

Vol. 7, No. 3 (\$10.00)

Affiliated with the IAEE

November, 1999

PRESIDENT'S MESSAGE

The Orlando Conference

The 20th Annual North American Conference is behind us, and my congratulations to Mike Yucel and Mary Barcella, the program co-chairs, along with the program committee for putting together an excellent conference. As anyone purchasing the Proceedings (p. 21) can see, it was a superb program. And a quick perusal of page 10 will demonstrate that a splendid time was had by all.

My congratulations to the awards winners, including Kathy Cooper and James Sweeney, who became USAEE Senior Fellows, William Nordhaus, who received the Adelman-Frankel Award for Contributions to the Profession, and especially Sophie Meritet who received the award for the best student paper.

There are a number of new developments regarding the Association, including the development of our webpage (p. 8), and we are now working on a survey of the members and proposing a new Mission Statement. Feedback is not only welcome, but actively sought. David DeAngelo, my successor, will see these through to fruition and we hope that the Association will emerge not necessarily transformed, but at least stronger and more vibrant.

The State of the Profession

To follow-up from my comments in the last newsletter, the profession of energy economics has definitely changed. Much of the research done in the 1970s is no longer performed, computer modeling is almost completely restricted to global warming studies, and there are very few courses taught on energy at all, let alone energy economics, in most universities.

What Went Wrong?

Partly, it was merely a matter of exogenous events. Oil prices returned to their previous level, electricity blackouts virtually ceased, natural gas disruptions in the U.S. ended and catalytic converters cut pollution without bankrupting the nation (or the automobile industry). Frankly, no terrorist worth his or her salt would stoop to hijack an OPEC ministers meeting these days.

But also, we have done much of it to ourselves. Partly by encouraging price decontrol, markets have become more rational and, despite occasional outcries, operate far more efficiently than when under government control. Success has brought its own punishment.

But not everything has been positive. The profession has been discredited because of the large body of work which is not only wrong, but often poorly done. The reasons for this are debatable, but partly it seems that any topic which becomes popular attracts a flood of work which is subject to

the law of diminishing returns. Many of the authors are now embarrassed by their work, and students in the library must be puzzled by the number of exotic theories developed to explain what seems a fairly straightforward set of developments.

And as someone whose work is completely applied, I certainly recognize that there is a place for basic, abstract research and that place is the university. However, there is also a place for basic research in the university (and the journals), something not universally accepted. This has led to a further estrangement between traditional economists and the corporate sector, which seems to be increasingly ignoring the work of academics.

Is There Still a Role for Energy Economists?

What is left without energy economists? Management would respond only to pressure from Wall Street, companies to the latest price, without much understanding of long-term trends (and deviations from them). Companies would heed warnings against excessive optimism (and spending and hiring) during the short-term oil price booms. Politicians would revise electricity and gas regulations without resort to economic analysis, instead relying on negotiations between interest groups to determine outcomes.

But we all know that would never happen, eh?

Mike Lynch

Editor's Corner

This issue of **Dialogue** includes (1) a paper by Joseph Dukert on energy interdependence in North America (presented by Joe at the USAEE/IAEE 20th Annual North American Conference in Orlando), (2) a follow-up paper by Dr. Maureen Crandall of the Industrial College of the Armed Forces on energy education, (3) responses to the "Energy Puzzler" posed by Adam Sieminski in the last issue of **Dialogue**, (4) a brief report on developments in energy markets in Mexico by Dr. George Baker, and (5) a summary of a portion of the sessions at the 20th Annual Conference.

Please join me in thanking the authors for their contributions to our newsletter.

Please send new articles (or suggestions for articles) and notices for publication in **Dialogue**. Include news of chapter events and appropriate press releases. Items can be sent via E-mail (paul-roberts@worldnet.att.net), by Fax (713-207-9962), or by regular mail (Reliant Energy, Incorporated, P.O. Box 1700, Houston TX 77251-1700). If you have questions, comments, or suggestions, I can be reached by phone at 713-207-5059.

Paul Roberts

Is The Energy Interdependence Of North America An Irreversible Phenomenon?

*By Joseph M. Dukert**

This paper will not offer any statistical sampling or complex mathematical presentation. It takes only a single (tongue-in-cheek) equation to express my hypothesis:

$$\text{GEE} + \text{I} > \text{TN}$$

That is to say: The Geographical Economics of Energy, once Infrastructure is in place, amounts to more than does Traditional Nationalism.

There is a North American energy market today. It is growing – in defiance of some diehard chauvinists and xenophobes in all three countries involved: Canada, the United States and Mexico. I believe the market that has evolved during the 1990's can survive any foreseeable result in the Mexican and U.S. presidential elections next year. Indeed (although I certainly am not predicting such a geopolitical upheaval as this), even if Quebec somehow separated itself from the rest of Canada, a shock like that wouldn't reverse the now-inexorable movement toward what I have long called "energy interdependence". Most significantly, these three countries need not adopt a uniform set of national energy policy goals; so the phenomenon does not interfere with pride of sovereignty. The effects of energy interdependence are far less contingent on who owns natural resources – or the facilities to convert them into end-use services – than on the groundrules by which the various players act.

The U.S. electricity market, for instance, has survived and prospered... despite the fact that it includes Federal entities such as TVA, investor-owned utilities, cooperatives, municipal suppliers, and a great variety of independent power producers.

The North American energy market (which I see as embracing all forms of energy exchange) is still a work in progress. It is incomplete geographically; and parts of it will need further lubrication before they can operate smoothly. But my basic contention is that once a critical number of pipelines, power plants, and transmission/distribution systems are in place and have begun to function they produce within this newly unified market a "ratcheting effect". Fresh progress might be delayed – or even halted (as it was for a few weeks recently after small-scale U.S. oil producers brought an anti-dumping suit against Mexico); but physical links will remain... and the mechanisms that hold the market together will not "slip back".

Energy interdependence has already started to bring enormous benefits to all three nations, with more in the offing. It stimulates efficient production, and it reduces costs to consumers. It promotes security of supply and reliability of service. Undeniably it can also be a source of friction – which is often particularized beyond vague feelings of nationalism. For instance, some U.S. environmentalists resent our country's heavy reliance on hydroelectricity from Canada (which also draws criticism for violating the land

rights of indigenous peoples). During some unusually hot days this summer there were residents of Ontario who may have been upset at the possibility of losing power locally while a large chunk of their country's electricity was being exported. As for the generally unexpressed annoyance that some Mexicans may feel because their country has now become a net importer of natural gas from north of the Rio Bravo, that goes without saying.

The mention of net energy trade balances brings up a crucial point, though. It is the regional beneficiaries of energy interdependence who, in my opinion, are most important in protecting and extending it. To adapt the old saying about politics, all energy end-use is "local". That explains why (assuming relatively free markets and adequate delivery capability) national averages in price and supply availabilities for these three countries explain little inherently about optimal energy-source and consumption patterns that can now develop. Within the macroeconomic picture, the net of imports and exports tells us less about the energy interdependence of these three countries than does the volume and nature of their energy trade. This is especially true in respect to electricity. Occasionally the United States has been a net exporter of electricity to Canada although generally the "trade balance" in power has run the other way. But the significant point is that some Canadian utilities trade more with neighboring utilities than with other Canadian provinces. It becomes a matter of demands of the moment, with a payoff in both cost control and system reliability.

How, then, do I define this glib term: "energy interdependence"? I see it as a situation in which changes in any of the numerous, variable energy factors within one country tend inevitably and rather quickly to result in significant reactions in another. It is much more direct, specific, and immediate than the kind of interrelationship within the global oil market whereby (for example) a cutback or expansion of Iraq's production affects the price of West Texas Intermediate. The phenomenon I speak of relates to contiguity and more-or-less continuous flows, which can and do change direction from time to time.

- Energy interdependence produces the circumstances under which an unusually heavy snow-pack in Canada can hold down wholesale power prices a few months later in the North Central States and New England.
- It makes possible a U.S. commitment to reduce its emissions of so-called "global warming gases" by moving toward an economy in 2020 that could derive somewhere around 35 quads of primary energy from natural gas, with perhaps one-sixth of that originating in Canada.
- It enables Mexico, despite a scarcity of domestically available capital, to plan (seriously and confidently) an expansion of one-third in its nationwide use of electricity within one decade – between 1997 and 2007 – while focusing simultaneously on the modernization of its petroleum sector.

I have proposed previously¹ that it was the coincidence of four separate factors within the past 10 years or so that was necessary and sufficient for the process to begin and take

* Joseph M. Dukert is an energy consultant located in Bethesda, MD (dukert@erols.com). This is an edited version of his paper presented at the 20th Annual North American Conference of the United States Association for Energy Economics, Orlando, Florida, August 30, 1999.

¹ See footnotes at end of text.

hold. These were:

1. Two trade agreements: The Canada-U.S. Free Trade Agreement acknowledged electricity as an international trade commodity; the North American Free Trade Agreement (NAFTA) eventually eliminated Mexico's restrictions on gas imports, and indirectly encouraged a larger role for market forces throughout that country's energy sector;
2. The piecemeal but persistent reforms of all three countries in the regulation of energy markets;
3. The increasingly intimate relationship between natural gas and electricity within North America, epitomized by highly efficient combined-cycle turbines fueled by clean gas; and
4. The emergence of electronic markets for Btu's, in which the same marketers buy and/or sell either gas or electricity in real time – drawing ultimately upon supplies from great distances, but providing delivery "here and now".

For many years almost every paper at a conference of this type revolved in one way or another around oil. In this case, though, that fuel holds a more minor role. This is not to say that oil trade in North America is unimportant. Transportation could not survive without oil, and this will remain true for decades to come. But oil and coal are both energy sources that all three countries would be content to ease away from domestically – in one way or another, and for different reasons.

In 1998, Mexico supplied the United States with nearly as much crude oil as did Saudi Arabia – while at the same time it imported almost 150,000 barrels a day of U.S. refined petroleum products. Yet by 2005 Mexico has said it will stop using high-sulfur residual oil completely as fuel for any of its

electricity generation or industrial boilers. The replacement is supposed to be either low-sulfur distillate (which explains why Pemex plans to invest \$3.1 billion within the next two years to modernize its own refineries) or – preferably – natural gas.

Canada is second only to Venezuela as a U.S. source of crude oil and refined products combined. It sells us almost as much petroleum as it uses domestically. Yet Canada's hydrocarbon resources lie mainly in the West, with the bulk of its population (and about half its refining capacity) in Ontario and Quebec – the East. So Canada has been importing about 600,000 barrels of oil and oil products from other countries – including the United States.

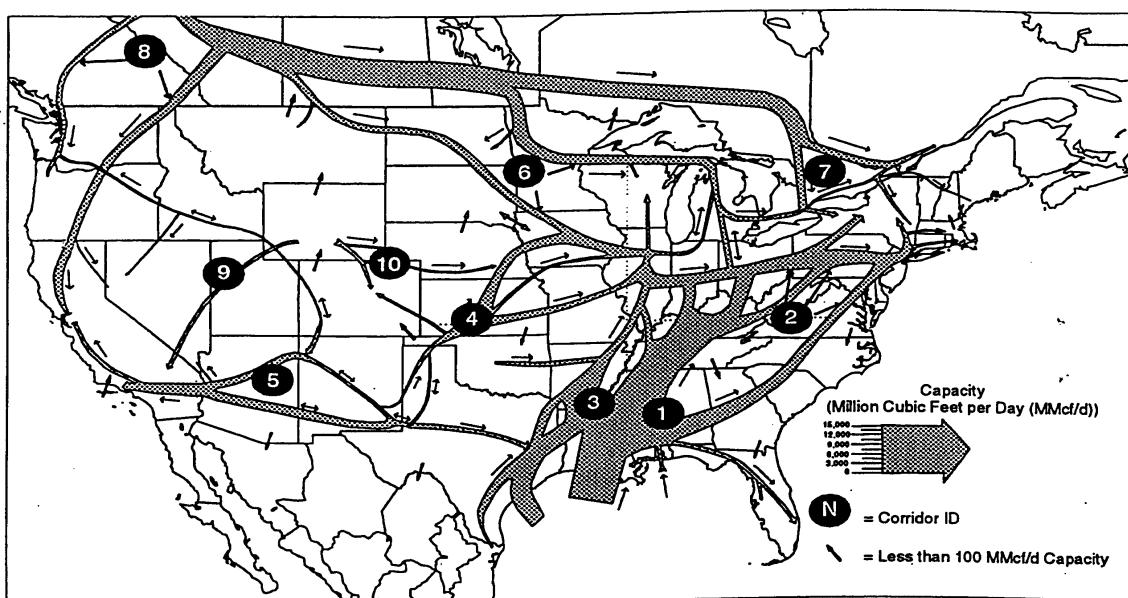
Our own country, of course, has been trying to minimize its oil dependency for more than a quarter century. For reasons of "energy security" it would prefer to draw on sources as close to home as possible. And, in light of concerns about the possibility of global climate change, it also has an interest in switching – everything else being equal – from oil to natural gas (whose combustion produces only about two-thirds as much carbon dioxide).

