and residential electric customers about the availability of green power, and informing potential alternative electric suppliers of the opportunities to participate in the customer choice program in Michigan." The utilities and the contractors have two months to comply with this order.

1/02: The Michigan PSC issued an order allowing nine electric cooperatives to use deferral accounting for the implementation and administrative costs associated with customer choice and unbundling electric rates. Cooperatives are not guaranteed cost recovery under this order, and the cooperative will have to file a separate recovery plan with the PSC.

12/01: The PSC issued nine new orders "to advance Michigan's competitive electric environment" that took effect on January 1, 2002. The first and second orders prohibit both the Detroit Edison and Consumers Energy from changing their depreciation accrual rates and practices until January 1, 2006. The third order initiated the drafting of "rules for service quality and reliability standards for electric distribution systems." The fourth order adopted standards for the disclosure of customer information, fuel mix information, and environmental characteristics of electricity products. The fifth and sixth orders approved Detroit Edison and Consumers Energy's new retail rates. The seventh order unilaterally determines net stranded costs for utilities. The eighth order approved Wisconsin Electric Power Company and Edison Sault Electric Company's "revised return-to-service proposal." The ninth order rejected the Detroit Edison Company's application "to unbundled existing commercial and industrial electric rates."

11/01: Recently issued orders by the PSC include: an order adopting procedures to protect customers from slamming, switching a customer to another service provider without their consent, and cramming, billing a customer for unauthorized service, in compliance with the Customer Choice and Electricity Reliability Act of 2000; an order establishing a procedureal framework for implementing and administering the Low-Income and Energy Efficiency Fund; and an order adopting a modified code of conduct for regulated and unregulated services provided by electric utilities and alternative electric suppliers.

10/01: The PSC issued an order October 11, 2001, to adopt the settlement agreement and authorizing Wisconsin Electric Power Co., Edison Sault Electric Col, Wisconsin Public Service Corp., Upper Peninsula Power Co., Northern States Power Co.-Wisconsin, Indiana, Michigan Power Co., and Alpena Power Co. to implement Customer Choice and Electricity Reliability act implementation plans.

11/00: The PSC issued two orders approving Detroit Edison's and Consumers Energy's financing order applications that allow them to issue securitization bonds. The refinancing will allow both companies to cover the cost of implementing the 5-percent reduction in rates, which began in June 2000 after passage of Public Act 141 and 142.

6/00: The PSC ordered Detroit Edison and Consumers Energy to immediately reduce residential rates by 5-percent. According to Public Act 141 and 142, Michigan's "Customer Choice and Electricity Reliability Act," the Commission must reduce rates by 5 percent.

8/99: The PSC established September 1, 1999, as the deadline for Detroit Edison and Consumers Energy to notify the PSC of their intent to voluntarily implement the Electric Choice plan, as ordered by the PSC. Both Detroit Edison and Consumers Energy have announced that they intend to implement retail competition under a voluntary basis. The Governor issued a statement in which he stated that he " continued to support the implementation of the PSC's Orders to begin the creation of a competitive market" and that " the next step is to codify those Orders into law…"

6/99: The Michigan Supreme Court decided that the PSC does not have the authority to mandate retail wheeling. However, Consumers Energy and Detroit Edison, which serve 90 percent of

the consumers in Michigan, are voluntarily restructuring according to the PSC restructuring Plan. All of their consumers will have retail access by January 1, 2002.

3/99: A PSC Order adopted implementation plans for 2.5 percent of Detroit Edison and Consumer's Energy consumers to choose electric suppliers beginning September 1999. Another 2.5 percent will be added each 6 months until all consumers have retail access by January 1, 2002.

4/98: Responding to the PSC order, Consumers Energy and Detroit Edison filed restructuring plans to implement retail competition. In other PSC action, the utilities were ordered to file plans for obtaining additional capacity for this summer.

