

How Big Energy Efficiency?

*Exploring Further Possibilities**

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*Liberty and Prosperity through Energy Efficiency.



An Opening Commentary

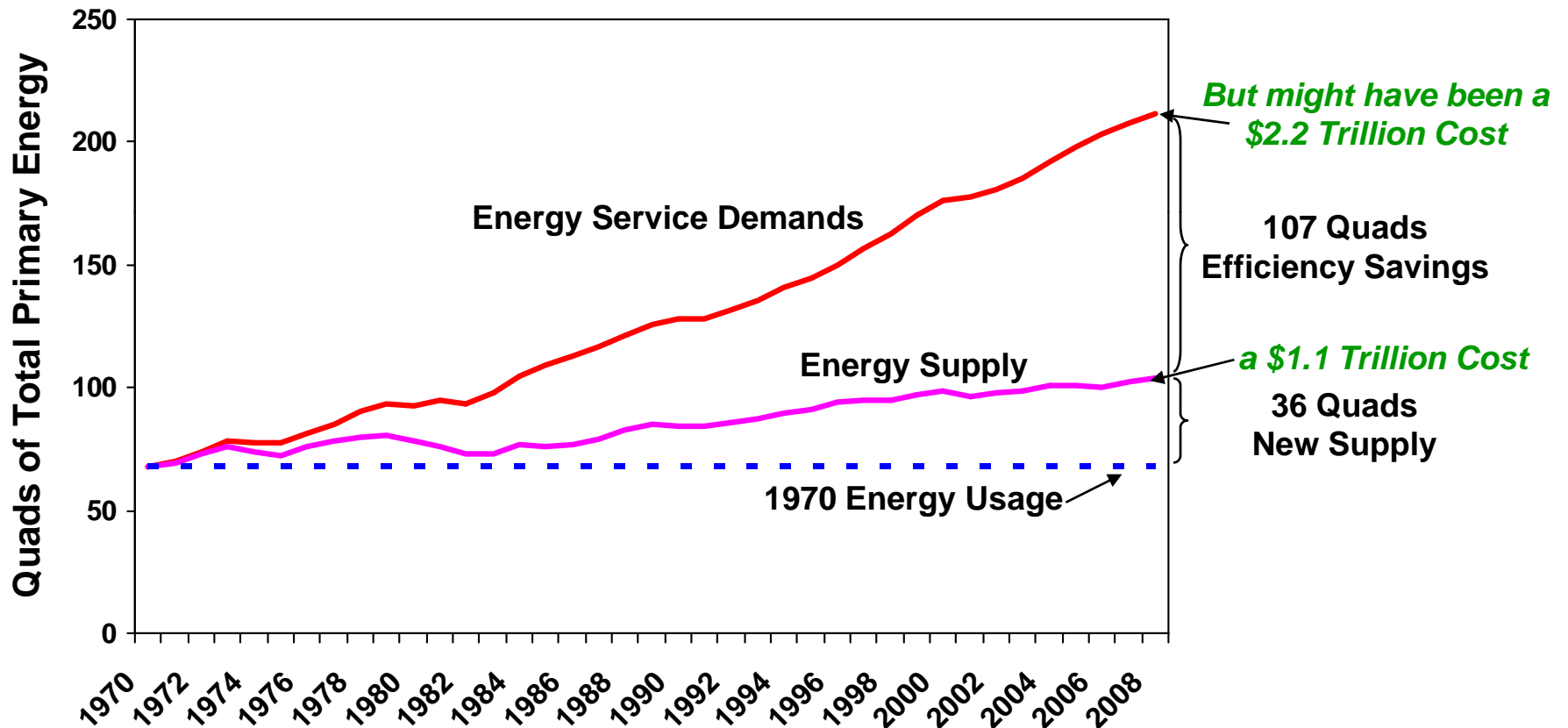
- Energy efficiency may be the farthest reaching, least-polluting, and fastest growing energy success story of the last 50 years. But it is a highly invisible success story. . . .
- We've accomplished a lot, but it's just the tip of the potential improvement opportunity
- Needed are policies and investments that create systematic improvements driven by the right economic motivation, and the innovative spirit.

