



House Public Utilities Committee

Prepared by:
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February 28, 2008

**TESTIMONY OF JANINE L. MIGDEN-OSTRANDER
OHIO CONSUMERS' COUNSEL
BEFORE THE HOUSE PUBLIC UTILITIES COMMITTEE
FEBRUARY 28, 2008**

Good afternoon. I am Janine Migden-Ostrander, the Consumers' Counsel for the State of Ohio, representing all of Ohio's 4.5 million residential households. As the representative of the largest stakeholder in this process, I would like to thank Chairman Hagan and the Public Utilities Committee for inviting me and other interested stakeholders to testify on the details contained in House Bill 487 as Ohio's energy policy legislation is considered.

The steps taken by the Ohio legislature and the Governor to increase energy efficiency and renewable energy in the state have been important to determining the energy future for all Ohioans. This latest effort, the introduction of House Bill 487, can bring Ohio to a level of reliable and affordable electric rates. I would like to thank Speaker Jon Husted for taking the steps to bring a bill before this committee that is achievable and sets Ohio up for a bright future. I also would like to thank Governor Ted Strickland for having the foresight to bring these issues to the forefront in an effort to establish portfolio standards in both energy efficiency and renewable energy. Representative Jim McGregor deserves many thanks also for his extensive research and continued advocacy for energy efficiency and renewable energy.

House Bill 487 is the most important piece of legislation in preparing Ohio to respond to mandatory greenhouse gas federal legislation. **Attachment 1** to my testimony is a summary of the Lieberman-Warner Climate Security Act (S. 2191) as approved by the United States Senate Environment and Public Works Committee. Duke Energy President Jim Rogers told this committee in December that this act "would raise rates from 20 percent to 50 percent in Duke Energy's Ohio service territory."ⁱ

House Bill 487 will be Ohio's first line of defense in maintaining affordable rates under mandatory greenhouse gas legislation under a new administration as all the lead Presidential candidates are supportive of mandatory carbon legislation.

House Bill 487 will help Ohio capture the untapped potential of green energy and bring more technologies available to help reduce consumers' usage of electricity. Coupled with benchmarks and penalties, the goals established in House Bill 487 can be achieved with certainty and result in a diversified energy portfolio that will assure affordable and stable rates for residential consumers. With a 22 percent reduction in electricity consumption through energy efficiency along with a renewable energy standard, a 2025 energy achievement will prove to be a great benefit for all Ohioans and will result in a future Ohio will be proud of.

The elements of this bill have long been a priority of the Office of the Ohio Consumers' Counsel for many reasons. Energy efficiency is the cheapest alternative to new supply. You can see in **Attachment 2** that the cost of energy efficiency is nearly one third the cost, in cents per kilowatt-hour, of many traditional supply options and can be obtained incrementally as opposed to investing a very substantial amount all at once in expensive generation projects.

Reducing electricity usage benefits all of a utility's customers even if some of them do not practice energy efficiency. As to those customers that do take measures to curb their usage, not only do they lower their own monthly bills through reduced consumption, but they also bring down the utility's overall system costs. These energy efficiency and peak reduction measures will help stave off enormous rate hikes by postponing the need for new generation.

Picture this scenario. A utility projects that it will need 10,000 megawatts of electricity for 20 years to meet the demand of its customers. Years pass and customers demand for electricity continues to steadily increase and a decision needs to be made about what to do to keep the lights on in the future. The utility could either build another power plant to supply additional megawatts for several hundred millions or even billions of dollars or reduce demand through energy efficiency to extend the current supply for years to come. At \$400 per installed kilowatt, energy efficiency is the cheapest and most cost effective

way to supply electricity. Please refer to **Attachment 3** for a graphical representation of this scenario.

Incorporating renewable energy into the mix is a logical step to diversify the fuel sources used for electricity. A 12.5 percent renewable energy standard with a 1 percent solar carve-out is a commendable first step towards ensuring reliability and stabilizing prices for residential customers. While OCC continues to advocate for a higher percentage requirement for renewable energy, 12.5 percent is modest enough as to prevent compliance from becoming onerous. The addition of renewable energy to Ohio's portfolio will reduce Ohio's need to import expensive resources to keep electricity flowing.

You may have heard some concerns that the standards proposed in House Bill 487 are ambitious. It should be noted that the energy efficiency requirements of House Bill 487 will reduce the required renewable kilowatt-hours by more than 32 percent from the expected 22.5 billion by 2025 and should materially reduce any concern over drastic rate increases due to the renewable standard.ⁱⁱ Also, **Attachment 4** can show you some examples of renewable energy standards that other states have adopted, exceeded, and expanded.

One of my office's concerns with Senate Bill 221's standard, as passed by the Senate, was an overall 3 percent cost constraint that applied to the entire production of advanced energy, including nuclear and clean coal supplies. The potential for a utility to propose a new multibillion-dollar clean coal or nuclear facility and declare rates would go up by 3 percent or more could excuse that utility from procuring any renewable power. Under those terms, Ohio could effectively have no renewable standard at all. That is far from the forward-looking 21st century energy plan our state should adopt. Given this, we are pleased that the 3 percent requirement has been dropped from House Bill 487.

The evidence is clear that renewable energy is desired by Ohioans.ⁱⁱⁱ Some individual homeowners have taken the initiative to erect a wind turbine or install solar panels onto

the roofs of their homes. Cities, too, are actively pursuing renewable energy for their communities. Bowling Green just reported a record output from its 7.2 megawatt wind farm. Bellefontaine is in the initial stages of building its own wind farm and Morrow County will soon be voting to set rules to build wind turbines. The city of Cleveland also has taken a great interest in implementing renewable energy. Studies are currently being done by the Great Lakes Energy Development Task Force to establish the feasibility of off shore wind in Lake Erie.

As the residential utility consumer advocate, the OCC looks out for customers' bottom line. Plans we support must make economic sense and help – not hurt – a family's budget. We have made it part of our efforts during the Senate Bill 221 deliberations to discuss how the development of an energy policy is about establishing the lowest possible electric rates now and to design a roadmap for future generations.

While it may not have been true decades ago, the economic interests of families across Ohio are now complimenting the need to begin producing some of our electricity using renewable resources. At a time when new and tighter federal environmental regulations are inevitable, Ohio can not afford to trail behind. As the risks of using fossil fuels increase, it is now cost competitive to construct renewable units. At precisely the same time we hear about mandatory greenhouse gas regulations and carbon limits, tremendous innovations are occurring to make green energy an attractive option. See **Attachment 5** for renewable energy cost trends and **Attachment 6** for facts about the prices of traditional supply resources.

We want to assure Ohioans that diversifying our energy mix is smart and financially responsible. As we follow industry activities across the country, we see how the price of coal fluctuates. When constraints occur with the transport of coal to power plants, that source becomes more expensive. If wholesale natural gas prices continue to escalate as they have over the last several years, we know it will negatively impact the cost of running gas-fired facilities. With renewable energy, the fuel is generally free. Tapping the sun, the wind and landfills for power is a cost effective choice for Ohio.