1/98: The PSC completed final action on rehearing orders required to introduce competition into the state's electric utility market. A phase-in sechedule was adopted allowing 2.5 percent of Consumer's Energy and Detroit Edison customers retail access as early as March 1998, adding another 2.5 percent on June 1998, January 1999, January 2000, and January 2001 and all consumers by 2002.

Legislation:

6/00: Public Act 141 of 2000 and companion Public Act 142 were signed into law on June 3, 2000. The comprehensive restructuring legislation will allow all consumers retail choice by January 2002. Detroit Edison and Consumers Energy residential consumers will receive an immediate 5-percent rate reduction. The reduced rates will then be frozen at least until December 31, 2003. Rates for large commercial and industrial consumers will also be capped through 2003, and small business consumers' rates will be capped at current levels through 2004. Other provisions of the law include: requiring the PSC to issue orders that will prevent "slamming" and "cramming;" creating a low-income and energy efficiency fund of approximately $40 million per year for 6 years; creating a consumer education program; authorizing stranded cost recovery and securitization (refinancing of debt); licensing new suppliers; and requiring a study of the effects of mercury emissions from the electric power industry in the state. The PSC was given authority to implement restructuring and retail competition.

Renewable Energy/ Energy Efficiency:

One provision requires the PSC to create a low-income and energy efficiency fund of approximately $40 million a year for 6 years.

State Restructuring Status:

State: Minnesota **Restructured:** NO

Public Utilities Agency: Minnesota Public Utilities Commission

Regulatory Orders: The PUC issued an "order initiating development of unbundling program and opening new investigation docket." The purpose of this order is "to investigate issues of unbundling/retail choice/restructuring in the gas and electric utilities industries." The PUC will develop program by January 2001, and present it to the legislature for consideration. Progress reports will be given to the Legislature on October 1, 1999, March 1, 2000, and September 1, 2000.

Legislation:

4/98: H.F. 3654 (Chapter 380 of the Laws of Minnesota 1998) established technical advisory work groups within the task force to study "bulk power system reliability, infrastructure, and regulation issues; distribution reliability, safety, and maintenance issues; energy prices and price protection mechanisms issues; and universal service issues." The groups will prepare a report for the full task force to review by November 30, 1998, and the task force will present a report to the Legislature by January 15, 1999.

5/97: The Legislature amended the role of The Minnesota Legislative Electric Energy Task Force to review and analyze issues relating to electric power industry restructuring with the passage of S.F. 1820 (Chapter 191 of the Laws of Minnesota 1997). TA report is due January 1998.

Renewable Energy/ Energy Efficiency: **NA**

State Restructuring Status:

State: New Hampshire **Restructured:** YES

Public Utility Agency: New Hampshire Public Utilities Commission

Regulatory Orders: **1/01:** The New Hampshire Supreme Court upheld Public Service of New Hampshire's (PSNH) restructuring plan, clearing the way for competition to begin for the majority of consumers in New Hampshire. The PSNH plans to implement retail choice by April 2001. The plan calls for a 10-percent rate reduction; standard offer rates between 4.4 and 4.6 cents per kWH, increasing gradually over a three-year transition period; and divestiture generation assets, including PSNH's interest in Seabrook nuclear and about 1,200 MW in fossil and hydro plants.

12/00: Granite State Electric Company was granted permission to increase rates by the New Hampshire Public Utilities Commission (PUC) due to the rising costs for natural gas and petroleum. The rate will rise from 3.8 cents/kWH to 5.6 cents/kWh, an average of 18.4 percent on a customer's bill.

10/00: Lawsuits filed by consumer groups challenged the new PSNH restructuring settlement concerning stranded costs recovery as unconstitutional. Competition was scheduled to begin on January 1, 2001, with an accompanying rate reduction of about 10.5 percent, but likely will be delayed again.

