# House Alternative Energy Committee

Testimony

Presented by:
**Wilson Gonzalez**
**Senior Regulatory Analyst**

May 30, 2007

# Office of the Ohio Consumers' Counsel
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Chairman McGregor, members of the Alternative Energy Committee, I appreciate the opportunity to present testimony to you today on a critical topic outlined in Consumer Counsel Migden-Ostrander's testimony, energy efficiency and demand response. In the past, the Committee has heard excellent presentations on the contributions that renewable energy and distributive generation could make to Ohio's energy future. OCC believes that energy efficiency and renewable energy are the "twin pillars" of a sustainable Ohio energy policy and both resources must be developed aggressively if Ohio is to maintain reliable and affordable energy, and meet the challenge of future Green House Gas (GHG) regulations.

My testimony today is on what has recently been termed the "fifth fuel" by Duke CEO James Rogers or what some states and countries consider the first fuel of choice in an energy loading order, energy efficiency.

A snapshot of the current residential pricing in Ohio yields the following: [Slide one, The Current Electric Situation]. These are "all in" prices that include customer charges, transmission, distribution, generation and a host of riders. We are all aware of the electricity auction prices following Rita and Katrina. The aim for Ohio is to learn from the experiences of other states. Keep this price range in mind as I discuss energy efficiency and demand response.

For those who are nostalgic and prefer to go back to cost of service regulation, I share with you some figures on future fossil fuel generation plant costs from the Department of Energy (DOE). [Slide 2: Future Fossil Fuel Electric Generation Costs] I share with you the costs of plants with carbon capture because mandatory federal GHG emissions legislation is approaching (and approximately one quarter of the US population is already under some form of carbon regime, RGGI, California's legislation, AB32). With that background, let's examine energy efficiency and demand response more closely.

First I would like to debunk some energy efficiency myths that still persist in energy circles. [Slide 3: Energy Efficiency Myths]

Let's tackle the first myth, energy efficiency and demand response cannot make a dent in Ohio's future energy needs and therefore should not get serious consideration.

The following graph provided by Sam Baldwin, Chief Technology Officer at DOE is illuminating. [Slide 4: EE and US Energy Consumption]. It shows that from the 1970-2003 time period, energy efficiency provided *three times* the energy resource as all other fuels combined.

A recent study indicates that approimately16% of the Midwest electric load is economically viable for energy efficiency. An ACEEE study recommended the following annual savings targets for Ohio. [Slide 5: How much Electric Energy Efficiency is in Ohio?]

Concerning the second myth, energy efficiency has been demonstrated to be very cost-effective across the country with levelized cost ranging from 1.3 cents/kWh in Minnesota to 3.2 cents/kWh in Massachusetts. [Slide 6: EE Has Been Shown to be Very Cost-Effective] Energy efficiency cost-effectiveness testing is now standardized across the country, with many regulatory jurisdictions accepting the Total Resource Cost Test (TRC) as the litmus test for approval/denial of programs. Extensive program monitoring and savings verifications protocols have also been established.

Energy efficiency has other significant benefits in the economic, environmental, and energy security realms. [Slide 7: Other Benefits of EE]

Demand response, a subset of demand side management is critical to the functioning of competitive electric markets. Besides providing economic and reliability benefits, it also serves as a deterrent and mitigates market power. [Slide 8: Benefits of Demand Response] In order to reap these benefits, Ohio will have to invest in upgrading the metering and distribution infrastructure to Advance Metering Infrastructure (FERC Demand Response study last year showed that Ohio had less than a 1 percent penetration of advanced meters). Demand response also complements variable renewable energy resources such as wind. During a summer peak period when the wind resource is sub-optimal, demand response can step in to supplement the capacity needed by the electric grid. Demand response makes intermittent renewable resources better, as would storage technologies (advanced batteries, flywheel, compressed air), an area Ohio's Third Frontier may want to examine.

The final myth I will like to address is if energy efficiency is so beneficial, why not let the competitive market provide it through a price signal? [Slide 9: Why Not Let the Market Alone Handle?] Being an economist, I always recommend that policy makers go beyond the idealized world of economics 101 and understand some of the subtleties of the real world. This next slide identifies some (but by no means all) of the more significant market barriers that exist and that the OCC believes justifies a social intervention into the market.

