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SHAPING OUR ENERGY FUTURE

E-Vision: Shaping Our Future by Reducing Energy Intensity in the U.S. Economy

May 14-16, 2002
Crystal Gateway Marriott • 1700 Jefferson Davis Highway
Arlington, Virginia

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Shaping Our Future By Reducing Energy Intensity In The US Economy

James D. Schultz

Vice President, Energy & Environment

May 15, 2002

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Lessons Learned – Public\Private

Energy Improvement Partnerships

Jim Schultz

American Iron and Steel Institute

Today's Comments Include:

- Steel and Energy Relationship
- Evidence of This Link
- DOE\AISI Project Description
- Attributes of Successful Partnership
- Challenges for the Future

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STEEL
MEANS ENERY

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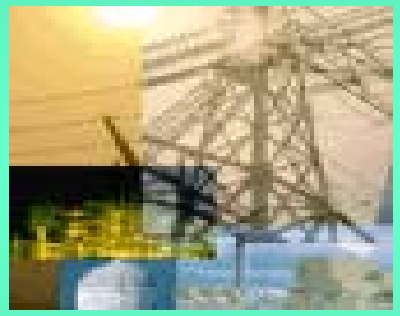
- Nature of Steel Making
- Energy Intensity
  - ✓15-30% of Cost
- Energy Sources
  - ✓Power \ Natural Gas \ Coal
  - ✓Other Process Gases
  - ✓Coke
  - ✓Scrap
  - ✓Slabs
- Impact of Price Spikes \ Shortages

Evidence



Energy Efficiency Importance

Jim Schultz

American Iron and Steel Institute

- **Joint Programs Participation**
  - ✓ Green Lights
  - ✓ Wastewise
  - ✓ Earth Star
  - ✓ Coal Bed Methane Recovery
  - ✓ Landfill Methane Recovery
  - ✓ Climatewise
  - ✓ NICE^3
  - ✓ 33\50 Pollution Prevention
  - ✓ Steam Challenge
  - ✓ Clean Coal Technology
  - ✓ Motor Challenge

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- Waste Gases\Heat Power Generation
- On Site Generation
- Emissions Reductions
- Water Recycling Effort

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More Evidence
Energy Efficiency Importance

- Technology Roadmap Developed – 1997
- Energy Reduction Target Areas Identified
- Reduction Objective Set
- Program Progress Report

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Technology Roadmap Update

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- Eight Year, $23 Million Collaborative Agreement – July 1997
- Project Selected and Co-Funded by DOE/AISI that Address the Mission:
  - ✓ To Increase the Competitiveness of the US Industry while Saving Energy and Enhancing the Environment
- AISI Members "Opt-In" on Only those Projects that Fulfill Their Own Research Objectives

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- 25 Active Projects
  - ✓9 completed in 2001
- 22 Unique R&D Organizations,
  - ✓51 Industrial Partners
- $20.1M Funds Committed
  - ✓21.9M Projected
- List of Achievements (Time Not Permitted)

Attributes of Successful Public/Private Partnering

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- Cutting Edge Technologies
- Ability to Leverage Resources
- Economic Incentives
- Recognition Opportunities
- Reasonable Metrics\Timing\Goals
- Flexible – Not Prescriptive
- Good Technical Available Support

Summary

- Energy and Steel – **Linked**
- Commitment by Industry – **Strong**
  - ✓Past Program Participation
  - ✓Current Program Goals/Objectives
- Attributes for Success
  - ✓Technology Cutting Edge
  - ✓Resource Leveraging

Summary

- Attributes for Success
  - ✓Reasonable Metrics/Goals/Timing
  - ✓Flexibility
  - ✓Great readily Available Technical Support
- Future Challenges
  - ✓Rising Energy Costs
  - ✓Limited Resources
  - ✓Price of Failure

The Role of Voluntary Programs in Improving Energy Efficiency, Saving Money, and Enhancing Economic Well-Being

John A. “Skip” Laitner
EPA Office of Atmospheric Programs
Washington, DC

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The Positive Role of Indicators

- A wide range of indicators can help us understand better the ordinary business of life
- Indicators help understand relationships, causes and opportunities
- In the words of Kenneth Boulding: “images of the future are the keys to choice-oriented behavior.”

But when we speak of reducing the nation's energy intensity, we might pose the question:

"Less energy-intensive with respect to what?"