Attachment 7 contains Ohio's current energy portfolio design. When investing for your personal future, a financial adviser will stress the importance of diversifying your investment portfolio. The same theories hold true for Ohio's energy supply portfolio. When looking at Ohio's current design, it is obvious there is a great need for diversification. Coal accounts for more than 86 percent of our current supply, a resource which future costs are extremely uncertain. While we will continue to rely on coal and nuclear plants paid for over decades by residential consumers, we should also chart a course emphasizing clean energy.

The inclusion of benchmarks and penalties for the energy efficiency and renewable energy portions of House Bill 487 should be a necessary component of Ohio's standards. In other areas of the law, lawmakers have, as necessary, included benchmarks for progress. Energy policy development is no different as it is vital to economic development and to our collective future. If Ohio is serious about putting itself on the map when it comes to these standards, we must ensure progress is made as the years pass.

Without benchmarks, Ohio would put itself in the position of letting the utilities dictate whether any kilowatt-hours of renewable energy are produced over the next 16 years. The time to start capturing the untapped potential of renewable resources such as wind, solar and biomass is now. By putting forth a reasonable timetable for producing minimum amounts of green energy, House Bill 487 will begin diversifying Ohio's energy portfolio now, and not allow our standard to be an empty promise. An investment in renewable sources now will give Ohio the time it needs to allow for the technology needed to capture and sequester greenhouse gases from coal plants to develop and for prices of this technology to come down. According to a recent study by the National Coal Council, carbon capture and sequestration technology is not commercially available and needs more time to develop.^{iv}

Likewise, Ohio should not send the message that the technologies to save our state electricity can be put on the back burner for the next decade if the utilities so choose. We cannot turn a blind eye to the projected growth in demand for electricity. Just as inflation

is a fact of our economic life, growth in demand is a fact of our energy life. But, just as we can set forth policies that can help keep inflation under control, we can do just the same with energy. As with the renewable benchmarks, the OCC believes the energy efficiency standard in House Bill 487 is reasonable and will help mitigate the growing demand for electricity in a much more cost effective manner than concluding that the only remedy is to increase supply by building new power plants.

Since improving the demand side of the equation is more cost effective, the time to start with the implementation of House Bill 487 is now, not 10 or 15 years in the future. Again, if you, as policymakers, want to make a positive mark through sound energy policy, a timetable needs to set forth a future of significant energy efficiency investments.

During the discussion of House Bill 487 at the Feb. 21 press conference, it was made clear that penalties need to back up the positive results intended by renewable energy and energy efficiency standards. There must be an economic consequence for failing to contribute to Ohio's future, including its need to diversify its energy sources and to take real measures to save electricity. Penalties need to be adequate to provide a significant disincentive for any utility not doing its fair share. Failing to contribute to our collective energy future should not be just the "cost of doing business"; it should ensure that assessing such penalties is the exception, not the rule.

Overall, OCC supports House Bill 487, but offers a few amendments in **Attachment 8**. Also, **Attachment 9** includes what Ohio is currently doing in energy efficiency. OCC has worked with the utilities to put together good programs to benefit consumers. It is a good start, but more can be done.

The subject before you today is important and the decisions you make today will matter greatly and will be demonstrable, maybe not tomorrow, but in the years to come. It is a legacy for our children and I hope that the legacy is one of affordable and reliable energy provided through new innovations and technologies, otherwise known as American ingenuity.

I thank you for your consideration of this important legislation and I am prepared to answer any questions you may have.

i Comment in response to Representative Inquiry on December 12, 2007, before the House Public Utilities Committee concerning Substitute Senate Bill 221.

ii Based on projected consumption from 2003-2023 from PUCO. Includes Investor Owned Utilities only.

iii http://www.odod.state.oh.us/cdd/oe/EERE_OhioResearch.htm

iv Technologies to Reduce or Capture and Store Carbon Dioxide Emissions, National Coal Council, Chapter 3, June 2007

Lieberman-Warner Climate Security Act

In historic committee action on December 5, 2007, the Lieberman-Warner Climate Security Act (S. 2191) was approved 11-8 by the United States Senate Environment and Public Works Committee.

This is the first comprehensive global warming bill to make it through any committee in Congress.

This historic vote reflects the growing momentum and public demand to cut America's global warming pollution. State and local action, court verdicts, business plans, and consumer decisions are all pointing the United States in the direction of taking serious action to curb global warming pollution.

The time to act is now. We already see the impact of a disrupted global climate through the increased number and severity of wildfires, floods, and droughts, among other effects. This bill has helped center our national discussion on how quickly we can and must reduce our emissions, which is exactly where it should be. We have the solutions—cleaner energy sources, new vehicle technologies and industrial processes, and enhanced energy efficiency. We need national legislation to ensure these best practices are implemented quickly and comprehensively.

Summary of Legislation

The bill would set a declining cap on U.S. emissions of greenhouse gases covering 86 percent of U.S. emissions. The bill *requires* reductions below 2005 levels from *covered sources* of 4 percent by 2012, 19 percent by 2020, and 71 percent by 2050.

A joint analysis by NRDC and the World Resources Institute indicates that these cuts would lead to reductions in total U.S. greenhouse gas emissions as follows:

- by 2012, a 5 to 13 percent reduction in total U.S. emissions
- by 2020 an 18 to 25 percent reduction in total U.S. emissions
- by 2050, a 62 to 66 percent reduction in total U.S. emissions

To achieve these reductions, the bill:

- Creates an emissions tracking and monitoring system.
- Creates a cap and trade system administered by the Environmental Protection Agency.
- Allocates a growing percentage of allowances, reaching 100 percent by 2030, to activities that provide public benefit and reduce the cost of the program.
- Allows up to 15 percent of a facility's compliance obligation to be fulfilled through the purchase of "offsets" which are reductions from sources outside the cap.
- Allows up to 15 percent of a facility's compliance obligation to be fulfilled through the purchase of international credits from other recognized trading systems of comparable integrity to the U.S. system.
- Contains provisions for banking and borrowing of emissions to help manage volatility in carbon prices. It creates a carbon market efficiency board which monitors emissions trading. The board can increase the amount of offsets and borrowing allowed at the individual firm level and can also release borrowed allowances into the carbon market equaling up to 5 percent of the national total. All borrowed allowances must be paid back by making deeper reductions in later years.

