Conceptual Perspectives on Energy Policy

*By Llewellyn King**

We live in very ugly times. What I mean by that is that now everything you say or write is recorded for posterity and quoted back to you. This makes life extremely unpleasant.

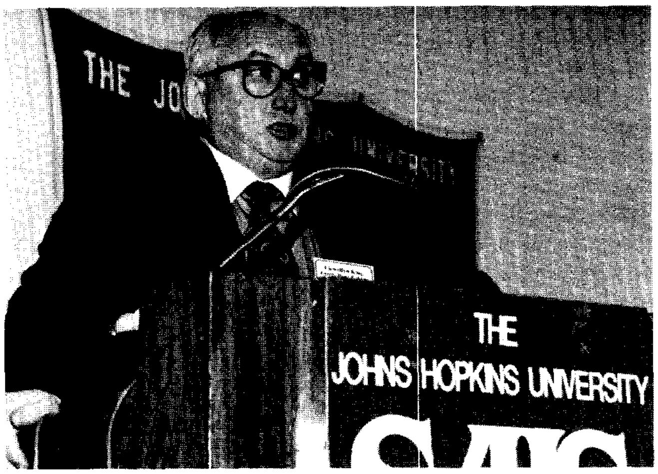
Happily, the technology wasn't quite as sophisticated in the '70s, and most of the things I said about energy policy in the '70s are hopefully lost because I was one of a very large crew of people, including three Presidents, the first Secretary of Energy and all sorts of people who briefly went under the title of "Energy Czar," which has a sort of circa 1917 ring to it. We all believed frantically, desperately, passionately - and wrongly - that what the country needed was "an energy policy."

In fact, we had an energy policy. It really didn't change very much from the energy crisis of 1973-74 until about 1986-87 and that policy was that we would be self-sufficient in energy. It hung about Richard Nixon's neck (I don't think that that was entirely fair as his neck was already fairly heavily burdened). This idea that we would have an energy policy and that we would be self-sufficient was a national feeling. We, as a nation, previously had never been dependent on a vital import. And it was horribilis to realize that in a way we didn't want dependency. We had joined the world community. So we set about solving this problem.

We also had a lot of exquisitely wrong assumptions, including assumptions about growth, demand, in-ground reserves. I vividly recall former Energy Deputy Secretary Jack O'Leary calling a group of reporters to the Old Post Office Building to tell them that they should stop worrying about natural gas. It was a depleted resource and they shouldn't worry about it any more. It wasn't part of the equation. He was very emphatic about this and had a lot of data to back it up. This was the policy.

But the policy really came out right after the oil embargo. It was first put forward in a very modest study done by Dixie Lee Ray for President Nixon. It was done by Gordon Smith (in fact I did the executive summary and I hope it doesn't exist anymore - I hope it's found the famed shredder). This was basically that we would maximize indigenous resources, no matter what the cost. Cost did not come into it. So came talk of uranium, coal for direct combustion, coal for gas, coal for synthetic fuels. Coal would also electrify the transportation system - railroads first, then all sorts of other marvelous electrifications after that - to reduce the dependency on imported oil.

Well, we didn't do it like that. As time went on in the '70s, the plans for self-sufficiency did not get more rational, they got less rational. They reached their ultimate in irrationality with the synthetic fuels project, Jimmy Carter's $88 billion white elephant, which seemed to most people at the time quite a good idea. Very shortly after that, the market took effect, the world changed, and the whole passion for self-sufficiency was revealed both to be impractical and of less importance than had been thought. We settled into a period of laissez-faire energy policy, which is probably close to the correct one.



Llewellyn King Addressing USAEE/NCAC Energy Policy Seminar

But the result of not actually having an energy policy means that energy policy is what is left over when other policies have taken their toll on the market - environmental policy, defense policy, clean air policy, statecraft, such as the cutting off of Iraqi oil or Iranian oil, etc.

