
Michigan's Energy Crisis: Time to Get Serious (and Why Energy Efficiency Must Be a Top Policy Priority)

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(Adapted from presentations to the National Conference of State Legislatures (NCSL) November 19, 2004 and the Michigan House Energy and Technology Committee, May 4, 2005)



TOPICS

- 1) Background: Michigan's Serious Energy Vulnerability
- 2) Overview of the National Energy Crisis
 - why it is real, & why you should be concerned
 - what's going on in the energy markets & why [special focus on natural gas]
- 3) Description of how energy efficiency can help

SOURCES OF INFORMATION

ACEEE (my organization)

- The leading non-profit organization on energy efficiency research in the U.S.
- Frequent testimony before Congress
- Work with all the major leading industry groups
- The only non-profit invited to confidential energy industry “Energy Futures” forum hosted by BP in late 2004.

Energy and Environmental Analysis, Inc. (EEA)

- They do our energy modeling and natural gas forecasts
- Same firm that does natural gas forecasting for the National Petroleum Council



KEY POINTS (Pre-Katrina)

- Michigan faces a severe economic problem with high energy costs. Some would call it a crisis.
- High energy prices are not temporary, they are the new reality. Michigan must plan accordingly.
- Energy efficiency is the only viable near to mid-term policy response.
- Energy efficiency is faster, and costs less than half as much as new electricity or natural gas supplies.
- Energy efficiency policies are well-proven. Other leading states are far ahead of us.

KEY POINTS (Post-Katrina)

- Energy prices have become catastrophic
 - \$65/ barrel oil [\$49 last year]
 - \$13/Mcf natural gas [\$7.00 last yr. \$2.50 in 1999]
- Much uncertainty over how long it will last
(How much damage to gas & oil infrastructure???)
- This winter will be terrible
 - Extreme prices, possible shortages
- Energy efficiency is still the only policy option for states like Michigan

BACKGROUND: MICHIGAN'S ENERGY VULNERABILITY

- Michigan uses a lot of energy
 - Total cost over \$20 billion per year (in 2000)
(now likely well over \$30 billion)
 - 8th highest cost burden in the nation
- **Michigan is almost totally dependent on fuels imported from other states and countries**
 - 100% of the coal and uranium we use
 - 96% of oil & petroleum products
 - Three-fourths of the natural gas

COST OF MICHIGAN'S ENERGY IMPORTS

- Before the current crisis (circa 2000), roughly \$12 billion per year was leaving Michigan to pay for fuel imports
- **At pre-Katrina market prices, this dollar outflow was already \$18 billion or more**

THIS IS A HUGE ECONOMIC DRAIN ON OUR STATE ECONOMY!

EFFECTS ON HOUSEHOLDS

- In 2002, the average household nationally spent about \$3,000 on energy
[half for transportation, half for home uses]
- In 2005, Pre-Katrina, that amount was up to \$4,600 per year ... an increase of over 50%,
or \$1,600 taken out of every household's annual disposable income
[with Katrina, that's well over \$2,000 per year]

ECONOMIC RAMIFICATIONS

This **additional \$6 billion** annual drain on Michigan's economy is roughly equivalent to the lost payroll from **closing 60 Greenville Electrolux manufacturing plants**. **[more like 80 plants now]**

Even the Wall Street Journal has written about the unprecedented transfer of wealth, calling it a “bonanza” and “windfall” for the handful of big energy producing states (i.e., AK, NM, WY and TX) and countries (e.g., OPEC).

Bottom line: Michigan is in an economic war regarding energy costs...and we are losing!

THE ENERGY CRISIS

YES, IT'S REAL. (and not a temporary blip)

Since 2000:

- World oil prices have doubled
- Natural gas prices have nearly tripled
- Spot market coal prices have doubled

Virtually all market experts foresee a prolonged period of high and volatile energy prices

THE CRISIS IS NOT A TEMPORARY BLIP

THE MARKET FUNDAMENTALS HAVE CHANGED:

- Oil
 - growth in world demand (China & India esp.)
 - OPEC losing control
 - Approaching world production peak
- Natural Gas
 - Primarily North American Market
 - several major negatives (see later slide)
 - no supply relief in sight
- Coal
 - spot prices have doubled
 - plentiful supply,
BUT major environmental costs are looming
- No magic bullet (Forget about Hydrogen)

THE NATURAL GAS CRISIS:

Key Factors Contributing to the Problem

- Demand growth has outpaced supply (especially due to dramatic shift to gas for electricity generation)
- No net additional production projected from “lower 48” (additions in Rocky Mtn. region offset by depletion of old fields)
- Imports available from Canada projected to decline from current levels
- Alaska gas pipeline is a decade away
- LNG is the only relatively near term additional supply (and it has substantial risks that may delay and/or raise costs)