S.2191 as Reported On
December 5, 2007 by the
U.S. Senate Environment
and Public Works Committee



www.nrdc.org/policy

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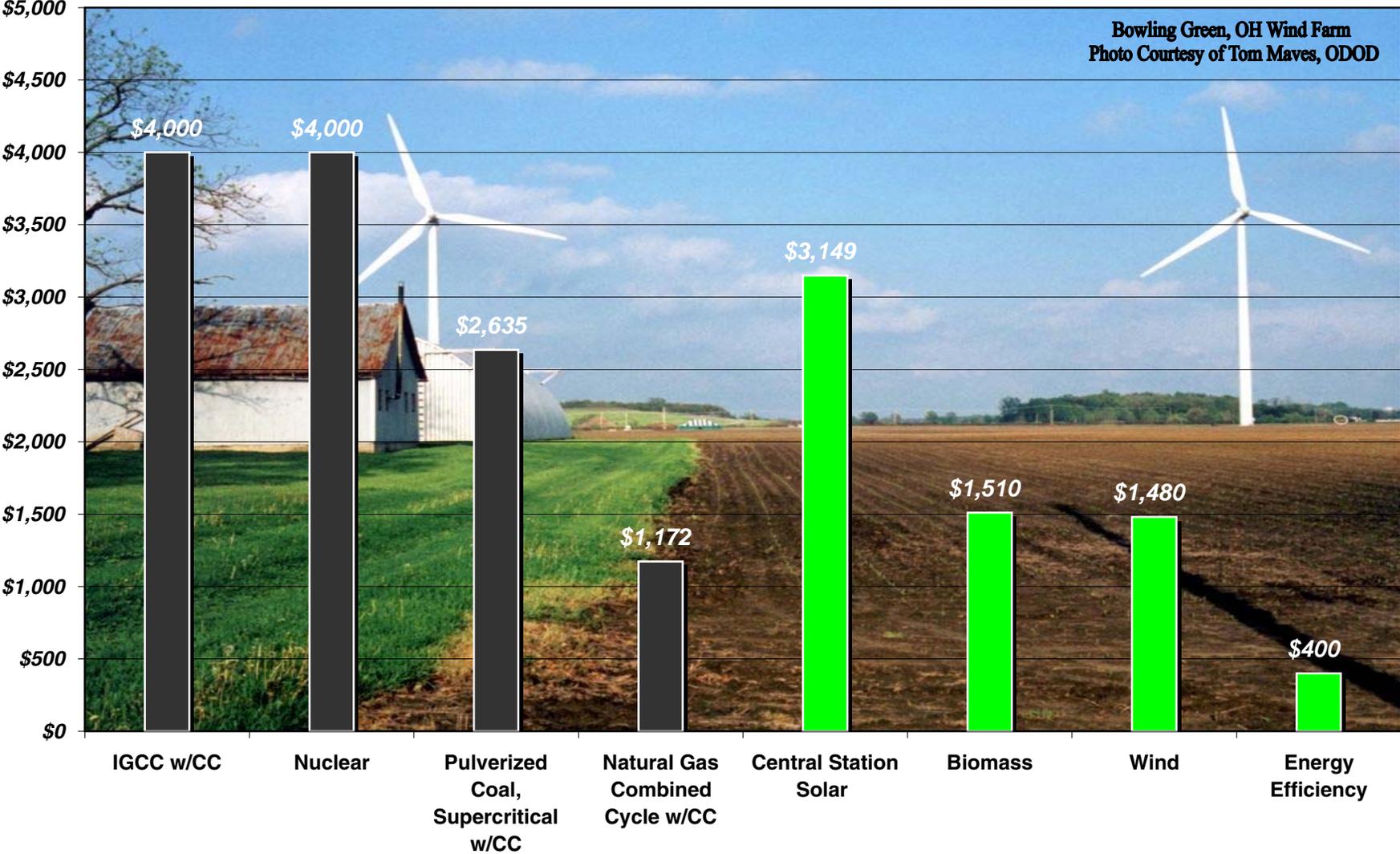
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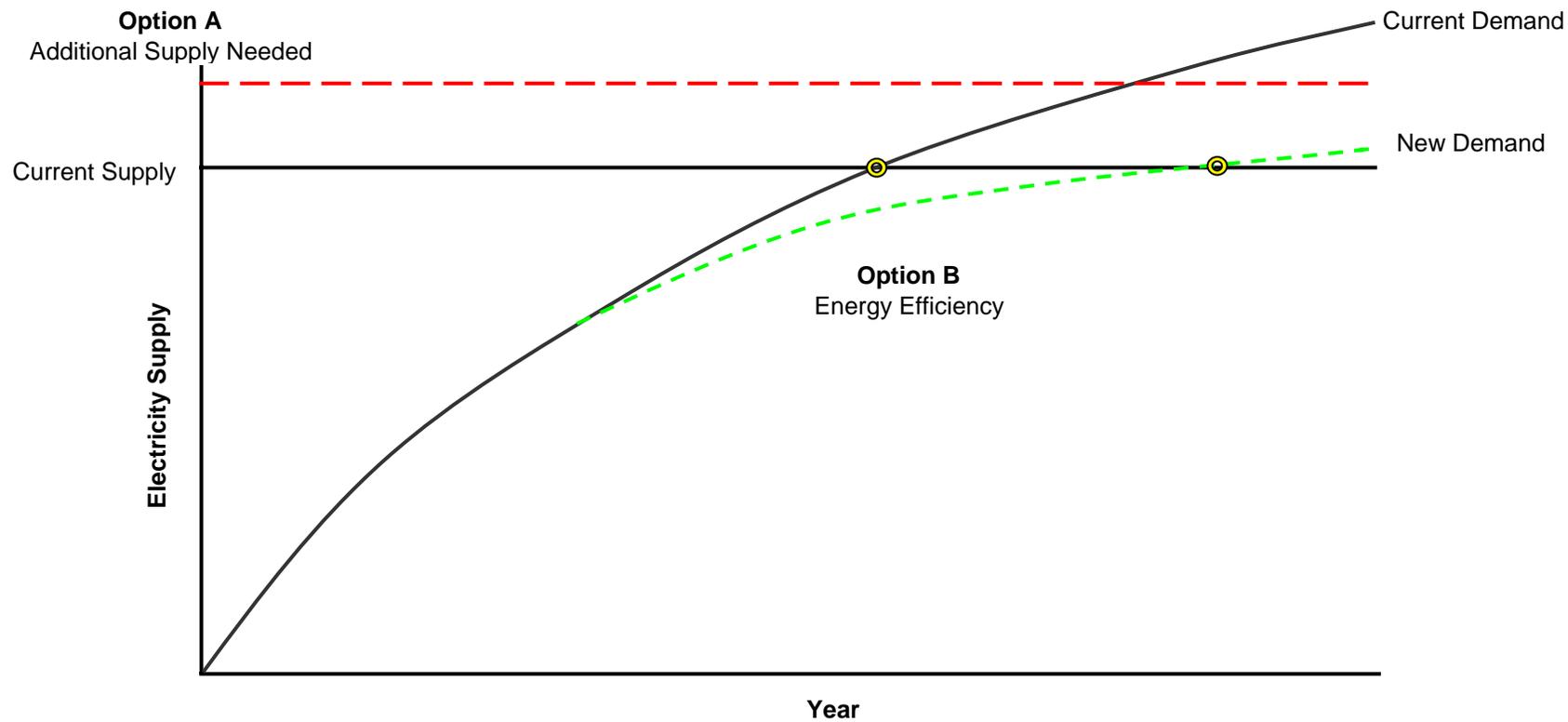


Comparative Cost of Generation 2007 \$/KW



Bowling Green, OH Wind Farm
Photo Courtesy of Tom Maves, ODOD

2 OPTIONS FOR OHIO



States with Expanded Renewable Portfolio Standards

Some of the efforts made on renewable portfolio standards have been particularly successful. For example, Connecticut increased its RPS in 2003, extending the standard to all utilities in the state; Iowa met its standard in 1999. Many states allow utilities to comply with the RPS through tradeable renewable energy credits. While the success of state efforts to increase renewable energy production will depend in part on federal policies such as production tax credits, states have shown their considerable efficacy in encouraging clean energy generation.