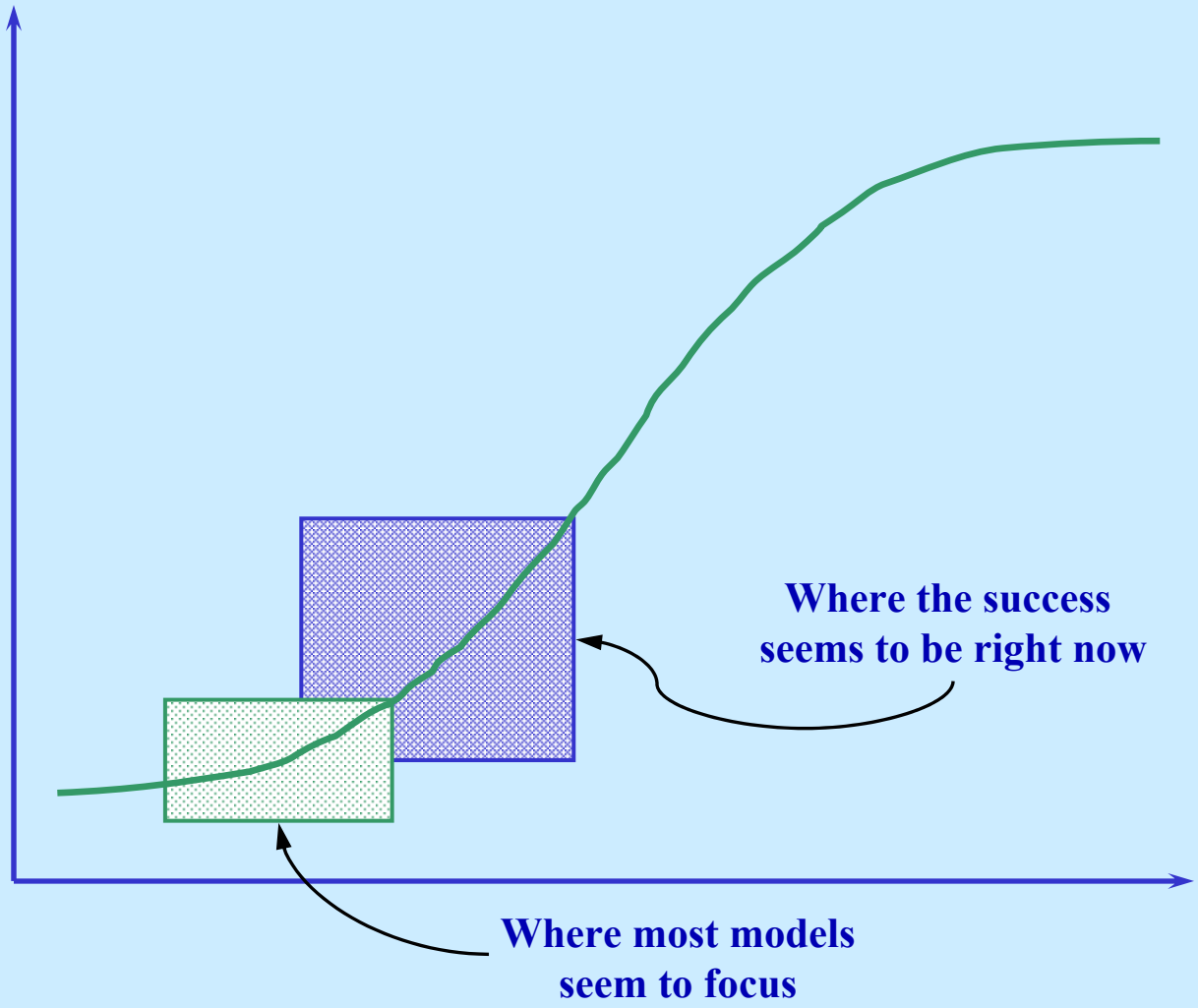
- The nation's economic well-being?
- Higher levels of productivity?
- Increased employment and incomes?
- Improved environmental quality?

Reducing the nation's energy intensity may or may not contribute to each of these goals

The Jackal as a possible Role Model for EPA, DOE, and other Voluntary Programs?

"Yo! Everyone down there! This is the jackal! I'm tired of slinking around in the shadows!...I'm coming down to the kill!...Is that gonna be cool with everyone?...I don't want trouble!"

Standard Forecasts about the Role and Impact of Voluntary Programs



It is *assumed* that existing investments are already optimal, but inefficiency is a well-known phenomenon.

