



CES Newsletter

Fall 2011



www.enrg.lsu.edu

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Shale Gas Focus of Energy Summit 2011

This year's Energy Summit, "Unconventional Louisiana: Shale, Sands, and Other Opportunities," held October 18, addressed the timely topic of oil and gas shale plays in the state and their potential economic impact, with one speaker comparing the Tuscaloosa Marine Shale to that of the massive Eagle Ford natural gas play in Texas, which has generated 13,000 full-time jobs and more than \$500 million in salaries. Devon's Harry Livingstone, exploration manager for new ventures in the Southern region, cited the Louisiana Geological Survey's 1997 report that estimated the southeast-central Louisiana Tuscaloosa play likely contains 7 billion barrels of oil. Livingstone said Devon currently leases 250,000 acres along the Tuscaloosa, with plans to expand.

American Chemistry Council (ACC) chief economist and managing director Kevin Swift discussed the game-changing nature of U.S. shale gas production. He cited the National Petroleum Council's 2003 estimates of technically recoverable shale gas, 38 trillion cubic feet (TCF), and the Potential Gas Committee's 2009 estimate of 615-680 TCF, noting that in less than two years, the U.S. had gone from a gas importing nation to a gas surplus nation. In terms of Gulf Coast petrochemical feedstocks, the economics are favorable for U.S. competitiveness and exports of petrochemicals, plastics, and other derivatives. He cited ACC report findings that show that a 25 percent increase in petrochemicals supply generates 17,000 new jobs in the U.S. chemical industry, \$32 billion increase in U.S. chemical production, \$16.2 billion in new capital investment by the chemical industry, and 395,000 new jobs outside the chemical industry.

Michael Hayes, governmental affairs manager for Sasol Synfuels, explained how his company is leveraging plentiful domestic unconventional gas into new transportation fuels, specifically gas to liquids (GTL), colorless, clean burning fuel for use in diesel and jet engines. Sasol is assessing the feasibility of the Gulf Coast production of diesel, kerosene, naphtha and other GTL products.



Energy Transfer Corporation's Greg Brazaitis discussed his company's efforts in expanding infrastructure to accommodate new natural gas production at Energy Summit 2011.

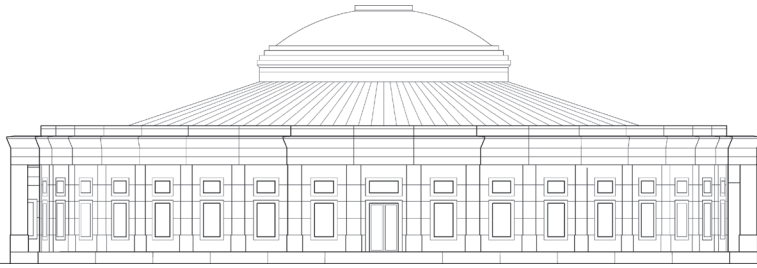
With increased domestic production of natural gas, pipeline and infrastructure issues come to the fore. Energy Transfer Corporation's Greg Brazaitis, vice president for governmental affairs, explained that much of the existing infrastructure is either inadequate or are in less-than-ideal locations. He said new pipelines will be required because a percentage of new markets will be in new locations and that many new pipelines for natural gas liquids (NGLs) transport must be built. The Tuscaloosa Shale oil play, for example, will produce associated NGLs, such as ethane, propane, and butanes. He said Energy Transfer Corporation had invested \$1+ billion capital in assets related to shale over the past several years. For 2012, the budget estimate is approximately \$1.9 billion.



Harry Livingstone of Devon Energy discussed opportunities in the Tuscaloosa Marine Shale play.

Development of natural gas plays in Europe lag far behind that of the U.S. Michael Power, manager of Chevron's unconventional resources for drilling and completions, discussed his company's operations on the continent, which currently must import most of its natural gas. Chevron is exploring opportunities in Poland, Bulgaria, and Romania. The company expects to drill its first well in Poland by the end of the year.