U.S. SOURCES OF NATURAL GAS

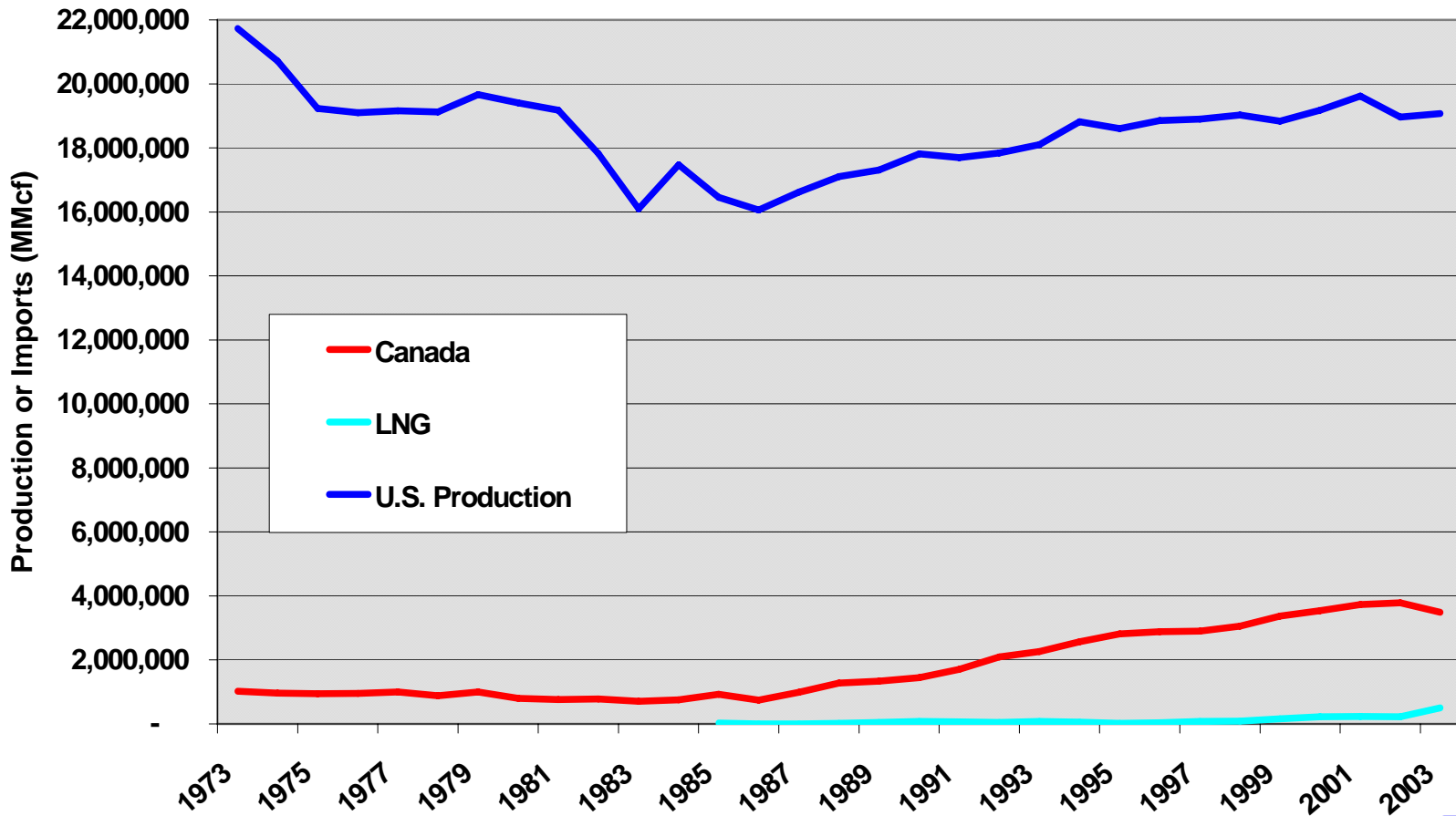
