No Need for Additional Offshore Outer Continental Shelf Oil Drilling in the US

Barney L Capehart, PhD, CEM

ABSTRACT

This article shows that we do not need the additional oil from the Outer Continental Shelf area of the US, and that the risks of irreparable environmental damage are far too great to allow it. There are cheaper, easier, and less environmentally damaging alternatives for us by using more efficient cars and light trucks, more efficient equipment in our homes and businesses, and more solar and wind energy production.

INTRODUCTION

In 1973 we were facing the height of the Middle East oil crisis, and actual shortages of oil. Even then the Army Corps of Engineers' plan to allow oil drilling in the eastern Outer Continental Shelf (OCS) was shelved once it was explained to them that adopting energy efficiency and energy conservation programs would be easier, safer and more cost effective for reducing the need for oil. This presentation to the Corps of Engineers was so powerful and so persuasive that they denied the issuance of any permits for oil drilling off the eastern OCS. They agreed that it made more environmental and economic sense to reduce our energy waste than to risk significant environmental damage by producing more oil to waste.

Now we are in 2015, and the issue is re-surfacing; however, there is no oil crisis today, and the US is becoming the largest oil producer in the world again (1). Still, energy efficiency and energy conservation, along with the use of more renewable solar and wind energy, offers us the cheapest, easiest, and environmentally safest way to provide all of the energy services desired and demanded by our society.

Most of our oil use in the US today is in the transportation sector, with 2/3 of that in cars and light trucks (2). We could easily increase our requirements for miles per gallon (MPG) fuel economy for our cars and light trucks. We will have a 38.2 MPG standard by 2016, and a 55.3 MPG standard in 2025, but we already have cars that are well above 38.2 MPG and close to 55.3 MPG. Europe has already met a 45 MPG standard for 2015 and has established a 60.6 MPG standard for 2021 (3), and we could too.

Can We Do Even Better with Our Automobile Fuel Economy Standards?

TV is currently full of ads for small and medium-sized cars that get 35-50 MPG using gasoline, diesel, or hybrid power. I have a friend who recently bought a new Honda Accord full-sized hybrid that is getting around 50 MPG in town. Smaller cars like the Toyota Prius are advertising similar MPGs. At this time, it might be instructive to look at the history of automobile fuel economy standards in the US.

History of Fuel Economy Standards in the United States

The original US fuel economy standards from 1978-1985 produced a dramatic increase in fuel economy of cars from about 18 MPG to 27 MPG—50%! Unfortunately, the next five years suffered from political interference, and MPG numbers actually went down. MPG requirements went up to 27.5 in 1990, but were unfortunately stuck there for 20 years. If we could have had the same kind of law for fuel economy for cars that we had for energy savings in the federal sector of 2% per year, we could have reduced fuel use in cars 36% during that period. However, we lost that opportunity, and between 1990 and 2010, we increased our oil imports 56% (4).

Finally in 2010 we began to increase our fuel economy standards for cars, and now we are on a path to 38.2 MPG by 2016 and 55.3 MPG by 2025. These numbers vary by source and assumptions in the mix of cars in these years.

We are quite far behind other developed countries in our increases in fuel economy requirements. The European Union will be at 50 MPG (equivalent) by 2016, and up to 60.6 MPG by 2020. By contrast, the US (and Canada) will only be at about 44.2 MPG by 2020. It is clear that the

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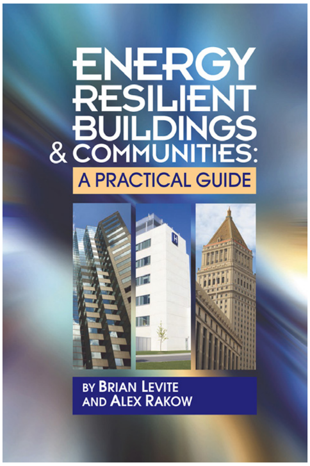

This book is written as a practical guide to those interested in the pursuit of energy resilience at a local scale. Energy resilience is defined as the relative ability of an institution to carry out its mission during a shock to the energy system, and to approach the concept on the level of a single site occupied by a single community or institution. Examples are drawn from four key community types: military bases, healthcare campuses, educational campuses and municipal governments. The book then describes a framework for developing an energy resilience plan that applies to each. While the focus is clearly on the U.S., understanding the energy resilience threat and conducting long-range energy resilience planning will benefit communities all over the globe. Part I describes the specific energy security threats that are facing local institutions and communities, the specific impact of an energy shock, and the advantages offered by pursuit of energy resilience. Part II provides concrete guidance and allows managers to assess where their institution lies on the energy resilience spectrum and they would like to be. Part III describes the three main areas of energy resilience performance: energy efficiency, on-site generation, and emergency planning. Case studies are also provided.