Patricia Outtrim, Cheniere Energy's vice president for governmental and regulatory affairs, reported on Cheniere's efforts to export liquefied natural gas to Europe through its Cameron Parish facility. She said the company had obtained a U.S. Department of Energy permit to export LNG and was pursuing other required permits to export via its \$1.5 billion facility, which was originally built in the 1990s to receive imported of liquefied natural gas.



In the Rotunda



Participants at the 2011 Louisiana Clean Energy Expo gather to tour the renewable energy, energy efficiency, and alternative fuel exhibits located outside the Energy, Coast & Environment Building April 14.



Clean Fuels Forum panelist Julie Puckett of the Propane Education & Research Council discusses the advantages of propane during the Clean Energy Expo.



Retired CES professor Don Goddard interrogates a speaker at the 2011 Alternative Energy Conference.

Alternative Energy 2011 Features Second Louisiana Clean Energy Expo

The annual Alternative Energy conference, co-hosted by CES and the Greater Baton Rouge Clean Cities Coalition, held April 14, included forums on clean fuels and green jobs, as well as the second Louisiana Clean Energy Expo. The Clean Fuels Forum served as a platform for discussing engines, infrastructure and incentives, and the Green Jobs Panel discussed the “greening” of Louisiana’s economy, including current and developing technology, policy, and implementation. The Clean Energy Expo included exhibitors from propane provider Ferrellgas, South Coast Solar, LLC, Team Honda of Baton Rouge, the Louisiana Business and Technology Center and more. Visit the Alternative Energy 2011 web page for more details: www.enrg.lsu.edu/Conferences/altenergy2011/index.html

For more on CES conferences,
visit www.enrg.lsu.edu/conferences

Center Hosts *Haynesville* Screening

The Center for Energy Studies, with the Consumer Energy Alliance and America's Natural Gas Alliance, presented a screening of the documentary film *Haynesville: A Nation's Hunt for an Energy Future*, in the Dalton J. Woods Auditorium April 19. The film's writer and director, Gregory Kallenberg, introduced the film to a packed house. Afterward, the audience was treated to a panel discussion on the Haynesville Shale play and its potential economic and environmental impacts on the state. Panelists were Stephen Moret, secretary, Louisiana Economic Development; Jimmy Field, chairman, Louisiana Public Service Commission; Tommy Foltz, director of government relations for Petrohawk Energy; Shane Schulz, manager of governmental affairs for QEP Energy; and Kallenberg. CES's David Dismukes moderated the panel.



*Director Gregory Kallenberg speaks with audience members after the April 19 screening of his film *Haynesville: A Nation's Hunt for an Energy Future*.*

ExxonMobil Researcher Presents Biofuels Talk, Meets with LSU Researchers

Tim Barckholtz of ExxonMobil's Corporate Strategic Research spoke October 17 on his company's efforts in biofuels development, particularly its alliance with Synthetic Genomics, Inc., for production of photosynthetic algae. Louisiana Public Service Commissioner Eric Skrmetta introduced Barckholtz to the audience of University researchers, students, and industry representatives. Barckholtz espoused the benefits of producing transportation fuels from algae, including the fact that it can be grown using land and water unsuitable for food production and that it could potentially yield greater volumes of biofuels per acre than other biofuel sources. He said the land area required for bio-oil production from algae, equivalent to 0.1% of total U.S. road transportation demand--based on current bio-oil productivity (gallons/acre-year) rates--was 110 sq. mi., compared to 4,791 sq. mi. for soybeans and 958 sq. mi. for corn. According to Barckholtz, algae-based biofuels could provide greenhouse gas mitigation benefits versus conventional fuels because growing algae consume CO₂. He said the Synthetic Genomics project complements ExxonMobil's ongoing efforts to advance breakthrough technologies to meet the world's energy challenges.



