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## U.S. Energy Sector Is Again the Focus at the Sixth Annual Beaver Creek Energy Conference

More than 50 energy sector financial executives, owners, transmission experts, utility managers, and power generators were given a thought-provoking glimpse of the future of America's energy industry during the Sixth Annual Beaver Creek Energy Conference, sponsored by E3 Consulting® and Calyon on February 7 & 8. And, as in past years, conference participants enjoyed skiing and other indoor and outdoor activities in this beautiful setting in the Colorado Rockies.



John Buehler, Managing Partner, EIF, gives his keynote address.

The business of seeing what is ahead in the U.S. energy, power, and fuel sectors was accomplished by several presentations and panels, including:

- A review of the predictions from last year's Beaver Creek Energy Conference, presented by Paul Plath, Senior Vice President at E3.
- A keynote address "Market-Based Momentum in the U.S. Power Sector—Perspective from EIF" presented by John Buehler, Managing Partner at Energy Investors Funds.
- A review of the Energy Policy Act of 2005 (EPAct '05) and its unintended consequences (such as linking U.S. pipeline gas and feedstuff commodities to world petroleum market prices, as well as biofuels causing increasing grain

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prices and production). This was followed by an update on air pollution regulations (Clean Air Interstate Rule (CAIR)/ Clean Air Mercury Rule (CAMR)/ Greenhouse Gas) and technology implications, by Jim Short, Chief Operating Officer, and Earl Franklin, Executive Director, E3.

- An Electric Power Transmission update with a particular focus on ERCOT, by Trudy Harper, President, Tenaska Power Services.

- An update on North American Oil & Gas by Andy Franks, Managing Director, E3.

- A panel discussion on “Fuels and Feedstocks” moderated by Paul Plath, Senior Vice President, E3. The panelists included John Strom, Managing Director, Haddington Ventures; Greg Bafalis, President and CEO of Green Earth Fuels; and Frank Kirby, Assistant Vice President, Skelly & Loy.

- A panel discussion on the evolution of the U.S. energy sector in the coming years. The panel was moderated by Jim Guidera, Managing Director, Callyon and included: Trudy Harper, President of Tenaska Power Services; Frank Napolitano, Managing Director, Lehman Brothers; Rick Abel, Senior Vice President, Prudential Capital; Peter Rigby, Director, Standard & Poor’s; and Greg Donat, Managing Director, Lazard Frères.



**Peter Rigby, Director, Standard & Poor’s; and Frank Napolitano, Managing Director, Lehman Brothers.**



**Trudy Harper, President, Tenaska Power Services; Rick Abel, Senior VP, Prudential Capital; and Greg Donat, Managing Director, Lazard Frères.**

The final panel debated the following premises in their discussion of the U.S. energy sector:

- 1) There is “plentiful” capital in the marketplace.
- 2) There is increased awareness of climate change that will have an increasing impact on the energy marketplace.

Following are some key observations from this panel on the current U.S. energy market, as well as prognostications for the future:

- Current market drivers include declining reserve margins; a move from natural gas as “fuel of choice” to fuel diversity; an increased rate of return for transmission; Renewable Portfolio Standards (RPS); and the possibility of a carbon tax.
- Utilities are trying to increase their rate base, and for electric co-ops, the Rural Utility Service (RUS) is being cut back in the federal budget (their primary source of long-term capital) at a time when CapEx is increasing.

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Trudy Harper, President, Tenaska Power Services, shows off a “Texan” map of the U.S. during her Power Transmission Update presentation.



The hosts of the Conference—Nina Eshoo, Managing Director, Calyon and Don Hurd, President and CEO, E3.

owned assets, so there is plenty of room for capital. A private equity firm has recently completed term sheets for IGCC and coal deals.

- Some IGCC, coal gasification or coal-to-liquids plants will be built, probably in rate base. Since these technologies are not yet proven, deals will tend to be risky, with non-recourse financing and lengthy ramp ups.
- Ethanol plants may prove to be profitable, but only with production tax credits. Investor sentiment is not driving this. Cellulosic ethanol would be a better way to go than ethanol from corn, but the incentives are not yet there.



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- Nuclear continues to be a long-term play. Several U.S. utilities are planning to file applications for combined operating licenses (COLs) for new nuclear plants in 2007-08. The approval process will take up to 3 years.