But we do have underlying all of these things the powerful effects of the market. The market does not go where the policy thought it would or should. In fact, it went somewhere quite different. And consistently you see this. The market sends one set of figures and the policy sends another idea. Those countries that have plunged down the energy path with vast coercive policies have ended up as frequently as not with an uneconomic energy basis. It's very difficult to tell the French that their nuclear dependence may be uneconomic (I'm not sure whether it is or not). But the South Africans for their own reasons developed a very expensive synthetic oil, with the Lurgi process, and the Statoil state-owned company. Brazil rues the idea that it would be self-sufficient through ethanol by growing an enormous amount of sugar cane, which could have been better used to produce rum (it would have made the consumers happier and reduced the economic burden to taxpayers).

The market and its friend, technology, changed everything. We talked about technology, but if we were not funding it as part of energy policy at the national laboratories, which of course were funding solar, wind, ocean thermal radials, and various other exotic ideas, we did not see that there were any other technologies. Look at what happened: natural gas changed - after seismic, we found more of it; horizontal drilling meant we extracted more of it. We were dead wrong in the '70s. Now, I was at a meeting recently where they were talking about a 1,000 year supply of natural gas (the same number given to coal in the '70s). We also developed a better machine in which to use it - the aero-derivative turbine and the heavy frame turbine with a lot of technological input from aero-derivative turbines. Technology came and side-swiped the best-laid plans that not insensibly followed the technology and high and dry were all of these exotic technologies that were going to produce the self-

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* Llewellyn King is publisher of *The Energy Daily* and *White House Weekly*. This is an edited version of his comments before the joint United States Association for Energy Economics and National Capital Area Chapter Annual Washington Energy Policy Seminar, March 11, 1996, Washington, DC.

Perspectives on Energy Policy *(continued from page 13)*

sufficiency oil from shale, in situ gasification of coal, magnetohydrodynamics. These wonderful dinosaurs of ideas some of which still tick over in the secret places of the national laboratories where those who believe that one day we will repeat the '70s and they again can be men on horses, cantering.

In fact, it was not just government who got it wrong. Nobody got it more wrong than the oil companies, who rushed out and bought businesses they didn't understand – coal, they paid out enormous sums of money for shale leases, and they tried to get into the nuclear business. Others, believing that the oil business was finite, tried to get into real estate, office machines, and a series of things that they truly didn't understand – without great success.

I think we have reached a sort of maturity toward energy now that we do believe the market will take us where we have to go and that the externalities belong in other policies, such as security in the Middle East, the environment, the safety of supply. These are not energy questions. These, we now clearly see, are matters of national statecraft and I really think, preemptiveness. Because that is where we are. Let the market take care of the supply of the commodity, and many other complex relationships involved belong elsewhere, in other polices.

Shell North American Study *(continued from page 2)*

tion, as well as industry technology development and transfer across borders. Finally, Dr. Michot Foss is well known for her research and commentary on natural gas market developments in Mexico and North America. The CBA Energy Institute, housed in the College of Business Administration, will serve as the team's conduit to outside experts and as the distribution point for study results. The team's work-in-progress will serve as the basis for the CBA Energy Institute's North American Roundtable to be held June 5-7, 1996 in Houston. The Institute plans to engage in similar studies in other key world regions.

The $100,000 grant is one of two first year awards in the five-year, $1 million Shell Interdisciplinary Scholars Program at the University of Houston. The purpose of the program is to encourage interdisciplinary research and education at UH. "At Shell, we work in teams. Our concern is that students come out of universities prepared to work that way. Consequently, we need to foster interdisciplinary team-based faculty research, and we need faculty to extend that cooperation to academic courses and student involvement," says Mr. Phil Carroll, President and CEO of Shell Oil Company and member of the University of Houston Board of Regents.

The North American natural gas and electricity study will result in a new, interdisciplinary, team-taught course on North American energy transactions to be offered at the University of Houston in 1997. "Few universities in the world offer studies on international energy transactions and none are known to employ an interdisciplinary approach to the subject," says Professor Conine. The team members will also incorporate results and lessons from the Shell study into current course offerings.