9/00: The PUC approved a settlement that resolves a three-year long dispute over the restructuring of PSNH. The settlement, which was signed into law in June 2000, calls for the utility's residential customers to receive a 5 percent rate reduction on October 1, 2000. The full rate reduction will total 15.5 percent and will happen when "Competition Day" occurs. The actual start of competition, or Competition Day, is dependent on how soon financing of the rate reduction is completed, as well as possible legal challenges to the PUC orders by other parties. Residential rates will be capped for nearly three years, and businesses' rates f or nearly 2 years. PSNH will divest its generation assets by July 2001, and operate as a transmission and distribution utility, regulated by the state.

6/00: The New Hampshire Electric Cooperative voted to set their own rates and approve financing without oversight of the PUC.

The PUC will continue oversight of contracts between the cooperative and the outside suppliers, IPPs, and municipal utilities as well as continuing oversight of deregulation activities and the service territory.

8/99: The PSNH filed an agreement with the PUC that could end the litigation that is blocking competition in PSNH territory. Under the agreement, PSNH would be allowed to recover $1.9 billion in stranded costs, and allow the issuance of $725 million in bonds to finance part of these costs (a process known as securitization). The governor supports the agreement, and stated that "If approved by the PUC and legislature, this agreement will reduce electric rates about 18 percent for families and businesses, open the door for electric competition, and end the costly litigation brought by PSNH that has blocked competition and lower rates for the past two years.

4/99: Restructuring in New Hampshire is at a standstill due to Federal court rulings concerning the PUC's efforts to set stranded costs and rates for PSNH. The continuing federal court cases will further delay restructuring efforts in the state.

6/98: US District Court issued an order enjoining the PUC from implementing any restructuring plans until the court holds trial for the suit filed by PSNH, scheduled for November 1998.

3/97: PSNH filed a complaint in Federal District Court requesting a stay against the PUC's stranded cost recovery plan, claiming the PSNH would be forced into bankruptcy. The stay was issued, halting implementation of the restructuring plan as it applied to PSNH. The stay was extended until a trial is completed, which is expected to begin in February 1999.

2/97: The PUC issued a final plan and legal analysis for restructuring the electric power industry in New Hampshire. Among the issues addressed by the plan are market structure, unbundling electric services, stranded costs, and public policy issues such as universal service, renewable energy, and customer protections.

Legislation:

6/00: Legislation was passed and signed into law that will resolve the lengthy dispute that has delayed retail competition in the PSNH area. SB 472 authorizes refinancing of $800 million of PSNH debt to be paid off over 12 to 14 years. PSNH will reduce rates by an average 15.5 percent for businesses and 17 percent for

residential consumers. Residential rates will be capped for nearly three years, and businesses' rates for nearly 2 years. PSNH will divest its generation assets by July 2001, and operate as a transmission and distribution utility, regulated by the State.

7/99: HB 464, a law that addresses rate reduction financing or securitization, was signed into law on July 16, 1999.

6/98: SB 341, a law that addresses default and transition services, was signed into law on June 17, 1998.

6/98: HB 485, a net metering law, was enacted to allow customers with 25kW or less renewable generation to utilize net metering.

5/96: HB 1392 was enacted, requiring the PUC to implement retail choice for all customers of electric utilities under its jurisdiction by January 1, 1998 or at the earliest date which the Commission determines to be in the public interest, but not later than July 1, 1998.

Renewable Energy/ Energy Efficiency:

9/00: The Department of Environmental Services is developing a draft regulation to implement a new state law (House Bill 649). The regulation would impact new sources that install internal combustion engines or combustion turbines. Existing sources would be subject to the requirements in 7 years. Subject devices would be required to pay fees on emissions above 7 pounds of NOx per MW. The fees would be deposited in a dedicated NOx Emission Reduction Fund.

6/98: A net metering law was enacted to allow customers with 25 kW or less renewable generation to utilize net metering.

State Restructuring Status:

State: New Jersey **Restructured:** YES

Public Utilities Agency: New Jersey Board of Public Utilities

Regulatory Orders: **12/00:** The New Jersey Supreme Court upheld a decision upholding the New Jersey Board of Public Utilities' (BPU) restructuring and securitization orders for PSE&G. This decision will allow PSE&G to go forward with its implementing restructuring according to the orders issued by the BPU. Customers will receive an additional 2 percent rate reduction and securitization bonds will be sold, amounting to $2.5 billion, the proceeds which will retire outstanding debt and/or equity.