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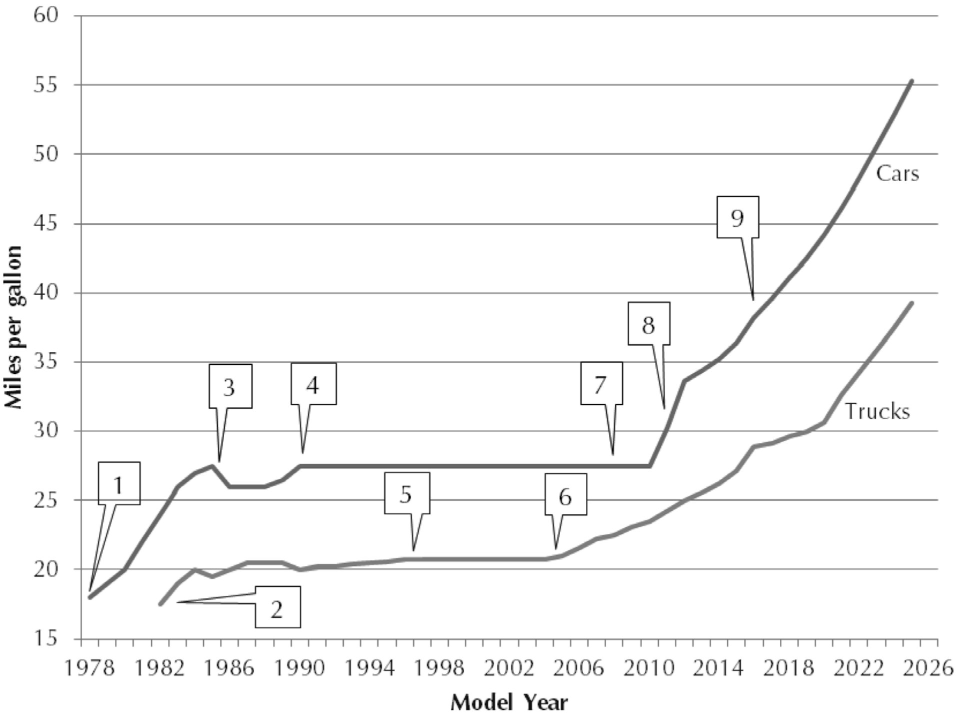

Source: *NHTSA Summary of Fuel Economy Performance, NHTSA MY2017-2025 Factsheet*

1. 1978-1985: Congress sets car standard (1978-1985)
2. DOT sets truck standard to max feasible (1979-1996)
3. DOT decreased car standard (1986-1989)
4. DOT sets car standard to 27.5 mpg (1990-2010)
5. Congress freezes truck standards at 20.7 mpg (1997-2001)
6. Bush Admin issues new truck targets (2005-2007)
7. EISA changes CAFE to footprint standard (2008-present)
8. Obama Admin issues new car & truck standards (2012-2016)
9. Obama Admin issues new car & truck standards (2017-2025)

technology of automobile fuel economy allows us to do much better, and it is just our regulatory system that is far behind the times in the US. Even countries like Japan, China and India are well ahead of us as shown by Figure 2. If the EU, Japan, China and India can have much greater MPG standards for cars now and in the future compared to our US standards, why can't we raise our standards to their levels? This is

Table 1. Projected Fuel Economy Standard (mpg).

	2012	2013	2014	2015	2016	2017	2018
Passenger Cars	33.6	34.4	35.2	36.4	38.2	39.6	41.1
Light Trucks	25	25.6	26.2	27.1	28.9	29.1	29.6
Combined Cars & Trucks	29.8	30.6	31.4	32.6	34.3	35.1	36.1

	2019	2020	2021	2022	2023	2024	2025
Passenger Cars	42.5	44.2	46.1	48.2	50.5	52.9	55.3
Light Trucks	30.0	30.6	32.6	34.2	35.8	37.5	39.3
Combined Cars & Trucks	37.1	38.3	40.3	42.3	44.3	46.5	48.7

This table is based on CAFE certification data from model year 2010, a car-truck sales split from the Energy Information Administration's *Annual Energy Outlook for 2012*, and future sales forecasts by JD Powers. From Center for Climate and Energy Solutions, 2101 Wilson Blvd., Suite 550, Arlington, VA 22201.

our opportunity to make these advances in the energy efficiency of our cars in the US.