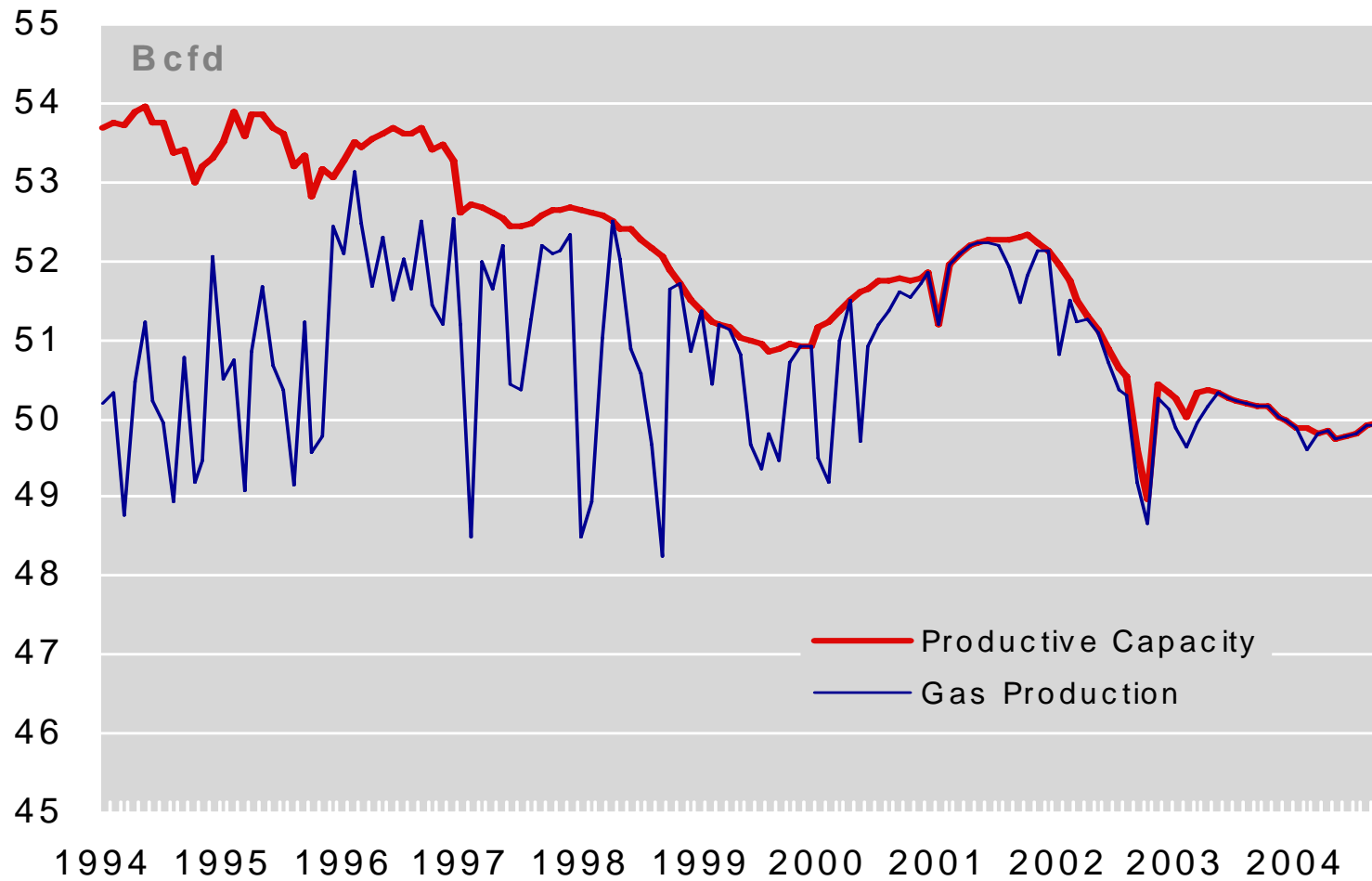
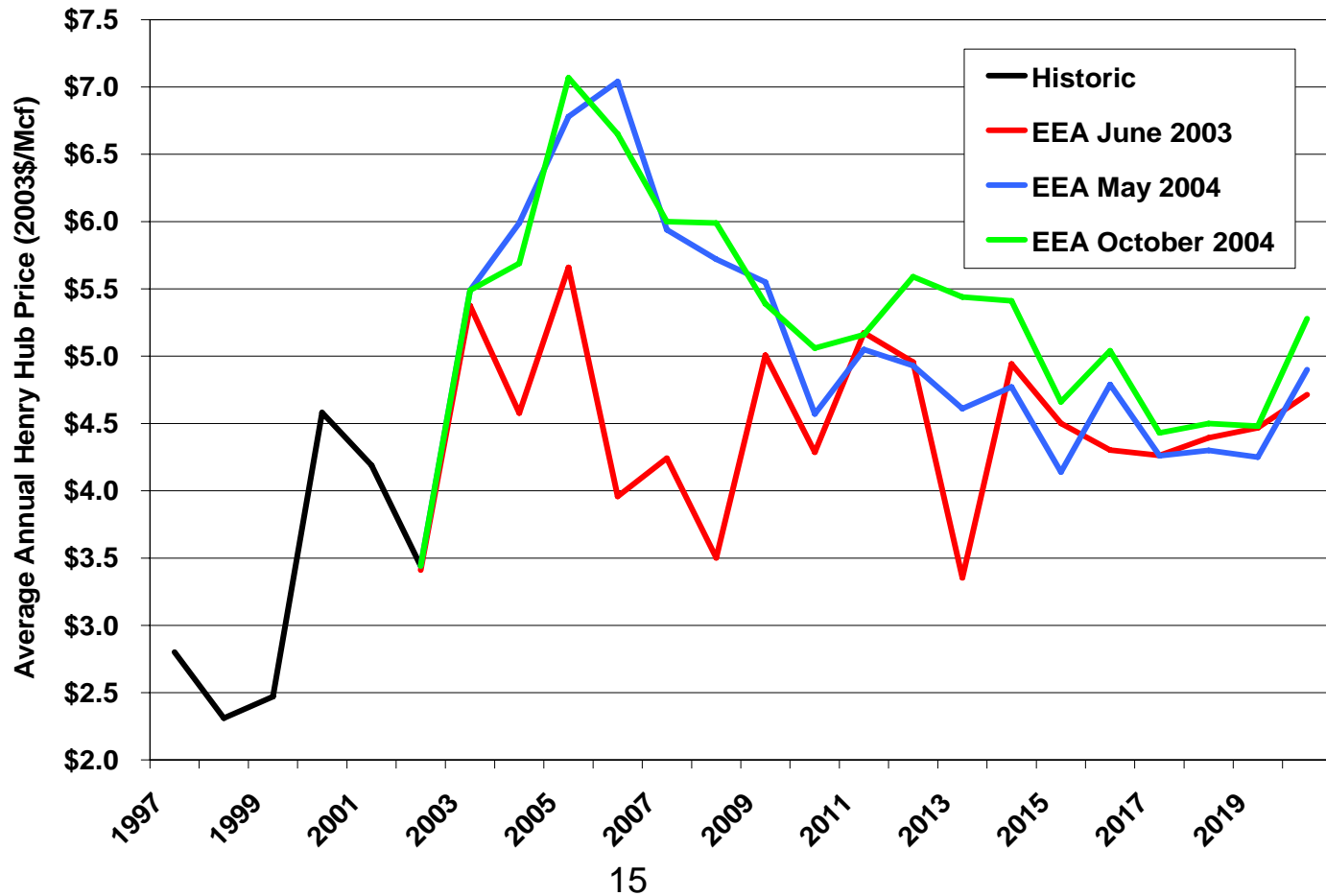