Michelle Foss

How Much Profit Should Monopoly Networks Make?

Notes from the First BIEE Seminar on Competition and Regulation of Energy Utilities

Held on 6 March, this BIEE Seminar was opened by Dr. Tony White, former Head of Corporate Strategy, National Grid Company. The main points of his presentation were:

- The monopoly networks of gas and electricity (and also water) have regulatory regimes which seek to balance the interests of customers and shareholders. But the process of determining the acceptable level of profit is difficult since the evaluation of both the asset base and the appropriate cost of capital is uncertain. Moreover, there are problems in deciding how allowance should be made for future capital investment.
- The present system of cost regulation is RPI-x with periodic review. This has provided strong incentives to reduce controllable costs, but has done nothing to improve service, or provide appropriate signals for investments for the medium- to long-term.
- Even though the electricity and gas grids are often treated as "natural monopolies," they are not without risks, particularly if stranded assets such as under-utilized pipelines or wires or the pattern of gas or electricity supply were to change in the long-term.
- There would be advantages if regulation of the networks moved towards performance related regulation and away from undue emphasis on cost regulation and from the 5-year reviews. Performance against standards should be reflected in profits which would not need to be subject to review unless the rate of return fell outside a range of say, 4-11 percent. Such a system could provide real incentives over a range of policies, e.g., reduction of environmental impact.

In the ensuing discussion, points made included the following:

- It was not clear how performance targets would be set. The process would become politicized and thus subject to unpredictable variation.
- Perhaps the most important performance target related to the ongoing security of the networks and their ability to meet all reasonable demands (although there were differences of opinion as to what "reasonable" meant in this context.) In political terms, the risk aversion to system failure was very high.
- It was possible to introduce competition into the operation of the networks. The only real monopoly was control of the network. Operating services and installations could be sublet, and any "add-on" services developed by the network companies could be regarded as competitive activities.
- It might be possible to create a market in rights to use the capacity of Transco or the National Grid. This could provide signals on the economic value of new investments.
- The benefits intended to flow from privatization of the gas and electricity industries do not really apply to the monopoly infrastructures.
- The present regulatory framework discourages the network companies from promoting demand and load management.

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In cooperation with

THE INTERNATIONAL ASSOCIATION FOR ENERGY ECONOMICS

Presents

A Regional European Conference in Celebration of the 10th Anniversary of the Danish Association on:

TRANSPORT, ENERGY AND ENVIRONMENT

The importance of the transport sector in relation to energy demand and long term environmental goals.

To be held at Marienlyst, Elsinore, Denmark, 3-4 October 1996

The conference will focus on economic and broader policy issues as well as technological perspectives. Further, focus will be primarily on medium to long term aspects. The conference is primarily devoted to European issues, but papers addressing global aspects are also welcome. General conference themes:

- Transport sector in relation to energy demand and long term environmental goals
- Recent trends in transport energy demand
- Lifestyle changes and demand for energy and transportation
- Actions and policies to reduce urban air pollution
- Incentives and cost effectiveness of public policies
- Scope for further energy intensity improvements
- The potential for fuel substitution; towards non CO_2 fuels
- Implications for energy industries, the business sector and international trade

The conference is supported by the International Association for Energy Economics (IAEE) and the European Foundation for Cooperation in Energy Economics (EFCEE).

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- There was room for differences of opinion on whether the cash flow arising from the operation of the monopoly should be "ring-fenced" and dedicated to either reducing charges or providing for investment in the networks; or whether such cash flow should be regarded as the property of shareholders, with the companies having discretion to diversify as they felt fit.