- There is a 40+ year literature on the measurement of many existing inefficiencies.
- The basic notion of technical efficiency dates back to Koopmans (1951), Debreu (1951), and Farrell (1957), and more recently by Boyd, Färe, and S. Grosskopf (1998), Sanstad, DeCanio, and Boyd (2001), and Laitner, DeCanio and Peters (2001). One bibliography, Cooper et al. (1999), contains over 1,500 references to existing inefficiencies.
- The literature on suboptimal performance, so-called "X-inefficiency" (Leibenstein, 1966), may help explain the apparent success of voluntary programs as suggested in Dowd, Friedman, and Boyd (2001), among others.

Highlights of the EPA Voluntary Programs

Overview of EPA Voluntary Programs

- Many underutilized technologies and practices:
  - sizable efficiency gains and GHG reductions by 2010
  - significant energy bill savings
  - enhanced economic growth
- Voluntary programs spur investment
  - focused on cost-effective opportunities
  - delivering multiple benefits
  - addressing most major emission sources
  - strong track record
- Prudent actions TODAY have big payoff in future

Keys to Program Success

- Strategic Planning
  - market assessments of cost-effective opportunity
    - where are markets not working
    - where is largest environmental benefit
- Focus on Action
  - what does audience need to make better energy decisions
  - reducing transaction costs to better investments
- National definitions and Strong partnerships
  - can be leveraged by many
  - maintain consistency and value

➔ ***Coalesce and build industry infrastructure***

Program Efforts are Highly Effective

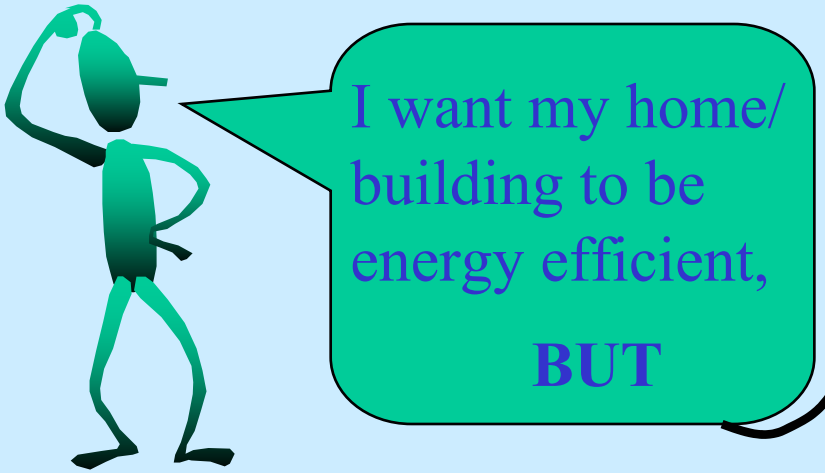
Investment in efficient technologies thru 2010	***$13 billion***
Net consumer and business savings thru 2010	***$70 billion***
Total peak energy saved in 2001	***10 GW***
Total electricity savings in 2001	***80 billion kWh***

- ***$15 invested***
- ***$60 net energy savings***
- ***more than 1 ton of carbon avoided***

Source: CPPD 2001 Achievements in Brief

Programs like ENERGY STAR makes efficiency easy

- Turns energy efficiency into real products and services
- National definitions for efficient products, homes, and buildings
- Provides objective, clear information



What does that mean?

What do you ask for it?

Who do you ask?

How do you know it will work?

How do you know it did work?

Success with ENERGY STAR for homeowners/consumers

- **On Products** — *Over 30 products (11,000 models)*
  — *Across 1,600 manufacturers*
- **In Stores** — *7,000 stores: Sears, Home Depot, Best Buy*
- **With Utilities/States** — *Representing about 50% of US customers*
- **Powerful Platform** — *Typical homeowner can save ~$400/yr*

