Preliminary Text

10-Minute Opening "Bumper" for IES Webcast

As of 08-26-05

Ron Fiskum:

Welcome to the U.S. Department of Energy's Webcast on Integrated Energy Systems. My name is Ron Fiskum and I am DOE's Technical Program Manager for Integrated Energy Systems – IES for short. We hope you will find this webcast informative and full of lessons learned that you can apply to your energy project in the future. This is our goal for these broadcasts, but it will take your close attention and probing questions to assure success.

We firmly believe that, your economic bottom line will increasingly depend on your ability to manage energy costs. Integrated Energy Systems can provide a cost-effective and efficient means to control rising energy costs, ensure a secure power supply, assure power quality and provide a hedge against the rising cost of pollution control.

[Narrator takes over]

The live portion of our broadcast is just minutes away, but before we begin, let's review some key topics, including.

- A brief introduction to the four segments in our series
- An understanding of what IES is and is not
- today's energy trends that will surely mean greater use of IES in the future, and
- bottom line economic reasons to rethink energy supply and management that favor an IES future

The four segments will highlight three first generation IES projects and the final segment will be an assessment of lessons learned and discussion of the role IES will play in America's future energy portfolio.

First, a new A&P supermarket located in Mt Kisco, NY which installed a UTC Power PureComfort™ 240 cooling, heating and power – also know as CHP – Integrated Energy System that was commissioned in January of 2005. This site features a completely packaged system that required a single lift to the roof that was integrated with the store's power, heating, air conditioning, dehumidification and refrigeration system.

The second IES site is the U.S. Army post at Fort Bragg, North Carolina. Ft. Bragg partnered with DOE, Honeywell Energy Services and the Federal Energy Management Program to design and finance a new IES plant. The system includes a Solar 5.5 megawatt gas combustion turbine with dual fuel capability. It can switch -- on the fly -- from base operations using natural gas, to #2 fuel oil, as real-time economics dictate, or in the event of an emergency. Fort Bragg illustrates the value of a "packaged system" that will reduce operating costs and enhance the base's security.

And the third IES site examines Austin Energy's IES system at the Domain Industrial Park in north Austin. The Domain cooling and power plant incorporates a 4.5 MW Solar combustion turbine that directly fires a 2,500 RT Broad absorption chiller. A critical aspect of this IES plant is the fact that it uses pre-manufactured modules and off-the-shelf components. This is expected to significantly lower the cost of replicating similar on-site generation systems.

Each of these modules is one-hour. The final one-hour segment will bring together experts and thought leaders from these projects to discuss lessons learned and the role of IES in America's energy future.

CUE: Understanding IES

IES is the integration of power generation equipment with heat recovery and thermally activated technologies. But, IES is much more than that. IES creates a whole new business model where system integrators pre-engineer, pre-assemble, and pre-test -- power, thermal, control, and ancillary services modules to:

1. Dramatically reduce field labor and installation costs
2. Optimize component integration and system efficiency
3. Easily integrate with building or system loads
4. Improve reliability
5. Enhance operability
6. Provide secure power
7. Reduce cost and increase internal rate of return

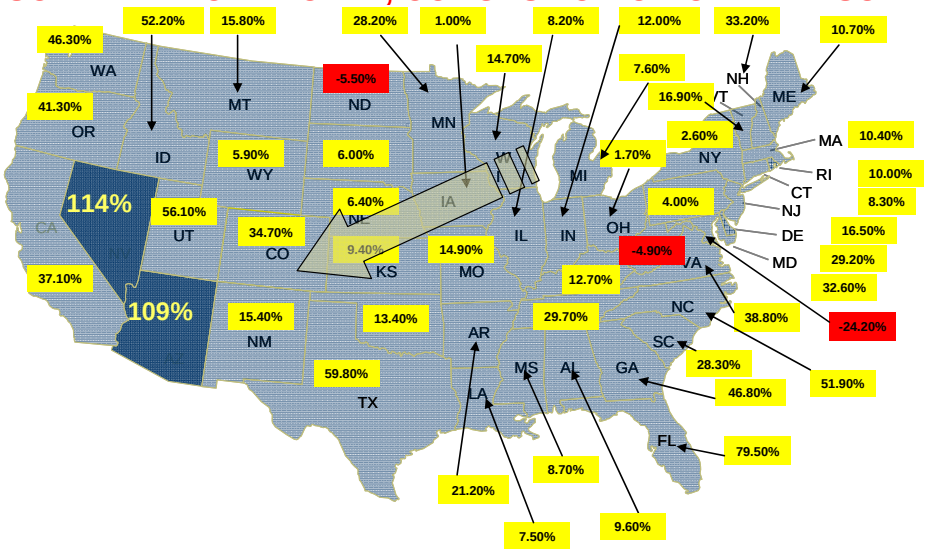
IES is not just co-generation or warmed over total energy solutions. This is a whole new class of technology, with new business models, offering important energy solutions for tomorrow's energy problems.