M. J. Parker

Forum of Energy Financiers

A forum of financiers gathered in Dallas, Texas on February 26-27, 1996 to discuss among themselves and with potential investors the prospects for financing oil, gas and power projects in Latin America. The Forum was chaired by Dr. Hossein Razavi, Chief of the Oil and Gas Division at the World Bank and comprised high level executives from:

- Multilateral financiers including World Bank, International Finance Corporation (IFC), Inter-American Development Bank (IDB), Inter-American Investment Corporation (IIC) and the Multilateral Investment Guarantee Agency (MIGA).
- Bilateral financiers including, U.S. Export-Import Bank, Japan Export-Import Bank, U.S. Overseas Private Investment Corporation (OPIC), Canadian International Development Agency (CIDA), Canadian Export Development Corporation (CEDC), U.K. Export Credit Guarantee Department (ECGD), and Italy's Mediocredito Centrale.
- Commercial financiers including Chase Manhattan, GE Capital, Societe General, JP Morgan, and Duetche Morgan Grenfell.
- Rating agencies, Standard and Poors and Moody's.

In addition, many high level executives of energy companies from Latin America, U.S. and Europe participated in the Forum.

The main theme emerging throughout the discussions was that there is no specific shortage of funds for investment and even for debt financing of energy projects in Latin America. Indeed, most financiers expressed interest in expanding the level of their involvement in the region. Also, most financiers stated that they had a much higher lending capacity than currently utilized. They would be interested in financing "sustainable projects" undertaken by "sustainable entities" in "sustainable economies."

Despite availability of sufficient funds, many energy projects do not proceed to the implementation stage due to difficulty in securing finance. The Forum speakers attributed the difficulty to the following factors:

- The lack of clarity and stability in the business environment. It was noted that in many of the countries in the region, the rules of the game are either unclear or keep changing. This is particularly true for the relationship between the public and private sectors, and the role of the government entities as producers, as well as, regulators of the energy sector.
- The problems in the ownership and security structures of the proposed energy projects. While there is a lot of interest in investing in the sector, and thereby, many potential sponsors for energy projects, financiers do not come until they see clear risk mitigation arrangements. Risk mitigation requires mobilizing support from the governments, multilateral and bilateral financiers, as well as, guarantee and insurance arrangements with parties involved in construction and operation of the project. A pre-requisite for satisfactory risk mitigation is a suitable ownership structure, and the ultimate evidence for effec-

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International Conference on Petroleum Fiscal Regimes

United States Association for Energy Economics/School of Business, University of Alaska Anchorage/Journal of Energy Finance & Development/BP Exploration (Alaska)/USAEE (Alaska Chapter)
May 2-3, 1996, Hotel Captain Cook, Anchorage, Alaska

Overview

Experts from the United States, Canada, and Europe will meet to discuss and assess the emerging changes in international petroleum fiscal incentives/disincentives and their implications for global energy competition, investment, and socioeconomic developments in petroleum producing nations.

Program

On Thursday, May 2, 1996, the following papers will be presented: State-of-the-Art of Petroleum Fiscal Systems Design by D. Johnston; The Risk of Fiscal Reform by R Marks; Is Fiscal Efficiency the Panacea for Investors and Governments? by M.Castellani; The Impact of Petroleum Taxation of Russian Oil Production by J. Smith; Caveat Emptor: Purchasing Petroleum Industry Investment with Fiscal Incentives by M. Berman; International Comparative Analysis of Fiscal Systems for Oil by P. Van Meurs; Roulette and Offshore Exploration Development and Production by K. Forbes, J. Diemer, D. Van Wagener, and E. Zampelli; Oil Prices, Taxes, and the Response of States to Reserve Depletion by Charles Logsdon; Alberta's New Generic Oil Sands Royalty Regimes by R. Mason, P. Precht, and B. Remillard; Enabling Better Policy Decisions for Fiscal Change by P. Burden; Inter- jurisdictional Competition, Resource Rents, Tax Exporting, and Oil and Gas Severance Taxes by M. Fagan and K. Forbes; The Comparative Effects of Petroleum Fiscal Systems on Development and Exploration Decisions by A. Kemp and P. Jones.

