

NEWSLETTER-FALL 2001

CENTER FOR ENERGY STUDIES " LOUISIANA STATE UNIVERSITY
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ECONOMIC CONSEQUENCES OF MORE MERCHANT POWER PLANTS IN LOUISIANA

There has been considerable talk, both at the professional and barbershop levels, about the consequences of new, non-utility power generation in Louisiana. David Dismukes, who recently rejoined the Center after a year in Houston, provides some hard numbers for these conversations in a soon-to-be-released report *Moving to the Front of the Lines: The Economic Opportunities for Independent Power Plant Development in Louisiana*. The report is more comprehensive, current and consistent than any analysis publicly available.

The report analyzes the output, employment, tax and rate implications of the completion of 13,758 megawatts (MW) of new generating capacity that thus far have been "announced" by independent (non-utility) power producers.¹

In total, the new facilities represent an investment in Louisiana of \$7.8 billion.²

To provide a financial perspective:

- Louisiana's share of the "Tobacco Settlement" was \$4.4 billion paid over 24 years. The merchant power plant investment includes only those projects scheduled for completion by or before 2005.
- Louisiana State Government's projected spending via the General Appropriation Bill, including Federal funds, in the current fiscal year is \$14.6 billion.

About 60 percent of the new capacity will be operated as independent "merchant power plants." The labels "independent" or "merchant" indicate that the plants are unregulated, selling at prices set in the market, with all financial risks borne by stockholders. Cogenerating facilities producing heat and electricity, being built by existing industrial plants and partners, make up the remaining 40 percent of the new capacity. The partners are usually in the merchant power plant business. The cogenerating facilities are "over-sized," i.e., larger than the host industrial facility requires, with the "excess" power produced to be sold on the open market in the same way as merchant power plants.

Two typical technologies are used to make the economic impact estimates; a 350 MW combustion turbine is the model for the technology to be used by about 20 percent of the new capacity designed to operate at periods of peak demand, and a 600 MW combined cycle plant is used to model the rest. For each of these typical facilities economic effects were estimated for the construction phase, the operational phase, and the dispatch phase. The dispatch phase refers to effects attributable to lower prices for electricity, i.e., the uses for income now not required to pay for higher priced electricity.

¹ "Announcing" is not ground breaking. The amount of the "announced" investment actually realized will depend upon a number of factors not included in the analysis. The possible gains in efficiency, reliability and profitability of independent power are so large, however, that realization of a substantial proportion of announcements is a realistic possibility.

² The estimate is made by applying standard, per-unit-average-industry cost to the capacity announced in each project. If cost estimates made by each project's proposers were to be used, the total would be larger.

Jobs—Both temporary construction jobs and permanent operation and maintenance jobs are created by the investment. Jobs are also created by multiplier effects—additional expenditures made possible both from the jobs created and the decrease in electricity rates. The multiplier effects in the study are much smaller and more conservative than many similar studies since they account for the fact that a significant proportion of expenditures attributable to these projects go to firms outside the state and do not stimulate or induce further economic activity in Louisiana. The estimated effects on employment of adding 13,785 MW of new generating capacity are:

- 9,382 temporary jobs added as a consequence of construction--about half in construction per se and half via multiplier effects.
- 1,483 permanent jobs associated with the operation of the new facilities will be created, again split about evenly between direct employment and multiplier effects.

Taxes--The study makes use of a regional economic model to estimate the tax implications of the new investment.

- Over the life of the projects, about \$1.2 billion would be paid to state governments, local governments and school districts as property taxes. This total is net of the existing 10-year exemption from property taxes now in force for new manufacturing facilities.
- The net present value of property taxes received over a thirty-year project life would be almost \$430 million. In addition, all in net present value terms:
- About \$555 million would be paid in fuel taxes.
- \$128 million in sales taxes, and
- \$743 million would be paid in income taxes.
- In total, taxes paid would come to almost \$5.5 billion in current dollars and have a net present value of \$1.9 billion dollars.

Efficiency--The study also discusses the increase in efficiency of generating electricity that the new investment would make possible. Efficiency is measured by “heat rates,” which are the number of British thermal units (BTUs) required to produce a kilowatt-hour of electricity (kWh). The fewer BTUs required, the more efficient the technology, and the lower the heat rate. New combustion turbines have heat rates around 10,000 BTU/kWh; combined cycle facilities have heat rates between 5,000 and 6,000 BTU/kWh. In comparison:

- The average heat rate in our region currently ranges from 13,000 to 17,000 BTU/kWh.
- Ninety-five percent of the generating facilities operating in our region have heat rates greater than 10,000 BTU/kWh, i.e., 95 percent are less efficient than the least efficient new technology.
- Some current peaking capacity, which serves the same need as combustion turbines, have heat rates as high as 28,500 BTU/kWh.