ExxonMobil researcher Tim Barckholtz discussed ExxonMobil's efforts in producing biofuels from algae October 17 in the Dalton J. Woods Auditorium.



Louisiana Public Service Commissioner Eric Skrmetta (left), introduced guest speaker Barckholtz (second from right). Also attending the biofuels presentation were Secretary of Economic Development Stephen Moret (second from left), David Dismukes, and Commissioner of Agriculture Dr. Mike Strain.

CES Hosts La. Natural Gas Vehicle Leadership Committee

In an effort to identify policy and infrastructure requirements for implementing a natural gas vehicle infrastructure and industry using abundant, Louisiana-produced natural gas, the Center for Energy Studies hosted state leaders October 19 for the first meeting of the Louisiana Natural Gas Vehicle Leadership Committee (LNGVLC). Members are U.S. Congressman Bill Cassidy, La. Department of Natural Resources Secretary Scott Angelle, La. Public Service Commission Chairman Jimmy Field, La. Department of Environmental Quality Secretary Peggy Hatch, and La. Department of Economic Development Secretary Stephen Moret. The committee heard presentations on NGV opportunities from a producers' perspective by Sherrie Merrow of Encana, and NGV sales, service, and pricing from a utility perspective from Barrie McKay of Questar. The meeting was a constructive forum for coordinating state policies on NGV development. The Committee anticipates meeting again in the near future, pending a potential rulemaking docket at the LPSC examining the opportunity for creating rules and regulations governing alternative fuel vehicle development and rates.

CES Presents

Center for Energy Studies researchers are invited throughout the year to share their expertise with professional associations, local, state, and national agencies, institutes and universities.

Recent presentations include

- CSAPR and EPA Regulations Impacting Louisiana Power Generation
David E. Dismukes
LSU Environmental Sciences Seminar
November 4, 2011 and
Air and Waste Management Association (Louisiana Section) Fall Conference
25 October 2011
- A Comparative Analysis of the Performance of Selected E&P Firms in the U.S. & Abroad
Omowumi O. Iledare
30th USAEE/IAEE North American Conference
9-12 October 2011
- Natural Gas Trends and Impact on Industrial Development
David E. Dismukes
Central Gulf Coast Industry Alliance Conference
22 September 2011
- Energy Market Changes and Policy Challenges
David E. Dismukes
Southeast Manpower Tripartite Alliance (SEMTA) Summer Conference
2 September 2011
- Changing Energy Markets and Policy
David E. Dismukes
Louisiana Department of Natural Resources Annual Conference
29 August 2011
- Strengthening Transparency and Accountability in the Oil and Gas Sector in Nigeria:
Are the Provisions in the Petroleum Industry Bill Pragmatic?
Omowumi O. Iledare
Institute of Petroleum Studies
University of Port Harcourt
August 2011

*To view or download a CES presentation,
visit www.enrg.lsu.edu/presentations*



Mike the Tiger was on hand to charge an electric vehicle using the University's recently donated electric vehicle charging station July 6. LSU is the first university in the state to participate in Entergy's program to support the adoption of electric vehicles in Louisiana.

GBRCCC Facilitates Campus Electric Vehicle Charger Installation

Entergy Louisiana LLC, Entergy Gulf States Louisiana L.L.C., and LSU unveiled two campus electric vehicle car chargers Wednesday, July 6. The chargers are located on the south end of campus on Nicholson Extension across from Patrick F. Taylor Hall and on the north side in the Hart Lot near Kirby-Smith Hall. On hand for the unveiling was Mike the Tiger, who made the ceremonial first charge on campus of an electric vehicle—a Nissan Leaf provided by Royal Nissan.