My first figure shows the major transportation corridors for natural gas in North America that center on the United States (as of 1997). This picture continues to change rapidly; but flow patterns are still close to what is shown here. Trade volume across the southern border is far smaller than between Canada and the United States – with only 15 billion cubic feet being exported to us by Mexico last year and 64 bcf moving south across the Texas, Arizona and California borders. By contrast, Canada is now the third largest gas producer in the world (ranking only behind the United States and Russia). In

(continued on page 4)

Deliverability on the Interstate Natural Gas Pipeline System

Energy Information Administration



Note: The 10 transportation corridors are: (1) Southwest–Southeast, (2) Southwest–Northeast, (3) Southwest–Midwest, (4) Southwest–Panhandle–Midwest, (5) Southwest–Western, (6) Canada–Midwest, (7) Canada–Northeast, (8) Canada–Western, (9) Rocky Mountains–Western, and (10) Rocky Mountains–Midwest.

Source: Energy Information Administration, EIA GIS-NG Geographic Information System, Natural Gas Pipeline State Border Capacity Database, as of December 1997.

Energy Interdependence (*continued from page 3*)

1998 Canada sold us more than three trillion cubic feet—about half of all it produces.

In the Northeastern United States a new gas line will soon appear. Large new fields are being developed off Canada's east coast, between Newfoundland and Nova Scotia; and pipelines have been approved to both Eastern Canada and New England. Cambridge Energy Research Associates has estimated that gas reserves in that area may roughly approach those in the Western Canada Sedimentary Basin.

As long ago as 1993, Michelle Foss predicted a new sort of activity on the Mexican-U.S. border. She and her co-authors for *The Energy Journal* envisioned a counterclockwise flow—with U.S. gas heading south generally, but with Mexican gas being piped into the United States at some point close to the Gulf². But that article concentrated on gas and oil, rather than gas and electricity. It is this newer intersource energy relationship that I have found absolutely critical.

Late in 1992 (even before NAFTA), President Carlos Salinas de Gortari pushed through a new "Law for the Public Service of Electric Power". It effectively redefined the way the Mexican Constitution would be implemented. The law listed exceptions in small-scale generation that were not to be "considered public service", which meant they could be privately owned. All the power they produced would have to be used by the private enterprise itself or sold to the national grid—which is owned and operated by the Mexican government. Today, incumbent President Ernesto Zedillo Ponce de Leon is trying to open the door wider to privatization with a Constitutional initiative; but whether or not domestic politics permit him to do so the Comision Federal de Electricidad (CFE) has begun an internal restructuring on its own that facilitates cooperation with free market principles. It parallels what has taken place in the United States—a division into generation, transmission, and distribution segments. A similar pattern has evolved in Canada as well, but at the provincial level (which is appropriate to that country's federal system in regard to energy). Alberta created a competitive market for generation in 1995, with a power pool for spot trading. Just this summer, Ontario Hydro split itself into the same three elements—generation, transmission, and a separated distribution system that permits free competition in both generation procurement and retail sales.

In April 1995, President Zedillo took an important complementary action in regard to natural gas. He reaffirmed the explicit Constitutional provision that the nation holds inalienable and non-transferable sovereignty (*dominio inalienable e imprescriptible*) over all hydrocarbons—which obviously include natural gas; but he announced that Pemex would concentrate public resources on the "strategic activities" (*actividades estratégicas*) of gas exploration, field development, and processing. He said this could succeed only by allowing the private sector (and even foreign enterprises) to move into the "non-strategic" aspects of gas transport, storage, and distribution. Zedillo took care to open up only those business areas that needed heavier investments of capital and modern technology than Mexico itself could afford at that point.

How has this worked out? Mexico desperately needs to increase its supply of electricity, for a growing population seeking higher living standards. The industrial base it is

nurturing needs energy to expand and modernize, whether this be in the form of process heat or power. An independent Energy Regulatory Commission (CRE) has been established; and it is dedicated to supervising the new rules of the game in a way that has been far more transparent and speedier than skeptics anticipated.

Pemex is no longer the only supplier of gas in Mexico; and for several years it has based its internal pricing on a basket of Texas gas sources, adjusted for transportation costs. Pipelines are being built and operated on an open access basis. Distribution franchises are being awarded right and left.

Near the end of 1997 a new pipeline to export U.S. gas opened just east of El Paso. It is owned 50-50 by El Paso Energy and Pemex. Its capacity is 212 million cubic feet per day; and ultimately four-fifths of this gas will be used by the Samalayuca Power Plant in the state of Chihuahua—which has already expanded and is due for enlargement in two more phases. The rest of the gas will go to the border city of Ciudad Juarez and to the city of Chihuahua, a couple hundred miles south—where Sempra Energy of San Diego is part of the consortium authorized by CRE to handle local distribution. This is just one of many parts of northern Mexico where a growing number of residents, businesses and industries will be using both U.S. gas and electricity produced from it. By next year Sempra Energy International will be delivering a larger volume of gas (300 mmcf/d) to the Presidente Juarez power plant in Rosarito (Baja California Norte). Eventually, such gas will also serve the cities of Tijuana, Tecate, and Ensenada³.

Two other examples are worth citing specifically, because each represents a different sort of "ratcheting forward". One also involves Baja California, but the other is associated with Monterrey—Mexico's third largest city, and an industrial area that owes part of its growth to a huge domestic pipeline (now more than 20 years old) that delivers gas from Mexico's southern fields in Chiapas and Tabasco. This is ironic, because that old pipeline had been intended originally to take gas all the way to the Texas border for sale to the United States. The story of how negotiations broke down then over price and politics, irritating U.S.-Mexican relations for many years, has been mistold many times by both sides; but my belief is that the time to initiate energy interdependence had simply not yet come⁴.

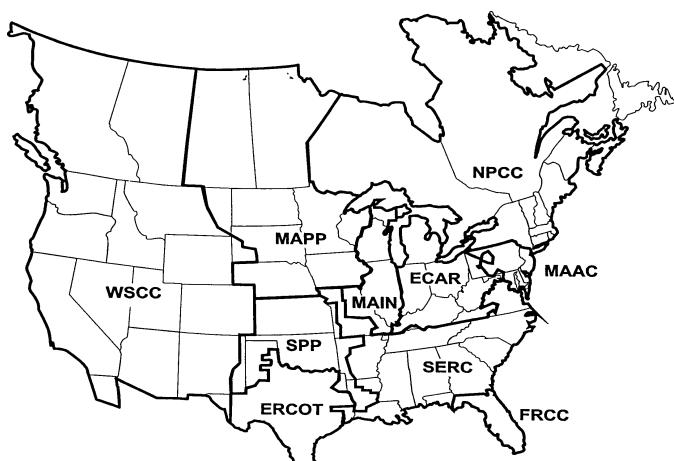
A new pipeline to Monterrey, bringing Texas gas southward, had been announced this year by KNE Energy, Inc., headquartered in Lakewood, Colorado. Prospects for the project really brightened when Mexico's Energy Minister (Luis Tellez Kuenzler) announced that his country would voluntarily and unilaterally eliminate the last remaining tariff on gas imports from the United States—years ahead of the NAFTA schedule. He took the move in Mexico's own interest, noting that the power industry in northern Mexico would get a boost from cheaper gas. In commodity trading with narrow margins, pennies make a difference; and this last 4-percent cut in selling price was considered quite important. But then came the almost frivolous dumping suit against Mexico and three other countries by small independent U.S. oil producers. Minister Tellez froze the waiver (one day before it was to take effect); and KNE instantly froze all engineering work on the pipeline. Fortunately for all concerned, the U.S. Department of Commerce threw out the suit a few weeks later; and KNE resumed work on the pipeline the

day after that – even before the Mexicans finally lifted the tariff. The line should be completed and ready to deliver Texas gas to Monterrey by the second or third quarter of next year.

This gas – an additional 275 mmcf/d or so – is intended for use partly in a new, independently operated generating unit. CRE had not yet announced its selection for that power plant at the time of this writing; but it was rumored in advance of the award that the new unit's generating capacity might intentionally exceed what was needed at its site – with the understanding that the surplus power would be allowed to flow directly to other industrial customers. If the reports prove correct, this would be a further market opening.

My final example is one about which little detail has been made available thus far by its sponsor, NRG, Inc. (a wholly owned subsidiary of Northern States Power Company). Within the next year or so, that company expects to receive the necessary approvals to build a 500-kilovolt transmission line from the Palo Verde Nuclear Power Plant in Arizona to a switchyard in Mexicali. From that point the electricity might eventually be dispatched to almost anywhere in northern Mexico. And this leads to the final illustration, a map of the regional groupings within the North American Electric Reliability Council.

NERC is a voluntary, non-governmental organization, founded in 1968 to help avert power outages through coordination and advance planning; but it is in the process of converting itself into a self-regulating body with powers to enforce group decisions. President Clinton's proposed Comprehensive Electricity Competition Act would authorize this country's Federal Energy Regulatory Commission (FERC) to compel compliance by U.S. entities that belong to this group; and the obvious hope is that Canada and Mexico would take similar measures.



ECAR
East Central Area Reliability Coordination Agreement

ERCOT
Electric Reliability Council of Texas

FRCC
Florida Reliability Coordinating Council

MAAC
Mid-Atlantic Area Council

MAIN
Mid-America Interconnected Network, Inc.

MAPP
Mid-Continent Area Power Pool

NPCC
Northeast Power Coordinating Council

SERC
Southeastern Electric Reliability Council

SPP
Southwest Power Pool

WSCC
Western Systems Coordinating Council

Canadian utilities take part in NERC's activities; and since July 1998 Quebec has been considered an integral part of what is called the Eastern Connection, which potentially offers synchronous transmission of alternating current (AC) across roughly two-thirds of the United States. British Columbia has long been a member of the Western Interconnection; and as a direct result of the Canada-U.S. Free Trade Agreement (signed in January 1988) B.C. Hydro has been on an equal footing with most U.S. utilities in access to the giant West Coast market – via a 6,300 MW intertie that ultimately links with northwest Mexico⁶. Quebec has direct-current (DC) connections with New York State and New England, as well as with Ontario and the Maritime Provinces. The Maritimes, in turn, are linked synchronously with New England. But (and this is intriguing) Quebec and Ontario can't "talk with each other" directly in electrical terms. Their AC power systems are not synchronized.

Now let's look southward quickly: Since 1985 the Western Systems Coordinating Council (WSCC) has included not only the adjacent Canadian provinces but also the northern part of Baja California – which is not really part of the Mexican national grid but which has had many years of experience exchanging large blocks of power with our State of California. U.S. electricity (much of it generated outside that state) flows south when needed. Substantial amounts of electrical energy from geothermal power plants in Mexico flow north.

The third internally synchronous interconnection in the United States lies wholly within Texas. Except for a relatively modest DC connection with the Eastern network (capable of transmitting about 800 MW), the bulk of Texas is almost cut off from direct access to the rest of our country in electrical terms. Yet ERCOT (the Electric Reliability Council of Texas) has now accorded "associate" status to Mexico's CFE. The Texas legislature periodically examines the desirability of establishing synchronous links to the east, west and north. I believe that eventually this will take place . . . and that a quick step beyond that will be either to synchronize with northern Mexico (which would be technically demanding) or to establish with that country DC connections (which are quite expensive). Alternating-current electricity is sold from ERCOT companies to Mexico spasmodically now, but the procedure involves isolating the generating source and the receiving community or enterprise from all other transmissions for the duration of the transfer. It is too clumsy for the more massive exchanges I foresee.