CT: On June 4, 2007, Governor M. Jodi Rell signed House Bill 7432, which expanded the state's previous renewable portfolio standard. HB 7432 requires that 27 percent of the state's electricity come from renewable sources by 2020. The law includes standards for three classes of renewables. By 2020, 20 percent of the renewables must be from Class I, 3 percent must be from Class I or II, and 4 percent must be from Class III. Class I sources include solar, wind, new sustainable biomass, landfill gas, fuel cells (using renewable or non-renewable fuels), ocean thermal power, wave or tidal power, low-emission advanced renewable energy conversion technologies, and new run-of-the-river hydropower facilities with a maximum capacity of five megawatts. Class II sources include trash-to-energy facilities, biomass facilities not included in Class I, and certain hydropower facilities. Class III sources include customer-sited combined heat and power systems with a minimum operating efficiency of 50 percent installed at commercial or industrial facilities on or after January 1, 2006; electricity savings from conservation and load management programs that started on or after January 1, 2006; and systems that recover waste heat or pressure from commercial and industrial processes installed on or after April 1, 2007.

DE: On July 24, 2007, Governor Ruth Ann Minner signed Senate Bill 19, which expanded the state's previous renewable portfolio standard to require that 2 percent of the state's electricity supply come from solar photovoltaics by 2019, in addition to 18 percent from other renewable sources by the same date. Sources of energy that count toward the standard include wind, ocean tidal, ocean thermal, fuel cells powered by renewable fuels, hydroelectric facilities with a maximum capacity of 30 megawatts, sustainable biomass, anaerobic digestion, and landfill gas.

MD: On April 24, 2007, Governor Martin O'Malley signed Senate Bill 595, which expanded Maryland's existing renewable portfolio standard to require that 2 percent of the state's electricity supply come from solar sources by 2022, in addition to 7.5 percent from other renewable sources by the same date. Sources of energy that count toward the standard include wind, qualifying biomass, methane from the anaerobic decomposition of organic materials in a landfill or wastewater treatment plant, geothermal, ocean, including energy from waves, tides, currents, and thermal differences, a fuel cell that produces electricity from qualifying biomass or methane, and small hydroelectric power plants.

NJ: On April 12, 2006, the New Jersey Board of Public Utilities (BPU) approved new regulations that expanded the state's renewable portfolio standard. The BPU decision requires utilities produce 22.5 percent of their electricity from renewable sources, at least 2 percent of which must come from solar sources. Sources of energy that count toward the remainder of the standard include solar, wind, wave, tidal, geothermal, methane gas captured from a landfill, fuel cells powered by renewable fuels, electricity generated by the combustion of gas from the anaerobic digestion of food waste and sewage sludge at a biomass generating facility, and hydropower.

NV: On June 7, 2005 the Nevada Governor Kenny Guinn signed into law Assembly Bill 3, expanding Nevada's previous renewable portfolio standard. The updated standard requires that 20 percent of the state's electricity come from renewable energy sources by 2015, and for each year thereafter. Of the 20 percent, not less than 5 percent must be generated from solar renewable energy systems. Utilities can also earn credit for up to 25 percent of the standard through energy efficiency measures. Sources of energy that count toward the standard include biomass, fuel cells, geothermal, solar, waterpower, and wind.

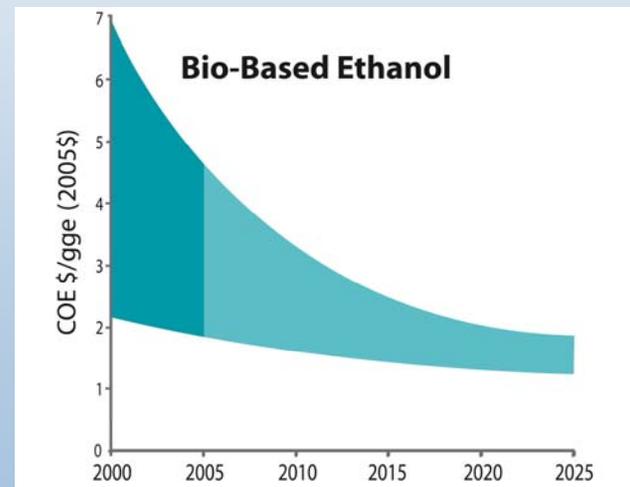
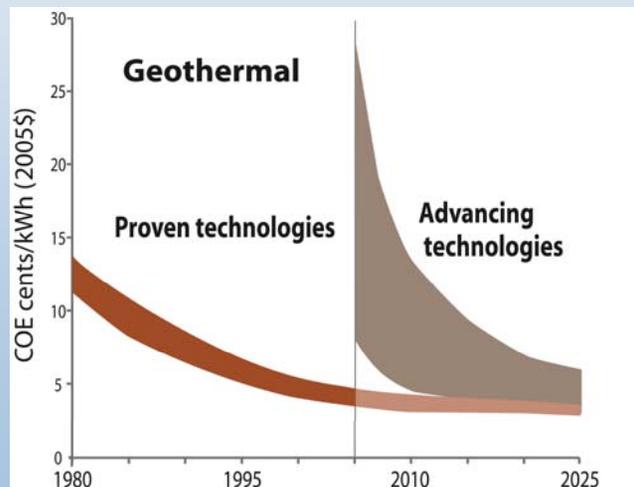
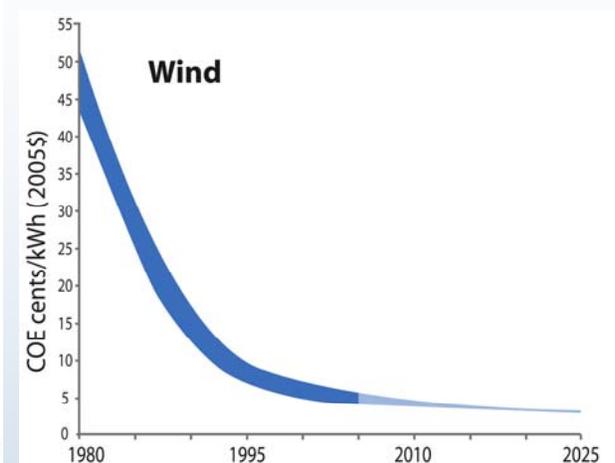
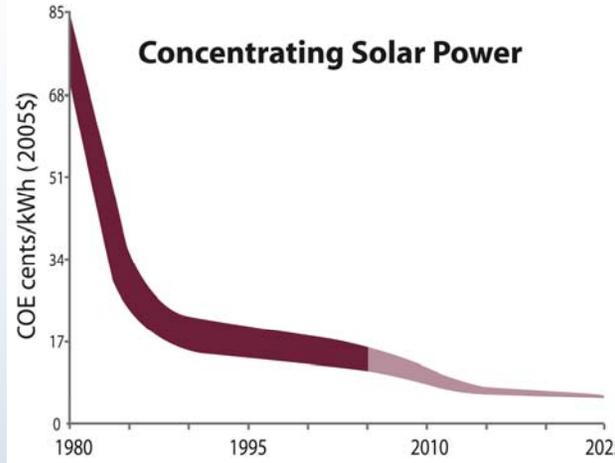
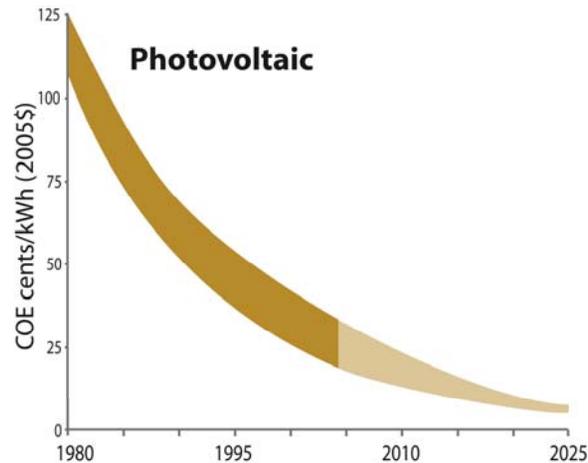
TX: On August 1, 2005, Governor Rick Perry signed a bill increasing the amount of renewable generation required in the state. The law requires that 5,880 MW of new renewable generation be built in the state by 2015, which will meet about 5 percent of the state's projected electricity demand. The legislation also sets a cumulative target of installing 10,000 MW of renewable generation capacity by 2025. In an effort to diversify the state's renewable generation portfolio, the measure also includes a requirement that the state must meet 500 MW of the 2025 target with non-wind renewable generation.