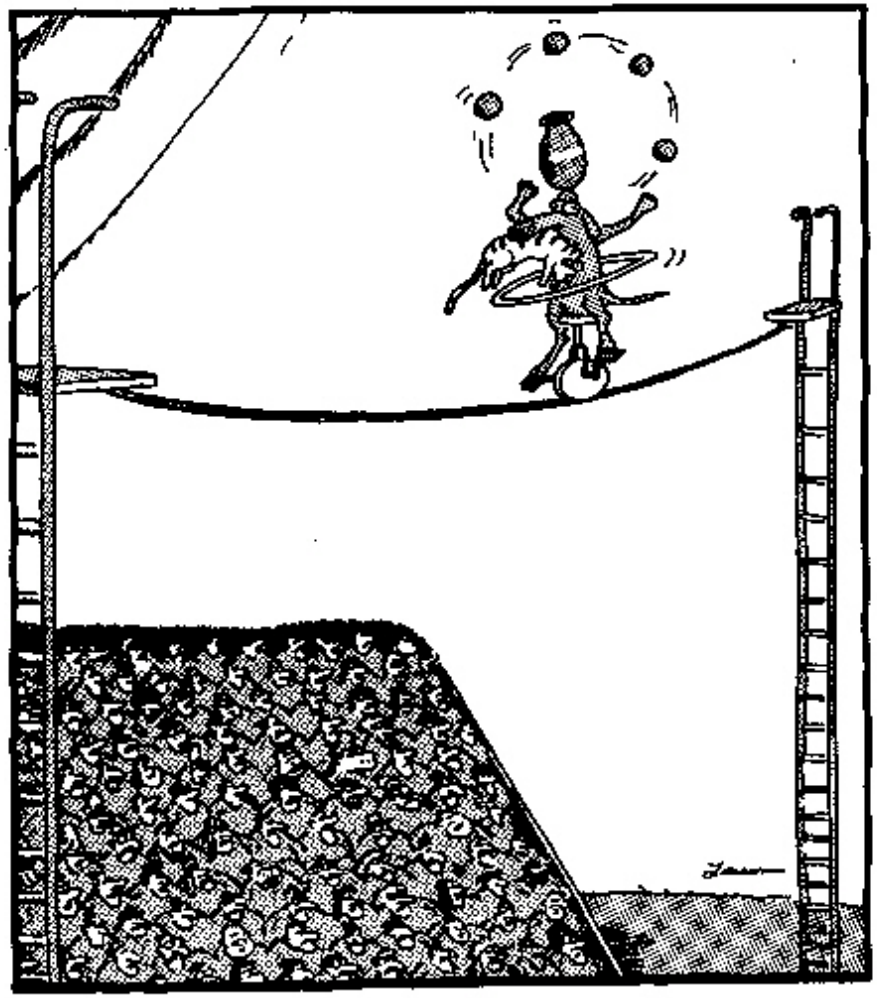
- **With Consumers** — 40% *public recognition nationally*
  — *750 million products purchased*
  — *55,000 new homes*
- **Sizable Savings** — *$40 billion saved from actions and investments to date with 5 GW peak savings*

