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*spot*light

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Energy Efficiency, Economic Efficiency, and The Pretense of Knowledge

KEY FACTS: **• Energy efficiency, as defined by those who embrace it as a policy guide, is focused strictly on saving energy even if it means sacrificing overall economic efficiency.**

• Energy efficiency programs focus on the relationship between one input into the production process, energy, relative to the output generated by that process.

• This simplistic view makes no consideration for the strong possibility that other inputs — labor, plastic, steel, glass, etc. — might actually increase.

• Economic efficiency, on the other hand, relates total costs to the value of the output that those costs generate.

• We may observe people making decisions that we consider to be inefficient, but the proper conclusion to draw is that we, not they, are misperceiving their costs and benefits.

• For an increase in energy efficiency to translate into an increase in economic efficiency, it would have to result in an overall decrease in the average cost of production or, if you are a consumer, the cost of consumption. The people implementing the energy efficiency plan would have to be better off from their own perspectives.

• Mandates and special incentive programs would not have to be put in place to promote energy efficiency, unless we assume that the government is in a better position to judge the best interest of individuals or businesses than the individuals or businesses themselves.

• When experts and policy advocates push energy taxes, incentives, and mandates to promote energy efficiency, they do what Nobel Prize-winning economist Friedrich Hayek warned against: craft policy through a "pretense of knowledge." They pretend to have information about other people's preferences and alternative uses of resource that they could not possibly obtain.

• Ultimately, energy efficiency programs are necessarily an exercise in paternalism and behavior modification.

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Over the past decade a new buzzword has come to be infused into the public policy debate. "Energy efficiency" is now a major part of any new initiative in the areas of energy policy, transportation policy, environmental policy, land use policy, building code and zoning policy, and even tax policy. It seems that no matter what governments at any level do, from building buildings to formulating and implementing legislation, "energy efficiency" has to be a consideration.

The problem is that the term, as defined by those who embrace it as a policy guide, is focused strictly on saving energy even if it means sacrificing overall economic efficiency. Indeed, the standard definitions (see below) display an almost obsessive concern for the energy input into production and consumption processes while showing no regard at all for the very real possibility that saving energy would also require the wasteful use of other resources.

The Meaning of Energy Efficiency

Below are three definitions of energy efficiency. Each of these is from federal and state government documents. These definitions are typical of how the term is used by government agencies and trade associations, as well as how, as noted in language from North Carolina's SB3, which mandates "energy efficiency," it is codified in legislation.

> *'Energy efficiency measure' means an equipment, physical, or program change … that results in less energy used to perform the same function.*
> — NC Senate Bill 3, passed in 2007[1]
>
> *Reducing energy or demand requirements without reducing the end-use benefits.*
> — The Low-Income Home Energy Assistance Program[2]
>
> *…products or systems using less energy to do the same or better job than conventional products or systems…*
> — U.S. Environmental Protection Agency[3]

When examined carefully, none of those definitions have anything to do with actual economic efficiency. They focus on the relationship between one input into the production process, energy, relative to the output generated by that process.

The definitions essentially express a ratio putting the amount of energy used — i.e., BTUs — in the numerator and the benefits received from a given amount of energy in the denominator. Policies that are said to promote energy efficiency, such as those that set energy efficiency standards for appliances, homes, or commercial buildings, or mandate the kind of light bulbs we can use, ultimately have as their goal to reduce that ratio.

This simplistic view makes no consideration of the strong possibility that other inputs — labor, plastic, steel, copper, glass, etc. — might actually increase in the process. In fact, since energy efficiency is single-mindedly focused on the energy, any tradeoffs for other inputs are left out of the equation. For that reason the above definitions have nothing to do with overall economic efficiency. In fact implementation of policies that promote energy efficiency so defined could easily lead to overall reductions in economic efficiency if the quantity or, more appropriately, the value of other resources used more than compensates for the value of energy saved.