7/99: The BPU reached a final settlement agreement with Conectiv. The final plan sets a schedule for rate reductions, determines stranded costs recovery and shopping credits, and sets retail access implementation by November 1999.

6/99: The BPU reached a settlement agreement with GPU for restructuring. The settlement includes rate reductions, increased shopping credits, and reduced the amount of stranded costs GPU will be allowed to recover.

3/99: New Jersey plans to launch its consumer education for electricity restructuring and retail choice program on June 1, 1999.

5/98: The BPU announced a 6-month delay in its plan to offer retail competition. Phase-in of retail competition should now begin by April 1999.

4/97: The BPU issued an order adopting and releasing its final report for the Energy Master Plan. The revised plan accelerates the time line for retail competition to begin: phase-in should begin with 10 percent by October 1998, 35 percent by April 1999, 50 percent by October 1999, 75 percent by April 2000, and all by July 2000.

1/97: The BPU issued an order releasing its Energy Master Plan for public comment. The proposal calls for a phase-in of retail choice that would give all New Jersey residents and businesses the option of choosing their electricity supplier by April 2001.

Legislation

9/02: Senate Bill 869 was enacted on September 9, 2002 and effective immediately. SB 869 gives the Board of Public Utilities the discretionary power to allow the utilities to issue "transition bonds." These bonds will allow Conectiv, Jersey Central Power & Light, Public Service Electric & Gas and Rockland Electric to recover nearly $1 Billion in "deferred balances" as a result of the rate cap. The Board has hired two consulting firms to audit the four utilities.

2/99: Legislation (A 10/S 5) to restructure the electric power industry in New Jersey was enacted. The law allows all consumers to shop for their electric supplier by August 1999; reduces current rates by 5 percent, and over the next 4 years, by 10 percent; and allows recovery of utilities' stranded costs through a wires charge paid by consumers.

7/97: AB 2825, a tax reform bill, was enacted. The law abolished the gross receipts and franchise tax on sales of electricity and replaces it with a corporate business tax paid by the utilities and a 6 percent sales and use tax paid by the customers on energy use. The new tax system will create tax equity between utility companies and potential competitors in a deregulated market.

Renewable Energy/ Energy Efficiency:

8/00: The Board of Public Utilities (BPU) delayed a decision on a $130 million program that would increase the number of renewable energy projects in the state. BPU is wary that utilities may seek rate increases to pay for the programs once the rate price cap is lifted in NJ in 2003. For now, the BPU has directed the utilities in the state to further research the potential price impact on ratepayers.

The restructuring legislation in NJ requires spending $230 million for home weatherization, renewable energy and other programs, and increases spending on new energy conservation programs.

State Restructuring Status:

State: New York **Restructured:** YES

Public Utilities Agency: New York State Public Service Commission

Regulatory Orders: **6/01:** The New York Public Service Commission approved standards governing the electronic exchange of routine business information and data among electricity and natural gas service providers in New York. The PSC also issued an order to establish uniform retail access billing and payment processing practices that will facilitate a single bill option for customers who buy power and/or natural gas from ESCOs. These orders are designed to facilitate retail energy competition in New York and provide for efficient single-billing options for all New York electricity and natural gas customers.

3/01: The PSC approved rules for customers in New York State Electric & Gas territory to receive a credit for switching to a competitive electricity supplier. The old "shopping credit" was set, at 3.71 cents per kilowatthour, below market prices. Competitors could not beat the that price with market prices consistently being higher. The new "shopping credit" will be tied to the going market price plus a small amount for administrative costs, making it easier for competitors to deal with wholesale prices that fluctuate seasonally. The market-based shopping credit is expected to entice more customers to switch suppliers.