Figure . Lower-48 Dry Gas Production versus Dry Gas Productive Capacity (Source: Petak 2004)



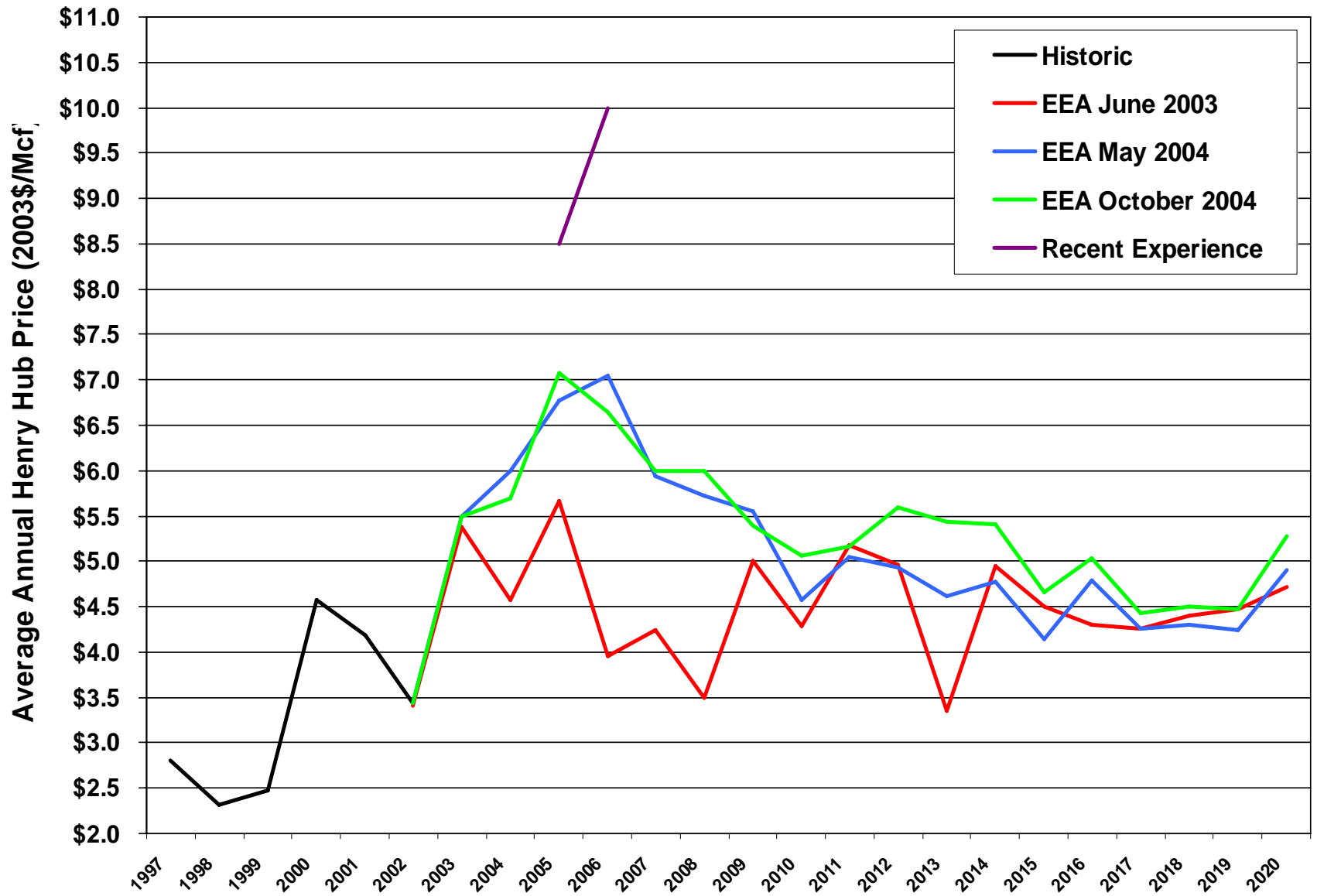
Latest EEA Natural Gas Price Forecast [October 2004]



REALITY IS ALREADY WORSE THAN THE FORECAST

In current natural gas cases for the major utilities in Michigan, they are asking for a gas commodity cost alone of over \$10.00 per Mcf...

This would result in natural gas bills 3 or 4 times higher than what customers faced in the 1990's!!!!



BOTTOM LINE

Michigan is facing a serious energy crisis, and all indicators are that very high energy prices are here to stay.

This suggests we need a new top priority policy approach to energy and the funding of energy efficiency.

*OK, so we believe there is a serious
problem....*

What can we do about it?

FORTUNATELY, HELP IS AVAILABLE: ENERGY EFFICIENCY

A groundbreaking ACEEE study modeled the effects of aggressive but achievable energy efficiency and renewable energy on national natural gas prices.

