The Credibility Gap

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ABSTRACT

Energy is critical to the operation of any entity, from our homes to the largest factories. Yet, it has become virtually impossible to predict our energy future. With seemingly inexhaustible technological improvements and the richness of our ingenuity on one hand, and borderline political malfeasance on the other, our energy horizon is foggy at best.

Richard Ottinger effectively summarized our dilemma when he observed, "Modern civilization and the world economy are literally sitting on the edge of an energy precipice." [1]

If we are to pull back from this precipice, we need to be able to access *reliable* energy data. We need to break out of this pretend bubble that is giving us false comfort. When it comes to energy, the credibility gap has grown into a chasm. Information and misinformation abound.

We cannot outguess the politicians. Even with good intentions, they too often act without giving sufficient attention to the unintended consequences. They impact our day-to-day energy environment and leave us with uncertainties that paralyze our planning process.

This article looks at the mixed messages and deliberate misdirection that surround us, and it offers some thoughts on sorting through the complex mix of data that bombard us.

INTRODUCTION

Strange dreams sometimes offer us food for thought. I recently dreamt I stepped into an elevator with rough-hewn timber walls. It was natural and elegant at the same time. I had been told in my dream that this was the best way to get to the 5th floor.

The doors closed and the cage began to move so smoothly I could not tell if it was going up or down. I turned to push the 5th-floor but-

ton, but there was no control panel, no emergency phone. Nothing but rough-hewn timbers all around me.

My "dream" elevator ride is frighteningly symbolic of our current energy situation. Based on faulty information, we are riding in a cage to parts unknown. We don't know where we are or where we are going. Even worse, we can't seem to control it, and we are often oblivious to the sources of the power we rely on.

What is the source of the power you used to get somewhere today? What are the sources that you used to condition the room you slept in last night? To fix your breakfast this morning? To make the room where you now sit comfortable? We are living in a make-believe bubble. Our country pays over $700 billion each year to other countries, often our enemies, to provide our creature comforts, run our factories, etc.

Maybe the biggest part of our credibility gap is our incredible naïveté that this situation can continue indefinitely and that we don't need to do anything about it. We just go blithely along. Aren't you even curious? Don't you want to know if the next time you flip the switch, there will be power there?

CLOSING THE GAP

It seems that the best way to close the credibility gap is to make a diligent search for reliable information.

Any attempt to get information reminds me of another elevator situation. We were trapped in one in a Cairo hotel. Seeking to report our problem, or get some information as to what was being done, we tried the emergency phone. It was dead. Once the situation was resolved, we told the hotel manager that the phone did not work. The next day the phone had been torn out of the elevator.

A major source of our false comfort that feeds the credibility gap is the belief that renewables will do the job. Alternative energy is important; it's attractive, and we should continue to pursue the power opportunities it offers. But it is not the panacea many would have us believe. Renewables currently provide only 7% of our energy supply. Seven yards on three downs does not give us a first down. It does not win ball games. We could double our output to 14%, and we would still not make it to first base. In fact, the elevator in my dream would not even make it to the first floor … and somebody tore out the phone.

So where are we? And where do we go from here? After considerable research, the only conclusion one can reach is that we are one confused lot.

To meet the world's anticipated 2030 energy needs, current predictions say we will need 28 million megawatts—*28 trillion watts*. That's double our current usage. As we assess these needs, we cannot help but worry about our carbon emissions. How much more can we absorb without doing irreparable harm to our planet?

In less than 20 years, we are expected to have a demand gap of about 14 million megawatts—a gap equal to our *current consumption*. As staggering as this potential demand appears, even more daunting is the credibility gap that has gotten us into this fix.

To underscore our difficulties in accessing reliable data, the White House's *own* October 2010 evaluation of its actions during the BP disaster reports that the White House seriously and knowingly underplayed the extent of the problem. The actual oil being released into the Gulf waters was 10-20 times that being reported. A flow of 2.5-4.6 million was being reported as 210,000, misleading the American people as to the extent of the problem.