11/98: The PSC ordered utilities, beginning in 4/00, to inform customers of the sources of their electricity and their amount of environmentally "clean" power.

6/98: The PSC set rules for a Systems Benefit Charge to fund R&D related to energy service, storage, generation, the environment, and renewables; pilot programs for energy management for low-income consumers; and environmental protection.

1997 to 1998: The PSC approved restructuring orders for six utilities in the State.

5/96: The PSC issued its opinion and order regarding competitive opportunities for electric service that restructured New York's electric power industry. The Competitive Opportunities Case

adopted the goal of having a competitive wholesale market by 1997, and a competitive retail market by early 1998. Electric utilities are required to submit restructuring plans by October 1996. It also states that utilities should have a reasonable opportunity to recover stranded costs consistent with the goals of restructuring.

Legislation

9/02: According to the Governor's press release, "Governor Pataki signed net metering legislation that will encourage farmers to sell excess electricity generated through the use of anaerobic digesters to utilities. Net metering laws already exist for electricity generated by solar panels on homes. The new legislation would expand those laws to include technically qualified farms as potential "net metering" customers who generate power from methane."

1/99: The governor withdrew a tax break for customers who chose an alternative generation supplier, resulting in a 4 percent increase in rates for customers who are"choosing."

2/98: A bill, A.7942 - D, was introduced by Senator Tonko to provide an alternative deregulation plan to the PSC, saying the current PSC plan does not go far enough to protect consumers. The bill calls for competition in electric generation no later than March 1, 2000 for all consumers, including municipal systems and 10 percent rate cuts by September 1998.

Renewable Energy/ Energy Efficiency:

9/00: Pacific Gas and Electric (PG&E) Corporation's National Energy Group began commercial operation of the largest wind power plant in the eastern U.S., an 11.5 MW facility in Madison County, NY, near the town of Hamilton. Cost sharing and performance incentives available from the New York State Energy Research and Development Authority (NYSERDA) in recent years have succeeded in attracting at least 30 MW of wind energy generation to western New York (of which the Madison County project is the first).

The NYSERDA funds are from the New York Public Service Commission (PSC) order establishing a system benefits charge (SBC) on electricity sales to support energy conservation and renewable energy.

In Opinion 96-12, the NYPSC directed that a non-bypassable system benefits charge be established to support investments in energy efficiency, research, development and demonstration, low-income programs and environmental monitoring that might not be fully supported in a competitive market.

Certain rules (12 and 52.3) by Niagara Mohawk can be a significant impediment to CHP: onsite generated kWh will still be charged delivery fees.

11/98: The Public Service Commission ordered utilities beginning in 4/00, to inform customers of the sources of their electricity and their amount of environmentally "clean" power.

6/98: The PSC set rules for a Systems Benefit Charge to fund R&D related to energy service, storage, generation, the environment, and renewables; pilot programs for energy management for low-income consumers; and environmental protection.

State Restructuring Status:

State: Ohio **Restructured:** YES

Public Utilities Agency: Public Utilities Commission of Ohio

Regulatory Orders

6/01: The New York Public Service Commission approved standards governing the electronic exchange of routine business information and data among electricity and natural gas service providers in New York. The PSC also issued an order to establish uniform retail access billing and payment processing practices that will facilitate a single bill option for customers who buy power and/or natural gas from ESCOs. These orders are designed to facilitate retail energy competition in New York and provide for efficient single-billing options for all New York electricity and natural gas customers.

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1997 to 1998: The PSC approved restructuring orders for six utilities in the State (see utility plans in the "retail access" table).

5/96: The PSC issued its opinion and order regarding competitive opportunities for electric service that restructured New York's electric power industry. The Competitive Opportunities Case

adopted the goal of having a competitive wholesale market by 1997, and a competitive retail market by early 1998. Electric utilities are required to submit restructuring plans by October 1996. It also states that utilities should have a reasonable opportunity to recover stranded costs consistent with the goals of restructuring.

