Consult

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For ICF Consulting's views on Power Market Restructuring, see page 5.



# Gaining Competitive Advantage From Air Regulatory Uncertainty

## An Uncertain Outlook

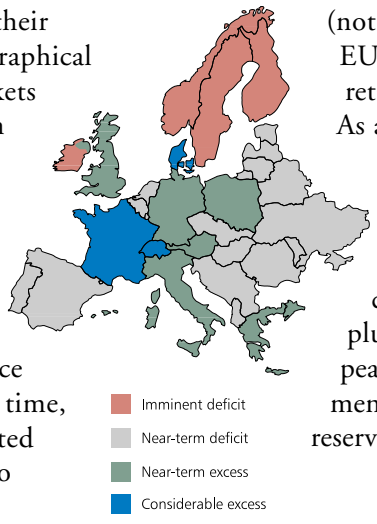
Emissions from fossil-fired electric generation plants contribute to ozone formation in many U.S. cities, acid rain, fine particulates (soot), and global climate change. Under the Clean Air Act Amendments (CAAA) of 1990, the U.S. Environmental Protection Agency (EPA) is required to determine if nitrogen oxide ($NO_X$), sulfur dioxide ($SO_2$), and mercury (potentially) emission reductions are needed for electric boilers and other stationary sources. In addition, despite President Bush's decision to withdraw U.S. support for the Kyoto Protocol, there is growing public support to reduce carbon emissions, which contribute to global climate change.

continued on page 2

# European Electricity Markets

The deregulation of the European gas and electricity markets is gaining pace as European Union (EU) directives on energy are implemented. The European markets are dominated by old state monopolies, particularly in France, Portugal, Greece, and Italy. The vertical integrated character of the incumbents ties their stronghold to specific geographical areas. The opening of markets to competition both within and between countries demands a great deal of restructuring as all incumbents inevitably have to surrender market shares in their service areas while trying to gain entrance in other areas. At the same time, new entrants from the United States are assessing where to concentrate their efforts.

The gradual market opening of electricity began in 1999 and will end in a full European-wide market opening in most countries by 2005. Several countries are ahead of the minimum requirements and countries such as the United Kingdom, Germany, Sweden, and Norway (not a member of the EU) already allow free retail customer choice. As a result, the process is moving forward at various speeds in different areas of the EU. The current capacity surplus in relation to peak demand requirements, also called the reserve margin, varies




continued on page 4

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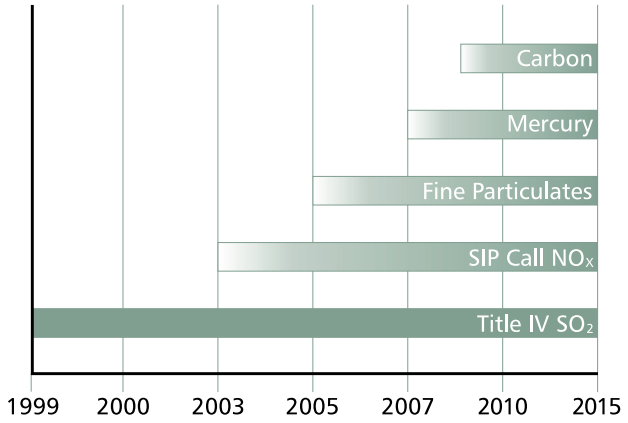
# Gaining Competitive Advantage (cont.)

As illustrated below, EPA is pursuing a sequential, piecemeal approach to address each air emissions problem. The first step was the Acid Rain regulation, implemented under Title IV of the CAAA, which established limits on $SO_2$ emissions for some fossil generation units in 1995. $SO_2$ emission limits were extended in 2000 to cover most fossil-fired electric generators that are more than 25 MW.

### The Uncertain Air Regulatory Timeline




The next step involves new $NO_X$ emission reduction regulations. Regulatory structure for limiting summer $NO_X$ emissions will be extended from 9 to 19 eastern U.S. states in May 2004.

EPA and Congress have taken initial steps to implement additional air regulations, including several bills that would transform the eastern U.S. summer $NO_X$ emission regulations into a national annual program. In 1997, EPA indicated its intentions to further reduce $SO_2$ emissions and in 2000 announced its intentions to regulate mercury emissions from power plants.

Since 1995, EPA has been trying to build a consensus between electric utilities and other stakeholders to replace this piecemeal regulatory approach with a comprehensive, one-time integrated solution to reduce these emissions. This would provide regulatory certainty to electric generation capacity owners so they can develop optimal, least-cost, compliance strategies and not waste money with missteps resulting from a mis-reading of future regulatory developments. President Bush has consistently supported this solution, and this year's Congress is likely to introduce several multi-pollutant bills.