*Natural Gas Price Effects of Energy Efficiency
and Renewable Energy Practices and Policies*

R. Neal Elliott, Ph.D., P.E., Anna Monis Shipley, Steven Nadel, and
Elizabeth Brown Dec. 2003

URL: <http://www.aceee.org/energy/efnatgas-study.htm>

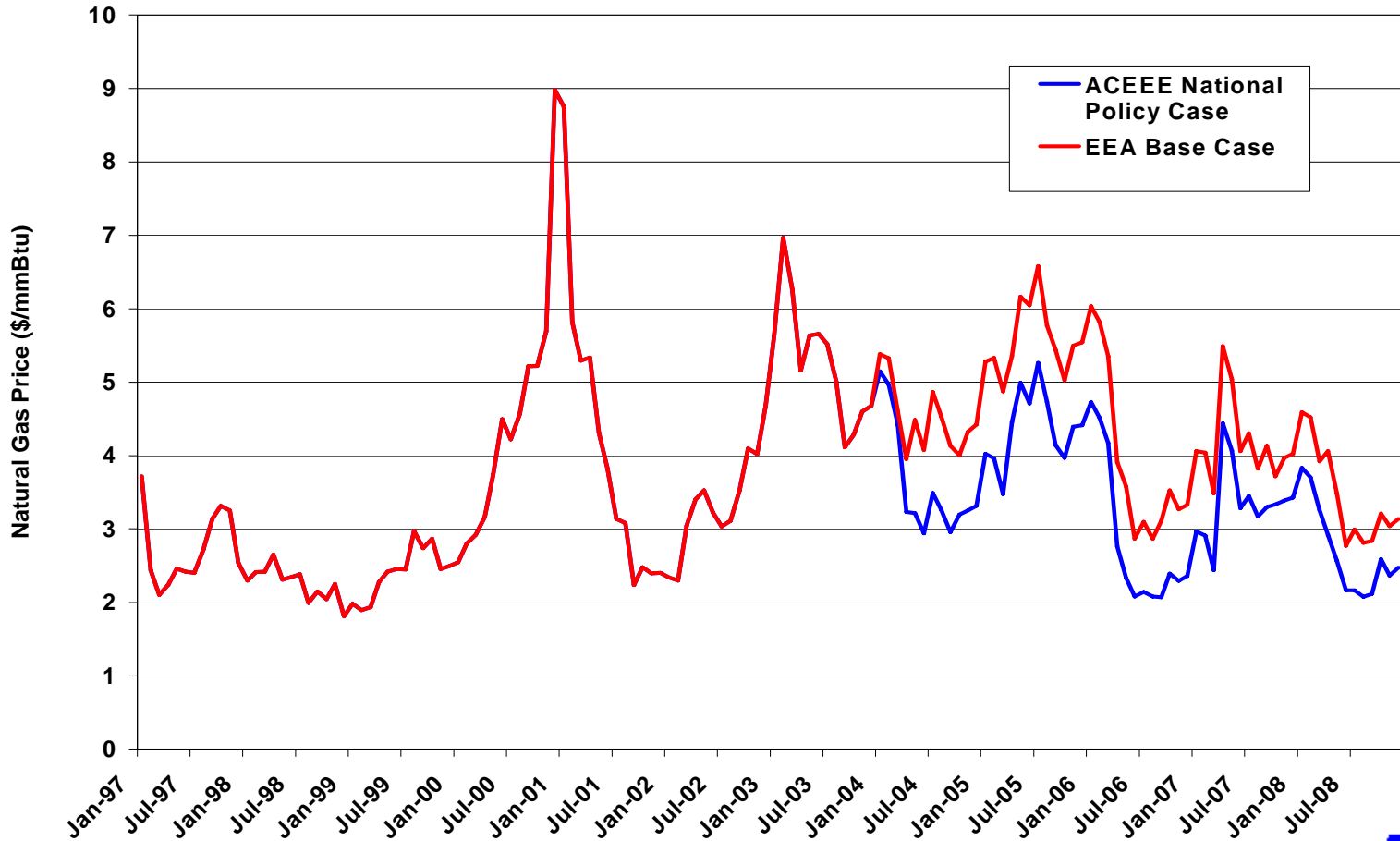
ACEEE Research Approach

Began with sector estimates by State of the near-term (1 year) and mid-term (5 year) implementable potential for energy efficiency and conservation programs.

1. Natural Gas
2. Electricity
3. Renewable Resources

Calculated “reasonably achievable” savings based on sector end-uses (i.e. space heating, motors, lighting, etc.)...about 1% savings/year

Impact on Henry Hub Natural Gas Pricing



KEY NATURAL GAS STUDY RESULTS

An aggressive but achievable national policy of Energy Efficiency and renewable energy could:

- Reduce wholesale natural gas prices by 10-20%
- Save consumers over \$75 billion in gas costs over the next five years
- Save up to an additional \$30 billion in electricity costs over that time period

[Savings = market price effects + direct program savings]

Also, the model showed that strong efforts in a single region can have significant effects in lowering regional natural gas prices (~ 5 to 7%)

THE GOOD NEWS

Energy Efficiency is available to provide a very effective response

...in fact, it's the only viable near-term option

This is leading to some amazing endorsements:

“Policies most likely to have an immediate impact are actions to promote consumer conservation and energy efficiency.”

-- National Petroleum Council, Sept. 2003



More Nice Quotes

“Based on the Department’s analysis, we concur that over the next 12 to 18 months there are only limited opportunities to increase supply, and that, therefore, the emphasis must be on conservation, energy efficiency, and fuel switching.