WI: On March 17, 2006, Governor Jim Doyle signed Senate Bill 459, the Energy Efficiency and Renewables Act, which increased the state's previous renewable portfolio standard. The revised standard requires utilities to produce 10 percent of their electricity from renewable energy sources by 2015. Sources of energy that count toward the standard include solar, wind, water power, biomass, geothermal technology, tidal or wave action, and fuel cell technology that uses qualified renewable fuels.

Source: http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm, States with Renewable Portfolio Standards, Updated August 2007

Renewable Energy Cost Trends

Levelized cost of energy in constant 2005\$¹



Source: NREL Energy Analysis Office (www.nrel.gov/analysis/docs/cost_curves_2005.ppt)

¹These graphs are reflections of historical cost trends NOT precise annual historical data. DRAFT November 2005

Renewable Electricity Technology Cost Trends

Chart Notes, Page 1

Background

- The Cost Curves are expressed as a band in constant, 2005 year dollars where the low to high range represents variations in resource quality, scale of installation and financing terms.
- Actual project costs can vary substantially – not only over time, but from project to project – based on variables such as siting and permitting costs, land costs, transmission access, labor costs, and financing terms.
- The Cost Curves are **not based on specific project data**, but are composite representations derived from a variety of sources outlined below.
- Historic costs from 1980 to 2000 generally reflect costs that were published in various DOE Renewable Energy Program plans such as five-year program plans, annual budgets, and other program publications. DOE/EPRI Renewable Energy Technology Characterizations published in 1997
- The Future Cost Curves generally reflect how the DOE Renewable Energy Programs expect the costs of renewable energy to decrease through lowered technology costs and improved performances, resulting from R&D efforts and other factors.
- Projections of cost to 2025 for wind are based on GPRA 06 projections, for photovoltaic and CSP GPRA 06 and MYPP projections. For geothermal projections are based on modeling results from the GETEM model. For bio-based ethanol projections are based on program modeling efforts.
- The lower band of the Cost Curves generally assume the availability of high-quality resources. This is an important point because systems using lower quality resources are being built, in some cases with costs much higher than for high quality resources.
- The Cost Curves do not include the effects of tax credits or production tax incentives.

Renewable Electricity Technology Cost Trends

Chart Notes, Page 2

General Observations

- The renewable technology cost trends typically show a steep decline from 1980 to the present. Projections show this decline to continue, but at a slower absolute pace as the technologies mature.
- Historic cost of energy trends reflected in this chart are in broad agreement with the trends published in “Winner, Loser, or Innocent Victim? Has Renewable Energy Performed as Expected?” Renewable Energy Policy Project, Report No. 7, April 1999.

Technology Specific Notes

- Wind technology cost projections represent wind power systems in locations with Class 6 resources for the lower part of the band and Class 4 resources for the high part of the band. Low wind-speed turbine technology is under development, which will make available large amounts of usable wind resources that are closer to transmission. Lower costs will result from design and technology improvements across the spectrum from foundations and towers, to turbine blades, hubs, generators, and electronics.
- Bio-based ethanol represents a combination of corn starch in the near term and lignocellulosic ethanol in the long term. Lignocellulosic production technologies that co-produce feed products and electricity with ethanol are projected to become the lower cost technology in the latter years of the projected values.
- Geothermal cost projections for Proven Technologies are largely Flash technology with a few binary technology systems. Cost reductions will result from more efficient and productive resource exploration and characterization as well as from continued improvements in heat exchangers, fluid-handling technologies, turbines, and generators. The Advancing Technologies cover three general topics: energy conversion (power generation systems), drilling and wellfield construction systems, and geologic systems. The Advancing Technologies cost curve illustrates year 2005 projections of future LCOE values for this suite of technology topics, considering a wide range of potential research results that can lower the net costs of geothermal power. For conversion systems the principal improvements are expected to come from such benefits as raising process efficiencies and lowering the costs of systems to make it competitive to generate power with cooler temperatures than are now feasible. In drilling and wellfield construction, such issues as corrosion play a major role in well costs. Work is under way to identify new metal alloys and protective coating systems to lengthen the serviceable lifetime of piping components. Drilling costs are a substantial fraction of overall development costs, and R&D are focused on such things as drill bit design to raise ROP values (rate of penetration of drill bits, leading to less time and costs of the drilling operation).
- Solar thermal cost projections are for parabolic trough and power tower for historical values from 1980-1990. While 1980-1990 saw a significant reduction in COE due to R&D efforts, the 1990s R&D efforts were at lower levels and reductions in COE came largely from improvements in operation and maintenance (O&M) costs. Projected values for 2005-2025 are from the Solar program MYPP for 2005 and based on parabolic trough technologies and are based on a detailed due-diligence study completed in 2002 at the request of DOE. Cost reductions will result from improved reflectors and lower-cost heliostat designs, improved solar thermal receivers, heat exchangers and fluid handling technologies, and turbines and generators, as well as from volume manufacturing.
- Photovoltaic cost projections are based on increasing penetration of thin-film technology into the building sector. Likely technology improvements include higher efficiencies, increased reliability (which can reduce module prices), improved manufacturing processes, and lower balance of system costs through technology improvements and volume sales.



