

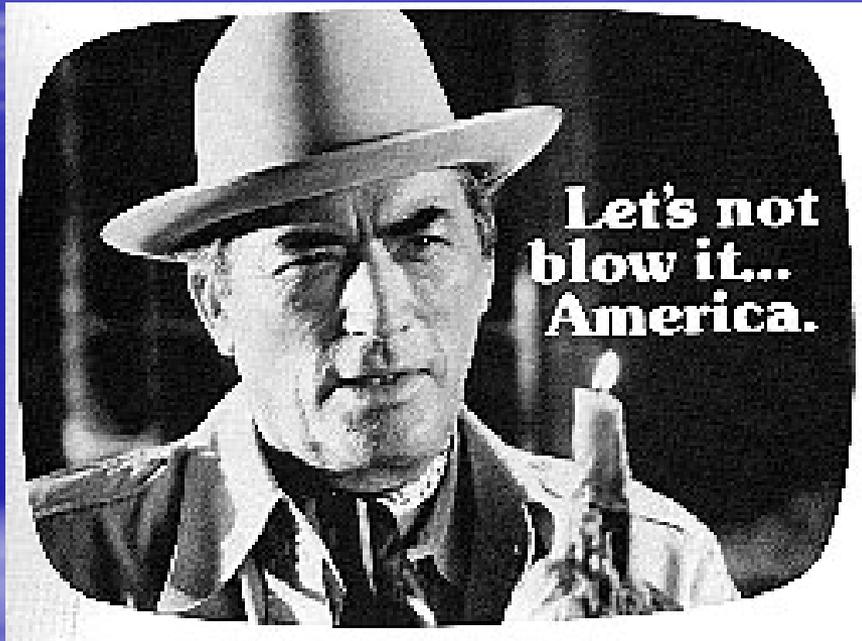
***The Energy Efficient Natural
Gas Supply Resource
Opportunity***

Alliance to Save Energy

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Alliance to Save Energy



- A non-profit coalition of business, government, environmental and consumer leaders.
- Promotes energy efficiency worldwide to achieve a healthier economy, a cleaner environment and energy security
- Senator Byron L. Dorgan, Chairman
- Gas Industry Board Member -- James H. DeGraffenreidt, Jr. Chairman and CEO Washington Gas

What is Energy Efficiency?

- Turning off the lights when you are in the room, that's energy conservation
- Turning off the lights when you leave the room, that's smart energy behavior
- Installing a motion detector, that's energy efficiency!



The Natural Gas Problem

- Demand for natural gas is projected to be greater than supply
- Supply side reforms aren't sufficient to meet projected demand
- Plus, many supply side reforms will be difficult to achieve -- NIMBY

**If supply can't do it
all, what can?**



Energy Efficiency

It Just Makes Common Sense

**Energy efficiency
is our nation's
quickest,
cleanest and
cheapest energy
supply resource**



National Petroleum Council

“Balancing Natural Gas Policy: Fueling the Demand of a Growing Economy”