Thus, the new technologies are on average more than twice as efficient as existing generators, and a considerable amount of old, inefficient, and dirty capacity would be retired or put on standby as new capacity comes on line. The report does not review the environmental and resource issues in depth, but the improved efficiency means that air quality benefits are derived both from much cleaner technology (fewer emissions per unit of fuel) and from less fuel required (fewer BTUs per kWh).

Electricity Bills--Louisiana is an energy intensive state. Not only Louisiana’s industry, but also its households use more electricity than the nationwide average. The reason is that electricity powers most residential air conditioning equipment. Thus, although average electricity rates of about 7 cents per kWh are about 12.5 percent below the nation’s average of about 8 cents per kWh, the average residential electricity bill in Louisiana of \$87.26/month in 1999, was about five percent above the national average of \$83.26 per kWh. Household incomes in Louisiana are well below the national average, thus the average Louisiana household spends about 3.4 percent of its income for electricity compared to a national average of 2.4 percent. This difference translates into an “excess” of more than 40 percent in the relative terms.

Regional Competition and Electricity Industry Restructuring—Independent power plant entrepreneurs are making plans to build new facilities in a great many states. The phenomena is not focused on nor limited to either Louisiana, to the South, or to Southwest. Because of access to natural gas, pipelines, and transmission lines, Louisiana is an attractive candidate-location for new generating facilities. Contiguous states, especially Texas and Mississippi, share many of Louisiana’s advantages and also provide potential access to those interested in serving the Louisiana market. Legislative or regulatory moratoria, delays or costs, by Louisiana, will make its competitors more attractive to prospective investors. Further, an argument for not implementing restructuring or retail competition is the fear that there are not enough producers in the State’s electricity grid to rely on competition rather than regulation to achieve efficiency and rates as low as possible. It seems clear that merchant plants and independent producers are the way that competition will intensify enough to make sure consumers get the benefits that restructuring and new technology make possible.

MERCHANT POWER PLANT CONFERENCE SCHEDULED FOR OCTOBER 11 AND 12

The Center is convening a conference on the role of merchant power plants in Louisiana’s energy future at the Lod Cook Alumni Conference Center on the LSU campus. Leading policy-makers and analysts from both the public sector and the private economy will participate. Both regional and national interest will be represented. Among those speaking are Jimmy Field, Chairman, Louisiana Public Service Commission; Jack Cashin, Electric Power Supply Association; Judge Bobbie McCartney, Federal Energy Regulatory Commission; Secretary Don Hutchinson, Louisiana Department of Economic Development; Chip Estes, Vice President, Williams Energy; Vann Prater, Director Transmission Market Development, Dynegy; and Jim Clinton, Executive Director, Southern Growth Policies Board. James Glassman, Chairman, Progress for America and former host of CNN’s Capital Gang Sunday, will be the lunch speaker, and a reception will follow the first day’s program.

David Dismukes will also present the study on the economic impacts of independent power investment we discussed above. The attendance at the Conference is limited to 150 to ensure an opportunity for discussion and networking. If you want to attend, please register now. More detailed information and a registration form are on the Center’s web page— www.enrg.lsu.edu/mpgt

FORECASTING LAST SPRING’S ENERGY FUNDAMENTALS

In the Spring 2001 Newsletter we discussed three fears that had led many to declare, or to expect, an “energy crisis.” In rhetorical question form they were:

1. Should Louisianans expect rolling electricity blackouts?
2. Would natural gas prices (and electricity bills) return to “normal?”
3. Would Louisianans be paying \$2 or more for a gallon of gasoline in the near future?

Our response was that answering “yes” to the first and third questions was not consistent with the facts, and the second question turned on how “normal” was defined. We suggested that during the preceding decade natural gas prices were below “normal” and were not likely to return to that level, which they have not done, quite.

Not only did Louisiana avoid rolling blackouts, but to the surprise of all, the lights have also stayed on in California. California’s good fortune is attributable to many factors, including the weather and, unfortunately, much slower economic growth, but widespread reductions in energy consumption seem to be not only the most surprising but the most important of them.