Being highly leveraged in CA

Success with ENERGY STAR for Business and Organizations

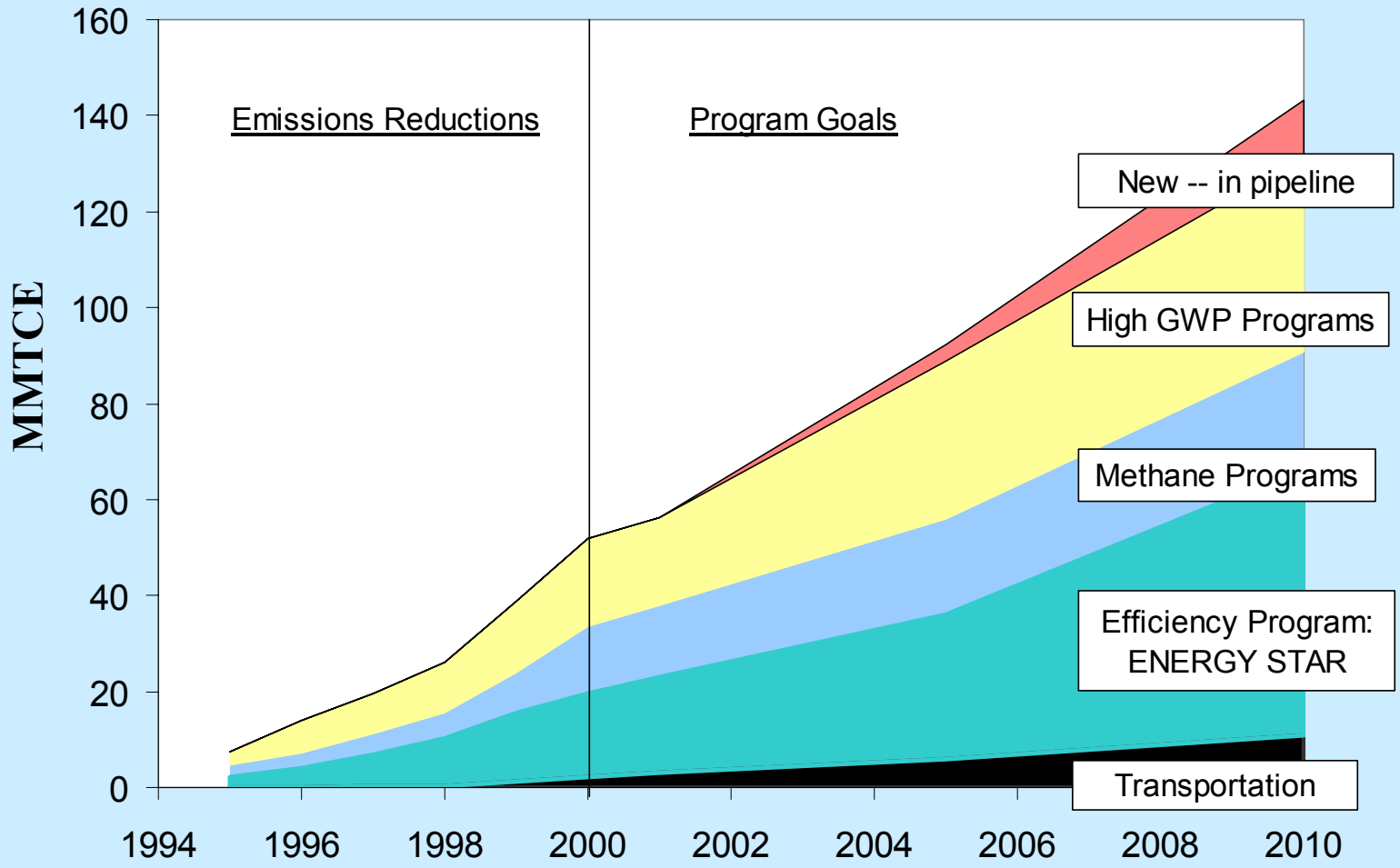
- Partners in effective building upgrade improvements
  - good upgrades offer 30% reduction in energy bill for many
  - more than 7000 partners
  - $20 billion in savings thru 2010 from completed projects
  - 5 GW of peak power offset

- New -- building energy performance rating system ('99)
  - innovative new system overcomes major market gap --
    - can't manage what can't be measured
    - now have system like mpg for cars; scale of 1 to 100
  - great success in short time
    - 10% of office building space; 8% schools benchmarked to date
    - 700 buildings labeled for excellence
  - promoting ratings (value of efficiency) in market transactions (leasing, audits, sales)



High above the hushed crowd, Rex tried to remain focused. Still, he couldn't shake one nagging thought: He was an old dog and this was a new trick.

Emissions Reductions and Goals for Key Programs of all EPA Voluntary Programs



Goals under revision as part of 3rd National Communication to the FCCC

Future Program Opportunities

- More than double GHG reductions by 2010
  - have successful business models to expand
    - after a decade of building, Energy Star is ready for major push
      - new public education campaign
      - major push on building benchmarking and effective upgrades
      - add more complicated home improvement elements
      - add industrial energy efficiency
    - methane programs continue to grow and deliver
- New opportunities for industry participation
  - Corporate Climate Leaders program
  - Combined Heat and Power
  - Green Power

Some Conclusions

- Voluntary programs have a seemingly unexpected level of success that is not easily captured by today's modeling environment.
- Much of the success is attributable to reducing existing inefficiencies and information asymmetries. In effect, voluntary programs derive their success from closing both the information and the efficiency gaps.
- Corporate champions appear to view Energy Star programs as a critical resource that adds value to their products and provides a competitive edge in promoting market share.
- To the extent that conventional economic models capture real business decision processes, voluntary programs will continue to emerge as an important and growing strategy in cost-effective energy savings and reductions in GHG emissions.

The difficulty lies not with the new ideas, but in escaping the old ones

John Maynard Keynes

For more information on the material referenced in this presentation, contact:

John A. “Skip” Laitner
EPA Office of Atmospheric Programs
1200 Pennsylvania Avenue NW, MS-6201-J
Washington, DC 20460
o: +1 (202) 564-9833
f: +1 (202) 565-2147
email: Laitner.Skip@epa.gov

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