“North America is moving to a period in its history in which it will

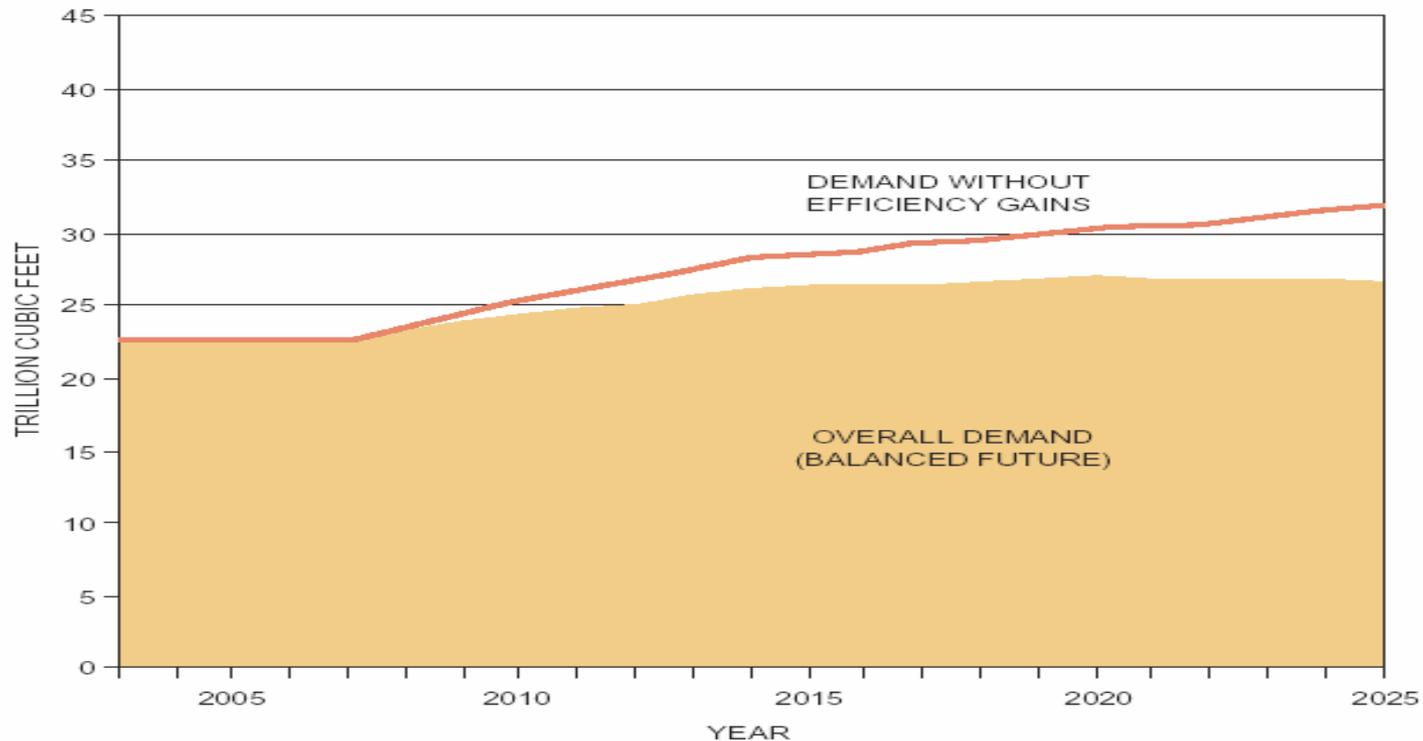
no longer be self reliant in meeting its growing natural gas needs;

production from traditional U.S. and Canadian basins has plateaued. Government policy encourages the use of natural gas but does not address the corresponding need for additional natural gas supplies. A status quo approach to these conflicting policies will result in undesirable impacts to consumers and the economy, if not addressed. The

*solution is a balanced portfolio that includes all of the following elements: **increased energy efficiency and conservation;***

alternate energy sources for industrial consumers and power generators, including renewables; gas resources from previously inaccessible areas of the United States; liquefied natural gas (LNG) imports; and gas from the Arctic.”

Increased energy efficiency is key to meeting future demand for natural gas and will lower prices



Note: Energy efficiency gains in NPC modeling of future gas demand are principally from: decreased electric power demand intensity; increased efficiency in gas-fired power generation, industrial boilers, and industrial process heat; and efficiency gains in commercial and residential gas consumption.

Figure 3. Energy Efficiency Effect on Gas Consumption

Energy Efficiency Can Offset Natural Gas Price Volatility

- Small increments in gas savings can have large impacts on the price of natural gas
 - For instance if we deploy energy efficiency to reduce the demand for natural gas by 5.5% by 2008, it will reduce the wholesale price by 22%

(based on econometric models by Energy & Environmental Analysis (EEA), source: American Council for an Energy Efficient Economy)

- Increased energy efficiency will mitigate “demand destruction” in industry, such as plant closures and layoffs in energy dependent manufacturing
- Increase gas demand driven by demand to produce electricity
 - Reducing end use electricity is a vital strategy to alleviate NG shortages and price volatility