Similarly, gasoline prices in Louisiana not only fell, they fell below the record-low levels (adjusting for inflation) experienced in 1997 and 1998. In the Midwest and West Coast, however, gasoline prices were much higher. This pattern is consistent with the regulatory fragmentation of the gasoline market theory discussed in the Newsletter.

Natural gas prices have also fallen to more familiar levels, but most analysts attribute their decline to short term rather than long-term adjustments. On the demand side, natural-gas-consuming firms, which were dependent upon “cheap gas,” stopped or scaled back operation. On the supply side, gas producers pushed output as hard as they could to reap near-record-high prices. Over the longer-term, however, demand for fuel by the new generation of natural-gas-fired power plants will push demand for gas beyond the current, optimistic, gas supply forecasts. Higher prices and the beginning of significant liquefied natural gas imports still seem to be a part of the consensus expectation.

A WHOLE NEW BALL GAME?

A common theme of the commentary and analysis of the implications of the World Trade Center terrorist catastrophe is that it has suddenly and irreversibly changed the realities of American life. “It’s a whole new ball game.”

The metaphor is woefully inadequate, and neither the new rules nor the new realities are clear or agreed upon. But threats to the world’s energy economy are near the center of the “contest” because of both geography and economics.

The Center’s mission is to study those aspects of the energy economy that are important for Louisiana’s citizens, businesses, and governments on the consumption as well as production side. That mission remains unchanged, but the core questions of last spring now seem less complex, important and central.

As former Senator Bennett Johnston so concisely described it a decade ago, United States energy policy has been two words: “import oil.” To which might be added, “make sure we have the military capability to do so.”

Continued and increasing reliance on imported oil remains the clear winner, i.e., it is the cheapest, on narrow, purely economic grounds. The hard questions are political.

Can military and diplomatic capability ensure future energy supplies? Does it make sense for the energy-intensive industrialized nations to rely for supply on countries that an Iranian analyst, Abbas Maleki, recently described as in the midst of a “legitimacy crisis?” “The Arabian states’ elites,” he said, “have all attended Western Universities, gotten Western values, and then return to states run on a tribal system. All of them feel the deep gap between themselves and a populace that’s [increasingly] devoted to Islam. These countries have an uncertain future.”³ To which the obvious can be added—so do policies premised on the future availability of increasing amounts of imported oil.

CENTRAL GULF COAST PETROLEUM TECHNOLOGY TRANSFER COUNCIL WORKSHOPS

A full schedule of workshops has been scheduled for the coming year. Titles and dates are given below. For more information contact Don Goddard at 225-578-4538

- October 30, 2001, Jackson, MS: *Field-Oriented Research Projects for Independents*
Jointly sponsored by the CGR/Eastern Gulf Regions

³ As reported in, Justin Fox, “The Politics of Energy,” FORTUNE.com September 14, 2001.

- November 14, 2001, Baton Rouge: *Louisiana Energy and the Environment*
- January 23, 2002, Lafayette: *Essentials of Subsurface Mapping*
- February 6, 2002, Tyler, TX: *Stripper Well Project Results*
Jointly sponsored by the CGR/Texas Regions
- March 19 & 20, 2002, New Orleans: *Optimized Horizontal Well Technology*
Jointly sponsored by the CGR/Eastern Gulf Regions
- April 2002, Shreveport *Reservoir Characterization Technology*
- June 2002, Lafayette: *Casing Drilling, An Emerging Technology*

STAFF ACTIVITIES

Wumi Iledare, associate research professor, was an invited speaker at the Society of Petroleum Engineers (SPE) Nigeria Annual International Conference and Exhibition (NAICE 2001). Wumi presented a lead paper titled *OPEC Production Quota Allocation Criteria: Empirical Evidence from 1982-1999* during a special plenary session on “Nigeria’s Growth Aspirations and OPEC Quota.” The presentation was summarized in one of the most widely circulated national daily newspapers in Nigeria. Wumi also expanded on this presentation and other energy issues during a one-hour interview with the Nigeria Television Authority in Lagos, Nigeria. He also facilitated a workshop on Economics, Public Policy and the E&P Industry for Nigerian legislators and senior government officials. The workshop was held to deliberate measures to maintain Nigeria’s competitive position in the global oil and gas industry.