CEMs and other energy professionals can help here, even though many of us work primarily in buildings. Much of the improvement in automobile efficiency comes from using the same technologies we use in buildings—smart sensors, more efficient engines and motors, more efficient and smart variable speed drives, and much better use of intelligent controls, and more use of intelligent information and communications technologies. So we can also contribute to the increase in MPG of automobiles and light trucks. Certainly we can make sure we purchase the most fuel efficient cars and light trucks.

Can Using Electric Cars Help Us Reduce Our Use of Oil?

The previous section showed that we could easily meet an automobile fuel economy standard of 50-60 MPG by 2020 using current gasoline, diesel and hybrid vehicles. The Ford Focus hybrid plug-in is EPA rated at 105 MPG equivalent, and the Chevrolet Volt hybrid plug-in is EPA rated at 98 MPG equivalent. I bought a Chevrolet Volt hybrid last year for under $30,000 (after the $7500 tax credit), and it goes 45 miles on a charge of electricity. As an almost exclusive urban driver, only about 10% of my mileage driven is more than 10 miles from home. I have driven 2500 miles so far, and the total MPG meter is pegged at

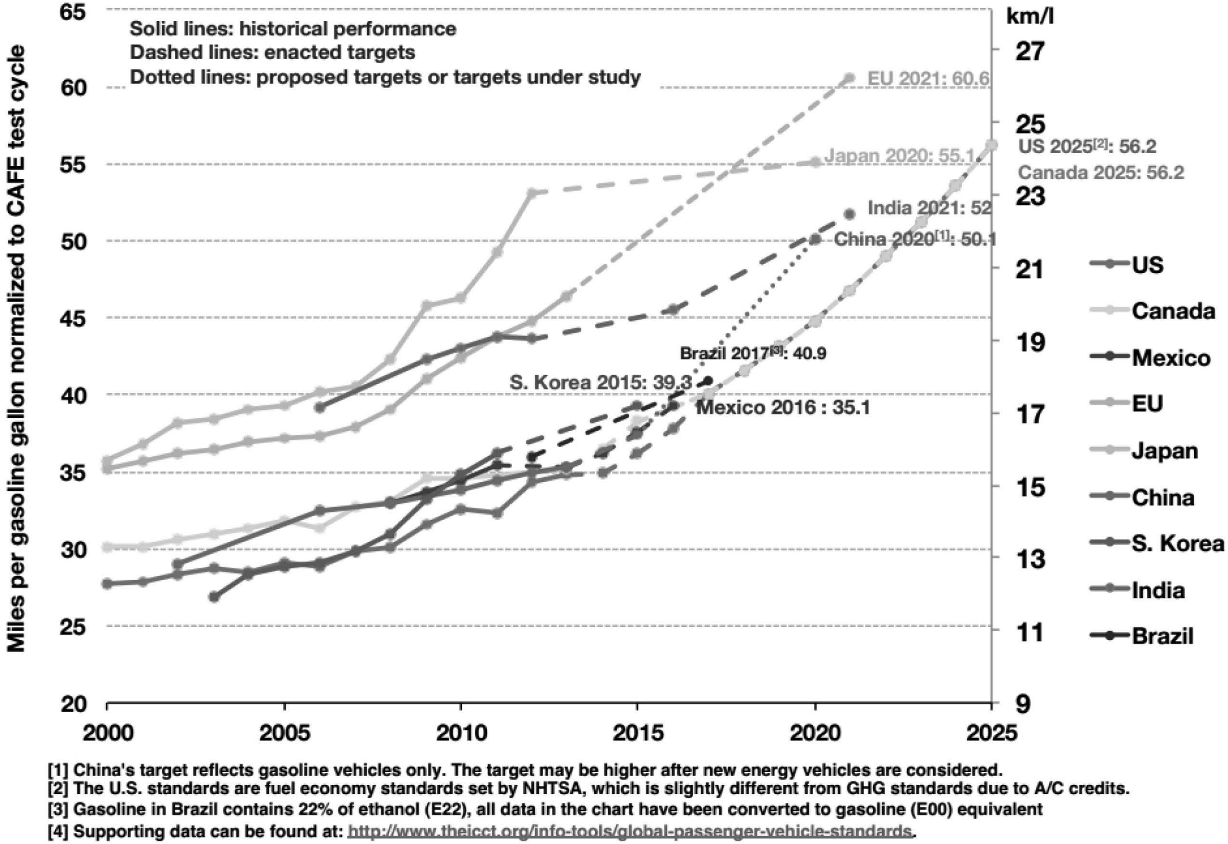

Figure 2

Source: An, F., and A. Sauer. 2004. Comparison of Passenger Vehicle Fuel Economy and GHG Emission Standards Around the World. Pew Center on Global Climate Change, Washington, DC; Updated data obtained from “Global passenger vehicle standards,” The International Council for Clean Transportation, Retrieved from http://www.theicct.org/info-tools/global-passenger-vehicle-standards, June 2014.

250 MPG. For many urban drivers, near all-electric cars could help us eliminate the need for any imported oil coming into the US.

But, all-electric cars can really make a difference. Unfortunately, the only readily available all-electric cars today are the Nissan Leaf and the Tesla. The Nissan Leaf is EPA rated at 126 city/101 highway MPG, but has a very reasonable price of about $22k at the low end after the income tax credit, which is affordable by most new car purchasers. The range of the Leaf varies with driving habits but is about 60-90 miles, which accommodates almost all urban drivers, and many suburban drivers on a round-trip basis. This is now 101-126 MPG for every mile driven, and there is no direct fossil fuel input. For those who have access to a 240-volt charging station at work, the charging time is about 8 hours if the battery is fully depleted. So someone who drives 50 miles to work and 50 miles back each day could easily charge their Leaf in about four hours at work. Many companies offer free charging stations for employees with electric cars. Here is another opportunity for CEMs and other energy professionals to help make sure that all new commercial buildings have charging stations for electric cars.