Planning Ohio's Future Energy Resources

February 2008

Perspective

With increasing costs and demands for energy in Ohio, it is imperative that the state develops a comprehensive and diverse energy policy. Diversifying the types of resources Ohio uses to produce energy has tremendous potential to improve the state's economy, enhance the lifestyle for its residents and establish a sound economic future.

Adding renewable energy to our portfolio and engaging in comprehensive energy efficiency can help stabilize prices over the long term, create jobs, improve the environment and guarantee energy independence.

Ohio also can benefit by diversifying the resources used to produce electricity, including the need for utilities to use wind, solar and biomass. Because these resources do not pollute and have no ongoing fuel costs associated with them, Ohio should increase the commitment to renewable energy and include annual benchmarks and penalties for noncompliance. In fact, some renewable energy resources are competitive with and less costly than advanced technologies such as nuclear and clean coal.

Technology exists today to help lower consumers' demand for power through energy efficiency. Energy efficiency is a far less costly option than any supply-based option and represents Ohio's best opportunity to manage and deflect rising costs to keep service affordable for customers. A greater commitment in legislation to energy efficiency would be a great benefit to consumers.



Why Ohio? Why Now?

Consider these facts:

- The capital cost of renewable power is below and/or competitive with traditional fossil fuels. Renewable energy fuel costs will not increase because they are free.
- The cost of compliance with the Clean Air Interstate Rule (CAIR) and Clean Air Mercury Rule (CAMR) has already cost billions of dollars. The cost of compliance with anticipated federal laws addressing greenhouse gases will have a significant impact on Ohio utilities.
- Duke Energy CEO Jim Rogers recently states that his company's analysis of the Lieberman-Warner Carbon Mitigation bill indicates that if signed into law, the legislation "would raise rates from 20 to 50 percent in Duke's Ohio service territory."ⁱ
- Moody's Investors Service, one of three major rating agencies, said in October that new nuclear reactors would cost up to \$6,000 per kilowatt (KW) of capacity to build.ⁱⁱ
- Based on new industry estimates, the cost to build a 2,200 megawatt (MW), two-nuclear reactor project in Florida could come in significantly above early estimates. Florida Power & Light (FPL) said that the "overnight costs" would range from \$12 billion to \$18 billion. Overnight estimates exclude interest amounts paid on the loan and are based on commodity prices when estimates are made. ($\$15 \text{ billion} / 2,200 \text{ MW} = \$6,818 \text{ per KW}$)ⁱⁱⁱ



Bowling Green, Ohio leads the state in wind farms. Built in 2003, the Bowling Green Project was Ohio's first utility-scale wind farm. The site has four 1.8 MW turbines.

Source: www.ohiowind.org

Photo courtesy of Thomas R. Maves, Ohio Department of Development

- In 2007, Duke and AEP both gave estimates for their latest Integrated Gasification Combined Cycle (IGCC) projects to cost around \$4,000 per KW.^{iv}
- The last year has seen significant numbers of IGCC projects shelved or stalled as developers and utilities have been unable to justify IGCC investments in the context of spiraling capital costs, lack of satisfactory technology performance guarantees, and an uncertain carbon policy environment.^v
- New guidelines call for three big financial firms (Citibank, JPMorgan Chase & Co. and Morgan Stanley) to go through a rigorous “due diligence” process before lending money for non-renewable energy plants. Other banks stated that their environment-related lending plans were currently “under review internally.”^{vi}
- Columbus, Ohio-based American Electric Power (AEP) acknowledged the need for new guidelines from lenders. “A rational set of carbon principles to help guide energy investment strategy is vital to our nation’s energy and economic future,” AEP Chairman and CEO Michael Morris said in a statement.^{vii}
- In November 2007, natural gas generating plants had seen a 13.2 percent increase in generation from the 2006 level. This increase

was significantly higher than any other type of generation.^{viii}

- Energy efficiency is cheap at approximately one-third the cost of fossil fuel-based generation and can be obtained incrementally as opposed to investing in “lumpy” generation projects.^{ix}
- According to the Energy Information Administration, in the United States, growth in energy demand is expected to increase by 40 percent by 2030.

Bibliography

ⁱ Comment in response to Representative inquiry on December 12, 2007, before the House Public Utilities Committee concerning Substitute Senate Bill 221.

ⁱⁱ New lending rules push power companies to go green: By BOB KEEFE Cox News Service Monday, February 11, 2008

ⁱⁱⁱ Nuclear Costs Explode: by Russel Ray, the Tampa Tribune. January 15, 2008 <http://www2.tbo.com/content/2008/jan/15/bz-nuclear-costs-explode>

^{iv} Based on latest IGCC estimates, see 9/10/07 Power Daily, page 5, for Duke \$2.0 billion estimate and 6/18/07 \$2.23 billion filing of AEP’s 629 MW West Virginia plant.

^v Emerging Energy Research, *TECO, Nuon Cancellations Underscore IGCC’s Woes*, October 5, 2007