If like OCC, you believe that energy efficiency is both abundant and affordable, how does Ohio get more of it? The passage of House Bill 251 last year and the Governor's Executive Order 2 this year allows the State to lead by example in the energy efficiency arena. OCC has attempted to revive utility sponsored energy efficiency in Ohio. [Slide 10: Energy Efficiency Programs Negotiated by the OCC]

OCC believes that an Energy Efficiency Resource Standard (EERS) provides the best mechanism for Ohio to tap into energy efficiency in an aggressive way. [Slide 11: Major Attributes of an Energy Efficiency Resource Standard.]

In closing, I believe that energy efficiency and demand response can result in large and highly cost-effective energy and capacity savings, and emissions reductions for Ohio. While it lacks the "appeal" of the renewable clean technology sector, Ohio legislators would be remiss if it were to underestimate this valuable energy resource. The OCC stands ready to provide whatever assistance you may need as this Committee considers energy efficiency legislation. Thank you.

# Energy Efficiency and Demand Response in Ohio's Energy Future

Wilson Gonzalez

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# The Current Residential Electric Situation

## Electricity Prices on the Rise

- **AEP (9.2 cents/kWh)**
- **FE (12.5 cents/kWh)**
- **Duke (9.9 cents/kWh)**
- **D P & L (11.9 cents/KWh)**

(Avg. Total Residential Price in OH about **10.9** cents/kWh for 850 kWh per summer month)

- Generation Auction Price 70% higher in MD
- 50 % + price increases in Illinois, MA, CT

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# Future Fossil Fuel Electric Generation Costs with Carbon Capture

| | IGCC Average Of Three Designs | PC Supercritical | NGCC |
|---|---|---|---|
| **LCOE, $/MWh** | **71.3** | **86.8** | **84.9** |
| **$/kW** | **2,245** | **2,635** | **988** |

DOE NETL IGCC, PC, and NGCC Cost Estimates
(Illinois #6 Coal, With $CO_2$ Capture)
(Source: EPRI 1012224, based on draft of
DOE *Cost & Performance* report *Comparison of Fossil Energy Power Plants*, May 2006)

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## Energy Efficiency Myths

- ★ Not Enough Available to Have an Impact
- ★ Too Expensive
- ★ Let Market Price Signal Deliver