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- Utilities have had cash flow in excess of CapEx for several years, paying down debt and strengthening balance sheets. This is now reversing as more is being spent on environmental compliance, generation and transmission.
- Gas-fired generation has increased from 30% to 50% in the last few years, but with the current price of gas it will be difficult to justify adding more. Coal looks more attractive, but we will probably move into unused gas-fired capacity in this cycle since there are delays in getting coal plants permitted and coal plant construction is hampered by labor and equipment availability.
- Demand for electricity continues at a rapid pace, so global warming concerns will probably not have much of an impact in the U.S. for the next 10-15 years. Other countries have adopted strict energy efficiency standards but the U.S. will probably not move in that direction in the foreseeable future.
- Capital is being deployed, but less in plant construction than in the commodities markets that support that construction. Scarcity of equipment is driving prices up.
- More investment will be, and needs to be, going into transmission.
- There are thousands of individually

## E3 Staff Expands in Q1 2007



E3 Consulting® enjoyed another record year in 2006 and is now expanding its base of consultants, in numbers and in diversity of expertise.

**Frank Kirby** brings over 28 years of experience in the mining industry to E3, in disciplines such as mine management, mine planning, reserve acquisition and development, financial due diligence, contract negotiations, environmental and safety compliance, team building, and performance evaluation. Frank holds a B.S. degree in Mining Engineering from West Virginia University. He can be contacted at 717-599-1020 or by email at [frank.kirby@e3co.com](mailto:frank.kirby@e3co.com).

**Vanessa Cameron** brings nearly 20 years of experience in the Rocky Mountain energy industry to E3, in disciplines such as federal land use planning and NEPA compliance for energy project development, air quality, wildlife habitat mitigation, state permitting, strategic advice on public opposition to development, education of regulatory officials and concerned stakeholders, development of grass-roots project support, and environmental compliance. Vanessa holds a B.A. in International Studies from Ohio State University and a Master of Environmental Policy and Management from the University of Denver. She can be reached at 303-762-7064 or by email at [vanessa.cameron@e3co.com](mailto:vanessa.cameron@e3co.com).



**Ginger Grubbs** brings over 6 years of experience within the construction and power industries to E3. Her previous positions have included engineering, construction management, and gypsum mining/processing plant operations. Ginger has experience primarily in natural gas power plant construction, including simple and combined cycle configurations as well as a water treatment facility. She has performed construction management and engineering troubleshooting for plants under construction as well as technical support for the operating fleet. Ginger holds a B.S. in Mechanical Engineering from Texas A&M University. She can be reached at 720-833-6343 or by email at [ginger.grubbs@e3co.com](mailto:ginger.grubbs@e3co.com).

**Andy Hixson** brings over 5 years of experience in environmental services and air quality consulting to E3, working in a variety of industries which include electric power generation and oil & gas distribution. His experience includes air quality dispersion modeling using AERMOD, ISC, and CALPUFF for coal fired power plants, landfill gas-to-energy (LFGTE) projects and other industrial facilities associated with state and federal permit applications, litigation support, and federal investigations. Andy graduated with a B.S. in Chemical Engineering from the Georgia Institute of Technology. He can be reached at 303-762-7069 or by email at [andy.hixson@e3co.com](mailto:andy.hixson@e3co.com).



## E3 Putting Energy in Biodiesel

Biodiesel processes have received considerable attention over the past year as developers in the U.S. seek new sources of renewable energy, and E3 Consulting® is actively engaged in assessing several projects. Memphis Biodiesel in Memphis, Tennessee is a 36 million gallon per year (MGY) production plant sited at an existing cotton seed and animal fat processing facility. The biodiesel plant will utilize poultry fat, combined with soybean oil delivered by rail. E3 has been providing Independent Engineer (IE) services to the primary investor (Cohen & Co.) since the early stages of this project. In addition to a review of the detailed design, we also reviewed the primary operating and cost assumptions used in the financial model. E3 reviewed the construction costs and schedule, and provided construction monitoring services through the construction process. E3 observed the performance testing in March 2007 and the plant is now in commercial production.



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A Houston-based company is in the process of constructing two biodiesel facilities in the Gulf Coast region. E3 was engaged by Calyon to perform a due diligence review of the planned 43 MGY facility near Houston, Texas. The plant is strategically located in the Houston ship channel and will use palm oil as well as other feedstocks. As with the Memphis project, E3 has reviewed the plant design and construction costs, as well as the operating and cost assumptions used in the financial model. E3 is also reviewing the marketing plan and feedstock procurement strategy for the project. Construction is underway and is expected to be complete during the summer of 2007. E3 will be monitoring the construction of the project on behalf of the lenders.

For a private developer in the Northeastern U.S. E3 is serving as IE and providing a technical review of the proposed process technology to be used at several planned biodiesel plants. E3 is also providing initial due diligence with respect to siting, permitting and construction of the facilities.