So, if your site or application requires: electricity and thermal energy in the form of heating, cooling, and dehumidification; or needs secure or high quality power; or faces increasing peak loads and rising peak electric rates, you have tuned into the right program.

CUE: Current Trends and Issues

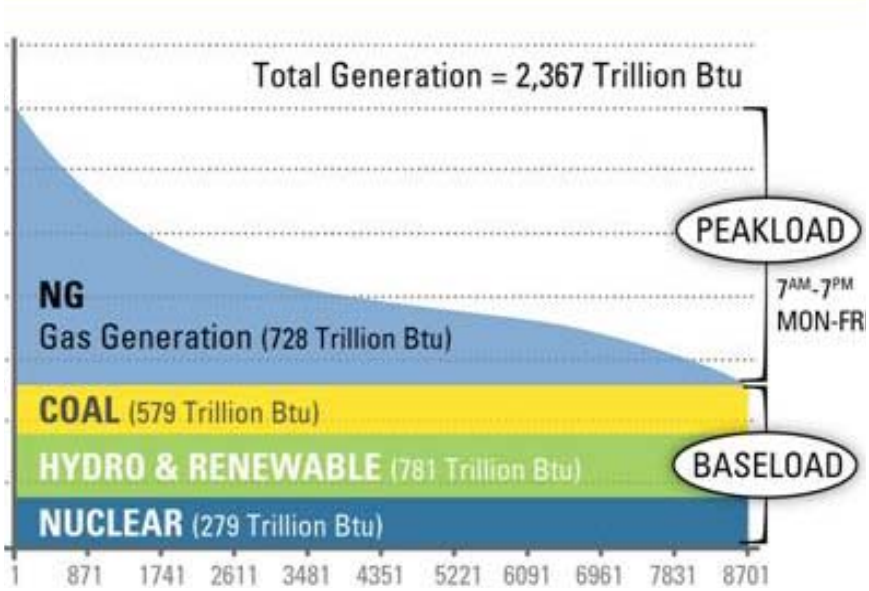
According to the U.S. Census Bureau, there will be a decided shift in the population over the next 30 years toward the Southwestern and Southeastern USA. This shift will create a significant and important change in many states. In fact, all states with over 30 percent growth projections will likely face unsustainable growth if one assumes a business-as-usual energy, water and infrastructure approach.

SOME TYPE OF PEOPLE, CONGESTION OR OTHER VISUAL



In the Southwestern USA, Florida, Texas, New England, the Pacific Northwest and Hawaii, natural gas is on the margin for electric power production. Therefore, electric demand reduction through IES, recycling energy and thermally activated technologies,

can play a significant role in reducing peak electric demand, conserving natural gas and lowering energy costs.



Employing IES can be more than energy efficiency and security. Did you know that as much freshwater is withdrawn for producing electricity as for irrigation? In fact, on average, for every kWh of electric power produced, about ½ gallon of water is captured for cooling. High fuel use efficiencies offered by IES will use less water by recycling energy and will increase water sustainability.

CUE: Your Bottom Line

How can we connect the dots between these general trends, today's economics and the need to consider IES for today's buildings, power parks and process systems? If you are an architect or consulting engineer, properly incorporating IES into your building, development or urban planning project can increase your client base. If you operate a

facility or business that concurrently requires electric power, hot water, steam, chilled water or dehumidification, consider these benefits:

- increase your immunity against power outage losses
- save money today in spite of high natural gas prices, and
- hedge the inevitable rise in fuel and energy costs.