One major advantage of having either gas or electricity connections is that there are hourly, daily, weekly and seasonal variations in the demand for either commodity. Continuous operation – whether of a power plant or of gas fields and pipelines – results in higher long-term efficiency. That cuts costs. Because demand is ultimately a determinant of natural gas supply, the creation of a much larger, integrated market also encourages domestic production – whether it be from Canada's northern frontier, Mexico's old-but-largely-undeveloped Burgos Basin, or from deep offshore U.S. wells in the Gulf of Mexico (where the U.S. Senate has finally ratified a 1978 treaty with Mexico on demarcation of the two countries' respective economic zones). Greater gas production equates with greater consumption, in preference to other fuels that yield more pollutants; so the environment

(continued on page 6)

Energy Interdependence (*continued from page 5*)

is treated more kindly too. Finally, if a continental network existed (and we are far from that, as one can see by glancing at a map) competition by suppliers would yield lower end-use prices overall.

Even today, gas put into a pipeline in Alberta can be bought in Maryland (or Florida). To demonstrate the principle, Pemex International purchased Canadian gas in the same fashion as early as 1992. Of course the molecules don't move the entire distance. The transaction is accomplished by a series of electronic bookkeeping transfers, including a calculation of imputed transportation costs. But this does mean that there can now be price competition across two sets of borders.

The future will hold many new tests, including some we may not yet envision. KEN Energy (builder of the Monterrey pipeline) has said it expects to build a total of 5,000 MW of new generating capacity immediately adjacent to its tens of thousands of miles of gas pipeline. This will probably be in the form of about 10 different gas-fired units, sited strategically and operating as intermediate-load plants. Depending on the market situation at a given place and time, the company may be selling gas, electricity, or even space in the pipeline. It's a new world!

I suspect that states and provinces (within the United States and Canada respectively) will play almost as large a role as the central governments in the near- to mid-term future. In electricity industry restructuring at least, U.S. public utility commissions at the state level have filled a void while partisan failure to agree on national legislation could well continue through the 2000 election. There will be exceptions, of course, but I suggest that regional leaders near borders are likely to be responsive to the welfare of their constituents – who will probably be first and foremost among the beneficiaries of more fully developed energy interdependence. As to the U.S. presidential election, no candidate in either major party with a chance of reaching the White House would try to reverse the trend I have described.

In Mexico, where a three-way race for the presidency is shaping up, the outlook is somewhat less certain. There are a couple of scenarios that could raise some concern – although I personally believe at the moment they are unlikely. If Francisco Labastida Ochoa of the long-ruling PRI is elected, he might not carry through all of Zedillo's plans, but he surely wouldn't stop the movement in its tracks. PAN's Vicente Fox Quesada might actually speed things up, since he has even publicly favored debate on the privatization of Pemex. If Cuauhtemoc Cardenas Solorzano of the PRD (the farthest to the left) somehow won I suggest that a populist candidate of his ilk would be hard-pressed not to disappoint the citizens whose lives had been enriched recently by the advent of pipeline gas to replace the much more dangerous and less satisfactory bottled variety... and by adequate electricity for the first time. Cardenas' rhetoric would be different, but the ratchet would not slip. Gas flow from the north would not be turned off, and new electric lines would not be torn down.

In my opinion, the most serious threat to the trend I have described would come from a candidate of the PRI who had literally campaigned against Zedillo and had won an upset victory in the party's first primary this fall – either Roberto Madrazo Pintado or Manuel Bartlett Diaz. In either case, however, the new President would almost surely lack a

working majority in the National Assembly that could reverse course in respect to the energy links unless there was a nationwide groundswell of citizen clamor to do just that. Polling shows no evidence to point to such strong feeling among the Mexican populace, as distinguished from the politicians.

In such a time-limited presentation as this, I'm sure I have left many contentions open to challenge. A fuller exposition of the current situation (and a list of potentially fruitful lines of further investigation) is given in a monograph I have written on "The Evolution of the North American Energy Market" that is now in press. It is being published by the Center for Strategic and International Studies in Washington, DC, and should be released some time in October.

In closing, let me also admit that I cannot now quantify (or specifically qualify) the exact "point of irreversibility" in energy interdependence as it affects Mexico. But the pace in that direction should have been sufficient in the past few years (and even months) to suggest this much: If we have not reached it yet we are probably very, very close.

Footnotes

¹ Joseph M. Dukert, "North American Energy Interdependence", *Geopolitics of Energy*, December 1995, as well as the text of a more detailed presentation on June 29, 1995, at The Johns Hopkins School of Advanced International Studies – part of a course arranged for the Foreign Service Institute on "Energy, Environment, and U.S. Economic Interests".

² Michelle Michot Foss, Francisco Garcia Hernandez, and William A. Johnson, "The Economics of Natural Gas in Mexico – Revisited", *The Energy Journal*, vol. 14, no. 3, pp. 17-50.

³ Don Stowers, "Mexico Generating Interest", *Hart Energy Markets*, January 1999, p. 18.

⁴ On the basis of extensive personal interviews with those who were involved firsthand (on both sides) and U.S. government files that have been examined under provisions of the Freedom of Information Act, the author intends to produce a fresh account of this matter – perhaps in connection with his long-delayed doctoral dissertation.

⁵ U.S. Department of Energy, Energy Information Administration, U.S. Electricity Trade with Canada and Mexico (January 1992), p. 6. (This is an excellent basic reference work, although it is now far out of date because of developments described briefly in this paper.)

****** USAEE Survey On Its Way ******

Keep your eyes open for the forthcoming USAEE Membership Survey. The USAEE held a Long Term Strategy Committee meeting preceding the Orlando North American Conference. It was decided that a survey needs to be completed to help guide the organization toward productive growth. USAEE Council wants to deliver to its members the services you need to help you in your day to day work. Toward this end, the survey will query you on what services you utilize and what services need to be developed. Please respond to this survey so that the USAEE Council can act on your requests to improve the organization.

USAEE/IAEE 20th Annual North American Conference

By Gürçan Gülen and Paul Roberts

Following is a brief summary of a small portion of the conference in Orlando:

The keynote address was provided by **Paula G. Rosput**, President & COO, Atlanta Gas Light. Ms. Rosput reminisced that her last presentation before USAEE/IAEE had been in 1980 when she had given a paper on the cost-effectiveness of demand-versus supply-side programs in lease cost utility planning. She observed that the research done at that time was "good work for economists" where analysis of elasticities and related concepts were still understandable and influential with policymakers. She lamented that in the intervening years, the journals of our profession have become increasingly dominated by mathematical economics. While it is laudable that quantitative rigor has shaped our profession, today's economic journals cannot be easily read and understood by policymakers. As a result, Ms. Rosput observed, "the influence of our profession has waned appreciably." The term "economist" all too often alludes to "hired gun" and the quality of honest discourse has declined. Ms. Rosput used the Georgia retail deregulation debate as a case in point. She lamented that many of the key outcomes of the restructuring reflected "the triumph of policies over down-to-earth economics." She urged members to get a practical focus on our industry issues and communicate our analysis in a rigorous but highly understandable manner.

One of the dual general sessions on Monday, chaired by **Paul Roberts**, Manager of Risk Control for Reliant Energy, Inc., addressed "Electric Restructuring". **J. Christopher Allen**, Vice President, Business Development, Reliant Energy Wholesale Group, described the changes in the organization of Reliant Energy and the strategy which the company is pursuing in the gas and power industries. **Dr. William Hogan**, of the Center for Business & Government at Harvard University, discussed "Electric Transmission Adequacy And Market Institutions", commenting especially on the notice of proposed rulemaking issued by the Federal Energy Regulatory Commission relative to regional transmission organizations. **Dr. John Jurewitz**, Manager of Regulatory Policy for Southern California Edison Company, described the changes in power markets in California and the mechanisms for recovery of stranded costs. **Stephen R. Connors**, Director, Analysis Group for Regional Electricity Alternatives at the Massachusetts Institute of Technology, addressed "Missing Links in the Transition to a Competitive Electric Industry", commenting especially on technology and environmental issues.

Peter C. Fusaro, President of Global Change Associates, chaired a session addressing "Energy Financing Practices and Innovation". **Gregory Pickett**, an advisor to Tokyo Gas Co., described the use of the real options theory to measure the value of building long distance natural gas pipelines and/or LNG routes with excess capacity. **Andrew Kleit** and **Ahmet Kocagil** presented a paper showing a potentially profitable spread trading strategy in commodity futures based on the analysis of the asymmetric nature of arbitrage opportunities. **Lynda Clemonns**, Vice President of Enron Capital & Trade Resources, enlightened the audience on the relatively new topic of weather risk management.

Dr. Gürçan Gülen from the Energy Institute at University of Houston chaired a session on "North American Gas and Power". **Shree Vikas** from ICF Resources Incorporated presented a sophisticated model of the North American natural gas market. **Alberto Elizalde Baltierra**, who is a Ph.D. student at Institut Français du Pétrole, discussed the prospects for Mexican natural gas exports to the U.S. He addressed reform efforts of the Mexican government in the downstream natural gas sector and in the electricity sector as potential drivers of faster development of natural gas resources of Mexico. **Joseph Dukert**, an energy consultant, discussed the increasing and irreversible nature of "energy interdependence" between the U.S. and Canada, and indicated that such interdependence between the U.S. and Mexico will soon become a reality, if it has not already. (See Joe Dukert's article in this issue.) Finally, **Frances Wood** from OnLocation Inc compared two environmental policies in terms of their effects on electricity prices and emissions. Results indicate that the first policy reduces SO₂, NO_x and CO₂ without significant cost effects whereas the second policy raises the price of electricity as much as 50% although it also provides much more significant carbon emission reductions.

One of the dual general sessions on Tuesday addressed "Natural Gas Markets in the New Century" and was chaired by **Les Deman**, Director, Fundamental Research & Analysis of Coral Energy. **Joe Foster**, CEO, Newfield Exploration, described the current state of the natural gas industry, noting the higher levels of drilling necessary to maintain production and the gas reserve study being completed by the National Petroleum Council. **Matthew R. Simmons**, President of Simmons & Company International, described the increasing gas demand and the factors which could cause demand to increase even faster. He said that much of the new production will have to come from the frontier areas. **Terrance McGill**, President of Columbia Gulf Transmission Company, discussed the changes taking place in gas transmission, especially the decline of long term firm capacity contracts and the mandate for flexibility.

Donald Hertzmark, a consultant, chaired a session on Power Markets in Developing Economies. **Boyko Nitzov** from Institute for Energy Economics & Policy at Sarkeys Energy Center of the University of Oklahoma discussed the barriers to seamless cross-border energy trade in the Balkans despite the international agreements such as GATS. **Dr. Gürçan Gülen** from the Energy Institute at University of Houston provided an evaluation of electricity interconnections between Turkey and its neighbors as well as the potential for developing the Mediterranean Power Ring and a similar regional network in the Black Sea region. **Romeo Pacudan** from Asian Institute of Technology provided a comparison of coal and natural gas as competing fuels in the Asia-pacific region. **Hyun-Joon Chang**, the president of Korean Energy Economics Institute, summarized the restructuring process of the Korean Electricity Sector and provided a price reform proposal.

Mitchell Rothman from Hagler Bailly chaired a session on distributed generation. The Best Student Paper Award winner, **Sophie Méritet** from Université de Paris - Dauphine, presented her award-winning paper on the role of gas

(continued on page 8)

N.A. Conference Summary (*continued from page 7*)

microturbines as a prime example of distributed generation technologies. **Stephanie Battles** from the Energy Information Administration pointed out the importance of cogeneration in her review of historical data of electricity generation in the U.S. manufacturing sector.

Jim Sweeney chaired a session on Alternative Fuel Vehicles. **Tom Crackette** from the California Air Resource Board emphasized the need for cleaner vehicles and fuels and provided an overview of alternatives that are currently available or under development. **Brad Bates**, manager of Alternative Power Sources Technology at Ford Motor Company, presented Ford's P2000 (i.e., 2000 pounds not year 2000) mid-size sedan. **David Montgomery** from Charles River Associates emphasized the importance of the option value of being flexible with respect to alternative fuel and car technologies and suggested that "a central planner should make the option value calculation...mostly regarding health and environmental effects..."

***** NEW *****

USAEE WEBSITE

That's right, USAEE is now on-line. Come visit us at www.usaee.org. Some of the features available on the website include the following:

- Overview/Objectives of USAEE
- Council Member Listing & Contacts
- Chapter President Listing & News
- Full Issues of the USAEE Dialogue
- Events/Speakers List
- Calendar of USAEE/IAEE & Other Conferences
- USAEE On-Line Discussion Forum
- Membership Database

Of interest is the new Yahoo! USAEE discussion group. We want to foster active discussion within the field of energy economics. Complete instructions on how to get registered for participation in this on-line discuss group are located at the USAEE website.

We're sure that you will find our new site full of up-to-date information. Please feel free to drop USAEE Headquarters an email at usaee@usaee.org if you have any suggestions on how to improve the site.