The other all-electric car is the Tesla, which gets a combined EPA MPG of 90-95. This is now 90-95 MPG for every mile driven. There is no direct fossil fuel input. The Tesla has a range of 232 to 300 miles according to their advertisements, while the EPA gives it a somewhat smaller range of 208 to 265 miles. In any event this is definitely enough range for any urban or suburban driver for a day. The charging time for the Tesla varies with the capacity of the charger. For a single 240-volt charger, the time is 9.5 hours for a full charge of 300 miles, but you can hook up a dual charger that will reduce this time to 5 hours. When you can get access to a 480-volt "Supercharger" the time drops to about one hour. Tesla is embarking on a program to install electric vehicle superchargers around the country, and around the world. In the US there were about 100 Tesla supercharger stations in operation as of fall 2014.

While not many of us can afford an $80k to $100k Tesla, they are coming out with somewhat cheaper models, and Tesla recently announced they would be building a $5 billion battery plant that would reduce battery costs for the Tesla by 30% (5). Before long other car companies will be coming out with their own all electric cars with similar ranges of the Tesla. This competition will further reduce the cost of all electric cars.

Using Solar PV to Charge Electric and Plug-in Hybrid Cars

One way to insure that no fossil fuel is used to operate all-electric or near all-electric cars is to charge them with electrical energy produced by solar PV systems. This works perfectly for charging electric vehicles during the day when the sun is shining. However, it works almost perfectly for PV owners who produce kWhs during the day and send them to their utility to avoid some use of fossil fuels for electric generation, and then draw the energy back out during the night when they are charging their car's batteries. The net effect is the same as if the electricity had been used during the day, since fossil fuel is saved in the process, so the electric car owner can still reasonably claim that their car is powered by solar generated electricity.

With solar PV becoming so available and so cheap today, this is a very practical solution. Current costs for 2-5 kW PV systems are around $3,000 per kWh before tax incentives, or other incentives. I have a 2.5 kW solar PV system here in Florida, and it produces about 100 kWh per month for each kW of capacity, or about 250 kWh per month. My Chevrolet Volt gets about 4 miles for each kWh from the batteries, so I can drive my car 1,000 miles each month on electric power if I want to. My normal urban driving is less than 5,000 miles per year, so I can easily drive on all PV electric power for my urban driving. My charge from my utility is about 15 cents per kWh to buy back my power at night, but they pay me about 13 cents per kWh for the power I send to them during the day on my net metering contract with them.