Energy credibility suffers from misleading statements and deliberate misdirection. We could spend hours talking about the folks in East Anglia and "computer gate." We could consider how the author of *An Inconvenient Truth*, who predicted rising waters and crumbling shores, just bought a huge home on the California coastline. We can shudder when we hear "plug in" cars don't use energy—and wonder where they think the juice comes from. We could talk about Secretary Chu announcing the installation of symbolic solar panels on the White House residence while the same administration's EPA promulgates regulations that are destined to close biomass plants and terminate an estimated 185,000 *green* jobs—185,000 people being put out of work during a failing economy. We could go on, but it is far more productive to carefully look at the energy data and focus on solutions.

If we are to believe our venture capitalists, put your money on renewables. In 2009, the venture capitalist (VC) industry invested more than $2.6 billion in alternate supply-side technologies, while the VC energy efficiency investments were roughly $440 million. That's hard data. It is critical that we stop and think about what these numbers tell us.

THE ROMANCE OF THE RENEWABLES

Perhaps the greatest underpinning of the credibility gap is the romantic notion we have about renewables. We have all become enamored with renewables. There is this sense that they will ride in on a white horse to save the day.

Amid our love affair with renewables, we must get serious and ask how much we can really rely upon alternative energy sources. There is no question that fabled *green* energy plays an important role in our future and the energy mix on which we will depend. Increased use of renewables can reduce the demand for fossil fuels and cut associated pollution.

To get a firm vision of our energy future, it is worth repeating: *In 2008 only 7% of our total energy consumption was provided by renewables*. Of that 7%, over half of it was from biomass. Hydropower contributed 34% of it, wood 7%, geothermal 5%, and solar 1%.

At 7,315,711 billion Btu, the good news is that the use of renewable energy in 2008 was 7.5% greater than the preceding year.

Our love affair is compounded by an assumption that renewables are, by their very nature, low emitters of pollution and that non-renewables are high emitters of pollution. We tend to see "green" energy and "clean" energy as one and the same. This is not necessarily the case. Some 30 years ago, there was a tremendous push for wood-burning stoves for home heating. It was the *natural* thing to do. The trees would grow back, so wood burning was, and is, considered a renewable source. Ultimately, we began to realize that waste wood would not meet demand, replacement trees grow slowly, and the environmental benefit (sequestration) from trees could be lost. Much to the chagrin of some nature lovers, wood-burning was finally recognized as a high pollution-emitting heat source. Today, for example, there are "burn bans" in the Pacific Northwest (a time, by law, when burning wood is not allowed because of the pollution potential).

The Clean Non-renewable

Nuclear power is an excellent example of a non-renewable that is a low-emission source. It is almost impossible to view the potential for nuclear energy objectively. Any consideration is clouded with concerns for safety and the association of this power source with nuclear armaments. This source of power, however, is relatively clean. All of the

nuclear power in the U.S. is used to generate electricity. In fact, nuclear represents 19.4% of the electricity we generate annually.

Since new construction of nuclear plants has been quiet for so long in the U.S., it often comes as a surprise to Americans that the U.S. has, at 30%, the greatest share of nuclear electric generation in the world. Other major shares of the world's nuclear power belong to France at 16%, Japan at 11%, Germany at 6% and Russia and South Korea at 5% each. Of the 443 operable reactors in the world, 104 of them are in the U.S., and they contribute 8% of our total energy supply. The number of states with one or more commercial nuclear plants is 31, with the highest ranked being Illinois with 6 and Pennsylvania with 5. The best known is probably Three Mile Island in Pennsylvania because of an incident there many years ago. The story *not told* about Three Mile Island, however, is that when problems occurred, the back-up system worked. (Note that, at 8%, nuclear energy currently contributes more to our energy mix than renewables do.)

The Not So Clean Non-renewable

Concern for the future of our planet has limited oil drilling domestically, while we quietly rely on our enemies to drill without regard to the environment. Here we also have a credibility problem. British Petroleum, a foreign company, which had a higher-than-average problem with safety, received an award from the U.S. government. Then, after the Deepwater Horizons disaster, the government declared a six months moratorium on deep water drilling and retracted drilling permits in other areas as well. According to authorities assembled by the U.S. government, the data do not support this moratorium. This overreaction has been likened to grounding all aircraft after one crashes.

Since more oil gets into our oceans from tankers than drilling, one can't help but wonder how increasing the dependence on tankers has helped resolve the problem.