Energy Efficiency: *Past and Present*

Working Definition of Energy Efficiency

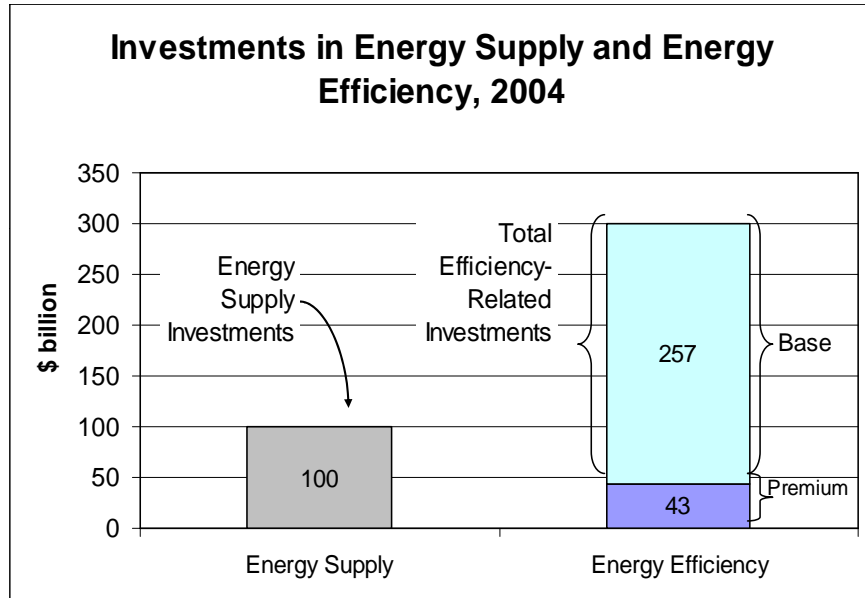
- The energy that we don't use to produce our nation's goods and services and the cost-effective investments in the tools and behaviors needed to achieve those savings.
- Examples include investments in:
 - New electronic ballasts and lamps, sensors, building and piping insulation, and heat recovery systems installed to primarily save energy
 - Information and communication technologies (ICT) whose secondary value increases overall energy productivity
 - Combined heat and power (CHP) and recycled energy systems with efficiencies of 70-90 percent, or more
 - Investments in the more innovative, high value-added industries and services that power structural change, but in ways that also lower the nation's energy-intensity
- The common denominator in all these examples is productive investment!

The Efficiency Contribution*



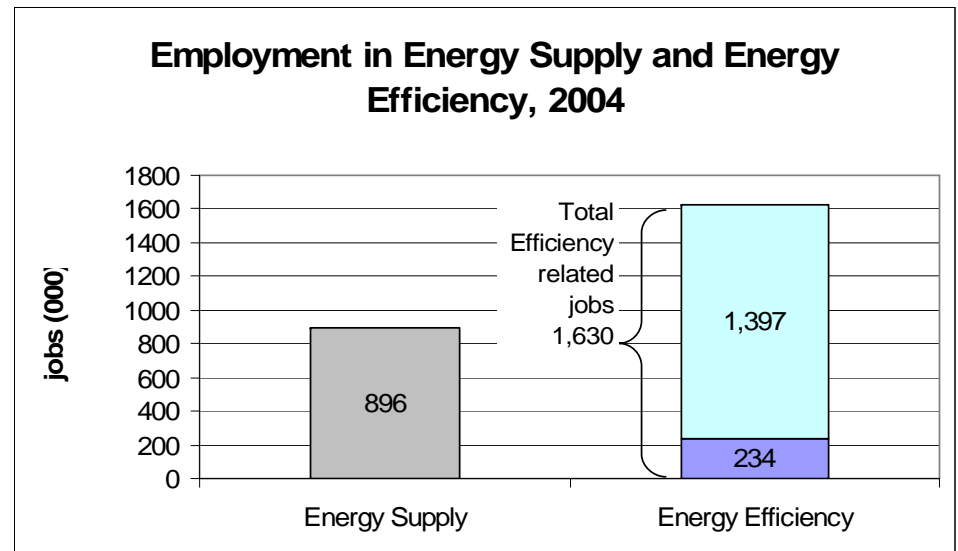
* Assuming 1970 Technologies and Market Structure with a Growth in GDP (all values in \$2000)

