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## Ranked #10: Energy Availability & Costs

The ranking of Energy availability and costs in Area Development's 2005 Corporate Survey should be viewed in the context of the survey's timing.

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**Surprisingly, the relative importance ranking** of energy availability and costs dropped to number 10 in the 2005 Corporate Survey from number 5 in the 2004 Corporate Survey. This represented a 3.0 percent change, from 85.2 percent (in 2004) to 82.8 percent (in 2005). Of course, energy costs at that time were not nearly as high as they are now, so this is logical in the context of the survey at the time. I suspect, however, if the same survey were taken today, the results would be much different.

Let's examine the cost of oil then and now. The nominal average costs per barrel of oil for the years 2003 and 2004 were \$27.69 and \$37.66, respectively. The cost for 2005 was \$50.04, with the price climbing to \$59.44 in the first quarter of 2006. Crude oil prices, according to Bloomberg<sup>1</sup> on August 16, 2006 were at \$72.86 on the spot market. Natural gas prices have followed the same trend.

Unfortunately, there is no accurate way to predict what the future energy picture will be. Trends are impacted by supply and demand, U.S. and world economic growth, technology advances, public policy decisions, and world events. Still, there is a clear consensus among the experts: Increased energy costs will continue in the foreseeable future. There is no industry that is not, or will not, be affected in some way by increased energy costs. One way or another, energy costs flow through and affect everyone — some more than others. With that in mind, there are opportunities for both the public sector (recruitment leverage) and the private sector (cost savings).

### Opportunities to Reduce Costs

In this author's opinion, there is little likelihood that new energy sources away from fossil fuels will fundamentally change the course of energy costs in the near future. From a macro-perspective, the economics of conversion to hydrogen, biomass, wind, or other non-fossil fuel sources are simply too high without concerted government intervention to guide and subsidize such a program. Even then, the idea is difficult to completely rationalize. Add to this the regulatory pressure for environmental compliance, coupled with both market forces and policy decisions regarding energy exploration and discovery, and there is little chance that the United States will wean itself from imported oil soon. From a micro-perspective, industry cannot justify the conversion of existing facilities to newer technology or alternative fuels for the same reasons. While this is problematic from an industry perspective, it is an opportunity waiting for economic developers.

Companies are constantly looking for new and innovative ways to increase efficiency within their organizations, throughout the entire supply chain and manufacturing process. As a consequence of these efficiencies, they either establish or maintain a competitive advantage in the marketplace. Some have the resources in-house, while others seek assistance outside the organization. Regardless, the more efficient they are, the more productive they become. Unless the firm is energy-intensive with a heavy demand and

### Top Ten Site Selection Factors Ratings\* 2005

1	Highway accessibility	91.4
2	<b>Labor Costs</b>	<b>87.9</b>
3	Availability of skilled labor	87.2
4	<b>State and local incentives</b>	<b>86.0</b>
5	<b>Availability of high-speed internet access</b>	<b>85.7</b>
6	Corporate tax rates	85.0
7	<b>Occupancy or construction costs</b>	<b>83.7</b>
8	<b>Tax exemptions</b>	<b>83.6</b>
9	Proximity to major markets	83.2
10	<b>Energy availability and costs</b>	<b>82.8</b>

\* All figures are percentages and are the total of "very important" and "important" ratings of the Area Development Corporate Survey and are rounded to the nearest tenth of a percent.

high load factor, there is little that can be done about energy costs except through streamlining operations. As a consequence, anything that can be done to reduce energy costs — whether it is logistics, improved process flow, better energy management practices, or other process modifications — is welcomed.

Electricity costs have increased dramatically in some parts of country and are not likely to let up in the near future.<sup>2</sup> One logical partner — that is many times overlooked and usually underappreciated — is the local utility company. Most, if not all, provide free consultation on ways to reduce total energy costs and increase efficiencies. In fact, some offer incentives up front to encourage smart design.

### **Product Innovations Will Help**

Because of the increased cost of energy, new product innovations will no doubt be just around the corner, particularly in the automotive and aerospace industries. New composite materials for body and frame sections are already more pronounced in the aerospace industry. For instance, 45 percent of the Boeing 787 aircraft's structure is made of graphite composites. Another 5 percent or so is composed of fiberglass, for a total of about 50 percent of the aircraft. General Electric's GENx Powerplant™ (which powers the 787 aircraft) offers fuel efficiency benefits over current generation turbofan engines, thanks in part to composite components that make the GENx lighter than comparably sized engines. The net result of these and other innovations in the aircraft has resulted in a 20 percent savings in fuel economy and 35 percent savings in operating and maintenance cost.

This same effort is being made in the automotive industry as well and is comprised of basically two activities: (1) those that represent incremental improvements/advancements in conventional power trains; and (2) those that represent significant changes in power train design (electric, hybrid, fuel cell, and battery-powered). Innovation will also affect building materials, electronics, logistics services, and many other products in the future.

### **The Future**

The supply of crude oil and its derivatives such as diesel, jet fuel, and gasoline will not dwindle in the near future; however, they will become progressively more expensive over the next several decades. Also, thanks in part to industry and power generation switching to natural gas from 1970 to 1990, there will be a tightening of conventional natural gas in the near future.<sup>3</sup> In spite of the proliferation of liquid natural gas (LNG) facilities, this will not have a major impact on the industry as a whole; instead, the selective sponsors/users of these facilities as a primary fuel source will be the real beneficiaries.

For instance, anyone who has performed a site search in the Midwest has seen a high level of interest in ethanol plants. Just how much of an impact this will have on energy prices remains to be seen. Of particular recent interest is the prospect of synthetic fuels produced from coal that can produce both natural gas (SNG — synthetic natural gas) and liquid fuel. Currently, the United States has an 800-year supply of coal at present consumption rates, and this represents only a small fraction of the world's coal supply. There is considerable interest by both the federal government and private sector to invest in this technology. These investments are not small, nor are the levels of employment and compensation associated with them. The recruitment of one of these technology sectors would be a huge economic development windfall for any community.

In sum, even though the 2005 Corporate Survey indicates energy costs were not as important as in the previous year, this should be considered in the context of when the survey was taken. Energy costs are rising and will continue to do so — and will become increasingly important to virtually every business enterprise, since the costs will flow through all aspects of manufacturing and logistics. Those communities that recognize the “opportunities” associated with helping industry manage these costs, while capitalizing on the product innovations that will be a natural consequence, will be the winners. The most pressing opportunity is through collaborations with industry, academic institutions, and public-policy initiatives to foster energy savings and promote product innovation. Investment in alternative fuels manufacturing is only a small percentage of what it will be in the next two decades.

<sup>1</sup>Nymex Crude Future Price at 12:39 quoted from <http://www.bloomberg.com/energy/>

<sup>2</sup>Deregulation Heats Up Power Bills, Thursday, Aug. 3 2006, U.S. News & World Report, 8-2-06

<sup>3</sup>The Future of Energy in Manufacturing, Dr. John R. Wilson, Target Volume 21, Number 2.