Economic Efficiency

The typical definition of energy efficiency does not express an economic relationship but a technical relationship; i.e., quantity of energy (BTUs) in comparison to some measure of actual services provided (illumination, warmth in the winter, coolness in the summer, cleanliness of clothes, etc.). Economic efficiency, on the other hand, relates total costs

to the value of the output that those costs generate.

From an economics perspective, the term costs here does not simply refer to monetary outlays, but any sacrifice that the business or consumer must make to obtain a given benefit — that would include sacrifices in time or convenience, which are subjective and valued differently by different people. For this reason, economists generally argue that outside observers (such as energy efficiency experts, politicians, and bureaucrats) cannot decide what is an efficiency-enhancing decision for others.

We may observe people making decisions that we consider inefficient, but the proper conclusion to draw is that we, not they, are misperceiving their costs and benefits. Indeed to do otherwise is to take the path of paternalism and social engineering.

How Does Economic Efficiency Differ from Energy Efficiency?

Energy efficiency and economic efficiency are unrelated. In order for an increase in energy efficiency, as defined above, to translate into an actual increase in economic efficiency, it would have to result in an overall decrease in the average cost of production or, if you are a consumer (using a home appliance, paying for electricity, etc.), the cost of consumption. In other words, the people implementing the energy efficiency plan would have to be better off from their own perspectives.

We may observe people making decisions that we consider inefficient, but the proper conclusion to draw is that we, not they, are misperceiving their costs and benefits.

As already alluded to, if using less energy, or more accurately, spending less money on energy, meant that the person had to invest in other equipment whose cost more than offset the savings, then even though energy efficiency might be enhanced, economic efficiency would be reduced. If the opposite were the case, mandates and special incentives programs would not have to be put in place to promote energy efficiency, unless we are to assume that the government is in a better position to judge the best interest of individuals or businesses than the individuals or businesses themselves.

To square this circle — in other words, to justify energy efficiency programs on the grounds of economic efficiency — proponents are indeed advancing the idea that the experts know better than the individual. As William H. Golove and Joseph H. Eto, researchers from Lawrence Berkley National Laboratories, put it: there is an "efficiency gap" between people's perceptions of costs and benefits and reality. As the authors describe it:

> Proponents of government intervention believe that substantial market barriers prevent socially desirable levels of investment in energy efficiency. … This belief justifies continued government intervention in energy service markets to correct or overcome the distortions inherent in market-based resource allocations. … [T]here is a substantial "efficiency gap" between a consumer's actual investments in energy efficiency and those that appear to be in the consumer's own interest.[4]

This conclusion, which Golove and Eto subscribe to, is the conclusion that governs the energy efficiency movement generally, including those programs launched in North Carolina under the banner of its mandated energy-efficiency/renewable-portfolio standard (SB3) and other subsidy and mandate programs funded by state and local governments. As stated more succinctly in a document published by the federal Environmental Protection Agency meant to support implementation of its energy efficiency programs, "energy efficiency remains critically *underutilized* in the nation's energy portfolio."[5] (Emphasis added.)

As an aside, resource allocation in the area of energy, particularly electric power, is anything but market based as Golov and Eto imply. Utility companies are government-created, government-protected monopolies. The kinds of fuels they are allowed to use and the modes of power generation are tightly controlled by government regulations, and the rates that are charged to customers are a ultimately based on decisions made by public utility commissions. To claim that this process is somehow "market based" is to demonstrate profound ignorance of the nature of actual market processes.

Furthermore, to suggest that any shortcomings with regards to the *socially desirable levels of investment in energy efficiency* are somehow the result of a "market failure" rather than government failure is a willful distortion of reality. If anything is "socially undesirable," it is the monopoly granted public utilities and the public utility commissions that control our lives with respect to energy usage and pricing.