The Immediate Success Story: Something to Decidedly Build On



- Cumulative investments in Energy Efficiency (since 1970) saved an estimated \$700 billion in energy costs in 2004 alone.
- 2004 investments in Energy Efficiency saved an estimated \$19.4 billion in energy costs in 2004 alone.

- In 2004, Energy Efficiency related investments employed nearly twice as many people as investments in energy supply .

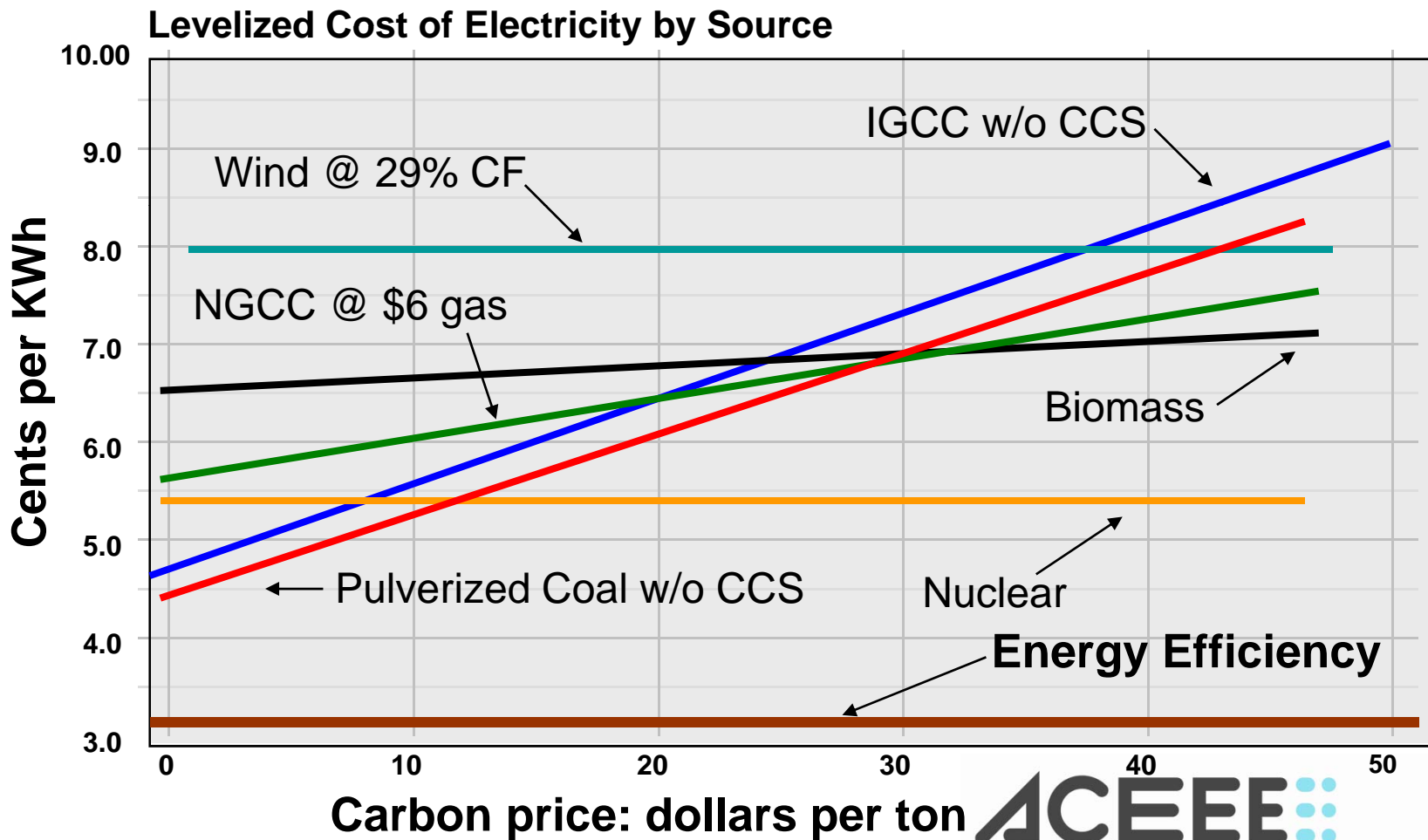


The *Future* of Energy Efficiency

Why is Efficiency the ‘First Fuel’?

- No clean energy strategy will work without substantially moderating demand growth
- Rising demand is straining all conventional energy markets – whether fossil fuel or renewable energy resources
- Bringing new supply capacity on line is increasingly tough — clean or dirty. . . .
- Efficiency buys us cost-effectiveness, and buys us time to deploy clean supply options
- Efficiency is essential to making carbon solutions both achievable and affordable