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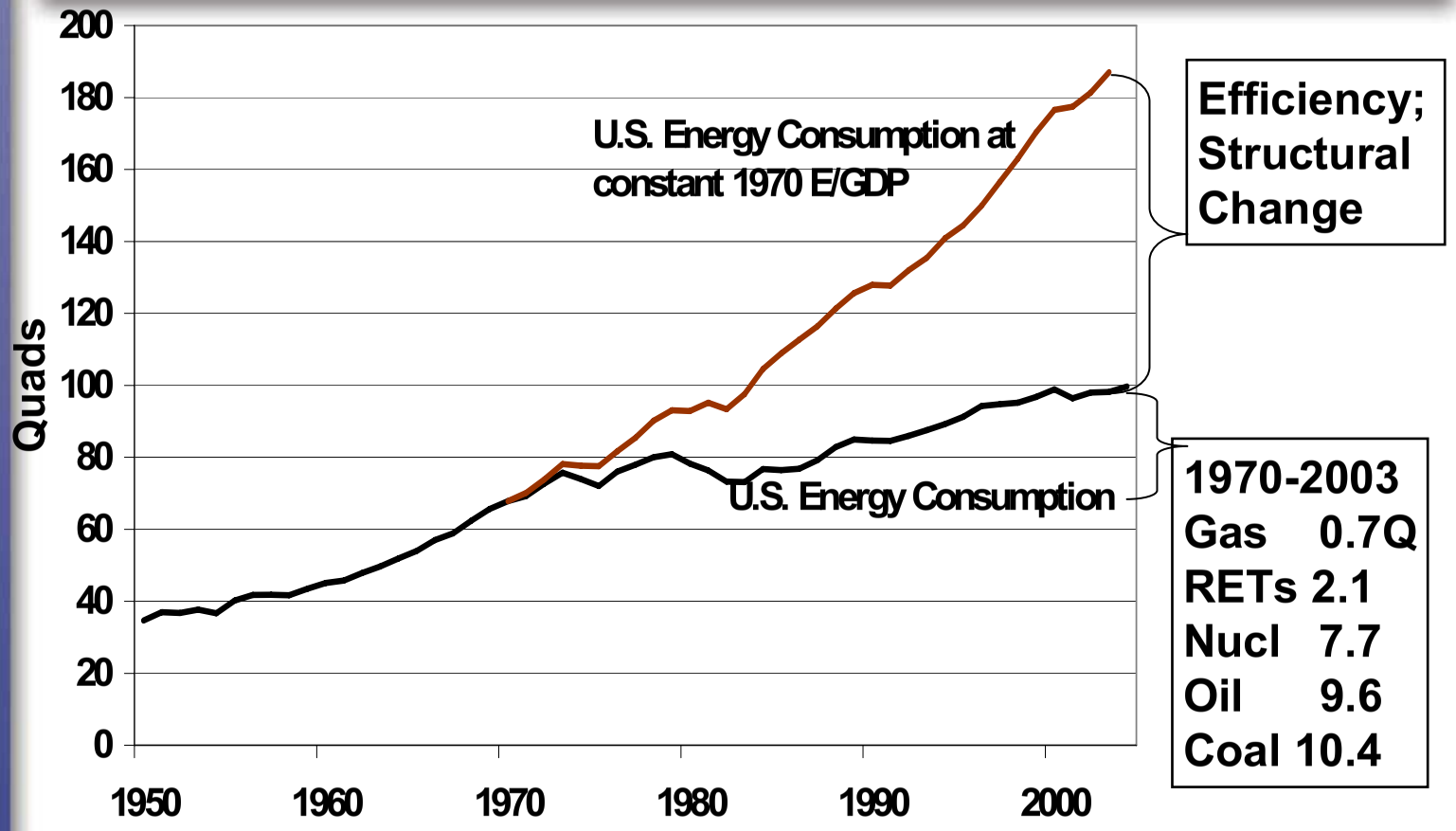
## U.S. Energy Consumption



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# How Much Electric Energy Efficiency is Available in Ohio?

- About **16%** of Midwest Electric Load is Economically Viable for EE (Quantec 2005 Market Assessment Study)
- ACEEE Midwest Study Recommendations for Ohio (Percentage Electricity Savings by Sector)

| | 2006 | 2010 | 2015 | 2020 |
|---|---|---|---|---|
| Residential | 2.0% | 3.2% | 4.7% | 6.3% |
| Commercial | 2.3% | 4.7% | 7.6% | 10.5% |
| Industrial | 1.7% | 4.2% | 7.4% | 10.6% |
| Total | 1.9% | 4.0% | 6.7% | 9.4% |

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# ENERGY EFFICIENCY HAS BEEN SHOWN TO BE VERY COST-EFFECTIVE

COST OF CONSERVED ENERGY ACHIEVED[1]

| | |
|---|---|
| California | 1.6 cents to 2.9 cents/kWh |
| Connecticut | 2.3 cents/kWh |
| Massachusetts | 3.2 cents/kWh |
| Minnesota | 1.3 cents/kWh |
| Mich CPCo | 2.6 cents/kWh |
| Mich DECo | 1.5 cents/kWh |
| Vermont | 2.6 cents/kWh |

Typical current market cost, generation only: 6 cents/kWh

Fully loaded costs, incl. generation, transmission, distribution: 11.0 cents/kWh

[1]Levelized cost of saving electricity, over the useful measure lifetimes

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# Other Benefits of EE

- ★ Environmental (GHG mitigation, "White Tags")
- ★ Energy Security (Home Grown)
- ★ Economic
  - Large $ drain avoided. Ohio is extremely dependent on fuels imported from other states and countries
  - 97% of oil & petroleum products
  - 89% of the natural gas
  - 61% of the coal
  - *An ACEEE Report estimates that $123 million could be saved from leaving Ohio in 2006 alone, due to natural gas energy efficiency programs*
  - Helps Reduce Uncollectibles/PIP Arreages
- ★ Employment
  - *24 jobs per every million dollars expended on energy efficiency.*