The Pretense of Knowledge

Or, the experts know what's best for you

Economist Friedrich Hayek, in receiving the 1974 Nobel Prize in economics, delivered an address titled "The Pretense of Knowledge."[6] In large part the talk was a warning to experts, particularly in areas of economics and public policy, to avoid pretending to have information that they could not possibly obtain and then to act on that "pretense of knowledge" in designing public policy. Nevertheless, what Hayek warned about is exactly what "proponents of government intervention" to promote energy efficiency are doing. The fact is that when Golov and Eto (above) refer to "socially desirable levels of investment in energy efficiency" as being inconsistent with levels of investment actually made by real participants in real markets, they are pretending to have information that they could not possibly obtain.

Any statement about overusing energy is simultaneously a statement about the underutilization of other resources.

First, even if one is to focus on energy markets alone, the complexities are so great that it would be impossible to establish an efficiency target that could be met by central planners, which is what energy efficiency advocates are. To say that energy efficiency is being underinvested in is to say that people are consuming more energy than they should be. Putting aside the fact that defining the "right amount" would be impossible, let's assume that the right amount would be that amount consumed in a free market with no "market barriers," which is implied by the Berkeley authors. If that is the standard, then it could be just as easily argued that energy is being underconsumed and overpriced and that energy efficiency is being overinvested in. After all, there are overwhelming legal barriers to, and outright prohibitions on, drilling and exploring for oil and gas, mining coal, and building nuclear power plants. In addition there are many other taxes and regulations that are keeping the supply of energy smaller than it otherwise would be. And that does not include the fact that electricity is provided by monopolies created and protected by government.

All of these market barriers could lead one to conclude that energy is overpriced and therefore that energy efficiency is being overinvested in. Energy efficiency advocates typically do not discuss any of that when discussing the "efficient" level of investment. They assume that all the market barriers are to investments in purchases of things like energy efficient windows and appliances and that there are no barriers to purchasing and producing energy itself.

My purpose is not to argue that there is overinvestment in energy efficiency, but to show how anyone who claims to know one way or another is invoking a pretense of knowledge.

Furthermore, energy markets are only part of the equation. Whether the level of investment in energy efficiency is "socially desirable" adds a whole new dimension to the problem. Energy efficient appliances, windows, homes, light

bulbs, etc. are all on their face more costly to produce and purchase than their conventional competitors. An energy efficient washing machine or refrigerator could be more than twice as expensive as the standard appliances. What that means is that in manufacturing the energy efficient appliances, more valuable (i.e., scarcer) resources were used than in manufacturing the standard equipment. Manufacturing costs are a measure of the relative scarcity of the resources used in the production process. The more costly a process is, the more valuable the resources it uses.

When advocates proclaim that it is "socially desirable" to promote energy efficiency through public policy — taxes, subsidies, mandates, etc. — they are saying that the tradeoff of higher equipment costs for less energy usage is worth it, from society's perspective, even if it is a tradeoff that freely choosing individuals reject. What that implies is that from the perspective of social desirability, it is better to use up the additional resources needed to produce the energy efficiency equipment than it is to use the additional energy.

Any statement about overusing energy is simultaneously a statement about the underutilization of other resources. For example, assume that energy efficient windows require more glass, insulation, and other materials than traditional windows. When an analyst or bureaucrat claims that we are overusing energy and that energy efficient windows should be subsidized, he is simultaneously claiming that the additional glass, insulation, and other resources that go into making these windows are being underutilized.

But of course, energy efficiency advocates never quantitatively justify those tradeoffs nor do they even make them explicit. That would require the ultimate pretense of knowledge. Since the more valuable resources being used to manufacture the energy efficient windows or appliances or home would go elsewhere in the absence of the subsidy or mandate, the experts are actually saying that the energy being saved is more valuable to society than whatever it is that would otherwise be produced by the additional resources devoted to energy efficiency. That is not only a pretense of knowledge; it is the height of presumptuousness. If these experts had that much information, they could centrally plan the entire economy No markets would be needed for the efficient allocation of any resource, energy or otherwise.

