

Revitalizing the Energy Management Industry

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ABSTRACT

If we are to revitalize the energy management industry, we need a better sense of what energy management is and what we'd like it to be. This article summarizes many of the emerging energy issues facing the international, national, state, and local organization, which influence our energy management industry. It further considers the economic implications related to the way we manage our energy.

Special attention is devoted to the inadequacy of our energy information today and the critical need to highlight the *management* component in energy *management* at the organizational level.

INTRODUCTION

When we say “energy management,” most of us think of what is done at the organizational level. To truly revitalize energy management, we need to step back and gain a broader perspective—managing energy is a geopolitical issue, a national concern, a state matter, and a local problem.

As a weapon of geopolitical influence and a tool of war, energy is gaining increasing prominence on the world stage. Early in 2006, Russia blatantly denied energy to Ukraine in an arm-twisting scenario. More than ever, the unrest in the Middle East has thrust us into an era of petropolitics. We fight for our freedom and democratic values, but our efforts rest on energy availability.

At the national level, our efforts to manage energy have been uneven, often sporadic. Thirty years ago, I went to Congress to get energy assistance for our public schools, and was asked if engineers could predict energy savings. I had to answer, “No.” Before we were done, we had a strong energy auditing protocol developed and a \$900

million schools and hospitals grants program. That program, described by the chair of the House Energy and Commerce Committee as the best thing the US Department of Energy had going for it, has saved our institutions and our taxpayers over \$15 billion. All of us in the energy efficiency community should be proud of what we accomplished with that program, and the use we have made of what we learned from it.

At the national level, and progressively at the international level, the Association of Energy Engineers has offered incredible leadership and an effective learning conduit in energy efficiency and managing energy more effectively. Great credit is due to Mr. Al Thumann for his leadership and tenacity. In the late 1980s when energy prices were dropping and many chose to think the energy crisis was history, Al kept AEE going and continued to offer leadership to the energy market place.

Gradually, it became evident that energy efficiency was the cornerstone for sustainable development. Burning fossil fuels contributed to our environmental problems. Using less became part of the solution.

Our management of energy use at the national level has shown constant improvement in relation to our GDP. Without the great energy efficiency strides we made, we'd be in a lot worse shape than we are. Over the past 35 years, U.S. energy consumption has increased by 48 percent (while population grew by 42 percent). Considering the incredible increase in energy-dependent technologies, from computer rooms to the kitchen, energy efficiency can take considerable credit for keeping usage in line. Significantly, emissions of the six most common pollutants during that time have decreased by 53 percent! The way we are managing the use of our energy is yielding valuable results.

On the supply side of the equation, we have not done as well. In fact, we have failed—failed miserably. At the time of the Arab Oil Embargo of 1973, we were importing 26 percent of our energy. Today, we have more than doubled our dependence on foreign oil and *now import about 60 percent!* Our federal government and our national energy leaders have failed to make the case that we can protect the environment while drilling for oil.

MANAGING ENERGY

If we are to manage energy effectively, we must become better informed. Our energy managers need to become a major source of energy

information in their respective organizations.

Unfortunately, as a nation we have failed to become adequately informed before making key energy decisions. Our political leaders frequently mislead us because we are not well enough informed to question their decisions. Two examples will help illustrate the point. First, ANWR. I doubt that one in ten can plot ANWR on a map. Or tell you what the letters A.N.W.R. stand for. Even fewer could tell you what ANWR looks like... Is it tundra? Heavily forested? Permafrost? Is it populated by polar bears? Caribou? What exactly are the flora and fauna we are protecting? What drilling has already taken place in this area? What has been the environmental damage? How big is ANWR? What percentage is being considered for drilling? What would be the potential damage from such drilling? Can we develop it in an environmentally responsible way? What is the cost of NOT developing it? We need information—not political sound bites.

How long will we be content to depend on Venezuela, Iran, and other unstable governments for our oil? How long can we afford to place our economy and our way of life in their hands? Are we willing to pay \$4, \$5, \$6 a gallon at the pump to assure maximum protection for ANWR? I fear that overnight we may be placed in an untenable energy position, reach economic hysteria, and dash into ANWR and/or off-shore, creating irreparable damage that could have been avoided by managing our energy more effectively now.

For a second example of inadequate information, let's look at "big oil." When prices go up, politicians point with relish to this "big oil" problem. How big is it? How much control of the market place does US "big oil" have? Exxon Mobil is the most valuable listed company, with a market capitalization of \$412 billion. But when ranked by proven reserves, it ranks 14th in the world. Figure 1 reveals that the 13 companies which over-shadow it are all *national* companies, controlled by governments such as Saudi Arabia and Iran. Those 13 control approximately 90 percent of the world's oil and gas.

