

# Strategic Planning for Energy and the Environment

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F. William Payne, Editor-in-Chief

## IN THIS ISSUE...

|  |    |
|--|----|
| <i>F. William Payne</i> , Editorial—<br>"Kinder, Gentler" Government Programs .....  | 5  |
| <i>James J. Winebrake, Ph.D.</i> , From Mandates to Commitments: Partnerships<br>for Energy and Environmental Management ..... | 6  |
| <i>Gayle A. McCauley, P.E.</i> , Developing a CFC Phaseout Strategy .....  | 12 |
| <i>W.H. Dolan, P.D. Holtberg</i> , Electric Deregulation:<br>Impact on Cost of Air Conditioning .....                          | 23 |
| <i>William A. Holmes, P.E., C.E.M.</i> , Reducing Utility Costs is<br>Primarily a People Problem .....                         | 30 |
| New World Record for Commercial-Scale Solar Electricity .....  | 38 |
| Enron Corporation Bets \$150 Million on Solar-Powered Generation .....   | 41 |
| <i>P.G. Stroot, R.J. Nemeth, D.F. Fournier, Jr.</i> ,<br>Pollution Reduction Through Energy Conservation .....                 | 43 |
| <i>Christopher Flavin</i> , Windpower's Future Grows Brighter .....  | 55 |
| <i>Elaine C. Sadowski</i> , Lighting Retrofits at the Pittsburgh Zoo and Aviary .....  | 62 |
| <i>John R. Puskar, P.E.</i> , Nerve Gas Protection for Office Buildings .....  | 73 |
| <i>Dale E. Steffes, P.E.</i> , High-Tech Progress and Gas Deregulation .....   | 76 |
| 100 Highly Successful Energy Efficiency Programs .....   | 78 |



*An attempt to find a more effective way  
to save energy led to a surprising discovery:*

REDUCING UTILITY COSTS IS  
PRIMARILY A PEOPLE PROBLEM;  
TECHNOLOGY IS ONLY A TOOL

*William A. Holmes, P.E., C.E.M.  
President, UtiliTRACK Corporation*

UtiliTRACK Corporation was established in 1979 as a result of the frustration of several years of observing both the tremendous opportunities for energy savings in existing buildings and the ineffectiveness of traditional energy management methods in taking advantage of them. We had only one objective:

*To find a way to produce, document and maintain maximum cost-effective energy savings in existing buildings.*

Although we didn't really know what we were going to find, we realized that the only way we were going to satisfy our objective was by spending as much time working in existing buildings as it took to determine how they actually used energy and what was required to reduce consumption and costs. We knew that much of what was being taught and practiced as energy management wasn't very effective and we were determined to find out for ourselves what would be.

To insure that we did not lose sight of our objective we began contracting with building owners to provide energy management services on an ongoing basis with all fees paid as a percentage of documented savings.

Using this approach, we had to produce immediate savings in existing buildings with existing equipment, and document and maintain them to remain in business. There was no confusion between what looked good in theory and what actually worked in the field, no one else to blame if

problems occurred or the expected savings didn't materialize, and no losing interest after a few months.

We learned that in order to succeed, we had to:

- Install permanent monitoring instrumentation to track actual operation, utility consumption and costs, and savings on a continuing basis.
- Assume responsibility for overseeing the operation, maintenance and control of everything within a facility that could affect energy consumption and costs.
- Be on call 24 hours a day, 365 days a year for any comfort or other type of problem that could affect energy consumption and costs.

For the past fifteen years the same techniques have been applied to all types of existing facilities with the following results in every case:

- Energy and cost savings from 20% to more than 50%.
- Minimal if any need for capital improvements.
- Positive cash flow within weeks or months.

When we couldn't find what we needed on the market in 1979, we were forced to develop our own PC-based monitoring system. We installed one at our expense in every project for more than ten years with no thought of selling them to others. Gradually however, in response to requests, we began to sell the system. Our business now focuses on selling the UtiliTRACK™ Monitoring System and teaching others how to use the resulting information to manage and reduce their own utility costs.