The August 2003 blackout that struck much of the northeastern United States and eastern Canada, was a clear demonstration of how vulnerable we are to power loss, and how dramatic an impact that power loss can have on our economy. Most estimates range between $4 billion and $8 billion. This lost revenue results from losses in a wide variety of economic areas, including food spoilage for the supermarket and restaurant industry, cancelled flights on airlines, and halted production in manufacturing. Regardless of differing loss estimates, most experts agree that the economy suffered a severe blow because of the blackout.

One reason for the blackout is that people were over-using their air conditioners on that hot, humid day in August and overloaded the power grid. Distributed Integrated Energy Systems, providing power and cooling, reduce peak electric demand and provide you with critical stand-by power that could potentially save your business tens of thousands of dollars during future blackouts.

NO
POWER
CLOSED

verizon
verizon

IES is not the solution to every energy problem you face. In fact, today, you must carefully research and develop a number of approaches to heating, cooling, and ventilating your facilities. This is especially true considering the volatility of natural gas prices and the difficulty of projecting rising fuel costs and their impact upon electric prices.

For example, knowing the linkage between natural gas and peak electric power costs in California, it is no surprise that Southern California Edison shifted their mid-range and peak power time-of-use rates by 11% and 16% respectively while reducing their off-peak rate by 10%. These increasing rates partially reflect the rising cost of natural gas. The key question is what will happen in the next 20 years to fuel and electric prices? What can you project as a baseline for your economic analysis?

These new rate structures also mean a shift in operating philosophy for many IES systems which may need to operate during mid-range and peak-power times and shut down during off-peak times to be economically viable.

But, energy costs are not the only economic value of an integrated energy system. Business continuity is increasingly becoming part of the economic evaluation. In the supermarket case study profiled in this web cast, you will learn what the 2003 blackout cost A&P, and how it is changing their corporate view on standby power. This is just one example of how our increasing dependence upon digital commerce and computer controlled operations, adds increasing economic value to power quality.

Air emissions have been a hidden cost of electric production for many years. What does the future hold? The Texas Commission on Environmental Quality weighed in on the importance of IES in economically achieving low emissions in the Austin Energy case study.

Other economic benefits can be derived from effectively using opportunity fuels, like landfill gas, digester gas, flare gas and various bio-fuels.

As energy prices rise, the opportunity to economically recycle energy and use opportunity fuels will surely increase.

CUE: Our energy future

U.S. economic growth is closely tied to the availability of economic and affordable supplies of energy. The demand for energy in all forms is likely to increase significantly, according to the Energy Information Administration. By 2025, even with expected dramatic gains in efficiency, total energy consumption is forecasted to increase by 36 percent, natural gas by 40 percent.

Shortfalls and bottlenecks in energy supplies and infrastructure systems are becoming more evident. The imbalance between energy supply and demand raises the question of how access to energy supplies can be increased and infrastructure systems improved to meet current and future demands.

The North American central power transmission grid was not designed to meet the demands of today's competitive markets in terms of scale, transactional complexity, and power quality, resulting in a grid that is severely constrained in many geographical areas during times of peak power use. Considerable wire line losses occur during peak electric demand hours, on the order of 15-25%, which reduces reliability, wastes energy and contributes to higher energy cost. Furthermore, economic shifts toward a digital economy (requiring high quality electricity), urban migration (further stressing overloaded and difficult to upgrade circuits) and a decided southern population shift (resulting in increased peak air conditioning demand) continues to add stress to an increasingly fragile electric grid. Power quality concerns such as feeder voltage sags

and current fluctuations at end-of-line distribution are especially problematic to computing, communications, and other sensitive loads. Centralized power systems, simply by themselves, cannot solve urban electric grid shortcomings, southern transmission chokepoints or achieve invulnerability to natural events, human error, and intentional attack.

These are a few of the reasons why the Department of Energy is investing in Integrated Energy Systems -- to deliver technical solutions that will be in demand as we begin to cope with tightening global natural resources, increasing the need to reduce air pollutants, improving water sustainability in arid climates, and insuring global economic competitiveness. We hope the case studies presented in the following modules will illustrate how Integrated Energy Systems, installed at a federal military installation, a supermarket, and an industrial park, can help overcome these problems.

Enjoy the program. We look forward to your questions and comments during each segment of the broadcast and in the final, live question and answer module.