ALL IS NOT LOST

We are an innovative group. "Yankee ingenuity" is alive and well. There are many promising technologies out there. As an example, the potential offered by marine energy is particularly fascinating. With 71% of the earth's surface covered with water, that is a huge energy reservoir,

especially when we consider that much of that water is constantly in motion—motion that might be milked as a power source.

Research in refining old marine energy technologies and creating new ones is ongoing. These include wave power generation, tidal (current) stream technologies, salinity gradient power generation, and thermal gradient.

Each of these areas has a raft of energy capture ideas. For example, in wave power generation, work goes forward in wave capture devices, shoreline devices, oscillating water columns, offshore wave energy converters, floats, wave pumps, etc. Exploring salinity gradient includes cosmic power, hydrocratic generation, vapor compression, and reverse electrodialysis.

As we pursue these opportunities, we must be mindful, however, that roughly 90% of life on earth is in the water. New species, especially those found at great depths, are being discovered every year. It is critical that the pursuit of marine energy be done in harmony with marine life. Small mistakes could cause serious damage, as well as further resistance to additional important research.

While huge reservoirs of energy exist in our world, difficulties with extracting, storing, and transporting such fuels are often staggering. As an example, hydrogen, for all its abundance, poses major problems. It's advocates agree that resolving hydrogen's extraction, storage, and transport problems will require enormous research for decades to come.

Despite the opportunities that marine energy, hydrogen, and other alternative energy resources offer, we are not there yet. As noted above, *all* alternative energy resources only contribute 7% to our energy supply. If we look at the most optimistic, but real, prognostications, we find that we do not have the resources or the time to meet short-term—or even long-term—energy needs with renewables.

REALISM REARS ITS UGLY HEAD

We must ultimately come to the conclusion that renewables are not going to fill the supply gap, and certainly will not replace the fossil fuels currently being used. The disappointment this realization brings is compounded by the almost hysterical characterization of oil as being all bad. One of our problems is the role assigned to "Big Oil." We need to recognize that Big Oil in the U.S. is relatively small potatoes on the

world stage. In proven reserves, our "giant," ExxonMobil, ranks 14th in the world. The ability of our Big Oil to set world energy prices has been vastly overstated.

Another piece of our credibility gap is the "ANWR (Arctic National Wildlife Refuge) problem." ANWR has become symbolic of our fear about drilling for oil, even when on dry land. When pressed for details, most folks who are dead set against drilling in ANWR cannot tell you what the letters stand for, where ANWR is, how big it is, what percentage of the refuge would be involved in drilling, and what the "threatened" flora and fauna actually are. They seem unaware that we have been drilling for years right next door at Prudhoe Bay.

Ironically, those who seem most concerned about our planet are far more willing to let other countries drill without the regulatory oversight that we exercise domestically. They continue to drive their cars, air condition their homes, etc, without any real thought about where that fuel comes from, who is doing the drilling, or even what environmental damage is being done in far-off lands.

On the plus side, natural gas, the cleanest of fossil fuels, has become more accessible. We have also seen much of our reliance on imports shifting from the Middle East to Canada.

CONVENTIONAL WISDOM

The greatest opportunity to close the supply gap and the credibility gap is all around us. If we start questioning the PR blitz about renewables and just look around, the answer is pretty obvious. The problem is that the solution is old hat; it's been around for decades. There is not much political mileage in offering a 20th century solution to today's problem: *The greenest electron is the one not generated*. The answer is so simple; it's right there before us.

Energy efficiency (EE) allows us to use less to achieve the same purpose. Energy efficiency means less energy needs to be generated to do specified work. When electrons are *NOT* generated, absolutely *NO* contaminates are emitted. Yet in the past decade, energy efficiency and conservation have taken a back seat to renewables.

As a supply option, it is well to remember that EE can produce revenue. While all other sources of energy will cost, EE can pay for itself and generate a positive cash flow. Even better, when paired with

renewable energy, EE can help buy down the higher cost of renewables.