## NEEDED: CHANGED ATTITUDES

With this kind of success, why aren't more people using this approach? The primary reason is that it requires rethinking and changing views by a number of different people in a number of different disciplines; and convincing people to change attitudes is extremely difficult. We believe that the following changes must occur before the tremendous opportunities that exist in every building can be realized.

### Owners Must:

Understand that reducing utility costs may offer one of the best opportunities a company has to improve the bottom line.

- Most companies view utility costs as fixed overhead expenses. They may only represent 2% or 3% of total expenses so they don't appear to offer much of an opportunity for significant savings.
- Utilities are generally a low priority. Companies exist to produce a product or service and utility costs are regarded as a continuous aggravation and drain on resources.

Building owners must realize that utility costs can be managed and controlled the same as all other costs within a facility.

- Companies that require every dollar spent on materials or labor to be accounted for daily, will accept expenditures of millions of dollars for utilities without requiring the same accountability.
- The first step in the process is to establish a method for tracking every dollar spent on utilities.

Building owners need to recognize that utility costs can best be managed by the individual user by providing them with the proper information and incentive.

- Management assumes that utility costs are the responsibility of the facility engineers and cannot be managed the same as all other expenditures.
- Facility engineers regard utilities as their responsibility but are focused on adding or moving equipment, repair and replacement and just keeping everything working. They don't generally have the time, training, understanding or support from management to take advantage of the opportunities.

#### **The Energy Management Profession Must:**

Make a transition from an engineering to a financial management discipline.

- Saving energy is really about reducing costs.
- Solutions should be market-driven.
- Solutions should comply with accepted financial requirements and controls.

- Technology is only a tool to be employed after it has been determined that there is a technical problem.

Remember: the objective should be to reduce energy consumption and costs. Currently the process seems to have taken precedence over the objective. Architects, engineers, energy auditors, equipment suppliers, contractors and utility companies are almost always paid for their products or services without regard for actual savings.

Realize: much of the emphasis on capital improvements stems from the money to be made by those selling products and services. An industry has built up around this approach, people are comfortable with it and there is a lot of pressure for it to continue.

Require: documentation and independent validation of results of energy projects the same as is required for all other financial expenditures. Energy consumption in large facilities is quite complex and the effect of each of the influencing factors is difficult to quantify. As a result, the desire to succeed along with political and financial pressures often lead to reports of savings that are greatly exaggerated.

#### **Energy Engineers Must:**

Get back to problem solving fundamentals.

Stop blindly following traditional methods and recognize that not all solutions involve technology and require capital projects.

Be more objective. Throw out the preconceived solutions and determine what the problems are. They are different in every building.

Realize that current practices leave a lot to be desired. We have:

- Never found much similarity between the recommendations contained in Energy Audits and what is actually required to create and maintain energy savings.
- Never found the addition of energy management systems, new lights or more efficient motors to be cost effective.
- Never been able to verify claims of savings without valid documentation before and after changes are made.

## CONCLUSIONS

Our experiences and beliefs based on more than 20 years in the Energy Engineering and Management field can be summarized as follows:

- Reducing utility costs is primarily a people problem.
- Accountability is what produces results; technology is only a tool to be employed after an opportunity has been identified that requires technical analysis and engineering involvement.
- The most important factor in creating and maintaining energy savings is management commitment; the determination to succeed and willingness to break from tradition and do whatever is necessary.
- The energy management profession needs to follow the lead of industry, abandon the attitude that technology is the only solution and begin to involve people by applying information technology and management methods that focus on individual accountability and responsibility.

## QUOTATIONS BY OTHERS

For those traditionalists or newcomers that might tend to dismiss our findings and conclusions as not representative of others in the profession, I have included several quotations from a number of different sources that provide similar views.

