

Why Public Policy is Weak Medicine for Industrial Energy Costs

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ABSTRACT

There is little doubt about the impact of rising energy costs on the profitability of American industrial activity. Energy consumers, producers, and government leaders are all compelled to “do something” about this challenge. As a result, energy issues have been a prominent feature of federal policy agendas in recent years. However, the policy-making process draws participants with highly varied perceptions of the causes of (and solutions for) today’s energy market problems. Finance-minded business leaders usually anticipate a supply or price-oriented solution. Engineers support solutions in the form of advanced technology research and development. Government action emerges in the form of policies and programs, but whose agenda is reflected in these actions? Is it practical to expect lawmakers to solve industry’s energy cost control issues? This article examines these questions. The conclusion is that policy makers can help, but the true solution to industry’s energy cost control challenges comes from leadership and accountabilities developed within industrial facilities themselves.

INTRODUCTION

Let’s be clear at the start of this discussion: legislative policy is a necessary *yet insufficient* tool for shielding the industrial sector from today’s volatile energy markets. Industry—meaning the facilities that transform raw materials into the final goods that we consume—incur

energy bills that reflect a myriad of internal, day-to-day facility operating decisions. In general, manufacturers will assert that their internal business decisions are proprietary and off limits to lawmakers. Accordingly, policy initiatives often focus on the *supply* side of the energy equation. Recent policies have attempted to ease restrictions on energy exploration and supply, which would ostensibly lead to lower energy prices. Supply initiatives, however, do nothing to address energy waste, which also inflates energy bills. As a practical matter, energy policy seeks to influence rather than control the decisions made by energy producers and consumers. These policies will, by their nature, have limited effectiveness in reducing industrial energy bills. Industry's relief from runaway energy expenses ultimately depends not on legislative action, but on business strategies *developed and executed within facilities*.

POLICY VS. PROGRAMS: WHAT'S THE DIFFERENCE?

Public *policies* are concepts around which laws, standards, and regulations are developed by legislative bodies (lawmakers) at federal, state, or local levels. *Programs* are administrative activities designed to implement policy. Public policies are developed from an original recommendation, or bill, which lawmakers then hammer into its final form through deliberation. The bill, in its final draft, must be ratified by an executive branch of government to become law. Broad energy market policies are largely a federal concern. State and local energy policies tend to focus on building codes and construction standards.

In general, energy policies either restrict or encourage certain investment activity. Restrictions tend to focus on the terms and conditions for fossil fuel exploration, extraction, refining, and the interstate transmission of gas and electricity. Restrictions also impact the consumption of energy by prescribing performance standards for the design and operation of buildings and certain energy-using equipment. Policies often impose penalties against entities that don't meet prescribed criteria, which obviously requires some kind of administrative enforcement function. Energy markets are influenced by policies that encourage investment, usually through tax incentives, in certain kinds of energy-related equipment. Policies also authorize the development of energy-themed programs.

Programs are activities carried out primarily by government agen-

cies. Each program reflects an agenda with clear themes, milestones, and objectives. Traditional energy program initiatives include technology research and development and market transformation activities (these will be explained below). Note that policies authorize programs, but program funding usually requires a separate legislative action. In other words, the policy act of authorization “makes a parking space” for a program concept, but the decision to allocate (or “park”) funds is a separate issue.

ENERGY POLICY STAKEHOLDERS

Industrial energy consumption is a complicated matter that touches many decision-makers in a variety of ways:

- Industry’s corporate leaders are keenly aware of rising energy expenses. These leaders demand relief primarily in the form of lower prices.
- Facility managers note the growing lack of skilled human resources needed to run their plants and keep pace with new technologies. They want training resources for existing staff as well as properly educated new employees.
- Vendors want to sustain industry’s demand for the motors, pumps, insulation, controls, and other equipment that manufacturers rely on for their operations. Vendors want tax credits and other incentives to raise the demand for their products.
- Facility engineers are responsible for the reliability of plant equipment. They evaluate the technology options for meeting production goals. Engineers want unbiased guidance to sort out the promises made by equipment vendors.
- Universities host much of the activity funded by energy research and development expenditures. They want sustained government support for new technology development.
- Gas and electric utilities must maintain the infrastructure that delivers

energy to all consumers, including industry. Business planning is a difficult chore for utilities, since their customers' energy supply and demand projections must be sorted out before utilities can decide on their optimal level of infrastructure investment.

- Environmental advocates challenge the unnecessary depletion of natural resources, and seek to restrict energy-related practices that negatively impact air and water quality.
- Efficiency proponents remind us that energy depletion can at least be tempered through advanced technologies and best-practice procedures. Efficient use of traditional energy sources helps buy time while advanced technologies and alternative fuel sources are being developed.