On Friday, May 3, 1996, the following papers will be presented: Fiscal and Regulatory Regimes in the Former Soviet Union by R. Weiner; Fiscal Regimes and LNG Projects by G. Benson and G. Wetzel; The Impact of Taxation and Foreign Exchange Controls on the Location of Petroleum Investments in the Former Soviet Union by R. Rolfe; Alternative Tax Regimes and the Survival Probability of Oil Firms by J. E. Portillo; Oil Pricing and Traffic Taxation in Austria by A. Jochlinger; The Impact of Petroleum Taxes on Residential Heating Oil Demand in Denmark by J. Bentzen; Fiscal Versus Non-Fiscal Incentives by G. Kellas; Tax System Interactions and Fiscal Incentives, by K. Sunnevag; Fiscal Impact of Marginal Oil Field Development in Alaska by S. Goldsmith; Financial Strategies and Economic Performance of the Major Petroleum Companies, by J. Siu, C.G. Krouse, and F. Weston.

Who Should Attend

- Specialists from Petroleum Companies
- Petroleum Economists in Petroleum Producing States and Nations
- Petroleum Taxation Specialists in State, National, and International Organizations
- Energy Investment Specialists/Financing Institutions
- Oil and Natural Gas Executives
- Academics Specializing in Energy Taxation, Finance, and Investment
- Energy Environmental Analysts

Registration

Registration fees are $300 (includes registration materials, five meals, and many coffee breaks).

Registration Form
International Conference on Petroleum Fiscal Regimes
May 2-3, 1996 - Hotel Captain Cook, Anchorage, Alaska.

Name: ______________________
Title: ______________________
Company: ______________________
Address: ______________________
City/State/Zip: ______________________
Phone: ______________________

Please return this form with check payable to "UAA School of Business" to: Dr. Musa Essayyad, School of Business, University of Alaska Anchorage, 3211 Providence Dr., Anchorage, AK 99508.

Forum of Energy Financiers *(continued from page 15)*

tive risk management is a comprehensive security package.

- Fears about lack of sustainability. It was observed that the only hope for sustainable growth is an increase in domestic savings and development of domestic capital markets. In this regard, Latin America is facing a problem particularly when competing with Asia for capital resources. While national savings in Asia range between 30-40 percent, those of Latin American countries fall between 15-20 percent. With such low savings ratios, Latin American countries are becoming increasingly dependent on foreign flow of funds for their investment. This trend is one of concern for financiers who have previously experienced the debt crisis of the 1980s and the Mexican crisis of 1994.

The Forum of financiers analyzed a number of investment operations in the region to draw upon the lessons learned in each case. It was observed that most of the successful projects involved a "hybrid" of project-based and corporate-based financing. While pure project-based finance, with zero recourse to corporate sponsors, is practiced in the U.S., financing projects in developing countries does require some corporate sponsorship. The corporate sponsorship results in more effective implementation as well as less expensive financing arrangements. It was also noted that in the case of complex energy projects, joint ventures between private and state-owned entities are more likely to take off than projects sponsored by each side.

Hossein Razavi

Notes From the Polish Affiliate

At its February 26th meeting the Polish Affiliate of the IAEE elected Franciszek Krawczynski president. Mr. Krawczynski is Department Director in the Polish Ministry of Planning. Members of the Affiliate agreed to reorient the Association with the aim of taking a more active role in the Polish energy economy and in international activities with the objective of representing opinions of energy consumers in the hopes of influencing energy policy. The Affiliate now has 30 individual and five institutional members.

Zbigniew Mantorski

16th North American Conference Proceedings

The Proceedings of the 16th North American Conference of the IAEE/USAEE held at Dallas, Texas, November 1994 and entitled *The World Oil & Gas Industries in the 21st Century* are available from Headquarters at $55.95 for members and $75.95 for nonmembers. Send check and order form below to IAEE Headquarters, 28790 Chagrin Blvd, Suite 210, Cleveland OH, USA.

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Conference Announcement

IEW/JSER'96

Joint IEW/JSER International Conference on Energy, Economy, and Environment

June 25-27, 1996

Osaka University Convention Center, Osaka, Japan

The following topics will be covered:

- National, regional, and global energy projections.
- Energy resources assessment: fossil fuels, renewables, and nuclear resources.
- Analysis of energy-economy interactions.
- Innovative energy technology in supply, end-use, and environmental protection.
- Policy analysis of climate change issues.
- Energy conservation and efficiency policies.