### Monitoring & Tracking is Essential

- Let us propose that energy tracking simply be accepted as a management information tool that can help to define objectives and verify benefits. Energy tracking is equivalent to financial accounting.<sup>5</sup>
- Energy monitoring and targeting is a management approach that enables firms to manage energy as a controllable resource in the same way as they manage other resources such as finance and people.<sup>8</sup>

- Energy tracking to achieve energy efficiency shows you where you are, where you want to go, and how you can stay on course. Without tracking, how does the energy manager know where to begin? If something is done, how can it be shown that the effort did any good?<sup>5</sup>
- A good tracking program includes management commitment, accountability by the energy manager and data formats that are clear in presentation.<sup>5</sup>
- A comprehensive quality process always requires data collection after the energy measure is in place. Engineers often leave this step unfinished.<sup>4</sup>
- Real-time monitoring is vital to an energy management program. Real-time phenomena require real-time attention.<sup>10</sup>
- Prior to a commitment of major capital expenditures, there must be documented proof that the investment will produce cost-effective savings. Adequate documentation can only be accomplished by end use metered evaluation and analysis techniques.<sup>12</sup>
- Views not backed by data are more likely to include personal opinions, exaggeration and mistaken impressions.<sup>11</sup>
- The long-term success of any energy conserving program depends on close monitoring of the equipment and operation.<sup>3</sup>
- Few maintenance groups receive accounting feedback to indicate how efficiently the buildings are being operated (or if anyone cares as long as the heat is on).<sup>7</sup>

### People are the Key

- Accountability, not technology, conserves energy. It is not the mouse-trap, but how it is operated.<sup>1</sup>
- What works? The common ingredient is a sustained commitment by owners reflected in the attitude and incentives of the building staff.<sup>1</sup>
- Often, we see well-conceived energy conservation efforts that have been neglected or abandoned due to a lack of understanding of their operation by the facility maintenance staffs.<sup>3</sup>
- Submetering added to apartment houses in New York City resulted in a 15-30 % drop in consumption. It is simple enough: if you have to pay

for something you will use it more carefully.<sup>1</sup>

- Inhuman engineering fools itself into thinking something will work when it won't. By contrast, the human side means to design and plan with an understanding of the user and behavior under actual conditions.<sup>2</sup>
- The energy usage of a facility is at least as sensitive to operating strategy and operator training as it is to equipment design and installation.<sup>3</sup>
- There is nothing warm and fuzzy about the real human side of engineering. It is just technology beamed so that there is accountability with responsibility and the most effective measures get done and remain done for the least cost.<sup>2</sup>
- Few maintenance people will have an incentive to reduce energy bills. Their primary responsibility is to keep the equipment operating.<sup>7</sup>
- The facility staff, often undersized, has as its first priority the continued operation of equipment; energy efficiency is, at best, a second priority.<sup>3</sup>
- It has been our experience that most savings result from the owner's or operator's awareness of good operating practices and good maintenance.<sup>9</sup>
- Optimum energy savings' calculations are just theory in the hands of design engineers, and they only become reality when they are effectively used by building operating personnel.<sup>6</sup>
- Our experience shows that energy conservation measures, once installed, are often not operated or maintained to produce maximum savings. Energy conservation extends beyond the design and construction phase to the end of the useful life of the equipment.<sup>3</sup>

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## ABOUT THE AUTHOR

Bill Holmes is President of UtiliTRACK Corporation, in Columbus, Indiana. His firm developed and sells the UtiliTRACK™ Monitoring System, an information system that allows businesses to track and manage utility costs in the same way that they do all of the other costs within their facility. After five years with a consulting firm doing energy audits and designing improvements, he taught for six years in Purdue's Mechanical Engineering Technology Program. In 1979 he founded UtiliTRACK Corporation.

In 1988 and 1990 his firm received Awards from the State of Indiana for achievements in energy efficiency and in 1990, it received a DOE Award for Energy Innovation. Bill holds a B.S. in Mechanical Engineering from Rose-Hulman Institute of Technology and an M.S.M.E. from New Mexico State University. He is a registered engineer in Indiana and Ohio, a Certified Energy Manager and is a Charter Member of AEE.

Bill has spoken about his firm's approach and results at Energy Conferences at the Ohio State University, the University of Michigan, the World Energy Engineering Congress in Atlanta and the Industrial Energy Technology Conference in Houston. He is a regular lecturer in the Energy Management Program conducted by the College of Engineering at the University of Wisconsin.