All of these stakeholders have a valid agenda. It's easier for lawmakers to craft individual policies for each of these agendas, but a policy framework that backs all of them simultaneously is problematic, as will be discussed below. None of these agendas, taken singularly, represents *the* comprehensive solution to industrial energy challenges. Instead, an effective solution will involve all of these elements, orchestrated through energy management plans crafted at the facility level. Energy management plans can be as many and varied as the number of industrial facilities that dot the landscape. This is because each facility is uniquely characterized by its purpose, design, operations strategy, maintenance history, business objectives, and staff culture. As a consequence, there is no one-size-fits-all energy management protocol, nor is there a comprehensive policy design for facility-level energy management.

WHO SPEAKS FOR INDUSTRY, AND WHAT DO THEY WANT?

Lawmakers are responsive to the constituents and advocacy groups who bother to articulate their needs and wishes. If policy is the result of "listening" to constituents, then who speaks for industry? Is it the mid-level technocrats, or the corporate leaders of holding companies that own entire portfolios of manufacturing enterprises? This is a distinction of great consequence. Holding company directors generally know where their dollars go, but they may or may not fully

understand the technical aspects of the operations under their control. They are happy to delegate technical issues—like energy—to mid-level managers. Lawmakers are more likely to network with corporate leaders than with factory technocrats. Corporate leaders, therefore, serve as “industry’s voice” about needed legislation.

And how might corporate leaders express their energy wishes? Remember that as the U.S. produces ever-fewer engineering and technical degree holders,* there is a growing disconnect between non-technical corporate leaders and the facilities they ultimately manage. In other words, corporate priorities are increasingly set by people that have no concept of how heat, force, and motive power are applied to raw materials to transform them into the products we use every day. Many policy professionals are similarly uninformed. “Price” is one of the few concepts that is universally understood. Supply-oriented policy initiatives that seek lower energy prices will perfectly fit the expectations of finance-minded corporate leaders.

WHAT ARE ENERGY POLICY OPTIONS, AND HOW GOOD ARE THEY?

One of the last acts of the 109th U.S. Congress, which adjourned in December 2006, was to deliver a policy initiative that emphasized more energy exploration, supplies, and infrastructure. There are two main dimensions to supply-oriented energy policy:

- Regardless of how efficient a facility is, it will benefit from lower energy prices. For a fixed level of demand, more supply will ostensibly drive market prices lower. Opponents to this approach typically cite the negative environmental impacts that accompany the ever-more intensive extraction of fossil fuels. There are also compelling arguments about the dwindling supplies of fossil fuels and the need to develop alternatives. There is also concern over climate change that is attributable to fossil fuel combustion.
- Refineries and power generating plants are key components of energy infrastructure. In general, policies that reduce regulatory

*http://www.compete.org/benchmarking/default.asp#Long-Term_Vulnerabilities

restrictions on the construction of energy infrastructure will presumably boost energy supplies and therefore reduce energy prices. Interests opposed to this approach are again typically concerned with environmental impacts. But even with regulatory approval, new energy supplies and infrastructure will take years to establish.

Supply-oriented policy initiatives—like those that promote more energy exploration and production—will be only partial solutions to industry’s energy cost woes. Alternative policy approaches address the demand side of energy use. A variety of demand-oriented policy concepts exists, and each is backed by one or more advocacy groups that work hard to make their agenda visible to lawmakers. However, each approach has certain shortcomings when translated into policy:

- **Energy technology research and development (R&D).** The development of advanced energy technologies is a task that few companies can pursue alone. Many technologies—like combustion, heat transfer, advanced materials, and controls—will have wide application across industries. Therefore, no one company or industry wishes to shoulder the burden of their development. The time, risk, and money that characterize R&D are best orchestrated through government-industry collaboration. Problems with technology R&D are (1) it takes years to come to fruition, (2) human skills don’t necessarily keep pace with technology advances, and (3) industrial facility managers are best advised to improve their current energy housekeeping before investing in new technologies. The logic is simple: new capital investment projects are more likely to meet their projected payback if they are complemented with energy-smart maintenance and operating procedures.
- **Alternative or “renewable” fuels.** Wind, solar, biomass and other non-fossil fuels are necessary components of the energy future. But one of the hurdles to ramping up these investments is the tangled mess that describes the current state of utility deregulation. Before committing to these alternative fuel assets, investors need more certainty regarding (1) the ongoing viability of traditional fossil fuels; (2) the future maintenance and overhaul of our national electricity transmission system; (3) the state-by-state patchwork of

utility distribution costs and requirements; and (4) tax structures that directly impact all of the above.