Energy Efficiency: A Cheaper Resource

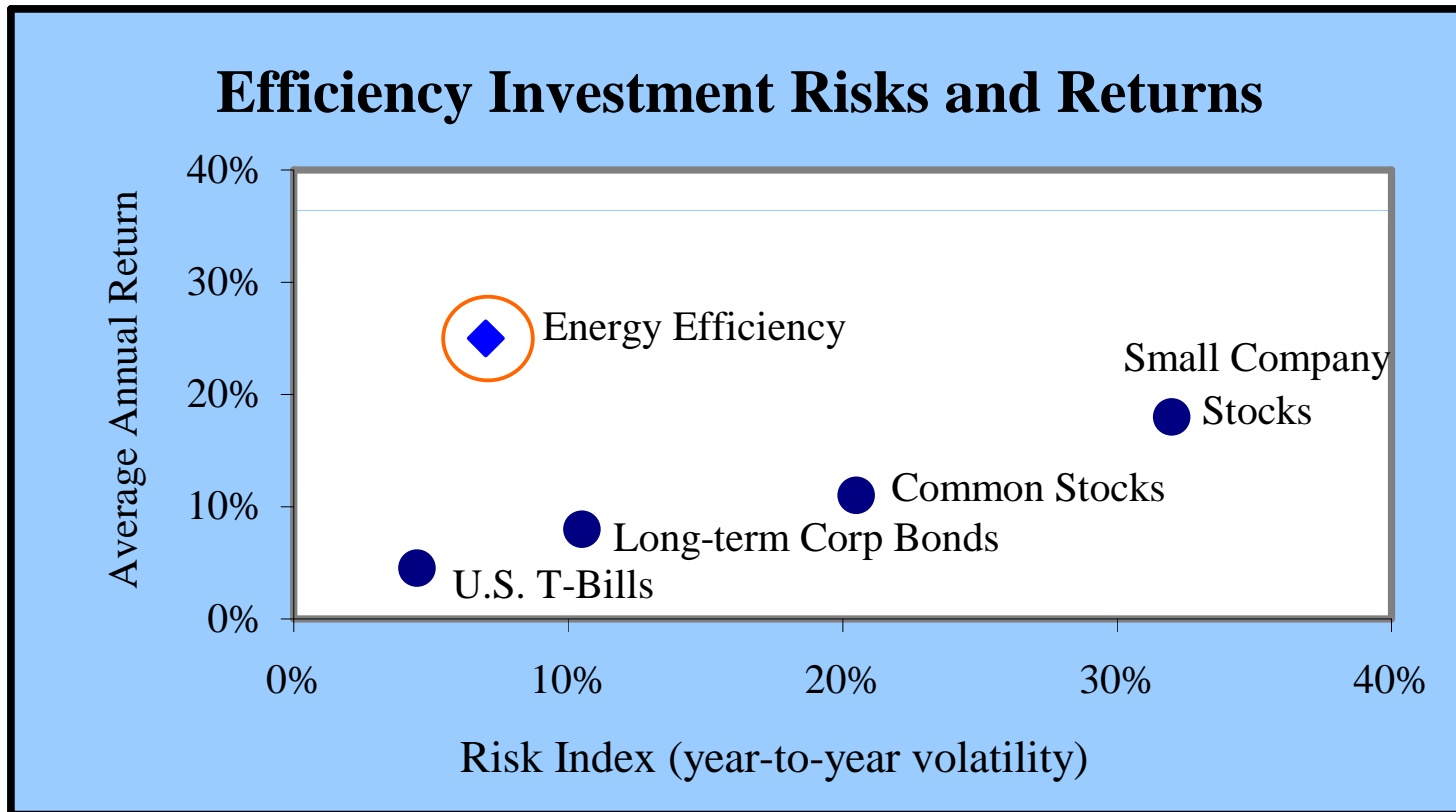


Carbon price: dollars per ton

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Energy Efficiency Investments: A Low Risk, High Return



Source: ACEEE estimates adapted from the U.S. EPA and the Vanguard Group

Efficiency Potential Remains Large

- A variety of efficiency resource studies show an economic potential with a **~25% energy savings** beyond normal gains over the next 20 years or so.
- Indeed, **efficiency resources are renewable** as technologies evolve and costs drop.