When we look at Figure 1, Exxon Mobil doesn't look so big. How much leverage does "big oil" have to set prices in the world market place? Are they making too much profit? I don't have sufficient information. But pointing fingers won't get me the information I need to make an informed decision.

In late 2006, energy prices at the pump began to go down again. What caused it? Will they continue to trend down? How much are you

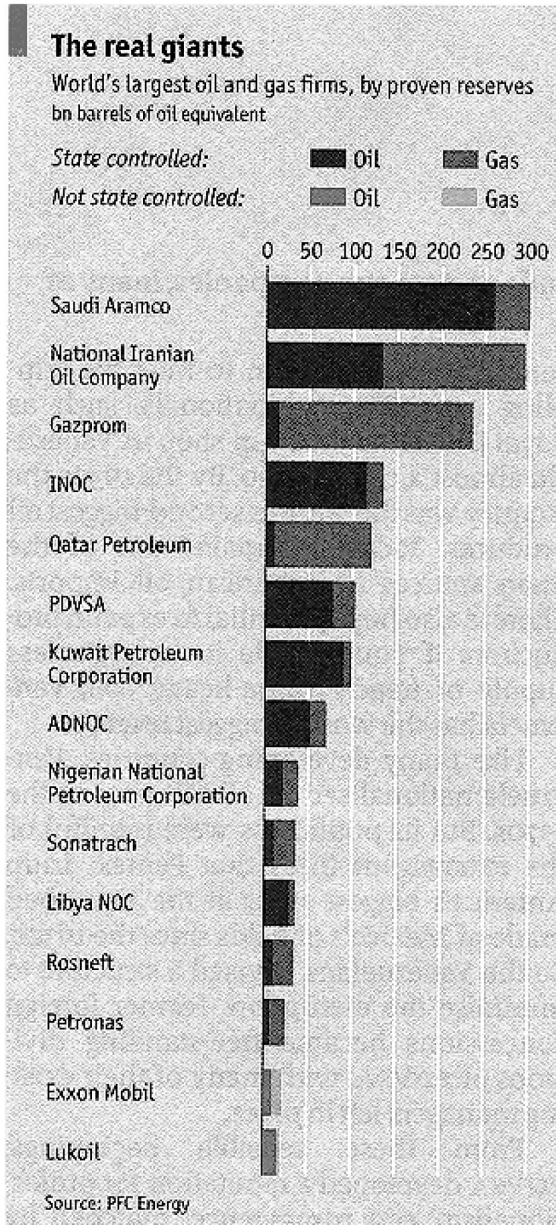


Figure 1. Proven Reserves of the World's Largest Oil and Gas Firms
Source: *The Economist*, August 12, 2006, page 56

willing to bet that prices will be below \$2.50 at the gas pump a year from now? Is it possible that prices are being kept just below the level needed to produce economically viable alternative sources? Do other governments see value in keeping America so heavily energy dependent on foreign sources?

The United States uses 25 percent of energy consumption worldwide. Our economy and economies around the world are dependent on our managing that energy efficiently and effectively. We have placed our economy in foreign hands—hands that have the ability to bring us to our economic knees overnight and send shock waves around the world.

As we continue to assess our energy situation, we find that the picture at the state level is even more uneven. In the 30 years since we first learned that energy was something more than “kinetic,” we have gained, and then lost, ground. Too many states have closed their energy offices, or made them divisions of the environmental bureaucracy. California botched what it labeled as deregulation, and as a result many have backed away from privatizing our utility industry. Our decaying transmission lines are trapped in these vertically integrated entities. We have heard little from the states which are moving forward effectively with deregulation. The media seem reluctant to tell about our state energy leadership successes. This is compounded by the fact that energy management leadership at the state level is sparse.

Today we are at a critical juncture in the evolution of energy management; it is a point of serious consequences and great opportunities.

Some of us with gray hairs remember the first energy shock in 1973, and the steep learning curve we were all on. We focused on pieces of equipment and building modifications, which would save energy and cut those escalating utility bills. Energy expertise was primarily focused on getting equipment and system modifications, which would reduce energy consumption. During that time, the energy manager was born and, not surprisingly, the job was defined by the level of expertise in getting the hardware which would most effectively cut energy costs.

We craved technical information; so the focus was on the word, “energy.” Technology reigned and energy managers were relegated to the boiler room. They have yet to climb back out.

The energy manager is the most over-looked and underutilized part of our energy equation. If we are to revitalize energy management,

we must shift our focus from *energy* and its technology emphasis and give at least equal weight to the *management* aspect.

We now recognize that *energy* is the life blood of an organization, any organization. Reliability and security issues have made energy critical *management* issues. Supply options, which dictate price and availability, have made energy a *management* issue. The time has come. It's no longer just "energy," we need very capable *MANAGERS*.