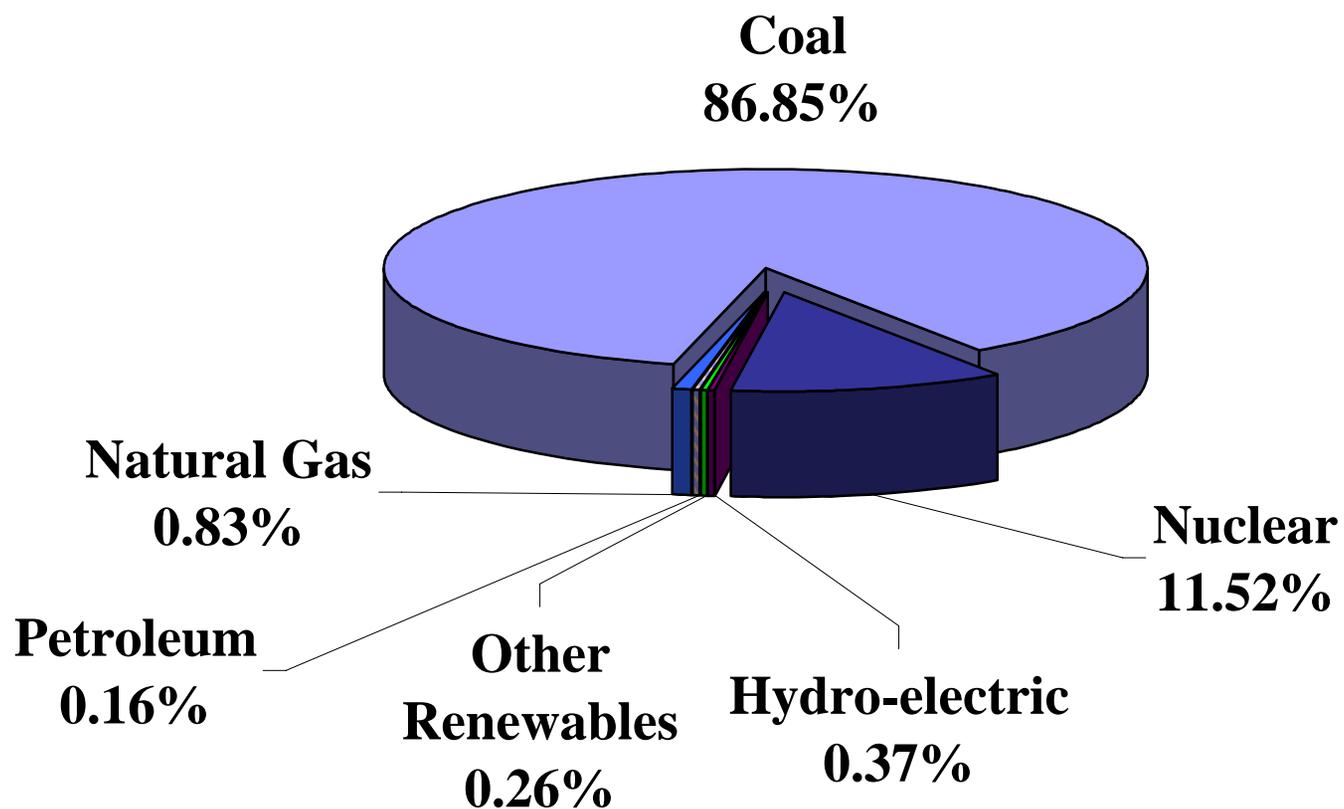
^{vi} New lending rules push power companies to go green: by Bob Keefe Cox News Service Monday, February 11, 2008

^{vii} New lending rules push power companies to go green: by Bob Keefe Cox News Service Monday, February 11, 2008

^{viii} Electric Power Monthly: February 2008 Edition, http://www.eia.doe.gov/cneaf/electricity/epm/epm_sum.html

^{ix} American Council for Energy Efficient Economy

Ohio's Electricity Generation Profile



Source: EIA

OCC Proposed Amendments to HB 487

- 1. Issue: Current Net-Metering Statute:** As currently written, the renewable energy requirement, especially the solar carve out portion will clash with the one percent of a utilities' peak demand net-metering restriction. Since the majority of the solar installations will be on the roofs of commercial and residential customer homes and facilities and therefore produce electricity behind the customer's meter, the existing one percent of utility demand net-metering restriction needs to be removed. Otherwise, once the one percent constraint is reached, electric utilities will not have to credit customer generators when they produce more electricity than they consume during a billing period, diminishing renewable project economics. OCC recommends the following:

Proposed Amendment to current statute Sec. 4928.67. (B)(1) Delete the following language: ~~“Any time that the total rated generating capacity used by customer generators is less than one per cent of the provider's aggregate customer peak demand in this state, the provider shall make this contract or tariff available to customer generators, upon request and on a first come, first served basis.”~~

- 2. Issue: Sec. 4928.66 Energy Efficiency Standard:** OCC is suggesting minor editing to clarify the energy efficiency language. OCC inserts the term “customer” in this section to make sure it's clear that these are energy efficiency programs for customers, not things that the utility might do in their own operations (they should be making themselves more efficient already, and do not need state policy for that). Additional language is used to help avoid a common source of confusion. The original language might be interpreted to mean that the utility is responsible for assuring that overall energy use goes down by those percents each year. But overall usage is influenced by many things, such as population growth and economic activity. Wording it as we have suggested clarifies this to apply to something that the utility can more reasonably control, which is the amount of energy savings produced by their programs. In other

words, the energy savings from their various energy efficiency programs must sum up to be equivalent to X% of their prior year total annual sales.

Proposed Amendment: Lines 733-742: “(A) Beginning in 2009, an electric distribution utility, as well as the director of development, shall implement energy efficiency programs [delete “designed to”] [add “which”] achieve [delete “reductions in energy usage by”] [add “customer energy savings equivalent to at least”] three-tenths of one per cent [add “of the total utility kWh sales”] in [delete “that”] [add “the previous”] year [delete “,”] [add “.”] [delete “increasing by an additional”] [add “The savings requirements would increase to”] five-tenths of one per cent in 2010, seven-tenths of one per cent in 2011, eight-tenths of one per cent in 2012, nine-tenths of one per cent in 2013, one per cent from 2014 through 2018, and two per cent each year thereafter, achieving a cumulative [add “annual”] energy [delete “reduction”][add “savings”] in excess of twenty-two per cent by 2025.”

3. Issue: Sec. 4928.66 Line Loss Efficiency: OCC recommends that the transmission and distribution infrastructure improvements that reduce line losses be taken out. These improvements are contemplated as part of the infrastructure modernization language in SB 221 for which utilities can receive cost recovery on an expedited basis.

Proposed Amendment: Lines 753-754: Delete lines 751-754

4. Issue: Sec. 4928.66 Decoupling: This language change adds symmetry to assure that customers receive the benefit if the utility’s revenues increase above the revenue requirements. As currently written, customers compensate utilities if the revenues received are below their requirements only.

Proposed Amendment: Rewrite starting on **line 780** after “for a [add “symmetrical revenue”] decoupling [add “true-up”] mechanism that [delete “shall provide a utility reasonable recovery of lost revenue resulting from”] [add “adjusts for sales volumes

that are above or below forecasted levels, so that a utility is not in jeopardy of failing to recover its authorized revenues as a result of”] its promotion of energy efficiency to consumers.”

5. **Issue: Sec. 4928.66 Cost Recovery:** Reasonable cost recovery is a threshold condition for all utility energy efficiency programs. Utilities cannot be expected to provide programs without cost recovery. Having a decoupling mechanism doesn’t change the need to have program cost recovery.

Proposed Amendment: Lines 790-794: “Additionally, the rules [delete “may”] [add “shall”] provide, subject to notice and hearing, for a utility [delete “for which a decoupling mechanism has not been authorized”] to receive just and reasonable recovery of costs the utility incurs in meeting the reductions established under division (A) of this section.”

6. **Issue: Sec. 4928.66 (C) Failure to Comply:** OCC recommends that the Commission administer the higher of the two penalties for non-compliance.

Proposed Amendment: Line 776: After “assess” [add “the higher of”]

7. **Issue: Sec. 1572.03 (F):** OCC recommends that language be added that allows for the transfer of the carbon storage liability to the Federal government if and when the Federal Government assumes this liability. This would be analogous to the Price Anderson federal nuclear liability provision. Note also that in the recent report from the National Coal Council on Carbon Capture and Sequestration, this issue is addressed.

Proposed Amendment: Line 274: [Add at the end of the sentence “The carbon dioxide leakage liability will be transferred to the Federal government if and when the Federal government assumes this liability.”]

- 8. Issue: Sec. 4928.64 Competitive Bid of Renewable Resources:** Renewable energy resources should be competitively bid to assure Ohio with the least cost resource.