-- DOE Secretary Abraham, June 2003

“Specifically, we need a concerted national effort to promote greater energy efficiency....”

-- Letter to the White House and Congress from the CEOs of the 11 largest U.S chemical manufacturers, January 2004

Gee, With Public Statements Like That...

.... You'd think we could get an aggressive federal policy to fund and promote energy efficiency.....

Unfortunately, Washington, D.C. is entirely dominated by the energy extraction industries....

The President, Vice President, and the Chair of virtually every Congressional Committee on energy issues are all from one of the few major energy producing states.

The Administration has announced no new initiatives for EE, and the new federal budget proposal contains further cuts to DOE energy efficiency programs.

It looks like the states will continue to have to provide leadership on their own [fortunately, there are some excellent examples of success]



KEY POINT

Michigan is on its own in this challenge.

The federal government is not going to bail us out

It's our money flowing across our borders to the energy producing states and countries, making them richer and damaging our economy

What are we going to do about it???

Latest Great Quote

“We need to lend a greater voice to this thing so that the department [DOE] will feel a need to move more quickly. We can’t wait much longer for increased energy efficiency in this country.”

-- Peter Molinaro

Vice President of Federal & State Affairs

Dow Chemical Company

Washington Post, January 22, 2005

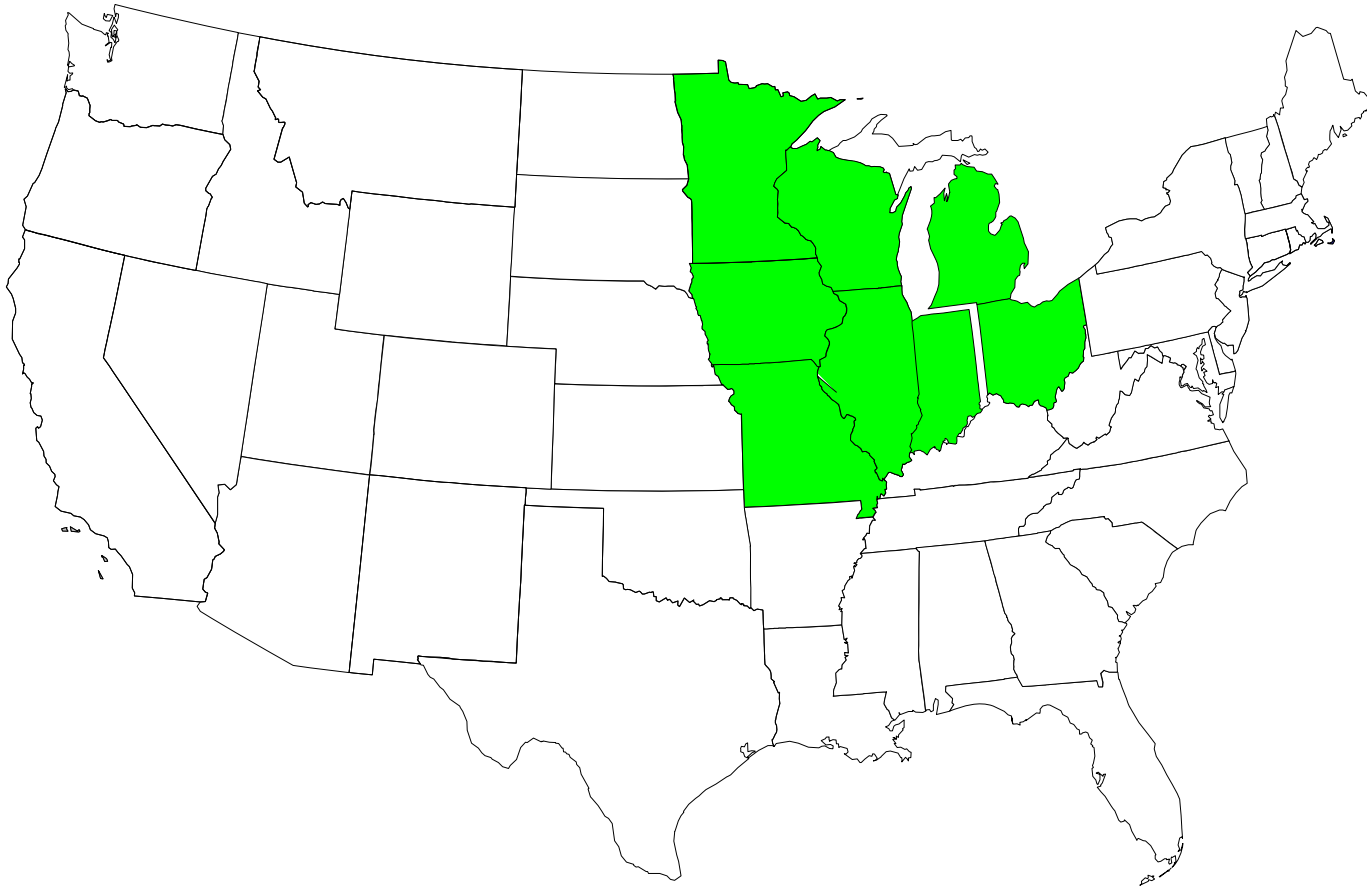
New ACEEE Midwest Natural Gas Study

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

**Martin Kushler, Ph.D., Dan York, Ph.D.,
and Patti Witte, M.A. January 2005**

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

FIGURE 1. STATES IN THE MIDWEST NATURAL GAS STUDY