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2/98: A bill, A.7942 - D, was introduced by Senator Tonko to provide an alternative deregulation plan to the PSC, saying the current PSC plan does not go far enough to protect consumers. The bill calls for competition in electric generation no later than March 1, 2000 for all consumers, including municipal systems and 10 percent rate cuts by September 1998.

Renewable Energy/ Energy Efficiency:

7/99: Restructuring legislation includes a provision for a $110 million revolving loan fund for residential and small commercial energy efficiency and renewable energy projects. Also, electricity marketers must disclose environmental information to consumers.

State Restructuring Status:

State: Pennsylvania **Restructured:** YES

Public Utilities Agency: Pennsylvania Public Utility Commission

Regulatory Orders

8/02: The Pennsylvania Public Utility Commission issued an emergency order to stop New Power "from sending out additional make-up bills that are not consistent with our rules and regulation." All New Power customers that have already paid these bills are to be refunded.

8/01: The Pennsylvania Public Utility Commission (PUC) approved a settlement with GPU, Inc. and First Energy Corp (a merger between the two utilities is pending) that preserves customer rate caps, encourages customer participation in choosing alternative generation suppliers, increases support for renewable energy and conservation programs, and enables GPU to defer its wholesale power losses through 2005. Distribution rate caps were extended for 3 years to 2005. Total generation rates, including shopping credits and competitive transition charges, continue at the same levels through 2010 as established by GPU's restructuring settlement. Shopping credits will rise with a corresponding decrease in the competitive transition charge, which will enable customers more opportunity to find alternative suppliers for generation. The settlement also commits $15 million to renewable and sustainable energy development. And finally, through the establishment of a deferral mechanism that allows GPU to carry its wholesale power losses in a deferred account through 2010, the settlement addresses GPU's current financial concerns and enables it to continue meeting its obligations to purchase wholesale power for its customers.

1/01: As required under PECO's restructuring plan, 300,000 residential customers that had not chosen a competitive supplier were randomly chosen and switched to The New Power Company, which was chosen by PECO to provide "Competitive Discount Service" from March 2001 through January 2004. Customers may opt out of the program or choose another electricity supplier without penalty.

1/01: The PUC deferred the decision on GPU's rate increase request for recovery of wholesale power costs until May, when it will be heard with GPU's merger request (with First Energy). GPU

claims projected losses in 2001 could exceed $145 million due to the rising costs of purchasing wholesale power. GPU voluntarily divested its generation assets, has not entered into long-term contracts for power, and must buy power on the wholesale market at increasing prices to serve its customer load.

12/00: GPU has asked the PUC to defer the losses from its rising costs of wholesale power purchases, due to rising fuel costs, to provide its default customers with power. A number of customers returned to GPU this summer following a rise in market prices. GPU was unable to procure through a 1999 auction, a supplier for 20 percent of its "provider of last resort" load. PECO, which initially also could not procure default power through an auction, recently was able to negotiate privately with New Power Company to supply part of its default load. NPC will offer discounted power to about 299,000 residential PECO customers until 2004. Customers may opt out and remain with PECO.

5/99: The PUC finalized rules for full consumer choice in the retail electricity market. By September 1999, utilities will mail information packages to all consumers that have not chosen a competitive supplier. The packages will contain information about consumer choice, the "price to compare," and a list of competitive suppliers serving their rate class and location.

6/98: The PUC began its consumer education program. An Electric Supplier Selection Form will be mailed to all consumers in the state to begin enrollment in the first part of the phase-in of competition, set to begin with two-thirds of consumers in January 1999. Sign-up for retail choice begins July 1, 1998. The final third of consumers will begin retail choice in January 2000. Most consumers are expected to realize savings of over 10 percent of what they now pay.

Legislation

12/96: HB 1509, the Electricity Generation Customer Choice and Competition Act, was enacted. The law allows consumers to choose among competitive generation suppliers beginning with one third of the State's consumers by January 1999, two thirds by January 2000, and all consumers by January 2001. Utilities are required to submit restructuring plans by September 1997.