Even at a cost of 15 cents per kWh, this lets me drive my Volt about 4 miles, at a cost of about 5 cents per mile after including the loss in the charging process. Comparing this to my friend's cost of driving her Honda Accord that gets 50 MPG, her cost per mile (if gasoline is $3.60 per gallon) is 7.2 cents per mile. For my wife's Ford Escape that gets 22 MPG in town, her cost is 16.4 cents per mile. So driving an all-electric car (my Volt for urban driving) is not only cheaper than most any gasoline or diesel powered car, but it does not use any fossil fuel, and does not produce any direct tailpipe emissions. And, since I use my own PV to power my Volt, I do not produce any climate-changing gasses or other pollutants such as sulfur oxides or nitrogen oxides.

The bottom line is that if we use more all-electric or near all-electric cars, we can most likely add to the oil savings from higher MPG gasoline and diesel cars to eliminate our need from any imported oil, and also reduce our use of domestically produced oil.

Reducing Oil Use in Electric Power Plants

Today we only use a small amount of oil to generate electrical power (1% of electric power is generated by oil, according the EIA), but we can eliminate any oil being used that way by requiring or incentivizing the use of higher efficiency air conditioners, refrigerators and other appliances, as well as expanding our use of solar electric and wind generation. Current air conditioners for homes and small businesses have an efficiency requirement of SEER 13. We now have units with SEERs of 20, and up to 30 available. The higher the SEER, the less energy used to provide the same amount of air conditioning. Thus we could reduce air conditioning use of electricity 32-52% by having these more energy efficient air conditioners. As of 2014, national standards for air conditions in the Southern US were SEER = 14, but this is still a far cry from the SEER 20 units that are readily available and cost effective today. We have a lot of opportunity here.

Many higher efficiency refrigerators are also readily available to save energy in most homes. In 1985 the average-sized 18-20 cubic foot refrigerator used about 1100 kWh per year (data from Dr. David Goldstein, NRDC). With newer appliance efficiency standards, this energy use is now under 400 kWh per year (EnergyStar). Compared to the 1985 energy use, this is only 36% of the energy previously needed to provide the same service as the older refrigerators. Data from EnergyStar Most Efficient Refrigerators from Energy Vermont, show an 18.1 top freezer refrigerator that uses only 311 kWh per year (https://www.efficiencyvermont.com/.../EVT_QPL_R...). This is less than 1 kWh per day of use, and is at least another 35% less energy use than that of the current standard for an 18-cubic-foot refrigerator. Other savings can come from using more efficient electric lights. Again, we have a lot of opportunity for energy savings for electrical energy use in our homes.

Other opportunities come from using more intelligent controls in our buildings and manufacturing plants. Recent studies on energy savings potentials in buildings show a possible savings of 15-30% just from adopting more intelligent control systems to operate the existing equipment we have installed in our buildings (6,7).

There is no doubt we could totally eliminate the use of oil for generating any electric power in the US by saving that 1% now generated by oil by using more efficient lights, refrigerators, air conditioners, and more intelligent controls in our buildings.

Energy Efficiency and Energy Conservation are Our Best Energy Policies

One of the most highly respected energy policy advocacy groups is the American Council for an Energy Efficient Economy (ACEEE) in Washington, DC. I worked with ACEEE from Florida to help create the 1987 National Appliance Efficiency Act and the 1988 Florida Appliance Efficiency Act. Since that time ACEEE has been one of the strongest advocates of energy efficiency, energy conservation, and use of renewable energy in the US. ACEEE recently released their new report finding that "Energy Efficiency is America's Cheapest Energy Resource." Here is ACEEE's Press Release on this document.

> "Washington, D.C. (March 26, 2014): According to a new report released today by the American Council for an Energy-Efficient Economy (ACEEE), energy efficiency is the cheapest method of providing Americans with electricity. Energy efficiency programs aimed at reducing energy waste cost utilities only about three cents per kilowatt hour, while generating the same amount of electricity from sources such as fossil fuels can cost two to three times more.
>
> "The cheapest energy is the energy you don't have to produce in the first place," said ACEEE Executive Director Steven Nadel. "Our new report shows that when utilities are examining options on how to provide their customers with cheap, clean electricity, energy efficiency is generally the best choice."
>
> "Why build more expensive power plants when efficiency gives you more bang for your buck?" said Maggie Molina, Utilities, State and Local Program Director and author of the report, The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs. "Investing in energy efficiency helps utilities and ratepayers avoid the expense of building new power plants and the harmful pollution that plants emit."
>
> The report looks at the cost of running efficiency programs in 20 states from 2009 to 2012 and finds an average cost of 2.8 cents per kWh---about one-half to one-third the cost of alternative new electricity resource options, as illustrated by the following graph from the report:
>
> Levelized costs of electricity resource options. Source: Energy efficiency data represent the results of this analysis for utility program costs (range

of four-year averages for 2009-2012); supply costs are from Lazard 2013.