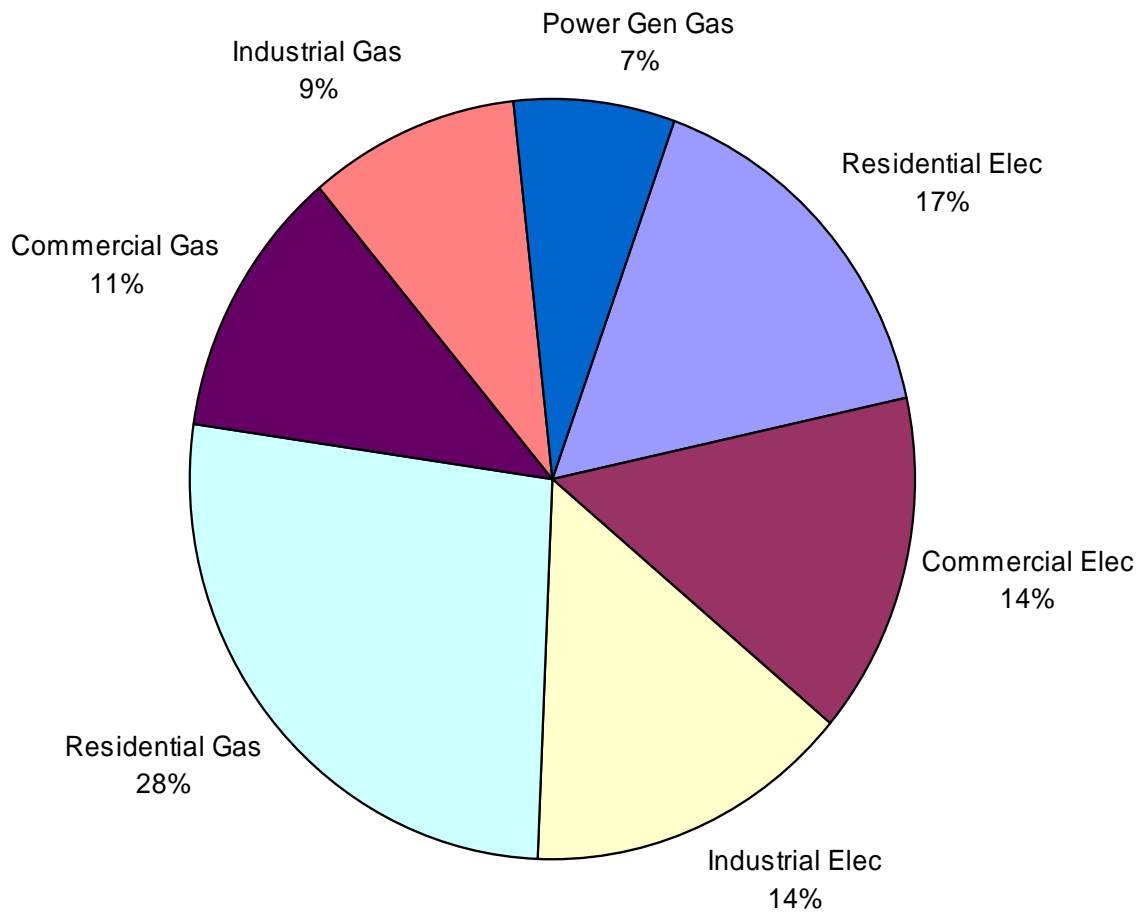
Total Midwest Customer Dollar Savings

| | <u>2010 Annual</u> | <u>2010 Cumulative</u> |
|--------------------|------------------------|------------------------|
| Gas price effects: | \$ 1.4 billion | \$ 5.2 billion |
| Gas Efficiency: | \$ 1.1 billion | \$ 3.9 billion |
| Elec. Efficiency: | \$ <u>1.86 billion</u> | \$ <u>6.75 billion</u> |
| Total Savings: | \$ 4.34 billion | \$15.85 billion |

[MICHIGAN: \$800 million \$3 billion]

Total Net Energy Expenditure Reductions in 2010

Reduction in Energy Expenditures = \$4,14 billion



Other Economic Benefits to the Midwest

- 30,000 net new jobs by 2010
- \$750 million increase in net annual employee compensation by 2010

[Michigan: 5,200 jobs \$130 million payroll]

Plus: significant avoided job losses in Midwest due to avoided “demand destruction”

The Natural Gas Crisis Has Particularly Serious Implications for the Midwest

- Very dependent on natural gas for space heating
- Very large industrial use of natural gas
- Very dependent on gas imports from outside the region

[Overall, Midwest imports 92% of the natural gas it uses from other states and countries. Every \$1.00 per Mcf increase in price drains an additional \$4 billion a year from the region.]

OTHER MIDWEST STATES ARE TAKING ACTION

- Minnesota and Wisconsin have always had strong utility energy efficiency funding, and they continue aggressive programs
- But even Illinois, Indiana and Ohio are moving ahead to initiate and expand utility energy efficiency funding
- Thus far, Michigan has done nothing to expand its utility energy efficiency funding
- In response to our study, a coalition of Midwest states is forming to take action on natural gas energy efficiency. The Governors of Wisconsin and Iowa have already signed on. Michigan should join in this effort.

Why is Govt./Regulatory Policy Needed?