Sponsoring Societies:

International Institute for Applied Systems Analysis (IIASA)
Japan Society of Energy and Resources (JSER)

Collaborating Societies:

Power Engineering Society of Institute of Electrical and Electronics Engineers (IEEE)
International Association for Energy Economics (IAEE)
Research Institute of Innovative Technology for the Earth (RITE)

Registration Fee: ¥30,000 before April 30, 1996 and ¥40,000 thereafter.

The conference program will include technical and discussion sessions on the above topics. Some sessions for plenary and invited papers are also planned. Industrial visits and social programs will be arranged during and after the conference. The official language throughout the conference will be English.

The conference will be held as a joint meeting of the JSER and the International Energy Workshop (IEW). JSER has organized an annual Energy Systems and Economics conference for more than ten years; the IEW has jointly organized annual meetings since 1981 in the USA and Austria. The joint meeting will include important features of the traditional JSER and IEW meetings. It will include discussions around the results of the IEW Poll on energy projections and also feature sessions on broader energy and environmental topics such as CO_2 control and recycling technologies.

For Further Information Contact:

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E-mail: pak@ise.eng.osaka-u.ac.jp

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Spring 1996 Publications List

Regulating Power: The Economics of Electricity in the Information Age, Carl Pechman (1993). 256 pages. Price: $90.00. Contact: Kluwer Academic Publishers, Order Dept., Box 358, Accord Station, Hingham, MA 02018-0358.

Service Opportunities for Electric Utilities: Creating Differentiated Products, Shmuel Oren & Stephen Smith (1993). 352 pages. Price: $85.00. Contact: Kluwer Academic Publishers, Order Dept., Box 358, Accord Station, Hingham, MA 02018-0358.

From Regulation to Competition: New Frontiers in Electricty Markets, Michael Einhorn (1994). 296 pages. Price: $110.00. Contact: Kluwer Academic Publishers, Order Dept., Box 358, Accord Station, Hingham, MA 02018-0358.

Electric Cooperatives: On the Threshold of a New Era (1996). 250 pages. Price: $79.00. Contact: Denise Benoit, Public Utilities Reports, Inc., 8229 Boone Blvd., Ste. 401, Vienna, VA 22182. Phone: 703-847-7720. Fax: 703-917-6964.

World Oil Companies (1995). Price: $312.00. Contact: FT Energy Publishing, Maple House, 149 Tottenham Court Road, London W1P 9LL, United Kingdom. Phone: 44-171-896-2698. Fax: 44-171-896-2276.

The Development of European Gas Markets: Environmental, Economic and Political Perspectives, Javier Estrada, Arild Moe and Kare Dahl Martinsen (1995). 352 Pages. Price £50.00. Contact: John Wiley & Sons, Ltd., Baffins Lane, Chichester, West Sussex, PO19 1UD, United Kingdom. Phone: 44-1243-770284. Fax: 44-1243-770225.

The Global Gas Guide. Price: $995.00. Contact: PIW Publications, 575 Broadway, 4th Floor, New York, NY 10012. Phone: 212-941-5500. Fax: 212-941-5509.

System of Taxation in the Russian Oil and Gas Industry and the Problems of Attracting Foreign Investment. Price: $375.00. Contact: PIW Publications, 575 Broadway, 4th Floor, New York, NY 10012. Phone: 212-941-5500. Fax: 212-941-5509.

Energy and the New China. Price: $795.00. Contact: PIW Publications, 575 Broadway, 4th Floor, New York, NY 10012. Phone: 212-941-5500. Fax: 212-941-5509.

Petroleum in Singapore - 1994/95. Price: $245.00. Contact: PIW Publications, 575 Broadway, 4th Floor, New York, NY 10012. Phone: 212-941-5500. Fax: 212-941-5509.