## Gaining Competitive Advantage

Electric generation plant owners must make compliance decisions for reducing $NO_X$ emissions in the face of considerable uncertainty about future emission regulations. Owners of fossil-fired electric generation plants can pursue two alternative strategies for complying with the new $NO_X$ regulation.

The high-tech strategy would be to install the most effective technology available, which can be capital-intensive and have adverse impacts on balance sheet debt and short-term earnings. For example, one Mid-Atlantic generation company announced plans to make capital investments of $430 million in $NO_X$ control equipment over five years. This large capital outlay could result in a decline in near-term earnings of $.30 per share and in a stock price of more than $3 per share. This strategy may also limit the generation plant owner's flexibility to respond to the evolving air regulatory outlook. Given the large space requirements associated with some $NO_X$ control equipment, adding control equipment to reduce $SO_2$ or mercury emissions may be more difficult and expensive than a less capital-intensive $NO_X$ control strategy.

The alternative low-tech strategy would be to install less-costly, but also less effective, reduction technologies such as gas-reburn or Selective Non-Catalytic Reduction. This strategy will require less capital investment, have less impact on short-term financial performance, and may preserve the generation plant owner's flexibility to adapt to new air emission regulations. However, it may also increase risk exposure as it will require the generation plant owner to rely on the $NO_X$ allowance market to achieve compliance.

ICF Consulting believes that generation plant owners must have an integrated view of wholesale and retail electric markets, fuel markets, and emissions allowance markets to develop the optimal compliance strategy.

ICF Consulting believes that generation owners must have an integrated view of wholesale and retail electric markets, fuel markets, and emissions allowance markets to manage the risks associated with this less capital intensive, "low-tech" strategy.

# Benchmarking Commercial Building Performance

The U.S. Environmental Protection Agency's (EPA) voluntary energy-efficiency programs have been helping large corporations, states, and other building portfolio owners reduce energy costs and associated pollution since 1990. These programs have been a unique and successful analog to EPA's regulation and compliance activities. From the start, ICF Consulting has assisted EPA with tools and financial messages to help participants make *investment* decisions that save energy.

Money Isn't All You're Saving

In the commercial building sector, *benchmarking* has become a buzzword for comparative performance assessment, and EPA is leading current efforts to provide this capability for buildings. EPA has developed benchmarking algorithms for offices, schools, and retail buildings and is working with ICF Consulting and Oak Ridge National Laboratory to add hospitality, healthcare, and other algorithms. Benchmark development involves using U.S. Census or other nationwide data and regression analyses to determine energy

continued on back page

# Green Power: An Expanding Niche

Deregulation in the U.S. electricity industry has fostered new competition at the retail level. Significant business opportunities in offering "green" energy products are emerging in light of concerns about global warming and the ever-increasing physical signs of environmental degradation. Historically, green power was seen as a premium product for a selected niche (up to 10 percent in the residential market). More recently, target customers have been found in the commercial, institutional, and industrial power markets with demand projected at 1 to 3 percent of the market. Research indicates that green retail products can offer higher margins than conventional commodity products, even though wholesale costs are higher.

At the same time, increasing requirements for retail energy sales to come from renewable sources are stimulating investments and creating a larger and more diverse market for green energy. ICF Consulting estimates that the normal annual market penetration of green energy can average about 1 to 2 percent per year for retail customers. The penetration may be higher with blended products.

To meet this growing demand, a number of energy marketers are now offering innovative green energy products and marketing approaches. Green pricing programs are being offered in traditionally regulated markets, while green power marketers compete with other electric product offerings in markets where retail deregulation has already occurred. The success of green power programs has been found to vary significantly due to the variability of marketing programs, pricing strategy, and local market conditions. A key factor of success is the program design and how it is differentiated and marketed to customers. Green energy programs are niche programs and they must be strenuously marketed to customers (residential, commercial, and industrial) to gain acceptance.

How can corporations evaluate green electric product offerings in light of other more traditional choices? Market research completed by ICF Consulting indicated that once corporations achieve some minimum threshold of savings brought on by deregulation (about 8 to 10 percent), they would then consider green options, recognizing that some small take back from the energy marketer would occur for the price premium. The research also indicated that blended green and conventional commodity rates were preferable. Premiums that would be acceptable to businesses would vary significantly—depending on the loads, pricing, and total cost of the energy bill. The mark-ups for the tariffs would vary significantly by firm. All this would require a unique sales and marketing approach for business and industry. A flexible pricing and proposal offer would also be required.