Renewable Energy/ Energy Efficiency:

9/00: A $21 million Green Energy Fund was created by the Public Utilities Commission (PUC) to be used for investment in green energy projects such as wind, solar, and biomass. The fund, which currently has $5 million, is expected to grow to more than $20

million over the next six years. The fund was created as part of a negotiated settlement between the PUC and Pennsylvania Power and Light (PPL) in the utility's restructuring case two years ago. Businesses and nonprofit organizations that wish to invest in green energy within PPL's territory may apply for the funds.

1/00: The PA Department of General Services agreed with Green Mountain.com to supply about half a dozen PA government offices with electricity generated with renewable energy sources. Part of the electricity will be generated at the 10.4 MW Green Mountain Wind Farm currently under construction in Garrett, PA.

State Restructuring Status:

State: Rhode Island **Restructured:** YES

Public Utilities Agency: Rhode Island Public Utilities Commission, Energy Facility Siting

Regulatory Orders

12/97: The Rhode Island Public Utilities Commission (PUC) issued an order accepting interim rates and approving retail choice for all Rhode Island consumers on January 1, 1998.

Legislation

6/02: HB 7786 was enacted. It changed the composition of the Public Utilities Commission, its membership, meetings and hearings. There will now be five commissioners instead of three, and three of the commissioners must be independent from any business regulated by the commission. The bill also amended the State's restructuring law, HB 8124. Utilities must offer Standard Offer Service (SOS) to customers not participating in retail competition until 2009, and Last Resort Service (LRS) to customer who left the competitive market. All SOS and LRS rates will be approved by the PSC. Starting January 1, 2003 and for the next 10 years, utilities will collect $0.000002 per kilowatt-hour "to fund demand side management programs and $0.0000003 per kilowatt-hour "to fund renewable energy programs." Municipal aggregation is also permitted.

5/01: The Rhode Island State Senate passed SB 881, an act that would enable nonresidential customers enrolled in last resort service the option to return to standard offer service. These customers would be required to sign an agreement for 2 years prohibiting self-generation during non-emergency conditions and remarketing of purchased electricity.

8/96: The Rhode Island Utility Restructuring Act of 1996, HB 8124, allowed retail choice to be phased-in starting July 1997. In July 1997, Rhode Island became the first state to begin phase-in of statewide retail wheeling (for industrial customers). Residential consumers were guaranteed retail access by July 1998.

Renewable Energy/

Department of Environmental Management (DEM) pollution control rules to be aware of: Air Pollution Control Regulation No. 9 “Air Pollution Control Permits,” Air Pollution Control Regulation No. 38 “Nitrogen Oxides Allowance Program,” Air Pollution Control Regulation No. 41 “NOx Budget Trading Program.”

State Restructuring Status:

State: Vermont **Restructured:** NO

Public Utilities Agency: Vermont Department of Public Service

Regulatory Orders

12/96: Vermont Public Service Board (PSB) issued a report and order on electric power industry restructuring that called for retail competition by 1998, functional unbundling, and allowed recovery of stranded costs. Implementation of the plan requires legislation.

10/95: The PSB opened docket 5854, a formal investigation into restructuring the electric power industry. An informal investigation yielded a set of principles for implementing competition.

Legislation

7/02: Senate Bill 138 (Act No. 145), a bill regarding net metering, took effect July 1, 2002. The act allows farms to produce up to 150 kilowatts of electricity using renewable energy sources. The farm will receive renewable energy credits as long as it produces "less energy than the annual load of the meters associated with the farm." As long as the farm as a certificate of public good, an electric company"may contract to purchase all or a portion of the output from a farm system."

8/98: The Governor created a task force to study restructuring activities regionally and nationally; the effects of Hydro-Quebec contracts on ratepayers; the State's competitive position with a deregulated environment; and the effect of recent regulatory activities on Vermont utilities. A report is due by December 1998.

4/98: Several restructuring bills were considered in 1998 session. The session ended on April 17 with no action taken on any of the bills.