**For more information please contact Paul Plath at 303-762-7061 or paul.plath@e3co.com.**

## **E3 Launches Regulatory Advisory Services for the Rocky Mountain Oil and Gas Industry**

The development of a new energy project can be a very exciting time for a company with a great idea and a proposed location. And the Rocky Mountain region is seeing unprecedented oil and gas development activity. However, lack of planning for required regulatory approvals and the potential for project opposition can cause significant delays. Vanessa Cameron (re-)joined E3 Consulting® this year and is providing regulatory planning services that can help oil and gas production companies anticipate and develop a plan to address the challenges that may arise along the road to project approval. The services include:

- Strategic project planning advice to assist clients with state and federal regulatory approval processes.
- Assessment of project impacts to develop mitigation strategies.
- Interaction with, and response to, opposing or uncertain stakeholder groups.
- Education of regulatory officials on the scope, impacts and benefits of a project.
- Development of grass roots community support to assist with project approvals.
  - Environmental permitting, including air modeling.



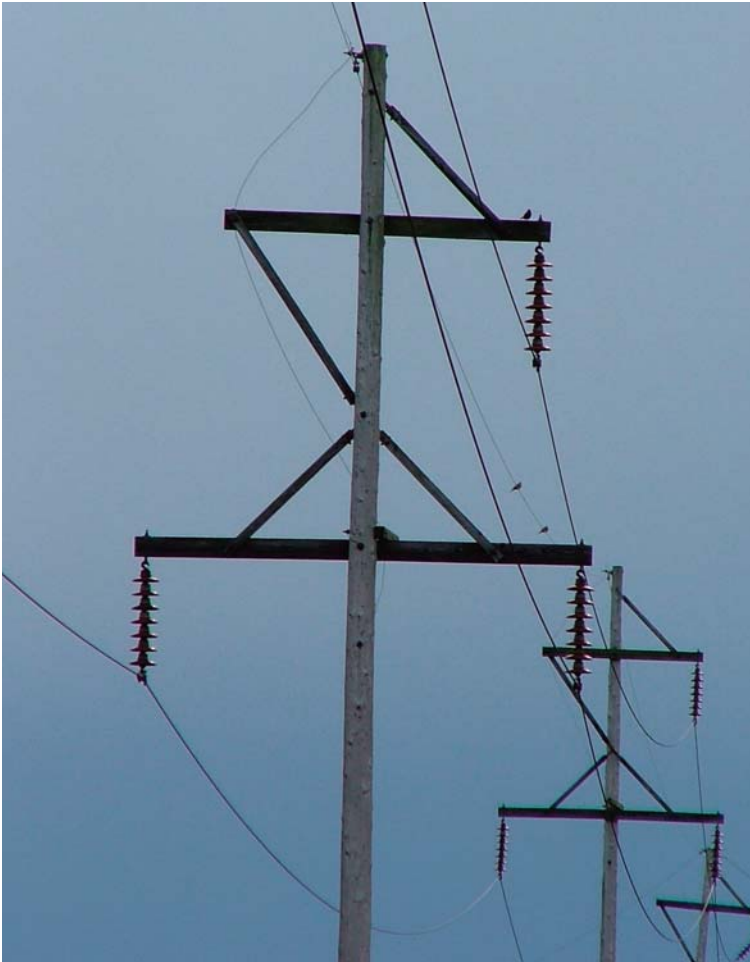
Vanessa is off and running, assisting clients in Colorado, Utah, and Wyoming with strategies and tactics to get their plans implemented. Andy Hixson also joined E3 this year and will be assisting with environmental permitting and air modeling support.

**For more information please contact Vanessa Cameron at 303-762-7064 or Vanessa.cameron@e3co.com.**

## **E3 Has Role in First-of-a-Kind Biosolids Facility**

EnerTech Environmental (EnerTech) announced on May 2, 2007 that the first commercial SlurryCarb™ facility in Rialto, California has completed financing and will begin construction immediately. EnerTech is the owner of a patented process (the “SlurryCarb™ process”) that converts municipal biosolids (wastewater treatment sludge from various sources in the Los Angeles area) into a useful renewable fuel (“E-Fuel”). The E-Fuel will be marketed to cement manufacturers and other regional industrial users as a supplementary boiler fuel. E-Fuel has been certified by the California Energy Commission as a renewable fuel. The Project represents the first commercial application of the SlurryCarb process. The transaction, valued at \$150 million, was financed through equity and a combination of tax exempt and taxable bonds. Deutsche Bank has agreed to purchase 100% of the bonds. As the Independent Engineer on the project, E3 Consulting’s® scope of review focused on the technical design and construction of the Project facility, performance assumptions and certain economic aspects. Our evaluation of economic aspects included capital construction costs, plant performance, revenues, operating costs and debt service assumptions in the Project’s financial model. E3 is currently monitoring construction of the facility for the lenders.