- There are key barriers in the Electric and Gas Utility Industry
- Utilities will not voluntarily provide serious energy efficiency programs
 - Higher sales means higher profit (and vice-versa)
 - Institutional focus traditionally on supply side
- The “market” does not provide a viable substitute for utility sector energy efficiency programs

UTILITY SECTOR POLICY APPROACHES

(The cornerstone of an overall state approach)

1. Establish binding savings targets for utilities/states (e.g., an “energy efficiency portfolio standard”)
[Targets could be established at the state level, as Texas has done, or at the federal level.]
2. Provide funding for energy efficiency through state system benefit funds
3. Require funding for energy efficiency through electric and gas utility rate cases

[Funding approaches and programs can be tailored to meet the unique needs of each state]

MICHIGAN WAS ONCE A LEADER IN ENERGY EFFICIENCY

- **In the early 1990's, Michigan was among the national leaders in utility efficiency programs.**
- Our top utilities were spending 1 to 2% of revenues on energy efficiency
- **Independent evaluations documented that the energy efficiency programs were very cost-effective (1.5 to 2.6 cents per kWh saved)...less than half the cost of new electric supply.**
- The programs were very popular with the public

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: 5.0 cents/kWh

Fully loaded costs, incl. generation, transmission, distribution:
6.0 to 10.0 cents/kWh

[1] Levelized cost of saving electricity,⁴⁰ over the useful measure lifetimes



Natural Gas Energy Efficiency Cost-Effectiveness

| | Min | Max | Mean | Median | Total |
|---|---------|------|-------|---------|-------|
| Annual program spending: all programs* (n = 32) (\$ million) | \$0.079 | \$36 | \$3.7 | \$0.954 | \$131 |
| Annualized 1st year savings: all programs* (million therms) | 0.025 | 10 | 1.3 | 0.568 | 44.8 |
| •Savings: residential programs (n = 20) | 0.025 | 7.0 | 0.824 | 0.267 | 16.5 |
| •Savings: C/I programs (n = 10) | 0.025 | 10 | 2.4 | 1.3 | 23.9 |
| Cost-effectiveness | | | | | |
| •Cost of conserved energy: 1 st year \$/therm (n = 8) | 1.53 | 6.70 | 3.63 | 2.59 | |
| •Cost of conserved energy: lifetime \$/therm (n = 7) | 0.07 | 0.80 | 0.38 | 0.28 | |
| •Benefit/cost ratio (n = 9) | 1.08 | 5.05 | 1.98 | 1.42 | |

WRONG TURN IN MICHIGAN

- Michigan's utility energy efficiency programs were terminated in 1996, in the rush to utility deregulation
- Many other states maintained their energy efficiency programs, and have realized hundreds of millions of dollars in utility cost savings.

A BENCHMARK TARGET FOR MICHIGAN

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

Energy Efficiency

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

>>If Michigan spent at median:

1.0 mills/kWh =

\$100 million/yr. for electric energy efficiency

BENCHMARK TARGETS (CONT.)

Low Income: Range: 0.1 to 1.2 mills/kWh

- Median: 0.6 mills/kWh
- \$ Range: \$0.8 million to \$100 million

>> If Michigan spent at median:

0.6 mills/kWh = \$60 million/yr.

Total Energy Efficiency plus Low-Income Programs:

CURRENT MICHIGAN LI/EE FUND: ~ \$45 million/yr.

TOTAL NEEDED TO BE AT MEDIAN: \$160 million/yr.

- **[\$100 MILLION EE, \$60 MILLION LI]**

BENCHMARK TARGETS (CONT.)

On the natural gas side, an equivalent energy efficiency charge would be about 8 cents/MCf, yielding about **\$60 million/year for natural gas energy efficiency**

For a typical household, the combined electric and natural gas energy efficiency charge would amount to less than \$20 per year... (about a 1% increase)

Compared to the increased energy costs of \$1,600 per year (50%) that households have experienced over the last 3 years.

In return for the \$20 per year, Michigan would obtain large-scale electric and natural gas energy efficiency programs that would save hundreds of millions of dollars per year.



GOOD POLICY = GOOD POLITICS

Surveys repeatedly show very strong public support for energy efficiency.

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

% of the public that favors or strongly favors:

83% Energy Efficiency

72% Renewable Energy

30% Building a coal or natural gas power plant

21% Building a new nuclear power plant

**19% Buying more power⁴⁶ from other states or
Canada**



CONCLUSIONS

- We are in an energy crisis, with the potential to be extremely serious.
- Michigan is very vulnerable, due to our high energy use and almost total dependence on imported fuels. Energy costs are crushing our economy.
- Energy efficiency is the only viable near to mid-term option. It reduces costs directly through energy savings, and helps lower market prices.
- Energy Efficiency should be a key part of Michigan's economic development strategy.
- This should not be a partisan issue. We are all in this together.

ENCOURAGING DEVELOPMENTS

- The preceding information has been widely circulated among policymakers, and the level of concern is definitely increasing.
- Governor Granholm formed the “EDGE2” collaborative group that has been examining energy efficiency policies for Michigan
- Senator Patterson [(R) Chair of Senate Energy Committee] has recently called for the development of a ‘State Energy Plan’
- The MPSC is showing an active interest in this topic
- It’s time to tell policymakers about the urgent need for expanding energy efficiency programs in Michigan.
Worth repeating: This should not be a partisan issue!