# Calendar of Events

## June

### June 3-5, 2001

New Orleans, LA. ICF Consulting will be exhibiting at the **Edison Electric Institute (EEI) Annual Conference.** The Canadian Electricity Association will join EEI for this gathering of CEOs and executives from North America's premier energy suppliers, energy delivery, and energy service companies. *For more information, contact Pat Alexander at 1.703.934.3157.*

### June 12-13, 2001

San Antonio, TX. ICF Consulting will be conducting **Property Management** training sponsored by the Texas Department of Housing and Community Affairs. This two-day course is designed to provide non-profit housing owners and property managers with an understanding of the full circle of property management: how development affects day-to-day management and how day-to-day management affects properties twenty years down the road. Topics include: design standards, financing and regulatory agreements, management plans, risk management, monitoring financial performance, resident policies, and maintenance procedures. *For more information, contact the Conference Coordinator at 1.703.934.3317, TDD 1.703.934.3230.*

### June 19-20, 2001

Corpus Christi, TX. ICF Consulting will be conducting **Construction Management** training sponsored by the Texas Department of Housing and Community Affairs. This two-day course is designed for community development professionals charged with overseeing construction activities. The training covers the principles and regulations associated with effective construction management. Topics include: construction codes and standards, the property inspection process, basic elements of the work write-up and cost-estimating process, contractor selection and federal procurement criteria, and construction scheduling and oversight. *For more information, contact the Conference Coordinator at 1.703.934.3317, TDD 1.703.934.3230.*

## July

### July 9-12, 2001

Washington, D.C. At the **E-Gov 2001 Annual Conference,** ICF Consulting will host an exhibit booth. This international showcase focuses on legislation, innovative solutions, and groundbreaking service delivery for the digital government environment. *For more information, contact Tim Herbst at 1.703.934.3766.*

## August

### August 1-3, 2001

Washington, D.C. At the **Excellence in Government 2001 Conference,** ICF Consulting will host an exhibit area. This annual conference brings together a large assembly of federal officials, executives, and managers who set the course of the federal government and affect all topics from IT decisions to public-private partnerships. *For more information, contact Kathy Ackley at 1.703.934.3293.*

## European Electricity Markets (cont.)

noticeably across the European countries. ICF Consulting's analysis of the European wholesale power market using its Integrated Power Model (IPM™) shows that capacity expansion should be an immediate priority in Norway, Sweden, Finland, and Ireland (see map on page one).

With demand growing faster than the EU average, Spain and Portugal will require construction of Combined Cycle Gas Turbine Plants (CCGTs) with a capacity of 18,000MW in the coming decade. In contrast, France, Denmark, and Switzerland have abundant capacity. Generators in these countries see electricity transmission into neighboring markets as crucial. Italy will experience a shift away from expensive, heavy fuel-oil-fired plants to less expensive and cleaner CCGTs. Stricter environmental regulations and resistance to nuclear generation will also drive the expansion of CCGT technology in countries such as Austria and Germany where there is no imminent lack of capacity.

Companies that understand the dynamics of the European markets and take an integrated approach will gain insights allowing them to pursue opportunities where they are most likely to be profitable. EU and national regulators will have to ensure that incumbents as well as new comers are provided a level playing field. On the other hand, regulated businesses will have to respond more rapidly to development and lower their exposure by looking across national borders.

# Optionality is Key to California Energy Crisis

The power crisis in California and the Western United States that began to emerge last summer has undermined public confidence in the process and the promise of electricity restructuring. The crisis, portrayed by the virtual and real bankruptcy of California's major utilities, massive State intervention, the specter of chronic Stage 3 alerts, and spiraling power prices across the West, ultimately manifests itself as a regional economy at risk. However, this is a crisis created not by a failure of competition, but by missteps in restructuring policy exposed by unfavorable market fundamentals.

Nothing in the California experience indicates that competitive markets, if allowed to work, will not produce the best long-run solution for consumers and the economy. Instead this experience provides a textbook example of how well-intentioned policies designed to "manage the market" can create perverse and costly mistakes when market fundamentals suddenly change. It also underscores two fundamental characteristics of power markets: they do not operate in a vacuum, but are inextricably linked to gas and environmental policy/markets; and uncertainty and risk dominate competitive markets.

The value of investments by energy producers and consumers can be substantially destroyed by unanticipated, unhedged volatility. Unmitigated uncertainty and risk can freeze an otherwise productivity-enhancing investment. Further, energy policy is easily frustrated by unexpected and dramatic changes in market conditions. Failure to fully account for those realities is the root of the crisis in the West and continues to create vulnerability to successive crises. Moreover, even those areas currently enjoying relatively more stable markets are at risk from rapid and unexpected change.