The Greater Baton Rouge Clean Cities Coalition (GBRCCC), housed at CES, participated in the implementation of the program by serving as a liaison between Entergy, the University, and EV charging station manufacturers and installers Coulomb Technologies and Verdek EV Solutions. GBRCCC coordinator and CES research associate Lauren Stuart helped to facilitate the process on campus. Through its charging station award program, Entergy plans to donate charging stations to 16 universities, with Verdek installing and servicing the stations. LSU was the first university to receive the EV chargers. For a five-year pilot period, Entergy will provide free electricity to university students, faculty and staff with electric vehicles, according to Bill Mohl, president and chief executive officer of Entergy Louisiana. Both the Nissan Leaf and Chevrolet Volt are expected to be available within the Baton Rouge market by March 2012. LSU Facility Services will operate a ChargePoint Network Tiger card-swipe system for the free plug-in vehicle charging stations.

Louisiana Geological Survey

Louisiana Geological Survey Publishes State Parks Series, New Geologic Quadrangle Maps

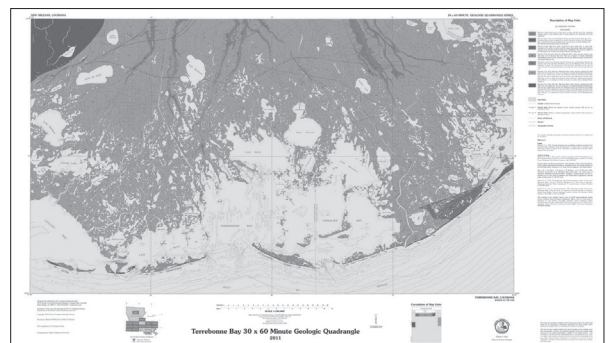
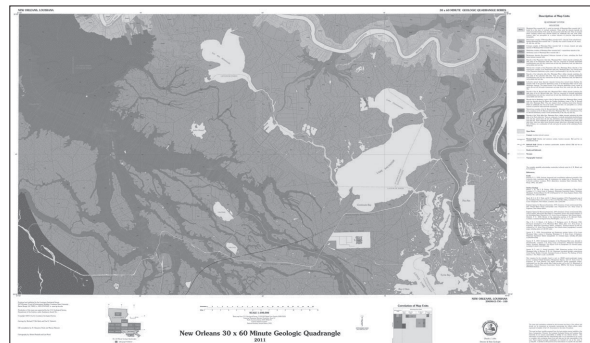
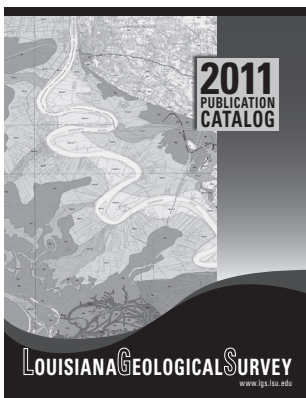
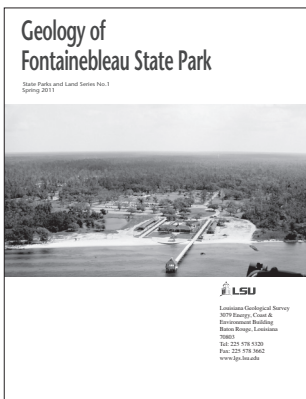
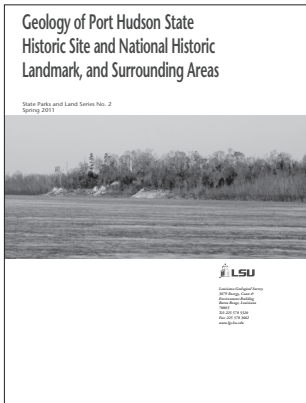
LGS's two new State Parks and Lands series publications summarize the geology, mineral resources, natural regions of Fontainebleau State Park and the Port Hudson State Historic Site. The Fontainebleau document includes the park's archaeological sites and its environs, as well as information sources and a glossary. The Port Hudson document provides a history of the Port Hudson State Historic Site and National Historic Landmark and surrounding areas. It includes information sources and a historic map, custom soil resource report, comprehensive gallery of photographs, related Web links, and a self-guided driving trip.