Position Available

Manager-Energy & Financial Markets Analysis

EOG Resources, Inc. has an immediate opportunity for a Manager-Energy & Financial Markets Analysis. This person will serve as a primary supplier of information to senior management for the assessment of current and longer-term trends in the natural gas market. Utilizes a variety of industry sources for obtaining and maintaining current industry information including records on production in the North American producing regions, storage in producing and consuming regions, consumption relating to the energy industry, and drilling data pertaining to wells currently in the process of being drilled. Prepares regular studies focusing on supply and demand trends in the North American natural gas market. Makes recommendations based on analysis of collected data as to the company's capital investments and hedging strategy. Provides analytical support on certain corporate finance matters, including debt capital markets analysis, structured financing analysis, corporate commercial banking relationships, rating agency relationships, and special projects as necessary. The position requires a Bachelor's degree in a quantitative discipline or a Master's degree with a quantitative focus is required. Five or more years industry/financial analysis or equivalent related experience preferred. Excellent PC skills including Microsoft Word, Excel, etc. Salary commensurate with experience. Relocation available. Interested candidates can fax, mail or e-mail their resumes to: EOG Resources, Inc. 1200 Smith Street Houston, TX 77002 Attn: Kyla Laird, Fax (713) 651-6995, or e-mail Kyla_Laird@Enron.com

USAEE Mission Statement

At the USAEE Long Term Strategy Committee meeting in Orlando it was decided to re-write the organization's mission statement. President-Elect Dave DeAngelo will chair a committee of individuals charged with bringing to Council a new mission statement for consideration at the Philadelphia North American Conference. This effort is taking part given the need to position the association well into the 21st century. Those of you that would like to e-mail Dave DeAngelo direct with your comments regarding the mission of the association, please feel free to contact him at djdeangelo@papl.com or call 610-774-4154. Your support, guidance and help in this project is greatly appreciated.

Conference Proceedings 19th North American Conference Albuquerque, New Mexico, October 19-21, 1998

The Proceedings from the 19th Annual North American Conference of the USAEE/IAEE held in Albuquerque, New Mexico, are now available from USAEE Headquarters. Entitled *Technology's Critical Role in Energy & Environmental Markets*, the proceedings are available to members for \$85.00 and to nonmembers for \$105.00 (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:

Order Department, USAEE/IAEE Headquarters, 28790 Chagrin Blvd., Suite 350 Cleveland, OH 44122, USA

Name _____

Address _____

City, State, Mail Code and Country _____

Please send me _____ copies @ \$85.00 each (member rate) \$105.00 each (nonmember rate).
Total enclosed \$ _____ Check must be in U.S. dollars and drawn on a U.S. bank, payable to IAEE.

23rd ANNUAL IAEE INTERNATIONAL CONFERENCE

Hilton Sydney Hotel, Sydney, Australia, 7-10 June 2000

Conference Theme

Energy Markets and the New Millennium: Economics, Environment, Security of Supply

The year 2000 is an ideal time to reflect on the dominant role of fossil fuels over the past century and assess how this pattern of reliance will change in the context of the liberalisation of energy markets and environmental pressures and concerns. This conference will consider: electricity market liberalisation: international experiences and expectations; the economics of renewable energy technologies; Asian energy markets and macro-financial management; liberalisation of international trade in energy resources; the geopolitics of energy supply: social, cultural, political and philosophical dimensions of energy sector restructuring; transport policy in the new millennium; and carbon sequestration and recycling.

Sydney (the Olympic City in the year 2000) has many attractions for both participants and accompanying persons, in addition to the world famous Harbour Bridge and Opera House. City and harbour tours are readily available, while longer trips into the Australian "bush" can be made with a hire car. World class vineyards are just two hours drive to the north of Sydney, sharing the area with some of Australia's largest open cast coal mines. The nation's capital, Canberra, is a 40-minute flight to the south of Sydney.

CALL FOR PAPERS

Deadline for Submission of Abstracts: 7 January 2000

Abstracts should be between 300 and 500 words, giving an overview of the topic to be covered. Full details, including the title of the paper, name of the author(s), address(es), telephone, fax and email numbers, should also be sent. At least one author from an accepted paper must pay the registration fee and attend the conference to present the paper. Anyone interested in organising a session should propose topics, objectives and possible speakers to the Programme Chairmen well in advance of the deadline for submission of abstracts. All abstracts, session proposals and related inquiries should be directed to:

Bob Bartels and Denzil Fiebig
23rd Annual International Conference of the IAEE
Department of Econometrics, Sydney University
Sydney, NSW 2006, AUSTRALIA
Fax: (+612) 9351 6409
Email: R.Bartels@econ.usyd.edu.au and denzilf@econ.usyd.edu.au

Deadlines

Abstract Submission Deadline: 7 January 2000
Notification of Abstract Acceptance: 1 February 2000
Manuscript Submission Deadline: 1 March 2000



Scenes from the Orlando Meeting

Clockwise from Lower Left

President Mike Lynch and Paula Rosput in the hotel gardens
Paula Rosput at opening session
Program Co-Chair Mary Barcella and Mike Lynch
Past President Bill Hogan and Peter Pearson
Carol Dahl congratulates USAEE Student Best Paper award winner Sophie Méritet
Mike Lynch holding forth
Ludwig Von Drake and friends Arnie Baker, John Jimison, Mindy Jimison and Len Coburn





UNITED STATES ASSOCIATION FOR ENERGY ECONOMICS
INTERNATIONAL ASSOCIATION FOR ENERGY ECONOMICS

IA
EE

21st Annual North American Conference

TRANSFORMING ENERGY

Wyndham Franklin Plaza Hotel - Philadelphia, Pennsylvania - USA
September 24 - 27, 2000

Session Themes and Topics

Transportation Technologies

- PNGV, Where Might Technology Take Us?
- What Role May Fuel Cells Play?

Reforming Electricity Markets

- Prospects for Distributed Generation
- Pricing Electricity
- Telecommunications and Electricity

Convergence: Gas & Power Industries

- Commodity Convergence
- Risk Management

Expanding the Paper Market

- The Role of the Paper Market in Commodity Markets

Charting the Path: Forces and Forecasts

- Relying on Gas: Will the Price Be Right?
- Coal: Surviving the Environmental Challenge
- Oil: Global Strategies for Growth

Electricity: Pricing Outlook in Wholesale and Retail

***** CALL FOR PAPERS *****

Deadline for Submission of Abstracts: May 15, 2000
(Please include your CV when submitting your abstract.)

Anyone interested in organizing a session should propose topics,
motivations and possible speakers to:

Mary Novak - 781-221-0340 / novak@wefac.com

Abstracts should be between 200-1500 words and must clearly address the theme of the conference and topics above to be considered for presentation at the meeting. At least one author from an accepted paper must pay the registration fees and attend the conference to present the paper. All abstracts/proposed sessions and inquiries should be submitted to:

David Williams, Executive Director, USAEE/IAEE
28790 Chagrin Blvd., Suite 350, Cleveland, OH 44122 USA
Phone: 216-464-2785 / Fax: 216-464-2768 / E-mail: iaee@iaee.org

General Conference Chair: David J. DeAngelo
Program Chair: Mary Novak
Arrangements Chair: David L. Williams

AGAIN THIS YEAR: USAEE Best Student Paper Award (\$250.00 cash prize plus waiver of conference registration fees). If interested, please contact USAEE Headquarters for detailed application/guidelines.

ICAF Energy Industry Study: In Touch with Industry

*Ed. Note: The April, 1997 issue of **Dialogue** carried an article entitled "On Teaching Energy and Economics to the Military," by Maureen Crandall (crandallm@ndu.edu), Professor of Economics at the Industrial College of the Armed Forces, National Defense University. This article updates that earlier piece.*

As part of the 10-month long course of study for the master's degree at the National Defense University, each Industrial College of the Armed Forces (ICAF) student must study and analyze a "strategic industry." Each industry study, as part of its curriculum, features local, domestic and foreign field trips, in addition to assigned readings and classroom sessions. Students build up their industry knowledge before conferring with energy company representatives or visiting energy sites. Much of what we do through our visits and guest speakers involves exposing the students to different corporate visions, strategies, styles and cultures.

The industry study program has existed since Bernard Baruch founded the school in 1924. The college's current enrollment is just over 300 senior military and government civilian students, who select one out of 20 strategic industries, to pursue for a six-month course of study. Papers and reports are required, and at the conclusion of the term each seminar prepares a group report on the state of its industry and the outlook for the next 10-15 years. All 20 of these papers are published as a book each year entitled "In Touch with Industry."

With the help of two senior military officers, I lead the energy industry study seminar of about 15 students. I also teach the student group microeconomics. For the past several years, the themes of the energy course have been competition, deregulation, privatization, regional integration, and technology development. At the executive level we cover oil, gas, coal, nuclear, renewables, electricity issues, changing patterns of energy use, and environmental concerns as they relate to energy. In addition to some local field trips, we have the opportunity near the end of the course for a week's domestic travel, and up to two weeks of foreign travel, budget permitting.

Local and Domestic Energy Travels

In the local area, we always call on DOE for half a day to hear the Administration's energy views and explore the current national energy strategy. This past year we were fortunate to be able to include a day's visit with Nymex, focusing on both physicals and financials and visiting the trading floor. On our way to one of CONSOL's Morgantown, WV underground coal mines, we spent several hours with Solarex, hearing about the potential for photovoltaics and touring the plant.

For domestic travels, we have typically alternated by year between Houston and the West Coast, staying either at military bases or in humble hotels. In both 1999 and 1997, we called on companies in Houston, including Anadarko, BP, Amoco, BP Amoco, Enron, Exxon, Chevron, Halliburton/Brown & Root, Koch Energy Services, Landmark Graphics, Reliant Energy, and Shell. In California in 1998 and earlier years, we visited with ARCO, high desert wind and sunsites, Chevron, Enron, BP Solar, CPUC, PG&E, and NRDC. 1998

was an interesting time to be discussing electricity in California. In both locations, this array of companies provides the students with ample contrasts for assessing both corporate visions for the future, and company attitudes toward changes in both market and regulatory environments. Since most of the students are trained as engineers and are new to economics, they benefit from combining their classroom and executive meetings with "kick the tires" visits to energy sites.

Foreign Travels

For both domestic and foreign travel, the intent is always to choose destinations of key energy importance to United States' interests in both the short and longer run. Most recently, 1999 took us to Caracas and Maracaibo, Buenos Aires, and Rio de Janeiro, while 1998 was the year for the Caspian, as we visited Baku - President Aliev received us - and called on companies and government agencies in both Istanbul and Ankara. In 1997, we were in the UK, Germany, and France, talking international oil developments, electricity and gas deregulation and competition, EU directives, and energy security and the environment.

Results

What do we get out of all of these travels? Students are forced to think at the strategic level, reaching beyond the confines of their previous knowledge and experience.

Venezuela

Using this year's international travel as an example, we learned a great deal about the key role of Venezuela, and its ongoing political change. Venezuela one of the largest suppliers of oil to the U.S. market, and we were there when the new Chavez government was beginning to signal great political movement, and right about the time the decision was made to cut back oil production. In late March, the *Oil and Gas Journal* published an article by Ali Rodriguez Araque, Minister of Energy and Mines, on why oil was too crucial to be left to fluctuations of markets. Clearly there was a difference in perception between the seminar's view and those of our hosts. Private sector reactions of the companies we called on were understandably cautious, with most waiting to see how the landscape would develop. In addition, we called on PdVSA and on Intevep, where we heard about the promise of the Orinoco tar sands, orimulsion, and how Venezuela sees itself as a future provider of energy on the world market.

At a reception in Caracas, we were confronted with criticisms about U.S. policy toward Venezuela. The speaker derided the notion of the U.S. SPR, suggesting that the U.S. treat Venezuela as its SPR; since oil degrades in his view after 3-4 years in storage, why is the U.S. spending substantial resources to maintain the SPR? All the U.S. needs to do is ask Venezuela for additional supplies when the need arises. The speaker felt the U.S. treats Venezuela differently from Colombia or Peru, yet the former is in the best position to support the U.S. and has effectively put its oil resources at our disposal. Noting that before the Gulf War no less than five high ranking U.S. officials, including the Secretary of Defense, visited Venezuela to ascertain its continued oil support, according to the speaker, the minute the war was over the U.S. proceeded to slap Venezuela with onerous restrictions on fishing, no support for orimulsion exports into U.S. markets (Florida specifically), and protectionist mea-

sures on steel exports. He maintained that orimulsion is a fuel that is superior to coal, can substitute for fuel oil, and is abundant; should the U.S. fail to commit now, it may find that in 40-50 years time, with the decline in crude reserves in the Middle East and Mexico, Venezuela may have found other markets and the U.S. will have lost a strategic opportunity. Moreover, the point was made that in the eyes of Venezuela, Middle East oil is the most expensive fuel due to transportation and the defense costs involved in taking care of a part of the world with whom the U.S. does not share any cultural, religious, or democratic government ties. While our group certainly did not have policymaking authority, the Venezuelan message was told to any visitor.