Mark Kaiser and David Dismukes each gave a presentation at the meeting of the Southern States Energy Board, held in conjunction with the Southern Governors Association meeting in September in Lexington Kentucky.

Mark discussed the public or systems benefit funds that have been enacted in several states. As the electricity industry moves toward deregulation and competitive pricing, financing of the public or social programs, such as low-income energy assistance, that are now supported through public service commission regulation, becomes an important issue. Mark argues that to make intelligent decisions, we need better measurement and verification of the results of such programs. Mark also discussed the way in which some federal energy assistance funds are allocated among states, which is biased toward heating rather than cooling, which reduces very significantly the share of such funds going to Southern States.

David discussed the economic effects associated with merchant power plants, which we have previously summarized.

Bob Bradley’s CD-ROM *Environmental Education: A Louisiana View* has been completed, presented and given away to a large number of middle school educators. The CD, funded by the Louisiana Department of Environmental Quality, and created in cooperation with the Louisiana Museum of Natural Science, is unique in that it “hot-links” the educational content and activities information to applicable LEAP Standards. The CD also contains a large “Resources” section of both hard and online resources in the subject area. Teachers wishing to get a CD- ROM are invited to come by the Center for Energy Studies Building and pick one up. Bob is scheduled for Department of Energy training workshops this fall in Wichita, KS; Atlantic City, NJ; and Providence, RI.

Don Goddard is involved in the geological phase of an integrated reservoir research study that is being performed in Livingston Field, Livingston Parish, Louisiana, for TMR Exploration, Inc. This phase has been completed, and the engineering phase, including numerical simulation of the reservoir, will be completed at the end of October. Based on the results of the study, horizontal infill drilling or secondary recovery projects may be recommended for increased recovery of remaining reserves.

Bob Baumann was one of the featured presenters at the Governor's Coastal Summit 2001 held on August 15 in Baton Rouge. Bob's presentation centered on future natural gas demand in the U.S. and the role of coastal Louisiana and the Gulf of Mexico in supplying the projected demand. A portion of the presentation was published as an editorial in the September issue of *LIOGA News*.

Bob's tenure on the Governor's Oil Centennial Commission came to an end with the celebration of Louisiana's Oil Centennial on September 21-23 in Jennings, Louisiana, the site of Louisiana's first oil well.

ROBERT BROOKSHER, LMOGA SCHOLARSHIP

The University has awarded \$400 per semester each for the academic year to James Alfred Nobles, Jr., a senior in the College of Basic Sciences and Bilal Ghosn, a senior in the College of Engineering. Both students have maintained a perfect 4.0 grade point average, are candidates for a university medal upon graduation, and are Louisiana residents.

The Robert Brooksher LMOGA Scholarship has grown from some \$1,000 per annum to \$1,600 per annum this year. Originally intended to help with one student's tuition payments, the scholarships are now awarded to two students for book scholarships, as all eligible candidates are also TOPS recipients.

RECENT PUBLICATIONS AND REPORTS

2001

Baumann, R. H. (with D. W. Davis). Oil in Louisiana's estuarine environment: a development model. *The Chinese Science Bulletin*, Science in China Press, Beijing, China (in press).

Bradley, R. W. *Environmental education: a Louisiana view [CD-ROM]*. Prepared for the Louisiana Department of Environmental Quality.

Dismukes, D. E. with contributions from D.V. Mesyanzhinov and W. O. Olatubi. *Moving to the front of the lines: the economic impact of independent power plant development in Louisiana*. Baton Rouge: Louisiana State University, Center for Energy Studies. [Http://www.enrg.lsu.edu/mpgt](http://www.enrg.lsu.edu/mpgt)

Dismukes, D. E. The role of distributed energy resources in a restructured power industry. In *The Future of Electric Power Deregulation*. Edited by Raymond D. Sauer. Washington, DC: Freedom Press.

Dismukes, D. E. Challenges and opportunities for distributed energy resources in the natural gas industry. In *Natural Gas Industry Analysis 2001-2002*. Edited by Robert Willett. Houston, TX: Financial Communications Company (forthcoming).

Dismukes, D. E. *The Economic Impacts of Merchant Power Plant Development in Mississippi*. Report prepared on behalf of the US Oil and Gas Association, Alabama and Mississippi Division. Houston, TX: Econ One Research, Inc.