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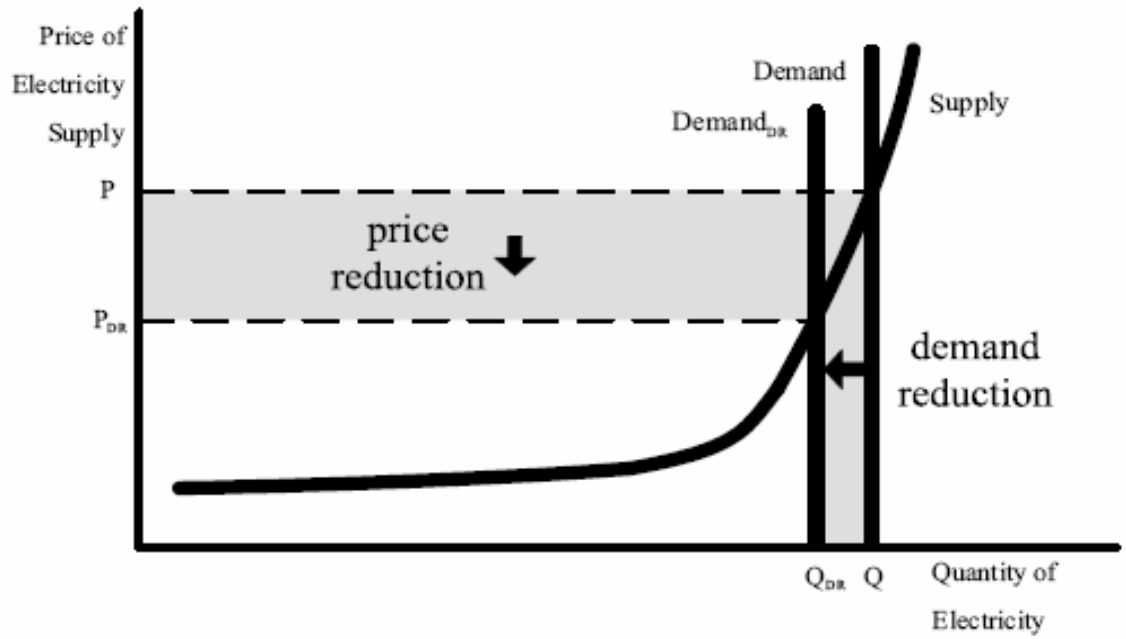
# Benefits of Demand Response

- ★ Economic and Reliability Related
- ★ Mitigates Market Power
- ★ Complements Variable Renewable Sources



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# Why Not Let the Market Alone Handle?

- Market Failures
  - Limited availability of energy-efficient products and contractors
  - Lack of consumer awareness of the products and their benefits
  - Imperfect information
  - Access to Capital
  - Resistance to new products in general
  - Over-emphasis on first cost vs. operating costs over product life
  - Split incentives (renter/landlord or track builder/homebuyer)
  - Failure of market prices to reflect the full cost of energy to society

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# Energy Efficiency Programs Negotiated by OCC

- ★ First Energy Program 2 year $25-30 million DSM Settlement
  - Status: Implementation starting on residential direct load control program and home performance program
- ★ Duke filed on 1/2006 for $70 million, 5 Year DSM filing
  - Status: Awaiting PUCO Decision
- ★ Vectren, OCC & OPAE signed and filed a $4.67 million DSM Settlement
  - Status: PUCO Altered Settlement ($2 mil. Low Income only, awaiting PUCO order on new phase of case)

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# Energy Efficiency Resource Standard

- ★ Market Based Mechanism to Encourage more efficient use of energy (analogous to RPS)
- ★ Consists of energy saving targets for load serving entities (utilities, marketers)
- ★ Savings can be achieved through a market based trading system ("White Tags")

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# Questions