- **Greater efficiency.** Efficiency-oriented policies tend to use tax incentives and design standards to encourage (if not compel) specific energy-related investments. Equipment selections include high-efficiency electric motors, pumps, or lighting. But in an industrial setting, sustained energy cost control is more dependent on whole-system designs, not isolated components. Facilities will achieve greater savings from an overarching energy-use strategy that harmonizes behavior and procedures to fully harness the benefit of efficient equipment.* Increased efficiency requires manufacturers to change the way they use energy and make energy related decisions. Organizational complexity and inertia are huge barriers to making such changes.
- **Market transformation programs.** This evolutionary concept emerged in the 1990s and is increasingly pursued as state-level initiatives. In brief, market transformation attempts to bring emerging technologies and behaviors into mainstream practice. This approach uses promotional strategies to effectively raise industry's demand for emerging technologies. It may encompass the other concepts described above, including greater efficiency, alternative fuel use, and investment incentives. Market transformation requires government collaboration among energy end-users, energy utilities, and equipment vendors. The challenge is that market transformation programs influence but do not compel industrial decision-making. It is difficult for these programs to engage industrial organizations, since the appropriate facility contact is not an individual, but rather a team of decision-makers, all of whom have varying interest in energy issues and have other matters competing for their attention. Also, while vendors play a critical role in market transformation, care must be taken to not let them co-opt such programs for overtly commercial purposes.

Industry certainly needs energy price relief. But in addition to the "more supply" envisioned by many corporate leaders, industry needs

*<http://www.ase.org/content/article/detail/3177>

technology R&D, efficiency, and alternative energy development if it is to achieve an effective solution to runaway energy costs. But note that lawmakers squeeze their work onto tightly packed session agendas. Hammering a legislative bill into law requires trade-offs and compromise, so policy suggestions that are overly complex or vague have little chance for ratification. Simple, one-dimensional messages are easier to process in the policy arena.

CONCLUSION:

REAL SOLUTIONS ARE BEYOND POLICY'S REACH

More supply, technology R&D, efficiency, and renewables—these are the energy policy options for lawmakers to ponder. Only so many federal dollars can be allocated to “energy” programs, so these become competing options. Also, there are distinct advocacy groups that back each approach, and obviously these groups need money to operate. Each group in turn has its backers who will benefit if the government were to support its particular niche. This means that advocacy groups—representing either more supply, R&D, efficiency, and renewables—are competing with each other. In addition, the “simple message” advocacy strategy discourages cooperation among advocates. Note, for example, that many general observers tend to confuse “renewables” with “efficiency.” This confusion becomes problematic when deciding where to allocate sponsorship dollars. Advocates are compelled to stick to their niche, because visibility lent to other agendas may be at the expense of one’s own. Segmented energy policy concepts are valuable to individual advocacy groups, but are of limited value to industrial energy consumers. Unfortunately, a comprehensive energy policy, for which the whole has a greater value than the sum of the parts, has no backer. For advocates, it simply “doesn’t pay” to take a comprehensive position.

Manufacturers can’t expect policy alone to solve energy cost challenges. Remember this fact: of all energy delivered to U.S. industrial facilities, about 40 percent is not applied as intended to works in progress.* In other words, a lot of energy is wasted. While lower fuel prices certainly help, energy cost control comes primarily from within

*http://www.eere.energy.gov/industry/energy_systems/pdfs/energy_use_loss_opportunities_analysis.pdf

industrial facilities. Each industrial facility must take control of its own energy fate through energy optimization plans that set goals, establish internal leadership, and assign accountability for results. Each facility is unique, and so is its optimal energy strategy. Public policy is weak medicine for energy issues, and certainly no replacement for good managerial decision-making.

ABOUT THE AUTHOR

Christopher Russell is the principal of Energy Pathfinder Management Consulting, LLC, an organization dedicated to the design and implementation of energy management strategies for business organizations. His 20-year career features a consistent focus on marketing, finance, and business development. Christopher has documented and evaluated energy management practices at dozens of facilities, and has advised utilities, trade associations, and government agencies in the planning and promotion of industrial energy assistance programs. As the director of industrial programs at the Alliance to Save Energy (1999-2006), he led, identified, documented, and communicated corporate energy management strategies as well as industrial energy assessment techniques. As an expert in industrial energy cost control, Christopher is in high demand as a writer, consultant, and keynote speaker at industry conferences. He is recognized by the Association of Energy Engineers as both a Certified Energy Manager and a Certified Energy Procurement Specialist. Christopher joined the board of directors of the Fuel Fund of Maryland in 2006, and is also on the advisory board for the Texas A&M Industrial Energy Technology Conference. He holds an MBA and Master's of Arts from the University of Maryland, and a Bachelor of Arts from McGill University in Montreal, Canada. His energy management blog is updated every Monday and Friday, and is found at <http://energypathfinder.blogspot.com>; he can be reached at crussell@energypathfinder.com.