The day at Maracaibo took us back to the cradle of the oil industry, in a sense similar to our earlier visit to Baku, at the turn of the century another cradle of the industry. We had all seen pictures of the structures in Lake Maracaibo, but nothing can compare with actually seeing them, and talking with the engineers about decline rates, secondary recovery, and the impacts of production cutbacks.

Venezuela sees itself as having a future role to play in greater regional integration of energy, with proposals to export electric power, and perhaps in due course to pipe oil southward to its neighbors. Yet Venezuela is experiencing a "bad patch" of economics at the moment, and these big-ticket items are likely to put off indefinitely. Privatization is not open for discussion, although greater foreign participation is.

Argentina

Argentina and its energy policy of privatization and competition served as a contrast to Venezuela. We called first at the American Embassy, for their views on Mercosur, on macroeconomic developments after the devaluation of the Brazilian real and its effects on Argentina, and their outlook on energy developments. Other calls included CAMMESA to talk about Argentina's experience with electricity deregulation, which antedates that of the U.S., the Secretariat of Energy, Esso, a visit to Reliant Energy's cogeneration facility at one of Siderar's steel plants, a visit to Atucha I nuclear plant built with the Candu technology and to discuss the outlook for nuclear power, and lastly an excellent session with YPF, now privatized, efficient, and in the process at the time of being bought by Repsol. Armed with our readings and maps, it became clear that there is enormous potential for continued cross-border integration of both electricity and gas developments throughout the Southern Cone, and thus as well a growing potential market for U.S. companies.

Brazil

Finally, to Rio, where the path toward deregulation and privatization appeared to the seminar to be much more tentative than in Argentina, particularly after Brazil's recent and continuing macroeconomic turmoil. We met with the industrialists association of Rio de Janeiro, the state oil company Petrobras, the national development bank BNDES, Enron, the Brazilian Institute of Petroleum, the state electricity company Eletrobras, and ANP, the government agency that is opening tracts for private petroleum bidding and development. Disappointment with centralized planning and the performance of government monopolies appears to be leading to the cautious introduction of market forces and the liberalization of energy prices. Large-scale transfers of state assets have begun, as commercial and financial risks are

beginning to be assumed by the private sector. Yet despite these recent governmental efforts to open the market door, the seminar group concluded that bureaucratic obstacles remain major in Brazil, and that the vast sums likely to be required for meeting the country's rapidly growing electricity requirements are not likely to be forthcoming without more rapid privatization.

1998 Travels: Azerbaijan and Turkey

All of our discussions in these countries, with both private and public sector hosts, took place in the context of what the pattern of oil and gas production and movements will be in the future, the role of Russia as both a natural gas and oil supplier, whether the Caspian is a sea or a lake and why that matters, the power of OPEC should the optimistic expectations for the Caspian be realized, why and how long we will continue our "peculiar" policy toward Iran, why we should be looking at westward movements of Caspian oil when the markets are likely to be more robust in Asia in the future, whether Turkish electric capacity expansion requires a change in the constitution, and an assessment of the sources and volumes of capital necessary to bring off any of these energy projects.

The messages we received in 1998 from government contacts were in a sense similar to those from Venezuela in 1999, for officials in both Azerbaijan and in Turkey felt the U.S. fails to see their strategic importance and basically ignores them. At the meeting with President Aliyev, and subsequently with his Ministers of Defense and Foreign Affairs, we were bombarded with questions about U.S. policy toward Armenia, and Section 907 of the Freedom Support Act of 1992, which singled out Azerbaijan among all the former Soviet republics and banned all direct U.S. aid to the Azeri government for both humanitarian and other purposes. The Azeris complained of both anti-Azeri and pro-Armenian U.S. policy, and enumerated the refugee problems as a result of the Nagorno-Karabakh conflict. Courtesy of AIOC, we visited and toured the Shelf V rig, an old Russian facility that was undergoing complete rehabilitation prior to becoming renamed as a new AIOC exploration platform. We also toured the Sangachal storage facilities, newly completed and designed to feed the pipelines to both Novorossiysk in Russia and Supsa in Georgia. Hopes were high at the time that Caspian oil and gas developments and subsequent transportation corridors could contribute to a major reshaping of the world's energy volumes and flows.

In Turkey, the Baku-Ceyhan proposal was viewed almost as a done deal in many quarters, for "clearly" the Bosphorus could not safely support the anticipated level of shipments expected with future developments of Caspian production. But an even more important lesson was learned: that no matter how much the U.S. beats the drum for such a pipeline, it cannot make it happen unless the project can be economically justified, as the AIOC companies and other internationals in Turkey were quick to point out. Other calls in Turkey included BP, Amoco, the Foreign Economic Relations Board known by the Turkish acronym DEIK, the Turkish engineering and construction firm Tekfen (which says it could build Baku-Ceyhan for substantially less than current western estimates), Enron's Trakya Elektric, a new powerplant to run on gas, BOTAS, the state natural gas and

(continued on page 14)

Energy Industry Study (continued from page 13)

pipeline company, TEAS, the state electricity company, and TPAO, the state oil company. The Turks are a warm and generous people, yet the seminar concluded that after 75 years of a policy where the state has deemed its role to be the leader in economic development, the private sector must have the patience of Job to continue to operate existing facilities or to take on the bureaucracy to bring new projects to fruition, despite the government's present desire to solicit private investment.

We were fortunate to have a guided tour of the Bosphorus provided by the Istanbul harbormaster; again, here was an instance where we had all seen pictures and maps of the narrowness and the turns of the straits, as well as of the spectacular fires and damages that have resulted from ship collisions, but the experience of actually being there, and having the upper and lower currents explained, cannot be overstated. Knowing the importance of the military in Turkey, we arranged a call on the Turkish General Staff to hear their views on energy developments, but the briefing of that week was a direct request that we carry the message that the U.S. should support Turkey over Greece in matters dealing with Cyprus.

Resources

At times, we the faculty feel more like travel agents than energy economists, and cheap travel agents at that. The school provides a nominal budget; the rest is up to us. We carry the tin cup to various government agencies with interests in energy, and the seminar has prepared commissioned reports in exchange for such funding. In 1997, for example, the group prepared a special report on what electricity deregulation meant for DoD – well in advance of the GAO report on the same topic. These funds are one-year monies, so the process is repeated every year, and never gets any easier. In 1999, for the first time ever, we secured private sector funds, with the donor providing the gift to the NDU Foundation, earmarked for the Energy Seminar. We stay at military bases both at home and overseas wherever possible, doubled up if necessary, and must obey the U.S. Government rule to fly American carriers wherever feasible. If the Government has a contract with that airline, we benefit from the government rate, which is generally less costly than the normal fare. It was substantially cheaper for us, for example, to fly an American carrier from Caracas back to Miami, and then from Miami to Buenos Aires, than to travel from Caracas onward to Buenos Aires.

Conclusions

Our students have had little exposure to the workings of the private sector, except for some in the course of the defense acquisition process. To merge their economics training with meetings with global companies who are on the cutting edge of technology, are developing new techniques of marketing, and dealing with environmental and regulatory issues that affects us all, is a new and unusual, and sometimes uncomfortable, experience for them. They are forced to think about the future of energy's contribution to the economic robustness of the country, to wrestle with the hard questions of how the Kyoto protocols will potentially impact the coal and electricity industries in the future, the problems of stranded costs and the role of nuclear power, competition and diversification of

oil and gas sources and services, and the contributions of clean energy sources. All of these issues affect the Department of Defense directly. As part of their grooming as future strategic leaders, the industry studies courses are designed to stretch the participants' horizons and develop their analytical skills, along with their fluency and conversancy, in addressing major compelling issues of our times.

USAEE Student Scholarship Fund: A Call for Support

The USAEE is proud to continue its student scholarship fund, started in 1997 at the San Francisco North American Conference. Funds are used to cover the cost of registration fees for students attending the annual conference of the USAEE/IAEE. Students must submit a written application and letter from their student advisor requesting that funds be granted. At the Orlando Conference, six conference registration fees were waived in an effort to share our conference experience, the field of energy economics and networking opportunities with students. Further, inviting student participation at our conferences is one of the best mechanisms for recruiting new members to the USAEE.

The student scholarship fund has been generously provided by the support of the following organizations/individuals:

American Petroleum Institute
Conoco, Inc.
Exxon Corporation
Andre Plourde
Mary Barcella
Joy Dunkerly

Recognizing the need for interested and qualified graduates, many funding organizations view the program as supporting education as well as recruitment. The USAEE has started its campaign for scholarship funds for the 2000 North American meeting in Philadelphia, Pennsylvania, September 24-27. Scholarships range from \$50 to \$2500. If you would like to receive information on how your or your company can become a supporter of this program, please contact Mine Yucel, USAEE Secretary-Treasurer at (p) 214-922-5160, (f) 214-922-5194, or mine.k.yucel@dal.frb.org or Dave Williams, USAEE Executive Director at (p) 216-464-2785, (f) 216-464-2768, or usaee@usaee.org

We Need Your Email Address !!

USAEE will be moving more correspondence to email in 2000. Toward this end, we have discovered that we have fewer than 50% of all USAEE members e-mail addresses. To keep you better informed, please email us your name and email address to usaee@usaee.org

USAEE Student Scholarships Program at the Orlando Annual North American Conference of USAEE/IAEE

This year, the USAEE continued to offer scholarships for students to attend the North American Conference in Orlando. At this year's conference, 6 students qualified under the guidelines for scholarship requests. With the dramatic changes in domestic and international energy markets, industry restructuring and the negotiations on global climate change protocol, energy economics is definitely back on the scene. Inviting student participation at the conferences is one of the best mechanisms for recruiting new members to the USAEE.

Of the 6 scholarship students at the conference in Orlando, several presented papers. With more advance notice for the 2000 conference, a greater number will likely participate as presenters. Student speakers in Orlando included the following:

Interrelationship of Energy, Economy, and Environment: its Implication for Sustainable Energy Future in Korea AND

Mitigating CO₂ Emissions of the Republic of Korea in 2020: The Role of Energy Efficiency Measures
Kyung-Jin Boo, University of Delaware

The Illusion of Climate Markets: Clean Development Mechanism, Climate Stability and Equity
Sun-Jin Yun, University of Delaware

On Efficient Economists and Oblivious Politicians: Political Economy of Energy Taxation, OECD 1973-1995
Svetlana Morozova, Claremont Graduate School

A Multi-area Electric Power Exchange Model for China
Xie Zhijun, Boston University

Long Term Natural Gas Supply in North America: Prospects for Mexican Exports
Alberto Elizalde Baltierra, Institut Francais du Petrole, ENSPM

*The Convergence of Electric Power and Natural Gas Utilities in the United States: Which Lessons for Europe? AND
Why New Distributed Generation Units Might Transform Power Industry's Organization? The Case of Gas Microturbines*

Sophie Meritet, Universite Paris IX - Dauphine

We were able to start the program this year with contributions totaling \$7700 from the American Petroleum Institute, Conoco, Inc., Exxon Corporation, Andre Plourde, Mary Barcella and Joy Dunkerley. Recognizing the need for interested and qualified graduates, many sponsors view the program as supporting education as well as recruitment.

Student scholarship winners and supporting organizations were once again invited to the networking breakfast. This was well attended by all involved and proved to be a good event to learn what is being researched and discovering in our field of energy economics.

USAEE plans to continue the student scholarship program and earnestly seeks your company's and your personal contributions to this fund. Enclosed in this issue of Dialogue is additional information on how you can become involved in this program.

Congratulations again to the above students who qualified for our program and participated in the annual USAEE/IAEE North American Conference in Orlando.

Conference Proceedings 18th North American Conference San Francisco, California, September 7-10, 1997

The Proceedings from the 18th Annual North American Conference of the USAEE/IAEE held in San Francisco, California, are now available from USAEE Headquarters. Entitled *International Energy Markets, Competition and Policy*, the proceedings are available to members for \$75.00 and to nonmembers for \$95.00 (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:

Order Department, USAEE/IAEE Headquarters, 28790 Chagrin Blvd., Suite 350 Cleveland, OH 44122, USA

Name _____

Address _____

City, State, Mail Code and Country _____

Please send me _____ copies @ \$75.00 each (member rate) \$95.00 each (nonmember rate).