## Update on Electricity Transmission



### Electric System Loss Study

E3 Consulting was retained by a medium sized Midwestern utility to conduct a study of the losses on its electric system from the step-up transformers of the generators to the customer meters. The utility had previously collected data on losses and used this data to justify new capacitors that successfully lowered distribution and transmission losses. When the utility needed to produce an allocation of losses to rate customers they asked E3 to determine each category of losses and allocate them to each transmission, substation or distribution sub-system in preparation for a rate case. E3 interviewed the utility's personnel to discover characteristics of the system configuration or scheduling that needed to be part of the loss accounting. E3 confirmed the utility's loss accounting program was correct, which is often not the case, and designed a methodology to allocate transmission losses. E3 then made calculations of the losses on the sub-systems and equipment throughout the electric delivery system.

This utility is located between two large utilities, and its system carries loopflows during different seasons of the year as a result of their schedules. The loopflows create additional transmission losses apart

from retail and wholesale electricity use. E3 ran powerflow studies of the system with these loopflows to ensure that the transmission losses could be correctly allocated based upon the loads served by the utility's transmission system. One of the interesting findings was that the highest transmission system losses do not occur at the time of the utility's peak load. The scheduling patterns of neighboring utilities create higher transmission losses at times other than the system peak.

The final report was used by the utility's rate personnel to assign capacity and energy losses to customer classes in their most recent rate case.

### Sharyland HVDC Tie to Mexico

Sharyland is a new housing subdivision near Mission, Texas that was developed by the Hunt family and is served by Sharyland Utilities. The regional electric system is a load pocket that could experience difficulty serving the entire regional load during the occurrence of generation or transmission outages. Therefore, Sharyland decided to construct a 150 MW AC-DC-AC converter facility and a short 138 kV transmission line to interconnect with the Comisión Federal de Electricidad (CFE) in northern Mexico. The converter also solved reliability problems in the southern Rio Grande Valley in Mexico.

E3 provided the financial and technical due diligence to the Equipment Finance Division of GMAC Commercial Finance, recently acquired by Prudential Capital Group, an institutional investment business of Prudential Financial, Inc., in their financing of the converter, substation and transmission line. E3's review included legal documents such as the required Presidential Permit, the approvals of ERCOT and the Texas PUC, and environmental permits.

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Technical aspects of the substation and converter specification required review, and liquidated damage levels had to be set to protect Sharyland and Prudential Capital Group. E3 reviewed reliability studies made by ERCOT justifying the project to ensure the revenue stream. As a load pocket, “Reliability Must Run” units had to be available to serve load during transmission outages, and Sharyland’s new DC facility would reduce the generation output and hours of operation of these uneconomic facilities. E3 also investigated transmission pricing rules in ERCOT and the ERCOT system through which transmission providers recover their revenue requirements.

E3 is monitoring the construction and testing of the transmission facilities on behalf of Prudential Capital Group.



### **Path 15 Transfer Path Limit Upgrade, California**

In 2000 and 2001 California experienced high electricity prices caused in part by inadequate generation reserves and inadequate transmission capacity. A transmission path is a group of lines that transfer power between the same two regions by sharing the power scheduled from low cost areas to higher cost areas. For economic power exchanges between the pricing zones of the California ISO (CAISO) the transfer path known as Path 15 was a bottleneck for both north and south transfers which increased costs. Pacific Gas & Electric, TransElect and the Western Area Power Administration teamed to plan and build an 83-mile, 500 kV transmission line that would increase both the north and south capacity rating of Path 15. Studies found that this line, and other system modification, would increase the south to north rated limit by 1,500 MW and the north to south rating by 1,100 MW.

E3 provided Independent Engineer services to support the financing of this project. E3 investigated the technical and environmental aspects of the line, reviewing the primary agreements and the technical assumptions in the financial projections. E3 also monitored construction of the line, testing and initial operations on behalf of the lenders. The new lines added to Path 15 have greatly reduced congestion and increased the reliability of the CAISO-operated transmission system, saving customers millions of dollars since the line was energized.

### **Evaluation of a Midwest Transmission Line**

E3 helped an Independent Transmission Company (ITC) in the Midwest evaluate the effectiveness of a proposed 345 kV transmission line in removing congestion within a major Regional Transmission Organization (RTO). The ITC wanted to perform studies in 2014 and lacked full knowledge of where future generation for each utility in the RTO could be sited. E3 determined good locations for siting generators by rating the best sites based upon proximity to water, rail and to all 230 kV and higher voltage electric substations that had sufficient capacity for the generator size. To determine the electrical capacity of the system at different locations, E3 performed a bus injection study of the 2014 electric system with a DC powerflow which incorporated the load projections and generator retirement schedules for each utility. The ITC was then able to study the extent to which future congestion would be alleviated by constructing the proposed 345 kV transmission line.



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