The LGS geologic quadrangle maps describe and illustrate the surface geology of the New Orleans and Terrebonne Bay quadrangles in the south Louisiana delta plain. The colorful 28"x 46" maps, identify the various surface geologic formations and their composition, and the locations of fault lines and waterways. In addition to rendering the geologic framework of the surface of these areas, the maps can serve as a potential guide to derivative engineering properties of surface materials, such as in connection with the design and construction of flood-protection structures. The 30 x 60 minute geologic quadrangle maps are at 1:100,000 scale.

La. Geological Survey's 2011 Publication Catalog Online

Louisiana Geological Survey has published its 2011 Publication Catalog. Most maps, atlases, and geological reports are available for order.

The collection features some of the Survey's earliest geological reports, including an overview of mineral resources and topography dating back to 1869, available for viewing only at the LSU Hill Memorial Library. Copies of "newer" reports, such as 1931's "Geology of Iberia Parish," are available for order. An index provides a list of geological, mineral, and water reports and pamphlets available for Louisiana parishes.



These and other LGS geologic quadrangle maps and publications are available from LGS at 225-578-8590 or via the LGS catalog, available online at http://www.lgs.lsu.edu/deploy/uploads/LGS_2011_Pub_Cat.pdf

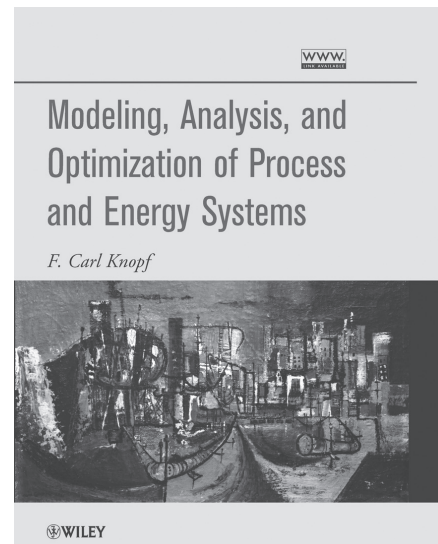
Pike, Sengupta Author Book, Chapters Featuring Biomass Work

Ralph Pike, director of the Minerals Processing Research Division, and his former Ph.D. student Debalina Sengupta will have chapters published in the *Handbook of Climate Change Mitigation* to be published by Springer in 2012. "Chemicals from Biomass" and "Biomass as Feedstock" will appear as chapters in the handbook, which focuses on mitigation of climate change impacts from a technical perspective and addresses fossil, alternative, renewable, solar, or biofuels in the context of mitigation of atmospheric carbon and resultant climate change. Much of the chapters' contents were drawn from the dissertation by Sengupta, who graduated in December 2010 and now works for the U.S. Environmental Protection Agency in Cincinnati.

Pike and Sengupta have also authored the book *Chemicals from Biomass: Integrating Bioprocesses into Chemical Production Complexes for Sustainable Development*, published by CRC Press and due out in 2012. The publication covers essentially all aspects of bioprocess engineering and presents a methodology for new plants based on renewable resources which supply the needed goods and services of existing plants. The production of chemicals from renewable resources and from biomass is covered in detail, using examples from existing chemical plants in the Lower Mississippi River Corridor as well as international case studies.

Knopf Publishes Energy Optimization Text

F. Carl Knopf, the Robert D. and Adele Anding Professor of Chemical Engineering and associate director for Minerals Processing Research, has authored the book *Modeling, Analysis, and Optimization of Process and Energy Systems*, which will be published by Wiley in early 2012. The book presents a systematic, integrated, and complete approach for minimizing energy use and reducing costs in processing plants, using cogeneration as an example. Thermodynamic and energy analysis software tools are included as open source code, encouraging further development by users. The text can be used in an elective course on process and energy systems engineering.





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