As we approach the world's water crisis, it is expected that more energy will be needed to run desalination plants. Fortunately, marine energy resources may be right there to meet the need. When we consider our water needs, associated energy demands, and a host of other claims on our resources, the growing need for sustainability management becomes apparent. The whole movement to use *all* our resources more judiciously and protect our planet has become a critical management issue. Hopefully, if you read *Sustainability Management Handbook,* just released by The Fairmont Press, you will get a better sense of how these concerns can be managed effectively. [3]

In our effort to reduce pollution, we sometimes overlook the fact that electrons *not* generated also represent an opportunity to conserve our finite resources. In our zealousness to find alternatives to oil, we have tended to denigrate the value of oil. To weigh all our supply options fairly, we must recognize the unprecedented role oil has played in the evolution of the world we enjoy today. The unrest in the Middle East and North Africa in early 2011 and the associated increase in prices underscores our reliance on this fuel—and the danger in relying so heavily on foreign sources. Certainly, the use of oil presents us with environmental problems, but it has also served some valuable purposes. Between now and the time energy alternatives can meet our needs, oil will continue to serve a critical, valued purpose. Energy efficiency can help preserve our resources to meet these needs.

The contribution energy efficiency (EE) can make to closing the supply gap is very real. The US Green Buildings Council has estimated that "greater building efficiency can meet 85% of future U.S. demand for energy." [2] This optimism is partially fueled by the funds now available for EE work. In addition to the Property Assessed Clean Energy (PACE) bond programs enacted in more than a dozen states and federal programs, there is growing awareness that EE is an investment, not an expense. The energy service company (ESCO) industry offers ample proof of that.

For all its virtues, however, we must not lose sight of the fact that the best EE we can mount and the most cost effective renewable we can field are still not expected to be enough to close the 2030 supply gap. Sadly, all the strides we have made to use energy more efficiently in U.S. homes has been offset by the increasing demand for energy.

To make matters worse, the proportion of energy used as electric-

ity has grown from 25% in 1978 to 42% in 2005. As we all know, our system requires that we generate three times more than we actually deliver at the plug, so electricity consumes resources at a much greater rate. This shift to a greater reliance on electricity gives us all the more reason to use energy more efficiently.

EE preserves our precious resources (a cornerstone of sustainability) and generates revenue while avoiding pollution. In summary, *it is the best source of energy available*. Wherever it is economically viable to use EE, it should be the preferred option in any energy management or sustainability program.

CONCLUSION

Renewable energy (RE) is an increasingly attractive source of power. As we analyze our energy and environmental needs, it is imperative that we recognize that *clean* is not necessarily green and *green* is not necessarily clean.

Government incentives in many parts of the world are fostering more reliance on renewables, and by 2030 our reliance on alternative energy is expected to double. But even if it doubles (or triples) it will not be enough to close the supply gap. Nor can we look to it to replace fossil fuels in our supply mix.

The growth of renewables is encouraging. Realistically, however, renewables will remain relatively costly in the near term and will be slow to fill the energy demand gap. For the next two decades, the major reliance is expected to remain heavily on fossil fuels. The U.S. DOE Energy Information Agency projects that the use of coal will grow faster than liquid fuels and natural gas.

The data suggest that we will ultimately need new sources of supply. New supplies, however, require significant time and capital to design, build, install, and distribute on any meaningful scale. It is inescapable that the search for more energy must begin with a search for more efficiency, the most cost-effective alternative. *Energy efficiency is far more desirable than any renewable.* It offers (and will continue to do so) the cleanest electron available to us. Further, while reducing pollution, it makes money.

If we are to close the credibility gap, we must boldly acknowledge that EE and RE will not be enough to meet our projected 2030 energy

demands.

If we are faithful to our goals to preserve our planet *in its entirety,* then the concern becomes one of exploring, drilling, transporting, and using the oil we have with the least harm to our earth.

We desperately need to burst the bubble, get out of our "dream elevator," and face reality. In the immediate future, renewables will *NOT* fill our supply gap—and all the renewable solution pretense will only make the credibility gap bigger. Despite our concerns related to the use of fossil fuels, they are essential to our getting from *here* to *there*. We must diligently strive for ways to use alternative energy more effectively. We must constantly weigh the consequences of our actions. Then the only remaining question will be, Will the U.S. continue on its path of energy dependence on foreign sources? If we are to close the credibility gap, we must give EE the attention it deserves, and we need to recognize that we are *not* faced with a question of renewables *vs*. fossil fuels; it is a question of *our* oil vs. *their* oil.

References

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