In a recent white paper, *The Path Forward,* ICF Consulting outlines a six-step analytical process designed to yield a robust portfolio of policy and market options. Central to the process is the need to clearly define the amount of risk policy makers and market actors are willing to bear; understand the impact of uncertainty on performance; know what can and cannot be controlled; and construct a portfolio that balances the wide variety of available physical and financial hedges to maximize objectives. This is a process that applies equally to the design of public policy and to the development of a business strategy.

Optionality—the ability to quickly adjust to unexpected market and policy changes—is the key to success in the volatile world of competitive gas and electricity.

At a recent roundtable discussion, ICF Consulting explored the roots of the California crisis, the market outlook for the West, and the actions necessary for short-term stabilization and long-term success in volatile power markets. Those insights are summarized in a videotape of the roundtable and a newly available white paper, ***The Path Forward in California and the West: The ICF Consulting View on Power Market Restructuring.***

In addition to measures to quickly address the lack of wholesale-retail pricing transparency and aggressive promotion of curtailment and other peak reduction programs, the ***Path Forward*** outlines a six-step analytical process designed to yield a robust portfolio of policy and market options.

To view or request copies of the ***Path Forward*** or the Roundtable videotape, please contact us at www.icfconsulting.com/energy.

# Benchmarking Commercial Building Performance (cont.)

performance drivers. These data are used to develop algorithms that compare a building's performance against the rest of the U.S. commercial stock regardless of size, location, or type.

Owners provide energy-use data, location, size, and several specific characteristics to get a benchmark score between 1 and 100. In the most effective use of building performance benchmarks, organizations benchmark their entire building stock to identify different categories of opportunity:

- Buildings with scores of 75 or above are eligible for the ENERGY STAR® label, a plaque that acknowledges exemplary performance. This reward has been very well received by the commercial real estate sector, where ICF Consulting has worked to sign up 2 billion square feet of U.S. leased space for benchmarking. These participants also are using exemplary scores to find lessons learned and as contractual collateral during contracting and sales.
- Buildings with below-average scores (50 is an average score) are the best candidates for aggressive investment in energy savings. This might include chiller replacement—which also addresses units using refrigerants that do not comply with federal chlorofluorcarbons (CFC) legislation—lighting upgrades, and other more involved projects that can be very profitable in these buildings. There is also an opportunity to target these facilities for operational training using the lessons learned from the upper quartile performers.
- Buildings with average to good performance may benefit from more specific operation and maintenance procedures, which also might be gleaned from the exemplary performers. In many cases, low-cost operational measures will significantly improve performance, so that many of these buildings might be eligible for the ENERGY STAR label.

Thousands of buildings have been benchmarked and are being tracked over time at EPA's Portfolio Manager Web site, which also can be used to print a Statement of Energy Performance and apply for the ENERGY STAR label. The Statement of Energy Performance is being used increasingly as a transactional component in financing, purchasing, and energy services contracts so that owners can request, verify, and obtain exemplary performance. ICF Consulting developed and administers the site, as well as the Commercial and Industrial Branch site that introduces participants to the tool.

ICF Consulting helped EPA develop benchmarking capability specifically for new building design. This tool, Target Finder, can help owners request designs that will become exemplary performers and help design teams set realistic goals for designing to high-performance standards. This has always been a challenge in an environment where codes only set good baseline performance standards and national comparative metrics for whole building performance do not exist. Owners that use a benchmark during design can track building performance using the same benchmark after construction to verify that it met the intended performance. Results may lead to lessons learned for the architects and engineers or periodic adjustment to keep the building tuned for maximum efficiency.

EPA continues to provide innovative and market transforming tools for commercial buildings and is currently working to integrate earnings per share and shareholder value messages so that building benchmarking becomes an extension of a high level corporate decision to invest wisely in efficiency. For more than a decade, ICF Consulting has helped EPA present investment opportunities and the tools required to make wise investment decisions. The building benchmark is an exciting new metric that uniquely gives large portfolio holders a national perspective from which to make good investment decisions.

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*Strategic Advantage.*
**Compelling Results.**

## About ICF Consulting

ICF Consulting is one of the world's leading consulting firms advising clients on managing the world's natural, physical, economic, and community resources in a sustainable way. The firm's more than 800 employees help clients optimize energy resources, meet environmental challenges, foster economic and community development, enhance transportation policy and projects, and manage information technology resources. ICF Consulting's clients include firms in the energy and utility industries, all levels of government, and national and multilateral organizations throughout the world. ICF Consulting has 15 offices around the globe, including offices in Bangkok, Fairfax, London, Los Angeles, Melbourne, Moscow, New York, San Francisco, Toronto, and Washington, D.C.

For more information on ICF Consulting's services, please visit our Web site at **www.icfconsulting.com.**

We welcome your comments and suggestions. Please contact us at 1.703.934.3659 or by e-mail at **consult@icfconsulting.com.**