- This means **shifting innovation and capital** from the energy supply infrastructure to the energy service infrastructure.
- The energy productivity gains imply significant **savings for businesses and consumers** while positively impacting carbon emissions and the economy.

Energy Efficiency Investment Can Become an Even Bigger Business

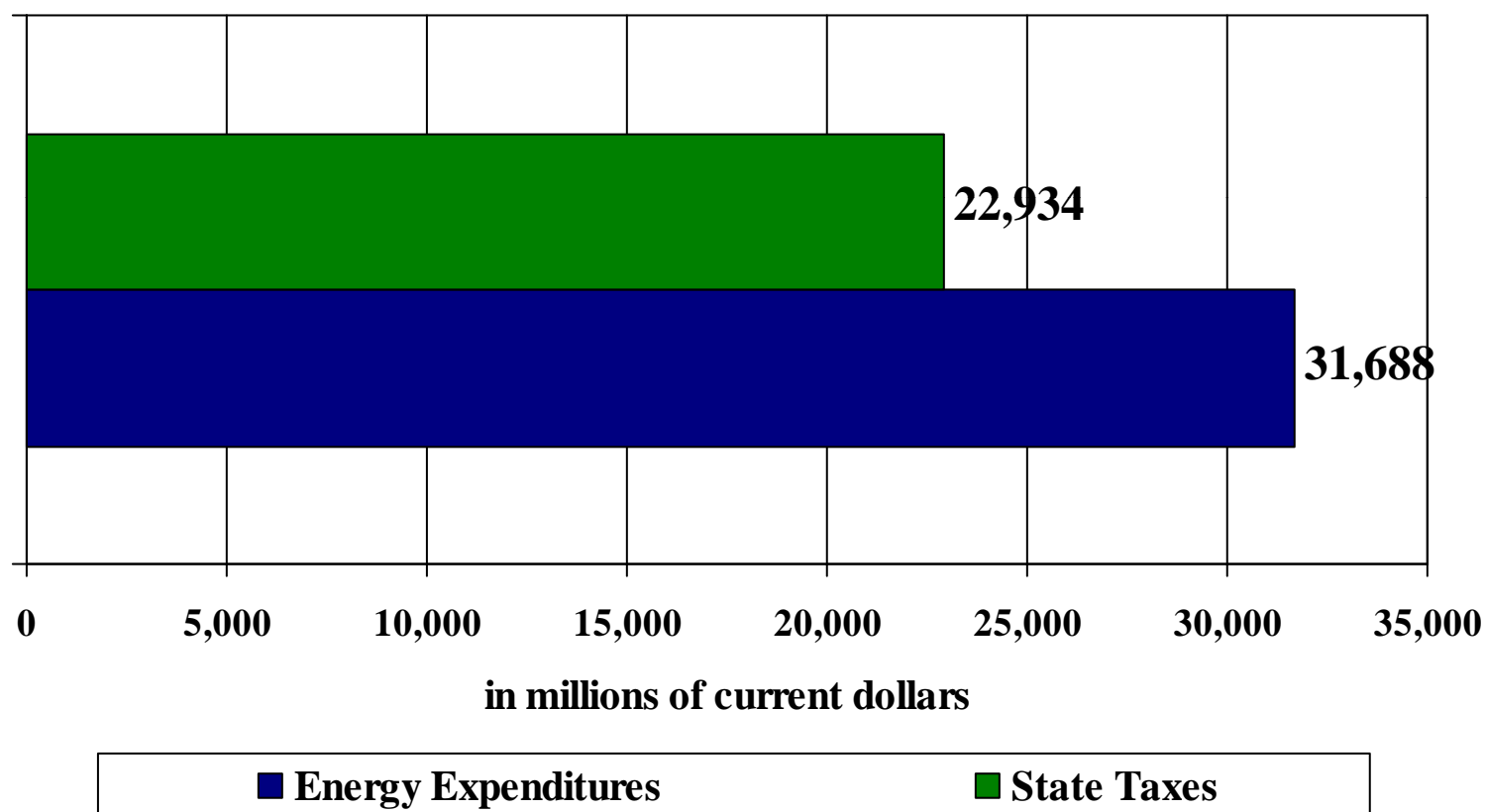
- Total spending energy-efficient technologies and services in 2004: ~\$300 billion
- Estimated market in 2030: ~\$700 billion
- *One very clear inference*: A lot of potential efficiency gains have yet to be realized
- Question: How much will be captured by New Jersey industries?