The report analyzes energy efficiency costs from states across the country, including: Arizona, California, Colorado, Connecticut, Hawaii, Illinois, Iowa, Massachusetts, Michigan, Minnesota, New Mexico, New York, Nevada, Oregon, Pennsylvania, Rhode Island, Texas, Utah, Vermont, and Wisconsin.

Other Key Findings Include:

- At an average of 35 cents per therm, natural gas utility energy efficiency programs are also highly cost-effective (in 2013, the national average natural gas commodity price was 49 cents per therm).
- Both electricity and natural gas efficiency programs have consistently remained low-cost resources over the past decade, which shows the reliability of efficiency as a long-term resource.
- Each dollar invested in electric energy efficiency measures yields $1.24 to $4.00 in total benefits for all customers, which include avoided energy and capacity costs, lower energy costs during peak demand periods like heat waves, avoided costs from building new power lines, and reduced pollution.
- Incorporating higher levels of energy efficiency in long-term planning can protect utilities and their customers against volatile and rising costs of traditional energy resources.

To read the report, The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs, visit: http://aceee.org/research-report/u1402.

This ACEEE study provides highly credible proof that energy efficiency and energy conservation programs are the cheapest and safest ways to meet our energy needs rather than producing more oil.

Risks and Costs of OCS Drilling for Oil

OCS drilling is a very risky way to meet our energy needs. We have only 2 percent of the world's oil reserves, yet we use one-quarter of the oil produced annually. Using this much oil, and wasting so much of it, is a dangerous practice that puts American lives and livelihoods at risk while distracting from real solutions that can provide clean energy and create jobs. The BP Deep Horizon oil spill off the coast of Louisiana has been extremely costly to the environment as well as to BP. WikiPedia reported, "As of March 2012, BP estimated the company's total spill-related expenses do not exceed $37.2 billion." (8).

There is no need to continue accumulating this risk when we have so many proven alternatives that are cheaper, easier, and more cost effective ways of dealing with the problem by reducing our use of oil. Our data on the savings from adopting higher fuel economy standards for our cars show that we now waste half of all the oil used in gasoline and diesel fuel for our cars. Risking economic and environmental damage from OCS oil spills so that we can waste the oil by having lower-efficiency cars and other low-efficiency, energy-using equipment just doesn't make sense.

Conclusion

We did not need OCS drilling in 1973 when we actually had an oil crisis, and we certainly don't need it now when we don't have an oil crisis. Please write President Obama, and your own national senators and congressional representatives and tell them that we do not need the additional oil from the OCS area, and that the risks of irreparable environmental damage are far too great to allow it. There are far cheaper, easier, and less environmentally damaging alternatives for us by using more efficient equipment in our homes and businesses, more solar and wind energy, and more efficient cars and light trucks.

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ABOUT THE AUTHOR

Dr. Barney L. Capehart is a Professor Emeritus of Industrial and Systems Engineering at the University of Florida, Gainesville, Florida, where he taught for 32 years. For the last 30 years, energy systems analysis has been his main area of research and publication. He is the co-author of 12 books on energy topics, and more than 50 energy research articles in scholarly journals. He worked with the Florida Legislature to write and pass the Florida Appliance Efficiency Act of 1987. He is given credit as the person most responsible for creating these appliance standards that have saved Florida electric and water utility customers over $3 billion. He teaches energy management seminars around the country and around the world for the Association of Energy Engineers. He is a Fellow of AEE and a member of the Hall of Fame of AEE. He is listed in *Who's Who in the World*, and in 1988 he was awarded the Palladium Medal by the American Association of Engineering Societies for his work on energy systems analysis and appliance efficiency standards. He was the editor of the *Encyclopedia of Energy Engineering and Technology*, 3 volumes, 190 articles, July 2007, the author of four books on *Web Based Energy Information and Control Systems*, and a new book on *Automated Diagnostics and Analytics for Buildings*, and he is also the lead author of the *Guide to Energy Management, 7th Edition*, 2011. Barney can be contacted at Energydoc1@aol.com.