Total enclosed \$ _____ Check must be in U.S. dollars and drawn on a U.S. bank, payable to IAEE.

Zedillo Score Card in Energy

By George Baker*

Today's discussion offers, in all probability, the last opportunity of the Zedillo Administration to have a serious discussion about energy policy and markets in Mexico. Once the PRI political candidate is named in November, future discussions will be exercises in posturing to gain favor in the next administration.

The theme for today's discussion is the transition from a centralized, command economy to a market economy in Mexico's energy sector. The topic is at once simple and vastly complex.

It is a simple topic because it concerns the need to institutionalize forces in the Mexican economy that, by their nature, favor lower producer prices, better product quality, upgraded infrastructure technology and environmental remediation. Today, such efforts by government agencies and private industry in these areas occur because of government mandate. There is nothing in the Mexican economy today that favors such outcomes as a function of market forces.

There is no single buzzword that captures the set of conditions, policy instruments and laws and regulations needed for these outcomes to occur. Sometimes the word "competition" is used in this context, but, in Mexico, as we shall see, "competition" is misused as often as it is used properly. Still, even in its correct usage, the term falls short of capturing the full reality of what is missing.

What is missing from the Mexican economy in the energy sector can be seen from two vantage points: (1) the point of sale, where the consumer has no choice of energy products that differ by price, manufacturer or supplier and quality, (2) the long-term trend in producer prices, where there is no natural downward trend as would be expected from the effects of learning curves and better efficiency. (In Mexico such effects may not necessarily result in lower retail or user prices as government fiscal policy may have rhythms independent of gains in industrial efficiency and cost-cutting gains.)

The topic of a transition from a centralized to a market economy is complex mainly because of the unique status of the energy sector in Mexican public life. For example, on October 4, 1999, Pemex's director general was quoted as having said "The oil sector should be a point of unity for Mexicans. There should be no need for a discussion of what to do with Pemex." Such a comment, if true, illustrates the colors of the command economy: the centralized economy in the oil sector, in the way it is organized today, need not be questioned by Mexicans—and, by implication, by anyone else.

We identify four factors affecting the transition to a market economy:

1. Limited availability of market-sensitive data. In the context of a command economy data is organized and made public in ways that correspond to the internal, institu-

tional needs of the government agency that is responsible for the sector or industrial activity. In the case of the oil sector, Pemex publishes oil statistics according to administrative regions and districts, not according to geological (and industrial) reality, namely, the petroleum-bearing basins or structures that, together, make up Mexico's petroleum resource endowment. If no data are published on the performance of Pemex as the sole caretaker of that endowment, then two results follow: (1) no criticism of Pemex's operations is possible that is based on verifiable industrial data, (2) no policy alternatives are discussed, as data for same are not available.

2. Use and limitations of international benchmarks. This is not a topic that is being discussed in Mexico in the terms in which I hope to frame it. Since 1991 Pemex has been developing "international benchmarks" in cost, quality and performance. On the basis of achieving results comparable to those of other companies, Pemex is able to claim that it is "internationally competitive" with other major oil companies.

In 1996 the CRE announced its framework for netback prices for Mexican natural gas. By linking Mexican natural gas prices to market prices at the Houston Ship Channel, CRE was able to claim that Mexican gas prices were "market sensitive."

The fallacy in both the Pemex claim and the CRE framework is the same: the benefits of competition are claimed without the market presence of actual competitors. At best there is virtual competition.

3. A third factor affecting the transition is the presence of what might be called "energy populism," a force in Mexican political life that openly and directly opposes any transition from a state-controlled to a market economy of energy goods and services. The origins and dynamics of energy populism in Mexico are complex; but the point is that in areas such as petrochemicals, electric power and natural gas transportation, where Government policy favoring private markets has been blocked by different expressions of energy populism, effective political negotiation is necessary for the transition to a market economy to continue.

Here, numbers or economic analysis seem to make no sense to opponents of a market-oriented restructuring. Part of this indifference to data is that entire generations in Mexico are brought up on a data-less diet of market information about the energy sector. Mexicans are taught State Orthodoxy. Now that the State seeks to look for changes (as in the electric power and chemical sectors) it finds that it is opposed by the very orthodoxy that, for decades, it had encouraged.

4. Finally, there is a disquieting pattern has been observed in CRE permit-granting behavior in the past two years: CRE is granting permits to Pemex and CFE that, in their effect, block the implementation of government mandates that certain parts of the energy sector be opened to private investment. This pattern was first seen in August 1997 when, unexpectedly, CRE reversed course and said

* Dr. George Baker is Research Director, Mexico Energy Intelligence and can be reached by e-mail at g.baker@energia.com. This is a summary of a keynote address at the British Chamber of Commerce in Mexico City on Energy Day, October 5, 1999.

Table 1
Zedillo Energy Score Card
Proposals in Gas Transportation, Power and Chemicals Blocked - But for Different Reasons

Area	Market Proposal?	Implemented?	Status	Outlook for Markets
<u>Natural Gas</u>				
Production	No	-	Not yet discussed	
Processing	No	-	Not yet discussed	Equity gas off limits
Distribution	1995	Yes	CRE tenders since 1996	Good
Storage	1995	No	Understudy	Pemex sell-supply to crowd out IP?
Transportation	1995	Not in Pemex mkt	Still no competition	Poor w/o Monterrey market opening
Over-the-fence services	No	Ad hoc	Cantarell gas separation/compr	Good
<u>Electric Power</u>				
Generation	1999	No	Awaits approval by Congress	Strong union & populist opposition
Transmission	1999	No	Awaits approval by Congress	Strong union & populist opposition
Distribution	1999	No	Awaits approval by Congress	Strong union & populist opposition
Power cooperatives	1999	No	New approach pending	Good; sales to be at market prices to CFE
<u>Petro-Chemicals</u>				
Customer-financed	No	Under discussion	Tried twice in early 1980s	Poor; perpetuates State management
Outright sale	1955	No	Cosoleacaque tender cancelled	
Portfolio only (49%)	1996	No	Understudy by Government	No private industry interest
Management (51%)	No	-	Pending for next Gov't	Poor w/o political negotiation
<u>LPG</u>				
Import/export	1999	No	No permits yet requested	Good if PMI concurs
Storage	1999	No	Pemex tender pending	Pemex self-supply to crowd out IP?
Transportation	1999	No	Penn Octane project	Good
Distribution	No	-	Intl' companies excluded	Poor w/o political negotiation
<u>Refining</u>				
Refining	No	-	Not yet discussed	Real & virtual joint ventures abroad
Distribution	No	-	Not yet discussed	Poor w/o political negotiation
Over-the-fence services	No	Ad hoc	MTBE & gasification considered	Uncertain
<u>Crude Oil</u>				
Intl' service tenders	1997	Yes	Burgos outsourcing is example	Good
E&P incentive contracts	No	-	Rejected by Pemex and Union	Government studying options
Over-the-fence services	1998	Ad hoc	Nitrogen project is example	Good

IP = private industry

that, to increase "competition" in the area, Pemex Gas would be allowed to keep its industrial accounts in the Monterrey region. The immediate effect of this decision was that the market value of the CFE's gas LDC, which was then the object of international bidding, dropped by half. The second effect was that nonPemex gas pipelines to the metropolitan area did not get built.

Now, CRE is proposing to grant "self-supply" storage permits to Pemex for LPG and natural gas. It takes no Harvard Ph.D. in economics to see that if Pemex, with its permit, gets 100% control over an LPG or gas storage facility (via a BLT or BOT) contract, it will exclude private investment in these two areas. In effect, the CRE's permit will void the government policy mandate that an area of the energy sector be open to private investment under an Open Access model.

Conclusions

1. Mexico's ambiguity and ambivalence about private markets has a high price. Investment capital that had been earmarked for Mexico has been diverted elsewhere. The gas pipelines that would have brought competition, employment and lower prices have not been built. Lower-cost electric power produced by the so-called "self-sup-

ply associations" is not sold to the CFE with savings passed on to consumer because government regulations do not permit it.

Even the most recent initiative of the Zedillo Government in relation to the restructuring of the electric power market was couched in ambiguous terms: it was not that the Government wanted market efficiencies, it was that the Government want to spend its money on Mexico's war on poverty — hence, as if it were a worse-case outcome, the private sector would be asked to pay the bill of some \$25 billion over six years for electric power generation, transmission and distribution.

2. Pemex and CFE intend to defend their status in the Mexican economy as the sole-source provider of energy products for as long as possible.
3. Where these agencies are most effective in blocking market-oriented reforms is in sterilizing industrially relevant data. If there is no market-relevant data there can be no discussion of energy markets.
4. Finally, the use of international benchmarks, which seems, at first, a step toward a market orientation, upon closer inspection turns out to be a mechanism to justify the continuation of the centralized, command economy.

EnergyPuzzler

In the August 1999 issue of "Dialogue", we posed the following question in our Energy Puzzler series:

Even without worrying about the Y2K problem, is the U.S. slated for a oil demand crunching recession to start the millennium? Since early 1999 crude oil prices have jumped from about \$11-\$12 per barrel to about \$20-\$21, an increase of approximately 80%. According to macroeconomic models developed by Hamilton and Mork, nine out of eleven U.S. recessions over the last 50 years were preceded by large energy (oil) price increases approximately 9 months beforehand. Should this bit of economic history be ignored? Should OPEC care?

Below we present responses to the puzzler, most of which seem to say "it's different this time" making a recession much less likely. Two key factors often cited are the perceived absence of a "shock" in the price rise, and the extremely low level of prices before the run-up. An expectation that OPEC will increase production and temper prices seems widely held. However, many of the responses reflect a clear undercurrent of concern that a misstep on monetary policy could be a problem.

Thanks to all those who participated,

Adam Sieminski

There is still minimal outlook for a U.S. recession. Certainly a near zero chance next year. Recessions are caused by shortages and rising prices leading to growth-choking high interest rates. There is just no such scenario that any sober economist can see. There is still enough global excess capacity to limit price increases in the aggregate, despite the recent run-up in oil prices. It just may be that high oil prices have been nudged up by overall inflation, not vice versa. That was certainly the case in 1973. In short, whatever correlation you might have heard about oil prices causing U.S. recessions is just not applicable for the next 16 months at least.

University Economist

The effect of business cycles on oil prices stands out more clearly than the effects of oil prices on business cycles. If the present high prices prove to be a spike, it shouldn't be nearly as worrisome as if these prices were here to stay. Before the oil market came roaring back it had been through its most dramatic period of softness since 1973, and softness at this level couldn't last. So a recovery should have been expected and not be classified as a price shock.

Essentially, the economy responds negatively to large, unusual, and unexpected price increases, not much to price decreases, and not much to small, ordinary, predictable fluctuations. Real oil shocks are scary world events that come from the outside, and the five largest have involved dramatic political events in the Middle East. What is important isn't the oil price movement per se, but the fear and uncertainty set about by the geopolitical event causing the oil price movement. Is the 1999 price increase such a scary event? We think not. It is true that it arguably is the first significant price increase that can be directly attributed to OPEC (without a war). It is an aberration that is likely to go away. And even if it doesn't, it has lifted oil prices to levels that hardly raised an eyebrow three years ago.

However, it's not enough to look at the direct impact that

oil shocks make on the economy via private markets. We also need to look at the indirect effects that come via monetary policy as central bankers react to the movements in oil prices. Oil price increases could spill over into "core" inflation. Central bank overreaction to rising prices for oil and other commodity prices remains a risk. This is especially true in Europe, both because of the Bundesbank's heritage of one-sided hawkishness against inflation, and partly because of the lack of a track record for the new European Central Bank.

Chief Economist, European Bank

I have little concern over recessionary impacts from the recent rise in oil prices because the increase was preceded by a significant decline in oil prices. However, the prices are now well above the \$18/bbl level we enjoyed previously and continued increases could pose a problem.

Utility Risk Manager

The rise in energy prices is a concern, but it's far less important than it was 20, 30, or 40 years ago. The impact of energy costs in the 1960's or 1970's was a far greater force for both economic growth and contraction and inflation than it is today. There is no doubt we've seen a significant pickup in the CPI as a consequence of increases in gasoline and home heating prices, and they have a slightly higher weight than they probably should have. The personal consumption expenditure data, which has a smaller energy share, probably presents a better view of the impact. The decline in energy prices as crude oil went to \$10/barrel had a fairly pronounced effect on measured inflation, and it reversed this year. But the impact is far less than it used to be and our concerns about a major breakdown in the physical flow of crude oil (which really gave us considerable concerns in the mid-1970's) is far less of a concern today than it was back then.