Dismukes, D. E. Do deepwater activities create different impacts to communities surrounding the Gulf OCS?. *Proceedings of the International Association for Energy Economics: 2001, An Energy Odyssey?* Philadelphia, April.

Dismukes, D. E. (with R. F. Cope). Modeling regional power markets and market power. *Managerial and Decision Economics* (in press).

Dismukes, D. E. (with S. W. Geiger) Electric utility restructuring and strategies for the future. *Proceedings of the Southwest Academy of Management Annual Meeting*, New Orleans, March.

Dismukes, D. E (with K. E. Hughes II). California dreaming: are competitive markets achievable? *Oil, Gas & Energy Quarterly*. March: 743-759.

Dismukes, D. E. (with K. E. Hughes II). A is for access: a definitional tour through today's energy vocabulary. *Oil, Gas & Energy Quarterly* (in press).

Dismukes, D. E. (with K. E. Hughes II) Energy policy by crisis: proposed Federal changes for the electric power industry. *Oil, Gas & Energy Quarterly* (in press).

Dismukes, D. E. (with M. Collette and R. D. Priddy). Distributed energy must be watched as opportunity for gas companies. *Natural Gas Magazine*. January: 9-16.

Dismukes, D. E. (with S. A. Ostrover). A comment on the integration of price cap and yardstick competition schemes in electrical distribution regulation. *IEEE Transactions on Power Systems* (in press).

Goddard, D. A. *Quick look hand book: onshore Louisiana petroleum producing formations*. Baton Rouge: Louisiana State University, Center for Energy Studies. September.

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Iledare, O. O. *Petroleum economics for professionals: petroleum evaluations and decision economics: a short course for petroleum engineers and geologists*. SPE Nigeria Annual International Conference & Exhibition, Abuja, Nigeria, August 4, 2001.

Iledare, O. O. *Global oil production allocations criteria among OPEC member nations: empirical evidence from 1983-1999*. Lead paper presented on OPEC Quota and Nigeria's Growth Aspirations at SPE Nigeria Annual International Conference & Exhibition, Abuja, Nigeria, August 7, 2001.

Iledare, O. O. and A. G. Pulsipher. The determinants of petroleum reserves additions: empirical evidence from the Gulf of Mexico Outer Continental Shelf. *Proceedings of the Society of Petroleum Engineers Hydrocarbon Economics and Evaluation Symposium*, SPE Paper #68604, Dallas, April 2-3.

Iledare, O. O. (with S. Inikori and K. M. Kumar). The responsiveness of the global E&P activity to changes in petroleum prices: evidence from 1960-1999. *Proceedings of the Society of Petroleum Engineers Hydrocarbon Economics and Evaluation Symposium*, SPE Paper #68587, Dallas, April 2-3.

Iledare, O. O., A. G. Pulsipher and R. E. Pincomb. *Crude oil production trends in the U.S. Gulf of Mexico OCS: how important are economic and policy incentives?* Paper presented at the International Association of Energy Economics 24th Annual International Conference, Houston, April 25-27.

Iledare, O. O., A.G. Pulsipher, W. O. Olatubi, and D. V. Mesyanzhinov. *Evaluating the efficacy of cash-bonus bidding for offshore petroleum leases in the U.S. Gulf of Mexico Outer Continental Shelf (OCS) Region, 1983-1999*. Society of Petroleum Engineers, Nigeria Council, SPE Paper #72507, Abuja, Nigeria, August 6-8.

Iledare, O. O. and A. G. Pulsipher. Forecasting the ultimate oil recovery and its rate of depletion in Nigeria's Niger Delta Basin. *Pacific and Asian Journal of Energy* 10(2): 185-200.

Iledare, O. O., W. O. Olatubi, and A. G. Pulsipher. Modeling wildcat petroleum productivity in the U. S. Gulf of Mexico Outer Continental Shelf (OCS). *Energy Studies Review* 9:2.

Kaiser, M. J. and A. G. Pulsipher and R. H. Baumann. Economic and environmental impact of a public benefits fund in Louisiana. Prepared for Louisiana Department of Natural Resources. Baton Rouge, LA. March.

Pulsipher, A. G. *Too many merchant power plants for Louisiana?* Louisiana State University, Center for Energy Studies. Available at <http://www.enrg.lsu.edu>.

Pulsipher, A. G. and W. B. Daniel IV. Onshore-only platform disposition needs exceptions. *Oil & Gas Journal*. Vol. 99(3): 64-65 (January 15, 2001).

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