Natural Gas: Trade and Investment Opportunities in Russia and the CIS (1995). Price: £395. Contact: Julia Thomas, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE, United Kingdom. Phone: 44-171-957-5700. Fax: 44-171-321-2045.

The Changing Politics of International Energy Investment (1995). Price: £395. Contact: Julia Thomas, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE, United Kingdom. Phone: 44-171-957-5700. Fax: 44-171-321-2045.

Oil and Gas Quarterly. Price: £800. Contact: Julia Thomas, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE, United Kingdom. Phone: 44-171-957-5700. Fax: 44-171-321-2045.

Gas and Oil in Northeast Asia: A Briefing for Investors (Spring 1996). Price: £295. Contact: Julia Thomas, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE, United Kingdom. Phone: 44-171-957-5700. Fax: 44-171-321-2045.

Calendar

21-22 May 1996, Central & Eastern European Power Industries. Brno, Czech Republic. Contact: Debbie Graham, Customer Services Manager, IIR, Ltd., 6th Floor, 29 Bressenden Place, London SW1E 5DR. Phone: 44-171-915-5055. Fax: 44-171-915-5056.

27-30 May 1996, 19th IAEE International Conference - "Global Energy Transitions: With Emphasis on the Last Five Years of the Century". Budapest, Hungary. Contact: IAEE Headquarters, 28790 Chagrin Blvd., Ste. 210, Cleveland, OH 44122. Phone: 216-464-5365. Fax: 216-464-2737. E-Mail: IAEE@IAEE.org

3-7 June 1996, The 6th International Energy Conference and Exposition - Energex '96. Beijing, China. Contact: Liu Feng, China International Conference Center for Science and Technology, 44 Kexueyuan Nan Road, Shuangyushu, Beijing 100086, China. Phone: 86-1-257-5681. Fax: 86-1-257-5691.

13-14 June 1996, Project Finance for Oil & Gas in Latin America. Houston, Texas, USA. Contact: Institute for International Research, 708 Third Avenue, 4th Floor, New York, NY 10017. Phone: 212-661-8740. Fax: 216-661-6677.

17-18 June 1996, Fundamentals of Cogeneration and On-Site Generation. Detroit, MI. Contact: AEE Energy Seminars, PO Box 1026, Lilburn, GA 30226. Phone: 770-925-9633. Fax: 770-381-9865.

12-14 June 1996, Managing the Powerplant in a Competitive Environment. Richmond, VA. Contact: Managing the Powerplant, 6155 Almaden Expy., #350, San Jose, CA 95120. Phone: 408-997-6474. Fax: 408-997-6487.

23-28 June 1996, Implications of the World Energy Balance: A Strategic Vision for the Future. Houston, TX. Contact: Beth Woodman, Deputy Director for Programs, The Mosher Institute, 2121 W. Holcombe Blvd., Houston, TX 77030-3303. Fax: 713-677-7727.

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Conference Proceedings
18th IAEE International Conference
Washington, DC, July 5-8, 1995

The Proceedings from the 18th International Conference of the IAEE held in Washington, DC, are now available from IAEE Headquarters. Entitled *Into the Twenty-First Century: Harmonizing Energy Policy, Environment, and Sustainable Economic Growth*, the proceedings are available to members for $55.95 and to non-members for $75.95 (includes postage). Payment must be made in U.S. dollars with checks drawn on U.S. banks. To order copies, please complete the form below and mail together with your check to:

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Calendar *(continued from page 18)*

23-28 June 1996, 11th World Hydrogen Energy Conference - Hydrogen '96. Stuttgart, Germany. Contact: DECHEMA e.V., Tagungen, Theodor-Heuss-Allee 25, D-60486 Frankfurt am Main, Germany. Fax: 49-69-7564-304.

24-26 June 1996, Understanding Energy Derivatives. Mayfair Inter-Continental, London, U.K. Contact: The Customer Services Manager, The International Faculty of Finance, 2nd Floor, Market Towers, 1 Nine Elms Lane, London, SW8 5NQ, England. Phone: 44-171-344-3833. Fax: 44-171-344-0083.