Government Regulatory Economist

I do not believe that the present increase in oil prices can affect the U.S. economy, provided that the price remains in the \$18 - 22 per barrel range. There is a small risk that the prices could increase over that level under an optimistic scenario for the world economy - driven by recovery in Asia and in Europe - and if OPEC sticks to its present production ceiling, but, again, this risk is limited. It is interesting to note that OPEC decisions are now taken with a degree of consensus, but the oil price increase is fragile. Must a recession follow a rise in oil prices? Not necessarily. For instance, we see that the European economy was relatively strong in 1998 (which started with high oil prices), weak at the beginning of 1999 (with very low oil prices) and strong now with the oil price increase.

Analyst/Economist

I do not believe this oil price increase will cause a recession. Past oil price shocks caused recessions because the Federal Reserve responded to inflationary pressure by tightening the money supply. But now we have a service economy and the energy intensity of manufacturing is greatly reduced. Oil is far less important to the U.S. economy. I would think that oil prices are now low on the list of things that the Federal Reserve looks at in its fight against inflation. I think they are much more concerned about rising labor costs and the low

unemployment rate.

While I am not concerned about the impact of oil prices, I am concerned that continued Fed tightening resulting from rising wage rates would greatly slow the U.S. economy. Thus far, productivity improvements have minimized inflationary concerns and interest rate increases. Will these productivity improvements continue at the same pace after Y2K-related spending ends?

My other concern is that as excess manufacturing capacity in Asia becomes more fully utilized, prices for manufactured goods in the U.S. will rise and the Federal Reserve will have yet another reason to raise interest rates.

If these rate increases caused a downward correction in the stock market, consumer confidence and spending could fall, leading to a recession. Nevertheless, I am not that worried about a recession in the year 2000. How many recessions have occurred in election years?

Oil Company Economist

I do not think that the move back to more "usual" prices would signify a major threat, especially when the other commodities are doing so poorly. The bigger risk may be in continued deflationary pressures. Perhaps Y2K issues, plus global stockpiling in 4Q this year, may result in a very tumultuous 1Q 2000. It's hard for me to see oil prices having more than a contributory influence on the big picture, but that doesn't mean that we do not face the risk of some kind of recession... can the bull economy go on forever?

Oil Analyst

The global economy has adjusted to a long-term price of \$18-\$22 per barrel, in my opinion. So the big change was the drop to \$10 late last year and early this year, not the rebound back to the perceived equilibrium price.

Economist / Stock Market Strategist

No recession. Just some mild pressure. The rise in oil prices is driven by a cutback in supply, not a significant rise in demand. Therefore, higher oil prices will be met with higher oil production from the OPEC countries. This will be done either through a formal quota increase at their September meeting or an informal increase through cheating on quotas. Past oil price driven recessions were sustained because of a political event that was irreversible in the short run. Today, there is no war in Iraq and OPEC is not aggressively trying to withhold oil from the West for political reasons. Therefore, when oil prices get too high for reasons of declining inventories, OPEC producers will add oil to the market. This will cause the futures traders to send the near month NYMEX futures contract on crude oil plummeting through all of their trend lines and the concern over high oil prices will be snuffed out.

You need a war that threatens a significant oil supply to get sustained high oil prices. I doubt one happens in the near term. As for higher oil prices affecting Fed policy, the Fed knows that OPEC cut production to stabilize oil prices and secure the longevity of oil supply throughout the world. Therefore, an interest rate increases by the Fed will not be motivated by rising oil prices. The Fed will be more concerned about the impact of the massive amount of liquidity injected into the world markets by the large number of interest

rate cuts by the world's central banks in the second half of 1999. In conclusion, no recession, oil prices peak at \$24 and then fall to \$18 and interest rates peak at 7.0% and then fall to 6.5%. This all happens during the winter.

Addendum: Look at interest rates now. They are moving up quickly. Further, oil is setting new highs. Too bad I didn't predict this earlier. It does not seem like OPEC will do anything at their September meeting. I now believe they will create an informal agreement at their Heads of State meeting in Venezuela in Jan-2000. This means oil is going higher in the near term. Lock in your mortgages, as the next 4 months are going to be rough on interest rates and perceived inflation.

Oil Analyst

Recent U.S. recessions have been largely the result of deliberate Federal Reserve policy, specifically inverted yield curves. Therefore, do large oil price boosts trigger Fed policy changes? My answer - probably yes. How about this year's jump in oil prices? Not so clear since it started, in my opinion from an unreasonably low base.

Portfolio Manager

The increase in the price of oil is substantial but should not pose a recessionary threat to the U.S. economy. For one thing, growth in U.S. oil demand, like that of other advanced economies, is more a function of economic growth rather than the cause of economic growth. Therefore, it is possible to choke off some oil demand growth, if price so warrants, without necessarily stifling economic growth. Secondly, the unprecedented economic growth we have enjoyed in the past 6-7 years has been arguably powered by technological advances and high productivity. It will similarly take a regression of both factors, primarily, to retard the growth (all things being equal).

Of course, the wild card is always inflation and its interest rate implications. But, even with the recent increases in the price of oil, inflation has remained muted, suggesting that it'll take more than just oil price increases (and a lot of it) to blame any rate hikes on oil-price induced inflation. While the Hamilton/Mork studies might suggest a historical correlation between high oil price and recession, they do not establish causation. I'm not suggesting that high oil prices might not have some impact on the economy but an early millennium recession due to it is highly unlikely.

Finally, as for OPEC, the irony of high oil prices is always the ever-present specter of OPEC-supply displacement by non-OPEC and non-oil substitutes and perhaps a return of the feud between the so-called OPEC price hawks and price moderates!

Government Analyst

Oil prices function much like a tax because oil is such a basic commodity. Raise taxes too suddenly or too much, you drain too much money from the economy and you have a recession. The real question today in light of Greenspan's recent statements is whether the Federal Reserve Board appreciates what the recent increase in oil price increases mean to the economy.

Regulatory Attorney

(continued on page 20)

Energy Puzzler (continued from page 19)

The strengthening of world oil prices does not portend dire consequences to the economies of oil consuming countries. This price rise only represents a recovery to where prices were before the recent price decline, and does not approach the scope of the shocks of the 1970's. Oil's role in consuming country economies is far less prominent than before. In the U.S., for example, the value of oil (demand * price) relative to GDP is now only about 1% in contrast to nearly 9% in 1980. Another difference is that the shock factor has not been as great - oil inventories were at very high levels as this price rise began. One thing that I really worry about is that the Fed will misread the situation. I don't think they have fully recognized the positive impact of productivity improvements on the sustainable level of GDP growth.

Oil Consultant

The price rise in 1996-97 was not followed by a U.S. recession, although the rest of the world has not fared as well. Maybe the U.S. economy has gotten so flexible that it adjusts very quickly to higher energy prices - i.e., a slowdown may be likely, but an outright recession probably not.

Oil Analyst

Although sharp spikes in the price of oil have caused recessions, several other variables must be examined. (1) Was the spike from sharply depressed levels, or merely from a long-term baseline oil price? (2) Were other key commodities also spiking up in price, such as steel, copper, etc.? (3) Was there an accompanying spike in interest rates? (4) Was there a severe short/long term commodity shortage in several key supply variables (steel, oil, etc.)? (5) Was there an extraordinary event (war, political upheaval, etc.) which the spike upward in oil (e.g., the Gulf War)?

In answering these questions, most of the post-WWII recessions can be found to be somewhat materially different than the present day situation, although a sustained move up to the \$25-\$28/bbl level now would likely precipitate a mild recession.

Oil Analyst

The world has been indifferent to the 80% increase in oil prices because it is merely a recovery to "normal" prices. A sustained 80% increase from here - \$20 to \$36 - would not go unnoticed. I don't think the price increase so far will cause a recession, but if oil prices do rise significantly further, then legitimate questions are these. (1) What will be the impact on demand in developing countries, especially those that have devalued? (2) What will be the impact on non-OPEC supplies? (3) What will be the response from OPEC - do they care more about demand or supply? (4) What will be the impact on the US economy? Given the other imminent dangers - widening trade deficit, higher interest rates, and stock market correction - higher oil prices will add to the difficulties.

Government Economist

We believed that the cartel could halt the decline in the price of oil. However, claims notwithstanding, it strikes us as hard to believe that OPEC could actually trigger an 80% rise. Oil prices have risen less because of OPEC's behavior,

in our opinion, than because of expectations in the short run about Asia's recovery and a long-run concern about Central Asia's oil ever coming to market. In our view, since Asia's recovery, taken as a whole, is more apparent than real, the great expectations held by the market will be disappointed. The American stock markets have simply ignored the rise in oil prices. So have Asian and European markets. Whatever drives them, the markets are saying that the rise in oil prices is either unsustainable or can be absorbed by the advanced industrial countries. In our view, the stock markets are acting appropriately. A dramatic return to the 1970's is not likely. Oil is still cheap and, we believe, will remain cheap. If other mineral commodities start to seriously surge, we might have to reevaluate our views.

Oil Consultant

There was an event in recent British history that has entered into our folklore. In response to a viewer's telephoned concern about the possibility of an impending hurricane, a TV weatherman assured the nation that no such thing could, or would, happen. That night in October 1987, in the south east of the country, we had the worst winds since records began. Vast tracts of precious woodland were devastated and roofs were blown off. The following day, London was at a standstill because of the large number of roads and railway lines blocked by fallen trees. The weatherman became a national scapegoat.

A cautionary tale for all us forecasters! But I risk being that weatherman. There will be no recession. At least not a big one. The really big global recessions of recent history have been driven by oil price shocks - 1973 and 1978-79. But this time around, the rise in oil prices is not a shock. Indeed, I doubt whether the majority of OECD residents have even noticed because of the insulating effect of the high levels of taxation on oil products. Even in the U.S., where taxation is considerably less, a rise in pump prices will cause a lot of public comment but shouldn't tip the economy over. And I don't believe western economies in general are over-heating in the way they have in the past, thus causing governments to damp things down with the attendant risk of precipitating recession. Economists are saying that the beast of inflation has been permanently conquered. What about the last recession in the early 1990s? Wasn't that oil price driven? Not really, although prices had risen for the Gulf War.

So, although it is possible the U.S. may sneeze, hopefully it will be touch of hay fever and the world will not catch a cold. I think the interesting thing about this rise in oil prices is not so much its impact on the U.S. economy as what it will do for recovery in the Far East. Will the rise in prices slow recovery there and hit demand? In which case, perhaps I should be worried after all - certainly OPEC should be.

Oil Consultant

Additional Information Available Upon Request

Adam E. Sieminski
Deutsche Banc Alex. Brown
1 South Street
Baltimore, MD 21202
Phone: 410-895-3347 Fax: 410-895-3202
E-mail: adam.sieminski@db.com

ORDERFORM

Proceedings from the 20th USAEE/IAEE Annual North American Conference

August 29 to September 1, 1999

Hilton Hotel
Orlando, Florida - USA

\$85.00-members \$105.00-non-members

This publication is 500 pages and includes articles on the following topics:

Energy Financing Practices
Energy, Sustainability and Market Transformation
Regional Oil Development
North American Gas and Power
Energy Policy Issues
U.S. Energy Policy: Should we Have One?
Implications of the Kyoto Protocol
Power Markets in Developing Economies
Converging Gas and Power Markets
Renewable Sources of Energy
Electricity Restructuring
Distributed Generation

Modeling Electricity Markets
Modeling Greenhouse Gas Emissions
Wither Oil Prices?
Electricity Deregulation in Canada: The State of Play
The Future of the Oil Industry
Designing Competitive Electricity Markets
Energy-Economy Interaction
Oil and Gas Industry Restructuring
Gas Regulation Issues
Environmental Issues
Alternative Fuels and Vehicles
Productive Efficiency in Electricity Markets

To order, please send your check payable to IAEE in U.S. dollars, drawn on a U.S. bank to:

Proceedings Order Department
IAEE/USAEE Headquarters
28790 Chagrin Blvd., Ste. 350
Cleveland, OH 44122

Phone: 216-464-2785
Fax: 216-464-2768

Please send publication to:

Name: _____

Position: _____

Company: _____

Mailing Address: _____

Mailing Address: _____

Country: _____

Phone: _____ Fax: _____

New Members of USAEE

The following individuals recently joined the USAEE. Welcome!!