10/97: House Electric Utility Regulatory Reform Committee voted to not propose any retail wheeling legislation in 1998, but will draft its version of a restructuring bill for 1999.

8/97: Prompted by the Senate bill, the House formed a special committee to study restructuring issues.

4/97: The Senate passed a bill based on the plan issued by the PSB that would have allowed retail choice by 1998; however, the bill stalled in the House.

Renewable Energy/ Energy Efficiency: The Department of Public Service supports and encourages the development of Distributed Utility Planning (DUP) in Vermont. The Department views Distributed Utility Planning as consistent with the Vermont statute and Public Service Board precedents mandating least-cost integrated resource planning for the state's electric utilities. The Department regards DUP as instrumental for implementing its policies promoting the development of sustainable and renewable energy resources in Vermont. The Department also considers Distributed Utility Planning to be consistent with its policy of optimizing existing transmission and distribution infrastructure and minimizing the creation of new transmission and distribution corridors in the state.

State Restructuring Status:

State: Wisconsin **Restructured: NO**

Public Utilities Agency: Wisconsin Public Service Commission

Regulatory Orders **12/00:** WPS Resources filed a restructuring plan with the Wisconsin Pubic Service Commission (PSC) that would transfer WPS generating assets to a nonregulated subsidiary (genco) and transform Wisconsin Public Service Corporation into a regulated electric distribution company (disco). A power purchase agreement between the disco and genco would be executed, and ratepayers would retain the same rates as they have today. WPS sees this plan that would remove power plants and their construction from rate bases as a step toward a competitive market in Wisconsin, something they see as inevitable due to surrounding states restructuring status.

11/97: The PSC issued its final decision on electric industry restructuring. The plan does not recommend retail access before 2000, but focuses on improving the utility infrastructure. Recommendations included improving transmission facilities; removing barriers to open transmission access; developing an ISO; promoting construction of merchant plants; and promoting the development of renewable energy resources.

8/97: The PSC submitted its draft 7-step work plan to restructure the electric industry to the legislature. The plan focuses on reliability and infrastructure improvements, and does not recommend retail access at least until 2000. A final decision is set for October 30, 1997.

Legislation

10/99: A proposal called "Reliability 2000," includes a budget plan to restructure the utility industry. It estimates a cost of $14 per year per consumer for energy conservation projects and low-income assistance programs; would create a nonprofit company to own and operate the transmission system; and would lift a rule that limits a utility's investments to 25 percent of its assets.

4/98: Legislation to improve reliability and prevent power shortages by establishing a competitive merchant plant

generating industry and creating a regional independent system operator was signed into law on April 28, 1998. The law will allow merchant plants up to 100 MW to be built without PSC approval, and utilities are required to join an ISO and create 50 MW of power from renewable sources by 2000.

1/98: A bill authored by the Governor was introduced in the 1998 session that considers the reliability issues as proposed in the PSC final decision of October 30, 1997.

Section VII. Other Resources

Many resources are available to learn more about combined heat and power and to become more involved. The following pages include regularly updated Internet sites that involve or specialize in combined heat and power.

Many more sites, including non-profit organizations, federal programs, trade associations, and companies are actively involved in CHP initiatives. Additional resources are available online at the US Combined Heat and Power Internet site. For the latest reports, studies, and articles on CHP, also view the "Papers and Articles" page.

Resource pages included here are:

- The Northeast-Midwest Institute: www.nemw.org
- The Northeast-Midwest Institute Energy Home Page: www.nemw.org/energy.htm
- The U.S. Combined Heat and Power Association: www.uschpa.org
- The U.S. Department of Energy's Distributed Energy Resources Program: www.eere.energy.gov/de/
- The U.S. DOE Energy Information Administration's State Restructuring Page: www.eia.doe.gov/cneaf/electricity/chg-str/restructre.pdf
- The American Council for an Energy-Efficient Economy's CHP/DER page: www.aceee.org/chp