Energy Efficiency Policy Options

- **Reduce Natural Gas Demand in our Nation's Buildings**
 - Accelerate Federal Efficiency Standards
 - Expand Incentives for High-Efficiency Technologies
 - Pursue New Building Construction Savings
 - Create Energy Star Media Campaign
- **Reduce Natural Gas Demand in Industry**
 - Create National Commitment and Recognition Program
 - Expand DOE's Best Practices Program
 - Create Industrial Energy Efficiency Tax Credit
 - Support for Combined Heat and Power
- **Federal Government: Leading By Example**
 - Expand Federal Energy Management
- **Encourage Greater Electric and Gas Utility Energy Efficiency**
 - Require Public Benefit Funds
 - Create Efficiency Performance Standards for Utilities
 - Reform Electric and Gas Utility Regulation
- **Developing New Gas-Efficient Technologies**
 - Expand Research, Development and Deployment Programs in:
 - *Residential Buildings Integration*
 - *Lighting and Appliance Standards*
 - *Federal Energy Management*
 - *Industries of the Future and Best Practice*
 - *Distributed Energy Resources*
 - *Energy Star*
 - *Building Codes Grants to States*

Energy Efficiency Since 1990

■ **The Winners:**

- Industrial 13.7% per GDP reduction
(much attributed to the economic restructuring towards lower energy input goods)
- Residential 2.6% per capita reduction
(Energy use per household increasing due to larger homes)

■ **The Losers:**

- Transportation 5.4% per capita increase
(Our continuing love affair with the SUV!)
- Commercial 2.5% per capita increase
(Plug loads increasing, but Energy Star is making an increasing difference)

An Energy Efficiency Case Study: Industrial Steam

- 45% of industrial energy use goes for heat and power (7.4 quads; 7-8% US energy)
- 21% (1.6 quads) is just wasted
- **80% of fuel waste can be recaptured through highly cost effective energy efficiency improvements!**



The Challenge

- Stream systems are low priority for industry
- Poor awareness of improvement options
- Technical benefits rarely translated into financial impacts
- Onsite skills and know-how in short supply



The Industrial Steam Opportunity



- **New Technologies Now Available**
 - burners, controls, traps, insulation, monitoring techniques, diagnostic software
- **Increased Profits**
 - reduced steam waste will lower fuel, scrap, labor, idle resource, safety, and emissions abatement costs
- **Gas Utility Assistance**
 - provide BestPractice Steam resources such as tip sheets, survey guides, diagnostic software, training and vendor networks

“higher profits means more viable industrial customers”

Industrial Steam Upgrades

Options, Savings and Payback

SOURCE: Enbridge Gas Distribution Steam Saver Program, Toronto Canada

ENERGY EFFICIENCY OPTIONS	% FUEL SAVINGS	TYPICAL PAYBACK
Combustion improvements	2%	0.4 yrs
Boiler room capital projects (new and right-sized boilers)	2%	6.0 yrs
Heat recovery (economizers)	3%	2.5 yrs
Operating changes (behavioral or low-cost)	1%	0.1 yrs
Reduce steam pressure (consult before doing)	2%	0.1 yrs
Steam traps and distribution improvements	2%	2.2 yrs
Upgrade pipe insulation	3%	0.7 yrs
Building HVAC improvements (related to building envelope)	2%	2.2 yrs
TOTAL	17%	2 year average

Corporate Energy Management

- Enhances business performance through optimized resource allocation to meet production goals
- Combines technology, behavior, metering, measurement, budgeting and management procedures



Energy Efficiency

Increases Revenues and Profits, and Reduces Business Risk

- Energy management reduces expenses, controls business risk and builds revenue
- Capital investments are NOT the only way to reduce energy costs
- Energy efficiency may not alone be important.... but its impacts on competitiveness are
- Barriers to energy efficiency are based largely on misperceptions
- Firms can manage the effects of energy price and supply fluctuation
- Actionable guidance on energy management is freely available

And If Making Money Isn't Enough, Do It For Our Children

If we continue current energy policies, in one hundred years CO₂ concentrations will explode to previously unknown levels. “Turning off the lights and changing furnace filters” won't do it — major economic, technical and policy changes must be made if we have any hope of survival!

Graph -- Robert Watson, World Bank