"*Energy*" is not just a boiler room issue anymore. It permeates all aspects of an operation. I am not saying energy managers don't need to know the return temperature in their chilled water system. I am saying that if we are to revitalize our industry, it cannot stop there. In fact, if we are to look at the qualifications of an energy manager in today's organizations, on a continuum from highly skilled technicians to strong leaders and communicators—even if they don't know a Btu from a cup of coffee, I'd lean toward leader qualifications.

It's a different world out there and we all need to get in step with it. Recently, Boeing announced that it would paint the nacelle—or engine cover—a new fuel-efficient gray on its 787s. If companies wish to have a more elaborate color, they would need to pay to have the Dreamliner's energy cover painted ...and they could also expect to pay for up to 30,000 gallons more in fuel consumption per year per airplane. An energy *management* decision.

From the largest countries down to the local "mom and pop" store, energy security is becoming a paramount issue, embedded in the security system that was set up in the 1970s to either avoid or mitigate disruptions such as the 1973 oil embargo. We also tried to avoid the kind of bruising political and economic scramble that threatened to fracture the Western alliance by creating such organizations as the International Energy Agency and stockpiles such as the Strategic Petroleum Reserve. But the overarching resolution that came out of that time was the importance of diversification of supplies. It is something we need to relearn today at every level. An energy *management* decision.

Imagine for a moment, that all your energy supplies are cut off for a day, a week, a month? How would your organization operate? Could it operate at all? Do you have an energy master plan that speaks to energy supply disruptions? Do you have a clear plan for what to do about it? Is the line of authority for managing such a situation clear and broadly accepted?

Our national energy situation and the effective operations of our

organizations need, even demand, that energy managers have a seat at the management table.

In our work in 35 countries around the world, it has become increasingly obvious that top management does not buy energy. They buy what it can do. They got to the top by selling widgets, and their focus is on production. To get energy even on the edge of their radar screen, they need someone at the table clueing them in as to the energy implications of various decisions. And non-decisions!

Energy managers will have to earn that seat at the management table. A companion article, "A Place at the Table," addresses this issue from the managers' point of view.

CONCLUSIONS

Everyone in the industry has a role to play in helping energy managers take their rightful position at the table. We need to work together to make top management aware of the vital role energy plays in their respective organizations. In helping managers, we help ourselves. Sales opportunities grow. Job opportunities grow. We work towards more economic self-sufficiency. We reduce our energy security vulnerabilities, increase the supply diversity, and encourage alternative fuels and renewables. In the process, we reduce pollution and improve the environment.

We are at a moment in time when energy consciousness is high. Energy prices are causing many organizations to rethink how they do business. An incredible opportunity exists for everyone in the energy community to change the focus from efficiency *per se* to *managing* energy.

When I pay the prices at the pump. When I see the confusion in Congress. When I hear a manager of a greenhouse operation tell me about laying off 30 people because they can buy the stuff nearly ready for market cheaper than they can buy the natural gas to grow those plants. A look at the grim indicators reveals we are sleepwalking into a major energy and economic disaster.

But we also have an incredible opportunity to get it right this time. Turnaround at the local organizational level is a great place to start. Most of us have had a moment in time when we have thought of the perfect comeback to a friendly barb—too late. And we think, "Oh, if I

only had a chance to do that over." Well, the fates have conspired for us to have a "do over" in energy management. We have an unprecedented opportunity to truly revitalize our energy management industry.

Let's hope we get it right this time.

ABOUT THE AUTHOR

Shirley J. Hansen, Ph.D., is internationally recognized as a leader in energy management and performance contracting. She has provided consultation and training to and for government agencies, private companies, and utilities in the U.S. and 35 other countries. She has served as a consultant in energy service company (ESCO) development to the World Bank and other multilateral development banks. Recognizing the rapidly evolving changes in the ESCO industry, Shirley has responded to the need with the 2nd edition of *Performance Contracting: Expanding Horizons*, which was released in 2006.

Prior to founding Kiona's sister company, Hansen Associates, in 1980, she served as the Director of the Schools and Hospitals Conservation Division of the U.S. Department of Energy (DOE). Before joining DOE, Shirley led a national effort to develop energy auditing protocol. While at DOE, she was responsible for promulgating regulations for energy auditing and also administered a \$900 million grants program to help schools and hospitals modify their buildings to save energy. This program is credited with saving U.S. institutions (and tax payers) more than \$15 billion.

Regarded as an expert in measurement and savings verification, she has served as the chair of the board of the International Performance Measurement and Verification Protocol (now EVO) and also chair of the board for the Certification of Measurement and Verification Professionals.

She received her Ph.D. from Michigan State University. Among her honors, she is particularly proud to have been recognized by the university as a distinguished alumnae and to have been inducted into the Association of Energy Engineers Hall of Fame.