The advocates of energy efficiency are engaging in pure paternalism or worse, social engineering.

The energy efficiency advocates seem to understand this criticism, because they always advocate for more conservation of energy. They never make a statement regarding the "right amount" of energy efficiency, only that more is always better than less — suggesting a movement being governed by ideology, not economic science.

Conclusion: Energy Efficiency As Paternalism

> Over time, the Duke Energy Carolinas' energy-efficiency programs can affect the nature of the energy-efficiency market such that customer behavior, vendor behavior, and even manufacturer behavior is altered.[7] (Emphasis added.)

Energy efficiency is rooted in the idea that some people, who have been labeled experts, believe that other people — i.e., American citizens, citizens of North Carolina, residents of a particular town or city — are using "too much" energy and, by implication, not enough other resources in their production and consumption activities. It is an empirically and even conceptually unsupportable assertion. The reality is that energy efficiency requirements and programs are about substituting the so-called experts' resource use preferences for the preferences of the people who actually purchase the resources and do the consuming and producing.

The point of energy efficiency programs is to subsidize or actually force tradeoffs onto producers and consumers

that they would not otherwise be willing to make. As none of it can be justified with rigorous analysis, energy efficiency advocates are engaging in pure paternalism or worse, social engineering.[8]

While the justifications for energy efficiency programs often hide behind a veneer of cost/benefit or so-called "cost effectiveness" calculations, none of it is or can be backed by the kind of information that would be necessary for a real economic efficiency justification of the programs. Stripped of this façade, energy efficiency programs are nothing more than an exercise in behavior modification as explicitly recognized in the testimony of Duke Energy cited above.

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End Notes

1. North Carolina General Assembly, Session Law 2007-397, Senate Bill 3, *www.ncga.state.nc.us/Sessions/2007/Bills/Senate/HTML/S3v6.html*.
2. See LIHEAPClearinghouse, "Energy Efficiency," Glossary of Selected Terms Used in Utility Deregulation, United States Department of Health and Human Services, Administration for Children & Families, *liheap.ncat.org/iutil2.htm*.
3. See Green Power Partnership, "Energy Efficiency," Glossary, U.S. Environmental Protection Agency, *www.epa.gov/greenpower/pubs/glossary.htm*.
4. William H. Golove and Joseph H. Eto, "Market Barriers to Energy Efficiency," Lawrence Berkeley National Laboratory University of California Berkeley, California, 1996, p. xi.
5. National Action Plan for Energy Efficiency, *Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers*, Energy and Environmental Economics Inc. and Regulatory Assistance Project, November 2008, *www.epa.gov/eeactionplan*.
6. F.A. Hayek, "The Pretense of Knowledge," Nobel Memorial Lecture, delivered at Stockholm, December 11 1974, *www.nobelprize.org/nobel_prizes/economics/laureates/1974/hayek-lecture.html*.
7. Testimony of Richard G. Steve, Ph.D., for Duke Energy Carolinas, In the Matter of Application of Duke Energy Carolinas, LLC for Approval of Save-a-Watt Approach, Energy Efficiency Rider and Portfolio of Energy Efficiency Programs, North Carolina Utilities Commission, Docket No. E-7, Sub 831, April 4, 2008, p. 29, as quoted in Daren Bakst, "Energy Behavior Modification: The Failure and Arrogance of Centrally Planned Energy-Efficiency Programs," John Locke Foundation *Spotlight* No. 357, August 21, 2008, *www.johnlocke.org/research/show/spotlights/208*.
8. For a paper that expands on this point see Bakst, *ibid*; also see Roy Cordato, "Demand Side Management: Social Engineering by Any Other Name…", John Locke Foundation *Spotlight* No. 402, October 28, 2010, *www.johnlocke.org/research/show/spotlights/253*.