25-27 June 1996, Joint IEW/JSER International Conference on Energy, Economy, and Environment. Contact: Assoc. Prof. Pyong Sik PAK, Secretary of NOC, Department of Information Systems Engineering, Faculty of Engineering, Osaka University, 2-1 Yamadaoka, Suita, Osaka 565, Japan. Phone: 81-6-879-7831. Fax: 81-6-879-7832.

28 June - 1 July, 1996, The Mechanics & Operations of Oil Trading. Durdent Court, Denham, Bucks, UK. Contact: Petroleum Economist, Baird House, 15/17 St Cross Street, London EC1N 8UN. Phone: 44-171-831-5588. Fax: 44-171-831-5313.

2-5 September 1996, National Energy Conference - CNE'96 "Improving Energy Efficiency in a Transition Economy". Neptun, Romania. Contact: CNE '96 Secretariat, c/o ICEMENERG, 8 Energeticienilor Blvd., 79619 Bucharest 3, Romania. Phone: 401-321-44-65. Fax: 401-321-10-10.

1-4 October 1996, 1996 Gasification Technologies Conference. San Francisco, California. Contact: James M. Childress, Executive Director, Gasification Technologies Council. Phone: 703-276-0110. Fax: 703-276-7662. E-Mail: jmchil@aol.com

28-30 October 1996, 17th Annual North American Conference of the USAEE/IAEE - "(De)Regulation of Energy: Intersecting Business, Economics and Policy". Boston, Massachusetts, USA. Contact: USAEE/IAEE Headquarters, 28790 Chagrin Blvd., Ste. 210, Cleveland, OH 44122. Phone: 216-464-5365. Fax: 216-464-2737. E-Mail: IAEE@IAEE.org

29 October - 2 November 1996, Energy and Power 1996 - EP China '96. China International Exhibition Centre, Beijing, P.R. China. Contact: Mr. Perry Tang, Adsale Exhibition Services Ltd., 14/F, Devon House, Taikoo Place, 979 King's Road, Quarry Bay, Hong Kong. Phone: 852-25163346. Fax: 852-25165024.

26-30 November 1996, 2nd Conference: Dam Safety Evaluation. Trivandrum, India. Contact: C.V.J. Varma, Member Secretary, Central Board of Irrigation & Power, Malcha Marg, Chanakyapuri, New Delhi-110021, India. Phone: 91-11-3015984/3016567. Fax: 91-11-3016347.

4-6 December 1996, POWER-GEN '96 International. Orlando, Florida, USA. Contact: Laura Ariane, Conference Manager, PennWell, 3050 Post Oak Blvd., Ste. 205, Houston, TX 77056. Phone: 713-963-6236. Fax: 713-963-6284. E-mail: lauraa@pennwell.com

11 December 1996, SNS Energy Day 1996 "Is There a Large-scale Future for Biomass Energy in Industrialized Countries?" Stockholm Sweden. Contact: Susanne Rothschild-Lundin. Phone: 46-8-453-99-77. Fax: 46-8-24-22-44.

22-24 January 1997, 20th IAEE International Conference. New Delhi, India. Contact: IAEE Headquarters, 28790 Chagrin Blvd., Ste. 210, Cleveland, OH 44122. Phone: 216-464-5365. Fax: 216-464-2737. E-Mail: IAEE@IAEE.org

8-10 September 1997, USAEE/IAEE 18th North American Conference. San Francisco, California, USA. Contact: USAEE/IAEE Headquarters, 28790 Chagrin Blvd., Ste. 210, Cleveland, OH 44122. Phone: 216-464-5365. Fax: 216-464-2737. E-Mail: IAEE@IAEE.org

11-15 November 1997, Fifth Chemical Congress of North America. Cancun, Quintana Roo, Mexico. Contact: 5NACC Congress Secretariat, c/o American Chemical Society, Room 420, 1155-16th St., NW, Washington, DC 20036. Phone: 202-872-4396. Fax: 202-872-6128.

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