Proposed Amendment: At the beginning of **line 655**, insert the following [add “(4) In meeting the requirements of paragraph (B)(2) of this section, the utility shall be required to conduct a competitive bid process in order to procure the lowest cost renewable energy option. The bid process shall not preclude the ability to conduct a bid to satisfy all or a part of multiple years of the renewable energy resources requirement.”]

- 9. Issue: Sec. 4928.64 Vintage of Generation Eligible:** OCC recommends that only generation put in production since 1997 be eligible to meet the alternative energy standard. This marks the start of the voluntary Green-e REC market and since that time renewable energy projects have used RECs to help finance their projects. Also for maximum job creation and increased economic development OCC supports newer advanced energy resources.

Proposed Amendment: Line 626, after “state.” [add “Only generation put in production since 1997 is eligible to meet the alternative energy requirement.”]

- 10. Issue: Sec. 4928.65 Voluntary Green Pricing Programs:** Customers who want a larger portion of their energy to be renewable and are willing to pay a premium for it through participation in voluntary green pricing programs should be able to increase the pool of RECs in the state above those required by the alternative energy standard.

Proposed Amendment: At the end of **line 732** [add “Renewable Energy Credits obtained for the purpose of meeting Ohio voluntary green pricing programs will not count towards meeting the alternative energy standard.”]

Energy Efficiency Funding and Energy Savings From Major Ohio Investor Owned Utilities (Draft)

ELECTRICITY	DSM \$ ANNUAL SPENDING	Estimated % OF SALES
Duke	\$12M*	1.4 after 3 yrs
F.E.	\$20M**	0.05 per year
AEP	Just weatherization	negligible
DPL	Just weatherization	negligible
NATURAL GAS***		
Duke	\$5.5M	1.03 per year
DEO###	\$10.5M - \$12.5	.7 per year
Vectren#	\$7.40	Over 1.5 per year
Columbia##	\$13.8M	.75-1.00 after 3 years

* Part of 5 year \$70 million energy efficiency settlement

** Part of a \$28M settlement

***These include proposed spending on weatherization programs

Includes their \$4.1 million proposal in current rate case, \$1.1 million in base rates and \$2 million in shareholder contribution.

Part of 3 year \$41.4 million energy efficiency settlement

\$5.5 million in existing rates and proposing \$5-\$7 million additional in current rate case.

Types of Energy Efficiency Programs in Ohio

Below are the types of Programs being offered by major Ohio Investor Owned Utilities.

Duke Energy of Ohio

RESIDENTIAL PROGRAMS

Home Energy House Call: An in-home energy analysis that helps consumers decide on the most cost-effective steps they can take in their home to save energy. The analysis looks at potential efficiency improvements from insulation to equipment replacement.

AC Check Pilot: An central air conditioning tune up and recharge program to increase efficiency of units. Using the Check Me! program developed in California, Duke Energy Ohio will work with contractors to test the savings available from these maintenance improvements.

Smart Saver/Summer Saver: Provides market incentives and market support to consumers, heating contractors and new home builders to promote the use of high efficiency heat pumps and natural gas furnaces with electronically commutated motors (ECM) and high efficiency Energy Star central air conditioners. Monetary incentives and technical support to trade ally sales personnel stimulate demand for the high efficient equipment options.

Power Manager: Reduces demand by controlling residential air conditioning usage during peak demand conditions in the summer months.

Energy Star Products: Provides market incentives and market support through retailers to build market share and usage of Energy Star products.

Appliance Turn-In: Encourages consumers to dispose of their old room air conditioners and purchase efficient Energy Star models, the DECP proposes a room AC turn-in program.

Energy Efficiency Website: Provides Duke Energy Ohio consumers the most advanced programs, tools, and measures available to manage their energy and achieve load impacts. The website features a multi-tiered design providing the consumer the opportunity to receive quick customized energy tips and, if they choose, the ability to complete an online audit and receive ten (10) self-install energy efficiency measures.

Ohio Energy Project: The Ohio Energy Project (NEED) activities provide teachers and students in Ohio with the materials, skills and classes to promote energy education in the classroom. The program will also provide a limited number of energy efficiency “kits” that will allow students to directly install energy efficiency items in their homes as it relates to their curriculum.

Personalized Energy Report: Will provide the Duke Energy Ohio consumer with a customized energy report aimed at helping them better manage their energy costs. With rising energy costs in all aspects of daily life, the consumer is searching for information they can use and ideas they can implement which will impact their monthly energy bill. The PER program also includes the “*Energy Efficiency Starter Kit*” which is nine easily installed measures which demonstrate how easy it is to move towards improved home energy efficiency.

Pre-Paid Billing Services: Provides consumers with the option of paying for their electrical use prior to consumption which allows consumers to control their bills and promote energy savings

COMMERCIAL PROGRAMS

- Commercial & Industrial (C&I) Prescriptive Incentive Program
 - School Incentive Program
- Photovoltaic Schools Demonstration/Education Program

Residential Research Program

House Call PLUS Research Program

Opportunity: With rising energy prices, there is an opportunity to increase savings in the residential market through more comprehensive building analysis and efficiency improvements. As shown through state programs in New York and California, a comprehensive audit program, utilizing diagnostic tools such as blower doors, infrared scanners and duct leakage tests, combined with a “one-stop” installation service can be effective at getting more measures installed cost effectively, thus increasing savings from 10% to 30%.

First Energy

Home Performance with ENERGY STAR® is a national Program from the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE). The Program offers a comprehensive, whole-house approach to improving energy efficiency and comfort of homes, while helping to protect the environment.

FirstEnergy’s Home Performance with ENERGY STAR® is a regional Program offered to residents who are current customers of FirstEnergy’s Ohio operating companies - Ohio Edison Company, Cleveland Electric Illuminating Company and The Toledo Edison Company - in partnership with the National ENERGY STAR® Program.

Contractors participating in the locally-sponsored Home Performance with ENERGY STAR® Program help improve your home’s energy efficiency. These specially-trained

contractors evaluate your home using state-of-the-art equipment and recommend comprehensive improvements that will yield the best results.

Direct Load Control Program: This program installs a Carrier setback thermostat and wireless two-way communications device that allows the Company to cycle a customers' air-conditioner during a limited number of peak events. This is a voluntary program and participants receive incentives for participating.

AEP and DP&L do not offer their customers any energy efficiency programs in Ohio except for their funding of low income weatherization.

Natural Gas Utilities

All the major natural gas utilities help fund low income weatherization. Other programs for all customers that are being proposed or are in planning are:

1. **Appliance Rebate Programs:** Rebates are given for the purchase of high efficiency furnaces and water heaters.
2. **New Construction Incentives:** Builders are provided incentives to surpass the energy efficiency requirements of Ohio's building code.
3. **Home Performance Programs:** Existing home whole house diagnostic audits and incentives for customers to act on audit recommendations.
4. **Commercial Programs:** Programs that target the various commercial natural gas end uses.