Seaborn Adamson

Frontier Economics

Linda Curry Bartholomew

VP, Public Affairs

PP&L Inc.

Steve Bell

American Gas Association

David Bowman

Oak Ridge National Laboratory

Nathan Boyce

Stanford University

Roy Boyd

Professor

Ohio University

James W. Brown

Green Mountain Power Corp.

Tyler Burton

High Latitude Consultants

Randall W. Byrne

Altura Energy

Daniel J. Celta

PricewaterhouseCoopers

Robert F. Cope III

Asst. Professor

Southeastern Louisiana University

Aline Dew

Market Development Manager

Sempra Energy

Robin Duquette

Louis Dreyfus Corp.

Simon Ede

Cornell University

Karen L.P. Elliott

George Mason University

Jean Wallace Frazier

Yale School of Management

George Given

Henwood Energy Services, Inc.

Kenneth Gordon

National Economic Research Assoc.

A.J. Goulding

London Economics

Robert Graniere

National Regulatory Research Inst.

Frank C. Graves

Brattle Group

Scott Hassell

RAND

Mike Herberg

ARCO

Tyler Hedge

Colorado School of Mines

Bruce G. Humphrey

PHB Hagler Bailly

Jonathan Jacobs

PG&E Energy Services Co.

Steve Jacobson

Henwood Energy Services, Inc.

John H. Jenrich

John Juliano

University of Chicago

Margaret Karl

Northern States Power

Michael Klemann

Caterpillar Inc.

Steven G. Kihm

Public Service Commission of Wisconsin

Donald J. Kilbride

Boston Company Asset Mgmt., LLC

Steven Klimowski

University of Texas at Austin

Raoul LeBlanc

Anadarko Petroleum Corp.

Paul Leiby

Oak Ridge National Laboratory

Keith G. Little

Conoco Global Power

Prakash Loungani

International Monetary Fund

Lori Megdal

Megdal & Associates

Ian Miller

President, Energy Industries
EDS

Reid Miner

NCASI

Martha G. Moore

Chemical Manufacturers Assoc.

Seiji Morishima

Center of International Studies, MIT

Fumio Murazeki

Tokyo Gas Co., Ltd.

Ebatool Nekooie

Southern Company Services, Inc.

Johannes Pfeifenberger

The Brattle Group

Kenneth Quinty

PP&L

Charles G. Rossmann

Southern Company Services, Inc.

Bryan R. Routledge

Carnegie Mellon University

Carlos Rufin

London Economics

Gerald B. Sheble

Iowa State University

Kyle Simpson

Morgan McGuire LLC

Joel Singer

Stanford University

Dennis L. Snider

ProLiance Energy LLC

Jim Stanfield

Hagler Bailly

John Stemple

Investment Evaluations Corporation

Richard Stuebi

NextWave Energy, Inc.

Alexandra Sundquist

US Department of State

Linda L. Sutliff

Tracy Terry
US Department of Energy

Barbara Treat

Bechtel Corporation

Natsuki Tsukada

MIT

Peter Vandoren

Cato Institute

Bob Welch

Partner
Ernst & Young

Ian Sue Wing

MIT

Zhijun Xie

Boston University

Keith A. Zimmerman

Cayman International

Assef Zobian

Tabors Caramanis & Associates



***Broaden Your
Professional Horizons***
***Join the
International Association for Energy Economics (IAEE)***

In today's economy you need to keep up-to-date on energy policy and developments. To be ahead of the others, you need timely, relevant material on current energy thought and comment, on data, trends and key policy issues. You need a network of professional individuals that specialize in the field of energy economics so that you may have access to their valuable ideas, opinions and services. Membership in the IAEE does just this, keeps you abreast of current energy related issues and broadens your professional outlook.

The IAEE currently meets the professional needs of over 3300 energy economists in many areas: private industry, non-profit and trade organizations, consulting, government and academe. Below is a listing of the publications and services the Association offers its membership.

- **Professional Journal:** The *Energy Journal* is the Association's distinguished quarterly publication published by the Energy Economics Education Foundation, the IAEE's educational affiliate. The journal contains articles on a wide range of energy economic issues, as well as book reviews, notes and special notices to members. Topics regularly addressed include the following:

Alternative Transportation Fuels	Hydrocarbons Issues
Conservation of Energy	International Energy Issues
Electricity and Coal	Markets for Crude Oil
Energy & Economic Development	Natural Gas Topics
Energy Management	Nuclear Power Issues
Energy Policy Issues	Renewable Energy Issues
Environmental Issues & Concerns	Forecasting Techniques

- **Newsletter:** The *IAEE Newsletter*, published four times a year, announces coming events, such as conferences and workshops; gives detail of IAEE international affiliate activities; and provides special reports and information on an international basis. The newsletter also contains articles on a wide range of energy economics issues, as well as notes and special notices of interest to members.
- **Directory:** The Annual *Membership Directory* lists members around the world, their affiliation, areas of specialization, address and telephone/fax numbers. A most valuable networking resource.
- **Conferences:** IAEE Conferences attract delegates who represent some of the most influential government, corporate and academic energy decision-making institutions. Conference programs address critical issues of vital concern and importance to governments and industry and provide a forum where policy issues can be presented, considered and discussed at both formal sessions and informal social functions. Major conferences held each year include the North American Conference and the International Conference. IAEE members attend at reduced rates.
- **Proceedings:** IAEE Conferences generate valuable proceedings which are available to members at reduced rates.

To join the IAEE and avail yourself of our outstanding publications and services please clip and complete the application below and send it with your check, payable to the IAEE, in U.S. dollars, drawn on a U.S. bank to: International Association for Energy Economics, 28790 Chagrin Blvd., Suite 350, Cleveland, OH 44122. Phone: 216-464-5365.

Yes, I wish to become a member of the International Association for Energy Economics. My check for \$60.00 is enclosed to cover regular individual membership for twelve months from the end of the month in which my payment is received. I understand that I will receive all of the above publications and announcements to all IAEE sponsored meetings.

PLEASE TYPE or PRINT

Name: _____

Position: _____

Organization: _____

Address: _____

Address: _____

City/State/Mail Code/Country: _____

8/99 Dialogue

Mail to: IAEE, 28790 Chagrin Blvd., Ste. 350, Cleveland, OH 44122 USA

Calendar

26-28 October 1999, PowerMart '99. AstroArena, Houston, Texas. Contact: FT Energy, 13111 Northwest Fwy, Suite 520, Houston, TX 77040. Phone: 713-460-9200. Fax: 713-460-9150. URL: www.powermart.com

26-28 Interactive Energy '99. Adam's Mark Hotel, Houston, Texas. Contact: Zeus Development Corporation, 2424 Wilcrest, Suite 250, Houston, TX 77042. Phone: 713-952-9500. Fax: 713-952-9526. URL: www.interactiveenergy.com

8-9 November 1999, Profit with Nuclear Power. Chicago, IL. Contact: Registration Dept., The Center for Business Intelligence, LLC, 500 W. Cummings Park, Suite 5100, Woburn, MA 01801. Phone: 781-939-2438. Fax: 781-939-2490. E-mail: cbireg@cbintet.com

8-9 November 1999, North American Gas Strategies Conference. Westin Hotel, Calgary, Alberta, Canada. Contact: Ziff Energy Group. Phone: 403-234-4285. E-mail: gasconf@ziffenergy.com URL: www.ziffenergy.com/nagsconference

9-10 November 1999, Border Energy Forum VI. San Antonio, Texas. Contact: Texas General Land Office, 1700 North Congress Ave., Austin, TX 78701-1495. URL: www.glo.state.tx.us/border

11-12 November 1999, 4th Annual Latin Upstream '99. Miami, Florida, USA. Contact: Fax: 281-597-9589. Email: global.pacific@pixie.co.za URL: www.globpac.com

17-19 November 1999, FERC 101 & 102, Washington, DC, USA. Contact: The Energy Daily, 627 National Press Bldg., Washington, DC 20045. Phone: 202-638-4260. Fax: 202-662-9744. E-mail: kingcomm@kingpublishing.com

2-3 December 1999, Buying & Selling Oil & Gas Assets. Houston, TX, USA. Contact: Conference Connection, Inc, Raffles City, PO Box 1736, Singapore 911758. Phone: 65-226-5280. Fax: 65-226-4117. Email: info@cconnection.org

6-9 December 1999, The Energy Trader's Institute. Chicago, IL, USA. Contact: Infocast, 22134 Sherman Way, Canoga Park, CA 91303. Phone: 818-888-4444. Fax: 818-888-4440. Email: mail@informationforecast.com URL: www.informationforecast.com

8-9 December 1999, The Geopolitics of Energy into the 21st Century. Monarch Hotel, Washington, DC. Contact: www.ftenergyusa.com or the Center for Strategic and International Studies-P-202-775-3209.

8-10 December 1999, Houston, TX. Mark Price Volatility: How to Model, Assess and Manage Price Volatility in Today's Power Markets. Contact: Infocast, 22134 Sherman Way, Canoga Park, CA 91303. Phone: 818-888-4444. Fax: 818-888-4440.

Email: mail@informationforecast.com URL: www.informationforecast.com

9-10 December 1999, Private Energy in Turkey '99. Washington, DC, USA. Contact: Registration Dept., Center for Business Intelligence, LLC, 500 West Cummings Park, Suite 5100, Woburn, MA 01801. Phone: 781-939-2438. Fax: 781-939-2490. Email: cbireg@cbinet.com URL: www.cbnet.com

10-21 January 2000, Utility Regulation and Strategy. Gainesville, Florida. Contact: Public Utility Research Center, Warrington College of Business Administration, University of Florida, PO Box 117142 (Matherly 205), Gainesville, FL 32611-7142. Phone: 352-392-6148. Fax: 352-392-7796. E-mail: purcecon@dale.cba.ufl.edu URL: www.cba.ufl.edu/eco/purc

12-14 January 2000, FERC 101 & 102, San Diego, CA, USA. Contact: The Energy Daily, 627 National Press Bldg., Washington, DC 20045. Phone: 202-638-4260. Fax: 202-662-9744. E-mail: kingcomm@kingpublishing.com

7-11 February 2000, CERAWeek 2000 - CERA's 19th Annual Executive Conference. Westin Galleria, Houston, Texas. For more information call Steven McCarthy at 617-441-1308 or visit www.cera.com/ceraweek

10-11 February 2000, Buying & Selling Oil & Gas Assets. Calgary, Alberta, CN. Contact: Conference Connection, Inc, Raffles City, PO Box 1736, Singapore 911758. Phone: 65-226-5280. Fax: 65-226-4117. Email: info@cconnection.org

4-6 March 2000, Electric Power 2000. Cincinnati, Ohio, USA. Contact: Electric Power 2000, 1220 Blalock Road, Ste. 310, Houston, TX 77055. Phone: 713-463-9595. Fax: 713-463-9997. E-mail: warrens@tradefairgroup.com URL: www.electricpowerexpo.com

25-28 April 2000, The 11th Global Warming International Conference & Expo. Boston, MA, USA. Contact: Global Warming International Center, PO Box 5275, Woodridge, IL 60517-0275. Phone: 630-910-1551.

7-10 June 2000, 23rd IAEE International Conference. Sydney, Australia. Contact: IAEE Headquarters, 28790 Chagrin Blvd., Ste. 350, Cleveland, OH 44122. Phone: 216-464-5365. Fax: 216-464-2737. E-Mail: iaee@iaee.org URL: www.iaee.org

23-28 July 2000, ENERGEX '2000 Conference, Las Vegas, USA. Contact: Dr. Chenn Zhou at fax: 219-989-2898, e-mail: qzhou@calumet.purdue.edu or Dr. Brian Golchert at fax: 630-252-5210. E-mail: brian_golchert@qmgate.anl.gov

24-27 September 2000, 21st USAEE/IAEEN.A. Conference - "Transforming Energy." Philadelphia, Pennsylvania, USA. Contact: IAEE Headquarters, 28790 Chagrin Blvd., Ste. 350, Cleveland, OH 44122. Phone: 216-464-5365. Fax: 216-464-2737. E-Mail: usaee@usaee.org URL: www.usaee.org

USAEE Dialogue

United States Association for Energy Economics
28790 Chagrin Boulevard, Suite 350
Cleveland, OH 44122 USA

BULK RATE
U.S. POSTAGE
PAID
Richfield, OH
Permit No. 82