And What About the Employment Impacts of Inefficiency?

- For this next part of the discussion the numbers “2” and “7” will be very important!
- And why is this? Because energy-related purchases are not at all very labor-intensive. In fact:
 - Energy-related sectors: 2 jobs per million dollars
 - All other sectors: 7 jobs per million dollars
 - So, a cost-effective investment in energy efficiency — in effect, a productive change in the recipe of the economy — should lead to a net employment benefit for a given economy

Energy Efficiency in *New Jersey*

A Comparison of NJ State-Generated Taxes to NJ State Energy Expenditures (2005)

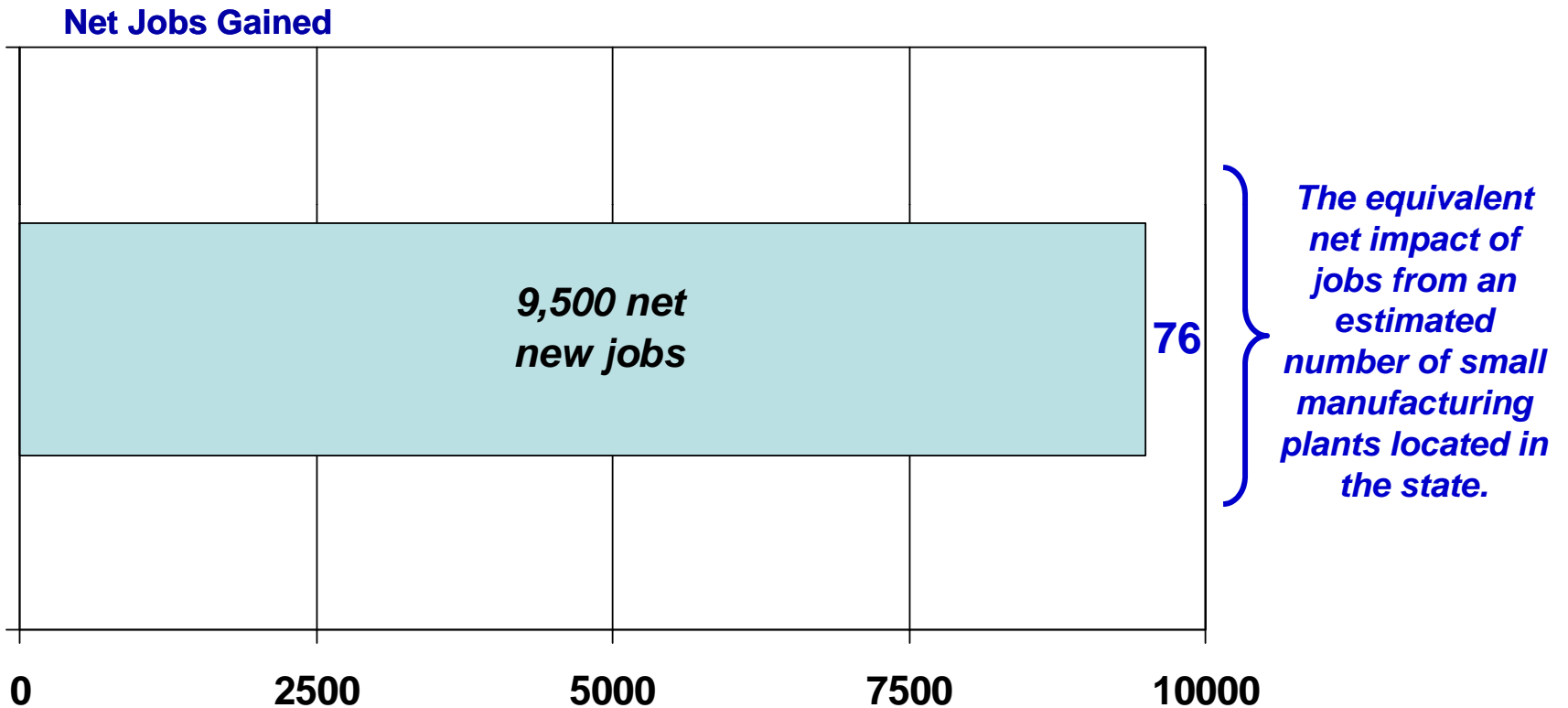


Sources: U.S. Statistical Abstract, 2008; and Energy Information Administration 2008. Information on all 50 states are available and, while varying, show a similar trend.

Estimated Efficiency Potential in N.J.

	National	New Jersey	% N.J.
Total Energy Consumption (quads)	100.3	2.73	2.7
Industrial Energy Consumption (quads)	32.3	0.48	1.5
Total Investment in Efficiency (\$ billion)	300.0	6.9 - 9.5	
Industrial Efficiency Investments (\$ billion)	75.0	0.9 - 1.3	
Total Efficiency Employment (000)	1,630	38 - 51	
Industrial Efficiency Employment (000)	351	4.4 - 6.0	
Total Efficiency Investment Potential - 2030	700	16 - 22	

Potential Impacts Had New Jersey Been Just Six Percent Energy-Efficient in 2005



Sources: Laitner, 2008. Building on the recommendations found in Nadel and Geller 2001, the IMPLAN data set, 2008; and the Energy Information Administration 2008.

Recap: The U.S. Energy Efficiency Market, Market Potential, and Smart Way Forward

Historically: EE has allowed us to meet our tremendous growth in energy service demands with only modest increases in energy supplies.

In the Future: EE could meet an even greater proportion of our energy service demands and achieve negative growth in energy consumption over the next 20-25 years.

Goal: To expedite the shift to a more energy-efficient economy

The Means to Get There: Better policies and more investment in energy efficiency technologies.

Some Final Thoughts. . . .

- Efficiency is an essential ingredient in efforts to maximize energy savings and expedite our transition to a low-carbon economy;
- Closing the efficiency gap requires new policies and expanded investments:
 - That develop economic, technological and behavioral mechanisms, and incentives to increase energy efficiency.
 - That catalyze innovation and develop multifaceted and integrated approaches to energy efficiency that include positive feedbacks.

Some Final Thoughts

Yes, energy efficiency costs money, but inefficiency even more so. . . .

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